

The Madden Julian Oscillation (MJO) Index lies currently in phase 4 with amplitude more than 1. It will continue in same phase during first half of week-1 with amplitude becoming less than 1 from 2nd May. During later part of week-1, it will move across phases 5 and 6 with negligible amplitude. It will move across phases 7 & 8 during first half of week-2 and move to phase 1 during later half of week-2 with amplitude gradually increasing to nearly 1. Thus, during first half of week-1 MJO Phase and amplitude will support enhancement of convective activity over the Bay of Bengal (BoB).

Numerical models including ECMWF, GEFS, GFS, NCUM AND NEPS suggest formation of low pressure area over south Andaman Sea and adjoining southeast BoB during next 48 hours. GEFS & NEPS are indicating further intensification upto depression stage during subsequent 48 hours. However, ECMWF is indicating intensification upto cyclonic storm stage. Models like IMD GFS and NCEP GFS are not indicating intensification of the system. There is large variation among various models wrt genesis date and further intensification. However, most of the models are indicating initial north-northwest movement followed by north-northeastward movement towards eastcentral BoB with weakening over Sea. The GPP analysis and forecast is also indicating potential zone of cyclogenesis over south Andaman Sea and neighbourhood during 2nd – 7th May with near northward movement of the potential genesis zone. MME (CFSv2) is also indicating high probability (>80%) of cyclogenesis over south Andaman Sea and neighbourhood during week 1.

In view of above, cyclogenesis is expected over Bay of Bengal with high probability during second half of week 1.

Verification of forecast issued during last two weeks:

The forecast issued on 16th April for week 2 (24.04.2020-30.04.2020), did not predict any cyclogenesis during the period and the forecast issued on 23th April for week 1 (24.04.2020-30.04.2020) also did not predict any cyclogenesis during the period. Thus non-occurrence of cyclogenesis over North Indian Ocean was correctly predicted two weeks in advance.



India Meteorological Department Ministry of Earth Sciences Mausam Bhavan, Lodi Road, New Delhi-110003



The Madden Julian Oscillation (MJO) index lies currently in phase 6 with amplitude less than 1. It will move across phases 7 and 8 with amplitude remaining less than 1 during first half of week 1. Thereafter, it will be in phase 1 with amplitude remaining less than 1 during later part of week 1. During week 2, it will remain in phase 1 with amplitude remaining less than 1. Thus, MJO phase and amplitude will not support enhancement of convective activity over the north Indian Ocean (NIO). including Bay of Bengal (BoB) and Arabian Sea (AS) during the entire period.

Numerical models like NEPS and NCUM are indicating cyclogenesis during 16th & 17th May over southwest BoB off Tamil Nadu coast. GEFS is indicating a low pressure area over southwest BoB during 13-14th May becoming less marked thereafter. ECMWF is indicating formation of a Low Pressure area over Andaman Sea around 11th May, its northwest-ward movement and becoming well marked upto 13th and weakening over westcentral BoB thereafter. GFS group of models are predicting cyclogenesis over westcentral BoB around 13th with intensification upto severe cyclonic storm stage and east-northeastward movement towards eastcentral BoB. GPP index forecast is indicating a potential zone of cyclogenesis over south Andaman Sea off Sumatra coast on 7th May. Again during 11th-13th May another potential zone is predicted over southeast & adjoining southwest BoB with northeastwards movement towards eastcentral BoB. MME (CFSv2) is also indicating high probability (>80%) of cyclogenesis over south Andaman Sea and neighbourhood during week 1 and 30-40% probability over eastcentral BoB during week 2. Various environmental features and global models are indicating cyclogenesis over south BoB during later half of week 1. However, there is large divergence about the track and intensification of this system.

In view of above, it may be concluded that there is low probability of cyclogenesis over the south BoB during the second half of week 1. The system is likely to move initially northwestwards and then re-curve northeastwards.

Verification of forecast issued during last two weeks:

The forecast issued on 23rd April for week 2 (01.05.2020-07.05.2020), and the forecast issued on 30th April for week 1 (01.05.2020-07.05.2020) predicted cyclogenesis with high probability over south Andaman Sea & adjoining southeast BoB during the period. However, a low pressure area formed over the south Andaman Sea & adjoining southeast BoB on 1st. It persisted over the same region and became less marked on 6th May, without any further intensification.



India Meteorological Department Ministry of Earth Sciences Mausam Bhavan, Lodi Road, New Delhi-110003



The Madden Julian Oscillation (MJO) index is currently in phase 2 with amplitude equal to 1. It will continue in same phase during week 1 with amplitude remaining more than 1 during first half of week 1 and will become less than 1 during later half. MJO will move to Phase 8 across phases 3, 4, 5, 6, 7 during week 2. Thus MJO will support enhancement of convective activity over the Bay of Bengal (BoB) during week 1.

Most of the numerical models including ECMWF, IMD GFS, NCEP GFS, NEPS and NCUM are indicating cyclogenesis over central parts of south BoB around 15th May, with intensification into cyclonic storm around 16th and initial northwest movement till 17th and north-northeastward recurvature during 18th-19th towards northwest BoB. GPP forecast is indicating positive zone for cyclogenesis over south Andaman Sea on 14th May with near northwards movement towards northwest BoB till 19th May. MME (CFSv2) is also indicating high probability (>80%) of cyclogenesis over central parts of south BoB during week 1. Various environmental conditions including ocean thermal energy, sea surface temperature, low level vorticity, upper level divergence, lower level convergence and wind shear etc. are also supporting cyclogenesis over central parts of south BoB.

In view of above, it may be concluded that there is high probability of cyclogenesis over central parts of south BoB tomorrow, the 15th May and further intensification into a cyclonic storm over the same region by 1200 UTC of 16th May. It is very likely to move northwestwards initially till 17th and then recurve north-northeastwards towards north BoB during 18th-19th May.

Verification of forecast issued during last two weeks:

The forecast issued on 30th April for week 2 (08.05.2020-14.05.2020) predicted no cyclogenesis during the period. The forecast issued on 7th May for week 1 (08.05.2020-14.05.2020) predicted low probability of cyclogenesis over the south BoB during the second half of week 1. However, a low pressure (LPA) area formed over the south Andaman Sea & adjoining southeast BoB on 1st May and became less marked on 6th. It's remnant cyclonic circulation organised into an LPA over southeast BoB and adjoining Andaman Sea on 13th May and into a well marked low pressure area over southeast BoB and neighbourhood on 14th May.





DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 06.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 06.05.2020 BASED ON 0300 UTC OF 06.05.2020.

BAY OF BENGAL:

YESTERDAY'S LOW PRESSURE AREA OVER SOUTH ANDAMAN SEA AND ADJOINING SOUTHEAST BAY OF BENGAL (BOB) HAS BECOME LESS MARKED. HOWEVER, THE ASSOCIATED CYCLONIC CIRCULATION PERSISTS OVER THE SAME REGION.

SCATTERED TO BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTHEAST BOB AND NEIGHBOURHOOD IN ASSOCIATION WITH THE LOW LEVEL CIRCULATION OVER THE AREA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX LIES CURRENTLY IN PHASE 6 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 1 ACROSS PHASES 7 AND 8 WITH AMPLITUDE REMAINING LESS THAN 1 DURING SUBSEQUENT 5 DAYS. MJO PHASE AND AMPLITUDE IS NOT SUPPORTING ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE ANDAMAN SEA AND SOUTH BAY OF BENGAL (BOB) DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS

30-31°C OVER ENTIRE BOB AND OVER EQUATORIAL INDIAN OCEAN. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER ANDAMAN SEA AND MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF BOB AND IS DECREASING TOWARDS NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 25 X10⁻⁶SEC⁻¹ OVER SOUTH BOB. ALSO SMALL ZONE OF HIGHER POSITIVE VORTICITY (50 X10⁻⁶SEC⁻¹) LIE OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL. POSITIVE LOWER LEVEL CONVERGENCE ZONE (10X10⁻⁵SEC⁻¹) LIES OVER EQUATORIAL INDIAN OCEAN (EIO) TO THE SOUTH OF SRI LANKA. THE ZONE OF POSITIVE CONVERGENCE (5X10⁻⁵SEC⁻¹) OVER SOUTH ANDAMAN SEA HAS DECREASED DURING PAST 24 HOURS. ZONES OF POSITIVE UPPER LEVEL DIVERGENCE (30 AND 10X10⁻⁵ SEC⁻¹) LIE OVER EQUATORIAL INDIAN OCEAN TO THE SOUTH OF SRI LANKA AND SOUTHWEST BOB. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-20 KTS) TO THE SOUTH OF10.0⁰N, ANDAMAN SEA AND EASTCENTRAL BOB. IT HAS BECOME HIGH OVER MAJOR PARTS OF BOB TO THE NORTH OF 10.0⁰N. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 7.0⁰N.

MANY NUMERICAL MODELS INCLUDING IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE NOT CAPTURING ANY SIGNIFICANT CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA AND NOT PREDICTING ANY CYCLOGENESIS DURING NEXT 5 DAYS. HOWEVER, ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHEAST BAY OF BENGAL AND AROUND 13TH MAY WITHOUT MUCH INTENSIFICATION AND SLIGHT WEST-NORTHWESTWARD MOVEMENT ON 14TH MAY. GPP INDEX FORECAST IS INDICATING A POTENTIAL ZONE OF CYCLOGENESIS OVER SOUTH ANDAMAN SEA DURING 6TH-8TH MAY AND ANOTHER POTENTIAL ZONE OVER SOUTH WEST BOB WITH NORTHEASTWARDS MOVEMENT DURING 7TH-12TH MAY. IMD GFS IS ALSO INDICATING CYCLOGENESIS AROUND 15TH WITH INTENSIFICATION AND NORTHWARDS MOVEMENT. SCATSAT PASS AT 1322 UTC OF 5TH MAY IS INDICATING WINDS WITH STRENGHT 15 KTS OVER SOUTH ANDAMAN SEA.

THUS TO SUMMARISE, VARIOUS ENVIRONMENTAL FEATURES ARE INDICATING FURTHER WEAKENING OF THE SYSTEM OVER SOUTH ANDAMAN SEA & NEIGHBOURHOOD AND MOST OF THE MODELS ARE NOT PREDICTING ANY CYCLOGENESIS OVER BOB DURING NEXT 5 DAYS.

CONSIDERING ALL THE ABOVE, NO CYCLOGENESIS IS LIKELY OVER THE NORTH INDIAN OCEAN DURING NEXT 5 DAYS.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 07.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 07.05.2020 BASED ON 0300 UTC OF 07.05.2020.

BAY OF BENGAL:

THE REMNANT CYCLONIC CIRCULATION OF THE PAST LOW PRESSURE AREA PERSISTS OVER SOUTH ANDAMAN SEA AND ADJOINING SOUTHEAST BAY OF BENGAL.

BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL (BOB) ADJOINING SOUTH ANDAMAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTHWEST BOB.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA SOUTH OF LATITUDE 9.0⁰N AND OVER COMORIN AREA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX LIES CURRENTLY IN PHASE 6 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE ACROSS PHASES 7 AND 8 WITH AMPLITUDE REMAINING LESS THAN 1 DURING SUBSEQUENT 2 DAYS. THEREAFTER, IT WILL BE IN PHASE 1 WITH AMPLITUDE REMAINING LESS THAN 1 DURING SUBSEQUENT 2 DAYS. MJO PHASE AND AMPLITUDE IS NOT SUPPORTING ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE ANDAMAN SEA AND SOUTH

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100% BAY OF BENGAL (BOB) DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER EQUATORIAL INDIAN OCEAN. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER ANDAMAN SEA AND MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF BOB AND IS DECREASING TOWARDS NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 25 X10⁻⁶SEC⁻¹ OVER SOUTH BOB. ALSO A SMALL ZONE OF HIGHER POSITIVE VORTICITY (60 X10⁻⁶SEC⁻¹) LIE OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE VERTICAL EXTENSION OF POSITIVE VORTICITY ZONE HAS INCREASED DURING PAST 24 HOURS. POSITIVE LOWER LEVEL CONVERGENCE ZONE HAS INCREASED SIGNIFICANTLY (30X10⁻⁵SEC⁻¹) OVER EAST EQUATORIAL INDIAN OCEAN (EIO) AND ADJOINING SOUTHEAST BOB. THE ZONE OF POSITIVE UPPER LEVEL DIVERGENCE HAS ALSO INCREASED SIGNIFICANTLY (30X10⁻⁵SEC⁻¹) OVER THE SAME REGION DURING PAST 24 HOURS. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-20 KTS) TO THE SOUTH OF 11.0⁰N, ANDAMAN SEA AND SOUTH BOB. IT HAS BECOME HIGH OVER MAJOR PARTS OF BOB TO THE NORTH OF 11.0⁰N. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.0⁰N.

NUMERICAL MODELS INCLUDING NEPS AND NCUM ARE NOT CAPTURING ANY SIGNIFICANT CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA AND NOT PREDICTING ANY CYCLOGENESIS DURING NEXT 5 DAYS. GEFS IS INDICATING A LOW PRESSURE AREA OVER SOUTHWEST BOB DURING 13-14TH MAY BECOMING LESS MARKED THEREAFTER. HOWEVER, ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHEAST BAY OF BENGAL AROUND 11TH MAY WITH GRADUAL INTENSIFICATION UPTO 13TH AND WEAKENING THEREAFTER TILL 16TH. AS REGARDS MOVEMENT, IT IS PREDICTING INITIAL WEST-NORTHWESTWARDS MOVEMENT TILL 13TH FOLLOWED BY EAST-SOUTHEASTWARDS MOVEMENT THEREAFTER, FOLLOWING ALMOST SAME PATH OVER WESTCENTRAL BOB. GFS GROUP OF MODELS ARE PREDICTING CYCLOGENESIS OVER WESTCENTRAL BOB AROUND 13TH WITH INTENSIFICATION UPTO SEVERE CYCLONIC STORM STAGE AND EAST-NORTHEASTWARD MOVEMENT TOWARDS EASTCENTRAL BOB. GPP INDEX FORECAST IS INDICATING A POTENTIAL ZONE OF CYCLOGENESIS OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST ON 7TH MAY. AGAIN DURING 11TH-13TH MAY ANOTHER POTENTIAL ZONE IS SEEN OVER SOUTHEAST & ADJOINING SOUTHWEST BOB WITH NORTHEASTWARDS MOVEMENT TOWARDS EASTCENTRAL BOB. SCATSAT PASS AT 1411 UTC OF 6TH MAY IS INDICATING WINDS WITH STRENGTH 30 KTS OVER SOUTHEAST & ADJOINING SOUTHWEST BOB. ASCAT IMAGERY BASED ON 0407 UTC OF 7TH IS INDICATING WINDS OF 15-20 KTS OVER SOUTH ANDAMAN SEA WITH CIRCULATION CENTRE NEAR 7°N/94°E. TOTAL PRECIPITABLE WATER IMAGERY AT 0142 UTC OF 7TH INDICATES ENHANCED WARM MOIST AIR OVER SOUTH ANDAMAN SEA & ADJOINING SOUTHEAST BOB NEAR THE INVEST AREA.

THUS TO SUMMARISE, VARIOUS ENVIRONMENTAL FEATURES AND GLOBAL MODELS ARE INDICATING CYCLOGENESIS OVER SOUTH BOB DURING EARLY NEXT WEEK. HOWEVER, THERE IS SOME DIVERGENCE ABOUT THE TRACK AND INTENSIFICATION OF THIS SYSTEM.

IT MAY BE CONCLUDED FROM THE NEAR CONSENSUS DERIVED FROM THE MODELS THAT A LOW PRESSURE AREA WOULD FORM OVER SOUTHEAST BAY OF BENGAL AND ADJONING ANDAMAN SEA AROUND 11TH – 12TH MAY AND INTENSIFY GRADUALLY DURING THE SUBSEQUENT 3-4 DAYS. IT IS LIKELY TO MOVE INITIALLY NORTHWESTWARDS AND THEN RE-CURVE NORTHEASTWRDS DURING THIS PERIOD.

SAT : INSAT-3D IMG IMG_TIR1 10.8 um L1C Mercator 07-05-2020/(0300 to 0326) GMT 07-05-2020/(0830 to 0856) IST



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DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 08.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 08.05.2020 BASED ON 0300 UTC OF 08.05.2020.

BAY OF BENGAL:

YESTERDAY'S CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA AND ADJOINING SOUTHEAST BAY OF BENGAL NOW LAY OVER SOUTH ANDAMAN SEA & ADJOINING SUMATRA COAST EXTENDING UPTO MID-TROPOSPHERIC LEVELS AT 0300 UTC OF TODAY THE 8TH MAY 2020.

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTH-EAST BOB AND ANDAMAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER REST SOUTH BAY OF BENGAL.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTH-EAST ARABIAN SEA OFF COASTAL KERALA AND EAST-CENTRAL ARABIAN SEA OFF COASTAL KARNATAKA. ISOLATED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER REST SOUTH-EAST ARABIAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED ISOLATED WEAK CONVECTION OVER EXTREME NORTH ARABIAN SEA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX LIES CURRENTLY IN PHASE 7 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 1 ACROSS PHASE 8 WITH AMPLITUDE REMAINING LESS THAN 1 DURING SUBSEQUENT 3 DAYS. THEREAFTER, IT WILL MOVE TO PHASE 1 WITH AMPLITUDE REMAINING LESS THAN 1. MJO PHASE AND AMPLITUDE WILL NOT SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE NORTH INDIAN OCEAN DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER EQUATORIAL INDIAN OCEAN. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER ANDAMAN SEA AND MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF BOB AND IS DECREASING TOWARDS NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 25 X10⁻⁶SEC⁻¹ OVER SOUTH BOB. ALSO A SMALL ZONE OF HIGHER POSITIVE VORTICITY (60 X10⁻⁶SEC⁻¹) LIES OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. POSITIVE LOWER LEVEL CONVERGENCE ZONE IS THE SAME (30X10⁻⁵SEC⁻¹) DURING PAST 24 HOURS OVER SOUTH ANDAMAN SEA. THE ZONE OF POSITIVE UPPER LEVEL DIVERGENCE IS THE SAME (30X10⁻⁵SEC⁻¹) DURING PAST 24 HOURS AND LIES OVER SOUTH ANDAMAN SEA. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-20 KTS) TO THE SOUTH OF 13.0⁰N, ANDAMAN SEA AND SOUTH BOB. IT HAS BECOME HIGH OVER MAJOR PARTS OF BOB TO THE NORTH OF 13.0⁰N. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.5⁰N.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING NO CYCLOGENESIS OVER THE NORTH INDIAN OCEAN DURING NEXT 7 DAYS. HOWEVER, IMD GFS IS INDICATING A LOW PRESSURE AREA (LPA) OVER WESTCENTRAL BOB ON 17TH WITH INTENSIFICATION INTO DEPRESSION OVER THE SAME REGION ON 18TH. GEFS IS INDICATING AN LPA OVER EASTCENTRAL BOB ON 15TH WITH NEAR NORTHWARD MOVEMENT & NO INTENSIFICATION. NEPS IS INDICATING DEPRESSION OVER WESTCENTRAL BOB ON 16TH WITH INTENSIFICATION OVER THE SAME REGION OFF TAMILNADU COAST. GPP IS INDICATING A POTENTIAL ZONE OVER SOUTH ANDAMAN SEA ON 7TH AND ANOTHER OVER WESTCENTRAL BOB ON 12TH.

ASCAT IMAGERY BASED ON 0507 UTC OF 8^{TH} IS INDICATING WINDS OF 15-20 KTS OVER MALAY PENINSULA, CENTRE IS NOT SEEN. SCATSAT IMAGERY AT 0142 UTC OF 8^{TH} INDICATE STRONG WINDS (30 KTS) OVER SOUTH ANDAMAN SEA. TOTAL PRECIPITABLE WATER IMAGERY AT 0162 UTC OF 8^{TH} INDICATES WARM MOIST AIR OVER SOUTH ANDAMAN SEA & ADJOINING SOUTHEAST BOB NEAR THE INVEST AREA.

THUS TO SUMMARISE, MOST OF THE NUMERICAL MODELS ARE NOT INDICATING ANY CYCLOGENESIS FOR NEXT 5 DAYS. HOWEVER, CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE AREA OVER SOUTH ANDAMAN SEA AND SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 09.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 09.05.2020 BASED ON 0300 UTC OF 09.05.2020.

BAY OF BENGAL:

YESTERDAY'S CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA & ADJOINING SUMATRA COAST EXTENDING UPTO MID-TROPOSPHERIC LEVELS PERSISTS OVER THE SAME REGION AT 0300 UTC OF TODAY THE 9^{TH} MAY 2020.

IT IS VERY LIKELY TO MOVE NORTHWESTWARDS GRADUALLY AND UNDER ITS INFLUENCE A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL AND ADJOINING ANDAMAN SEA AROUND 13TH MAY.

BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDAMAN SEA. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER REST SOUTH-EAST BAY OF BENGAL.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTH-EAST ARABIAN SEA AND SOUTH OF LAT 9.0N & COMORIN AREA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX LIES CURRENTLY IN PHASE 8 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 1 ACROSS PHASE 8 WITH AMPLITUDE REMAINING LESS THAN 1 DURING SUBSEQUENT 3 DAYS. THEREAFTER, IT WILL MOVE TO PHASE 2 WITH AMPLITUDE BECOMING 1. THEREAFTER, IT WILL MOVE TO PHASE 3 WITH AMPLITUDE NEARLY 1. MJO PHASE WILL NOT SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE NORTH INDIAN OCEAN DURING NEXT 3 DAYS, THEREAFTER IT MIGHT START SUPPORTING CONVECTION OVER THE BAY OF BENGAL (BOB). CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER EQUATORIAL INDIAN OCEAN. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER ANDAMAN SEA AND MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF BOB AND IS DECREASING TOWARDS NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 25 X10⁻⁶SEC⁻¹ OVER SOUTH BOB. ALSO A SMALL ZONE OF HIGHER POSITIVE VORTICITY (50 X10⁻⁶SEC⁻¹) LIES OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL AND IT HAS DECREASED SLIGHTLY DURING PAST 24 HOURS. POSITIVE LOWER LEVEL CONVERGENCE ZONE HAS DECREASED SIGNIFICANTLY (10X10⁻⁵SEC⁻¹) DURING PAST 24 HOURS OVER SOUTH ANDAMAN SEA. THE ZONE OF POSITIVE UPPER LEVEL DIVERGENCE HAS ALSO DECREASED DURING THE PERIOD (20X10⁻⁵SEC⁻¹) AND LIES OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST. VERTICAL WIND SHEAR (VWS) IS LOW (10 KTS) OVER ANDAMAN SEA, EASTCENTRAL BOB AND SOUTH BOB TO THE SOUTH OF 11.0⁰N. IT HAS BECOME HIGH OVER MAJOR PARTS OF BOB TO THE NORTH OF 11.0⁰N. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.5⁰N.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS AND NEPS ARE INDICATING CYCLOGENESIS OVER SOUTH BOB AROUND 15TH. HOWEVER, THERE IS LARGE DIVERGENCE AMONG THESE MODELS WRT AREA OF GENESIS, INTENSIFICATION AND DIRECTION OF MOVEMENT. ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 16TH WITH INTENSIFICATION UPTO CYCLONIC STORM STAGE AND NEAR WEST-NORTHWEST MOVEMENT OVER SOUTHWEST BOB. IMD GFS IN INDICATING CYCLOGENESIS OVER SOUTHEAST BOB AROUND 15TH WITH NEAR NORTHEASTWARD MOVEMENT AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. NEPS IS INDICATING CYCLOGENESIS AROUND 14TH OVER EASTCENTRAL BOB WITH NEAR NORTH-NORTHEASTWARDS MOVEMENT TOWARDS BANGLADESH-MYANMAR COASTS AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. MODELS LIKE GEFS AND NCUM ARE NOT INDICATING ANY CYCLOGENESIS OVER THE REGION DURING NEXT 5-7 DAYS. GPP FORECAST IS INDICATING POSITIVE ZONE FOR CYCLOGENESIS OVER SOUTH ANDAMAN SEA AND ADJOINING SOUTHEAST BOB DURING 8TH-11TH WITH NEAR NORTHWARD MOVEMENT.

ASCAT IMAGERY BASED ON 0407 UTC OF 9TH IS INDICATING CENTRE NEAR 5⁰N/96⁰E WITH STRONGER WINDS OF 15-20 KTS IN TO THE SOUTHWEST OF CIRCULATION CENTRE OVER SOUTH ANDAMAN SEA AND ADJOINING SOUTHEAST BOB. SCATSAT IMAGERY AT 1411 UTC OF 8TH INDICATE SIGNIFICANT DECREASE IN WINDS (15-20 KTS) OVER SOUTH ANDAMAN SEA AND ADJOINING SOUTHEAST BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 0146 UTC OF 9TH INDICATES SIGNIFICANT DECREASE IN WARM MOIST AIR AROUND THE INVEST AREA.

THUS TO SUMMARISE, MOST OF THE NUMERICAL MODELS ARE NOT INDICATING ANY CYCLOGENESIS FOR NEXT 5 DAYS. EVEN THE ENVIRONMENTAL CONDITIONS (MJO, VORTICITY, DIVERGENCE) ARE INDICATING UNFAVOURABLE ENVIRONMENT. HOWEVER, SINCE THE CROSS EQUATORIAL FLOW ASSOCIATED WITH THE FIRST MONSOON SURGE IS EXPECTED OVER SOUTH BOB WITHIN NEXT 5-6 DAYS ALONG WITH THE CONTRIBUTION FROM A CONVECTIVE ENVIRONMNET, A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL AND ADJOINING ANDAMAN SEA AROUND 13TH MAY. THUS THE AREA OVER SOUTH ANDAMAN SEA AND SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 10.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 10.05.2020 BASED ON 0300 UTC OF 10.05.2020.

BAY OF BENGAL:

YESTERDAY'S CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA & ADJOINING SUMATRA COAST EXTENDING UPTO MID-TROPOSPHERIC LEVELS PERSISTS OVER THE SAME REGION AT 0300 UTC OF TODAY THE 10TH MAY 2020.

IT IS VERY LIKELY TO MOVE NORTHWESTWARDS GRADUALLY AND UNDER ITS INFLUENCE A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL AND ADJOINING ANDAMAN SEA AROUND 13TH MAY.

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER SOUTH PARTS OF SOUTH ANDAMAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTH BAY OF BENGAL AND REST OF ANDAMAN SEA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER SOUTH-EAST ARABIAN SEA.SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER REST OF SOUTH ARABIAN SEA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX WILL REMAIN IN PHASE 1 WITH AMPLITUDE LESS THAN 1 DURING 10TH-11TH MAY. THEREAFTER, IT WILL REMAIN IN PHASE PHASE 2 DURING 12TH-18TH MAY WITH AMPLITUDE BETWEEN 0.5 AND 1. MJO PHASE WILL NOT SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE NORTH INDIAN OCEAN DURING NEXT 2 DAYS, THEREAFTER IT WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE BAY OF BENGAL (BOB).

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/ $\rm CM^2$ OVER ANDAMAN SEA AND MAJOR PARTS OF

SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF BOB AND IS DECREASING TOWARDS NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 25 X10⁻⁶SEC⁻¹ OVER SOUTH AND EASTCENTRAL BOB. ALSO A SMALL ZONE OF HIGHER POSITIVE VORTICITY (50 X10⁻⁶SEC⁻¹) LIES OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL AND IT HAS NOT CHANGED DURING PAST 24 HOURS. POSITIVE LOWER LEVEL CONVERGENCE ZONE HAS DECREASED (5X10⁻⁵SEC⁻¹) DURING PAST 24 HOURS OVER SOUTH ANDAMAN SEA. ANOTHER ZONE (5X10⁻⁵SEC⁻¹) DURING PAST 24 HOURS OVER SOUTH ANDAMAN SEA. ANOTHER ZONE (5X10⁻⁵SEC⁻¹) IS SEEN OVER EASTCENTRAL BOB. THE ZONE OF POSITIVE UPPER LEVEL DIVERGENCE HAS REMAINED THE SAME DURING THE PERIOD (20X10⁻⁵SEC⁻¹) AND LIES OVER SOUTH ANDAMAN SEA OFF MALAY PENINSULA. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) OVER ANDAMAN SEA, SOUTH BOB TO THE SOUTH OF 10.0⁰N AND EASTCENTRAL BOB. IT HAS BECOME HIGH OVER MAJOR PARTS OF BOB TO THE NORTH OF 10.0⁰N. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 11.0⁰N.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS AND GEFS ARE INDICATING CYCLOGENESIS OVER SOUTH BOB AROUND 16TH. NCEP GFS IS INDICATING FORMATION OF A LOW OVER SOUTHEAST BOB AND ADJOINING ANDAMAN SEA AROUND 13TH MAY, ITS PERSISTENCE AND WEAKENING AROUND 18TH MAY OVER EASTCENTRAL BOB, A FRESH FORMATION OVER SOUTHEAST AND ADJOINING EASCTCENTRAL BOB ON 19TH MAY AND ITS SUBSEQUENT INTENSIFICATION UPTO DEEP DEPRESSION OR CYCLONIC STORM STAGE, NORTH-NORTHWESTWARD MOVEMNET AND WEAKENING OVER THE WESTCENTRAL BOB DURING 20TH – 23RD MAY. HENCE, THERE IS LARGE DIVERGENCE AMONG THESE MODELS WRT AREA OF GENESIS, INTENSIFICATION AND DIRECTION OF MOVEMENT. ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 17TH WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND NEAR NORTH-NORTHWEST MOVEMENT TOWARDS WESTCENTRAL BOB. IMD GFS IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 17TH WITH NEAR NORTH-NORTHEASTWARD MOVEMENT TOWARDS EASTCENTRAL BOB AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. GEFS IS INDICATING CYCLOGENESIS OVER SOUTHEAST BOB WITH NORTHWARDS MOVEMENT TOWARDS EASTCENTRAL BOB AND NO SIGNIFICANT INTENSIFICATION. NEPS IS INDICATING CYCLONIC CIRCULATION OVER EASTCENTRAL BOB DURING 14TH-15TH WITH NO FURTHER INTENSIFICATION. NCUM IS NOT INDICATING ANY CYCLOGENESIS OVER THE REGION DURING NEXT 5 DAYS. GPP FORECAST IS INDICATING POSITIVE ZONE FOR CYCLOGENESIS OVER SOUTH ANDAMAN SEA ON 10TH MAY WITH NORTH-NORTHEASTWARD MOVEMENT TOWARDS EASTCENTRAL BOB TILL 16TH MAY. MODELS ARE THUS INDICATING CYCLOGENESIS OVER SOUTH BOB AROUND 16TH, WITH INTENSIFICATION BUT LARGE DIVERGENCE IN DIRECTION OF MOVEMENT AND AREA OF GENESIS.

ASCAT IMAGERY BASED ON 0507 UTC OF 10TH IS INDICATING STRONGER WINDS OF 15-20 KTS OVER SOUTH ANDAMAN SEA. SCATSAT IMAGERY AT 1322 UTC OF 9TH INDICATE SLIGHT INCREASE IN WINDS (20-25 KTS) OVER SOUTH ANDAMAN SEA AND ADJOINING SOUTHEAST BOB WITH MATCHING INDEX (MI) OF 0.38. TOTAL PRECIPITABLE WATER IMAGERY AT 0136 UTC OF 10TH INDICATES SIGNIFICANT INCREASE IN WARM MOIST AIR ENVELOPE AROUND THE INVEST AREA.

THUS TO SUMMARISE, MOST OF THE NUMERICAL MODELS ARE NOT INDICATING ANY CYCLOGENESIS FOR NEXT 5 DAYS. THE CURRENT ENVIRONMENTAL CONDITIONS (MJO, VORTICITY, CONVERGENCE) ARE INDICATING UNFAVOURABLE ENVIRONMENT. HOWEVER, SINCE THE CROSS EQUATORIAL FLOW ASSOCIATED WITH THE FIRST MONSOON SURGE IS EXPECTED OVER SOUTH BOB WITHIN NEXT 5-6 DAYS ALONG WITH THE CONTRIBUTION FROM A CONVECTIVE ENVIRONMNET, A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL AND ADJOINING ANDAMAN SEA AROUND 13TH MAY. THUS THE AREA OVER SOUTH ANDAMAN SEA AND SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 11.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 11.05.2020 BASED ON 0300 UTC OF 11.05.2020.

BAY OF BENGAL:

YESTERDAY'S CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA & ADJOINING SUMATRA COAST EXTENDING UPTO MID-TROPOSPHERIC LEVELS PERSISTS OVER THE SAME REGION AT 0300 UTC OF TODAY THE 11TH MAY 2020.

UNDER ITS INFLUENCE A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL (BOB) AND ADJOINING ANDAMAN SEA AROUND 13TH MAY. IT IS LIKELY TO BECOME MORE MARKED OVER SOUTH BOB DURING SUBSEQUENT 72 HOURS.

BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDAMAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED ISOLATED MODERATE TO INTENSE CONVECTION LAY OVER SOUTH BAY OF BENGAL.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	LOW

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTH-EAST ARABIAN SEA ,COMORIN AREA AND GULF OF MANNAR.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX WILL REMAINS IN PHASE 1 WITH AMPLITUDE LESS THAN 1 AS ON 11TH MAY. IT WILL MOVE OVER TO PHASE 2 AND CONTINUE THERE DURING 12TH-17TH MAY WITH AMPLITUDE REMAINING LESS THAN 1. MJO PHASE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE NORTH INDIAN OCEAN INCLUDING THE BAY OF BENGAL (BOB) DURING 12TH-17TH MAY.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER ANDAMAN SEA AND REMAINING PARTS OF BOB TO THE NORTH OF 18°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 25 X10⁻⁶SEC⁻¹ OVER SOME PARTS OF SOUTH AND EASTCENTRAL BOB. ALSO A SMALL ZONE OF HIGHER POSITIVE VORTICITY (40-50 X10⁻⁶SEC⁻¹) LIES OVER SOUTH ANDAMAN SEA OFF SUMATRA COAST WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL AND IT HAS SLIGHTLY DECREASED DURING PAST 24 HOURS. AN EXTENDED ZONE OF POSITIVE LOWER LEVEL CONVERGENCE ZONE (10X10⁻⁵SEC⁻¹) LIES OVER SOUTH ANDAMAN SEA AND SOUTH BOB. THE ZONE OF POSITIVE UPPER LEVEL DIVERGENCE HAS INCREASED DURING THE PERIOD (30X10⁻⁵SEC⁻¹) AND LIES OVER SOUTH ANDAMAN SEA. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) OVER ANDAMAN SEA AND EASTCENTRAL BOB. IT IS SLIGHTLY HIGHER 15-20 KTS OVER SOUTH BOB TO THE SOUTH OF 10⁰N. IT IS BECOMING HIGH TO THE NORTH OF OF 10.0⁰N EXCEPT OVER EASTCENTRAL BOB. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.0⁰N OVER BOB.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS AND NCEP GFS ARE INDICATING CYCLOGENESIS OVER SOUTH BOB AROUND 16TH. THERE IS LARGE DIVERGENCE AMONG THESE MODELS WRT AREA OF GENESIS, INTENSIFICATION AND DIRECTION OF MOVEMENT. ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 15TH WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND NEAR WEST-NORTHWEST MOVEMENT TOWARDS WESTCENTRAL BOB TILL 18TH MAY. IMD GFS IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 16TH WITH NEAR EAST-NORTHEASTWARD MOVEMENT TOWARDS EASTCENTRAL BOB AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. GEFS IS INDICATING LOW/CYCLONIC CIRCULATION OVER SOUTHEAST BOB ON 14TH, WITH NORTHWARDS MOVEMENT TILL 18TH MAY AND NO SIGNIFICANT INTENSIFICATION. NEPS IS ALSO INDICATING CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA ON 16TH WITH NORTH-NORTHEASTWARDS MOVEMENT TOWARDS BANGLADESH COAST AND NO SIGNIFICANT INTENSIFICATION TILL 20TH MAY. NCUM IS NOT INDICATING ANY CYCLOGENESIS OVER THE REGION DURING NEXT 5 DAYS. GPP FORECAST IS INDICATING POSITIVE ZONE FOR CYCLOGENESIS OVER SOUTH ANDAMAN SEA ON 12TH MAY WITH GRADUAL NORTH-NORTHEASTWARD MOVEMENT OF THE GPP ZONE TOWARDS EASTCENTRAL AND ADJOINING NORTHEAST BOB TILL 18TH MAY. SOME MODELS ARE THUS INDICATING CYCLOGENESIS OVER SOUTH BOB AROUND 16TH, WITH INTENSIFICATION BUT WITH LARGE DIVERGENCE IN DIRECTION OF MOVEMENT AND AREA OF GENESIS.

ASCAT IMAGERY BASED ON 0507 UTC OF 11TH IS INDICATING WEAKENING OF WINDS IN THE SUSPECT AREA (5-10 KTS) OVER SOUTHEAST BOB. SCATSAT IMAGERY AT 1411 UTC OF 10TH INDICATES WEAKER WINDS (10-15 KTS) OVER SOUTH ANDAMAN SEA WITH MATCHING INDEX (MI) OF 0.38. SCATSAT IMAGERY AT 0232 UTC OF 11TH INDICATES STRONGER WINDS (20-25 KTS) OVER COMORIN AREA AND ADJOINING SOUTHWEST BOB WITH MATCHING INDEX (MI) OF 0.41. TOTAL PRECIPITABLE WATER IMAGERY AT 1946 UTC OF 10TH INDICATES COMPLETE WITHDRAWAL OF WARM MOIST AIR ENVELOPE AROUND THE INVEST AREA.

THUS TO SUMMARISE, MOST OF THE NUMERICAL MODELS ARE NOT INDICATING ANY CYCLOGENESIS FOR NEXT 4 DAYS AND THERE LOW PROBABILITY FOR FORMATION OF A DEPRESSION DURING THE LATER PART OF DAY-5. THE CURRENT ENVIRONMENTAL CONDITIONS (MJO, VORTICITY, CONVERGENCE) ARE INDICATING SLIGHTLY UNFAVOURABLE ENVIRONMENT. HOWEVER, SINCE THE CROSS EQUATORIAL FLOW ASSOCIATED WITH THE FIRST MONSOON SURGE IS EXPECTED OVER SOUTH BOB WITHIN NEXT 5-6 DAYS ALONG WITH THE CONTRIBUTION FROM A CONVECTIVE ENVIRONMNET, A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL AND ADJOINING ANDAMAN SEA AROUND 13TH MAY. IT IS LIKELY TO BECOME MORE MARKED OVER SOUTH BOB DURING SUBSEQUENT 72 HOURS. THUS THE AREA OVER SOUTH ANDAMAN SEA AND SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.

SAT : INSAT-3D IMG IMG_TIR1 10.8 um L1C Mercator 11-05-2020/(0300 to 0327) GMT 11-05-2020/(0830 to 0857) IST









DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 12.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 12.05.2020 BASED ON 0300 UTC OF 12.05.2020.

BAY OF BENGAL:

YESTERDAY'S CYCLONIC CIRCULATION OVER SOUTH ANDAMAN SEA & ADJOINING SUMATRA COAST LAY OVER SOUTH ANDAMAN SEA AND NEIGHBOURHOOD EXTENDING UPTO MID-TROPOSPHERIC LEVELS AT 0300 UTC OF TODAY THE 12TH MAY 2020.

UNDER ITS INFLUENCE A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL (BOB) AND ADJOINING ANDAMAN SEA DURING NEXT 48 HOURS. IT IS LIKELY TO BECOME MORE MARKED OVER CENTRAL PARTS OF SOUTH BOB DURING SUBSEQUENT 48 HOURS.

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTH-EAST BOB AND SOUTH ANDAMAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER REST SOUTH BOB AND REST ANDAMAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED ISOLATED WEAK TO MODERATE CONVECTION LAY OVER REST BOB.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER SOUTH-WEST ARABIAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER EAST-CENTRAL ARABIAN SEA OFF NORTH COASTAL KERALA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 20TH MAY. HOWEVER, ITS AMPLITUDE WILL BE MORE THAN 1 DURING 13TH-17TH MAY, THEREAFTER, IT WILL BECOME LESS THAN 1. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 7 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 15°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 20-25 X10⁻⁶SEC⁻¹ OVER SOME PARTS OF SOUTH AND EASTCENTRAL BOB. ALSO A SMALL ZONE OF HIGHER POSITIVE VORTICITY (40-50 X10⁻⁶SEC⁻¹) NOW LIES OVER SOUTHEAST BOB WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL AND IT'S AREA OF OCCURRENCE HAS SLIGHTLY CHANGED DURING PAST 24 HOURS WITH MAGNITUDE REMAINING THE SAME. AN EXTENDED ZONE OF POSITIVE LOWER LEVEL CONVERGENCE ZONE (5-10X10⁻⁵SEC⁻¹) LIES OVER SOUTH ANDAMAN SEA AND PARTS OF SOUTH BOB ADJOINING EQUATORIAL INDIAN OCEAN. THE ZONE OF POSITIVE UPPER LEVEL DIVERGENCE HAS DECREASED SIGNIFICANTLY DURING THE PERIOD (10X10⁻⁵SEC⁻¹) AND LIES OVER SOUTH ANDAMAN SEA. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) OVER ANDAMAN SEA AND EASTCENTRAL BOB. IT IS SLIGHTLY HIGHER 15-20 KTS OVER PARTS OF SOUTH BOB & SOUTH ANDAMAN SEA TO THE SOUTH OF 10⁻⁰N AND OVER EASTCENTRAL BOB. IT IS BECOMING HIGH TO THE NORTH OF OF 10.0⁰N EXCEPT OVER EASTCENTRAL BOB. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.5⁰N OVER BOB.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS, NCUM AND GPP ARE INDICATING CYCLOGENESIS OVER SOUTHEAST BOB AND ADJOINING SOUTH ANDAMAN SEA WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND MOVEMENT TOWARDS NORTH BOB. THERE IS HOWEVER LARGE DIVERGENCE AMONG THESE MODELS WRT DIRECTION OF MOVEMENT AND DATE OF CYCLOGENESIS. ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHEAST BOB AROUND 17TH WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND NEAR NORTHWEST MOVEMENT TILL 19TH MAY. IMD GFS IS INDICATING CYCLOGENESIS OVER SOUTHEAST BOB AROUND 15TH WITH NORTH-NORTHEAST MOVEMENT DURING 15TH-20TH TOWARDS NORTH BOB AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. GEFS IS INDICATING CYCLOGENESIS OVER SOUTHEAST BOB ON 16TH, WITH NORTHEAST MOVEMENT TILL 19TH MAY TOWARDS NORTH BOB. NEPS IS ALSO INDICATING CYCLOGENESIS OVER SOUTHEAST BOB ON 17TH WITH NORTH-NORTHWEST MOVEMENT TOWARDS WESTCENTRAL AN ADJOINING NORTHWEST BOB TILL 21ST MAY. NCUM IS ALSO INDICATING CYCLOGENESIS AROUND 16^{1H} OVER SOUTHWEST AND ADJOINING SOUTHEAST BOB WITH INTENSIFICATION AND NORTH-NORTHWEST MOVEMENT TILL 17TH. GPP FORECAST IS INDICATING POSITIVE FOR CYCLOGENESIS OVER SOUTHEAST BOB ON 14TH MAY ZONE WITH NORTHEASTWARDS MOVEMENT TOWARDS EASTCENTRAL BOB TILL 19TH MAY. MOST OF THE MODELS ARE THUS INDICATING CYCLOGENESIS OVER SOUTHEAST AND ADJOINING SOUTHWEST BOB AROUND 16TH, WITH INTENSIFICATION AND MOVEMENT TOWARDS NORTH BOB.HOWEVER OWING TO THE LARGE VARIANCE AND SKILL OF THESE MODELS, STILL THERE IS LARGE UNCERTAINTY IN CYCLOGENESIS.

ASCAT IMAGERY BASED ON 0507 UTC OF 12TH IS INDICATING 15-20 KTS WINDS OVER NORTH ANDAMAN SEA. SCATSAT IMAGERY AT 1322 UTC OF 11TH INDICATES (20-25 KTS) OVER NORTH ANDAMAN SEA WITH MATCHING INDEX (MI) OF 0.31.

THUS TO SUMMARISE, THOUGH MOST OF THE NUMERICAL MODELS ARE INDICATING CYCLOGENESIS AROUND DAY-5, UNCERTAINTY STILL PREVAILS AND THUS THE CONFIDENCE IS LESS. THE CURRENT ENVIRONMENTAL CONDITIONS (DIVERGENCE AND CONVERGENCE) ARE INDICATING SLIGHTLY UNFAVOURABLE ENVIRONMENT. HOWEVER, SINCE THE CROSS EQUATORIAL FLOW ASSOCIATED WITH THE FIRST MONSOON SURGE IS EXPECTED OVER SOUTH BOB WITHIN NEXT 4-5 DAYS ALONG WITH THE CONTRIBUTION FROM A CONVECTIVE ENVIRONMNET, A LOW PRESSURE AREA IS VERY LIKELY TO FORM OVER SOUTHEAST BAY OF BENGAL AND ADJOINING ANDAMAN SEA DURING NEXT 48 HOURS. IT IS LIKELY TO BECOME MORE MARKED OVER SOUTH BOB DURING SUBSEQUENT 48 HOURS. THUS THE AREA OVER SOUTH ANDAMAN SEA AND SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 13.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 13.05.2020 BASED ON 0300 UTC OF 13.05.2020.

BAY OF BENGAL:

A LOW PRESSURE AREA HAS FORMED OVER SOUTHEAST BAY OF BENGAL (BOB) AND ADJOINING SOUTH ANDAMAN SEA WITH ASSOCIATED CYCLONIC CIRCULATION EXTENDING UPTO MID-TROPOSPHERIC LEVELS.

IT IS VERY LIKELY TO CONCENTRATE INTO A DEPRESSION OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL ON 15TH MAY AND FURTHER INTENSIFY INTO A CYCLONIC STORM OVER SOUTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BY 16TH EVENING. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS INITIALLY TILL 17TH AND THEN RECURVE NORTH-NORTHEASTWARDS.

BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL AND ANDAMAN SEA (MINIMUM CTT MINUS 85 DEG C). SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTHWEST BAY OF BENGAL AND WEAK TO MODERATE CONVECTION LAY OVER NORTH ANDAMAN SEA, ARAKAN COAST AND ADJOINING NORTHEAST BAY OF BENGAL.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	MODERATE	HIGH	HIGH

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER SOUTH ARABIAN SEA AND COMORIN AREA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE NEARLY 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1. THEREAFTER DURING 18TH-21ST, IT WILL MOVE TO PHASE 4 ACROSS PHASE 3 WITH AMPLITUDE REMAINING LESS THAN 1. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 8 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE LOWER LEVEL POSITIVE VORTICITY IS ABOUT 20-25 X10⁻⁶SEC⁻¹ OVER SOME PARTS OF SOUTH AND EASTCENTRAL BOB. ALSO A SMALL ZONE OF HIGHER POSITIVE VORTICITY (40-50 X10⁻⁶SEC⁻¹) LIES OVER SOUTHEAST BOB WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL AND IS PERSISTING OVER THE SAME AREA DURING PAST 24 HOURS WITH MAGNITUDE REMAINING THE SAME. YESTERDAY'S EXTENDED ZONE OF POSITIVE LOWER LEVEL CONVERGENCE ZONE HAS NOW BECOME MORE ORGANISED AND LIES OVER SOUTHEAST BOB AND ANOTHER OVER SOUTH ANDAMAN SEA (EACH 10X10⁻⁵SEC⁻¹). THE ZONE OF POSITIVE UPPER LEVEL DIVERGENCE WITH SAME VALUE DURING THE PERIOD (10X10⁻⁵SEC⁻¹) LIES OVER SOUTH ANDAMAN SEA. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (5-20 KTS) TO THE SOUTH OF 10⁻⁰N OVER ANDAMAN SEA AND SOUTH BOB. IT IS BECOMING HIGH TO THE NORTH OF OF 10.0⁻⁰N. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 9.0⁰N OVER BOB IN ASSOCIATION WITH ANTICYCLONIC CIRCULATION OVER NORTH ANDAMAN SEA.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS, NCUM AND GPP ARE INDICATING CYCLOGENESIS AROUND 16TH MAY OVER SOUTHWEST AND ADJOINING SOUTHEAST BOB WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND MOVEMENT TOWARDS NORTHWEST AND ADJOINING NORTHEAST BOB. THERE IS HOWEVER SOME DIVERGENCE AMONG THESE MODELS WRT DIRECTION OF MOVEMENT. ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHWEST ADJOINING SOUTHEAST BOB AROUND 15TH WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND NEAR NORTHWARDS MOVEMENT TILL 19TH MAY TOWARDS NORTHWEST BOB. IMD GFS IS INDICATING CYCLOGENESIS OVER SOUTHWEST AND ADJOINING SOUTHEAST BOB AROUND 16TH WITH NEAR NORTHWARDS MOVEMENT TILL 19TH TOWARDS NORTHWEST BOB AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. GEFS IS INDICATING CYCLOGENESIS OVER SOUTHEAST AND ADJOINING SOUTHWEST BOB ON 16TH, WITH NEAR NORTHWARDS MOVEMENT TILL 20TH MAY TOWARDS NORTHEAST & ADJOINING NORTHWEST BOB. NEPS IS ALSO INDICATING CYCLOGENESIS OVER SOUTHWEST BOB ON 16TH WITH NEAR NORTH-NORTHWEST MOVEMENT TILL 19TH TOWARDS WESTCENTRAL. NCUM IS ALSO INDICATING CYCLOGENESIS OVER BOB AROUND 16TH WITH INTENSIFICATION AND NORTHWARDS SOUTHWEST MOVEMENT TOWARDS WESTCENTRAL BOB TILL 17TH. GPP FORECAST IS INDICATING POSITIVE ZONE FOR CYCLOGENESIS OVER SOUTH ANDAMAN SEA ON 13TH MAY WITH NEAR NORTHWARDS MOVEMENT TOWARDS NORTHWEST BOB TILL 20TH MAY. MAJORITY OF THE MODELS ARE THUS INDICATING CYCLOGENESIS OVER CENTRAL PARTS OF SOUTH BOB AROUND 15TH MAY, WITH INTENSIFICATION INTO CYCLONIC STORM AROUND 16TH AND MOVEMENT TOWARDS NORTHWEST BOB.

ASCAT IMAGERY BASED ON 2207 UTC OF 12TH IS INDICATING 10-15 KTS WINDS OVER SOUTHEAST BOB. SCATSAT IMAGERY AT 1411 UTC OF 12TH INDICATES CLEAR CYCLONIC CIRCULATION NEAR 7.5N/89.5E (MAXIMUM SUSTAINED WIND SPEED OF 15-20 KTS) OVER ANDAMAN SEA AREA WITH MATCHING INDEX (MI) OF 0.53.

THUS TO SUMMARISE, THE LOW PRESSURE AREA OVER SOUTHEAST BOB AND NEIGHBOURHOOD IS VERY LIKELY TO CONCENTRATE INTO A DEPRESSION OVER CENTRAL PARTS OF SOUTH BOB AROUND 15TH MAY AND IT IS LIKELY TO FURTHER INTENSIFY INTO A CYCLONIC STORM OVER SOUTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BY 16TH EVENING. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS INITIALLY TILL 17TH AND THEN RECURVE NORTH-NORTHEASTWARDS. THE AREA OVER SOUTH ANDAMAN SEA AND SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 14.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 14.05.2020 BASED ON 0300 UTC OF 14.05.2020.

BAY OF BENGAL:

YESTERDAY'S LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL (BOB) AND ADJOINING SOUTH ANDAMAN SEA LAY AS A WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST BOB & NEIGHBOURHOOD WITH ASSOCIATED CYCLONIC CIRCULATION EXTENDING UPTO MID-TROPOSPHERIC LEVELS.

IT IS VERY LIKELY TO CONCENTRATE INTO A DEPRESSION OVER CENTRAL PARTS OF SOUTH BOB ON TOMORROW, THE 15TH MAY AND FURTHER INTENSIFY INTO A CYCLONIC STORM OVER THE SAME REGION BY 1200 UTC OF 16TH MAY. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS INITIALLY TILL 17TH AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS NORTH BOB DURING 18TH-19TH MAY.

AS PER SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY, THE 14TH MAY, VORTEX LAY OVER SOUTHEAST BOB WITH INTENSITY AS T1.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BOB AND NEIGHBOURHOOD IN ASSOCIATION WITH THE CYCLONIC CIRCULATION OVER THE REGION. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	MODERATE	HIGH	HIGH	HIGH

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTH ARABIAN SEA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE EQUAL TO 1. IT WILL CONTINUE IN SAME PHASE TILL 20TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 TILL 18TH MAY AND BECOMING LESS THAN 1 THEREAFTER. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 7 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, STRENGTH OF HIGHER POSITIVE VORTICITY ZONE HAS INCREASED DURING PAST 24 HOURS (60-80 X10⁻⁶SEC⁻¹) OVER SOUTHEAST BOB WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE CONVERGENCE ZONE OVER SOUTHEAST BOB HAS INCREASED DURING PAST 24 HOURS (15X10⁻⁵SEC⁻¹). UPPER LEVEL DIVERGENCE HAS SIGNIFICANTLY INCREASED DURING THE PERIOD (40X10⁻⁵SEC⁻¹) OVER SOUTHEAST BOB. VERTICAL WIND SHEAR (VWS) IS MODERATE (15-20 KTS) TO THE SOUTH OF 10⁰N OVER ANDAMAN SEA AND SOUTH BOB. IT IS BECOMING HIGH TO THE NORTH OF OF 10.0⁰N. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.0⁰N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 2241 UTC OF 13TH MAY INDICATES INCREASED CROSS EQUATORIAL FLOW WITH SIGNIFICANTLY HIGH WARM MOIST AIR INCURSION INTO THE SYSTEM.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS, NCUM AND GPP ARE INDICATING CYCLOGENESIS AROUND 16TH MAY OVER SOUTHWEST AND ADJOINING SOUTHEAST BOB WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND INITIAL NORTH-NORTHWEST MOVEMENT FOLLOWED BY NORTH-NORTHEASTWARD RECURVATURE TOWARDS CENTRAL PARTS OF NORTH BOB. THERE IS HOWEVER SOME DIVERGENCE AMONG THESE MODELS WRT DATE OF CYCLOGENESIS. ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 15TH WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND NEAR NORTHWARDS MOVEMENT TILL 18TH MAY AND NORTH-NORTHEASTWARDS RECURVATURE THEREAFTER TOWARDS NORTHWEST BOB OFF WEST BENGAL-BANGLADESH COAST. IMD GFS IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 16TH WITH NEAR NORTHWARDS MOVEMENT TILL 18TH & NORTH-NORTHEASTWARDS RECURVATURE THEREAFTER TOWARDS NORTHWEST BOB OFF WEST BENGAL-BANGLADESH COAST AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. GEFS IS INDICATING CYCLOGENESIS OVER SOUTHEAST AND ADJOINING SOUTHWEST BOB ON 16TH, WITH NEAR NORTHWARDS MOVEMENT TILL 18^{TH} MAY AND NORTH-NORTHEASTWARDS RECURVATURE THEREAFTER TOWARDS NORTHWEST BOB OFF WEST BENGAL-BANGLADESH COAST TILL 20TH. NEPS IS ALSO INDICATING CYCLOGENESIS OVER SOUTHWEST BOB ON 16TH WITH NEAR NORTH-NORTHWEST MOVEMENT TILL 20TH TOWARDS WESTCENTRAL BOB OFF ODISHA COAST. NCUM IS ALSO INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 16TH WITH INTENSIFICATION AND NORTH-NORTHWESTWARD MOVEMENT TOWARDS WESTCENTRAL BOB TILL 19TH. GPP FORECAST IS INDICATING POSITIVE ZONE FOR CYCLOGENESIS OVER SOUTH ANDAMAN SEA ON 14TH MAY WITH NEAR NORTHWARDS MOVEMENT TOWARDS NORTHWEST BOB TILL 19TH MAY. MAJORITY OF THE MODELS ARE THUS INDICATING CYCLOGENESIS OVER CENTRAL PARTS OF SOUTH BOB AROUND 15TH MAY, WITH INTENSIFICATION INTO CYCLONIC STORM AROUND 16TH AND MOVEMENT TOWARDS NORTHWEST BOB.

ASCAT PASS NOT AVAILABLE. SCATSAT IMAGERY AT 0142 UTC OF 14TH INDICATES CLEAR CYCLONIC CIRCULATION NEAR 10.0N/88.0E WITH MAXIMUM SUSTAINED WIND SPEED OF 20-25 KTS) OVER ANDAMAN SEA AREA WITH MATCHING INDEX (MI) OF 0.65.

THUS TO SUMMARISE, THE WELL-MARKED LOW PRESSURE AREA OVER SOUTHEAST BOB AND NEIGHBOURHOOD IS VERY LIKELY TO CONCENTRATE INTO A DEPRESSION OVER CENTRAL PARTS OF SOUTH BOB ON TOMORROW, THE 15TH MAY AND FURTHER INTENSIFY INTO A CYCLONIC STORM OVER THE SAME REGION BY 16TH MAY EVENING. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS INITIALLY TILL 17TH AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS NORTH BOB DURING 18TH-19TH MAY. THE AREA OVER SOUTH ANDAMAN SEA AND SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 15.05.2020

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 15.05.2020 BASED ON 0300 UTC OF 15.05.2020.

BAY OF BENGAL:

YESTERDAY'S WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL (BOB) & NEIGHBOURHOOD PERSISTS OVER THE SAME REGION WITH ASSOCIATED CYCLONIC CIRCULATION EXTENDING UPTO MID-TROPOSPHERIC LEVELS.

IT IS VERY LIKELY TO CONCENTRATE INTO A DEPRESSION OVER THE SAME REGION DURING NEXT 12 HOURS AND FURTHER INTENSIFY INTO A CYCLONIC STORM OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BY 1500 UTC OF 16TH MAY. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS INITIALLY TILL 17TH AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS NORTH BAY OF BENGAL DURING 18TH-20TH MAY.

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY, THE 15TH MAY, VORTEX LAY OVER SOUTHEAST BOB WITHIN HALF DEGREE OF 11.0°N/87.8°E. CENTRE IS NOT WELL DEFINED. INTENSITY AS T1.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BOB BETWEEN LATITUDE 6.0°N & 13.0°N AND LONGITUDE 85.0°E & 91.0°E IN ASSOCIATION WITH THE CYCLONIC CIRCULATION OVER THE REGION. THE DEPTH OF CONVECTION HAS NOT CHANGED WITH MINIMUM CLOUD TOP TEMPERATURE REMAINING THE SAME DURING PAST 24 HOURS (MINUS 93°C).

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	
MODERATE	HIGH	HIGH	HIGH	HIGH	

ARABIAN SEA:

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA.

PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
NIL	NIL	NIL	NIL	NIL

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 19TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 TILL 16TH MAY AND BECOMING LESS THAN 1 THEREAFTER. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 5 DAYS CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE HIGHER POSITIVE VORTICITY ZONE HAS MAINTAINED IT'S STRENGTH DURING PAST 24 HOURS (60-80 X10⁻⁶SEC⁻¹) OVER SOUTHEAST BOB WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL. THE CONVERGENCE ZONE OVER SOUTHEAST BOB IS THE SAME DURING PAST 24 HOURS (15X10⁻⁵SEC⁻¹) AND IS NORTH-SOUTH ORIENTED. UPPER LEVEL DIVERGENCE IS THE SAME DURING THE PERIOD (40X10⁻⁵SEC⁻¹) OVER SOUTHEAST BOB AND IS NORTH-SOUTH ORIENTED. VERTICAL WIND SHEAR (VWS) IS MODERATE (15-20 KTS) TO THE SOUTH OF 10⁰N OVER SOUTHWEST AND ADJOINING SOUTHEAST BOB. IT IS BECOMING HIGH TO THE NORTH OF 0F 10.0⁰N AND ANDAMAN SEA. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.0⁰N OVER BOB.

MOST OF THE NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS, NCUM AND GPP ARE INDICATING CYCLOGENESIS AROUND 16TH MAY OVER SOUTHWEST AND ADJOINING SOUTHEAST BOB WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND INITIAL NORTHWEST MOVEMENT FOLLOWED BY NORTH-NORTHEASTWARDS RECURVATURE TOWARDS CENTRAL PARTS OF NORTH BOB. THERE IS HOWEVER SOME DIVERGENCE AMONG THESE MODELS WRT DATE OF CYCLOGENESIS. ECMWF IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 15TH WITH INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM AND NEAR NORTHWARD MOVEMENT TILL 18TH MAY AND NORTH-NORTHEASTWARD RECURVATURE THEREAFTER TOWARDS NORTHWEST BOB OFF WEST BENGAL-BANGLADESH COAST. IMD GFS IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB AROUND 16TH WITH NEAR NORTHWARD MOVEMENT TILL 17TH & NORTH-NORTHEASTWARDS RECURVATURE THEREAFTER TOWARDS NORTHWEST BOB OFF WEST BENGAL-BANGLADESH COAST AND INTENSIFICATION UPTO SEVERE CATEGORY OF CYCLONIC STORM. GEFS IS INDICATING CYCLOGENESIS OVER SOUTHWEST BOB ON 16TH, WITH NEAR NORTHWARD MOVEMENT TILL 18TH MAY AND NORTH-NORTHEASTWARD RECURVATURE THEREAFTER TOWARDS NORTHWEST BOB OFF WEST BENGAL-BANGLADESH COAST TILL 20TH. NEPS IS ALSO INDICATING CYCLOGENESIS OVER CENTRAL PARTS OF SOUTH BOB ON 16TH WITH NEAR NORTH-NORTHWEST MOVEMENT TILL 20TH TOWARDS WESTCENTRAL BOB OFF ODISHA COAST. NCUM IS ALSO INDICATING CYCLOGENESIS OVER SOUTHEAST BOB AROUND 16TH WITH INTENSIFICATION AND NEAR NORTHWARD MOVEMENT TOWARDS WESTCENTRAL BOB TILL 19TH. GPP FORECAST IS INDICATING POSITIVE ZONE FOR CYCLOGENESIS OVER SOUTH ANDAMAN SEA ON 15TH MAY WITH NEAR NORTH-NORTHEASTWARDS MOVEMENT TOWARDS NORTHEAST BOB OFF BANGLADESH COAST TILL 20TH MAY. MAJORITY OF THE MODELS ARE THUS INDICATING CYCLOGENESIS OVER CENTRAL PARTS OF SOUTH BOB AROUND 15TH MAY, WITH INTENSIFICATION INTO CYCLONIC STORM AROUND 16TH AND MOVEMENT TOWARDS NORTHWEST BOB.

ASCAT PASS AT 0507 UTC OF 15TH MAY INDICATES WINDS OF AROUND 20 KTS OVER SOUTHEAST BOB IN THE SOUTHWEST SECTOR. SCATSAT IMAGERY AT 0231 UTC OF 15TH INDICATES CLEAR CYCLONIC CIRCULATION NEAR 10.0N/86.5E WITH MAXIMUM SUSTAINED WIND SPEED OF 20-25 KTS) OVER ANDAMAN SEA AREA WITH INCREASE IN MATCHING INDEX (MI) TO 0.69, INDICATING CYCLOGENESIS. TOTAL PRECIPITABLE WATER IMAGERY AT 0136 UTC OF 15TH MAY INDICATES INCREASED CROSS EQUATORIAL FLOW WITH SIGNIFICANTLY HIGH WARM MOIST AIR INCURSION INTO THE SYSTEM. THUS TO SUMMARISE, THE WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST BOB AND NEIGHBOURHOOD IS VERY LIKELY TO CONCENTRATE INTO A DEPRESSION OVER THE SAME REGION DURING NEXT 12 HOURS AND FURTHER INTENSIFY INTO A CYCLONIC STORM OVER CENTRAL PARTS OF SOUTH BOB BY 1500 UTC OF 16TH MAY. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS INITIALLY TILL 17TH AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS NORTH BAY OF BENGAL DURING 18TH-20TH MAY. THE AREA OVER SOUTH BOB IS MAINTAINED UNDER CONTINUOUS WATCH.







DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.05.2020 TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 16.05.2020 BASED ON 0000 UTC OF 16.05.2020.

DEPRESSION OVER SOUTHEAST BAY OF BENGAL & NEIGHBOURHOOD

LATEST SATELLITE IMAGERIES SCATTEROMETER AND BUOY OBSERVATIONS INDICATE THAT YESTERDAY'S WELL MARKED LOW PRESSURE AREA HAS CONCENTRATED INTO A DEPRESSION OVER SOUTHEAST BAY OF BENGAL AND LAY CENTRED AT 0000 UTC OF TODAY, THE 16TH MAY, 2020 NEAR LATITUDE 10.4°N AND LONGITUDE 87.0°E, ABOUT 1100 KM SOUTH OF PARADIP (42976) (ODISHA), 1250 KM SOUTH OF DIGHA (42901) (WEST BENGAL) AND 1330 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984) (BANGLADESH). IT IS VERY LIKELY TO INTENSIFY RAPIDLY INTO A CYCLONIC STORM BY 1200 UTC OF TODAY AND FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS.

IT IS VERY LIKELY TO MOVE NORTH NORTHWESTWARDS INITIALLY TILL $17^{\rm TH}$ MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS WEST BENGAL COAST DURING $18^{\rm TH}$ TO $20^{\rm TH}$ MAY.

DATE/TIME	POSITION	IAXIMUM SUSTAINED SURFAC	CATEGORY OF CYCLONIC
(UTC)	(LAT. ºN/ LONG. ºE)	WIND SPEED (KMPH)	DISTURBANCE
16.05.20/0000	10.4/87.0	40-50 gusting to 60	Depression
16.05.20/0600	10.7/86.9	50-60 gusting to 70	Deep Depression
16.05.20/1200	11.0/86.8	60-70 gusting to 80	Cyclonic Storm
16.05.20/1800	11.6/86.7	75-85 gusting to 95	Cyclonic Storm
17.05.20/0000	12.3/86.6	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1200	13.4/86.5	100-110 gusting to 120	Severe Cyclonic Storm
18.05.20/0000	14.3/86.4	120-130 gusting to 145	Very Severe Cyclonic Storm
18.05.20/1200	15.4/86.3	135-145 gusting to 160	Very Severe Cyclonic Storm
19.05.20/0000	16.6/86.4	155-165 gusting to 180	Very Severe Cyclonic Storm
19.05.20/1200	18.2/86.7	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0000	19.8/87.3	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1200	21.8/87.9	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0000	24.0/88.5	110-120 gusting to 135	Severe Cyclonic Storm

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0000 UTC OF TODAY, THE 16TH MAY, INTENSITY T1.5. CONVECTION AND ORGANISATION HAS INCREASED FURTHER. ASSTD BKN LOW/MED CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUTDE 6.0N TO 13.0N LONGITUDE 83.0E TO 90.0E. MINIMUM CLOUD TOP TEMPERATURE (CTT) MINUS 93 DEG C

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 25 KNOTS GUSTING TO 35

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100% KNOTS. THE SEA CONDITION IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 1000 HPA.

AT 0000 UTC OF 16TH MAY, A BOUY LOCATED AT 6.6°N/88.3°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1003 HPA AND MEAN SURFACE WIND SPEED OF 190°/ 13.6 KNOTS AND A SHIP LOCATED AT 5.8°N/91.6°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1000.5 HPA AND MEAN SURFACE WIND SPEED OF 190°/ 26 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE HIGHER POSITIVE VORTICITY ZONE HAS INCREASED IT'S STRENGTH DURING PAST 24 HOURS (50-100 X10⁻⁶SEC⁻¹) OVER SOUTHEAST BOB WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL. THE CONVERGENCE ZONE OVER SOUTHEAST BOB INCREASED DURING PAST 24 HOURS (30X10⁻⁵SEC⁻¹). UPPER LEVEL DIVERGENCE IS THE SAME DURING THE PERIOD (40X10⁻⁵SEC⁻¹) OVER SOUTHEAST BOB AND IS NORTH-SOUTH ORIENTED. VERTICAL WIND SHEAR (VWS) IS MODERATE (10-15 KTS) TO THE SOUTH OF 10⁰N OVER SOUTHWEST AND ADJOINING SOUTHEAST BOB. IT IS BECOMING HIGH TO THE NORTH OF OF 10.0⁰N AND ANDAMAN SEA. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 10.0⁰N OVER BOB.

THIS FORECAST IS BASED ON THE CONSENSUS AMONG VARIOUS NUMERICAL MODELS. ALL THESE MODELS ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO SEVERE CATEGORY AND MOVEMENT TOWARDS NORTH BAY OF BENGAL UPTO 20TH MAY. THUS THE SYSTEM IS VERY LIKELY TO INTENSIFY RAPIDLY INTO A CYCLONIC STORM BY 1200 UTC OF TODAY AND FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE NORTH NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS WEST BENGAL COAST DURING 18TH TO 20TH MAY.

(ANANDA DAS) SCIENTIST-E, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um L1C Mercator 16-05-2020/(0130 to 0156) GMT 16-05-2020/(0700 to 0726) IST








FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 1 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 16.05.2020 BASED ON 1200 UTC OF 16.05.2020.

SUB: DEEP DEPRESSION OVER SOUTHEAST BAY OF BENGAL INTENSIFIED INTO A CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN).

THE DEEP DEPRESSION OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD REMAINED PRACTICALLY STATIONARY DURING PAST 06 HOURS AND RAPIDLY INTENSIFIED INTO A CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN). IT LAY CENTRED OVER THE SAME REGION AT 1200 UTC OF TODAY, THE 16TH MAY, 2020 NEAR LATITUDE 10.9°N AND LONGITUDE 86.3°E, ABOUT 1040 KM SOUTH OF PARADIP (42976), 1200 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1300 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND INTO A VERY SEVERE CYCLONIC STORM BY 0000UTC OF 18TH MAY. IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND ADJOINING ODISHA COASTS DURING 18TH TO 20TH MAY 2020.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT. ⁰N/	SURFACE	DISTURBANCE
	LONG. ⁰E)	WIND SPEED (KMPH)	
16.05.20/1200	10.9/86.3	60-70 GUSTING TO 80	CYCLONIC STORM
16.05.20/1800	11.1/86.1	70-80 GUSTING TO 90	CYCLONIC STORM
17.05.20/0000	11.7/86.0	80-90 GUSTING TO 100	CYCLONIC STORM
17.05.20/0600	12.2/86.0	85-95 GUSTING TO 105	SEVERE CYCLONIC STORM
17.05.20/1200	12.8/86.0	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
18.05.20/0000	14.0/86.0	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
18.05.20/1200	15.1/86.1	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
19.05.20/0000	16.7/86.4	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	18.3/86.8	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	20.1/87.4	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
20.05.20/1200	22.2/88.0	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
21.05.20/0530	24.4/88.5	80-90 GUSTING TO 100	CYCLONIC STORM

21.05.20/1730	26.0/89.0	40-50 GUSTING TO 100	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY, THE 16^{TH} MAY, VORTEX OVER SE BAY & N/HOOD HAS FURTHER INTENSIFIED RAPIDLY. THE CURRENT INTENSITY OF THE SYSTEM IS T 2.5 ASSOCIATED WITH CDO PATTERN. MIN CTT -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 6.0° N TO 16.0° N LONG 81.0°E TO 91.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 35 KNOTS GUSTING TO 45KNOTS. THE SEA CONDITION IS VERY ROUGH TO HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA.

AT 1200 UTC OF 16^{TH} MAY, A BOUY (23094) LOCATED AT 13.3°N/84.0°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1001.6 HPA AND MEAN SURFACE WIND SPEED OF 40°/10 KNOTS AND ANOTHER BOUY (23459) LOCATED AT 13.6°N/86.6°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1001.3 HPA AND MEAN SURFACE WIND SPEED OF 80°/21 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY AND HENCE THE INTENSIFICATION OF THE SYSTEM.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTANED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 20X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. UPPER LEVEL DIVERGENCE OF 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS FURTHER DECREASED AND IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO NORTH OF LAT. 15 N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 12.0 N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 1041 UTC OF 16TH MAY INDICATES WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO VERY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND ADJOINING ODISHA AND BANGLADESH COASTS. THE FORECAST IS BASED AS THE CONCENSUS FROM VARIOUS MODELS.

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1 10.8 um L1C Mercator 16-05-2020/(1330 to 1356) GMT 16-05-2020/(1900 to 1926) IST











REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI SPECIAL TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.05.2020 TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 16.05.2020 BASED ON 0300 UTC OF 16.05.2020.

DEPRESSION OVER SOUTHEAST BAY OF BENGAL & NEIGHBOURHOOD

THE **DEPRESSION** OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED NORTHWESTWARDS WITH A SPEED OF 20 KMPH DURING PAST 03 HOURS AND LAY CENTRED AT 0300 UTC OF TODAY, THE 16TH MAY, 2020 NEAR LATITUDE 10.7°N AND LONGITUDE 86.5°E, ABOUT 1060 KM SOUTH OF PARADIP (42976) (ODISHA), 1220 KM SOUTH-SOUTHWEST OF DIGHA (42901) (WEST BENGAL) AND 1310 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984) (BANGLADESH). IT IS VERY LIKELY TO INTENSIFY RAPIDLY INTO A CYCLONIC STORM DURING NEXT 12 HOURS AND FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS.

IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL COAST DURING 18TH TO 20TH MAY 2020.

DATE/TIME (UTC) POSITION MAXIMUM SUSTAINED SURFACE CATEGORY OF CYCLONIC (LAT. ºN/ LONG. ºE) WIND SPEED (KMPH) DISTURBANCE 16.05.20/0300 10.7/86.5 40-50 GUSTING TO 60 DEPRESSION 50-60 GUSTING TO 70 DEEP DEPRESSION 16.05.20/0600 10.9/86.3 16.05.20/1200 11.2/86.2 60-70 GUSTING TO 80 CYCLONIC STORM 16.05.20/1800 11.8/86.1 75-85 GUSTING TO 95 CYCLONIC STORM SEVERE CYCLONIC STORM 17.05.20/0000 12.3/86.0 90-100 GUSTING TO 110 100-110 GUSTING TO 120 SEVERE CYCLONIC STORM 17.05.20/1200 13.4/86.0 18.05.20/0000 14.3/86.1 120-130 GUSTING TO 145 VERY SEVERE CYCLONIC STORM 18.05.20/1200 15.4/86.2 135-145 GUSTING TO 160 VERY SEVERE CYCLONIC STORM VERY SEVERE CYCLONIC STORM 19.05.20/0000 16.6/86.3 155-165 GUSTING TO 180 19.05.20/1200 18.2/86.7 170-180 GUSTING TO 200 EXTREMELY SEVERE CYCLONIC STORM 160-170 GUSTING TO 190 EXTREMELY SEVERE CYCLONIC STORM 20.05.20/0000 19.8/87.3 145-155 GUSTING TO 170 VERY SEVERE CYCLONIC STORM 20.05.20/1200 21.8/87.9 21.05.20/0000 24.0/88.5 110-120 GUSTING TO 135 SEVERE CYCLONIC STORM

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY, THE 16TH MAY, INTENSITY OF THE SYSTEM IS T1.5. CONVECTION HAS FURTHER ORGANISED. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUTDE 5.0°N & 13.0°N AND LONGITUDE 83.0°E & 90.0°E. MINIMUM CLOUD TOP TEMPERATURE (CTT) MINUS 93°C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. THE SEA CONDITION IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 1000 HPA.

AT 0300 UTC OF 16TH MAY, A BOUY LOCATED AT 13.8°N/87.0°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1004 HPA AND MEAN SURFACE WIND SPEED OF 100°/21.0 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE HIGHER POSITIVE VORTICITY ZONE HAS INCREASED CONSIDERABLY IN STRENGTH DURING PAST 24 HOURS (AROUND 150X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE OVER SOUTHEAST BOB IS AROUND 20X10⁻⁵SEC⁻¹ AROUND THE SYSTEM CENTRE. UPPER LEVEL DIVERGENCE IS THE SAME DURING THE PERIOD (40X10⁻⁵SEC⁻¹) OVER SOUTHEAST BOB. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (15-30 KTS) AROUND THE SYSTEM CENTRE. IT IS HIGH REMAINING SAME TO THE NORTH OF 10.0°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 11.5°N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 0136 UTC OF 16TH MAY INDICATES WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO SEVERE CATEGORY AND MOVEMENT TOWARDS NORTH BAY OF BENGAL UPTO 20TH MAY TOWARDS WEST BENGAL COAST. CONSIDERING ALL THE ABOVE, THE SYSTEM IS VERY LIKELY TO INTENSIFY RAPIDLY INTO A CYCLONIC STORM BY 1200 UTC OF TODAY AND FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE NORTH NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS WEST BENGAL COAST DURING 18TH TO 20TH MAY.

(SUNITHA DEVI) SCIENTIST-E, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um L1C Mercator 16-05-2020/(0500 to 0527) GMT 16-05-2020/(1030 to 1057) IST











FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 2 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1800 UTC OF 16.05.2020 BASED ON 1500 UTC OF 16.05.2020.

SUB: THE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD.

THE CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED NORTHWESTWARDS SLOWLY DURING PAST 06 HOURS AND LAY CENTRED OVER THE SAME REGION AT 1500 UTC OF TODAY, THE 16TH MAY, 2020 NEAR LATITUDE 11.0°N AND LONGITUDE 86.2°E, ABOUT 1030 KM SOUTH OF PARADIP (42976), 1190 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1290 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND INTO A VERY SEVERE CYCLONIC STORM BY 18TH MORNING. IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND ADJOINING NORTH ODISHA COASTS DURING 18TH TO 20TH MAY 2020.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT. ⁰N/	SURFACE	DISTURBANCE
	LONG. ⁰E)	WIND SPEED (KMPH)	
16.05.20/1500	11.0/86.2	65-75 GUSTING TO 85	CYCLONIC STORM
16.05.20/1800	11.1/86.1	70-80 GUSTING TO 90	CYCLONIC STORM
17.05.20/0000	11.7/86.0	80-90 GUSTING TO 100	CYCLONIC STORM
17.05.20/0600	12.2/86.0	85-95 GUSTING TO 105	SEVERE CYCLONIC STORM
17.05.20/1200	12.8/86.0	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
18.05.20/0000	14.0/86.0	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
18.05.20/1200	15.1/86.1	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
19.05.20/0000	16.7/86.4	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	18.3/86.8	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	20.1/87.4	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
20.05.20/1200	22.2/88.0	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM

21.05.20/0530	24.4/88.5	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1730	26.0/89.0	40-50 GUSTING TO 100	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1500 UTC OF TODAY, THE 16TH MAY, VORTEX OVER SE BAY & N/HOOD HAS FURTHER INTENSIFIED RAPIDLY. THE CURRENT INTENSITY OF THE SYSTEM IS T 2.5 ASSOCIATED WITH CDO PATTERN. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 5.0°N TO 16.0°N LONG 81.0°E TO 91.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. THE SEA CONDITION IS VERY ROUGH TO HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA.

AT 1500 UTC OF 16TH MAY, A BOUY (23094) LOCATED AT 13.4°N/84.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1003.0 HPA AND MEAN SURFACE WIND SPEED OF 50°/05 KNOTS AND ANOTHER BOUY (23459) LOCATED AT 14.0°N/86.9°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1003.2 HPA AND MEAN SURFACE WIND SPEED OF 80°/18 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY AND HENCE THE INTENSIFICATION OF THE SYSTEM.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTANED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 20X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. UPPER LEVEL DIVERGENCE OF 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS FURTHER DECREASED AND IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO NORTH OF LAT. 15 N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 12.0 N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 1041 UTC OF 16TH MAY INDICATES WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO VERY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND ADJOINING ODISHA AND BANGLADESH COASTS. THE FORECAST IS BASED AS THE CONCENSUS FROM VARIOUS MODELS.

(D R PATTANAIK) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um L1C Mercator

16-05-2020/(1630 to 1656) GMT 16-05-2020/(2200 to 2226) IST





PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%







REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI SPECIAL TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.05.2020 TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1200 UTC OF 16.05.2020 BASED ON 0900 UTC OF 16.05.2020.

DEPRESSION OVER SOUTHEAST BAY OF BENGAL & NEIGHBOURHOOD INTENSIFIED INTO A DEEP DEPRESSION OVER THE SAME REGION.

THE **DEPRESSION** OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED NORTHWESTWARDS WITH A SPEED OF 5 KMPH DURING PAST 06 HOURS, INTENSIFIED INTO A DEEP DEPRESSION AND LAY CENTRED OVER THE SAME REGION AT 0900 UTC OF TODAY, THE 16TH MAY, 2020 NEAR LATITUDE 10.9°N AND LONGITUDE 86.3°E, ABOUT 1040 KM SOUTH OF PARADIP (42976), 1200 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1300 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY INTO A CYCLONIC STORM DURING NEXT 12 HOURS AND FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS AND RAPIDLY INTENSIFY INTO A VERY SEVERE CYCLONIC STORM BY 0300 UTC OF 18TH. IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND ADJOINING ODISHA COASTS DURING 18TH TO 20TH MAY 2020.

Forecast track and intensity are given in the following table:

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED SURFACE	CATEGORY OF CYCLONIC DISTURBANCE
	(LAT. ⁰N/ LONG. ⁰E)	WIND SPEED (KMPH)	
16.05.20/0900	10.9/86.3	50-60 GUSTING TO 70	DEEP DEPRESSION
16.05.20/1200	11.2/86.2	55-65 GUSTING TO 75	DEEP DEPRESSION
16.05.20/1800	11.8/86.1	60-70 GUSTING TO 80	CYCLONIC STORM
17.05.20/0000	12.3/86.0	80-90 GUSTING TO 100	CYCLONIC STORM
17.05.20/0600	12.8/86.0	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
17.05.20/1800	13.9/86.1	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
18.05.20/0600	14.9/86.1	120-130 GUSTING TO 145	VERY SEVERE CYCLONIC STORM
18.05.20/1800	16.0/86.2	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
19.05.20/0600	17.4/86.5	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
19.05.20/1800	19.0/87.0	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.8/87.5	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.9/88.2	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
21.05.20/0600	25.0/88.7	110-120 GUSTING TO 135	SEVERE CYCLONIC STORM

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0900 UTC OF TODAY, THE 16TH MAY, INTENSITY OF THE SYSTEM IS T 2.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUTDE 5.0°N & 13.5°N AND LONGITUDE 82.0°E & 90.0°E. MINIMUM CLOUD TOP TEMPERATURE (CTT) MINUS 93°C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. THE SEA CONDITION IS ROUGH TO VERY ROUGH AROUND THE SYSTEM

CENTER. THE ESTIMATED CENTRAL PRESSURE IS 998 HPA.

AT 0900 UTC OF 16TH MAY, A BOUY LOCATED AT 13.2°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1003 HPA AND MEAN SURFACE WIND SPEED OF 60°/10.0 KNOTS AND ANOTHER BOUY LOCATED AT 13.4°N/87.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1001.6 HPA AND MEAN SURFACE WIND SPEED OF 80°/15.0 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE POSITIVE VORTICITY ZONE IS BEING MAINTANED DURING PAST 6 HOURS (MORE THAN 150X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE OVER SOUTHEAST BOB HAS INCREASED AND IS AROUND 30X10⁻⁵SEC⁻¹ AROUND THE SYSTEM CENTRE. UPPER LEVEL DIVERGENCE IS THE SAME DURING THE PERIOD (40X10⁻⁵SEC⁻¹) OVER SOUTHEAST BOB. VERTICAL WIND SHEAR (VWS) HAS DECREASED AND IS LOW TO MODERATE (15-20 KTS) AROUND THE SYSTEM CENTRE. IT IS HIGH REMAINING SAME TO THE NORTH OF 10.0⁰N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 11.5⁰N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 0741 UTC OF 16TH MAY INDICATES WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO SEVERE CATEGORY AND MOVEMENT TOWARDS NORTH BAY OF BENGAL UPTO 20TH MAY TOWARDS WEST BENGAL AND ADJOINING ODISHA COAST. CONSIDERING ALL THE ABOVE, THE SYSTEM IS VERY LIKELY TO INTENSIFY INTO A CYCLONIC STORM BY DURING NEXT 12 HOURS, FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS AND THEN RAPIDLY INTO A VERY SEVRE CYCLONIC STORM BY 0300 UTC OF 18TH. IT IS VERY LIKELY TO MOVE NORTH NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS WEST BENGAL- ODISHA COASTS DURING 18TH TO 20TH MAY.

(SUNITHA DEVI) SCIENTIST-E, RSMC, NEW DELHI

SAT : INSAT-3DR IMG IMG_TIR1_TEMP 10.8 um L1C Mercator

16-05-2020/(0949 to 0953) GMT 16-05-2020/(1519 to 1523) IST





PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%







FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 3 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2100 UTC OF 16.05.2020 BASED ON 1800 UTC OF 16.05.2020.

THE CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED NORTHWESTWARDS WITH SPEED OF 05 KMPH DURING PAST 06 HOURS AND LAY CENTRED OVER THE SAME REGION AT 1800 UTC OF THE 16TH MAY, 2020 NEAR LATITUDE 11.1°N AND LONGITUDE 86.1°E, ABOUT 1020 KM SOUTH OF PARADIP (42976), 1180 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1280 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND INTO A VERY SEVERE CYCLONIC STORM BY 18TH MORNING. IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND ADJOINING NORTH ODISHA COASTS DURING 18TH TO 20TH MAY 2020.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED SURFACE	CATEGORY OF CYCLONIC DISTURBANCE
	(_/	WIND SPEED (KMPH)	
16.05.20/1800	11.1/86.1	70-80 GUSTING TO 90	CYCLONIC STORM
17.05.20/0000	11.7/86.0	80-90 GUSTING TO 100	CYCLONIC STORM
17.05.20/0600	12.2/86.0	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
17.05.20/1200	12.8/86.0	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
17.05.20/1800	13.4/86.0	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
18.05.20/0600	14.5/86.1	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
18.05.20/1800	15.9/86.2	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
19.05.20/0600	17.5/86.6	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	19.2/87.1	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM

SUB: THE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD.

20.05.20/0600	21.1/87.6	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC
			STORM
20.05.20/1800	23.3/88.2	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC
			STORM
21.05.20/0600	25.2/88.7	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1800	26.2/89.1	40-50 GUSTING TO 100	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1800 UTC OF THE 16TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS T2.5 ASSOCIATED WITH CDO PATTERN. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 5.0°N TO 16.0°N LONG 81.0°E TO 91.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. THE SEA CONDITION IS VERY ROUGH TO HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA.

AT 1800 UTC OF 16TH MAY, A BOUY (23094) LOCATED AT 13.4°N/84.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1003.2 HPA AND MEAN SURFACE WIND SPEED OF 100°/05 KNOTS AND ANOTHER BOUY (23459) LOCATED AT 14.0°N/86.9°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1002.4 HPA AND MEAN SURFACE WIND SPEED OF 80°/21 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY AND HENCE THE INTENSIFICATION OF THE SYSTEM.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTANED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 20X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. UPPER LEVEL DIVERGENCE OF 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS FURTHER DECREASED AND IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO NORTH OF LAT. 15 N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 12.0 N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 1041 UTC OF 16TH MAY INDICATES WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO VERY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND ADJOINING ODISHA AND BANGLADESH COASTS. THE FORECAST IS BASED AS THE CONCENSUS FROM VARIOUS MODELS.

(D R PATTANAIK) SCIENTIST-F, RSMC, NEW DELHI 16-05-2020/(1900 to 1926) GMT 17-05-2020/(0030 to 0056) IST



IMG_TIR1_TEMP 10.8 um L1C Mercator

SAT : INSAT-3D IMG









REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI SPECIAL TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.05.2020 TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 16.05.2020 BASED ON 1200 UTC OF 16.05.2020.

DEEP DEPRESSION OVER SOUTHEAST BAY OF BENGAL & NEIGHBOURHOOD.

DEEP DEPRESSION OVER SOUTHEAST BAY OF BENGAL THE AND NEIGHBOURHOOD MOVED NORTHWESTWARDS WITH A SPEED OF 5 KMPH DURING PAST 06 HOURS, INTENSIFIED INTO A DEEP DEPRESSION AND LAY CENTRED OVER THE SAME REGION AT 0900 UTC OF TODAY, THE 16TH MAY, 2020 NEAR LATITUDE 10.9°N AND LONGITUDE 86.3°E, ABOUT 1040 KM SOUTH OF PARADIP (42976), 1200 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1300 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY INTO A CYCLONIC STORM DURING NEXT 12 HOURS AND FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS AND RAPIDLY INTENSIFY INTO A VERY SEVERE CYCLONIC STORM BY 0300 UTC OF 18TH. IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND ADJOINING ODISHA COASTS DURING 18TH TO 20TH MAY 2020.

Forecast track and intensity are given in the following table:

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED SURFACE	CATEGORY OF CYCLONIC DISTURBANCE
	(LAT. ⁰N/ LONG. ⁰E)	WIND SPEED (KMPH)	
16.05.20/0900	10.9/86.3	50-60 GUSTING TO 70	DEEP DEPRESSION
16.05.20/1200	11.2/86.2	55-65 GUSTING TO 75	DEEP DEPRESSION
16.05.20/1800	11.8/86.1	60-70 GUSTING TO 80	CYCLONIC STORM
17.05.20/0000	12.3/86.0	80-90 GUSTING TO 100	CYCLONIC STORM
17.05.20/0600	12.8/86.0	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
17.05.20/1800	13.9/86.1	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
18.05.20/0600	14.9/86.1	120-130 GUSTING TO 145	VERY SEVERE CYCLONIC STORM
18.05.20/1800	16.0/86.2	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
19.05.20/0600	17.4/86.5	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
19.05.20/1800	19.0/87.0	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.8/87.5	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.9/88.2	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
21.05.20/0600	25.0/88.7	110-120 GUSTING TO 135	SEVERE CYCLONIC STORM

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0900 UTC OF TODAY, THE 16TH MAY, INTENSITY OF THE SYSTEM IS T 2.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUTDE 5.0°N & 13.5°N AND LONGITUDE 82.0°E & 90.0°E. MINIMUM CLOUD TOP TEMPERATURE (CTT) MINUS 93°C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. THE SEA CONDITION IS ROUGH TO VERY ROUGH AROUND THE SYSTEM

CENTER. THE ESTIMATED CENTRAL PRESSURE IS 998 HPA.

AT 0900 UTC OF 16TH MAY, A BOUY LOCATED AT 13.2°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1003 HPA AND MEAN SURFACE WIND SPEED OF 60°/10.0 KNOTS AND ANOTHER BOUY LOCATED AT 13.4°N/87.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1001.6 HPA AND MEAN SURFACE WIND SPEED OF 80°/15.0 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER THE THE BAY OF BENGAL (BOB) FOR NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB AND OVER ANDAMAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB AND EASTERN PARTS OF ANDAMAN SEA. IT IS ABOUT 60-80 KJ/CM² OVER REMAINING PARTS OF ANDAMAN SEA AND BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE POSITIVE VORTICITY ZONE IS BEING MAINTANED DURING PAST 6 HOURS (MORE THAN 150X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE OVER SOUTHEAST BOB HAS INCREASED AND IS AROUND 30X10⁻⁵SEC⁻¹ AROUND THE SYSTEM CENTRE. UPPER LEVEL DIVERGENCE IS THE SAME DURING THE PERIOD (40X10⁻⁵SEC⁻¹) OVER SOUTHEAST BOB. VERTICAL WIND SHEAR (VWS) HAS DECREASED AND IS LOW TO MODERATE (15-20 KTS) AROUND THE SYSTEM CENTRE. IT IS HIGH REMAINING SAME TO THE NORTH OF 10.0⁰N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 11.5⁰N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 0741 UTC OF 16TH MAY INDICATES WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO SEVERE CATEGORY AND MOVEMENT TOWARDS NORTH BAY OF BENGAL UPTO 20TH MAY TOWARDS WEST BENGAL AND ADJOINING ODISHA COAST. CONSIDERING ALL THE ABOVE, THE SYSTEM IS VERY LIKELY TO INTENSIFY INTO A CYCLONIC STORM BY DURING NEXT 12 HOURS, FURTHER INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS AND THEN RAPIDLY INTO A VERY SEVRE CYCLONIC STORM BY 0300 UTC OF 18TH. IT IS VERY LIKELY TO MOVE NORTH NORTHWESTWARDS INITIALLY TILL 17TH MAY AND THEN RE-CURVE NORTH-NORTHEASTWARDS TOWARDS WEST BENGAL- ODISHA COASTS DURING 18TH TO 20TH MAY.

(SUNITHA DEVI) SCIENTIST-E, RSMC, NEW DELHI

SAT : INSAT-3DR IMG IMG_TIR1_TEMP 10.8 um L1C Mercator

16-05-2020/(0949 to 0953) GMT 16-05-2020/(1519 to 1523) IST





PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%







FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 4 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0000 UTC OF 17.05.2020 BASED ON 2100 UTC OF 16.05.2020.

SUB: THE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD.

THE CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED NORTH-NORTHWESTWARDS WITH SPEED OF 06 KMPH DURING PAST 06 HOURS AND LAY CENTRED OVER THE SAME REGION AT 2100 UTC OF 16TH MAY, 2020 NEAR LATITUDE 11.3°N AND LONGITUDE 86.1°E, ABOUT 1000 KM SOUTH OF PARADIP (42976), 1160 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1260 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND INTO A VERY SEVERE CYCLONIC STORM BY 18TH MORNING. IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS DURING NEXT 24 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND ADJOINING NORTH ODISHA COASTS DURING 18TH TO 20TH MAY 2020.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT. ⁰N/ LONG.	SURFACE	DISTURBANCE
	⁰E)	WIND SPEED (KMPH)	
16.05.20/2100	11.3/86.1	75-85 GUSTING TO 95	CYCLONIC STORM
17.05.20/0000	11.7/86.0	80-90 GUSTING TO 100	CYCLONIC STORM
17.05.20/0600	12.2/86.0	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
17.05.20/1200	12.8/86.0	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
17.05.20/1800	13.4/86.0	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
18.05.20/0600	14.5/86.1	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
18.05.20/1800	15.9/86.2	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
19.05.20/0600	17.5/86.6	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	19.2/87.1	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	21.1/87.6	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
20.05.20/1800	23.3/88.2	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM

21.05.20/0600	25.2/88.7	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1800	26.2/89.1	40-50 GUSTING TO 100	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 2100 UTC OF THE 16TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS T2.5 ASSOCIATED WITH CDO PATTERN. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 8.0°N TO 15.0°N LONG 81.5°E TO 89.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 45 KNOTS GUSTING TO 55 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 994 HPA.

AT 2100 UTC OF 16TH MAY, A BOUY (23094) LOCATED AT 13.5°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 999.7 HPA AND MEAN SURFACE WIND SPEED OF 40°/12 KNOTS AND ANOTHER BOUY (23459) LOCATED AT 13.9°N/87.0°E REPORTED A MEAN SEA LEVEL PRESSURE OF 999.4 HPA AND MEAN SURFACE WIND SPEED OF 50°/18 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY AND HENCE THE INTENSIFICATION OF THE SYSTEM.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTANED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 20X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. UPPER LEVEL DIVERGENCE OF 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS FURTHER DECREASED AND IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO NORTH OF LAT. 15 N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 12.0 N OVER BOB. TOTAL PRECIPITABLE WATER IMAGERY AT 1041 UTC OF 16TH MAY INDICATES WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING RAPID INTENSIFICATION OF THE SYSTEM INTO VERY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND ADJOINING ODISHA AND BANGLADESH COASTS. THE FORECAST IS BASED AS THE CONCENSUS FROM VARIOUS MODELS.

(D R PATTANAIK) SCIENTIST-F, RSMC, NEW DELHI 16-05-2020/(2300 to 2326) GMT 17-05-2020/(0430 to 0456) IST



L1C Mercator

SAT : INSAT-3D IMG

IMG_TIR1_TEMP 10.8 um









FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 5 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 17.05.2020 BASED ON 0000 UTC OF 17.05.2020.

SUB: THE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD.

THE CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED NORTH-NORTHWESTWARDS WITH SPEED OF 06 KMPH DURING PAST 06 HOURS, INTENSFIIED SLIGHTLY AND LAY CENTRED OVER THE SAME REGION AT 0000 UTC OF 17^{TH} MAY, 2020 NEAR LATITUDE 11.4°N AND LONGITUDE 86.0°E, ABOUT 990 KM SOUTH OF PARADIP (42976), 1140 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1260 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 06 HOURS AND INTO A VERY SEVERE CYCLONIC STORM DURING SUBSIQUENT 12 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS DURING NEXT 24 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN SAGAR ISLANDS (42903) AND HATIYA ISLANDS (41963) AROUND 0900-1200 UTC OF 20^{TH} MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
17.05.20/0000	11.4/86.0	80-90 GUSTING TO 100	CYCLONIC STORM
17.05.20/0600	11.9/85.9	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
17.05.20/1200	12.5/85.8	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
17.05.20/1800	13.1/85.9	115-125 GUSTING TO 140	VERY SEVERE CYCLONIC STORM
18.05.20/0000	13.7/86.0	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
18.05.20/1200	14.8/86.2	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
19.05.20/0000	16.1/86.6	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	17.6/87.2	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.6/88.0	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.7/89.0	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.5/89.7	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
21.05.20/1200	25.3/90.2	40-50 GUSTING TO 60	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0000 UTC OF 17TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS T3.0 ASSOCIATED WITH CURVED BAND PATTERN. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 7.5°N TO 14.0°N LONG 81.0°E TO 89.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 45 KNOTS GUSTING TO 55 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 992 HPA.

AT 0000 UTC OF 17TH MAY, A BOUY (23094) LOCATED AT 13.5°N/84.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 999.6 HPA AND ANOTHER BOUY (23459) LOCATED AT 13.9°N/86.9°E REPORTED A MEAN SEA LEVEL PRESSURE OF 998.9 HPA AND MEAN SURFACE WIND SPEED OF 70°/21 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 2 WITH AMPLITUDE MORE THAN 1. IT WILL CONTINUE IN SAME PHASE TILL 17TH MAY WITH AMPLITUDE REMAINING MORE THAN 1 AND BECOMING LESS THAN 1 THEREAFTER IN PHASE 3. THUS MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY AND HENCE THE INTENSIFICATION OF THE SYSTEM.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTANED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHEAST OF THE SYSTEM CENTRE., HOWEVER THR UPPER LEVEL DIVERGENCE HAS INCREASED AND IS ABOUT 60X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS HAS INCREASED AND IS MODERATE (15-20 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 13.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE IN AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HORS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS.

TOTAL PRECIPITABLE WATER IMAGERY AT 0100 UTC OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO VERY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED AS THE CONCENSUS FROM VARIOUS MODELS.

(D R PATTANAIK) SCIENTIST-F, RSMC, NEW DELHI

SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um

17-05-2020/(0100 to 0127) GMT 17-05-2020/(0630 to 0657) IST





PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 6 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 17.05.2020 BASED ON 0300 UTC OF 17.05.2020.

SUB: THE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) INTENSFIIED INTO A SEVERE CYCLONIC STORM OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD.

THE CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED SLOWLY NORTHWESTWARDS WITH SPEED OF 03 KMPH DURING PAST 06 HOURS, INTENSFIIED INTO A SEVERE CYCLONIC STORM AND LAY CENTRED OVER THE SAME REGION AT 0300 UTC OF 17^{TH} MAY, 2020 NEAR LATITUDE 11.4°N AND LONGITUDE 86.0°E, ABOUT 990 KM SOUTH OF PARADIP (42976), 1140 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1260 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A VERY SEVERE CYCLONIC STORM DURING 12 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS SLOWLY DURING NEXT 24 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS AND MOVE FAST ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN SAGAR ISLANDS (42903) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20^{TH} MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

DATE/TIME(UTC)	POSITION (LAT. ⁰ N/ LONG.	MAXIMUM SUSTAINED SURFACE	CATEGORY OF CYCLONIC DISTURBANCE
	°E)	WIND SPEED (KMPH)	
17.05.20/0300	11.4/86.0	85-95 GUSTING TO 105	SEVERE CYCLONIC STORM
17.05.20/0600	11.7/85.9	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
17.05.20/1200	12.3/85.8	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
17.05.20/1800	13.1/85.9	115-125 GUSTING TO 140	VERY SEVERE CYCLONIC STORM
18.05.20/0000	13.7/86.0	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
18.05.20/1200	14.8/86.2	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
19.05.20/0000	16.1/86.6	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	17.6/87.2	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.6/88.0	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.7/89.0	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.5/89.7	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
21.05.20/1200	25.3/90.2	40-50 GUSTING TO 60	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF 17TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS T3.0 ASSOCIATED WITH CURVED BAND PATTERN. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 7.5°N TO 14.0°N LONG 81.0°E TO 89.0°E. THE SCAT SAT IMAGERY AT 1411 UTC OF 16TH MAY IS INDICATING WINDS AROUND 40 KTS TO THE SOUTH OF SYSTEM CENTRE WITH MATCHING INDEX OF 0.79.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 990 HPA.

AT 0300 UTC OF 17TH MAY, A BOUY (23094) LOCATED AT 13.2°N/84.0°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1000.8 HPA AND ANOTHER BOUY (23459) LOCATED AT 13.5°N/86.5°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1000.8 HPA AND MEAN SURFACE WIND SPEED OF 80°/20 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 17TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTAINED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL IS ABOUT 60X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS INCREASED AND IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 13.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HORS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS AND MOVE FASTER.

TOTAL PRECIPITABLE WATER IMAGERY AT 0100 UTC OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO VERY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED AS THE CONCENSUS FROM VARIOUS MODELS.

(SUNITHA DEVI) SCIENTIST-E, RSMC, NEW DELHI




MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
<mark>≥ 64 (≥118)</mark>	Phenomenal	Total suspension of fishing operations





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 7 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 17.05.2020 BASED ON 0600 UTC OF 17.05.2020.

SUB: SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL AND NEIGHBOURHOOD.

THE SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD MOVED SLOWLY NORTHWESTWARDS WITH SPEED OF 02 KMPH DURING PAST 06 HOURS. AND LAY CENTRED OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL AND NEIGHBOURHOOD AT 0600 UTC OF 17TH MAY, 2020 NEAR LATITUDE 11.5°N AND LONGITUDE 86.0°E, ABOUT 980 KM SOUTH OF PARADIP (42976), 1130 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1250 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A VERY SEVERE CYCLONIC STORM DURING 12 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS SLOWLY DURING NEXT 24 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS AND MOVE FAST ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
17.05.20/0600	11.5/86.0	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
17.05.20/1200	12.2/86.0	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
17.05.20/1800	12.9/86.0	115-125 GUSTING TO 140	VERY SEVERE CYCLONIC STORM
18.05.20/0000	13.5/86.0	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
18.05.20/0600	14.0/86.1	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
18.05.20/1800	15.2/86.3	155-165 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
19.05.20/0600	16.6/86.7	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.4/87.2	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.4/87.7	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.4/88.2	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
21.05.20/0600	24.2/88.7	70-80 GUSTING TO 90	CYCLONIC STORM
21.05.20/1800	26.0/89.2	40-50 GUSTING TO 60	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0600 UTC OF 17TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS T3.5 ASSOCIATED WITH CURVED BAND PATTERN. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 7.5°N TO 14.0°N LONG 81.0°E TO 89.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 55 KNOTS GUSTING TO 65 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 988 HPA.

AT 0600 UTC OF 17TH MAY, A BOUY (23094) LOCATED AT 13.4°N/83.9°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1001.6 HPA AND ANOTHER BOUY (23459) LOCATED AT 13.9°N/86.9°E REPORTED A MEAN SEA LEVEL PRESSURE OF 998 HPA AND MEAN SURFACE WIND SPEED OF 70°/25 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 17TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTAINED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL HAS DECREASED AND IS ABOUT 30X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) CONINUES TO REMAIN MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 13.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HOURS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS AND MOVE FASTER.

TOTAL PRECIPITABLE WATER IMAGERY OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO VERY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

(SUNITHA DEVI) SCIENTIST-E, RSMC, NEW DELHI SAT : INSAT-3D IMG

17-05-2020/(0600 to 0627) GMT IMG_TIR1_TEMP 10.8 um 17-05-2020/(1130 to 1157) IST







MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
<mark>≥ 64</mark> (≥118)	Phenomenal	Total suspension of fishing operations





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 8 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1200 UTC OF 17.05.2020 BASED ON 0900 UTC OF 17.05.2020.

SUB: VERY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL

THE SEVERE CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL AND NEIGHBOURHOOD MOVED SLOWLY NORTHWARDS WITH SPEED OF 05 KMPH DURING PAST 06 HOURS, FURTHER INTENSIFIED INTO A **VERY SEVERE CYCLONIC STORM** AND LAY CENTRED AT 0900 UTC OF 17TH MAY, 2020 NEAR LATITUDE 11.7°N AND LONGITUDE 86.0°E OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL, ABOUT 960 KM SOUTH OF PARADIP (42976), 1110 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1230 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS SLOWLY DURING NEXT 12 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS AND MOVE FAST ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC DISTURBANCE
		WIND SPEED (KMPH)	
17.05.20/0900	11.7/86.0	120-130 GUSTING TO 145	VERY SEVERE CYCLONIC STORM
17.05.20/1200	12.0/86.0	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
17.05.20/1800	12.7/86.0	130-140 GUSTING TO 155	VERY SEVERE CYCLONIC STORM
18.05.20/0000	13.5/86.0	140-150 GUSTING TO 165	VERY SEVERE CYCLONIC STORM
18.05.20/0600	14.0/86.1	150-160 GUSTING TO 175	VERY SEVERE CYCLONIC STORM
18.05.20/1800	15.2/86.3	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/0600	16.6/86.7	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.4/87.2	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.4/87.7	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.4/88.2	120-130 GUSTING TO 145	VERY SEVERE CYCLONIC STORM
21.05.20/0600	24.2/88.7	70-80 GUSTING TO 90	CYCLONIC STORM

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

21.05.20/1800 26.0/89.2	40-50 GUSTING TO 60	DEPRESSION
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AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0900 UTC OF 17^{TH} MAY, IT HAS FURTHER INTENSIFIED AND THE CURRENT INTENSITY OF THE SYSTEM IS **T4.0** ASSOCIATED WITH A BANDING EYE PATTERN IN THE VISIBLE IMAGERY. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 7.5°N TO 14.0°N LONG 81.0°E TO 89.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 65 KNOTS GUSTING TO 75 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 980 HPA.

AT 0900 UTC OF 17^{TH} MAY, A BOUY (23459) LOCATED AT 14.0°N/86.6°E REPORTED A MEAN SEA LEVEL PRESSURE OF 996 HPA AND MEAN SURFACE WIND SPEED OF 80°/29 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 17TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTAINED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL HAS DECREASED AND IS ABOUT 30X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) CONINUES TO REMAIN MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 13.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HOURS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS AND MOVE FASTER.

TOTAL PRECIPITABLE WATER IMAGERY OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO AN EXTREMELY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um 17-05-2020/(1030 to 1056) GMT 17-05-2020/(1600 to 1626) IST



L1C Mercator









FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 9 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 17.05.2020 BASED ON 1200 UTC OF 17.05.2020.

SUB: VERY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL

THE **VERY SEVERE CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NORTHWARDS WITH A SPEED OF 09 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 17TH MAY, 2020 OVER **CENTRAL PARTS OF SOUTH BAY OF BENGAL** NEAR LATITUDE 12.0°N AND LONGITUDE 86.0°E, ABOUT 925 KM SOUTH OF PARADIP (42976), 1080 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1200 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS SLOWLY DURING NEXT 12 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS AND MOVE FAST ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

Date/Time(UTC)	Position	Maximum sustained surface	Category of cyclonic
	(Lat. ⁰ N/ long. ⁰ E)	wind speed (Kmph)	disturbance
17.05.20/1200	12.0/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
17.05.20/1800	12.9/86.0	135-145 gusting to 160	Very Severe Cyclonic Storm
18.05.20/0000	13.5/86.0	140-150 gusting to 165	Very Severe Cyclonic Storm
18.05.200600	14.0/86.1	150-160 gusting to 170	Very Severe Cyclonic Storm
18.05.20/1200	14.6/86.2	160-170 gusting to 185	Extremely Severe Cyclonic Storm
19.05.20/0000	15.9/86.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
19.05.20/1200	17.5/86.9	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0000	19.6/87.4	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1200	21.8/88.0	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0000	23.4/88.4	95-105 gusting to 115	Severe Cyclonic Storm
21.05.20/1200	25.2/88.9	60-70 gusting to 80	Cyclonic Storm
22.05.20/0000	26.8/89.4	30-40 austing to 50	Depression

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1200 UTC OF 17TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS **T4.0. IT SHOWS RAGGED EYE FEATURES.** IN THE WESTERN SECTOR. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 8°N TO 14.0°N LONG 80.0°E TO 87.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 70 KNOTS GUSTING TO 80 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 972 HPA.

AT 1200 UTC OF 17TH MAY, A BOUY (23094) LOCATED AT 13.3°N/84°E REPORTED A MEAN SEA LEVEL PRESSURE OF 998.4 HPA AND ANOTHER BOUY (23459) LOCATED AT 13.6°N/86.6°E REPORTED A MEAN SEA LEVEL PRESSURE OF 994.1 HPA AND MEAN SURFACE WIND SPEED OF 70°/27 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 17TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTAINED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL HAS FURTHER DECREASED AND IS ABOUT 20X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS REDUCED TO LOW TO MODERATE (15-20 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 15.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HOURS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS AND MOVE FASTER.

TOTAL PRECIPITABLE WATER IMAGERY OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO AN EXTREMELY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um 17-05-2020/(1200 to 1226) GMT 17-05-2020/(1730 to 1756) IST



L1C Mercator





MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 10 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1800 UTC OF 17.05.2020 BASED ON 1500 UTC OF 17.05.2020.

SUB: VERY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL AND ADJOINING CENTRAL BAY OF BENGAL

THE VERY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NORTHWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1500 UTC OF TODAY, THE 17TH MAY, 2020 OVER **CENTRAL PARTS OF SOUTH BAY OF BENGAL** NEAR LATITUDE 12.2°N AND LONGITUDE 86.2°E, ABOUT 900 KM SOUTH OF PARADIP (42976), 1060 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1170 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS SLOWLY DURING NEXT 12 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS AND MOVE FAST ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED SURFACE	CATEGORY OF CYCLONIC
	(LAT. ºN/ LONG. ºE)	WIND SPEED (KMPH)	DISTURBANCE
17.05.20/1500	12.2/86.2	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
17.05.20/1800	12.7/86.3	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
18.05.20/0000	13.5/86.3	150-160 GUSTING TO 175	VERY SEVERE CYCLONIC STORM
18.05.200600	14.0/86.4	160-170 GUSTING TO 185	EXTREMELY SEVERE CYCLONIC
			STORM
18.05.20/1200	14.6/86.4	160-170 GUSTING TO 185	EXTREMELY SEVERE CYCLONIC
			STORM
19.05.20/0000	15.9/86.5	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC
			STORM
19.05.20/1200	17.5/86.9	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC
			STORM
20.05.20/0000	19.6/87.4	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC
			STORM
20.05.20/1200	21.8/88.0	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.4/88.4	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
21.05.20/1200	25.2/88.9	60-70 GUSTING TO 80	CYCLONIC STORM
22.05.20/0000	26.8/89.4	30-40 GUSTING TO 50	DEPRESSION

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1500 UTC OF 17TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS **T4.5. IT SHOWS RAGGED EYE FEATURES.** IN THE WESTERN SECTOR. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 8°N TO 14.0°N LONG 80.0°E TO 87.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 70 KNOTS GUSTING TO 80 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 972 HPA.

AT 1200 UTC OF 17TH MAY, A BOUY (23094) LOCATED AT 13.3°N/84°E REPORTED A MEAN SEA LEVEL PRESSURE OF 998.4 HPA AND ANOTHER BOUY (23459) LOCATED AT 13.6°N/86.6°E REPORTED A MEAN SEA LEVEL PRESSURE OF 994.1 HPA AND MEAN SURFACE WIND SPEED OF 70°/27 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 17TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTAINED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL HAS FURTHER DECREASED AND IS ABOUT 20X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS REDUCED TO LOW TO MODERATE (15-20 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 15.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HOURS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS AND MOVE FASTER.

TOTAL PRECIPITABLE WATER IMAGERY OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO AN EXTREMELY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um 17-05-2020/(1630 to 1656) GMT 17-05-2020/(2200 to 2226) IST



L1C Mercator 28°N 26°N 24°N 22°N 20°N 18°N 16°N 14°N 12°N 10°N 8°N 6°N 4°N 2°N 100°E 78°E 76°E 80°E 86°E 92°E 96°E 74°E 82°E 90°E 94°E 98°E 84°E 88°E 0 -20 -50 Celsius IMD, DELHI -10 -30 -70 10



MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 11 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2030 UTC OF 17.05.2020 BASED ON 1800 UTC OF 17.05.2020.

SUB: VERY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL AND ADJOINING CENTRAL BAY OF BENGAL

THE VERY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NORTHWARDS WITH A SPEED OF 11 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF TODAY, THE 17TH MAY, 2020 OVER **CENTRAL PARTS OF SOUTH BAY OF BENGAL** NEAR LATITUDE 12.5°N AND LONGITUDE 86.4°E, ABOUT 870 KM NEARLY SOUTH OF PARADIP (42976), 1020 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1130 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 06 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS SLOWLY DURING NEXT 06 HOURS AND THEN RE-CURVE NORTH-NORTHEASTWARDS AND MOVE FAST ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
17.05.20/1800	12.5/86.4	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
18.05.20/0000	13.5/86.5	160-170 GUSTING TO 185	EXTREMELY SEVERE CYCLONIC STORM
18.05.20/0600	14.0/86.6	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
18.05.20/1200	14.6/86.7	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
18.05.20/1800	15.2/86.8	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/0600	16.7/87.2	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.5/87.7	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	21.7/88.3	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.6/88.7	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
21.05.20/0600	23.8/88.9	85-95 GUSTING TO 105	SEVERE CYCLONIC STORM
21.05.20/1800	26.0/89.3	50-60 GUSTING TO 70	DEEP DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1800 UTC OF 17TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS **T4.5. IT SHOWS RAGGED EYE FEATURES.** IN THE WESTERN SECTOR. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 8°N TO 14.0°N LONG 80.0°E TO 87.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 70 KNOTS GUSTING TO 80 KNOTS. THE SEA CONDITION IS VERY HIGH AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 970 HPA.

AT 1800 UTC OF 17TH MAY, A BOUY (23094) LOCATED AT 13.3°N/84°E REPORTED A MEAN SEA LEVEL PRESSURE OF 997.4 HPA AND ANOTHER BOUY (23459) LOCATED AT 13.6°N/86.6°E REPORTED A MEAN SEA LEVEL PRESSURE OF 991 HPA AND MEAN SURFACE WIND SPEED OF 80°/36.9 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 17TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE ENHANCED POSITIVE VORTICITY ZONE IS BEING MAINTAINED DURING PAST 6 HOURS (MORE THAN 200X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 30X10⁻⁵SEC⁻¹ LOCATED OVER SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL HAS FURTHER DECREASED AND IS ABOUT 20X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) HAS REDUCED TO LOW TO MODERATE (15-20 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 15.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HOURS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS AND MOVE FASTER.

TOTAL PRECIPITABLE WATER IMAGERY OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO AN EXTREMELY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

- STORM SURGE OF ABOUT 3 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND 2-3 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.
- STORM SURGE OF ABOUT 2-3 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF BANGLADESH DURING THE TIME OF LANDFALL.

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI



PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%

21118,25КТ,007	ē
	- I
2106,50KT,SCS 2019,75KT,SCS 2010,75KT,SCS 20	251
DATE/TIME IN UTC IST = UTC + 0530 HRS D: DEPRESSION DD: DEEP DEPRESSION CS: SEVERE CYCLONIC STORM VSCS: VERY SEVERE CYCLONIC STORM VSCS: VERY SEVERE CYCLONIC STORM ESCS: SEVERE CYCLONIC STORM	ORM
The Total Joint Josso 18/12_100KT_ESCS FORECAST TRACK 18/06_96KT_ESCS FORECAST TRACK 1000 18/10.90KT_ESCS 1000 17/18_80KT_VSCS 17/18_80KT_VSCS 17/12_66KT_VSCS 16/03_26KT_D 16/03_26KT_D 16/00_25KT_D 0	
MSW(knot)/kmph) Impact Action	
28-33 /(52-61) Very rough seas. Total suspension of fishing operation	tions
34-40/(62-74) High to very high seas Total suspension of fishing operation 41.63/(75.117) Very High seas Total suspension of fishing operation	tions
≥ 64 (≥118) Phenomenal Total suspension of fishing opera	ations



____ A I A 71 / 10 **OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY**

SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 12 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0000 UTC OF 18.05.2020 BASED ON 2100 UTC OF 17.05.2020.

SUB: EXTREMELY SEVERE CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL AND ADJOINING CENTRAL BAY OF BENGAL

THE VERY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NORTHWARDS WITH A SPEED OF 13 KMPH DURING PAST 06 HOURS, INTENSIFIED IN TO AN EXTREMELY SEVERE CYCLONIC STORM AND LAY CENTRED AT 2100 UTC OF TODAY, THE 17TH MAY, 2020 OVER **CENTRAL PARTS OF SOUTH BAY OF BENGAL** NEAR LATITUDE 12.9°N AND LONGITUDE 86.4°E, ABOUT 820 KM NEARLY SOUTH OF PARADIP (42976), 980 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1090 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY DURING NEXT 06 HOURS. IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS AND MOVE FAST ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM.

	POSITION		
DATE/TIME(01C)			
	(LAT. N/LONO. L)	WIND SPEED (KMPH)	DISTORDANCE
17.05.20/2100	12 0/86 /	160 170 GUSTING TO 185	
17.05.20/2100	12.3/00.4	100-170 0001110 10 100	EXTREMEET SEVERE CTOLONIC STORM
18.05.20/0000	13.5/86.5	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
18.05.20/0600	14.0/86.6	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
18.05.20/1200	14 6/86 7	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
10.00.20/1200	14.0/00.7	190-200 00011100 10 220	
18.05.20/1800	15.2/86.8	200-210 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/0600	16.7/87.2	200-210 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18 5/87 7	200-210 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
10.00.20/1000	10.0/01.1	200 210 0001110 10 220	
20.05.20/0600	21.7/88.3	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.6/88.7	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
21.05.20/0600	23 8/88 9	85-95 GUSTING TO 105	SEVERE CYCLONIC STORM
21.00.20/0000	20.0/00.0		
21.05.20/1800	26.0/89.3	50-60 GUSTING TO 70	DEEP DEPRESSION

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 2100 UTC OF 17^{TH} MAY, THE CURRENT INTENSITY OF THE SYSTEM IS **T5.0. IT SHOWS RAGGED EYE FEATURES.** IN THE WESTERN SECTOR. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LAT 10.5° N TO 14.0° N LONG 82.0° E TO 87.0° E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 85 KNOTS GUSTING TO 95 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS 968 HPA.

AT 2100 UTC OF 17TH MAY, A BOUY (23094) LOCATED AT 13.3°N/84°E REPORTED A MEAN SEA LEVEL PRESSURE OF 995 HPA AND ANOTHER BOUY (23466) LOCATED AT 6.5°N/88.4°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1001 HPA AND MEAN SURFACE WIND SPEED OF 200°/19.4KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 17TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND 250X10⁻⁶SEC⁻¹) AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 50X10⁻⁵SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS INCREASED AND IS ABOUT 40X10⁻⁵SEC⁻¹ TO THE NORTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (15-20 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE AXIS OF THE RIDGE AND WILL CONTINUE THE SAME MOVEMENT FOR NEXT 24 HOURS. SUBSEQUENTLY, THE SYSTEM WILL MOVE TO THE NORTH OF THE RIDGE AXIS AND WILL START RECURVING NORTH/NORTHEASTWARDS AND MOVE FASTER.

TOTAL PRECIPITABLE WATER IMAGERY OF 17TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO AN EXTREMELY SEVERE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

- STORM SURGE OF ABOUT 3 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND 2-3 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.
- STORM SURGE OF ABOUT 2-3 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF BANGLADESH DURING THE TIME OF LANDFALL.

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF EXTREMELY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 2100 UTC OF 17TH MAY, 2020



OBSERVED & FOECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF EXTREMELY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 21 00 UTC OF 17TH MAY, 2020



MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 13 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 18.05.2020 BASED ON 0000 UTC OF 18.05.2020.

SUB: EXTREMELY SEVERE CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER WEST CENTRAL BAY OF BENGAL ABD ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL

THE **EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NORTHWARDS WITH A SPEED OF 13 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0000 UTC OF TODAY, THE 18TH MAY, 2020 OVER **WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL** NEAR LATITUDE 13.2°N AND LONGITUDE 86.3°E, ABOUT 790 KM NEARLY SOUTH OF PARADIP (42976), 940 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1060 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER IN TO A SUPER CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEDD OF 155-165 KMPH GUSTING TO 185 KMPH.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC	
	(LAT ⁰ N/LONG ⁰ F)	SURFACE	DISTURBANCE	
			DIGTORDARIOE	
		WIND SPEED (KMPH)		
18.05.20/0000	13.2/86.3	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM	
18.05.20/0600	14.0/86.4	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM	
18.05.20/1200	14.6/86.5	220-230 GUSTING TO 255	SUPER CYCLONIC STORM	
18.05.20/1800	15.2/86.6	230-240 GUSTING TO 265	SUPER CYCLONIC STORM	
19.05.20/0000	15.9/86.8	220-230 GUSTING TO 255	SUPER CYCLONIC STORM	
19.05.20/1200	17.6/87.2	200-210 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM	
20.05.20/0000	19.9/87.8	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM	
20.05.20/1200	22.1/88.6	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM	
21.05.20/0000	24.0/89.3	80-90 GUSTING TO 100	CYCLONIC STORM	
21.05.20/1200	25.9/90.0	40-50 GUSTING TO 60	DEPRESSION	

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0000 UTC OF 18TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS **T5.5.** IT SHOWS A CIRCULAR EYE PATTERN WITH A DIAMETER OF 20 KM. IN THE WESTERN SECTOR. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 11.0°N TO 14.5°N LONG 83.0°E TO 88.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 100 KNOTS GUSTING TO 110 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **950** HPA.

AT 0000 UTC OF 17TH MAY, A BOUY (**23094**) LOCATED AT 13.3°N/84°E REPORTED A MEAN SEA LEVEL PRESSURE OF 994 HPA AND ANOTHER BOUY (**23460**) LOCATED AT 6.5°N/88.4°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1002 HPA AND MEAN SURFACE WIND SPEED OF 210°/15.6KNOTS AND ANOTHER BOUY (**23459**) LOCATED AT 14°N/87.0°E REPORTED A MEAN SURFACE WIND SPEED OF 90°/42.8 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 18TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS. CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB. CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND 300X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 50X10⁻⁵SEC⁻¹LOCATED

AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS INCREASED AND IS ABOUT 40X10⁻⁵SEC⁻¹ TO THE NORTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND HENCE SYSTEM STARTED MOVING IN THE NORTH-NORTHEASTWARD DIRECTION.

TOTAL PRECIPITABLE WATER IMAGERY OF 18TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO AN SUPER CYCLONE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

- STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.
- STORM SURGE OF ABOUT 3-4 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF BANGLADESH DURING THE TIME OF LANDFALL.

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um 18-05-2020/(0200 to 0227) GMT 18-05-2020/(0730 to 0757) IST











FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 14 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 18.05.2020 BASED ON 0300 UTC OF 18.05.2020.

SUB: EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL

THE EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NORTHWARDS WITH A SPEED OF 8 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0300 UTC OF TODAY, THE 18TH MAY, 2020 OVER WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL NEAR LATITUDE 13.3°N AND LONGITUDE 86.3°E, ABOUT 780 KM NEARLY SOUTH OF PARADIP (42976), 930 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1050 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO INTENSIFY FURTHER IN TO A SUPER CYCLONIC STORM DURING NEXT 6 HOURS. IT IS VERY LIKELY TO MOVE NORTHWARDS FOR SOMETIMES AND THEN NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL AND BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEDD OF 155-165 KMPH GUSTING TO 185 KMPH.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT. ⁰ N/ LONG. ⁰ E)	SURFACE	DISTURBANCE
	(
18.05.20/0300	13.3/86.3	210-220 GUSTING TO 240	EXTREMELY SEVERE CYCLONIC STORM
18.05.20/0600	14.0/86.4	220-230 GUSTING TO 255	SUPER CYCLONIC STORM
18.05.20/1200	14.6/86.5	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
18.05.20/1800	15.2/86.6	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
19.05.20/0000	15.9/86.8	220-230 GUSTING TO 255	SUPER CYCLONIC STORM
19.05.20/1200	17.6/87.2	200-210 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.9/87.8	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	22.1/88.6	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
21.05.20/0000	24.0/89.3	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1200	25.9/90.0	40-50 GUSTING TO 60	DEPRESSION

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF 18TH MAY, THE CURRENT INTENSITY OF THE SYSTEM IS **T6.0. CIRCULAR EYE PATTERN CONTINUING WITH A DIAMETER OF 15 KM**. EYE HAS BECOME WARMER WITH TEMPERATURE -5.0 DEG CEL, WALL CLOUD TEMPEARTURE IS -93 DEG C IN THE WESTERN SECTOR. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.0°N TO 17.5°N LONG 85.5°E TO 88.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 100 KNOTS GUSTING TO 110 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **940** HPA.

AT 0300 UTC OF 17TH MAY, A BOUY (**23094**) LOCATED AT 13.3°N/84°E REPORTED A MEAN SEA LEVEL PRESSURE OF 995 HPA WITH WIND 20°/19KT AND ANOTHER BOUY (**23459**) LOCATED AT 13.5°N/86.6.0°E REPORTED A MEAN SURFACE WIND SPEED OF 100°/40.8 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 18TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS. CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB. CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND 250X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 50X10-5SEC-1 LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 30X10⁻⁵SEC⁻¹ TO THE NORTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO THE NORTH OF LAT. 15N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND IT IS LIKELY TO CONTINUE IN THE SAME DIRECTION FOR SOME MORE TIMES. THEREAFTER, THE SYSTEM LIKELY TO MOVE IN THE NORTH-NORTHEASTWARD DIRECTION.

TOTAL PRECIPITABLE WATER IMAGERY OF 18TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING FURTHER INTENSIFICATION OF THE SYSTEM INTO AN SUPER CYCLONE CATEGORY AND MOVEMENT TOWARDS WEST BENGAL AND BANGLADESH COASTS. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

- STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.
- STORM SURGE OF ABOUT 3-4 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF BANGLADESH DURING THE TIME OF LANDFALL.

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um L1C Mercator 18-05-2020/(0500 to 0527) GMT 18-05-2020/(1030 to 1057) IST





MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations




FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 15 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0930 UTC OF 18.05.2020 BASED ON 0600 UTC OF 18.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL

THE EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NEARLY NORTHWARDS WITH A SPEED OF 4 KMPH DURING PAST 06 HOURS, INTENSIFIED FURTHER INTO A SUPER CYCLONIC STORM AND LAY CENTRED AT 0600 UTC OF TODAY, THE 18TH MAY, 2020 OVER WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL NEAR LATITUDE NEAR 13.4°N AND LONGITUDE 86.2°E, ABOUT 770 KM NEARLY SOUTH OF PARADIP (42976), 920 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1040 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME AND THEN NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 165-175 KMPH GUSTING TO 185 KMPH.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC DISTURBANCE
	(LAT. ⁰N/ LONG. ⁰E)	SURFACE	
		WIND SPEED (KMPH)	
18.05.20/0600	13.4/86.2	220-230 GUSTING TO 255	SUPER CYCLONIC STORM
18.05.20/1200	14.6/86.4	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
18.05.20/1800	15.2/86.5	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
19.05.20/0000	15.9/86.7	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
19.05.20/0600	17.1/87.0	220-230 GUSTING TO 255	SUPER CYCLONIC STORM
19.05.20/1800	18.3/87.3	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.8/88.1	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.8/88.8	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
21.05.20/0600	24.8/89.4	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1200	25.9/89.8	40-50 GUSTING TO 60	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0600 UTC OF 18TH MAY, THE SYSTEM HAS FURTHER INTENSIFIED AND THE CURRENT INTENSITY OF THE SYSTEM IS **T6.5. EYE CLEARLY VISIBLE WITH CIRCULAR PATTERN AND IT IS CONTINUING WITH A DIAMETER OF 15 KM.** EYE HAS BECOME COLLER WITH TEMPERATURE -21.0 DEG CEL. WALL CLOUD TEMPEARTURE IS -93 DEG C. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.0°N TO 18.0°N LONG 81.0°E TO 90.0°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 120 KNOTS GUSTING TO 135 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **930** HPA.

AT 0600 UTC OF 18TH MAY, A BOUY (**23094**) LOCATED AT 13.3°N/84°E REPORTED A MEAN SEA LEVEL PRESSURE OF 994 HPA AND ANOTHER BOUY (**23459**) LOCATED AT 14°N/86.6.0°E REPORTED A MEAN SURFACE WIND SPEED OF 110°/40.8 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 18TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS. CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB. CONSIDERING THE ENVIRONMENTAL CONDITIONS. THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND (50-60)X10⁻⁵SEC⁻¹ LOCATED AROUND SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 30X10⁻⁵SEC⁻¹ TO THE WEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 20-30 KTS TO THE NORTH BETWEEN 15-20DEGN ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND IT IS LIKELY TO CONTINUE IN THE SAME DIRECTION FOR SOME MORE TIMES. THEREAFTER, THE SYSTEM LIKELY TO MOVE IN THE NORTH-NORTHEASTWARD DIRECTION.

TOTAL PRECIPITABLE WATER IMAGERY OF 18TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

- STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.
- STORM SURGE OF ABOUT 3-4 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF BANGLADESH DURING THE TIME OF LANDFALL.

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um 18-05-2020/(0800 to 0827) GMT 18-05-2020/(1330 to 1357) IST









Figure: Storm Surge forecast from INCOIS







FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 16 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1200 UTC OF 18.05.2020 BASED ON 0900 UTC OF 18.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WEST-CENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NEARLY NORTHWARDS WITH A SPEED OF 07 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0900UTC OF TODAY, THE 18TH MAY, 2020 OVER **WESTCENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL** NEAR LATITUDE 13.7°N AND LONGITUDE 86.2 °E,, ABOUT 730 KM NEARLY SOUTH OF PARADIP (42976), 890 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 1010 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME AND THEN NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 165-175 KMPH GUSTING TO 195 KMPH.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC DISTURBANCE
	(LAT. ºN/ LONG. ºE)	SURFACE WIND SPEED (KMPH)	
18.05.20/0900	13.7/86.2	220-230 GUSTING TO 255	SUPER CYCLONIC STORM
18.05.20/1200	14.6/86.4	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
18.05.20/1800	15.2/86.5	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
19.05.20/0000	15.9/86.7	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
19.05.20/0600	17.1/87.0	220-230 GUSTING TO 255	SUPER CYCLONIC STORM
19.05.20/1800	18.3/87.3	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.8/88.1	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.8/88.8	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
21.05.20/0600	24.8/89.4	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1200	25.9/89.8	40-50 GUSTING TO 60	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0900 UTC OF 18TH MAY, THE SYSTEM CONTINUED TO MAINTAIN CURRENT INTENSITY **T6.5. EYE CONTINUED TO BE CLEARLY VISIBLE WITH CIRCULAR PATTERN WITH DIAMETER OF 15 KM.** EYE HAS BECOME FURTHER COLLER WITH TEMPERATURE -27.0 DEG CEL. WALL CLOUD TEMPEARTURE IS -93 DEG C. MINIMUM CLOUD TOP TEMPERATURE IS -93 DEG CELCIUS. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.0°N TO 18.5°N LONG 81.0°E TO 90.0°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 120 KNOTS GUSTING TO 135 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **925** HPA.

AT 0900 UTC OF 18TH MAY, A BOUY (**23094**) LOCATED AT 13.3°N/84.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 992.5 HPA AND ANOTHER BOUY (**23459**) LOCATED AT 13.5°N/86.6.0°E A MEAN SURFACE WIND SPEED OF 120°/43 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 18TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS. CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BOB. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BOB. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BOB. CONSIDERING THE ENVIRONMENTAL CONDITIONS. THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND (50-60)X10⁻⁵SEC⁻¹ LOCATED AROUND SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 40X10⁻⁵SEC⁻¹ TO THE WEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 20-30 KTS TO THE NORTH BETWEEN 15-20DEGN ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0 N OVER BOB. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND IT IS LIKELY TO CONTINUE IN THE SAME DIRECTION FOR SOME MORE TIMES. THEREAFTER, THE SYSTEM LIKELY TO MOVE IN THE NORTH-NORTHEASTWARD DIRECTION.

TOTAL PRECIPITABLE WATER IMAGERY OF 18TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall..

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um 18-05-2020/(1000 to 1026) GMT 18-05-2020/(1530 to 1556) IST



L1C Mercator







Figure: Storm Surge forecast from INCOIS





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 17 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 18.05.2020 BASED ON 1200 UTC OF 18.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NEARLY NORTHWARDS WITH A SPEED OF 11 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 18TH MAY, 2020 NEAR LATITUDE 14.0°N AND LONGITUDE 86.3°E OVER **WESTCENTRAL BAY OF BENGAL** ABOUT 700 KM NEARLY SOUTH OF PARADIP (42976), 860 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 980 KM SOUTH-SOUTH OF PARADIP (42976), 860 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 980 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME AND THEN NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 165-175 KMPH GUSTING TO 195 KMPH.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT.⁰N/ LONG.⁰E)	SURFACE	DISTURBANCE
		WIND SPEED (KMPH)	
18.05.20/1200	14.0/86.3	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
18.05.20/1800	15.2/86.5	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0000	15.9/86.7	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0600	17.1/87.0	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
19.05.20/1200	17.7/87.2	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.6/87.7	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.8/88.5	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.8/89.1	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1200	25.9/89.8	40-50 GUSTING TO 60	DEPRESSION

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1200 UTC OF 18TH MAY, THE SYSTEM CONTINUED TO MAINTAIN CURRENT INTENSITY **T6.5. EYE CONTINUED TO BE CLEARLY VISIBLE WITH CIRCULAR PATTERN WITH DIAMETER OF 20 KM.** EYE IS WARMER WITH TEMPERATURE +2°C THAN THE SOURROUNDING. WALL CLOUD TEMPEARTURE IS -93°C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.0°N TO 18.5°N LONG 81.0°E TO 90.0°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 125 KNOTS GUSTING TO 145 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **925** HPA.

AT 1200 UTC OF 18TH MAY, A BOUY (**23094**) LOCATED AT 13.3°N/84.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 992.1 HPA.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 18TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING NEXT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS. CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL. THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BAY OF BENGAL. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BAY OF BENGAL.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND (50 TO 60)X10⁻⁵ SEC⁻¹ LOCATED AROUND SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS INCREASED IN PAST SIX HOURS AND IS ABOUT 50X10⁻⁵ SEC⁻¹ TO THE WEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 20-25 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND IT IS LIKELY TO CONTINUE IN THE SAME DIRECTION FOR SOME MORE TIMES. THEREAFTER, THE SYSTEM LIKELY TO MOVE IN THE NORTH-NORTHEASTWARD DIRECTION.

TOTAL PRECIPITABLE WATER IMAGERY OF 18TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

> (R K JENAMANI) SCIENTIST-F, RSMC, NEW DELHI



PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%







Figure: Storm Surge forecast from INCOIS issued at 1837 IST of 18th May 2020

Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 18 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1730 UTC OF 18.05.2020 BASED ON 1500 UTC OF 18.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NEARLY NORTHWARDS WITH A SPEED OF 15 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1500 UTC OF TODAY, THE 18TH MAY, 2020 NEAR LATITUDE 14.5°N AND LONGITUDE 86.4°E OVER **WESTCENTRAL BAY OF BENGAL** ABOUT 640 KM NEARLY SOUTH OF PARADIP (42976), 800 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 920 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 165-175 KMPH GUSTING TO 195 KMPH.

DATE/TIME (UTC)	POSITION (LAT.⁰N/ LONG.⁰E)	MAXIMUM SUSTAINED SURFACE WIND SPEED	CATEGORY OF CYCLONIC DISTURBANCE
		(KMPH)	
18.05.20/1500	14.5/86.4	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
18.05.20/1800	15.2/86.5	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0000	15.9/86.7	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0600	17.1/87.0	230-240 GUSTING TO 265	SUPER CYCLONIC STORM
19.05.20/1200	17.7/87.2	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.6/87.7	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.8/88.5	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.8/89.1	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/1200	25.9/89.8	40-50 GUSTING TO 60	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1500 UTC OF 18TH MAY, THE SYSTEM CONTINUED TO MAINTAIN CURRENT INTENSITY **T6.5. EYE CONTINUED TO BE CLEARLY VISIBLE WITH CIRCULAR PATTERN WITH DIAMETER OF 15 KM.** EYE IS COLDER WITH TEMPERATURE -17°C THAN THE SOURROUNDING. WALL CLOUD TEMPEARTURE IS -93°C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.6°N TO 21.5°N LONG 80.5°E TO 92.5°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 125 KNOTS GUSTING TO 145 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **925** HPA.

AT 1500 UTC OF 18TH MAY, THE BOUY (**23094**) LOCATED AT 9.6°N/85.5°E REPORTED MEAN SEA LEVEL PRESSURE OF 995.3 HPA, BOUY (23092) AT 16.5°N/89.6°E REPORTED MEAN SEA LEVEL PRESSURE OF 999.3 HPA AND MEAN SURFACE WIND SPEED OF 50°/21 KNOTS, BOUY(23459) AT 11.7°N/86.6°E REPORTED MEAN SURFACE WIND SPEED OF 180°/55 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 18TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL AND THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BAY OF BENGAL. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17⁰N AND IS DECREASING TOWARDS EXTREME NORTH BAY OF BENGAL.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND (30 TO 40)X10⁻⁵ SEC⁻¹ LOCATED AROUND SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 20-25 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND IT IS LIKELY TO CONTINUE IN THE SAME DIRECTION FOR SOME MORE TIMES. THEREAFTER, THE SYSTEM LIKELY TO MOVE IN THE NORTH-NORTHEASTWARD DIRECTION.

TOTAL PRECIPITABLE WATER IMAGERY OF 18TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

> (ANANDA KUMAR DAS) SCIENTIST-E, RSMC, NEW DELHI

SAT : INSAT-3D IMG

18-05-2020/(1530 to 1556) GMT IMG_TIR1_TEMP 10.8 um 18-05-2020/(2100 to 2126) IST



L1C Mercator









Figure: Storm Surge forecast from INCOIS issued at 1837 IST of 18th May 2020

Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 19 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2100 UTC OF 18.05.2020 BASED ON 1800 UTC OF 18.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL MOVED NEARLY NORTH-NORTHEASTWARDS WITH A SPEED OF 17 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF THE 18TH MAY, 2020 NEAR LATITUDE 14.9°N AND LONGITUDE 86.5°E OVER **WESTCENTRAL BAY OF BENGAL** ABOUT 600 KM NEARLY SOUTH OF PARADIP (42976), 750 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 880 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 165-175 KMPH GUSTING TO 195 KMPH.

THE SUPER CYCLONIC STORM 'AMPHAN' IS NOW BEING TRACKED BY THE DOPPLER WEATHER RADARS AT VISHAKHAPATNAM (43149) ALONG WITH OTHER OBSERVING PLATFORMS.

DATE/TIME (UTC)	POSITION (LAT.ºN/ LONG.ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
18.05.20/1800	14.9/86.5	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0000	15.9/86.7	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0600	17.1/87.0	225-235 GUSTING TO 260	SUPER CYCLONIC STORM
19.05.20/1200	17.7/87.2	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.6/87.5	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.7/88.1	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.8/88.8	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
21.05.20/0600	24.8/89.5	50-60 GUSTING TO 70	DEEP DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1500 UTC OF 18TH MAY, THE SYSTEM CONTINUED TO MAINTAIN CURRENT INTENSITY **T6.5.** WALL CLOUD TEMPEARTURE IS - 93°C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.1°N TO 21.5°N LONG 81.5°E TO 92.5°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 130 KNOTS GUSTING TO 150 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **925** HPA.

NOW THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 460 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 28 KM.

AT 1800 UTC OF 18TH MAY, THE BOUY (**23094**) LOCATED AT 13.3°N/84.0°E REPORTED MEAN SEA LEVEL PRESSURE OF 995.2 HPA, BOUY (23092) AT 17.5°N/89.3°E REPORTED MEAN SEA LEVEL PRESSURE OF 998.5 HPA.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 DURING 18TH-20TH MAY. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT 3 DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL AND THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BAY OF BENGAL. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BAY OF BENGAL.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS AROUND 60X10⁻⁵ SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 30X10⁻⁵ SEC⁻¹ AROUND TO NORTH OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 20-25 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND IT IS LIKELY TO CONTINUE IN THE SAME DIRECTION FOR SOME MORE TIMES. THEREAFTER, THE SYSTEM LIKELY TO MOVE IN THE NORTH-NORTHEASTWARD DIRECTION.

TOTAL PRECIPITABLE WATER IMAGERY OF 18TH MAY INDICATES CONTINUED WARM MOIST AIR INCURSION OVER THE SYSTEM AREA, MAINLY IN ITS NORTHWESTERN SECTOR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

(ANANDA KUMAR DAS) SCIENTIST-E, RSMC, NEW DELHI

SAT : INSAT-3D IMG

18-05-2020/(1930 to 1956) GMT IMG_TIR1_TEMP 10.8 um 19-05-2020/(0100 to 0126) IST



L1C Mercator







FIGURE: STORM SURGE FORECAST FROM INCOIS ISSUED AT 1837 IST OF 18[™] MAY 2020



STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.

FIGURE: REFLECTIVITY OF VISHAKHAPATNAM DOPPLER WEATHER RADAR AT 00:30 IST OF 19TH MAY 2020







FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 20 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0030 UTC OF 19.05.2020 BASED ON 2100 UTC OF 18.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL AND ADJOINING EASTCENTRAL BAY OF BENGAL MOVED NEARLY NORTH-NORTHEASTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 2100 UTC OF THE 18TH MAY, 2020 NEAR LATITUDE 15.2°N AND LONGITUDE 86.6°E OVER **WESTCENTRAL BAY OF BENGAL** ABOUT 570 KM NEARLY SOUTH OF PARADIP (42976), 720 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 840 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 165-175 KMPH GUSTING TO 195 KMPH.

THE SUPER CYCLONIC STORM 'AMPHAN' IS NOW BEING TRACKED BY THE DOPPLER WEATHER RADARS AT VISHAKHAPATNAM (43149) ALONG WITH OTHER OBSERVING PLATFORMS.

DATE/TIME (UTC)	POSITION (LAT.ºN/ LONG.ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
18.05.20/2100	15.2/86.6	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0000	15.9/86.7	240-250 GUSTING TO 275	SUPER CYCLONIC STORM
19.05.20/0600	17.1/87.0	225-235 GUSTING TO 260	SUPER CYCLONIC STORM
19.05.20/1200	17.7/87.2	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.6/87.5	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.7/88.1	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1800	22.8/88.8	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
21.05.20/0600	24.8/89.5	50-60 GUSTING TO 70	DEEP DEPRESSION

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 2100 UTC OF 18TH MAY, THE SYSTEM CONTINUED TO MAINTAIN CURRENT INTENSITY **T6.5.** WALL CLOUD TEMPEARTURE IS - 93°C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.1°N TO 21.5°N LONG 81.5°E TO 92.5°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 120 KNOTS GUSTING TO 135 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **925** HPA.

NOW THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 445 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 30 KM.

AT 2100 UTC OF 18TH MAY, THE BOUY (**23459**) LOCATED AT 14.0°N/86.9°E REPORTED MEAN SEA LEVEL PRESSURE OF 994.8 HPA AND WIND DIRECTION/SPEED AS 140°/47 KNOTS AND ANOTHER BOUY (23092) AT 17.3°N/89.1°E REPORTED WIND DIRECTION AND SPEED 130°/29 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL AND THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BAY OF BENGAL. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BAY OF BENGAL.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 60-70 X10⁻⁵ SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 10X10⁻⁵ SEC⁻¹ AROUND TO NORTH OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS LOW TO MODERATE (10-15 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 20-25 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NEAR NORTHWARD ALONG THE PERIPHERY OF THE ANTICYCLONE AND IT IS LIKELY TO CONTINUE IN THE SAME DIRECTION FOR SOME MORE TIMES. THEREAFTER, THE SYSTEM LIKELY TO MOVE IN THE NORTH-NORTHEASTWARD DIRECTION.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

(ANANDA KUMAR DAS) SCIENTIST-E, RSMC, NEW DELHI

SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um

18-05-2020/(2300 to 2326) GMT 19-05-2020/(0430 to 0456) IST



L1C Mercator







FIGURE: STORM SURGE FORECAST FROM INCOIS ISSUED AT 1837 IST OF 18TH MAY 2020



STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.









FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 21 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 19.05.2020 BASED ON 0000 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL AND ADJOINING EASTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS, LAY CENTRED AT 0000 UTC OF THE 19TH MAY, 2020 NEAR LATITUDE 15.6°N AND LONGITUDE 86.7°E, ABOUT 520 KM NEARLY SOUTH OF PARADIP (42976), 670 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 800 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). **IT IS VERY LIKELY TO WEAKEN INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 06 HOURS**. IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 180 KMPH.

THE SUPER CYCLONIC STORM 'AMPHAN' IS BEING TRACKED BY THE DOPPLER WEATHER RADARS AT VISHAKHAPATNAM (43149) ALONG WITH OTHER OBSERVING PLATFORMS.

DATE/TIME(IST)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT. ºN/ LONG. ºE)	SURFACE WIND SPEED (KMPH)	DISTURBANCE
19.05.20/0000	15.6/86.7	225-235 GUSTING TO 255	SUPER CYCLONIC STORM
19.05.20/0600	16.8/87.0	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	17.4/87.1	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.3/87.4	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.6/87.8	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.7/88.4	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.8/89.1	60-70 GUSTING TO 80	CYCLONE
21.05.20/1200	25.9/89.9	40-50 GUSTING TO 60	DEPRESSION

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0000 UTC OF 19TH MAY, THE SYSTEM WEAKEND AND CURRENT INTENSITY **T6.0.** WALL CLOUD TEMPEARTURE IS -93°C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.3°N TO 21.5°N LONG 81.5°E TO 92.8°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS **125** KNOTS GUSTING TO **145** KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **940** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 426 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 30 KM.

AT 0000 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.5°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 993.9 HPA AND WIND DIRECTION AND SPEED 120°/29 KNOTS, BOUY (**23459**) LOCATED AT 13.9°N/87.0°E REPORTED WIND DIRECTION/SPEED AS 140°/39 KNOTS AND ANOTHER BOUY (**23094**) AT 13.6°N/84.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 995.3 HPA.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL AND THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BAY OF BENGAL. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BAY OF BENGAL.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50X10⁻⁵ SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 40X10⁻⁵ SEC⁻¹ AROUND TO NORTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-50 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

> (ANANDA KUMAR DAS) SCIENTIST-E, RSMC, NEW DELHI







MSW(knot)/kmph)	Impact	Action
28-33 /(52–61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.



FIGURE: REFLECTIVITY OF VISHAKHAPATNAM DOPPLER WEATHER RADAR AT 0100UTC OF 19TH MAY 2020.

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 22 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 19.05.2020 BASED ON 0300 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 15 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0300 HRS UTC OF 19TH MAY, 2020 NEAR LATITUDE 16.0°N AND LONGITUDE 86.8°E OVER **WESTCENTRAL BAY OF BENGAL** ABOUT 480 KM NEARLY SOUTH OF PARADIP (42976), 630 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 750 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 180 KMPH.

THE SUPER CYCLONIC STORM 'AMPHAN' IS BEING TRACKED BY THE DOPPLER WEATHER RADARS AT VISHAKHAPATNAM (43149) ALONG WITH OTHER OBSERVING PLATFORMS.

DATE/TIME UTC	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.05.20/0300	16.0/86.8	215-225 GUSTING TO 245	SUPER CYCLONIC STORM
19.05.20/0600	16.8/87.0	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	17.4/87.1	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.3/87.4	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.6/87.8	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.7/88.4	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.8/89.1	75-85 GUSTING TO 95	CYCLONE
21.05.20/1200	25.9/89.9	40-50 GUSTING TO 60	DEPRESSION
REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF 19TH MAY, THE SYSTEM HAS FURTHER SLIGHTLY WEAKEND AND CURRENT INTENSITY **T5.5/6.0 WITH** RAGGED EYE OF DIAMETER AROUND 20 KM VISIBLE. WALL CLOUD TOP TEMPEARTURE IS -93°C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 13.0°N TO 19.5°N LONG 83.5°E TO 90.0°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 115 KNOTS GUSTING TO 125 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **940** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 406 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 38 KM.

AT 0300 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.3°N/89.0°E REPORTED MEAN SEA LEVEL PRESSURE OF 993.3 HPA AND WIND DIRECTION AND SPEED 100°/37 KNOTS, BOUY (**23459**) LOCATED AT 14.0°N/87.0°E REPORTED WIND DIRECTION/SPEED AS 140°/37 KNOTS AND ANOTHER BOUY (**23094**) AT 13.3°N/84.0°E REPORTED MEAN SEA LEVEL PRESSURE OF 998.0 HPA.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL AND THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BAY OF BENGAL. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BAY OF BENGAL.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50X10⁻⁵ SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 40X10⁻⁵ SEC⁻¹ AROUND TO NORTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-50 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS SHIFTED NORTH AND NOW LIES NEAR 19.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

> (RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%

Super Cyclonic Storm 'AMPHAN'



PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





MSW(knot)/kmph)	Impact	Action
28-33 /(52–61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
<mark>≥ 64 (≥118</mark>)	Phenomenal	Total suspension of fishing operations



FIGURE: STORM SURGE FORECAST FROM INCOIS ISSUED AT 0600 UTC OF 19[™] MAY 2020

STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.









REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI TROPICAL CYCLONE ADVISORY BULLETIN NO. 23

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 23 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 19.05.2020 BASED ON 0600 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 17 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0600UTC OF 19TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM NEAR LATITUDE 16.5°N AND LONGITUDE 86.9°E OVER **WESTCENTRAL BAY OF BENGAL** ABOUT 420 KM NEARLY SOUTH OF PARADIP (42976), 570 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 700 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

THE SUPER CYCLONIC STORM 'AMPHAN' IS BEING TRACKED BY THE DOPPLER WEATHER RADARS AT VISHAKHAPATNAM (43149) ALONG WITH OTHER OBSERVING PLATFORMS.

DATE/TIME(U		MAXIMUM SUSTAINED	
10)	(LAT. [®] N/ LONG. ⁰ E)	WIND SPEED (KMPH)	DISTORBANCE
19.05.20/0600	16.5/86.9	210-220 GUSTING TO 240	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	17.1/87.1	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.0/87.3	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.3/87.7	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.9/88.2	160-170 GUSTING TO 190	VERY SEVERE CYCLONIC STORM
20.05.20/1800	22.7/88.7	95-105 GUSTING TO 115	CYCLONIC STORM
21.05.20/0600	24.3/89.3	50-60 GUSTING TO 70	DEPRESSION
21.05.20/1800	25.6/90.2	20-30 GUSTING TO 40	LOW PRESSURE AREA

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0600 UTC OF 19TH MAY, THE SYSTEM INTENSITY IS **T5.5/6.0 WITH** RAGGED EYE OF DIAMETER AROUND 25 KM VISIBLE. WALL CLOUD TOP TEMPEARTURE IS -93°.1C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 13.0°N TO 19.5°N LONG 83.5°E TO 90.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 115 KNOTS GUSTING TO 125 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **950** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 397 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 34 KM.

AT 0600 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.2°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 991.8 HPA AND WIND DIRECTION AND SPEED 130°/31 KNOTS, BOUY (**23459**) LOCATED AT 13.6°N/87.0°E REPORTED WIND DIRECTION/SPEED AS 140°/35 KNOTS AND ANOTHER BOUY (**23094**) AT 13.3°N/84.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 998.0 HPA.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50X10⁻⁵ SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS DECREASED AND IS ABOUT 20X10⁻⁵ SEC⁻¹ AROUND TO NORTHEAST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS SHIFTED NORTH AND NOW LIES NEAR 19.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

> (RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI







FIGURE: STORM SURGE FORECAST FROM INCOIS ISSUED AT 0600 UTC OF 19TH MAY 2020

STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.

FIGURE(BELOW): REFLECTIVITY OF VISHAKHAPATNAM DOPPLER WEATHER RADAR AT 0840UTC OF 19TH MAY 2020.







REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI TROPICAL CYCLONE ADVISORY BULLETIN NO. 24

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 24 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1200 UTC OF 19.05.2020 BASED ON 0900 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL BAY OF BENGAL MOVED NEARLY NORTHWARDS WITH A SPEED OF 18 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0900 UTC OF 19TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM NEAR LATITUDE 17.0°N AND LONGITUDE 86.9°E OVER **WESTCENTRAL BAY OF BENGAL** ABOUT 360 KM NEARLY SOUTH OF PARADIP (42976), 510 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 650 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

THE SUPER CYCLONIC STORM 'AMPHAN' IS BEING TRACKED BY THE DOPPLER WEATHER RADARS AT VISHAKHAPATNAM (43149) ALONG WITH OTHER OBSERVING PLATFORMS.

DATE/TIME(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.05.20/0900	17.0/86.9	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	17.1/87.1	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.0/87.3	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.3/87.7	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.9/88.2	160-170 GUSTING TO 190	VERY SEVERE CYCLONIC STORM
20.05.20/1800	22.7/88.7	95-105 GUSTING TO 115	CYCLONIC STORM
21.05.20/0600	24.3/89.3	50-60 GUSTING TO 70	DEPRESSION
21.05.20/1800	25.6/90.2	20-30 GUSTING TO 40	LOW PRESSURE AREA

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0900 UTC OF 19TH MAY, THE SYSTEM INTENSITY IS **T5.5/6.0** AND EYE IS NOT CLEARLY VISIBLE IN THIS OBSERVATION AND PRESENTLY IT HAS CDO PATTERN WITH WALL CLOUD TEMPERATURE IS - 93.1 DEG C. MAIN CONVECTIVE BANDS LIES IN THE SOUTHERN PARTS OF THE CYCLONE. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 13.0°N TO 19.5°N LONG 83.5°E TO 90.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 110 KNOTS GUSTING TO 120 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **950** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 395 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 27 KM.

AT 0900 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.2°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 987.8 HPA AND WIND DIRECTION AND SPEED 180°/37 KNOTS, BOUY (**23459**) LOCATED AT 13.6°N/87.0°E REPORTED MEAN SEA LEVEL PRESSURE OF 974.5 HPA AND WIND DIRECTION/SPEED AS 140°/27KNOTS AND ANOTHER BOUY (**23094**) AT 13.3°N/84.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 996.6 HPA.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50X10⁻⁵ SEC⁻¹ LOCATED SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS DECREASED FURTHER TO 10X10⁻⁵ SEC⁻¹ AND LIES AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS SHIFTED NORTH AND NOW LIES NEAR 19.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

• STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

> (RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI







Figure: Storm Surge forecast from INCOIS issued at 1245 IST of 19th May 2020

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 1430 hrs IST of 19th May 2020







REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL CYCLONE ADVISORY BULLETIN NO. 25

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)

QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 25 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 19.05.2020 BASED ON 1200 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WESTCENTRAL AND ADJOINING NORTHWEST BAY OF BENGAL

THE EXTREMELY SEVERE CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL BAY OF BENGAL MOVED NEARLY NORTHWARDS WITH A SPEED OF 17 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF 19TH MAY, 2020 OVER **WESTCENTRAL AND ADJOINING NORTHWEST BAY OF BENGAL NEAR** LATITUDE 17.4°N AND LONGITUDE 87.0°E ABOUT 320 KM NEARLY SOUTH OF PARADIP (ODISHA), 470 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 610 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATNAM (ANDHRA PRADESH).

DATE/TIME(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.05.20/1200	17.4/87.0	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.4/87.2	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.4/87.4	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0600	20.6/87.8	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.8/88.3	150-160 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.8/89.2	80-90 GUSTING TO 100	CYCLONIC STORM
21.0 <u>5.20/1200</u>	25.0/90.0	40-50 GUSTING TO 60	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1200 UTC OF 19TH MAY, THE SYSTEM INTENSITY IS **T5.5/6.0** AND IS CDO PATTERN WITH WALL CLOUD TEMPERATURE IS - 93.0°C. MAIN CONVECTIVE BANDS LIES IN THE SOUTHERN PARTS OF THE CYCLONE. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 13.0°N TO 19.5°N LONG 83.0°E TO 90.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 105 KNOTS GUSTING TO 115 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **950** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 405 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 20 KM.

AT 1200 UTC OF 19TH MAY, THE BOUY (**23091**) AT 17.6°N/89.3°E REPORTED MEAN SEA LEVEL PRESSURE OF 987.6 HPA AND WIND DIRECTION/SPEED AS 170°/38.9 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50 TO 60X10⁻⁵ SEC⁻¹ LOCATED SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER 10 TO 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um

19-05-2020/(1330 to 1356) GMT 19-05-2020/(1900 to 1926) IST



L1C Mercator







Figure: Storm Surge forecast from INCOIS issued at 1800 IST of 19th May 2020

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 1830 hrs IST of 19th May 2020







REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL CYCLONE ADVISORY BULLETIN NO. 26

FROM: RSMC - TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 26 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1800 UTC OF 19.05.2020 BASED ON 1500 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WESTCENTRAL AND ADJOINING NORTHWEST BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 20 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1500 UTC OF 19TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL** NEAR LATITUDE 18.1°N AND LONGITUDE 87.1°E, ABOUT 250 KM NEARLY SOUTH OF PARADIP (42976), 390 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 540 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS DURING AFTERNOON TO EVENING HOURS OF 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATNAM (ANDHRA PRADESH), PARADIP (ODISHA) AND GOPALPUR (ODISHA).

Date/Time(UTC)	Position	Maximum sustained surface	Category of cyclonic
	(Lat. ^o N/ long. ^o E)	wind speed (Kmph)	disturbance
19.05.20/1500	18.1/87.1	185-195 gusting to 215	Extremely Severe Cyclonic Storm
19.05.20/1800	18.7/87.3	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/0000	19.8/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0600	20.9/87.9	160-170 gusting to 190	Extremely Severe Cyclonic Storm

20.05.20/1200	22.1/88.3	150-160 gusting to 180	Very Severe Cyclonic Storm
21.05.20/0000	24.10/89.2	80-90 gusting to 100	Cyclonic Storm
21.05.20/1200	25.10/90.00	40-50 gusting to 60	Depression

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1500 UTC OF 19TH MAY, THE SYSTEM INTENSITY IS **T5.5** AND IS CDO PATTERN WITH WALL CLOUD TEMPERATURE IS - 93.0°C. MAIN CONVECTIVE BANDS LIES IN THE SOUTHERN PARTS OF THE CYCLONE. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 15.0°N TO 20.5°N LONG 84.0°E TO 90.0°E.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 100 KNOTS GUSTING TO 110 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **950** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 415 KM FROM THE RADAR.

AT 1200 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.4°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 989 HPA AND WIND DIRECTION/SPEED AS 210°/38.9 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50 TO 60X10⁻⁵ SEC⁻¹ LOCATED SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER 10 TO 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(D R PATTANAIK) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um L1C Mercator 19-05-2020/(1700 to 1726) GMT 19-05-2020/(2230 to 2256) IST











Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.



Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 2030 hrs IST of 19th May 2020





REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL CYCLONE ADVISORY BULLETIN NO. 27

FROM: RSMC - TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 27 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2100 UTC OF 19.05.2020 BASED ON 1800 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL MOVED NEARLY NORTHWARDS WITH A SPEED OF 19 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF 19TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL** NEAR LATITUDE 18.4°N AND LONGITUDE 87.1°E, ABOUT 210 KM NEARLY SOUTH OF PARADIP (42976), 360 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 510 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS DURING AFTERNOON TO EVENING HOURS OF 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATNAM (ANDHRA PRADESH), PARADIP (ODISHA) AND GOPALPUR (ODISHA).

Date/Time(UTC)	Position	Maximum sustained surface	Category of cyclonic
	(Lat. ⁰ N/ long. ⁰ E)	wind speed (Kmph)	disturbance
19.05.20/1800	18.4/87.1	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/0000	19.4/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0600	20.9/87.9	160-170 gusting to 190	Extremely Severe Cyclonic Storm

20.05.20/1200	22.1/88.3	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/1800	23.1/88.7	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0600	24.6/89.6	60-70 gusting to 80	Cyclonic Storm
21.05.20/1800	25.6/90.1	35-45 gusting to 55	Depression

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1800 UTC OF 19TH MAY, THE SYSTEM VORTEX (AMPHAN) LIES OVER NORTHWEST ADJOINING WESTCENTRAL BAY & NEIGHBOURHOOD CENTERED NEAR 18.3°N/87.0°E. THE SYSTEM INTENSITY IS T5.5/5.5. THE ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 15.0°N TO 21.0°N LONGITUDE 84.0°E TO 90.0°E & ALSO OVER ODISHA ADJOINING NORTH COASTAL ANDHRA PRADESH COASTAL GANGETIC WEST BENGAL. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 100 KNOTS GUSTING TO 110 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **950** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT PARADIP (42976). THE SYSTEM IS AT DISTANCE OF 210 KM FROM THE RADAR.

AT 1800 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.4°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 990 HPA AND WIND DIRECTION/SPEED AS 210°/35.0 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50 TO 60X10⁻⁵ SEC⁻¹ LOCATED SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER 10 TO 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um 19-05-2020/(2030 to 2056) GMT 20-05-2020/(0200 to 0226) IST



L1C Mercator



NWB – Northwest Bay of Bengal





Figure: Storm Surge forecast from INCOIS issued at 1800 IST of 19th May 2020

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Paradip Doppler Weather Radar at 1730 UTC hrs of 19th May 2020







REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL CYCLONE ADVISORY BULLETIN NO. 28

FROM: RSMC - TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 28 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0000 UTC OF 20.05.2020 BASED ON 2100 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL MOVED NORTH NORTH-EASTWARDS WITH A SPEED OF 11 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 2100 UTC OF 19TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL** NEAR LATITUDE 18.7°N AND LONGITUDE 87.2°E, ABOUT 180 KM NEARLY SOUTH OF PARADIP (42976), 320 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 480 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS DURING AFTERNOON TO EVENING HOURS OF 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATNAM (ANDHRA PRADESH), PARADIP (ODISHA) AND GOPALPUR (ODISHA).

Date/Time(UTC)	Position	Maximum sustained surface	Category of cyclonic
	(Lat. ⁰ N/ long. ⁰ E)	wind speed (Kmph)	disturbance
19.05.20/2100	18.7/87.2	175-185 gusting to 205	Extremely Severe Cyclonic Storm
20.05.20/0000	19.5/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0600	20.9/87.9	160-170 gusting to 190	Extremely Severe Cyclonic Storm

20.05.20/1200	22.1/88.3	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/1800	23.1/88.7	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0600	24.6/89.6	60-70 gusting to 80	Cyclonic Storm
21.05.20/1800	25.6/90.1	35-45 gusting to 55	Depression

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 2100 UTC OF 19TH MAY, THE SYSTEM VORTEX (AMPHAN) LIES OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY & NEIGHBOURHOOD CENTERED NEAR 18.6°N/87.0°E. THE SYSTEM INTENSITY IS T5.5/5.5. THE ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 15.0°N TO 21.0°N LONGITUDE 84.0°E TO 90.0°E & ALSO OVER ODISHA ADJOINING NORTH COASTAL ANDHRA PRADESH. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 100 KNOTS GUSTING TO 110 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **954** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT PARADIP (42976). THE SYSTEM IS AT DISTANCE OF 180 KM FROM THE RADAR.

AT 2100 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.4°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 990 HPA AND WIND DIRECTION/SPEED AS 210°/35.0 KNOTS.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50 TO 60X10⁻⁵ SEC⁻¹ LOCATED SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER 10 TO 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20^{TH} MAY 2020. THE FORECAST IS BASED ON THE CONCENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um L1C Mercator 19-05-2020/(2230 to 2256) GMT 20-05-2020/(0400 to 0426) IST



28°N 26°N 24°N 22°N NWB 20°N 18°N 16°N WCB 14°N 12°N 10°N SWB 8°N COM 6°N 4°N 2°N 100°E 74°E 90°E 94°E 98°E 76°E 78°E 80°E 82°E 84°E 86°E 88°E 92°E 96°E 0 -20 -50 Celsius IMD, DELHI 10 -10 -30 -70 Legend: WCB – Westcentral Bay of Bengal

NWB – Northwest Bay of Bengal







Figure: Storm Surge forecast from INCOIS issued at 1800 IST of 19th May 2020

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Paradip Doppler Weather Radar at 2030 UTC of 19th May 2020







REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL CYCLONE ADVISORY BULLETIN NO. 29

FROM: RSMC - TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 29 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0200 UTC OF 20.05.2020 BASED ON 0000 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER NORTHWEST BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL MOVED NORTH NORTH-EASTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0000 UTC OF 20TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST BAY OF BENGAL** NEAR LATITUDE 19.1°N AND LONGITUDE 87.5°E, ABOUT 155 KM SOUTH-SOUTHEAST OF PARADIP (42976), 280 KM SOUTH OF DIGHA (42901) AND 425 KM SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS DURING AFTERNOON TO EVENING HOURS OF TODAY, THE 20^{TH} MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

Date/Time(UTC)	Position (Lat. ⁰N/ long. ⁰E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
20.05.20/0000	19.1/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0600	20.5/88.0	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1200	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/1800	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0000	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1200	26.0/90.3	30-40 gusting to 50	Depression

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0000 UTC OF 20TH MAY, THE VORTEX (AMPHAN) LIES OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY CENTERED NEAR 19.1°N/87.4°E. THE SYSTEM INTENSITY IS T5.5/5.5. THE ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 15.0°N TO 21.5°N LONGITUDE 84.0°E TO 90.0°E & ALSO OVER ODISHA ADJOINING NORTH COASTAL ANDHRA PRADESH. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 95 KNOTS GUSTING TO 105 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **956** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT VISHAKHAPATNAM (43149), PARADIP (42976) AND GOPALPUR (43049). THE SYSTEM IS AT DISTANCE OF 130 KM FROM THE PARADIP RADAR.

AT 0000 UTC OF 20TH MAY, THE BOUY (**23092**) AT 17.4°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 993.7 HPA AND WIND DIRECTION/SPEED AS 240°/31 KNOTS. PARADIP (42976) REPORTED MEAN SEA LEVEL PRESSURE OF 985.5 HPA AND WIND DIRECTION/SPEED AS 320°/52 KNOTS

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND 250X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS ABOUT 30X10⁻⁵ SEC⁻¹ OVER THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(SUNITHA DEVI S) SCIENTIST-E, RSMC, NEW DELHI








Figure: Storm Surge forecast from INCOIS issued at 0525 IST of 20th May 2020

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.



Figure: Reflectivity of Paradip Doppler Weather Radar at 0042 UTC of 20th May 2020





TROPICAL CYCLONE ADVISORY BULLETIN NO. 30

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 30 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0430 UTC OF 20.05.2020 BASED ON 0300 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER NORTHWEST BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 22 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0300UTC OF TODAY, THE 20TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST BAY OF BENGAL** NEAR LATITUDE 19.8°N AND LONGITUDE 87.7°E, ABOUT 120 KM EAST-SOUTHEAST OF PARADIP (42976), 200 KM SOUTH OF DIGHA (42901) AND 360 KM SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS DURING AFTERNOON TO EVENING HOURS OF TODAY, THE 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position	Maximum sustained surface	Category of cyclonic
	(Lat. ⁰ N/ long. ⁰ E)	wind speed (Kmph)	disturbance
20.05.20/0300	19.8/87.7	165-175 gusting to 195	Extremely Severe Cyclonic Storm
20.05.20/0600	20.5/88.0	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1200	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/1800	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0000	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1200	26.0/90.3	30-40 gusting to 50	Depression

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF 20TH MAY SHOWS THE SYSTEM INTENSITY IS T5.5/5.5 WITH CDO PATTERN WITH ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 16.0°N TO 22.5°N LONGITUDE 84.0°E TO 90.0°E & ALSO OVER ODISHA ADJOINING NORTH COASTAL ANDHRA PRADESH. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 90 KNOTS GUSTING TO 100 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **960** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT VISHAKHAPATNAM (43149), PARADIP (42976) AND GOPALPUR (43049). THE SYSTEM IS AT DISTANCE OF 130 KM FROM THE PARADIP RADAR.

AT 0300 UTC OF 20TH MAY, THE BOUY (**23091**) AT 17.4°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 996.2 HPA AND WIND DIRECTION/SPEED AS 360°/33 KNOTS. PARADIP (42976) REPORTED MEAN SEA LEVEL PRESSURE OF 985.5 HPA AND WIND DIRECTION/SPEED AS 290°/50 KNOTS

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO FURTHER LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 60-80 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS ABOUT 30X10⁻⁵ SEC⁻¹ LIES AT NORTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N AND FURTHER TO 30-40 KTS AT NORTH OF 20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI





Figure: Storm Surge forecast from INCOIS issued at 0818 IST of 20th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.7	Around 15
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-4.0	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 15
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.8	Around 0.44
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.2
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.5	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.8	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.5	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.8
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.8	Around 0.8







TROPICAL CYCLONE ADVISORY BULLETIN NO. 31

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 31 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0800 UTC OF 20.05.2020 BASED ON 0600 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER NORTHWEST BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 29 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0600UTC OF TODAY, THE 20TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST BAY OF BENGAL** NEAR LATITUDE 20.6°N AND LONGITUDE 88.0°E, ABOUT 140 KM EAST-NORTHEAST OF PARADIP (42976), 125 KM SOUTHSOUTHEAST OF DIGHA (42901), 125 KM NEARLY SOUTH OF SAGAR ISLANDS(42903) AND 275 KM WESTSOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS DURING LATE AFTERNOON TO EVENING HOURS OF TODAY, THE 20TH MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
20.05.20/1130	20.6/88.0	160-170 GUSTING TO 190	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1730	22.0/88.4	150-160 GUSTING TO 180	VERY SEVERE CYCLONIC STORM
20.05.20/2330	23.2/88.8	110-120 GUSTING TO 135	SEVERE CYCLONIC STORM
21.05.20/0530	24.6/89.3	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/1730	26.0/90.3	30-40 GUSTING TO 50	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0600 UTC OF 20TH MAY SHOWS THE SYSTEM INTENSITY IS T5.0/5.5 WITH CDO PATTERN WITH ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 17.0°N TO 22.5°N LONGITUDE 85.0°E TO 90.0°E & ALSO OVER ODISHA ADJOINING NORTH COASTAL ANDHRA PRADESH. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 90 KNOTS GUSTING TO 100 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **960** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT VISHAKHAPATNAM (43149), PARADIP (42976) AND GOPALPUR (43049). THE SYSTEM IS AT DISTANCE 140 KM EAST-NORTHEAST OF PARADIP RADAR.

AT 0600 UTC OF 20TH MAY, THE BOUY (**23092**) AT 17.24°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 999.0 HPA AND WIND DIRECTION/SPEED AS 280°/19 KNOTS. PARADIP (42976) REPORTED MEAN SEA LEVEL PRESSURE OF 988.7 HPA AND WIND DIRECTION/SPEED AS 290°/47 KNOTS

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL, BUT SYSTEM IS ENTERING TO FURTHER LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 60-80 KJ/CM² AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY HAS REDUCED SLIGHTLY AND NOW AROUND (200-250)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS ABOUT (30-40)X10⁻⁵ SEC⁻¹ LIES AT NORTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (25-30 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS AT NORTH OF 20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 1000-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI







Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. Given below is the direct model output from INCIOS Strom Surge model.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.7	Around 0.7

Figure: Reflectivity of Paradip Doppler Weather Radar at 0642 UTC of 20th May 2020







TROPICAL CYCLONE ADVISORY BULLETIN NO. 32

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 32 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1100 UTC OF 20.05.2020 BASED ON 0900 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER NORTHWEST BAY OF BENGAL

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 20 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1430 HRS IST OF TODAY, THE 20TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST BAY OF BENGAL** NEAR LATITUDE 21.4°N AND LONGITUDE 88.1°E, ABOUT 190 KM EAST-NORTHEAST OF PARADIP (42976), 65 KM EAST-SOUTHEAST OF DIGHA (42901), 35 KM NEARLY SOUTH OF SAGAR ISLANDS(42903) AND 225 KM SOUTH-WESTSOUTHWEST OF KHEPUPARA (41984).

LANDFALL PROCESS HAS COMMENCED AND THE FORWARD SECTOR OF THE WALL CLOUD REGION IS ENTERING INTO LAND IN WEST BENGAL. DURING NEXT 2-3 HOURS IT IS VERY LIKELY CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH. AFTER LANDFALL, THE SYSTEM IS LIKELY TO MOVE NORTH-NORTHEASTWARDS CLOSE TO KOLKATA(42807).

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Kolkata (West Bengal).

Date/Time(UTC)	Position	Maximum sustained surface	Category of cyclonic
	(Lat. ^o N/ long. ^o E)	wind speed (Kmph)	disturbance
20.05.20/1430	21.4/88.1	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.0/90.3	30-40 gusting to 50	Depression

Forecast track and intensity are given in the following table:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0900 UTC OF 20TH MAY SHOWS THE SYSTEM INTENSITY IS T5.0/5.5. WALL CLOUDS HAVE ENTERED THE COAST. THE CENTRE OF THE CYCLONE LIES VERY CLOSE TO THE COAST. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 18.0°N TO 26.5°N LONGITUDE 83.5°E TO 92.5°E AND ALSO OVER COASTAL ODISHA AND GANGETIC WEST BENGAL. WALL CLOUDS MINIMUM CLOUD TOP TEMPERATURE -93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 85 KNOTS GUSTING TO 95 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **960** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT KOLKATTA (43049). THE SYSTEM IS AT DISTANCE 130 KM SOUTHSOUTHWEST OF KOLKATTA RADAR.

AT 0900 UTC OF 20TH MAY, THE BOUY (**23092**) AT 17.24°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 997.2 HPA AND WIND DIRECTION/SPEED AS 220°/08 KNOTS. DIGHA (42901), REPORTED MEAN SEA LEVEL PRESSURE OF 973.5 HPA AND WIND DIRECTION/SPEED AS 320°/27 KNOTS.

THE SYSTEM ENTERING THE COAST. CONSIDERING THE ENVIRONMENTAL CONDITIONS, WITH THE POSITIVE VORTICITY MAINTAINING AT (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE HAS REDUCED TO (20-30)X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS ALSO REDUCED TO 10X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (25-30 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS AT NORTH OF 23°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 22.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 1000-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG IMG_TIR1_TEMP 10.8 um L1C Mercator 20-05-2020/(1000 to 1026) GMT 20-05-2020/(1530 to 1556) IST ١





Figure: Storm Surge forecast from INCOIS issued at 1500 IST of 20th May 2020 PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. Given below is the direct model output from INCIOS Strom Surge model.

STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.7	Around 0.7



Figure: Reflectivity of Kolkatta Doppler Weather Radar at 0852 UTC of 20th May 2020





TROPICAL CYCLONE ADVISORY BULLETIN NO. 33

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 33 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1400 UTC OF 20.05.2020 BASED ON 1200 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) CROSSED WEST BENGAL – BANGLADESH COASTS

THE SUPER CYCLONIC STORM **'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 25 KMPH DURING PAST 06 HOURS, CROSSED WEST BENGAL – BANGLADESH COASTS AS A VERY SEVERE CYCLONIC STORM WITH WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH ACROSS SUNDARBANS, NEAR LAT. 21.65°N AND LONGITUDE 88.3°E AND LAY CENTRED AT 1200UTC OF TODAY, THE 20TH MAY, 2020, OVER WEST BENGAL COAST NEAR LATITUDE 21.9°N AND LONGITUDE 88.4°E, ABOUT 70 KM NEARLY TO THE SOUTH OF KOLKATA(42807), 95 KM EAST-NORTHEAST OF DIGHA (42901), 35 KM NORTHEAST OF SAGAR ISLANDS (42903) AND 185 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

KOLKATA (42807) REPORTED 112 KMPH WINDS AT 1200UTC OF TODAY, THE $20^{\rm TH}$ MAY 2020

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT KOLKATA (WEST BENGAL).

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT. ⁰N/ LONG.	SURFACE	DISTURBANCE
	⁰E)	WIND SPEED (KMPH)	
20.05.20/1200	21.9/88.4	140-150 GUSTING TO 165	VERY SEVERE CYCLONIC STORM
20.05.20/1800	23.2/88.8	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
21.05.20/0000	24.6/89.3	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/0600	26.0/90.3	30-40 GUSTING TO 50	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1200 UTC OF 20TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AEAS OF WEST BENGAL COAST ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 19.0°N TO 27.0°N LONGITUDE 85.0°E TO 92.5°E. WALL CLOUDS MINIMUM CLOUD TOP TEMPERATURE -93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 80 KNOTS GUSTING TO 90 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **970** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT KOLKATTA (43049). THE SYSTEM IS AT DISTANCE 70 KM SOUTH OF KOLKATA RADAR.

AT 1200 UTC OF 20^{TH} MAY, DIGHA (42901), REPORTED MEAN SEA LEVEL PRESSURE OF 980.0 HPA AND WIND DIRECTION/SPEED AS $320^{\circ}/22$ KNOTS, MIDNAPUR(42803) REPORTED MEAN SEA LEVEL PRESSURE OF 984.5 HPA AND WIND DIRECTION/SPEED AS $320^{\circ}/42$ KNOTS.

THE SYSTEM ENTERING THE COAST. CONSIDERING THE ENVIRONMENTAL CONDITIONS, WITH THE POSITIVE VORTICITY MAINTAINING AT (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE IS (30-40)X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS ALSO REDUCED TO 10X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS AT NORTH OF 23°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE IS AT NORTH AND NOW LIES NEAR 22.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 1000-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(RK JENAMANI) SCIENTIST-F, RSMC, NEW DELHI



NWB – Northwest Bay of Bengal





Figure: Storm Surge forecast from INCOIS issued at 1500 IST of 20th May 2020

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. Given below is the direct model output from INCIOS Strom Surge model.

STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.7	Around 0.7



Figure: Reflectivity of Kolkata Doppler Weather Radar at 1152 UTC of 20th May 2020





TROPICAL CYCLONE ADVISORY BULLETIN NO. 34

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 34 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1700 UTC OF 20.05.2020 BASED ON 1500 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) CROSSED WEST BENGAL – BANGLADESH COASTS

THE SUPER CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER WEST BENGAL COAST MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 25 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 2030 HRS IST OF TODAY, THE 20TH MAY 2020 OVER WEST BENGAL NEAR LAT. 22.7°N AND LONG. 88.6°E CLOSE TO KOLKATA AS A VERY SEVERE CYCLONIC STORM WITH WIND SPEED OF 120-130 KMPH GUSTING TO 145 KMPH 160 KM NORTHEAST OF DIGHA (42901), 120 KM NORTH-NORTHEAST OF SAGAR ISLANDS (42903) AND 185 KM WEST-NORTHWEST OF KHEPUPARA (41984).

KOLKATA (ALIPUR & DUMDUM) BOTH REPORTED 100 KMPH WINDS AND 222 MM & 194 MM RAINFALL RESPECTIVELY AT 2030 HRS IST OF TODAY, THE 20TH MAY 2020.

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT KOLKATA (WEST BENGAL).

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED	CATEGORY OF CYCLONIC
	(LAT. °N/ LONG. ⁰E)	SURFACE WIND SPEED (KMPH)	DISTURBANCE
20.05.20/1500	22.7/88.6	120-130 GUSTING TO 145	VERY SEVERE CYCLONIC STORM
20.05.20/1800	23.2/88.8	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
21.05.20/0000	24.6/89.3	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/0600	26.0/90.3	30-40 GUSTING TO 50	DEPRESSION

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1500 UTC OF 20TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AEAS OF WEST BENGAL COAST ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 19.0°N TO 27.0°N LONGITUDE 85.0°E TO 92.5°E. WALL CLOUDS MINIMUM CLOUD TOP TEMPERATURE -93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 80 KNOTS GUSTING TO 90 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **970** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT KOLKATTA (43049). THE SYSTEM IS AT DISTANCE 70 KM SOUTH OF KOLKATA RADAR.

AT 1500 UTC OF 20^{TH} MAY, DIGHA (42901), REPORTED MEAN SEA LEVEL PRESSURE OF 990.0 HPA AND WIND DIRECTION/SPEED AS 290°/11 KNOTS, KOLKATTA (43049) REPORTED MEAN SEA LEVEL PRESSURE OF 959.5 HPA AND WIND DIRECTION/SPEED AS 320°/5.1 KNOTS.

THE SYSTEM ENTERING THE COAST. CONSIDERING THE ENVIRONMENTAL CONDITIONS, WITH THE POSITIVE VORTICITY MAINTAINING AT (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE IS (30-40)X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS ALSO REDUCED TO 10X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (25-30 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS AT NORTH OF 23°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE IS AT NORTH AND NOW LIES NEAR 22.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 1000-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI









Figure: Storm Surge forecast from INCOIS issued at 1500 IST of 20th May 2020

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. Given below is the direct model output from INCIOS Strom Surge model.

STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.7	Around 0.7



Figure: Reflectivity of Kolkata Doppler Weather Radar at 1152 UTC of 20th May 2020





TROPICAL CYCLONE ADVISORY BULLETIN NO. 35

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 35 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2100 UTC OF 20.05.2020 BASED ON 1800 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) CROSSED WEST BENGAL – BANGLADESH COASTS

THE VERY SEVERE CYCLONIC CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER WEST BENGAL COAST MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 28 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 1800 UTC OF TODAY, THE 20TH MAY 2020 OVER BANGLADESH AND ADJOINING WEST BENGAL NEAR LAT. 23.3°N AND LONG. 89.0°E AS A SEVERE CYCLONIC STORM ABOUT 110 KM NORTHEAST OF KOLKATA (42807), 240 KM NORTHEAST OF DIGHA (42901), 200 KM NORTH-NORTHEAST OF SAGAR ISLANDS (42903) AND 190 KM NORTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A CYCLONIC STORM DURING NEXT 06 HOURS.

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT KOLKATA (WEST BENGAL).

DATE/TIME(UTC)	POSITION (LAT. ⁰N/ LONG. ⁰E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
20.05.20/1800	23.3/89.0	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
21.05.20/0000	24.6/89.3	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/0600	26.0/90.3	30-40 GUSTING TO 50	DEPRESSION

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1800 UTC OF 20TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AEAS OF WEST BENGAL COAST ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 19.0°N TO 27.0°N LONGITUDE 85.0°E TO 92.5°E. WALL CLOUDS MINIMUM CLOUD TOP TEMPERATURE -93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **988** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT KOLKATTA (43049). THE SYSTEM IS AT DISTANCE 70 KM SOUTH OF KOLKATA RADAR.

AT 1800 UTC OF 20TH MAY, KOLKATTA (43049) REPORTED MEAN SEA LEVEL PRESSURE OF 987.8 HPA AND WIND DIRECTION/SPEED AS 230°/27 KNOTS . CHUADANGA (41926), REPORTED MEAN SEA LEVEL PRESSURE OF 978.0 HPA AND WIND DIRECTION/SPEED AS 360°/35 KNOTS,

THE SYSTEM ENTERING THE COAST. CONSIDERING THE ENVIRONMENTAL CONDITIONS, WITH THE POSITIVE VORTICITY MAINTAINING AT (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE IS (30-40)X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS ALSO REDUCED TO 10X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (25-30 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS AT NORTH OF 23°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE IS AT NORTH AND NOW LIES NEAR 22.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 1000-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL (FIGURE ENCLOSED).

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI








Figure: Reflectivity of Kolkata Doppler Weather Radar at 1912 UTC of 20th May 2020





TROPICAL CYCLONE ADVISORY BULLETIN NO. 36

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 36 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0000 UTC OF 21.05.2020 BASED ON 0000 UTC OF 20.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) CROSSED WEST BENGAL – BANGLADESH COASTS

THE VERY SEVERE CYCLONIC CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) OVER WEST BENGAL COAST MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 28 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 2100 UTC OF TODAY, THE 20TH MAY 2020 OVER BANGLADESH AND ADJOINING WEST BENGAL NEAR LAT. 24.2°N AND LONG. 89.0°E AS A SEVERE CYCLONIC STORM ABOUT 210 KM NORTHEAST OF KOLKATA (42807), 340 KM NORTHEAST OF DIGHA (42901), 300 KM NORTH-NORTHEAST OF SAGAR ISLANDS (42903) AND 260 KM NORTHWEST OF KHEPUPARA (41984). IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A DEEP DEPRESSION DURING NEXT 03 HOURS AND INTO A DEPRESSION DURING SUBSEQUENT 06 HOURS.

THE SYSTEM IS NOW BEING CONTINUOUSLY TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT KOLKATA (WEST BENGAL).

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. ⁰N/ LONG. ⁰E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
20.05.20/2100	24.2/89.0	80-90 GUSTING TO 100	CYCLONIC STORM
21.05.20/0000	24.6/89.3	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/0600	26.0/90.3	30-40 GUSTING TO 50	DEPRESSION

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 2100 UTC OF 20TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AEAS OF WEST BENGAL COAST ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 19.0°N TO 27.0°N LONGITUDE 85.0°E TO 92.5°E. WALL CLOUDS MINIMUM CLOUD TOP TEMPERATURE -93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS **988** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT KOLKATTA (43049). THE SYSTEM IS AT DISTANCE 70 KM SOUTH OF KOLKATA RADAR.

THE SYSTEM ENTERING THE COAST. CONSIDERING THE ENVIRONMENTAL CONDITIONS, WITH THE POSITIVE VORTICITY MAINTAINING AT (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE IS (30-40)X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS ALSO REDUCED TO 10X10⁻⁵ SEC⁻¹ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (25-30 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS AT NORTH OF 23°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE IS AT NORTH AND NOW LIES NEAR 22.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 1000-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI



Legend: WCB – Westcentral Bay of Bengal NWB – Northwest Bay of Bengal







TROPICAL CYCLONE ADVISORY BULLETIN NO. 37

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 37 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 21.05.2020 BASED ON 0000 UTC OF 21.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) LAY AS A CYCLONIC STORM OVER BANGLADESH

THE SUPER CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 27 KMPH DURING PAST 06 HOURS, FURTHER WEAKENED INTO A CYCLONIC STORM AND LAY CENTERED AT 0000 UTC OF TODAY, THE 21ST MAY 2020 OVER BANGLADESH NEAR LAT. 24.7°N AND LONG. 89.5°E ABOUT 270 KM NORTH-NORTHEAST OF KOLKATA(42807), 150 KM SOUTH OF DHUBRI (42404) AND 110 KM SOUTH-SOUTHEAST OF RANGPUR (41984).

IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A DEEP DEPRESSION DURING NEXT 03 HOURS AND INTO A DEPRESSION DURING SUBSEQUENT 06 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
21.05.20/0000	24.87/89.5	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/0600	26.2/90.7	40-50 GUSTING TO 50	DEPRESSION

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0000 UTC OF 21TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AEAS OF WEST BENGAL COAST ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 20.0°N TO 28.0°N LONGITUDE 85.0°E TO 92.5°E. WALL CLOUDS MINIMUM CLOUD TOP TEMPERATURE -83 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS **990** HPA.

AT 0000 UTC OF 21TH MAY, KOLKATTA (43049) REPORTED MEAN SEA LEVEL PRESSURE OF 993.8 HPA AND WIND DIRECTION/SPEED AS 230°/06 KNOTS . CHUADANGA (41926), REPORTED MEAN SEA LEVEL PRESSURE OF 986.0 HPA AND WIND DIRECTION/SPEED AS 130°/15 KNOTS,

(V R DURAI) SCIENTIST-E, RSMC, NEW DELHI











TROPICAL CYCLONE ADVISORY BULLETIN NO. 38

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 38 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0700 UTC OF 21.05.2020 BASED ON 0300 UTC OF 21.05.2020.

SUB: CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) LAY OVER BANGLADESH

THE SUPER CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AS A **CYCLONIC STORM** AND LAY CENTERED AT 0830 HRS IST OF TODAY, THE 21ST MAY 2020 OVER **BANGLADESH** NEAR LAT. 24.7°N AND LONG. 89.5°E ABOUT 270 KM NORTH-NORTHEAST OF KOLKATA(42807), 150 KM SOUTH OF DHUBRI (42404) AND 110 KM SOUTH-SOUTHEAST OF RANGPUR (41984).**IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A DEEP DEPRESSION DURING NEXT 03 HOURS AND INTO A DEPRESSION DURING SUBSEQUENT 06 HOURS.**

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
21.05.20/0300	24.7/89.5	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/0600	25.3/89.8	50-60 GUSTING TO 70	DEEP DEPRESSION
21.05.20/1200	26.5/90.5	30-40 GUSTING TO 50	DEPRESSION

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF 21TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AREAS OF BANGALDESH. CENTRE NOT CLEARLY VISIBLE IN SATELLITE IMAGERY. HIGHER CLOUDS HAVE SHEARED AWAY TOWARDS NORTH-EAST FROM THE SYSTEM CENTRE. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BANGLADESH AND WEST ASSAM MEGHALAYA. MINIMUM CLOUD TOP TEMPERATURE -83 DEG C. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 35KNOTS GUSTING TO 45 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS **988** HPA.

RK JENAMANI SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG Visible Count 0.65 um NEQ 21-05-2020/(0630 to 0657) GMT 21-05-2020/(1200 to 1227) IST





Legend: WCB – Westcentral Bay of Bengal NWB – Northwest Bay of Bengal







TROPICAL CYCLONE ADVISORY BULLETIN NO. 39

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 39 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 21.05.2020 BASED ON 0600 UTC OF 21.05.2020.

SUB: CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) LAY OVER BANGLADESH

THE SUPER CYCLONIC STORM '**AMPHAN**' (PRONOUNCED AS **UM-PUN**) MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AS A **CYCLONIC STORM** AND LAY CENTERED AT 0830 HRS IST OF TODAY, THE 21ST MAY 2020 OVER **BANGLADESH** NEAR LAT. 24.7°N AND LONG. 89.5°E ABOUT 270 KM NORTH-NORTHEAST OF KOLKATA(42807), 150 KM SOUTH OF DHUBRI (42404) AND 110 KM SOUTH-SOUTHEAST OF RANGPUR (41984).**IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A DEEP DEPRESSION DURING NEXT 03 HOURS AND INTO A DEPRESSION DURING SUBSEQUENT 06 HOURS.**

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. ºN/ LONG. ºE)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
21.05.20/0300	24.7/89.5	60-70 GUSTING TO 80	CYCLONIC STORM
21.05.20/0600	25.3/89.8	50-60 GUSTING TO 70	DEEP DEPRESSION
21.05.20/1200	26.5/90.5	30-40 GUSTING TO 50	DEPRESSION

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0300 UTC OF 21TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AREAS OF BANGALDESH. CENTRE NOT CLEARLY VISIBLE IN SATELLITE IMAGERY. HIGHER CLOUDS HAVE SHEARED AWAY TOWARDS NORTH-EAST FROM THE SYSTEM CENTRE. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BANGLADESH AND WEST ASSAM MEGHALAYA. MINIMUM CLOUD TOP TEMPERATURE -68 DEG C. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 35KNOTS GUSTING TO 45 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS **988** HPA.

RK JENAMANI SCIENTIST-F, RSMC, NEW DELHI SAT : INSAT-3D IMG Visible Count 0.65 um NEQ 21-05-2020/(0800 to 0827) GMT 21-05-2020/(1330 to 1357) IST





Legend: WCB – Westcentral Bay of Bengal NWB – Northwest Bay of Bengal







SPECIAL TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 21.05.2020 TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 21.05.2020 BASED ON 0600 UTC OF 21.05.2020.

DEEP DEPRESSION LAY OVER BANGLADESH

THE SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) MOVED NORTH-NORTHEASTWARDS AS A CYCLONIC STORM WITH A SPEED OF 06 KMPH DURING PAST 06 HOURS, FURTHER WEAKENED INTO A DEEP DEPRESSION AND LAY CENTERED AT 0600UTC OF TODAY, THE 21ST MAY 2020 OVER BANGLADESH NEAR LAT. 25.0°N AND LONG. 89.6°E ABOUT 300 KM EAST-NORTHEAST OF KOLKATA(42807), 110KM SOUTHSOUTHEAST OF DHUBRI (42404) AND 80 KM SOUTH-SOUTHEAST OF RANGPUR (41984). IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A DEPRESSION DURING NEXT 06 HOURS AND FURTHER INTO A WELL MARKED LOW THEREAFTER.

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0600 UTC OF 21TH MAY SHOWS THE VORTEX LIES OVER THE LAND IN AREAS OF CENTRAL PARTS OF BANGALDESH. CENTRE NOT CLEARLY VISIBLE IN SATELLITE IMAGERY. HIGHER CLOUDS HAVE SHEARED AWAY TOWARDS NORTH-EAST FROM THE SYSTEM CENTRE. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BANGLADESH AND WEST ASSAM MEGHALAYA. MINIMUM CLOUD TOP TEMPERATURE -68 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS **992** HPA.

UPPER TROPOSPHERIC RIDGE FOR NORTH INDIAN OCEAN-THE EASTERN PARTS OF UPPER TROPOSPHERIC RIDGE LIES ALONG 21.0N ACROSS LAND AT NORTH OF BOB WHILE ITS WESTERN PARTS LIES ALONG 13.0N MAINLY ACROSS CENTRAL PARTS OF ARABIAN SEAS

> RK JENAMANI SCIENTIST-F, RSMC, NEW DELHI

SAT : INSAT-3D IMG Visible Count 0.65 um NEQ









SPECIAL TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 21.05.2020 TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 21.05.2020 BASED ON 1200 UTC OF 21.05.2020.

DEPRESSION LAY OVER BANGLADESH

THE DEEP DEPRESSION [REMNANT OF THE SUPER CYCLONIC STORM '**AMPHAN**'] MOVED SLIGHTLY NORTHWARDS WITH A SPEED OF 07 KMPH DURING PAST 06 HOURS, FURTHER WEAKENED INTO A **DEPRESSION** AND LAY CENTERED AT 1200 UTC OF 21ST MAY 2020 OVER **BANGLADESH** NEAR LAT. 25.4°N AND LONG. 89.6°E ABOUT 300 KM EAST-NORTHEAST OF KOLKATA (42807), 110 KM SOUTH-SOUTHEAST OF DHUBRI(42404) AND 80 KM SOUTH-SOUTHEAST OF RANGPUR (41984).

IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A WELL MARKED LOW DURING NEXT 12 HOURS.

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1200 UTC OF 21ST MAY SHOWS THE VORTEX (AMPHAN) LIES OVER CENTRAL PARTS OF BANGLADESH & NEIGHBOURHOOD. THE VORTEX CENTER IS NOT CLEARLY DEFINED. ASSOCIATED SCATTERED LOW/MEDIUM CLOUDS WITH EMBEDDED ISOLATED WEAK TO MODERATE CONVECTION OVER BANGLADESH, ASSAM, MEGHALAYA, TRIPURA AND MIZORAM.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 20 KNOTS GUSTING TO 30 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS **995** HPA.

UPPER TROPOSPHERIC RIDGE RUNS ROUGHLY ALONG LATITUDE 19.0N OVER BAY OF BENGAL.

SUNITHA DEVI SCIENTIST-E, RSMC, NEW DELHI









SPECIAL TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 21.05.2020 TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2000 UTC OF 21.05.2020 BASED ON 1800 UTC OF 21.05.2020.

WELL MARKED LOW PRESSURE AREA LAY OVER NORTH BANGLADESH AND NEIGHBOURHOOD:

THE DEPRESSION [REMNANT OF THE SUPER CYCLONIC STORM '**AMPHAN**'] MOVED SLIGHTLY NORTHWARDS DURING PAST 06 HOURS AND FURTHER WEAKENED INTO A **WELL MARKED LOW PRESSURE AREA** OVER NORTH BANGLADESH & NEIGHBOURHOOD AT 1800 UTC OF 21ST MAY 2020. IT IS VERY LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS AND WEAKEN FURTHER INTO A LOW PRESSURE AREA DURING NEXT 12 HOURS.

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 1800 UTC OF 21ST MAY SHOWS THE VORTEX (AMPHAN) LIES OVER CENTRAL PARTS OF BANGLADESH & NEIGHBOURHOOD. THE VORTEX CENTER IS NOT CLEARLY DEFINED. ASSOCIATED SCATTERED LOW/MEDIUM CLOUDS WITH EMBEDDED ISOLATED WEAK TO MODERATE CONVECTION OVER SOUTHEAST BANGLADESH AND TRIPURA.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 20 KNOTS GUSTING TO 30 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS **997** HPA.

UPPER TROPOSPHERIC RIDGE RUNS ROUGHLY ALONG LATITUDE 20.0 ⁰N OVER BAY OF BENGAL.

THIS IS THE LAST BULLETIN FOR THIS SYSTEM. HOWEVER, REGULAR BULLETIN WILL CONTINUE FROM NATIONAL WEATHER FORECASTING CENTRE, IMD NEW DELHI & REGIONAL METEOROLOGICAL CENTRE GUWAHATI.

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