REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 06.12.2016

SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 1200 UTC OF 06.12.2016 BASED ON 0900 UTC OF 06.12.2016.

THE WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL AND ADJOINING SOUTH ANDAMAN SEA CONCENTRATED INTO A DEPRESSION AND LAY CENTRED AT 0900 UTC OF TODAY, THE 6TH DECEMBER 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 8.5ºN AND LONGITUDE 91.0ºE, ABOUT 1320 KM SOUTH-SOUTHEAST OF VISHAKHAPATNAM (43149), 1360 KM SOUTH-SOUTHEAST OF GOPALPUR (43049) AND 210 KM WEST-SOUTHWEST OF CAR NICOBAR (43368). IT IS VERY LIKELY TO MOVE INITIALLY WEST-NORTHWESTWARDS AND THEN NORTHWESTWARDS DURING NEXT 72 HRS. IT IS VERY LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND INTO A CYCLONIC STORM IN SUBSEQUENT 24 HRS.

ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T1.5. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 85 DEG C. ASSOCIATED BROKEN LOW/MED CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIES OVER ANDAMAN & NICOBAR ISLANDS AND ADJOINING ANDAMAN SEA & SOUTHEAST BAY. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 25 KNOTS GUSTING TO 35 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 1002 HPA. SEA CONDITION IS ROUGH TO VERY ROUGH AROUND SYSTEM CENTRE. THE SHIP LOCATED NEAR LATITUDE 6.3^{0} N AND LONGITUDE 88.2^{0} E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1006.4 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 310/18 KNOTS.

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH, ODISHA, WEST BENGAL AND BANGLADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 100-120 KJ/CM^{2} OVER THE DEPRESSION AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^{2} NEAR, ODISHA, ADJOINING NORTH ANDHRA PRADESH, WEST BENGAL AND BANGLADESH COAST. THE LOW LEVEL CONVERGENCE IS ABOUT 20X10^{-5} SECOND^{-1} TO THE NORTHEAST, THE UPPER LEVEL DIVERGENCE IS AROUND 40X10^{-5} SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 120X10^{-6} SECOND^{-1} AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (10-20 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE <1. IT WILL CONTINUE IN PHASE 2 FOR NEXT 3-4 DAYS WITH INCREASING AMPLITUDE. ALL THE ABOVE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR INTENSIFICATION OF SYSTEM. THE UPPER TROPOSPHERIC RIDGE LIES ALONG 13^{0}N AND HENCE THE EAST-SOUTHEASTERLY WINDS PREVAIL OVER THE REGION OF DEPRESSION IN MIDDLE AND UPPER TROPOSPHERIC LEVELS. IT WOULD STEER THE SYSTEM, WEST-NORTHWESTWARDS INITIALLY AND THEN NORTHWESTWARDS. MAJORITY OF MODELS SUGGEST INTENSIFICATION INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND FURTHER INTENSIFICATION INTO A CYCLONIC STORM IN SUBSEQUENT 24 HRS. DYNAMICAL STATISTICAL MODEL OF IMD ALSO SUGGESTS INTENSIFICATION INTO A CYCLONIC STORM DURING NEXT 48 HRS. MODELS ALSO SUGGEST INITIAL WEST-NORTHWEST AND THEN NORTHWESTWARD MOVEMENT.

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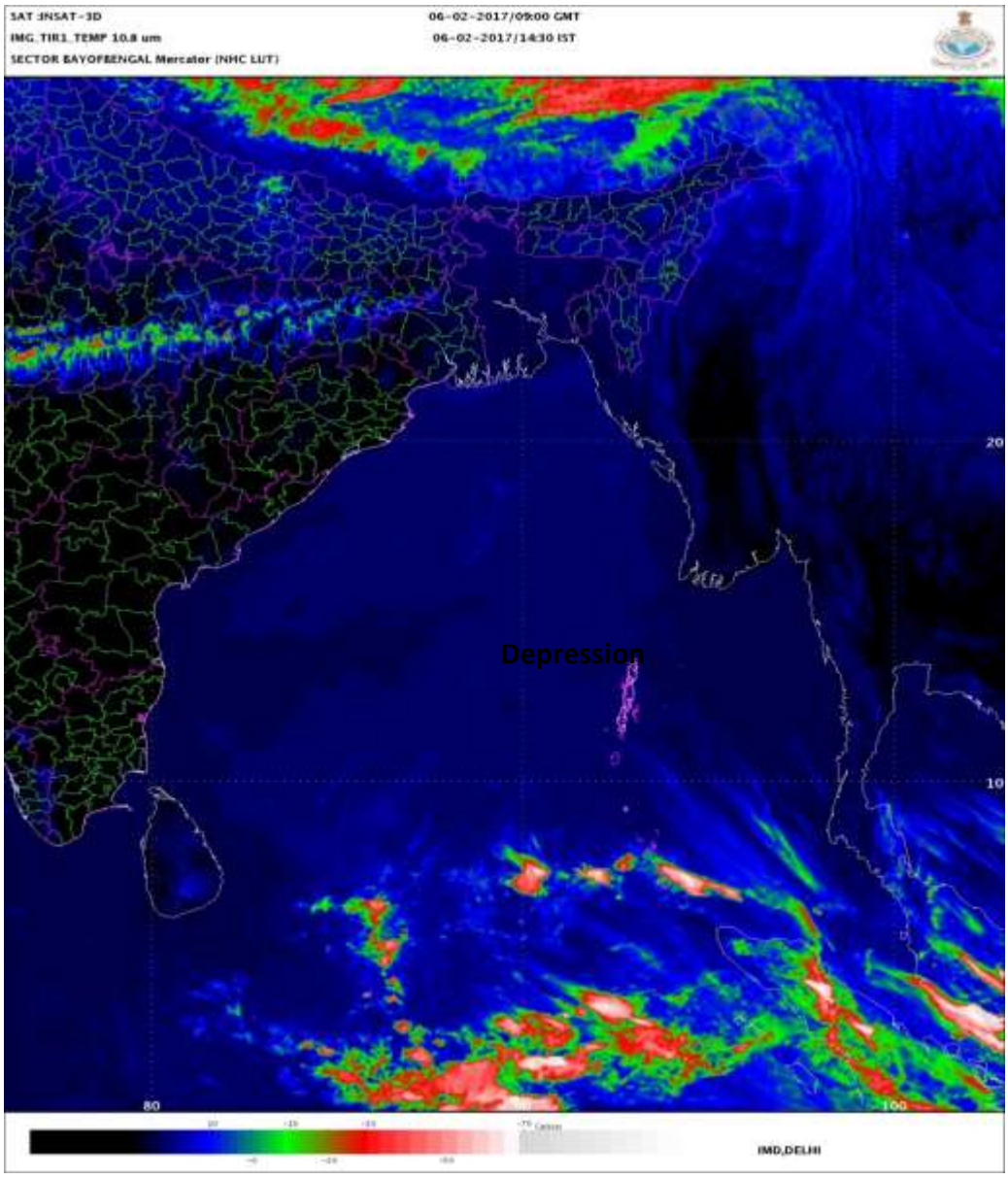

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 06.12.2016

SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 1500 UTC OF 06.12.2016 BASED ON 1200 UTC OF 06.12.2016.

THE DEPRESSION OVER SOUTHEAST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF ABOUT 20 KMPH AND LAY CENTRED AT 1200 UTC OF TODAY, THE 6TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 8.8ºN AND LONGITUDE 90.5ºE, ABOUT 1260 KM SOUTH-SOUTHEAST OF VISHAKHAPATNAM (43149), 1310 KM SOUTH-SOUTHEAST OF GOPALPUR (43049) AND 260 KM WEST-SOUTHWEST OF CAR NICOBAR (43368). THE SYSTEM IS VERY LIKELY TO MOVE NORTHWESTWARDS DURING NEXT 72 HRS. IT IS VERY LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND INTO A CYCLONIC STORM IN SUBSEQUENT 24 HRS.

ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T1.5. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 83 DEG C. ASSOCIATED BROKEN LOW/MED CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIES OVER ANDAMAN & NICOBAR ISLANDS AND ADJOINING ANDAMAN SEA & SOUTHEAST BAY. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 25 KNOTS GUSTING TO 35 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 1002 HPA. SEA CONDITION IS ROUGH TO VERY ROUGH AROUND SYSTEM CENTRE. THE SHIP LOCATED NEAR LATITUDE 6.0^{0} N AND LONGITUDE 92.8^{0} E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1006.3 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 200/19 KNOTS. ANOTHER SHIP LOCATED NEAR LATITUDE 6.3^{0} N AND LONGITUDE 87.7^{0} E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1006.4 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 320/18 KNOTS.

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH, ODISHA, WEST BENGAL AND BANGLADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^{2} OVER THE DEPRESSION AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^{2} NEAR, ODISHA, ADJOINING NORTH ANDHRA PRADESH, WEST BENGAL AND BANGLADESH COAST. THE LOW LEVEL CONVERGENCE IS ABOUT 15X10^{-5} SECOND^{-1} TO THE SOUTHEAST, THE UPPER LEVEL DIVERGENCE IS AROUND 40X10^{-5} SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (15-20 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE <1. IT WILL CONTINUE IN PHASE 2 FOR NEXT 3-4 DAYS WITH INCREASING AMPLITUDE. ALL THE ABOVE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF SYSTEM. THE UPPER TROPOSPHERIC RIDGE LIES ALONG 13^{0}N AND HENCE THE EAST-SOUTHEASTERLY WINDS PREVAIL OVER THE REGION OF DEPRESSION IN MIDDLE AND UPPER TROPOSPHERIC LEVELS. IT WOULD STEER THE SYSTEM, WEST-NORTHWESTWARDS FOR SOME MORE TIME AND THEN NORTHWESTWARDS. MAJORITY OF MODELS SUGGEST INTENSIFICATION INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND FURTHER INTENSIFICATION INTO A CYCLONIC STORM IN SUBSEQUENT 24 HRS. DYNAMICAL STATISTICAL MODEL OF IMD ALSO SUGGESTS INTENSIFICATION INTO A CYCLONIC STORM DURING NEXT 48 HRS. MODELS ALSO SUGGEST INITIAL WEST-NORTHWEST AND THEN NORTHWESTWARD MOVEMENT.

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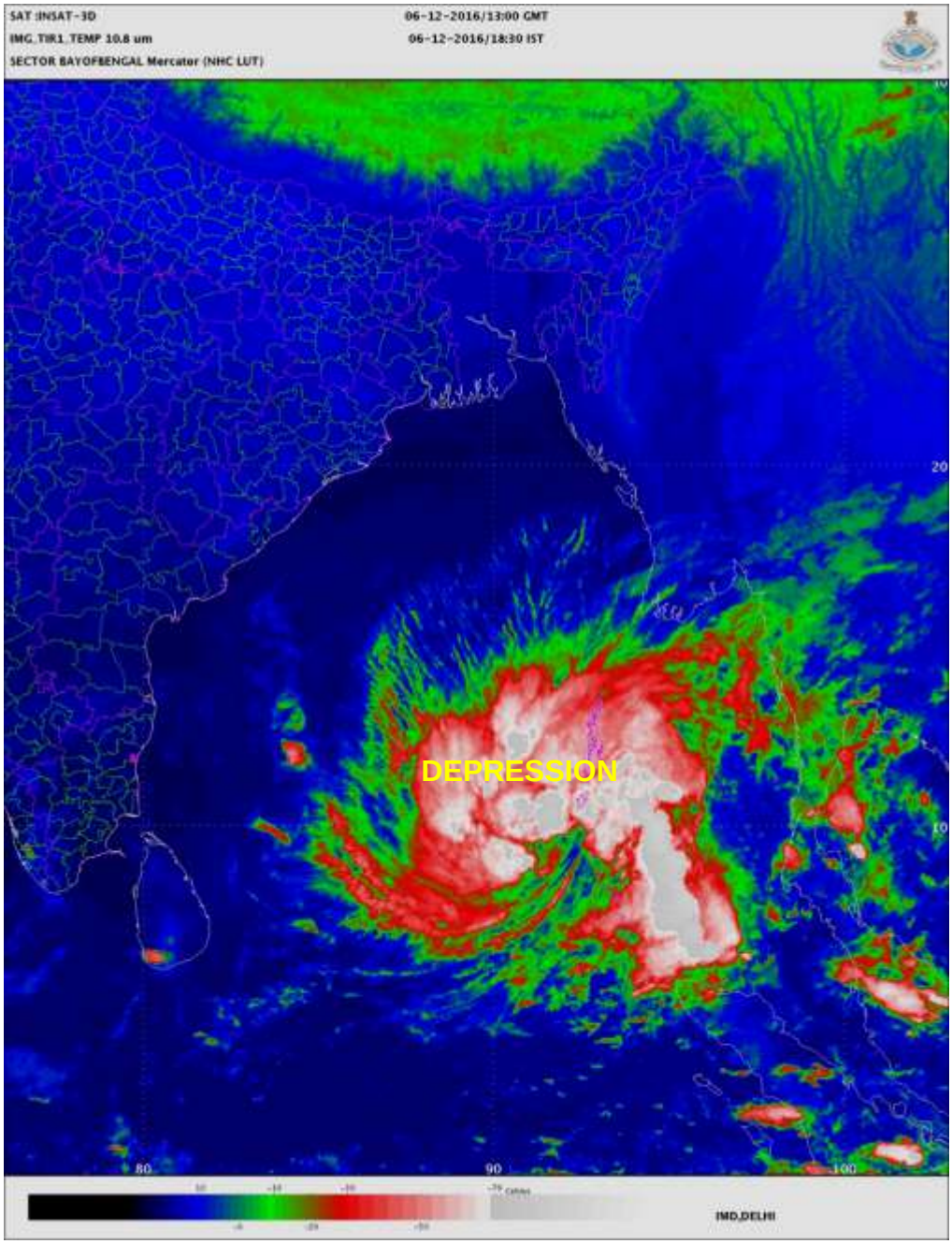

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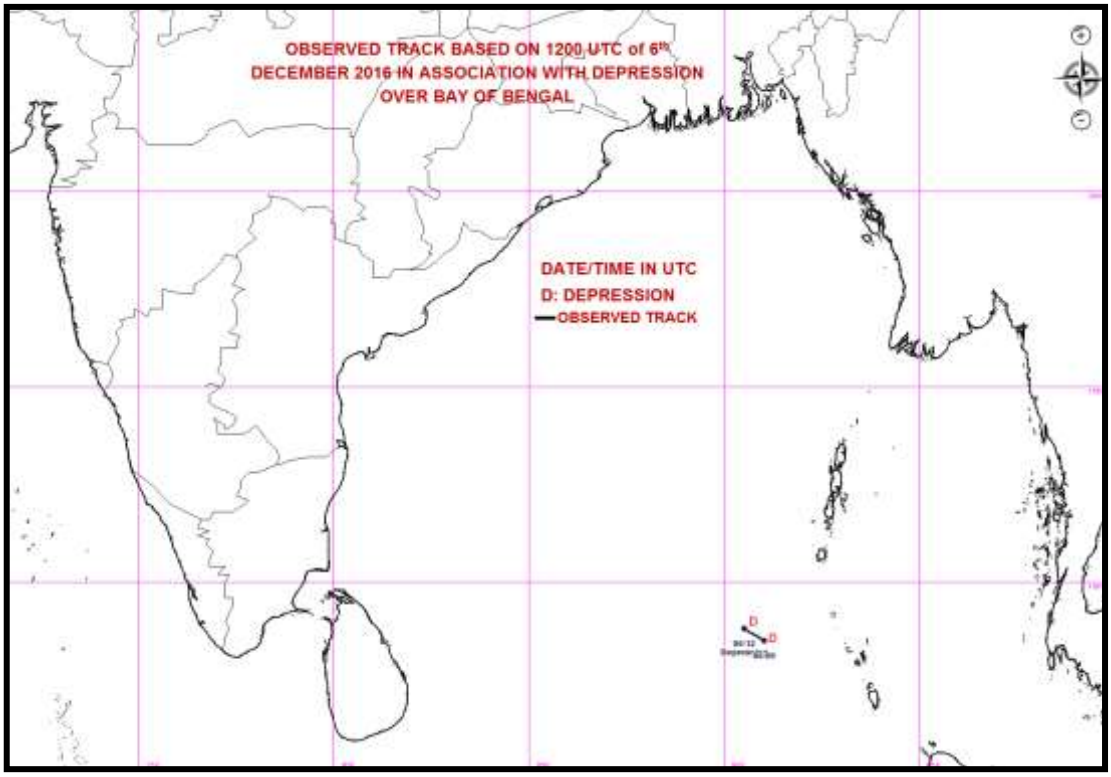

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 07.12.2016

SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 0600 UTC OF 07.12.2016 BASED ON 0300 UTC OF 07.12.2016.

THE DEPRESSION OVER SOUTHEAST BAY OF BENGAL MOVED NORTHWARDS DURING PAST 12 HRS WITH A SPEED OF ABOUT 10 KMPH AND LAY CENTRED AT 0300 UTC OF TODAY, THE 7TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 9.8ºN AND LONGITUDE 90.5ºE, ABOUT 1180 KM SOUTH-SOUTHEAST OF VISHAKHAPATNAM (43149), 1210 KM SOUTH-SOUTHEAST OF GOPALPUR (43049), 260 KM WEST-NORTHWEST OF CAR NICOBAR (43368) AND 310 KM SOUTH-SOUTHWEST OF PORT BLAIR. THE SYSTEM IS VERY LIKELY TO MOVE NORTHWESTWARDS DURING NEXT 72 HRS. IT IS VERY LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND INTO A CYCLONIC STORM IN SUBSEQUENT 24 HRS.

ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T1.5. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 73 DEG C. ASSOCIATED BROKEN LOW/MED CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIES OVER SOUTHEAST BAY OF BENGAL AND ADJOINING EASTCENTRAL BAY OF BENGAL, ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 25 KNOTS GUSTING TO 35 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 1002 HPA. SEA CONDITION IS ROUGH TO VERY ROUGH AROUND SYSTEM CENTRE. THE SHIP LOCATED NEAR LATITUDE 6.0^{0} N AND LONGITUDE 91.5^{0} E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1009.5 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 230/24 KNOTS. ANOTHER SHIP LOCATED NEAR LATITUDE 6.0^{0} N AND LONGITUDE 84.9^{0} E REPORTED MSLP OF 1006.4 HPA AND MSW OF 320/13 KNOTS.

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH, ODISHA, WEST BENGAL AND BANGLADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^{2} OVER THE DEPRESSION AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^{2} NEAR, ODISHA, ADJOINING NORTH ANDHRA PRADESH, WEST BENGAL AND BANGLADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^{2}. THE LOW LEVEL CONVERGENCE IS ABOUT 20X10^{-5} SECOND^{-1} TO THE EAST, THE UPPER LEVEL DIVERGENCE IS AROUND 40X10^{-5} SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHWEST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (10-20 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. ALL THE ABOVE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF SYSTEM. THE UPPER TROPOSPHERIC RIDGE LIES ALONG 13^{0}N AND HENCE THE SOUTHEASTERLY WINDS PREVAIL OVER THE REGION OF DEPRESSION IN MIDDLE AND UPPER TROPOSPHERIC LEVELS. IT WOULD STEER THE SYSTEM, NORTHWESTWARDS. MAJORITY OF MODELS ARE IN AGREEMENT WITH ABOVE FORECAST OF TRACK AND INTENSITY.

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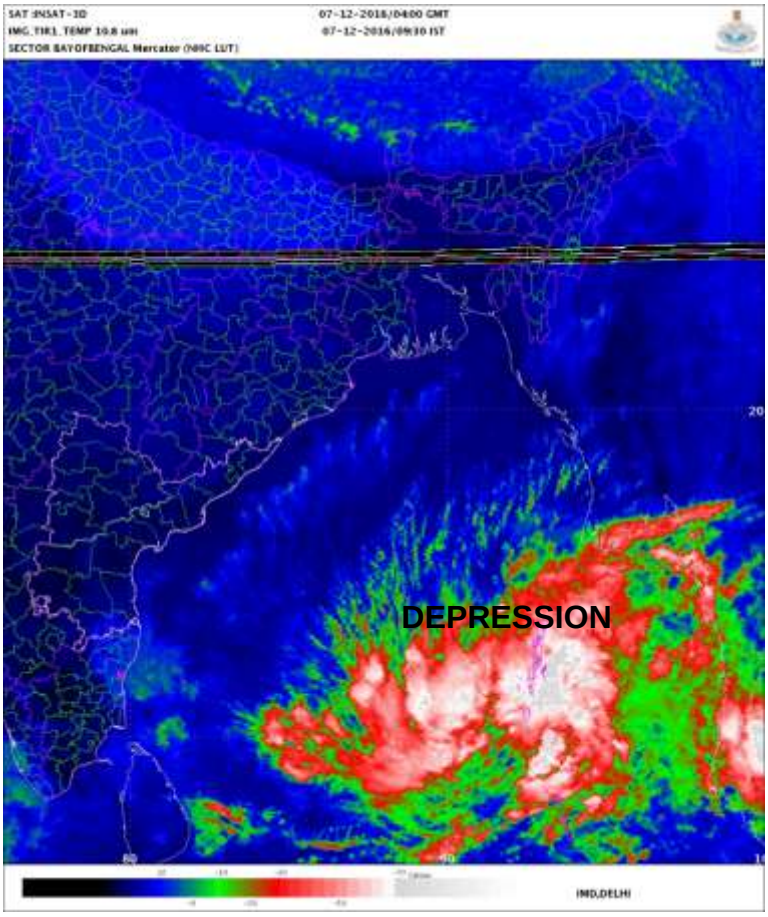

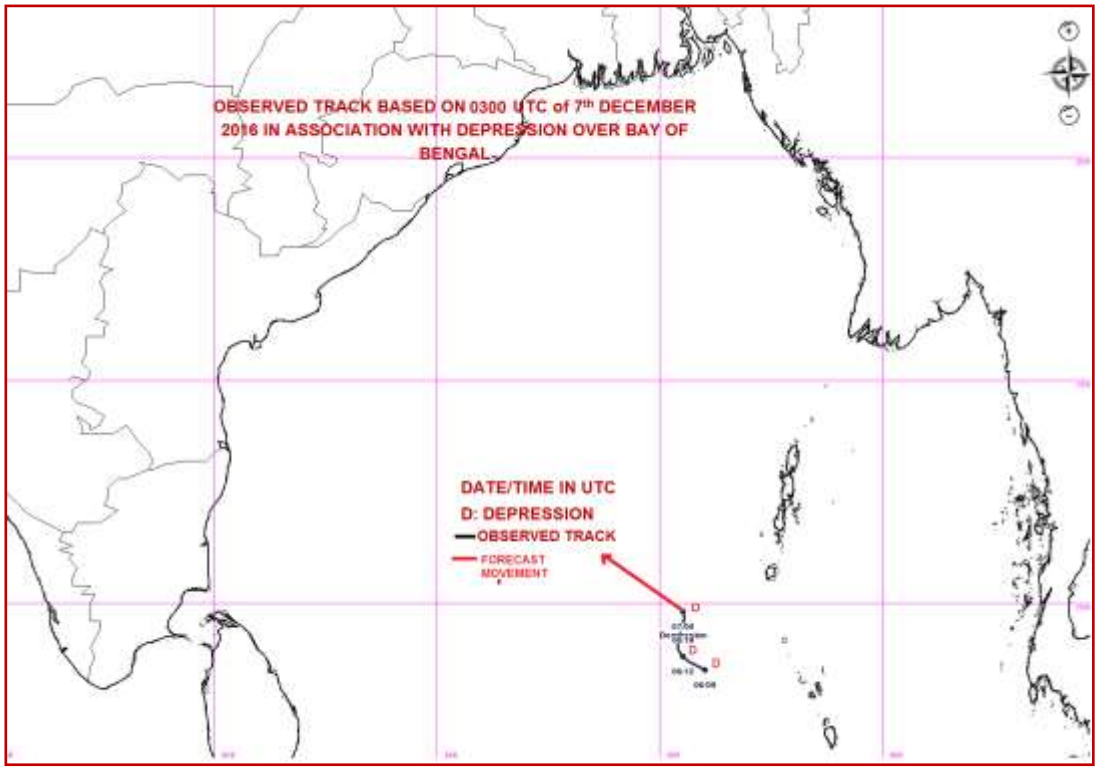

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI

TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 07.12.2016

SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 1500 UTC OF 07.12.2016 BASED ON 1200 UTC OF 07.12.2016.

THE DEPRESSION OVER SOUTHEAST BAY OF BENGAL MOVED SLIGHTLY NORTHWARD DURING THE PAST 6 HOURS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 7TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 10.0ºN AND LONGITUDE 90.5ºE, ABOUT 1160 KM SOUTHEAST OF VISAKHAPATNAM (43149), 1220 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185), 270 KM WEST-NORTHWEST OF CAR NICOBAR (43368) AND 300 KM SOUTH-SOUTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY NORTHWARD FOR NEXT 12 HRS AND THEN NORTHWESTWARDS TOWARDS ANDHRA PRADESH COAST DURING SUBSEQUENT 4 DAYS. IT IS VERY LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND INTO A CYCLONIC STORM IN SUBSEQUENT 24 HRS.

ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T1.5. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 73 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 25 KNOTS GUSTING TO 35 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 1002 HPA. SEA CONDITION IS ROUGH TO VERY ROUGH AROUND SYSTEM CENTRE. THE BOUY LOCATED NEAR LATITUDE 13.5^0 N AND LONGITUDE 84.0^0 E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1010.6 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 020/16 KNOTS. ANOTHER BOUY NEAR LATITUDE 14.0^0 N AND LONGITUDE 87.0^0 E REPORTED MSLP OF 1009.5 HPA. THE BOUY NEAR LATITUDE 10.5^0 N AND LONGITUDE 94.0^0 E REPORTED MSLP OF 1006.1 HPA AND MSW OF 130/23 KNOTS.

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE DEPRESSION AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20X10^{-5} SECOND^{-1} TO THE EASTNORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 40X10^{-5} SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (10-20 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE DEEP DEPRESSION WILL INTENSIFY INTO A CYCLONIC STORM DURING NEXT 24 HRS WHILE MOVING NORTHWESTWARDS DURING NEXT 3-4 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

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Forecast track and intensity of the system are given in the table below:

Date/time(IST)	Position (lat. 0N/ long. 0E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
07-12-2016/2330	10.8/90.5	50-60 gusting to 70	**Deep Depression**
08-12-2016/0530	11.4/90.5	55-65 gusting to 75	Deep Depression
08-12-2016/1130	11.7/90.5	60-70 gusting to 80	Cyclonic Storm
08-12-2016/1730	12.0/90.3	70-80 gusting to 90	Cyclonic Storm
08-12-2016/2330	12.3/90.1	80-90 gusting to 100	Cyclonic Storm
09-12-2016/1130	12.9/89.6	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/2330	13.5/88.8	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/1130	14.1/87.4	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/2330	14.7/86.0	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1130	15.3/84.6	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/2330	15.9/83.2	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/1130	16.4/81.8	80-90 gusting to 100	Cyclonic Storm
12-12-2016/2330	16.8/80.4	50-60 gusting to 70	Depression

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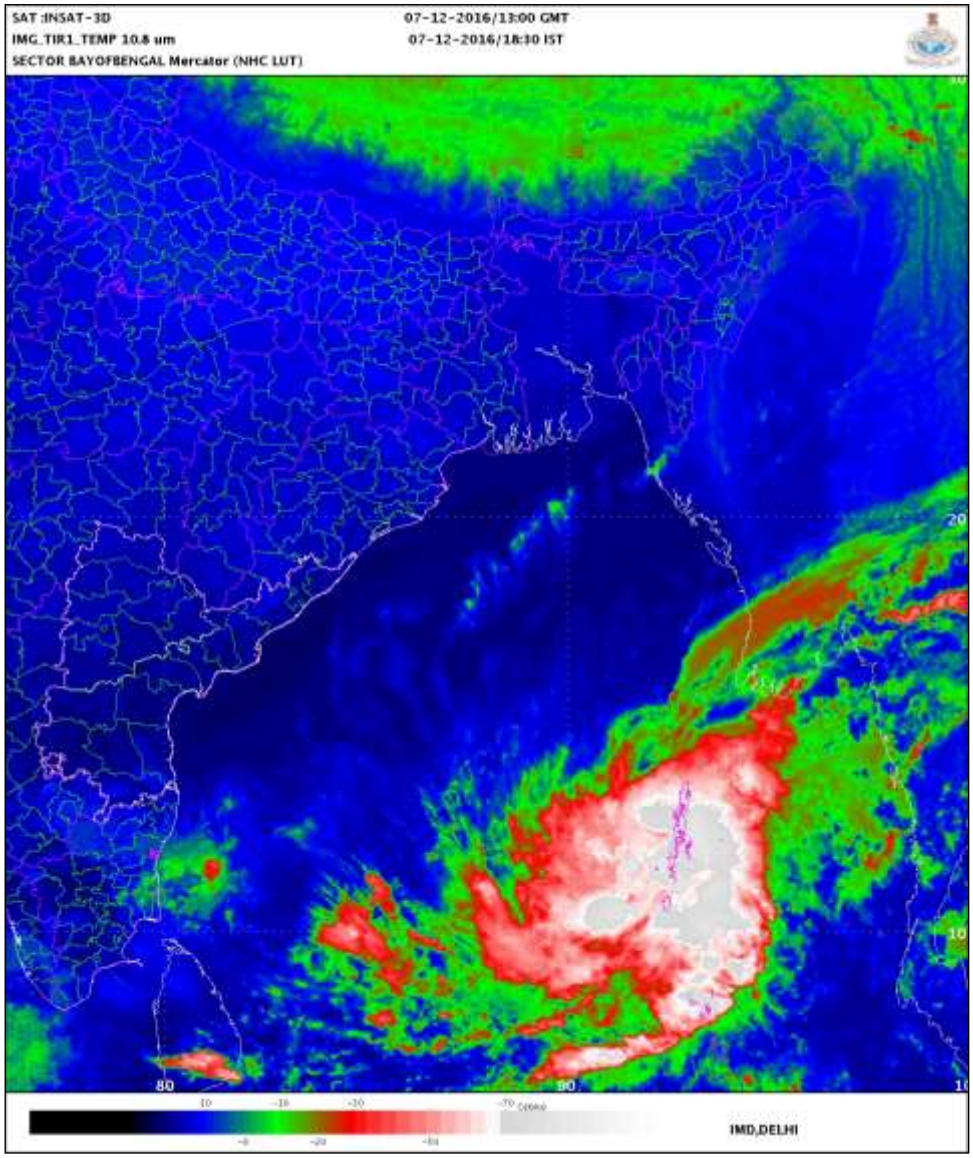

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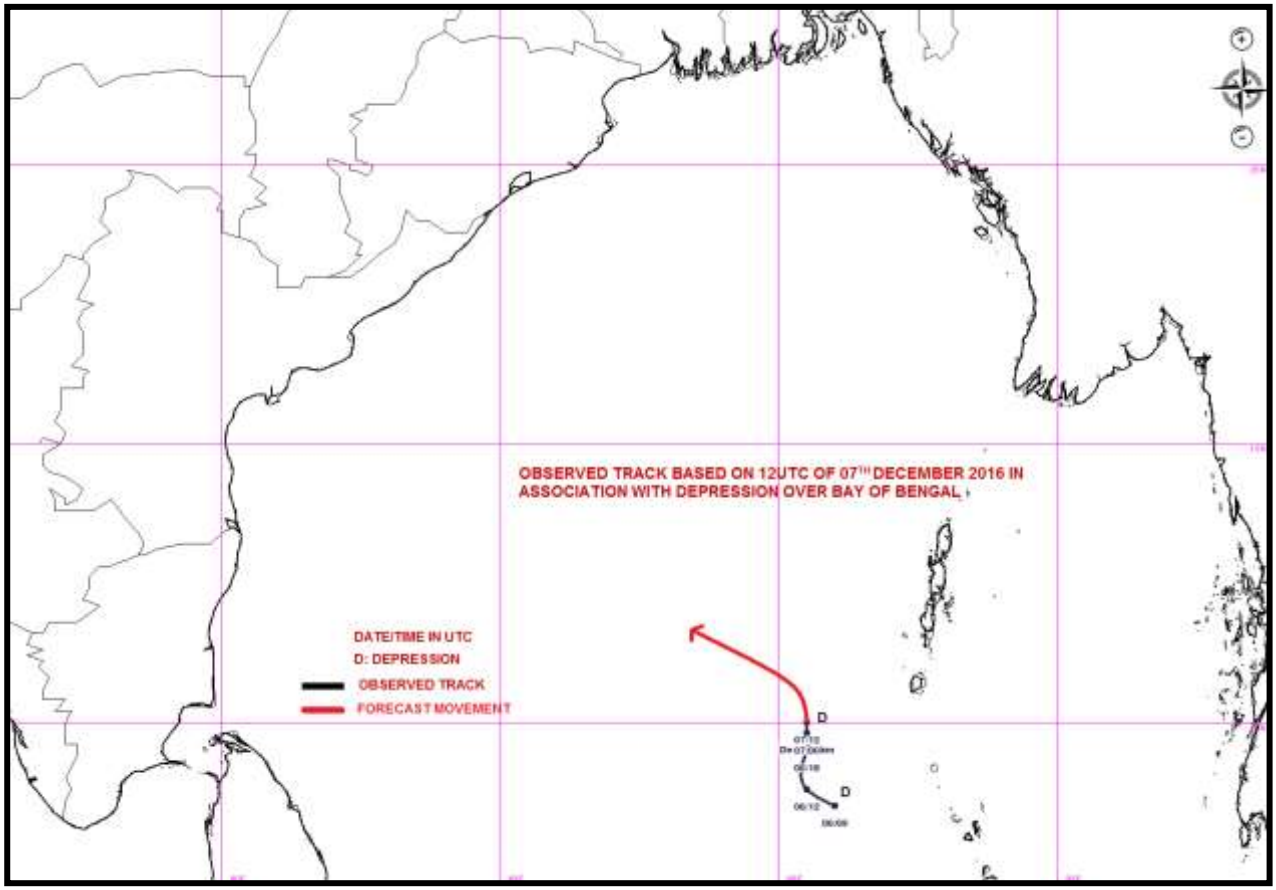

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TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 07.12.2016

SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 2100 UTC OF 07.12.2016 BASED ON 1800 UTC OF 07.12.2016.

THE DEPRESSION OVER SOUTHEAST BAY OF BENGAL MOVED SLIGHTLY NORTHWARD DURING THE PAST 6 HOURS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 7TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 10.0ºN AND LONGITUDE 90.5ºE, ABOUT 1160 KM SOUTHEAST OF VISAKHAPATNAM (43149), 1220 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185), 270 KM WEST-NORTHWEST OF CAR NICOBAR (43368) AND 300 KM SOUTH-SOUTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY NORTHWARD FOR NEXT 12 HRS AND THEN NORTHWESTWARDS TOWARDS ANDHRA PRADESH COAST DURING SUBSEQUENT 4 DAYS. IT IS VERY LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND INTO A CYCLONIC STORM IN SUBSEQUENT 24 HRS.

ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T1.5. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 73 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 25 KNOTS GUSTING TO 35 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 1002 HPA. SEA CONDITION IS ROUGH TO VERY ROUGH AROUND SYSTEM CENTRE. THE BOUY LOCATED NEAR LATITUDE 13.5^0 N AND LONGITUDE 84.0^0 E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1010.6 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 020/16 KNOTS. ANOTHER BOUY NEAR LATITUDE 14.0^0 N AND LONGITUDE 87.0^0 E REPORTED MSLP OF 1009.5 HPA. THE BOUY NEAR LATITUDE 10.5^0 N AND LONGITUDE 94.0^0 E REPORTED MSLP OF 1006.1 HPA AND MSW OF 130/23 KNOTS.

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE DEPRESSION AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20X10^{-5} SECOND^{-1} TO THE EASTNORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 40X10^{-5} SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (10-20 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

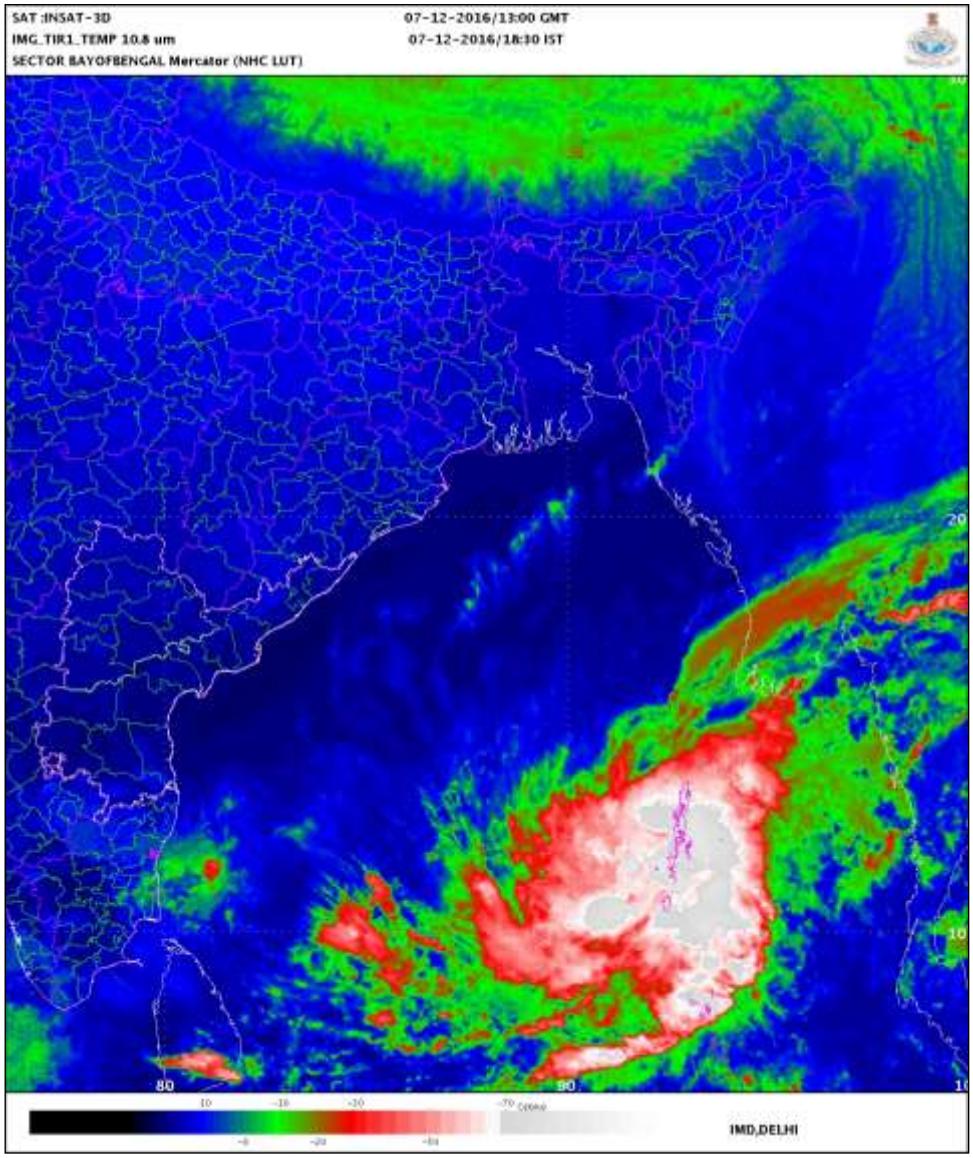
CONSIDERING ALL THE ABOVE, THE DEEP DEPRESSION WILL INTENSIFY INTO A CYCLONIC STORM DURING NEXT 24 HRS WHILE MOVING NORTHWESTWARDS DURING NEXT 3-4 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in

Forecast track and intensity of the system are given in the table below:

Date/time(IST)	Position (lat. 0N/ long. 0E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
07-12-2016/2330	10.8/90.5	50-60 gusting to 70	**Deep Depression**
08-12-2016/0530	11.4/90.5	55-65 gusting to 75	Deep Depression
08-12-2016/1130	11.7/90.5	60-70 gusting to 80	Cyclonic Storm
08-12-2016/1730	12.0/90.3	70-80 gusting to 90	Cyclonic Storm
08-12-2016/2330	12.3/90.1	80-90 gusting to 100	Cyclonic Storm
09-12-2016/1130	12.9/89.6	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/2330	13.5/88.8	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/1130	14.1/87.4	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/2330	14.7/86.0	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1130	15.3/84.6	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/2330	15.9/83.2	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/1130	16.4/81.8	80-90 gusting to 100	Cyclonic Storm
12-12-2016/2330	16.8/80.4	50-60 gusting to 70	Depression

(SHOBHIT KATIYAR)
SCIENTIST-B,
RSMC NEW DELHI



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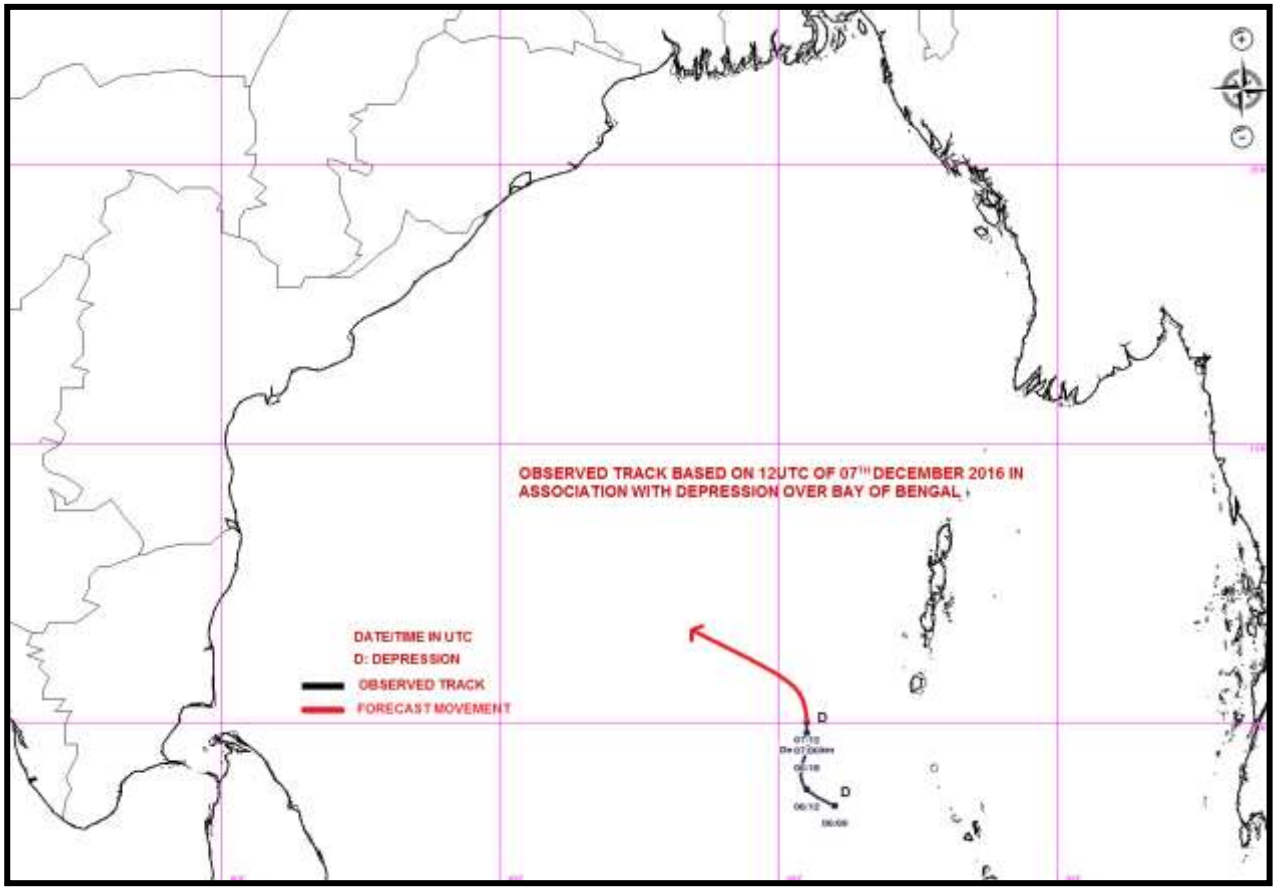

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER ONE ISSUED AT 0300 UTC OF 08TH DECEMBER 2016 BASED ON 0000 UTC CHARTS OF 08TH DECEMBER 2016

THE DEEP DEPRESSION OVER SOUTHEAST BAY OF BENGAL MOVED FURTHER NORTHWARDS DURING PAST 6 HOURS, INTENSIFIED INTO A CYCLONIC STORM, **VARDAH** AND LAY CENTRED AT 0000 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.2ºN AND LONGITUDE 90.5ºE, ABOUT 1060 KM SOUTHEAST OF VISAKHAPATNAM (43149), 1150 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185), 340 KM NORTHWEST OF CAR NICOBAR (43368) AND 240 KM WEST SOUTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM, MOVE NEARLY NORTHWARD FOR SOME MORE TIME AND THEN NORTHWESTWARDS TOWARDS ANDHRA PRADESH COAST DURING NEXT 4 DAYS.

Forecast track and intensity of the system are given in the table below:

Date/time(UTC)	Position (lat. 0N/ long. 0E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/0000	11.2/90.5	60-70 gusting to 80	Cyclonic Storm
08-12-2016/0600	11.7/90.5	65-75 gusting to 85	Cyclonic Storm
08-12-2016/1200	12.0/90.3	70-80 gusting to 90	Cyclonic Storm
08-12-2016/1800	12.3/90.1	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0000	12.6/89.8	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1200	13.1/89.2	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0000	13.7/88.1	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1200	14.2/86.7	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.6/85.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	15.0/83.6	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	15.3/82.3	90-100 gusting to 110	Severe Cyclonic Storm
12-12-2016/1200	15.6/80.9	70-80 gusting to 90	Cyclonic Storm
13-12-2016/0000	15.8/79.6	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93

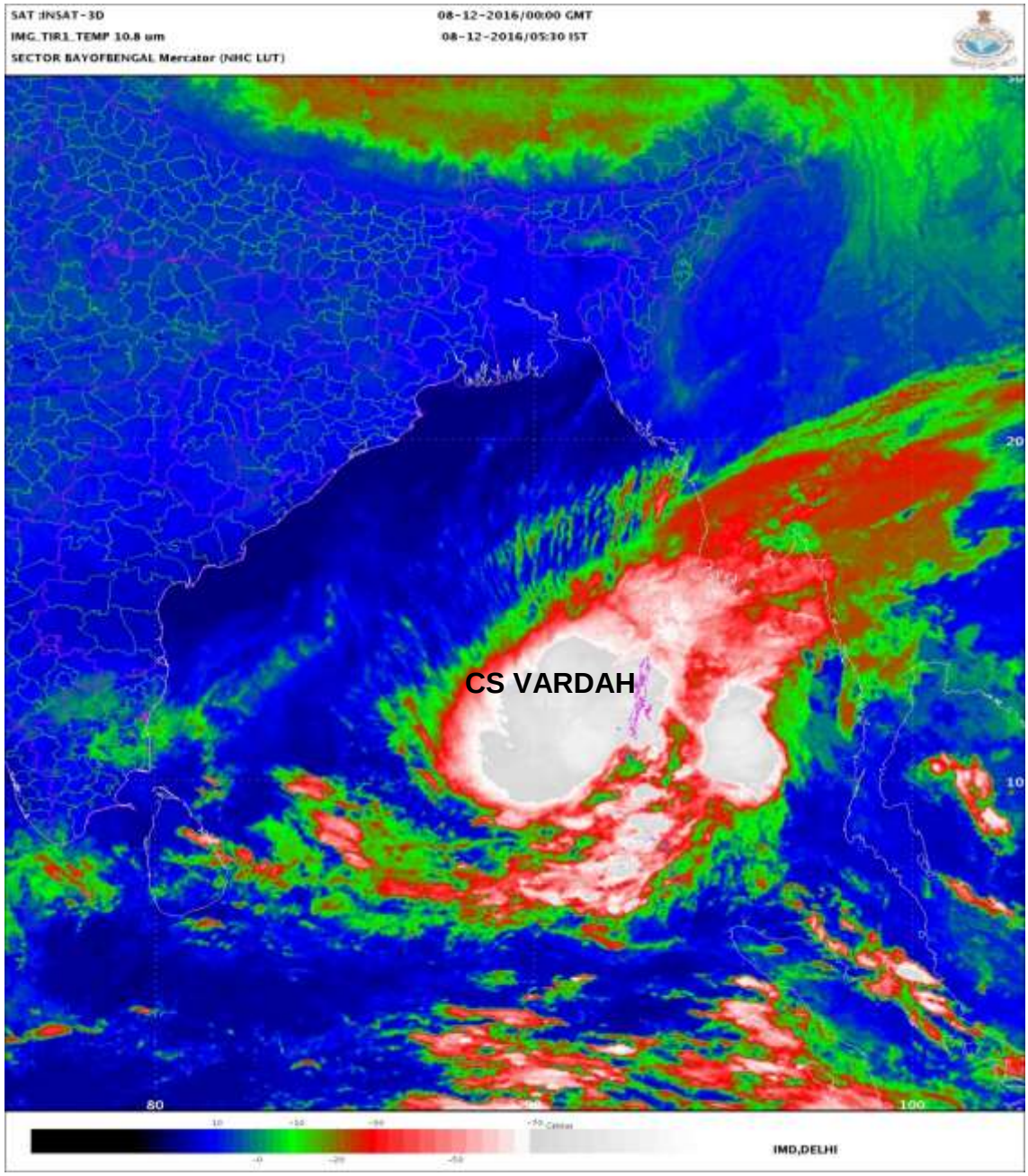
DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, WESTERN PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 35 KNOTS GUSTING TO 45 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 998 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE. THE BOUY LOCATED NEAR LATITUDE 10.5^0 N AND LONGITUDE 94.1^0 E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1004.6 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 170/25 KNOTS. ANOTHER BOUY NEAR LATITUDE 11.5^0 N AND LONGITUDE 92.6^0 E REPORTED MSLP OF 1000.3 HPA AND MSW OF 100/14 KNOTS. PORT BLAIR REPORTED MSLP OF 1001.8 HPA AND MSW OF 140/19 KNOTS.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $40X10^{-5}$ SECOND^{-1} TO THE EASTNORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $150X10^{-6}$ SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE TO HIGH (15-25 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS DURING NEXT 3 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(SHOBHIT KATIYAR)
SCIENTIST-B,
RSMC NEW DELHI



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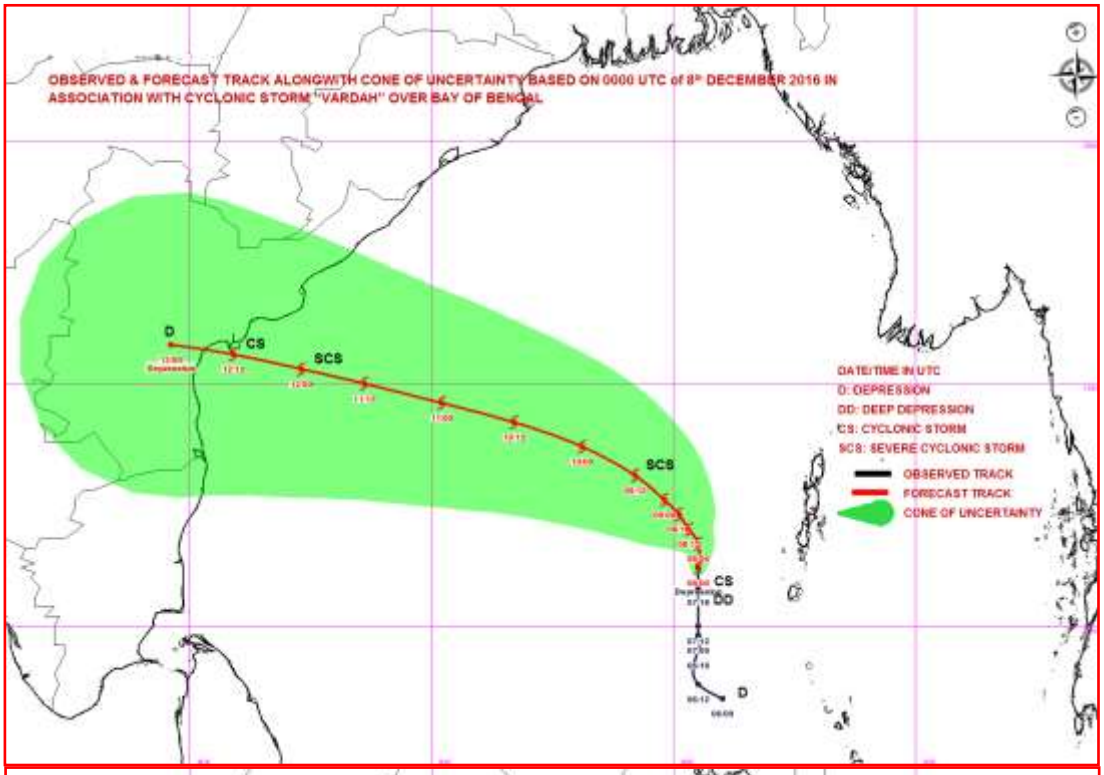

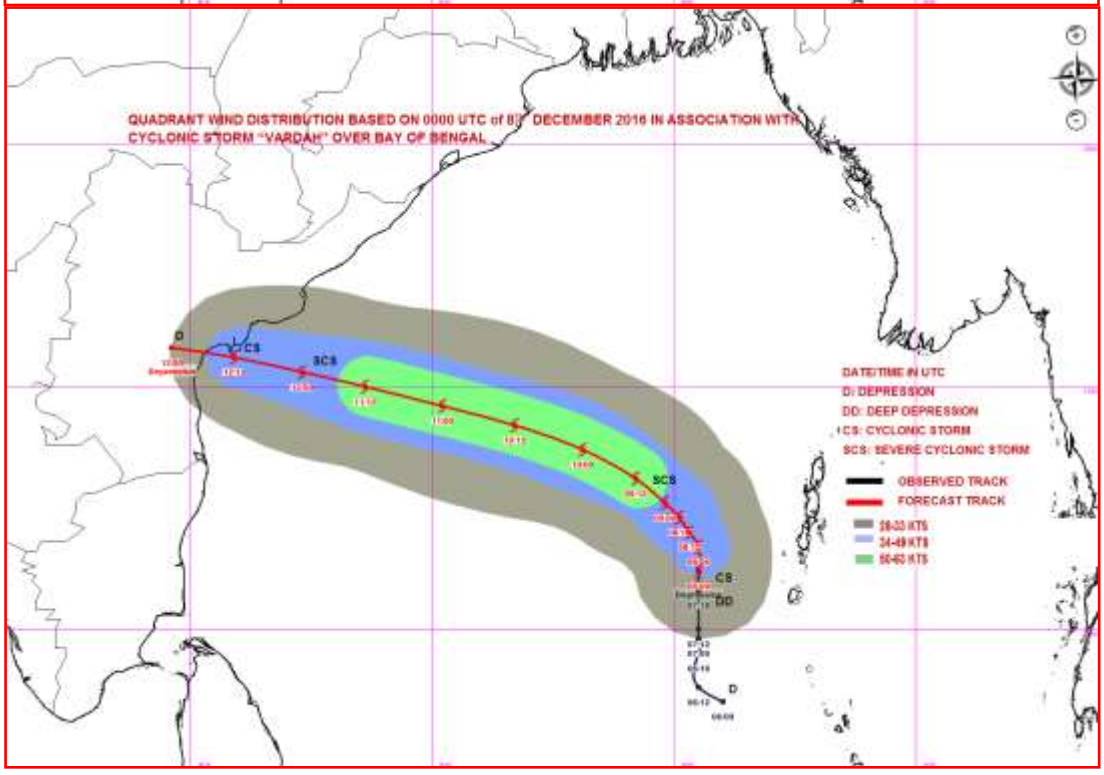

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER two ISSUED AT 0600 UTC OF 08TH DECEMBER 2016 BASED ON 0300 UTC CHARTS OF 08TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED FURTHER NORTHWARDS DURING PAST 06 HOURS WITH A SPEED OF 9 KMPH AND LAY CENTRED AT 0300 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.5ºN AND LONGITUDE 90.5ºE, ABOUT 1040 KM EAST-SOUTHEAST OF VISAKHAPATNAM(43149), 1135 KM EAST-SOUTHEAST OF MACHILIPATNAM(43185), 360 KM NORTHWEST OF CAR NICOBAR(43368) AND 240 KM WEST-SOUTHWEST OF PORT BLAIR(43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME, THEN NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE(43245) AND KAKINADA(43189) AROUND FORENOON/ NOON OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(utc)	Position (lat. 0N/ long. 0E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/0300	11.5/90.5	60-70 gusting to 80	Cyclonic Storm
08-12-2016/0600	11.7/90.5	65-75 gusting to 85	Cyclonic Storm
08-12-2016/1200	12.0/90.3	70-80 gusting to 90	Cyclonic Storm
08-12-2016/1800	12.3/90.1	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0000	12.6/89.8	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1200	13.1/89.2	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0000	13.7/88.1	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1200	14.2/86.7	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.6/85.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	15.0/83.6	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	15.4/82.0	90-100 gusting to 110	Severe Cyclonic Storm
12-12-2016/1200	15.8/80.4	70-80 gusting to 90	Cyclonic Storm
13-12-2016/0000	16.1/78.8	40-50 gusting to 60	Depression

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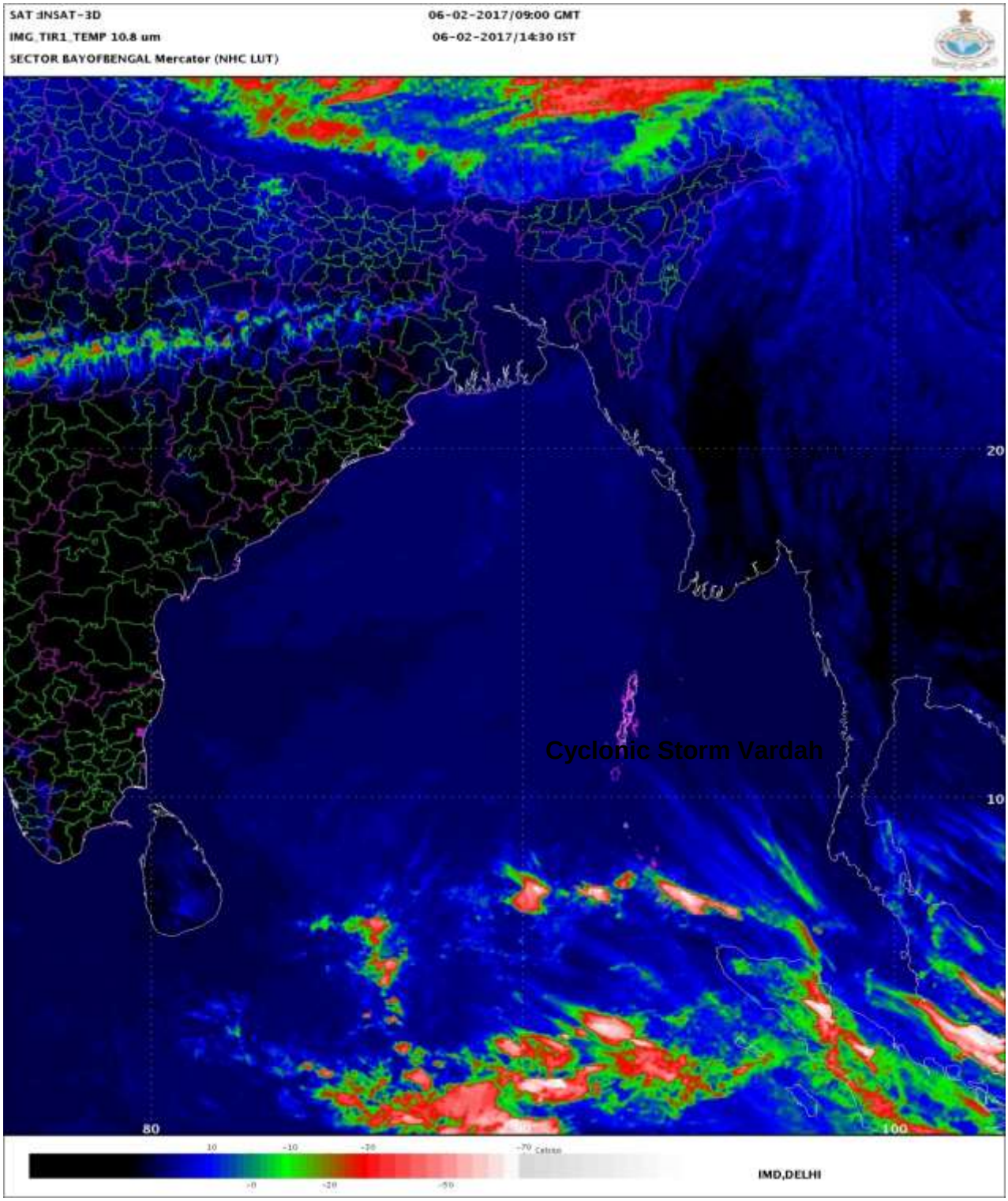
ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, WESTERN PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 35 KNOTS GUSTING TO 45 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 998 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE. THE BOUY LOCATED NEAR LATITUDE 10.5^0 N AND LONGITUDE 94.1^0 E REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 1004.6 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 170/25 KNOTS. ANOTHER BOUY NEAR LATITUDE 11.5^0 N AND LONGITUDE 92.6^0 E REPORTED MSLP OF 1000.3 HPA AND MSW OF 100/14 KNOTS. PORT BLAIR REPORTED MSLP OF 1001.8 HPA AND MSW OF 140/19 KNOTS.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $40X10^{-5}$ SECOND^{-1} TO THE EASTNORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $150X10^{-6}$ SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE TO HIGH (15-25 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS DURING NEXT 3 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(NARESH KUMAR)
SCIENTIST-D,
RSMC NEW DELHI



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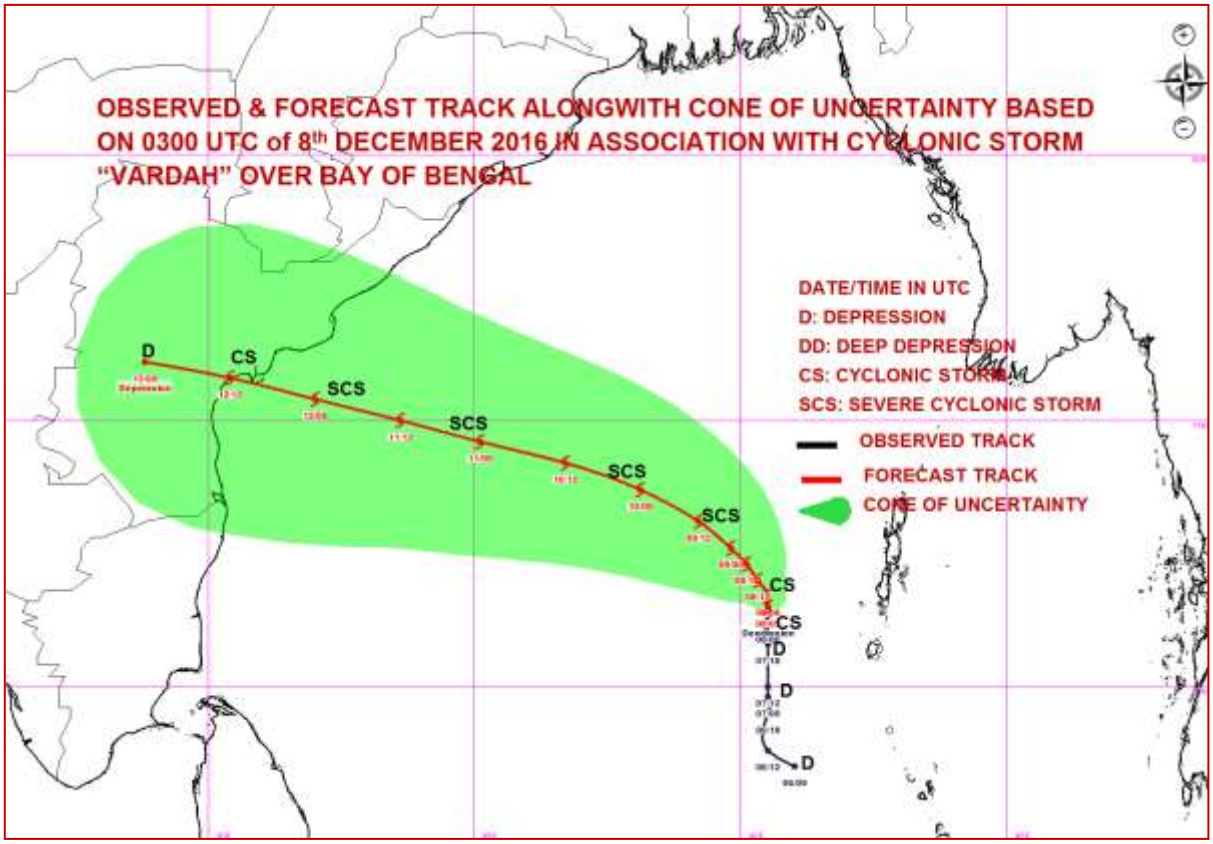

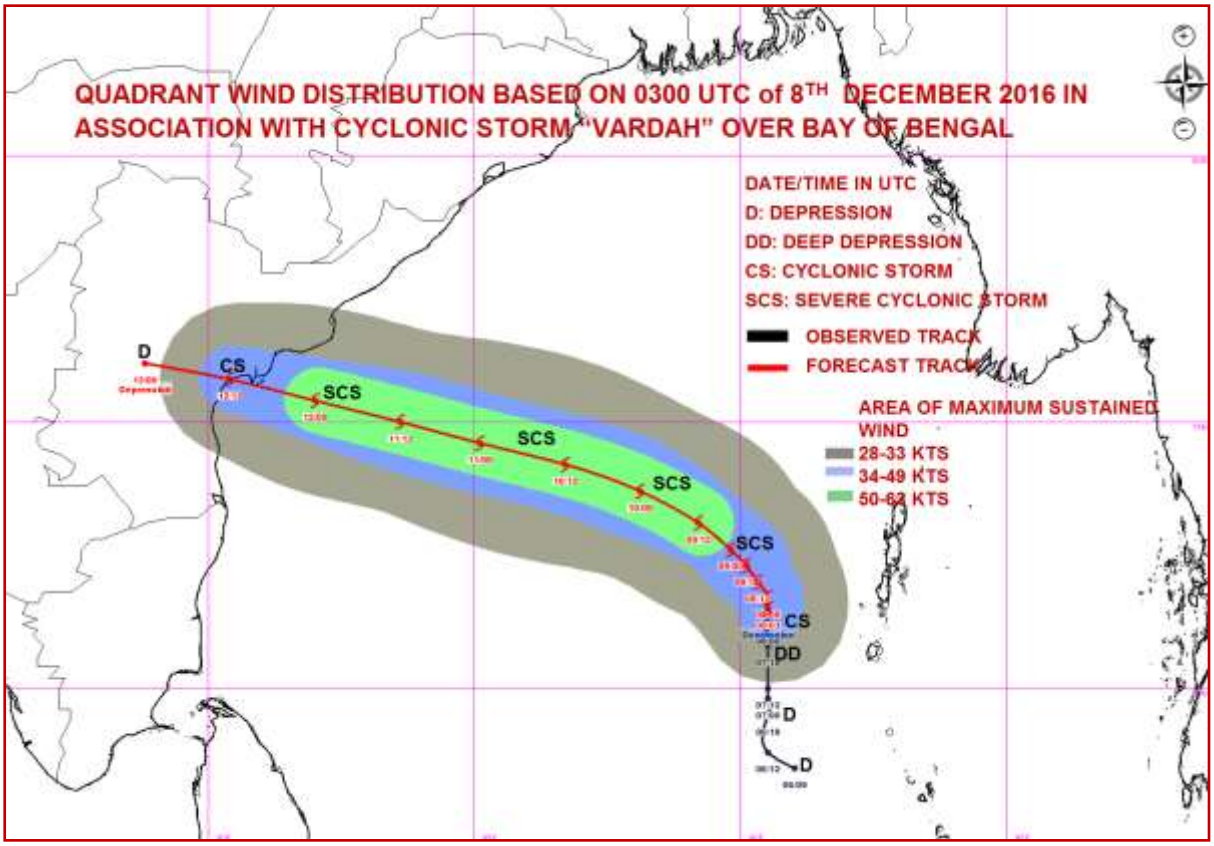

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THREE ISSUED AT 0900 UTC OF 08TH DECEMBER 2016 BASED ON 0600 UTC CHARTS OF 08TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL REMAINED PRACTICALLY STATIONARY DURING PAST 03 HOURS AND LAY CENTRED AT 0600 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.5ºN AND LONGITUDE 90.5ºE, ABOUT 1040 KM EAST-SOUTHEAST OF VISAKHAPATNAM (43149), 1135 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185), 360 KM NORTHWEST OF CAR NICOBAR (43368) AND 240 KM WEST-SOUTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME. THEREAFTER, IT IS VERY LIKELY TO MOVE NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND KAKINADA (43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(IST)	Position (lat. 0N/ long. 0E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/0600	11.5/90.5	60-70 gusting to 80	Cyclonic Storm
08-12-2016/1200	11.8/90.5	70-80 gusting to 90	Cyclonic Storm
08-12-2016/1800	12.1/90.3	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0000	12.5/89.8	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/0600	12.8/89.5	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1800	13.4/88.7	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/0600	14.0/87.3	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1800	14.4/85.9	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0600	14.8/84.4	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1800	15.2/82.8	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	15.5/81.2	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	15.8/79.6	50-60 gusting to 70	Deep Depression
13-12-2016/0600	16.1/78.0	25-35 gusting to 45	Low

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ACCORDING TO SATELLITE IMAGERY, INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 90 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, WESTERN PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 35 KNOTS GUSTING TO 45 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 998 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE.

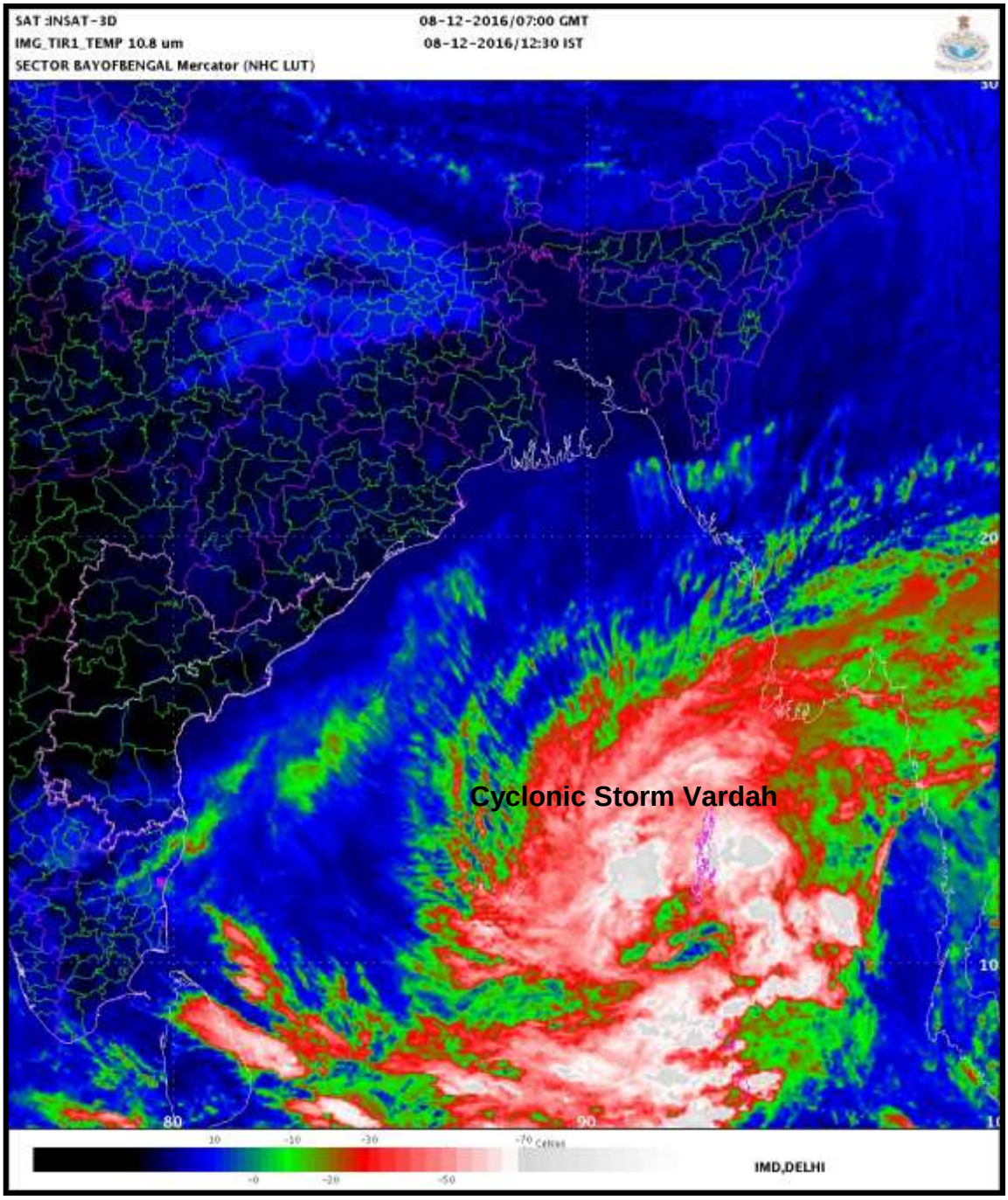
PORT BLAIR REPORTED (43333) REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 999.7 HPA AND MAXIMUM SUSTAINED WIND (MSW) OF 130/23 KNOTS.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 40X10^{-5} SECOND^{-1} TO THE EASTNORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 40X10^{-5} SECOND^{-1} TO THE NORTHEAST AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE TO HIGH (15-25 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS DURING NEXT 3 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(NEETHA K GOPAL)
SCIENTIST-E,
RSMC NEW DELHI



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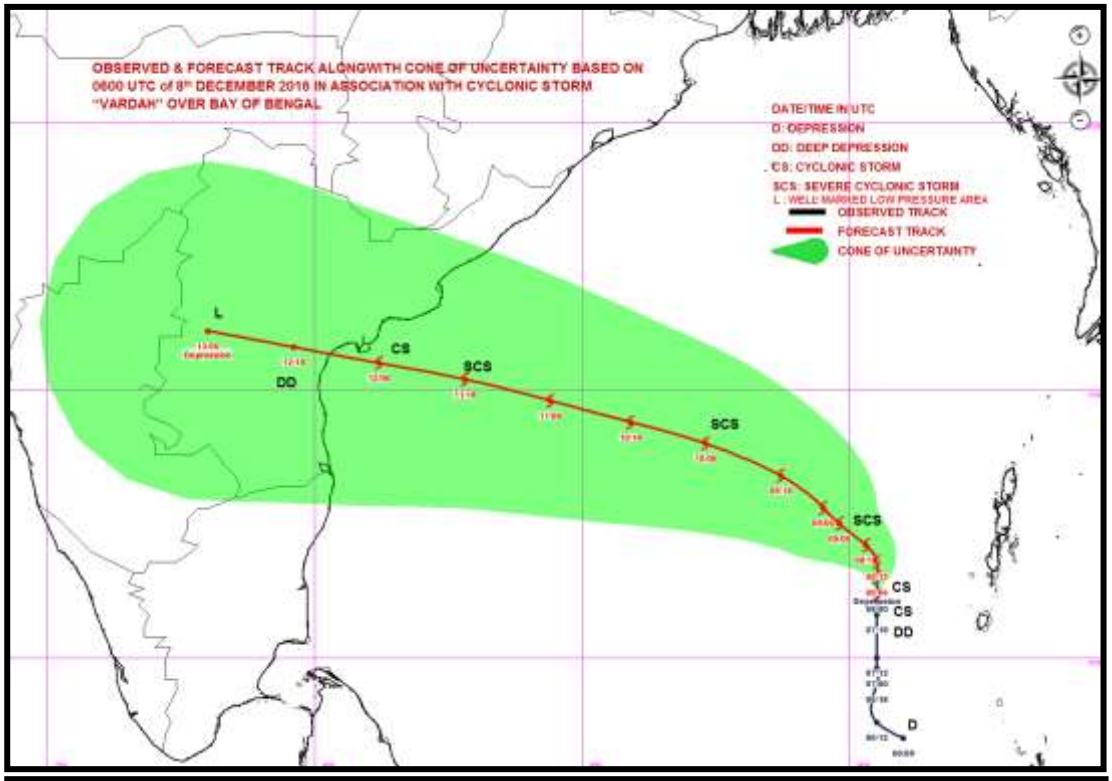

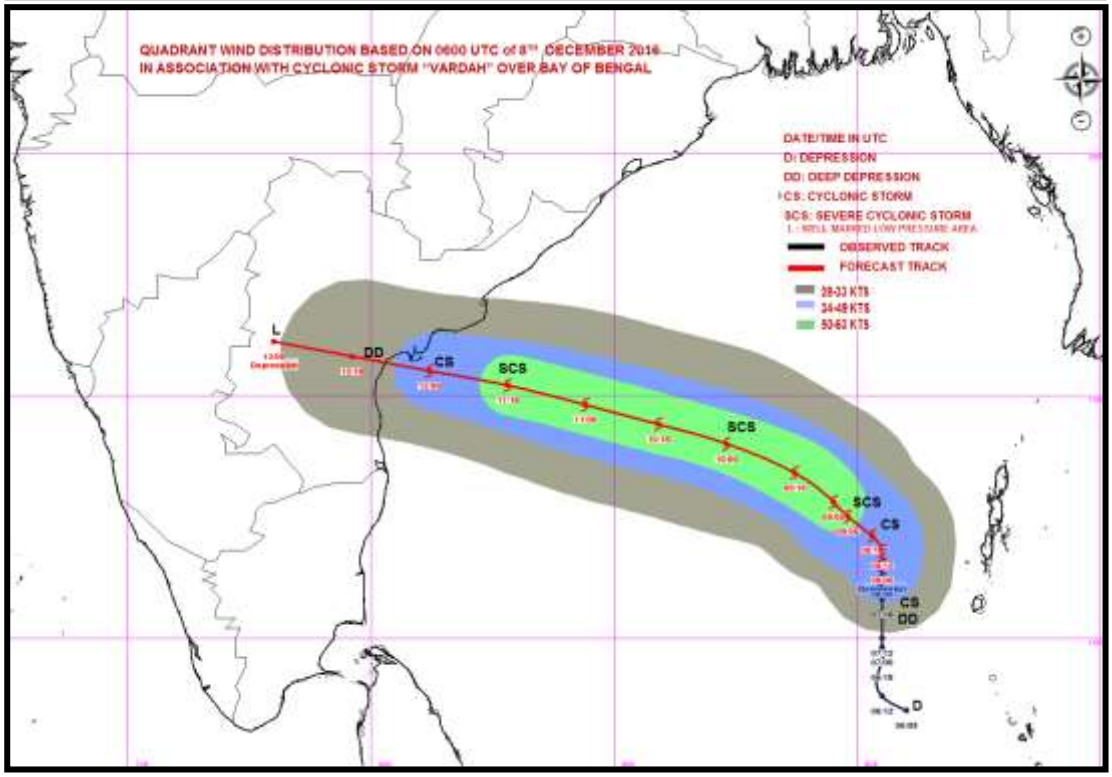

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER FOUR ISSUED AT 1200 UTC OF 08TH DECEMBER 2016 BASED ON 0900 UTC CHARTS OF 08TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL REMAINED PRACTICALLY STATIONARY DURING PAST 06 HOURS AND LAY CENTRED AT 0900 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.5ºN AND LONGITUDE 90.5ºE, ABOUT 1040 KM EAST-SOUTHEAST OF VISAKHAPATNAM (43149), 1135 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185), 360 KM NORTHWEST OF CAR NICOBAR (43368) AND 240 KM WEST-SOUTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME. THEREAFTER, IT IS VERY LIKELY TO MOVE NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND KAKINADA (43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(IST)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/0900	11.5/90.5	60-70 gusting to 80	Cyclonic Storm
08-12-2016/1200	11.8/90.5	70-80 gusting to 90	Cyclonic Storm
08-12-2016/1800	12.1/90.3	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0000	12.5/89.8	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/0600	12.8/89.5	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1800	13.4/88.7	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/0600	14.0/87.3	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1800	14.4/85.9	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0600	14.8/84.4	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1800	15.2/82.8	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	15.5/81.2	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	15.8/79.6	50-60 gusting to 70	Deep Depression
13-12-2016/0600	16.1/78.0	25-35 gusting to 45	Low

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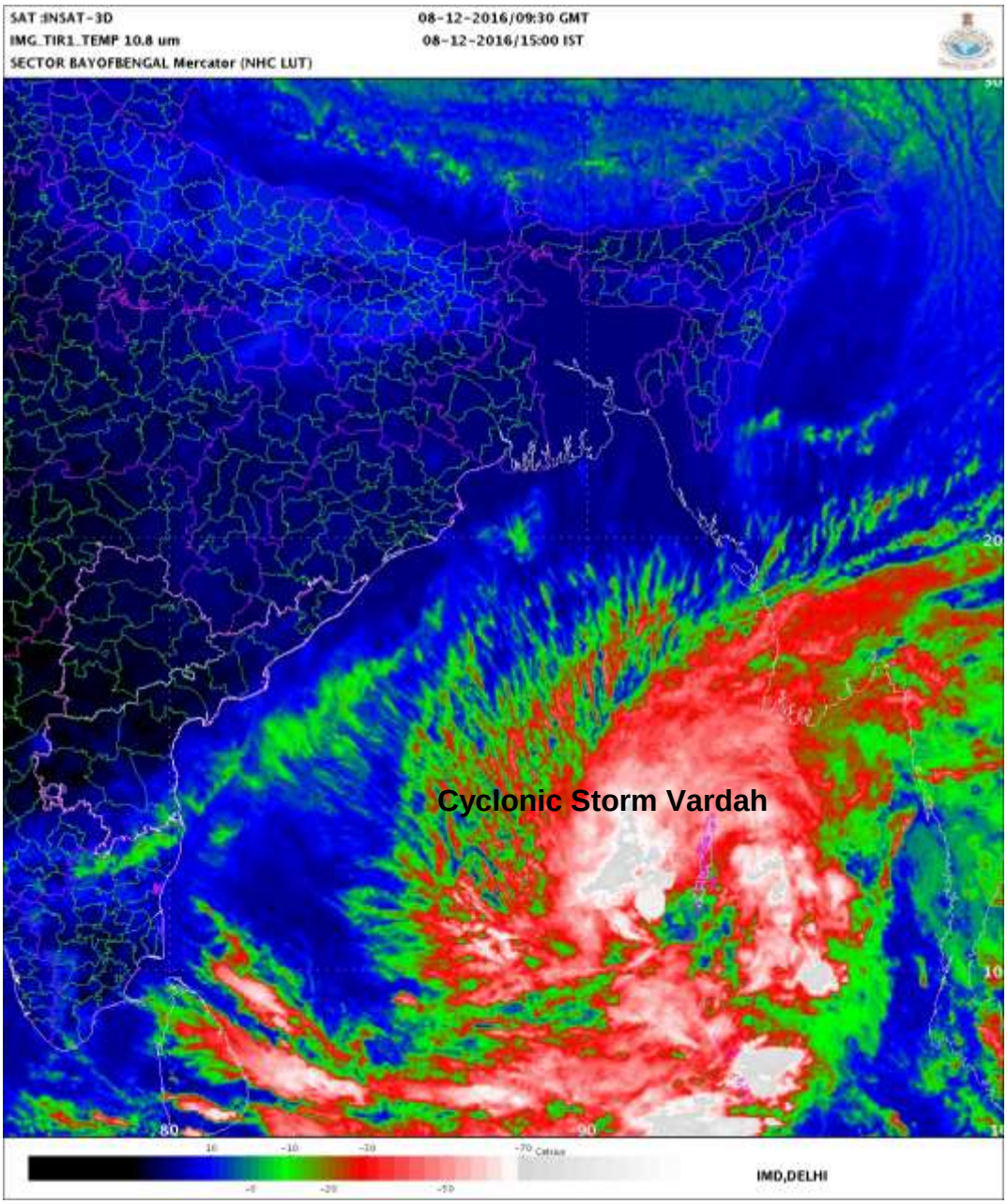
ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 90 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, AND OVER WESTERN PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 35 KNOTS GUSTING TO 45 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 998 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 40X10^{-5} SECOND^{-1} TO THE EASTNORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE TO HIGH (15-25 KNOTS) AROUND THE SYSTEM CENTRE AND INCREASES TOWARDS THE NORTHWEST AND TOWARDS WESTCENTRAL BAY OF BENGAL. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS DURING NEXT 3 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(NEETHA K GOPAL)
SCIENTIST-E
RSMC NEW DELHI



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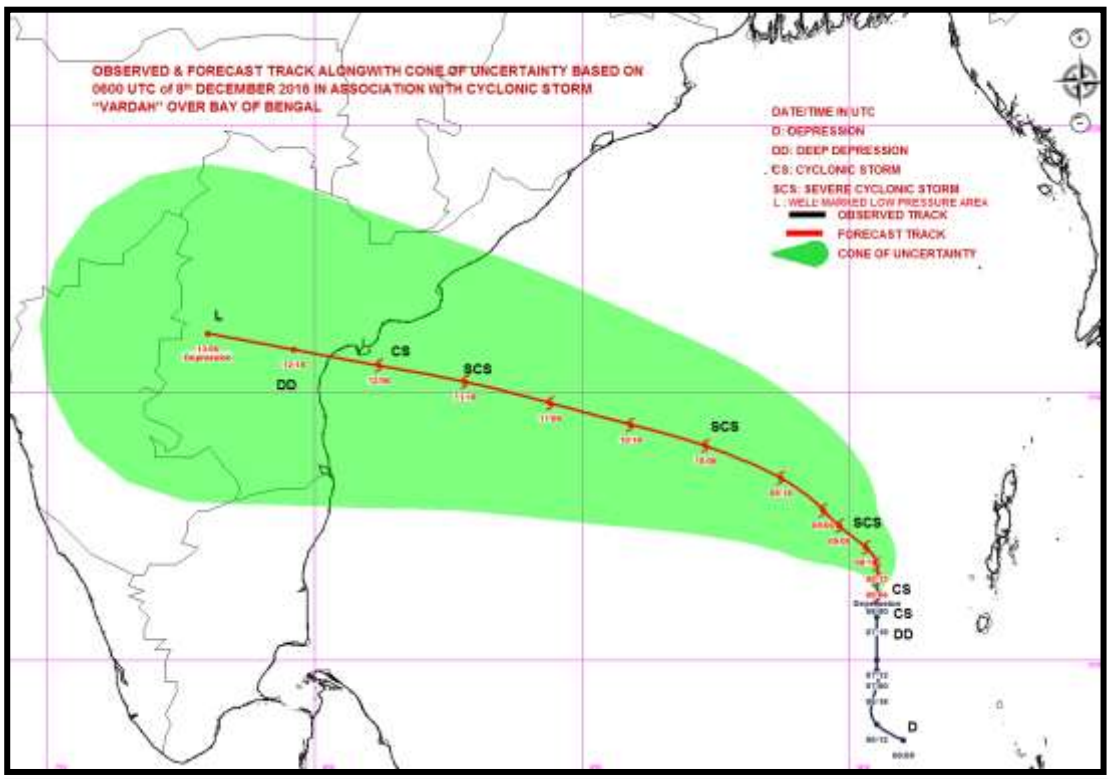

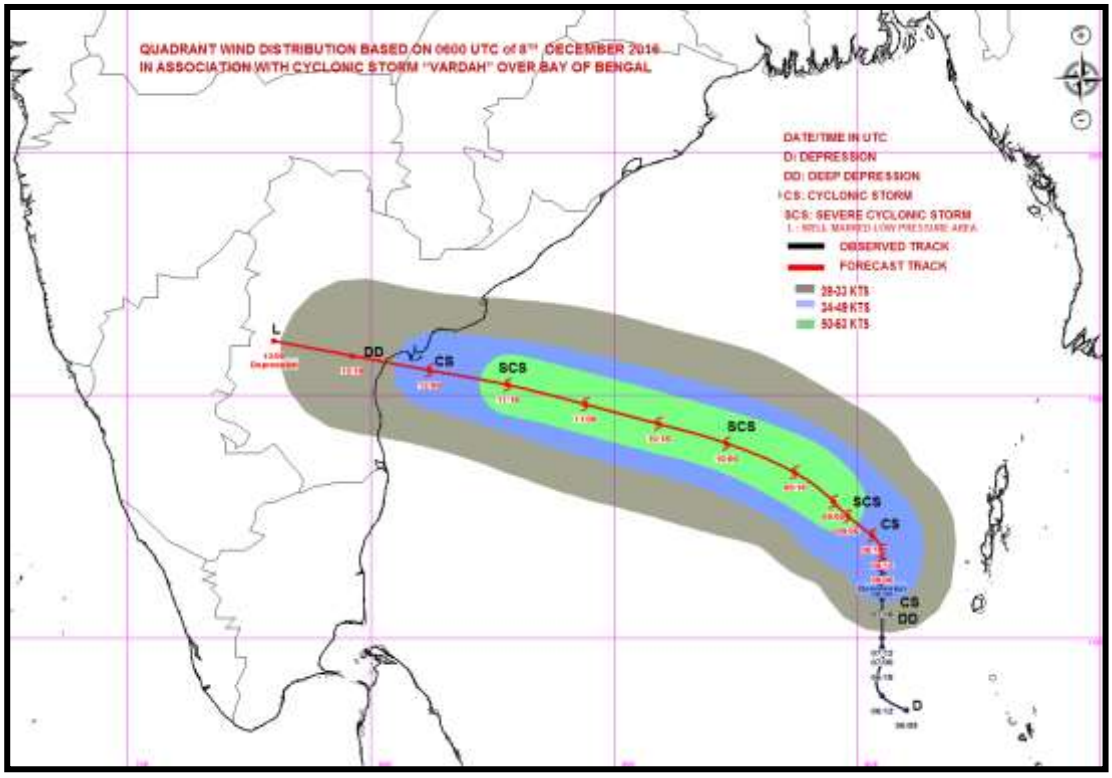

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER FIVE ISSUED AT 1500 UTC OF 08TH DECEMBER 2016 BASED ON 1200 UTC CHARTS OF 08TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED SLOWLY NORTHWARDS WITH A SPEED OF 4 KMPH DURING PAST 06 HRS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.7ºN AND LONGITUDE 90.5ºE, ABOUT 1020 KM EAST-SOUTHEAST OF VISAKHAPATNAM (43149), 1120 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 240 KM WEST-SOUTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME. THEREAFTER, IT IS VERY LIKELY TO MOVE NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND KAKINADA (43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(IST)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/1200	11.7/90.5	70-80 gusting to 90	Cyclonic Storm
08-12-2016/1800	12.1/90.4	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0000	12.5/90.0	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/0600	12.8/89.5	95-105 gusting to 115	Severe Cyclonic Storm
09-12-2016/1200	13.1/89.1	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0000	13.7/88.0	105-115 gusting to 125	Severe Cyclonic Storm
10-12-2016/1200	14.2/86.7	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.6/85.2	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	14.9/83.6	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	15.2/82.0	90-100 gusting to 110	Severe Cyclonic Storm
12-12-2016/1200	15.4/80.4	70-80 gusting to 90	Cyclonic Storm
13-12-2016/0000	15.6/78.8	40-50 gusting to 60	Depression

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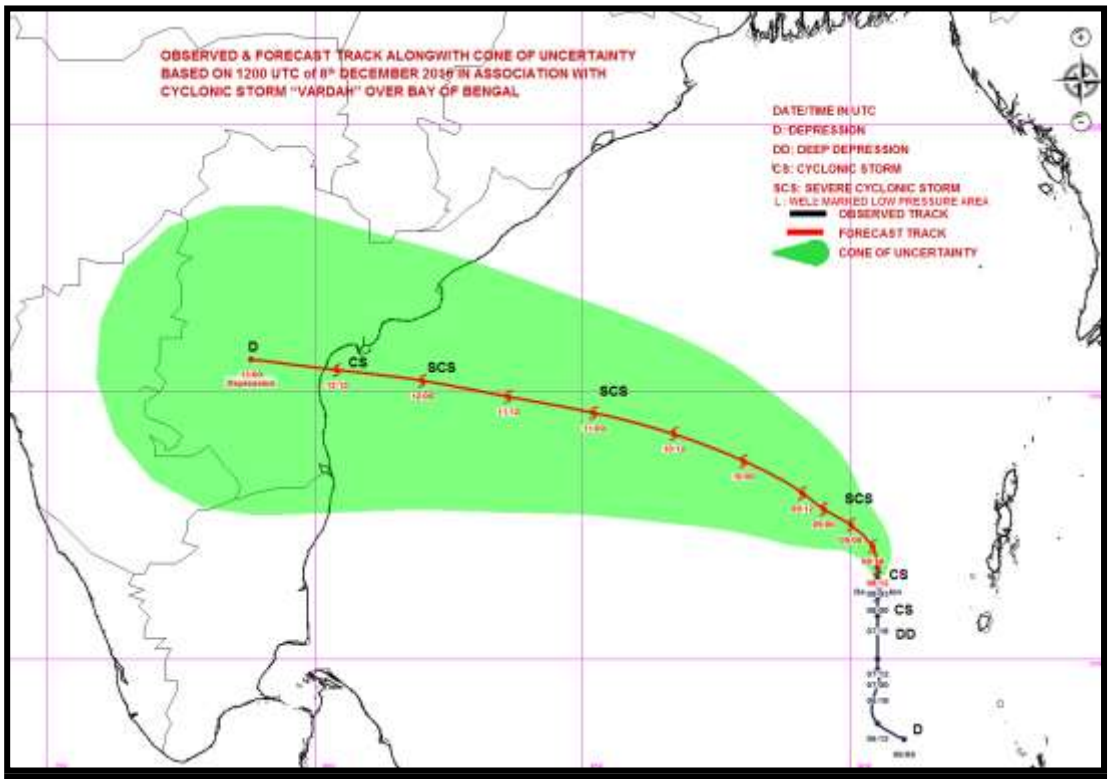
ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 90 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, AND OVER WESTERN PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 35 KNOTS GUSTING TO 45 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 998 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE.

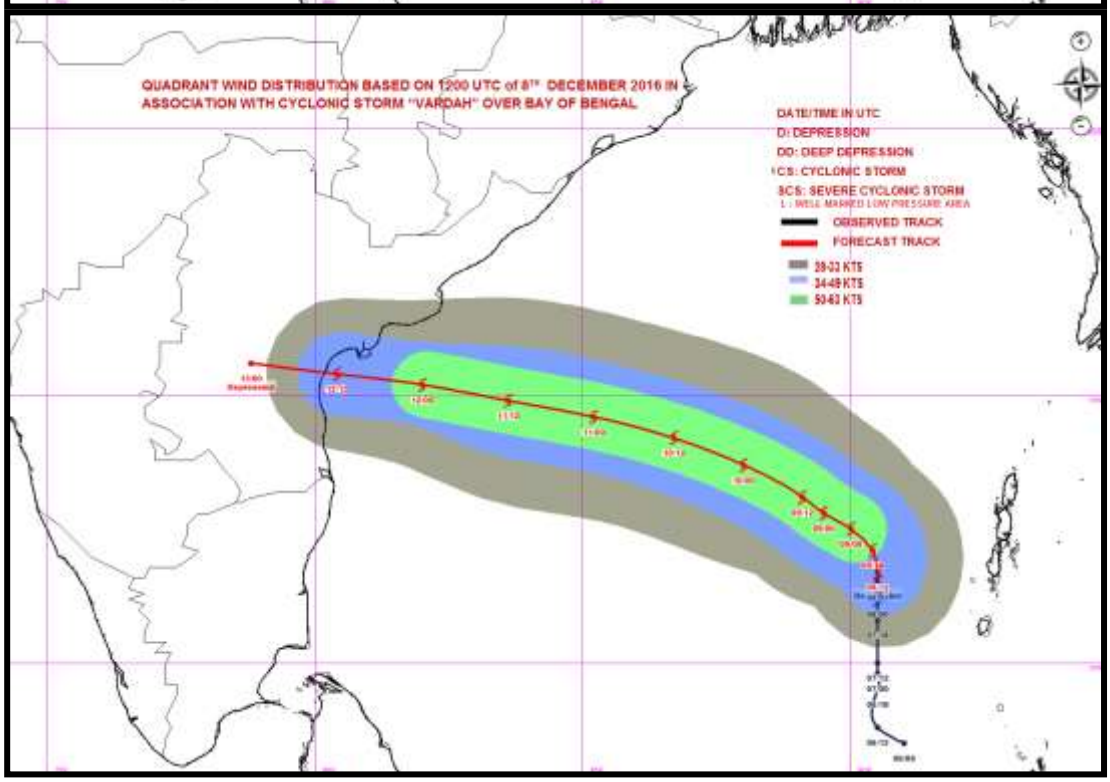
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 40X10^{-5} SECOND^{-1} TO THE EAST-NORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND REMAINS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS/WEST-NORTHWESTWARDS DURING NEXT 4 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI





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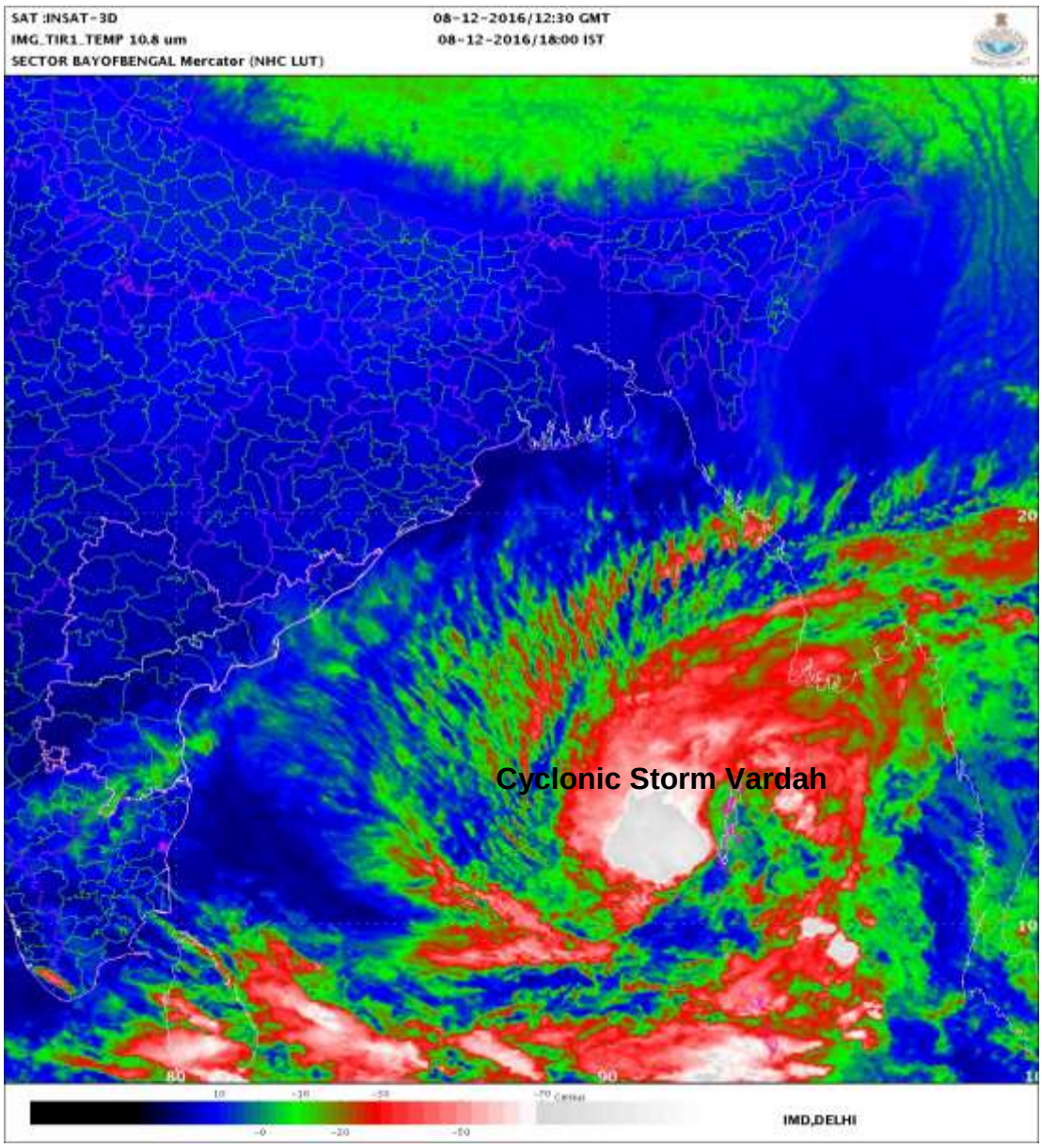

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER SIX ISSUED AT 1800 UTC OF 08TH DECEMBER 2016 BASED ON 1500 UTC CHARTS OF 08TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL REMAINED PRACTICALLY STATIONARY DURING PAST 03 HRS AND LAY CENTRED AT 1500 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.7ºN AND LONGITUDE 90.5ºE, ABOUT 1020 KM EAST-SOUTHEAST OF VISAKHAPATNAM (43149), 1120 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 240 KM WEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME. THEREAFTER, IT IS VERY LIKELY TO MOVE NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND KAKINADA (43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

HOWEVER, THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(IST)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/1500	11.7/90.5	70-80 gusting to 90	Cyclonic Storm
08-12-2016/1800	12.1/90.4	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0000	12.5/90.0	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/0600	12.8/89.5	95-105 gusting to 115	Severe Cyclonic Storm
09-12-2016/1200	13.1/89.1	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0000	13.7/88.0	105-115 gusting to 125	Severe Cyclonic Storm
10-12-2016/1200	14.2/86.7	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.6/85.2	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	14.9/83.6	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	15.2/82.0	90-100 gusting to 110	Severe Cyclonic Storm
12-12-2016/1200	15.4/80.4	70-80 gusting to 90	Cyclonic Storm
13-12-2016/0000	15.6/78.8	40-50 gusting to 60	Depression

Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in

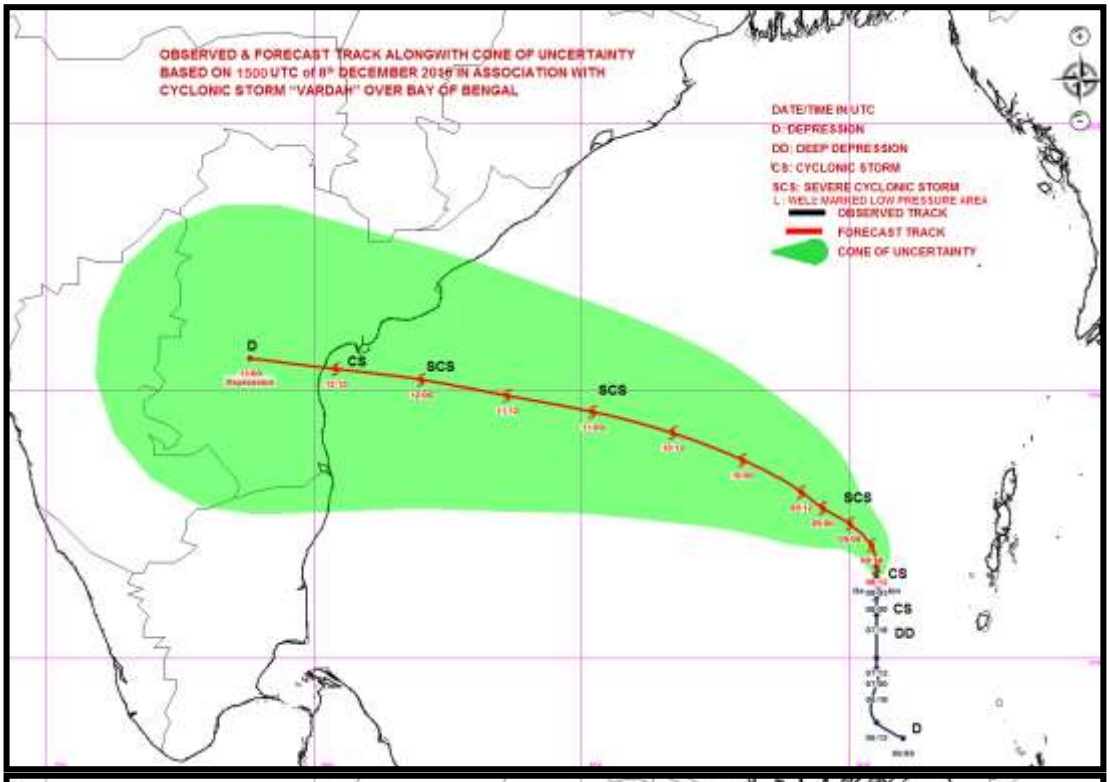
ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, AND OVER WESTERN PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 40 KNOTS GUSTING TO 50 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 997 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE.

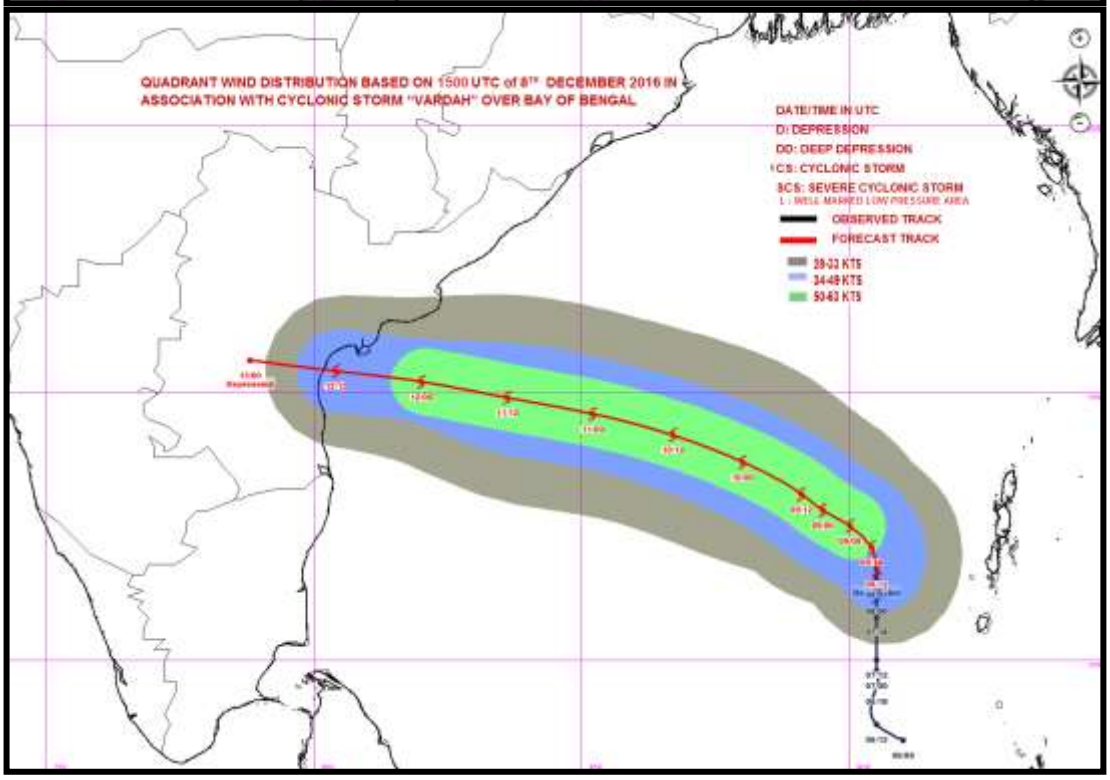
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 40X10^{-5} SECOND^{-1} TO THE EAST-NORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND REMAINS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS/WEST-NORTHWESTWARDS DURING NEXT 4 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI





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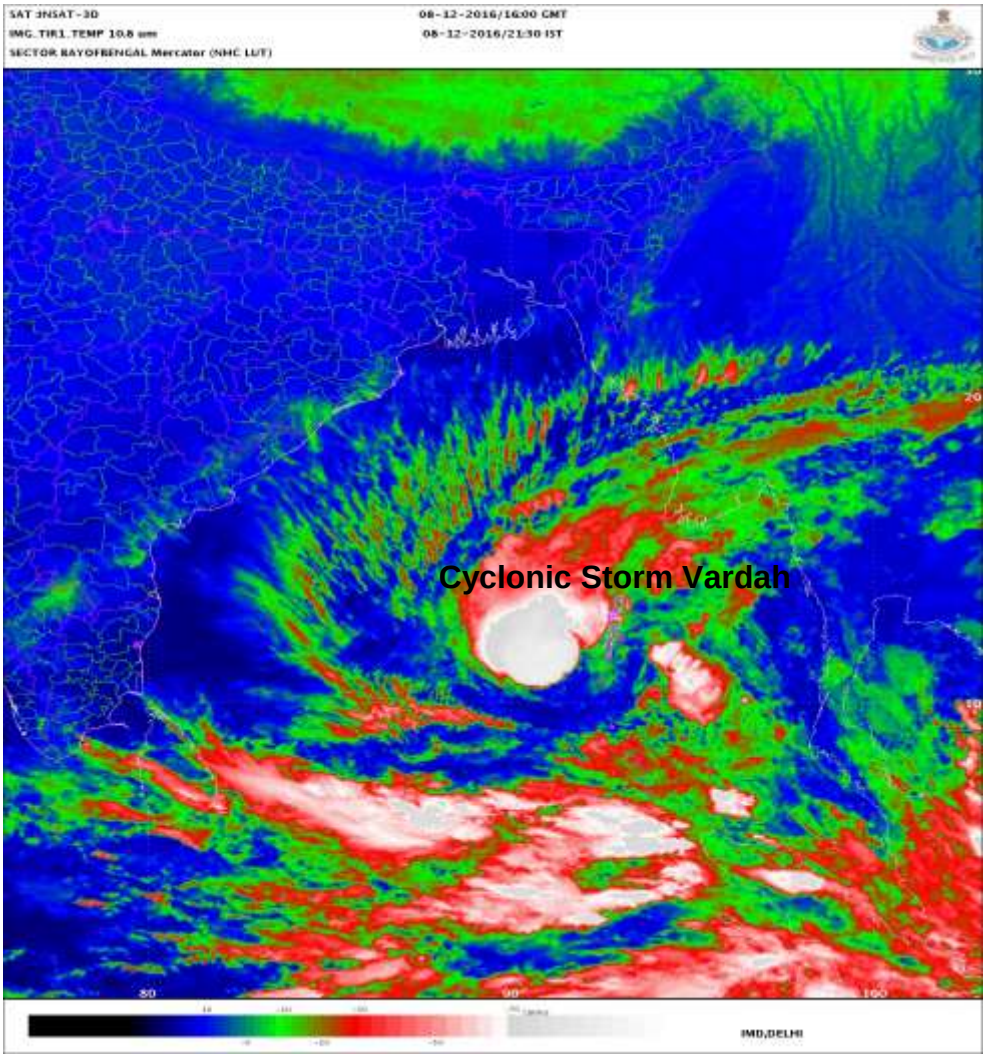

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER SEVEN ISSUED AT 2100 UTC OF 08TH DECEMBER 2016 BASED ON 1800 UTC CHARTS OF 08TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED SLIGHTLY NORTHWARDS WITH A SPEED OF 4 KMPH DURING PAST 06 HRS AND LAY CENTRED AT 1800 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.8ºN AND LONGITUDE 90.5ºE, ABOUT 1020 KM EAST-SOUTHEAST OF VISAKHAPATNAM (43149), 1120 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 240 KM WEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME. THEREAFTER, IT IS VERY LIKELY TO MOVE NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND KAKINADA (43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

HOWEVER, THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(IST)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/1800	11.8/90.5	70-80 gusting to 90	Cyclonic Storm
09-12-2016/0000	12.3/90.2	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0600	12.7/89.7	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1200	13.0/89.3	95-105 gusting to 115	Severe Cyclonic Storm
09-12-2016/1800	13.4/88.5	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0600	14.0/87.3	105-115 gusting to 125	Severe Cyclonic Storm
10-12-2016/1800	14.4/86.0	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0600	14.8/84.2	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1800	15.0/82.8	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	15.3/81.2	70-80 gusting to 90	Cyclonic Storm
12-12-2016/1800	15.5/79.6	40-50 gusting to 60	Depression

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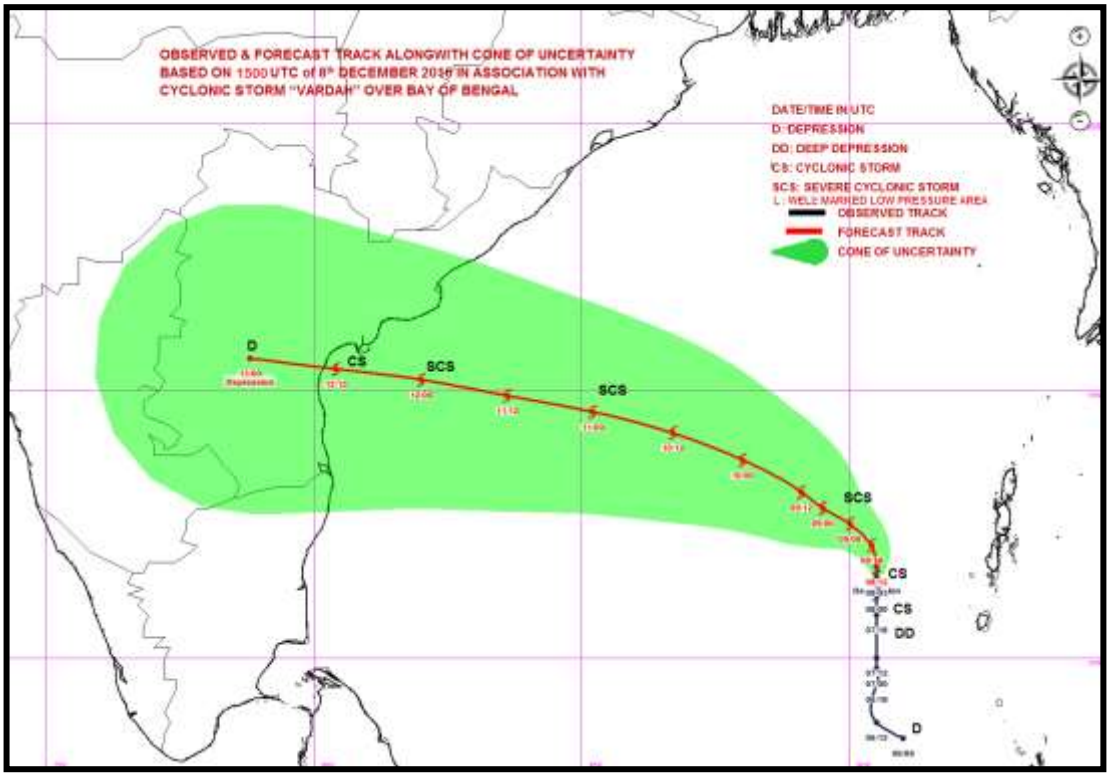
ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL, AND OVER WESTERN PARTS OF ANDAMAN SEA & BAY ISLANDS. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 40 KNOTS GUSTING TO 50 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 997 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE.

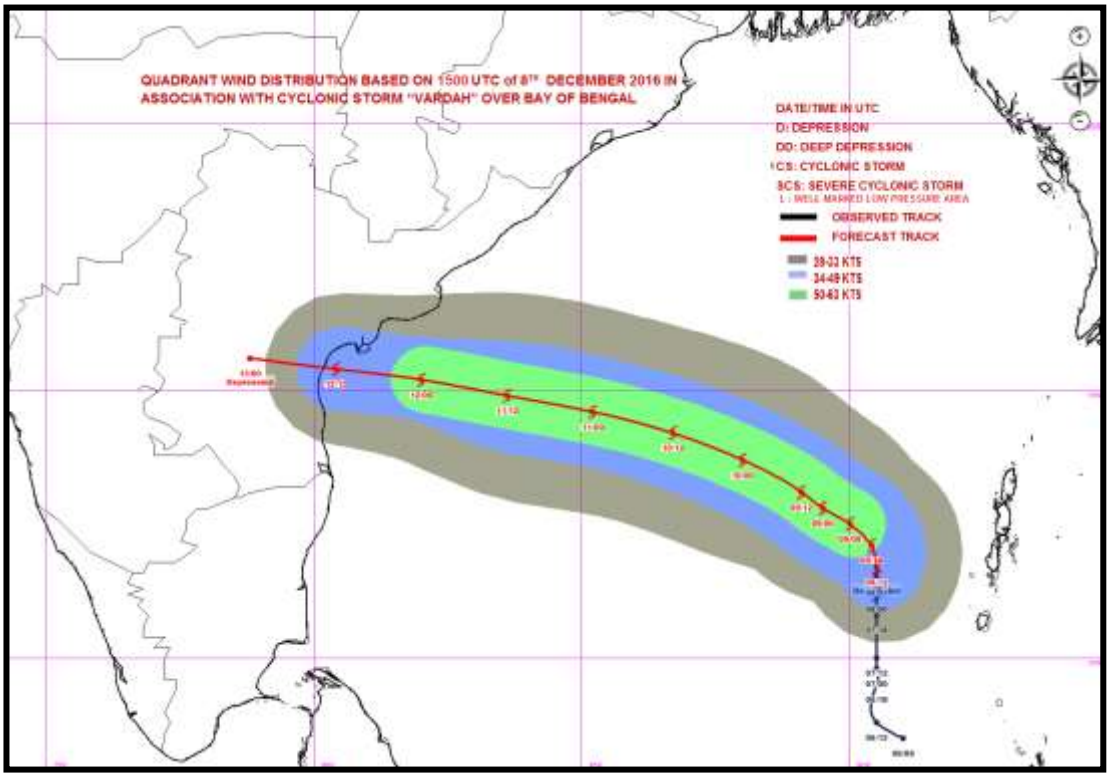
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 40X10^{-5} SECOND^{-1} TO THE EAST-NORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND REMAINS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS/WEST-NORTHWESTWARDS DURING NEXT 4 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI





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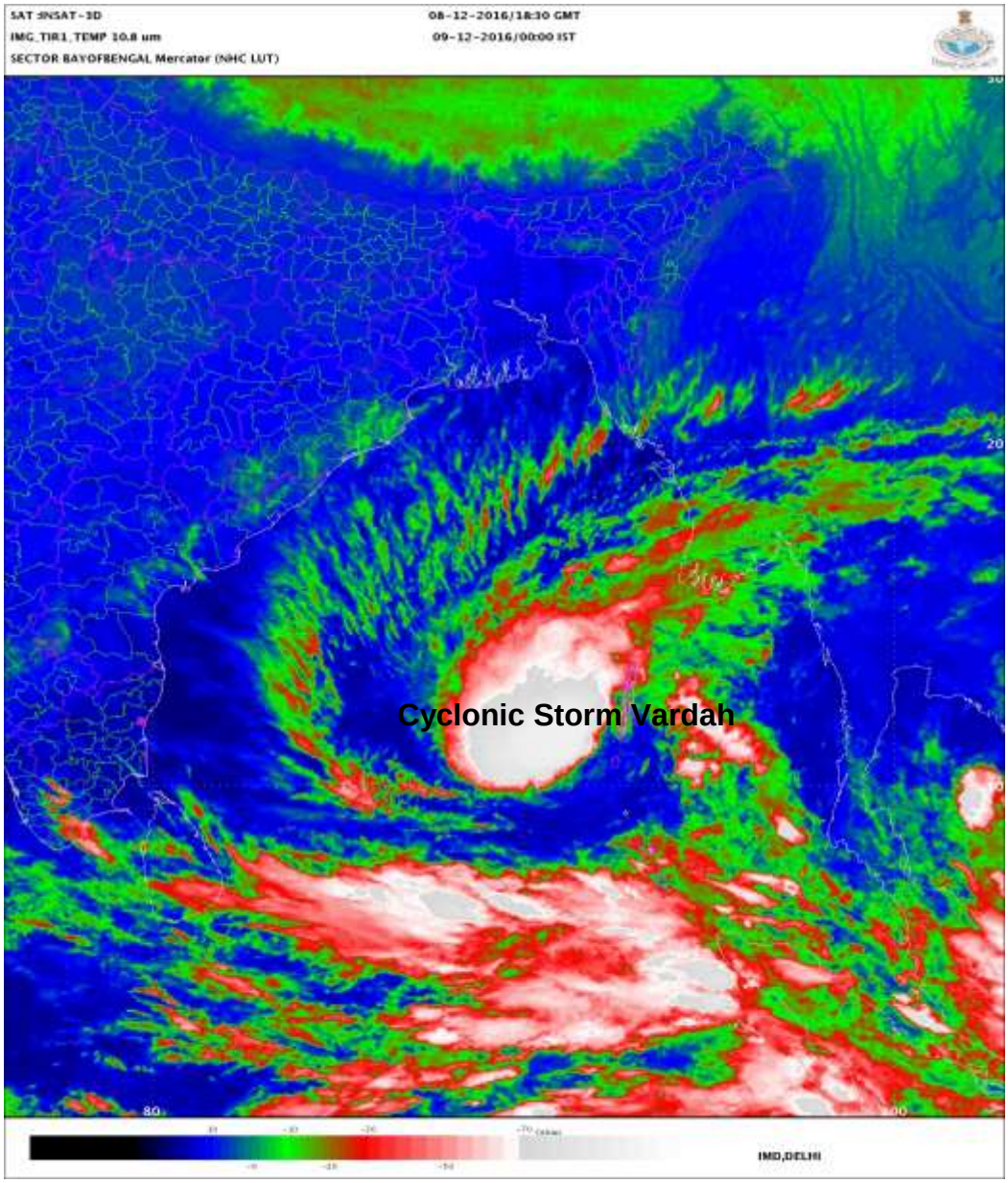

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER EIGHT ISSUED AT 0000 UTC OF 09TH DECEMBER 2016 BASED ON 2100 UTC CHARTS OF 08TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED FURTHER NORTHWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HRS AND LAY CENTRED AT 2100 UTC OF TODAY, THE 8TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.0ºN AND LONGITUDE 90.5ºE, ABOUT 1000 KM EAST-SOUTHEAST OF VISAKHAPATNAM (43149), 1110 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 240 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS FOR SOME MORE TIME. THEREAFTER, IT IS VERY LIKELY TO MOVE NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND KAKINADA (43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

HOWEVER, THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(IST)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
08-12-2016/2100	12.0/90.5	70-80 gusting to 90	Cyclonic Storm
09-12-2016/0000	12.3/90.2	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0600	12.7/89.7	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1200	13.0/89.3	95-105 gusting to 115	Severe Cyclonic Storm
09-12-2016/1800	13.4/88.5	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0600	14.0/87.3	105-115 gusting to 125	Severe Cyclonic Storm
10-12-2016/1800	14.4/86.0	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0600	14.8/84.2	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1800	15.0/82.8	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	15.3/81.2	70-80 gusting to 90	Cyclonic Storm
12-12-2016/1800	15.5/79.6	40-50 gusting to 60	Depression

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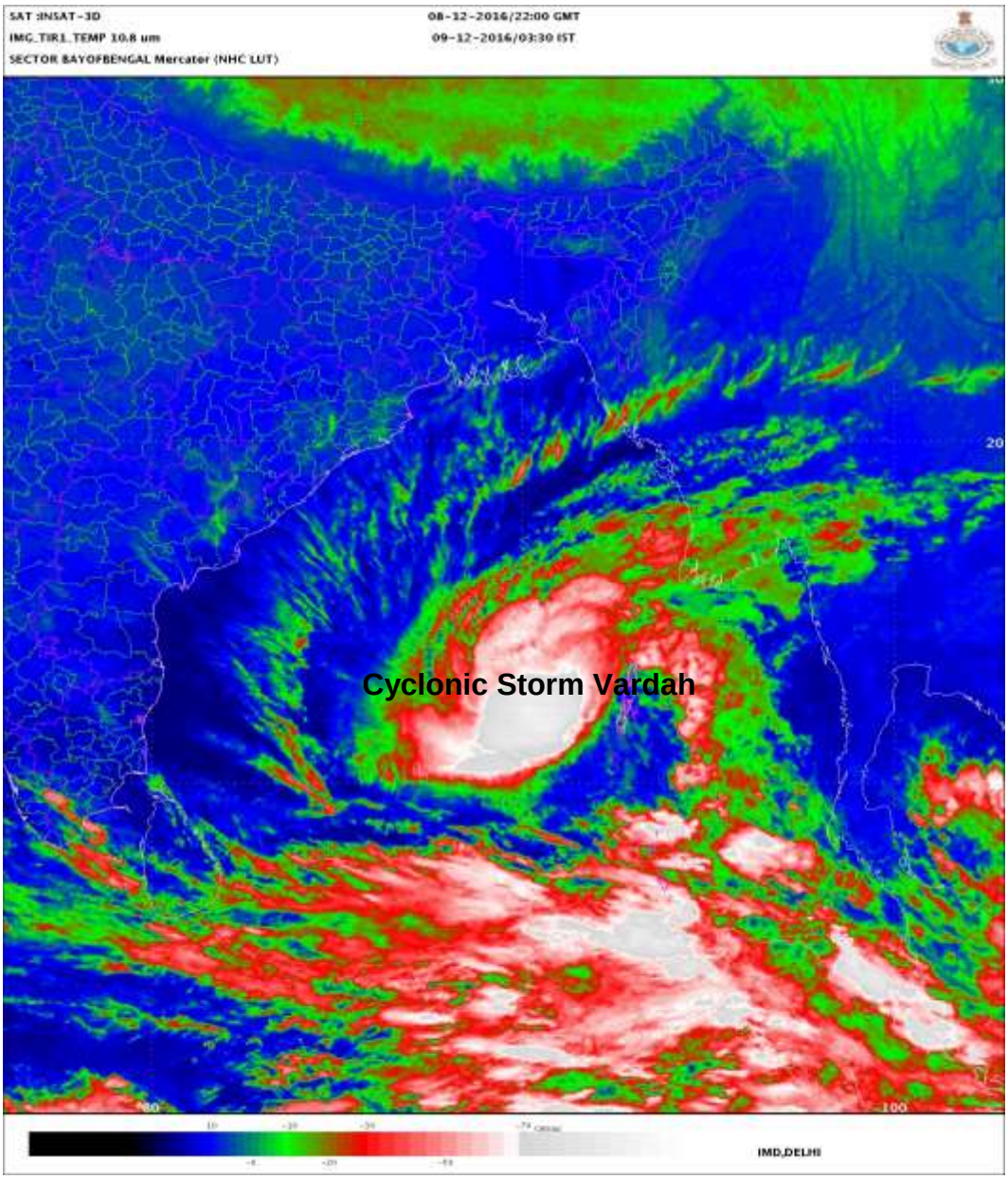
ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T2.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93 DEG C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 40 KNOTS GUSTING TO 50 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 997 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 40X10^{-5} SECOND^{-1} TO THE EAST-NORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND REMAINS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INTIALLY NORTHWARDS AND THEN NORTHWESTWARDS/WEST-NORTHWESTWARDS DURING NEXT 4 DAYS. THERE IS POSSIBILITY OF GRADUAL WEAKENING THEREAFTER ALONGWITH THE CONTINUED WEST-NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH COAST.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI



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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

FROM: RSMC –TROPICAL CYCLONES, NEW DELHI
TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)
STORM WARNING CENTRE, BANGKOK (THAILAND)
STORM WARNING CENTRE, COLOMBO (SRILANKA)
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METEOROLOGICAL OFFICE, MALE (MALDIVES)
OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)
YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER NINE ISSUED AT 0300 UTC OF 09TH DECEMBER 2016 BASED ON 0000 UTC CHARTS OF 09TH DECEMBER 2016

THE CYCLONIC STORM, VARDAH OVER SOUTHEAST BAY OF BENGAL MOVED NORTH-NORTHWESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HRS, SLIGHTLY INTENSIFIED FURTHER AND LAY CENTRED AT 0000 UTC OF TODAY, THE 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.1ºN AND LONGITUDE 90.4ºE, ABOUT 990 KM SOUTHEAST OF VISAKHAPATNAM(43149), 1090 KM EAST-SOUTHEAST OF MACHILIPATNAM(43185) AND 250 KM WEST-NORTHWEST OF PORT BLAIR(43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE INITIALLY NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE(43245) AND KAKINADA(43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

HOWEVER, THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
09-12-2016/0000	12.1/90.4	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0600	12.4/90.3	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1200	12.7/90.1	95-105 gusting to 115	Severe Cyclonic Storm
09-12-2016/1800	13.1/89.6	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0000	13.4/89.0	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1200	14.2/87.0	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.6/85.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	14.9/83.5	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	15.1/82.0	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1200	15.4/80.4	65-75 gusting to 85	Cyclonic Storm
13-12-2016/0000	15.6/78.6	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.0. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE

(CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS ABOUT 45 KNOTS GUSTING TO 55 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS HIGH AROUND SYSTEM CENTRE.

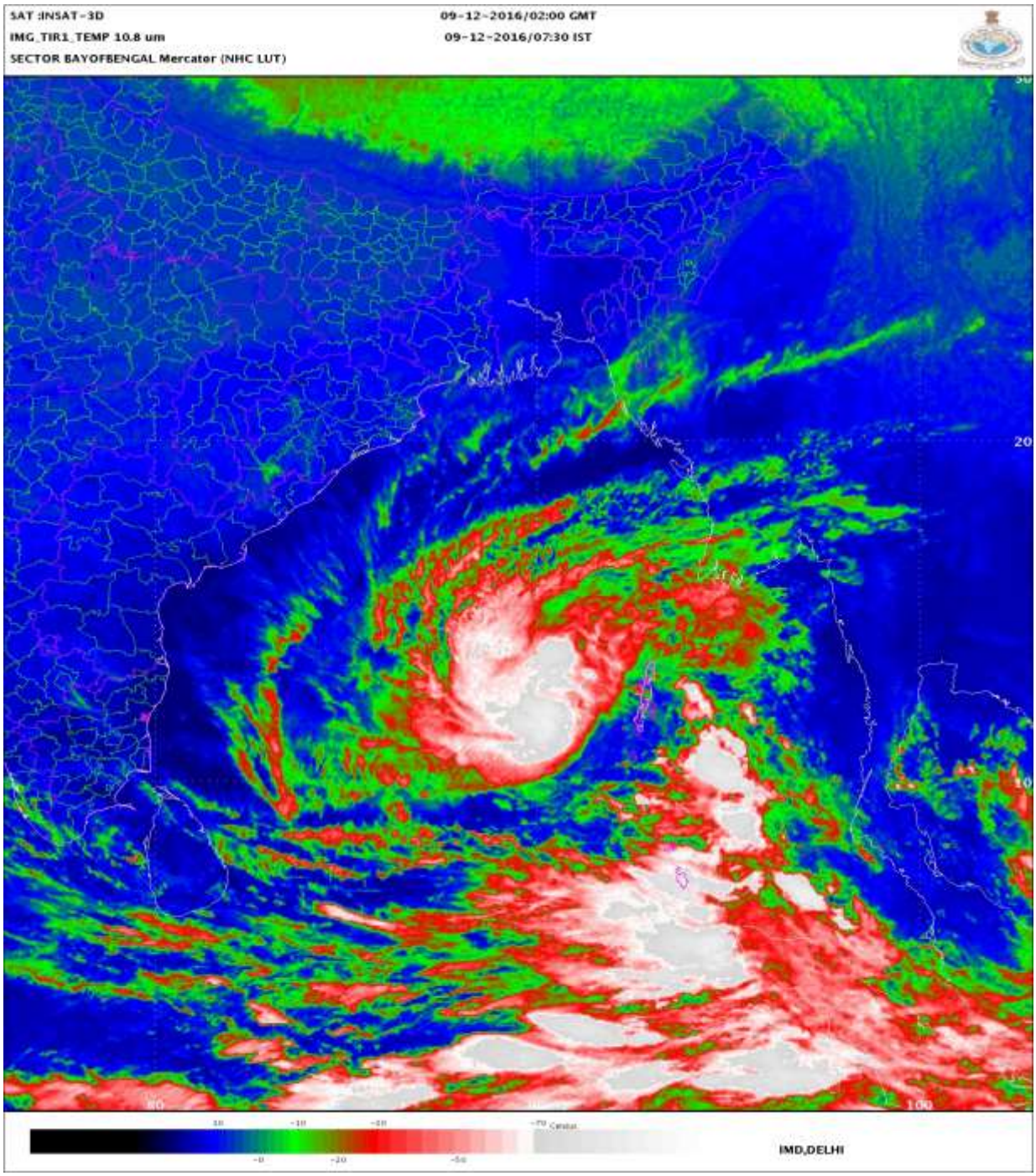
A BUOY LOCATED NEAR LATITUDE 10.5°N AND LONGITUDE 90.1°E REPORTED MEAN SEA LEVEL PRESSURE 1002.4 HPA AND MAXIMUM SUSTAINED WIND SPEED (MSW) OF 120°/29 KNOTS. PORT BLAIR(43333) REPORTED MEAN SEA LEVEL PRESSURE 1001.5 HPA AND MSW 180°/12 KNOTS

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WEST CENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20X10^{-5} SECOND^{-1} TO THE EAST-NORTHEAST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 10X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY has increased in past 12 hours and IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND REMAINS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH AMPLITUDE 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM AND ITS NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST. HOWEVER, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST ARE UNFAVOURABLE FACTORS WHICH MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL.

CONSIDERING ALL THE ABOVE, THE CYCLONIC STORM, ‘VARDAH’ WILL INTENSIFY FURTHER AND MOVE INITIALLY NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS TOWARDS ANDHRA PRADESH COAST DURING NEXT 4 DAYS.

(NARESH KUMAR)
SCIENTIST-D
RSMC, NEW DELHI



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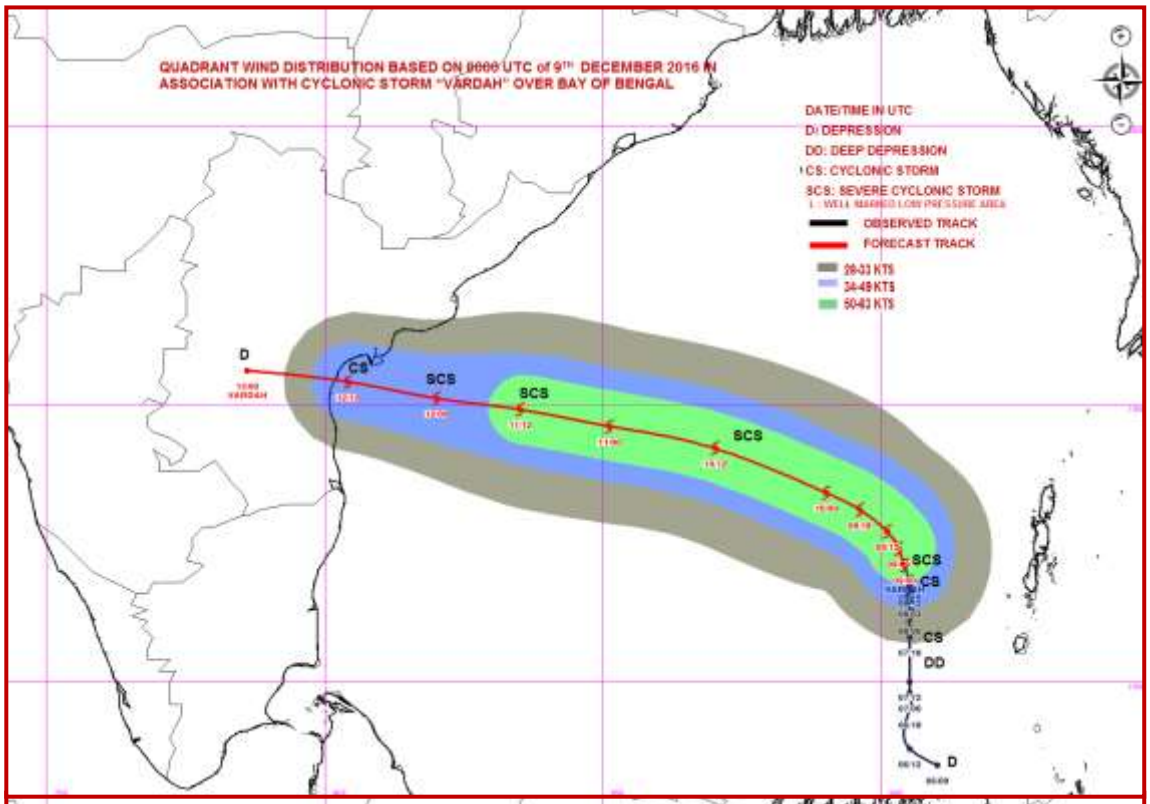

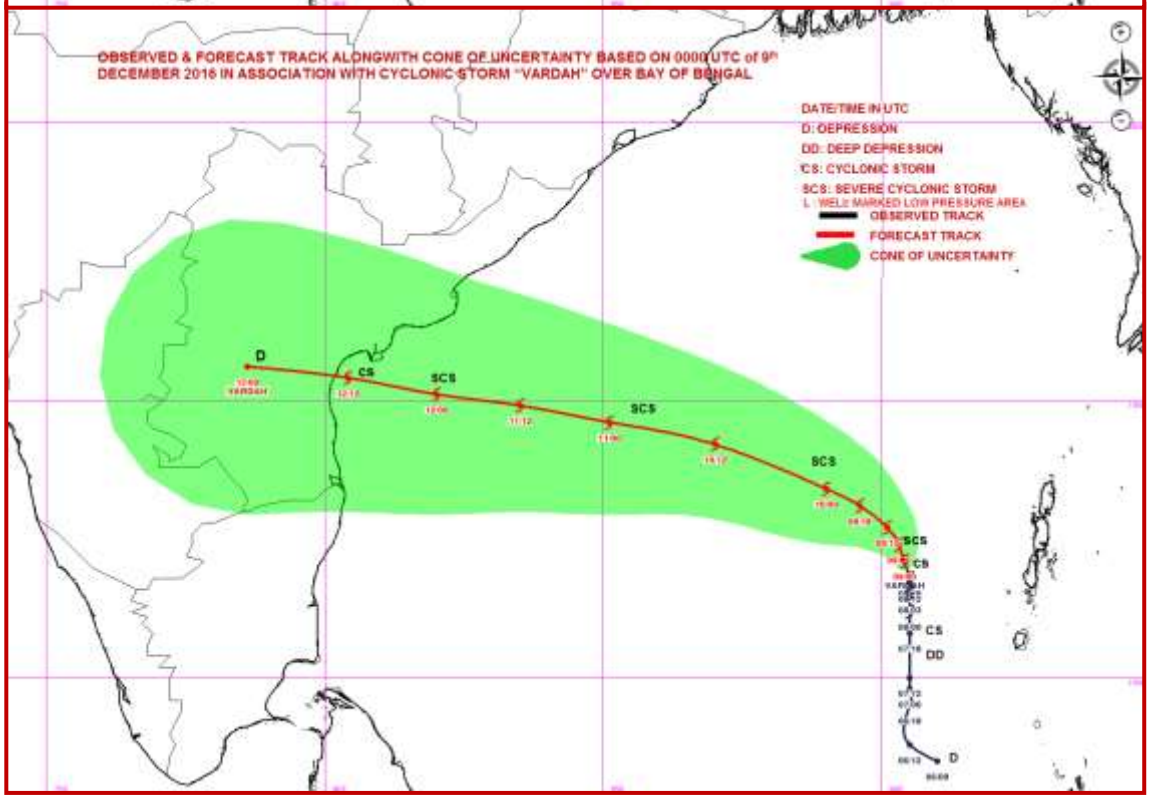

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TEN ISSUED AT 0600 UTC OF 09TH DECEMBER 2016 BASED ON 0300 UTC CHARTS OF 09TH DECEMBER 2016

THE CYCLONIC STORM, VARDAH OVER SOUTHEAST BAY OF BENGAL REMAINED PRACTICALLY STATIONARY DURING PAST 03 HRS AND LAY CENTRED AT 0300 UTC OF TODAY, THE 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.1ºN AND LONGITUDE 90.4ºE, ABOUT 990 KM SOUTHEAST OF VISAKHAPATNAM (43149), 1090 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 250 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE INITIALLY NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND KAKINADA (43189) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

HOWEVER, THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
09-12-2016/0300	12.1/90.4	80-90 gusting to 100	Cyclonic Storm
09-12-2016/0600	12.4/90.3	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1200	12.7/90.1	95-105 gusting to 115	Severe Cyclonic Storm
09-12-2016/1800	13.1/89.6	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0000	13.4/89.0	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1200	14.2/87.0	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.6/85.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	14.9/83.5	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	15.1/82.0	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1200	15.4/80.4	65-75 gusting to 85	Cyclonic Storm

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13-12-2016/0000	15.6/78.6	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.0. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. THE CONVECTION HAS FURTHER ORGANISED DURING PAST 6 HOURS. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 83º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 10.0^0N & 16.0^0N AND LONGITUDE 87.0^0E & 92.5^0E . THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 45 KNOTS GUSTING TO 55 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

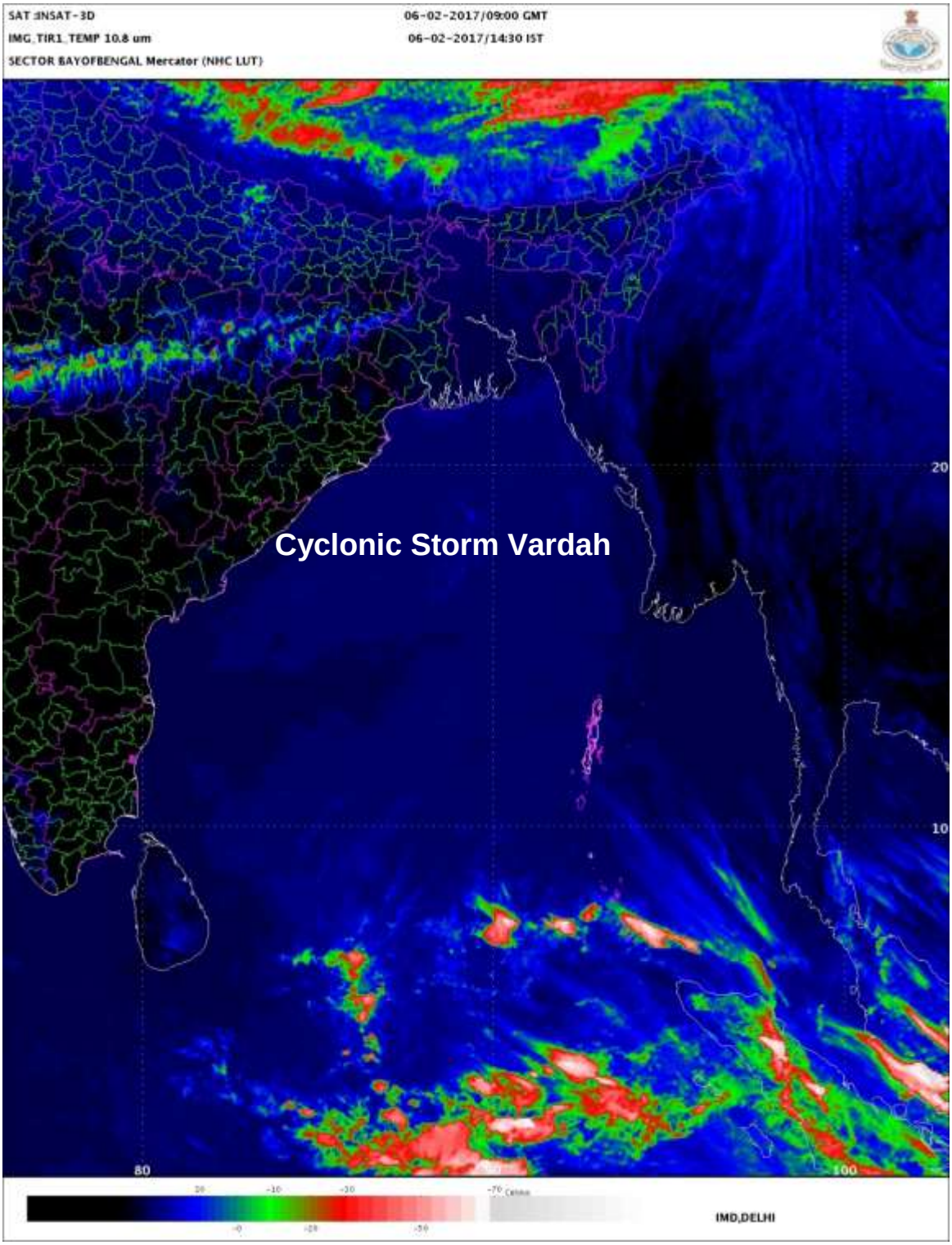
PORT BLAIR (43333) REPORTED MEAN SEA LEVEL PRESSURE 1004.6 HPA, THUS A RISE OF 3.1 HPA IN PAST THREE HOURS AND MSW 180°/11 KNOTS

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $20X10^{-5}$ SECOND^{-1} TO WEST-NORTHWEST OF SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $10X10^{-5}$ SECOND^{-1} TO WEST-NORTHWEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY HAS INCREASED DURING PAST 12 HOURS AND IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING > 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND ITS NORTHWESTWARD/WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3-4 DAYS.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL

(NEETHA K GOPAL)
SCIENTIST-E
RSMC, NEW DELHI



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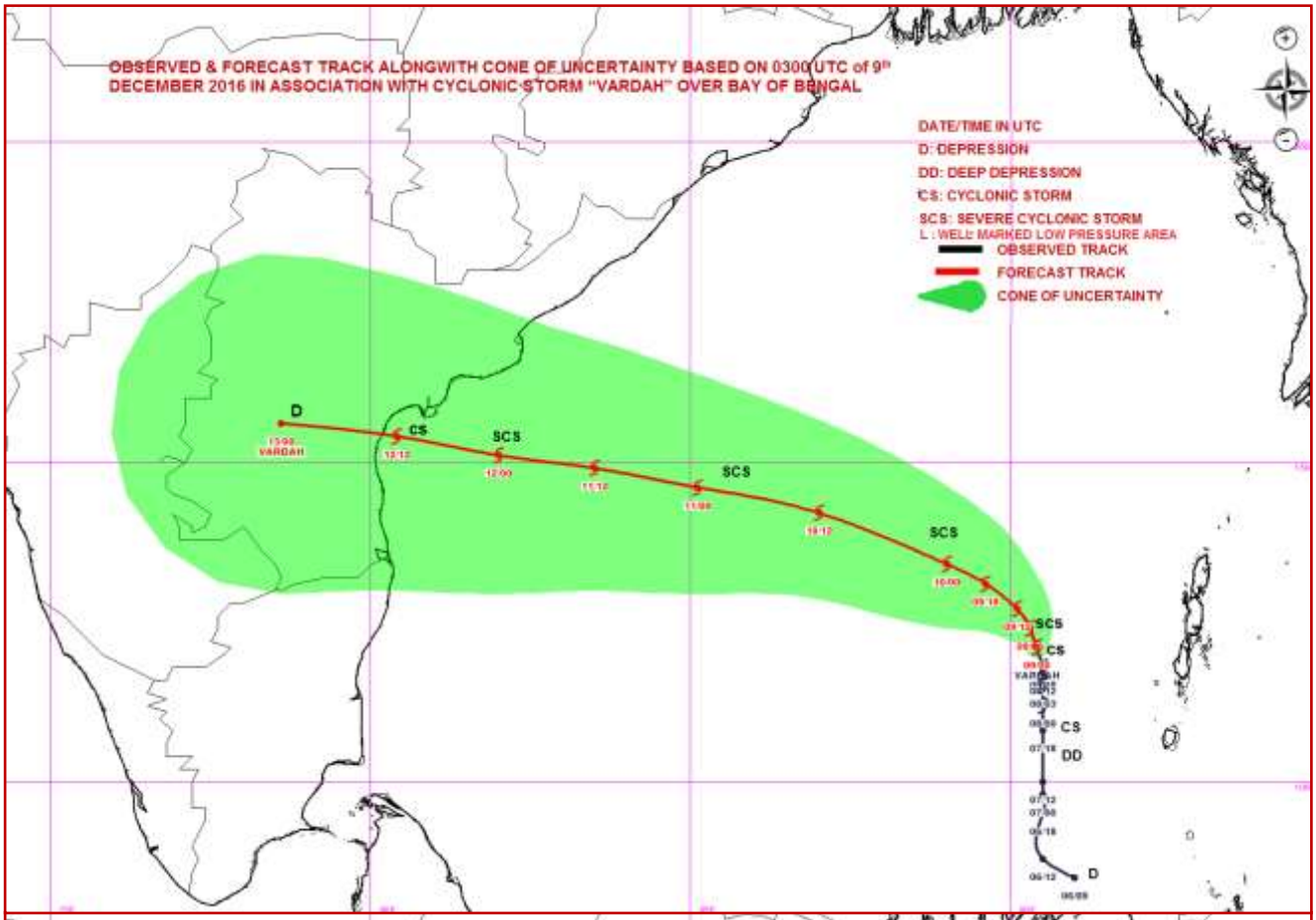

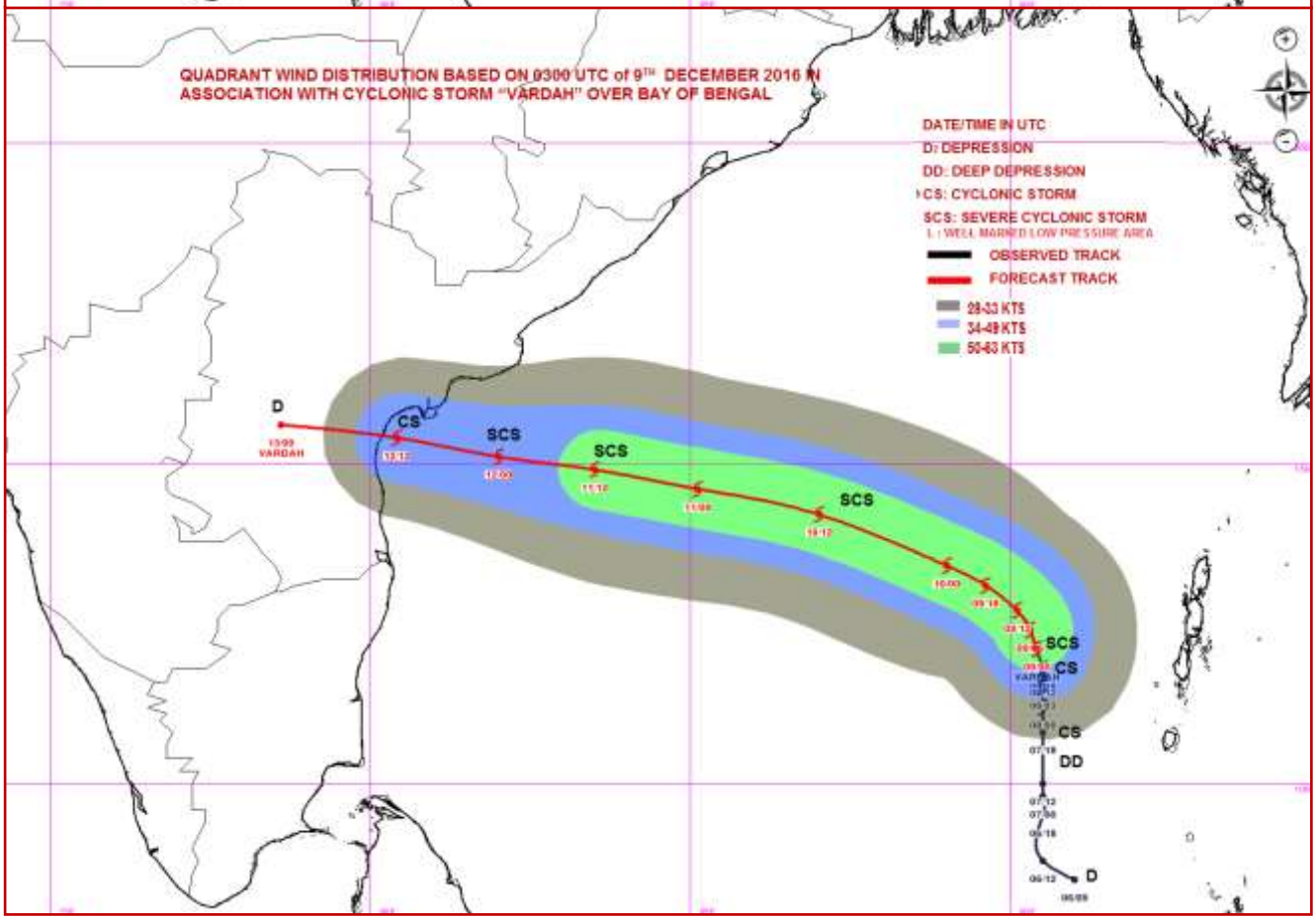

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER ELEVEN ISSUED AT 0900 UTC OF 09TH DECEMBER 2016 BASED ON 0600 UTC CHARTS OF 09TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL REMAINED PRACTICALLY STATIONARY DURING PAST 06 HRS AND LAY CENTRED AT 0600 UTC OF TODAY, THE 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.1ºN AND LONGITUDE 90.4ºE, ABOUT 990 KM SOUTHEAST OF VISAKHAPATNAM (43149), 1090 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 250 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE INITIALLY NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND MACHILIPATNAM(43185) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

HOWEVER, THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
09-12-2016/0600	12.1/90.4	80-90 GUSTING TO 100	CYCLONIC STORM
09-12-2016/1200	12.4/90.1	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
09-12-2016/1800	12.7/89.6	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
10-12-2016/0000	13.0/89.0	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
10-12-2016/0600	13.6/88.0	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
10-12-2016/1800	14.4/86.2	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/0600	14.8/84.3	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/1800	15.0/82.7	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
12-12-2016/0600	14.8/81.2	70-80 GUSTING TO 90	CYCLONIC STORM
12-12-2016/1800	14.4/79.8	55-65 GUSTING TO 75	DEEP DEPRESSION

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.0. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY

OF BENGAL BETWEEN 10.0^0N & 16.0^0N AND LONGITUDE 87.0^0E & 92.5^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 45 KNOTS GUSTING TO 55 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $20X10^{-5}$ SECOND^{-1} TO WEST-NORTHWEST OF SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $20X10^{-5}$ SECOND^{-1} TO WEST-NORTHWEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY HAS INCREASED DURING PAST 12 HOURS AND IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING > 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND ITS NORTHWESTWARD/WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL

(NEETHA K GOPAL)
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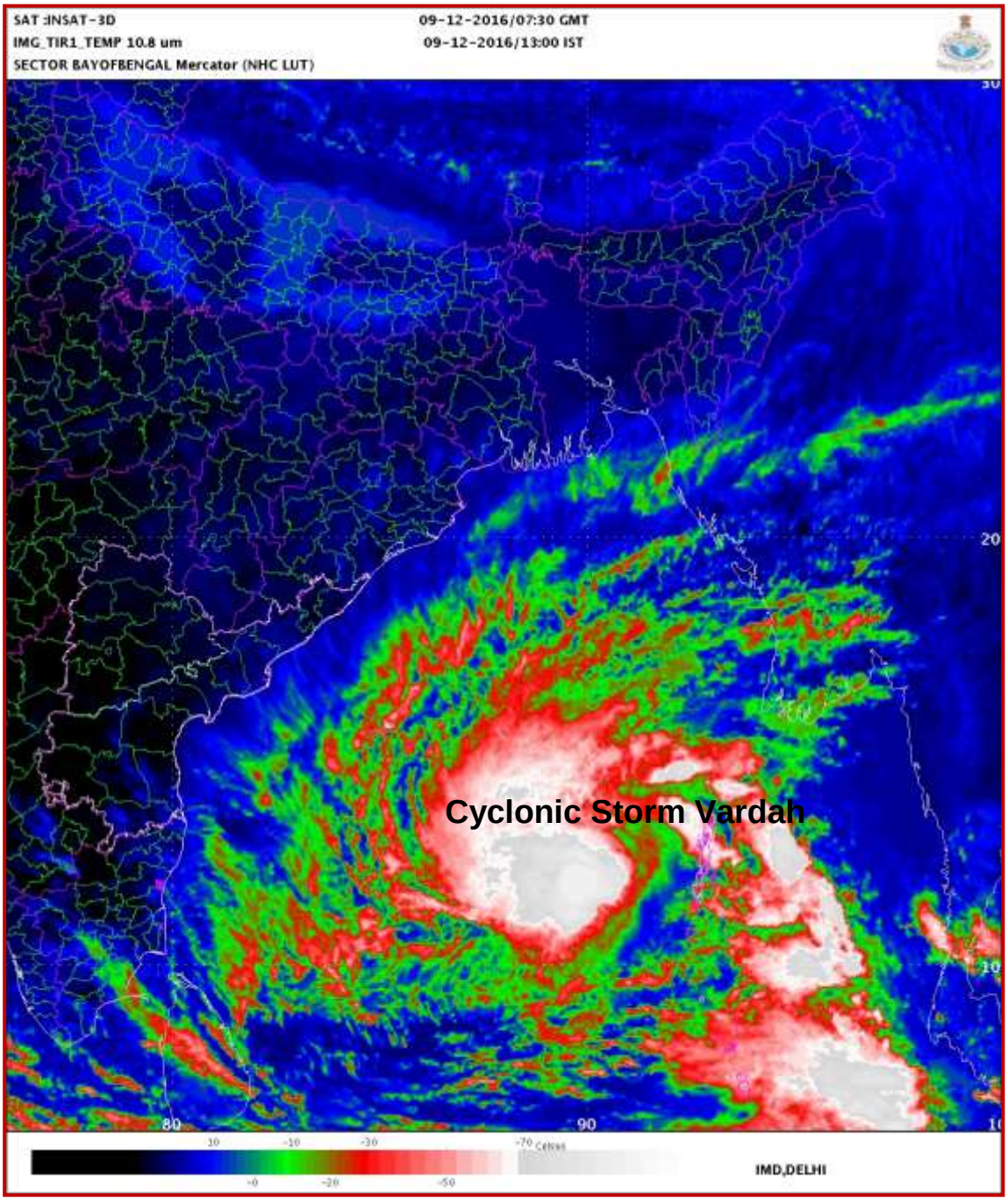

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWELVE ISSUED AT 1200 UTC OF 09TH DECEMBER 2016 BASED ON 0900 UTC CHARTS OF 09TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED SLIGHTLY NORTHWASTWARDS IN PAST 06 HRS WITH A SPEED OF 3 KMPH AND LAY CENTRED AT 0900 UTC OF TODAY, THE 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.2ºN AND LONGITUDE 90.3ºE, ABOUT 970 KM SOUTHEAST OF VISAKHAPATNAM (43149) , 1080 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 270 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE INITIALLY NORTHWESTWARDS, THEN WEST-NORTHWESTWARDS AND CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND MACHILIPATNAM (43185) AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

HOWEVER, THERE IS POSSIBILITY OF SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
09-12-2016/0900	12.2/90.3	80-90 gusting to 100	Cyclonic Storm
09-12-2016/1200	12.4/90.1	90-100 gusting to 110	Severe Cyclonic Storm
09-12-2016/1800	12.7/89.6	95-105 gusting to 115	Severe Cyclonic Storm
10-12-2016/0000	13.0/89.0	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/0600	13.6/88.0	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1800	14.4/86.2	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0600	14.8/84.3	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1800	15.0/82.7	90-100 gusting to 110	Severe Cyclonic Storm
12-12-2016/0600	14.8/81.2	70-80 gusting to 90	Cyclonic Storm
12-12-2016/1800	14.4/79.8	55-65 gusting to 75	Deep Depression

Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.0. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 10.5^0N & 16.0^0N AND LONGITUDE 86.0^0E & 91.5^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 45 KNOTS GUSTING TO 55 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $20X10^{-5}$ SECOND^{-1} TO WEST-NORTHWEST OF SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $20X10^{-5}$ SECOND^{-1} TO WEST-NORTHWEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY HAS INCREASED DURING PAST 12 HOURS AND IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING > 1. CONSIDERING THE ENVIRONMENTAL PARAMETERS, THESE ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND ITS NORTHWESTWARD/WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO WEAKENING OF THE SYSTEM TO SOME EXTENT BEFORE LANDFALL

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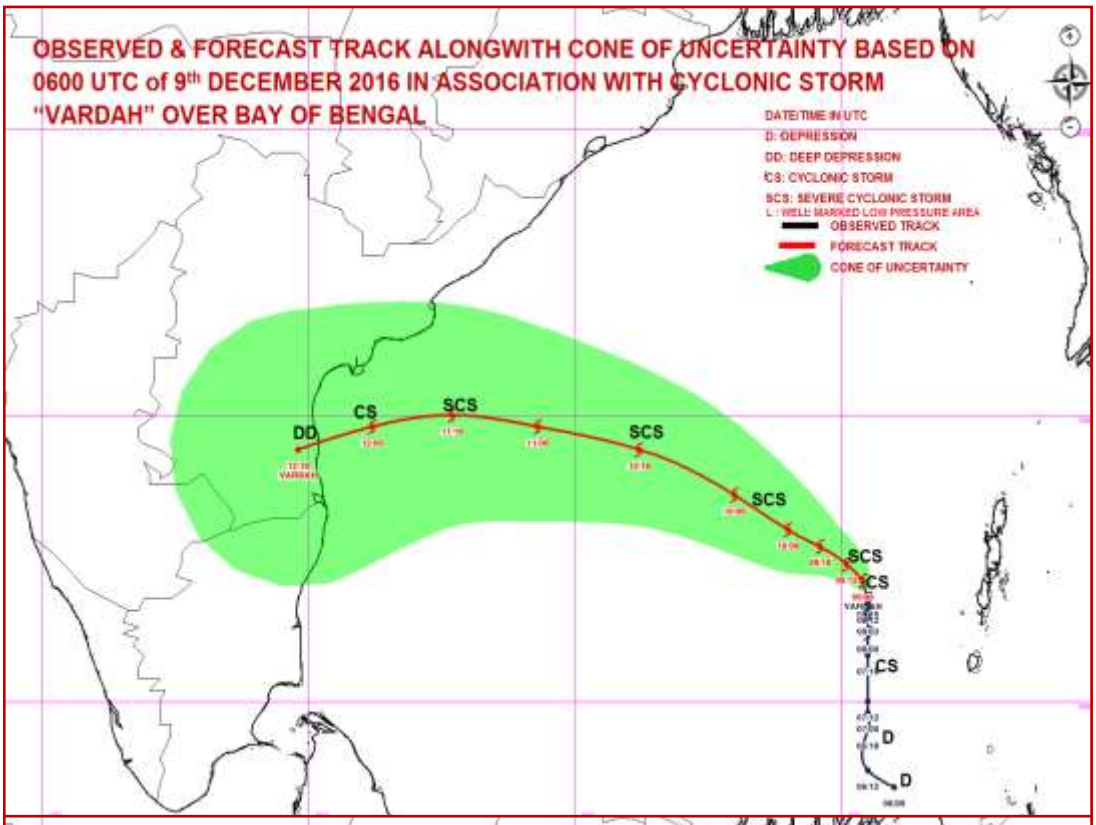

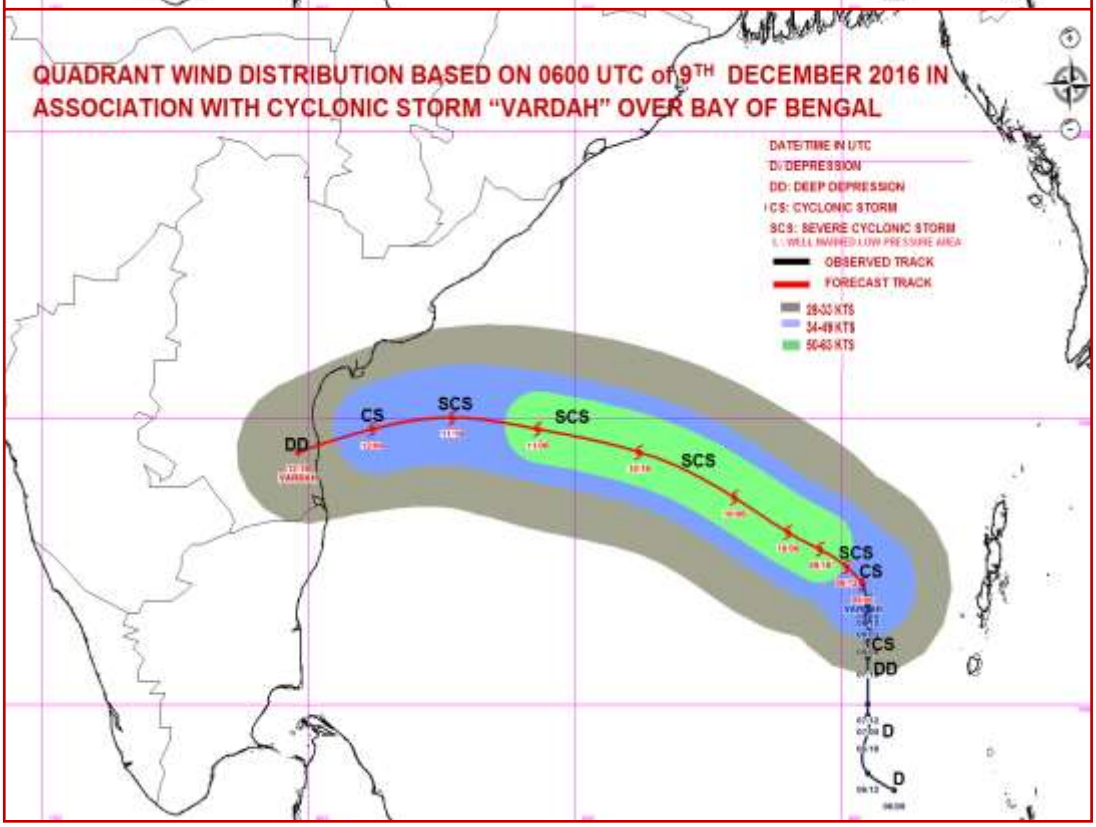

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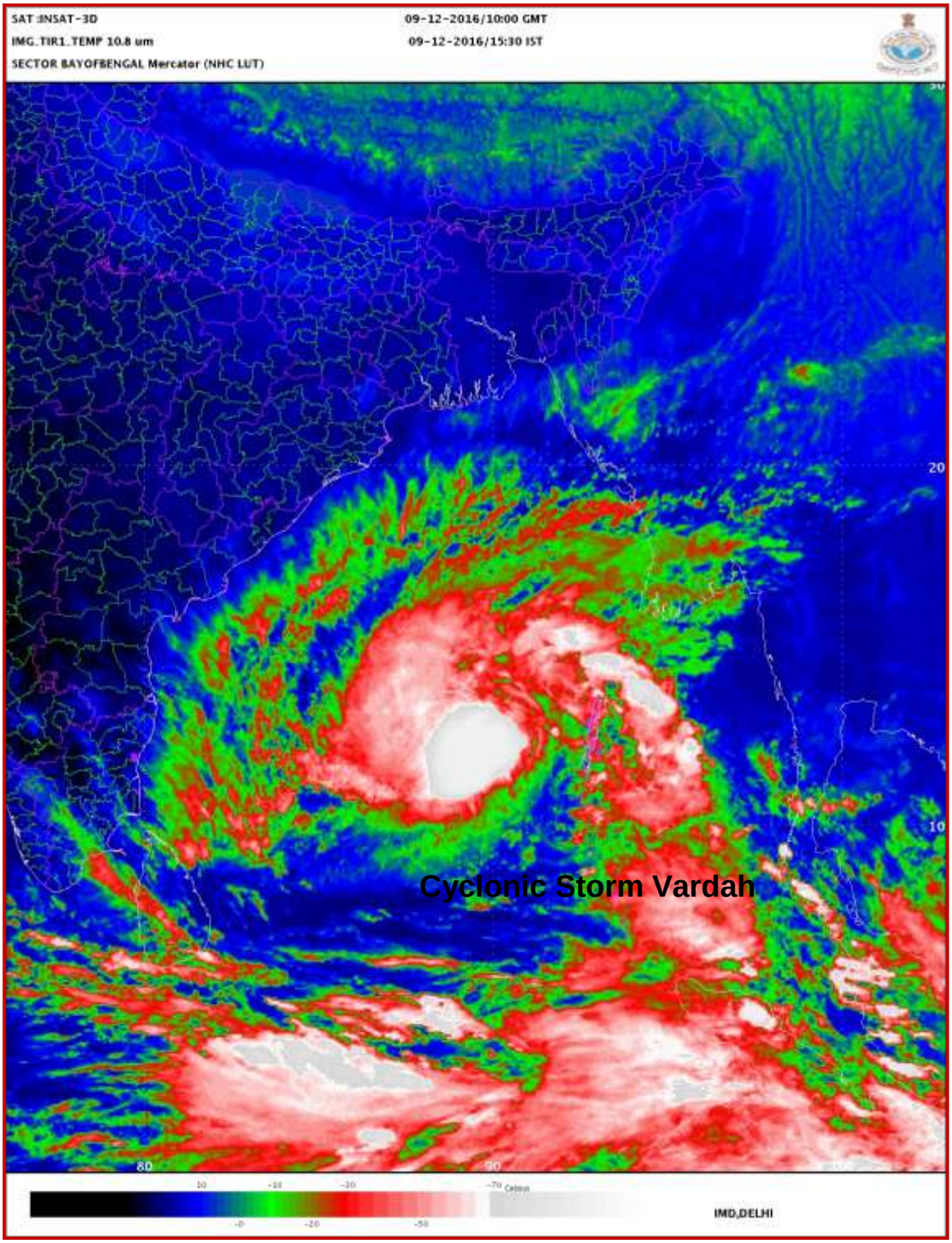

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

FROM: RSMC –TROPICAL CYCLONES, NEW DELHI
TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)
STORM WARNING CENTRE, BANGKOK (THAILAND)
STORM WARNING CENTRE, COLOMBO (SRILANKA)
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METEOROLOGICAL OFFICE, MALE (MALDIVES)
OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)
YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTEEN ISSUED AT 1500 UTC OF 09TH DECEMBER 2016 BASED ON 1200 UTC CHARTS OF 09TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS IN PAST 06 HRS WITH A SPEED OF 7 KMPH AND LAY CENTRED AT 1200 UTC OF TODAY, THE 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.2ºN AND LONGITUDE 90.0ºE, ABOUT 950 KM SOUTH-SOUTHEAST OF VISAKHAPATNAM (43149), 1050 KM SOUTHEAST OF MACHILIPATNAM (43185) AND 300 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND MACHILIPATNAM (43185) AROUND AFTERNOON/ EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
09-12-2016/1200	12.2/90.0	80-90 gusting to 100	Cyclonic Storm
09-12-2016/1800	12.4/89.5	90-100 gusting to 110	Severe Cyclonic Storm
10-12-2016/0000	12.8/88.9	95-105 gusting to 115	Severe Cyclonic Storm
10-12-2016/0600	13.5/88.0	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/1200	14.0/87.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.5/85.2	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	14.7/83.5	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	14.8/82.0	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1200	14.7/80.5	65-75 gusting to 85	Cyclonic Storm
13-12-2016/0000	14.4/79.0	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.0. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 10.0^{0}N & 15.0^{0}N AND LONGITUDE 86.5^{0}E & 91.3^{0}E. THE ASSOCIATED

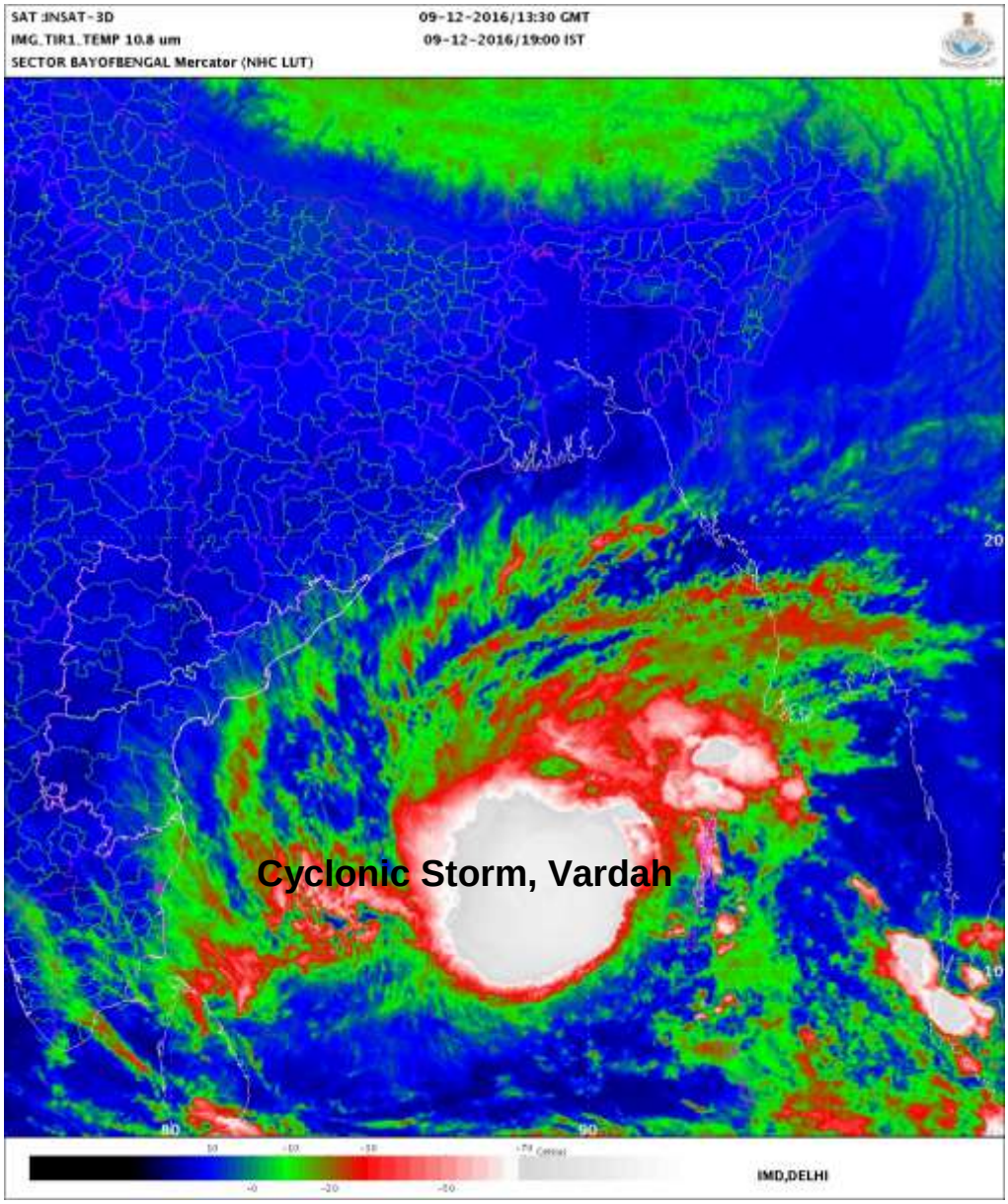
MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 45 KNOTS GUSTING TO 55 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

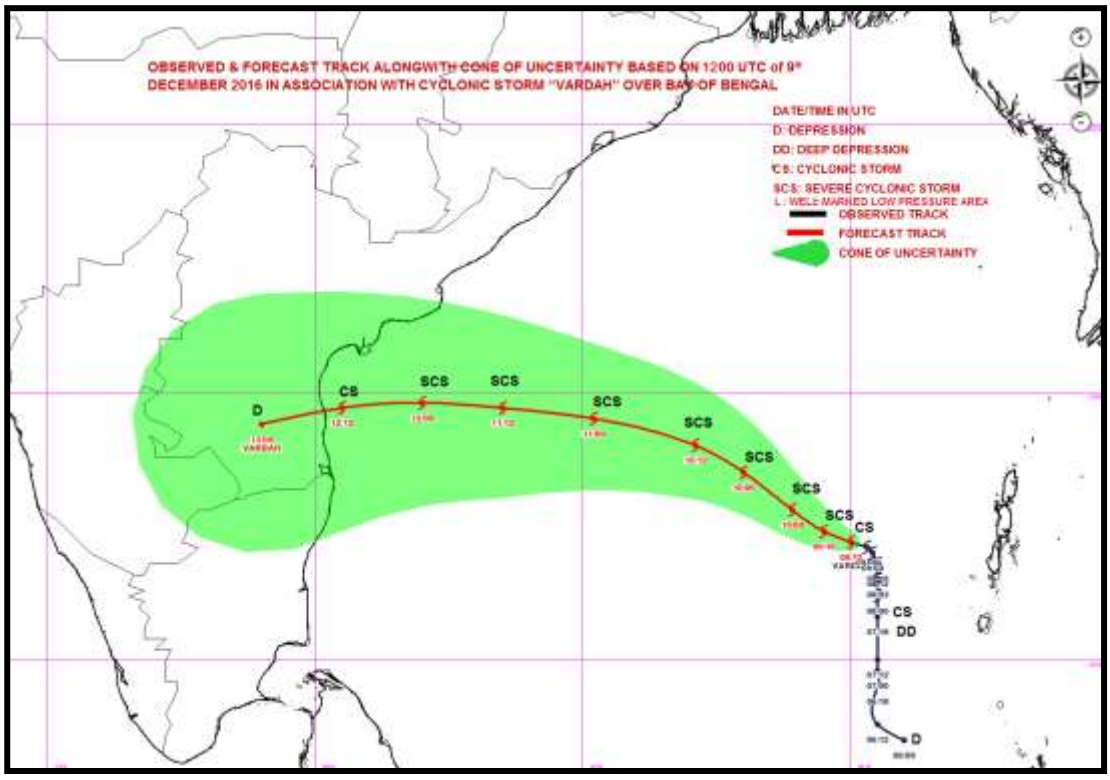
THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 50X10^{-5} SECOND^{-1} AT SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} TO WEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING > 1. THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND ITS WESTNORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS.

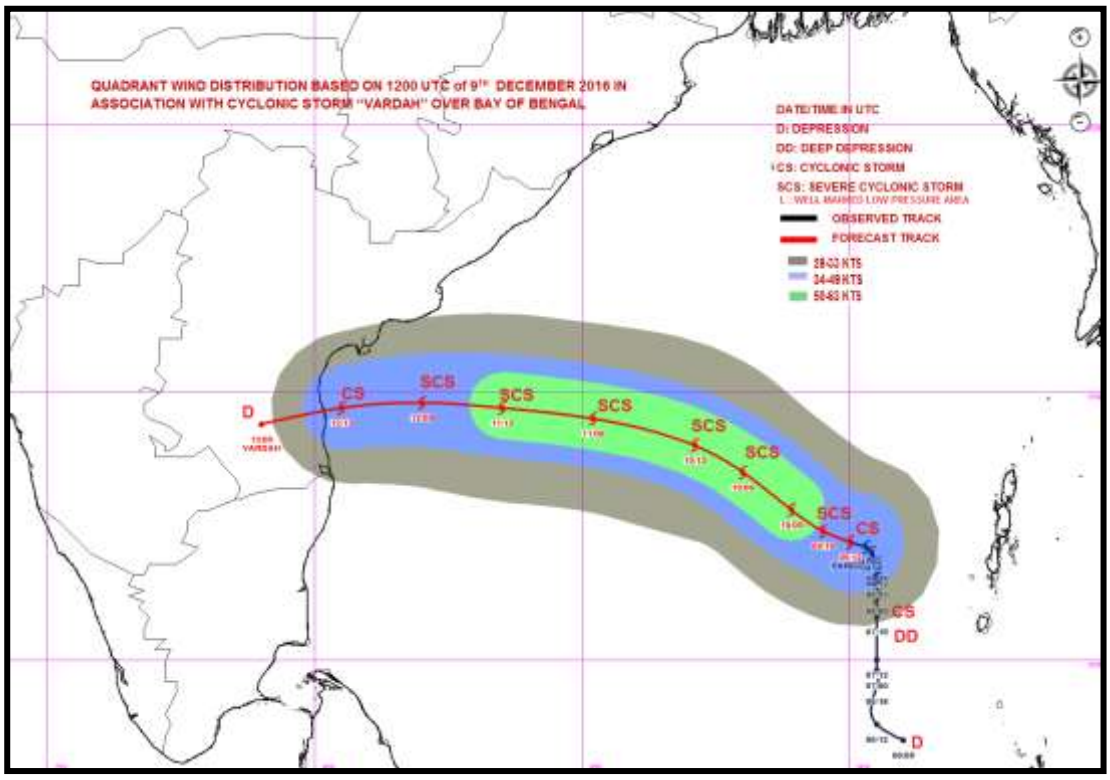
THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHWEST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11TH 1200 UTC ONWARDS.

(NEETHA K GOPAL)
SCIENTIST-E
RSMC, NEW DELHI



Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in





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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER FOURTEEN ISSUED AT 1630 UTC OF 09TH DECEMBER 2016 BASED ON 1500 UTC CHARTS OF 09TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED WESTWARDS IN PAST 06 HRS WITH A SPEED OF 5 KMPH AND LAY CENTRED AT 1500 UTC OF TODAY, THE 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.2ºN AND LONGITUDE 89.9ºE, ABOUT 940 KM SOUTH-SOUTHEAST OF VISAKHAPATNAM (43149), 1040 KM SOUTHEAST OF MACHILIPATNAM (43185) AND 310 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND MACHILIPATNAM (43185) AROUND AFTERNOON/ EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
09-12-2016/1500	12.2/89.9	80-90 gusting to 100	Cyclonic Storm
09-12-2016/1800	12.4/89.5	90-100 gusting to 110	Severe Cyclonic Storm
10-12-2016/0000	12.8/88.9	95-105 gusting to 115	Severe Cyclonic Storm
10-12-2016/0600	13.5/88.0	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/1200	14.0/87.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0000	14.5/85.2	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1200	14.7/83.5	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	14.8/82.0	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1200	14.7/80.5	65-75 gusting to 85	Cyclonic Storm
13-12-2016/0000	14.4/79.0	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.0. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 9.5^{0}N & 15.0^{0}N AND LONGITUDE 85.5^{0}E & 91.5^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 45 KNOTS GUSTING TO 55 KNOTS. THE

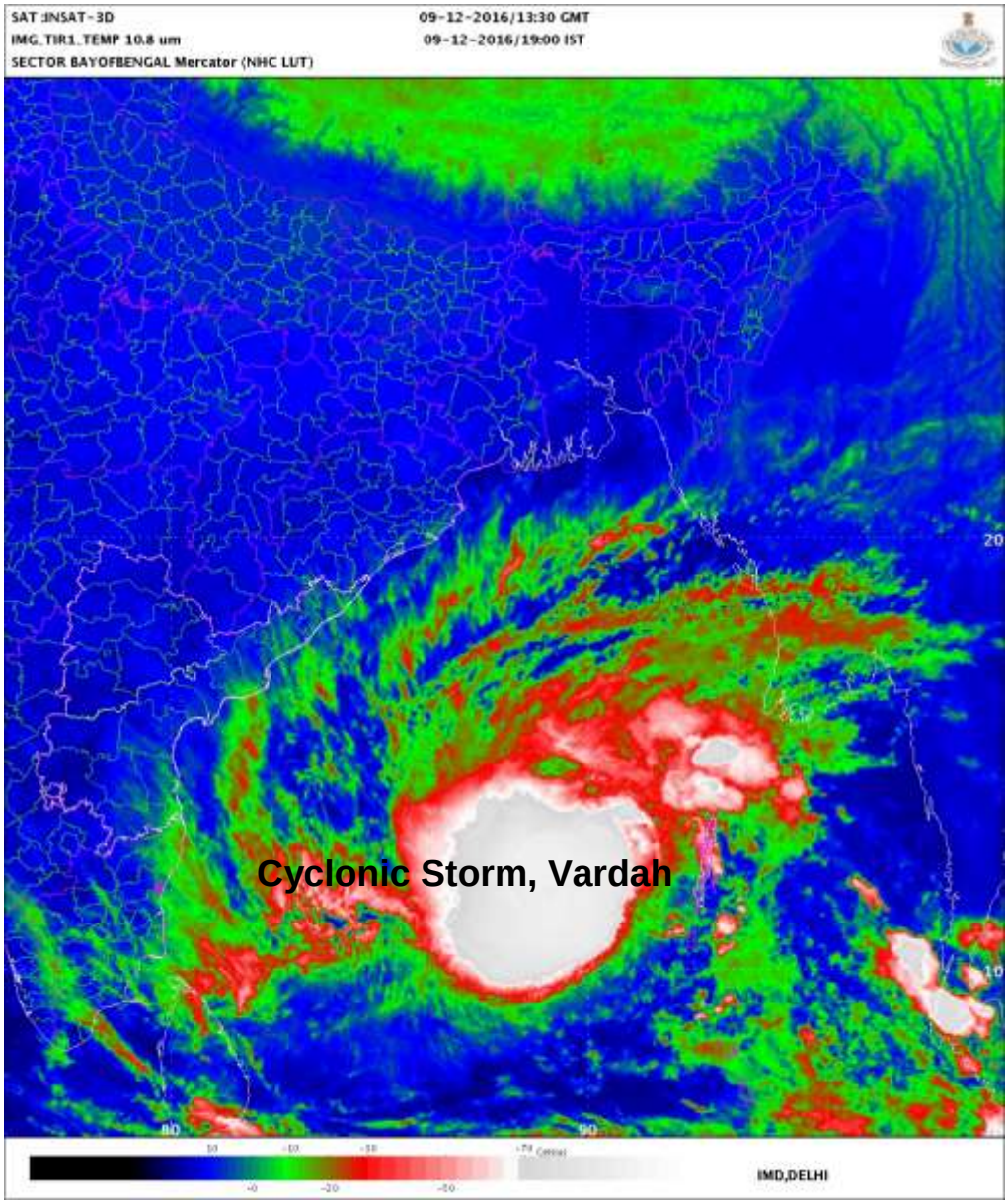
ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 50X10^{-5} SECOND^{-1} AT SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} TO WEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING > 1. THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND ITS WESTNORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHWEST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11TH 1200 UTC ONWARDS.

(AKHIL SRIVASTAVA)
SCIENTIST-B
RSMC, NEW DELHI



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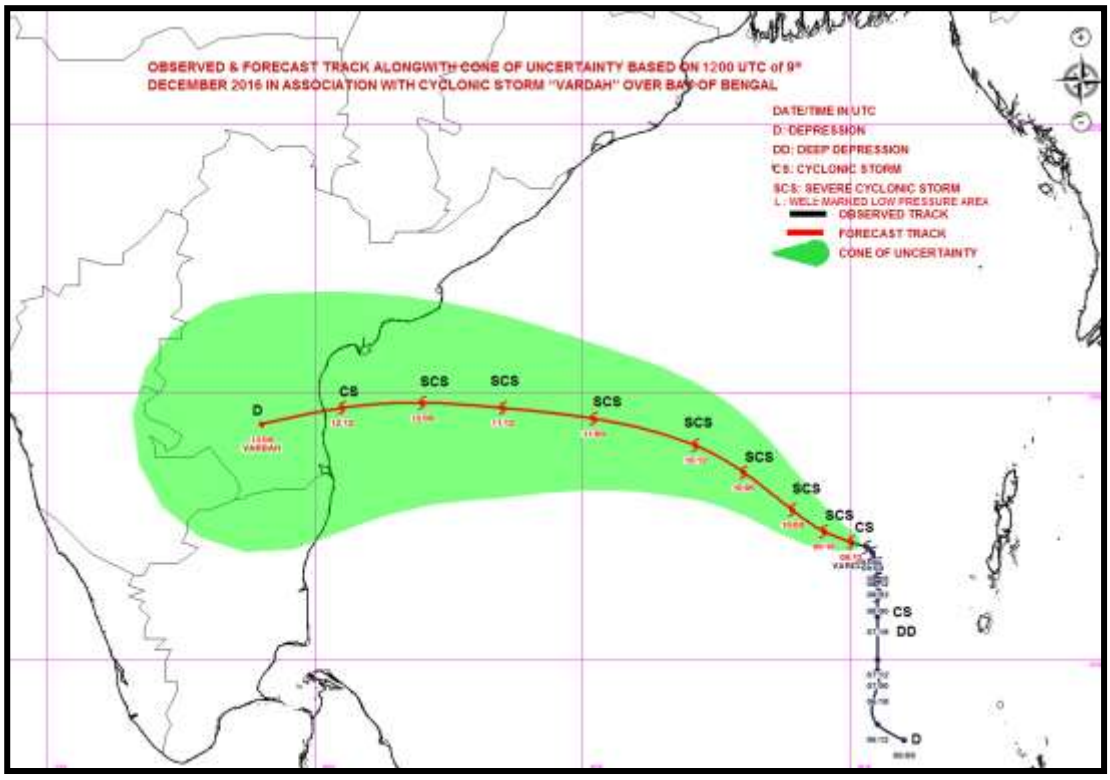

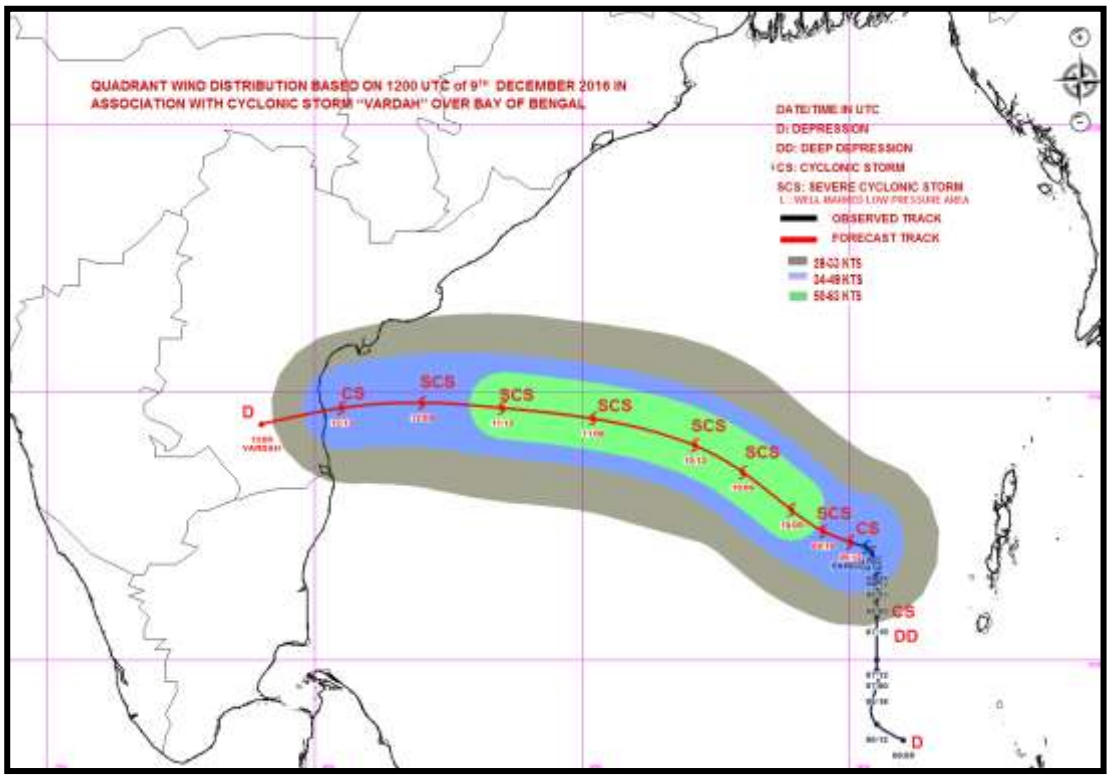

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER FIFTEEN ISSUED AT 2000 UTC OF 09TH DECEMBER 2016 BASED ON 1800 UTC CHARTS OF 09TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS IN PAST 06 HRS WITH A SPEED OF 7 KMPH INTENSIFIED FURTHER INTO A SEVERE CYCLONIC STORM AND LAY CENTRED AT 1800 UTC OF 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.3ºN AND LONGITUDE 89.6ºE, ABOUT 910 KM SOUTH-SOUTHEAST OF VISAKHAPATNAM (43149), 1000 KM SOUTHEAST OF MACHILIPATNAM (43185) AND 340 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND INTENSIFY FURTHER DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND MACHILIPATNAM (43185) AROUND AFTERNOON/ EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
09-12-2016/1800	12.3/89.6	90-100 gusting to 110	Severe Cyclonic Storm
10-12-2016/0000	12.8/88.9	95-105 gusting to 115	Severe Cyclonic Storm
10-12-2016/0600	13.5/88.0	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/1200	14.0/87.1	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1800	14.3/86.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0600	14.6/84.3	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1800	14.7/82.7	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	14.7/81.2	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	14.6/79.7	40-50 gusting to 60	Depression
13-12-2016/0600	14.2/78.3	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 9.5^{0}N & 15.0^{0}N AND LONGITUDE 86.0^{0}E & 90.0^{0}E. THE ASSOCIATED

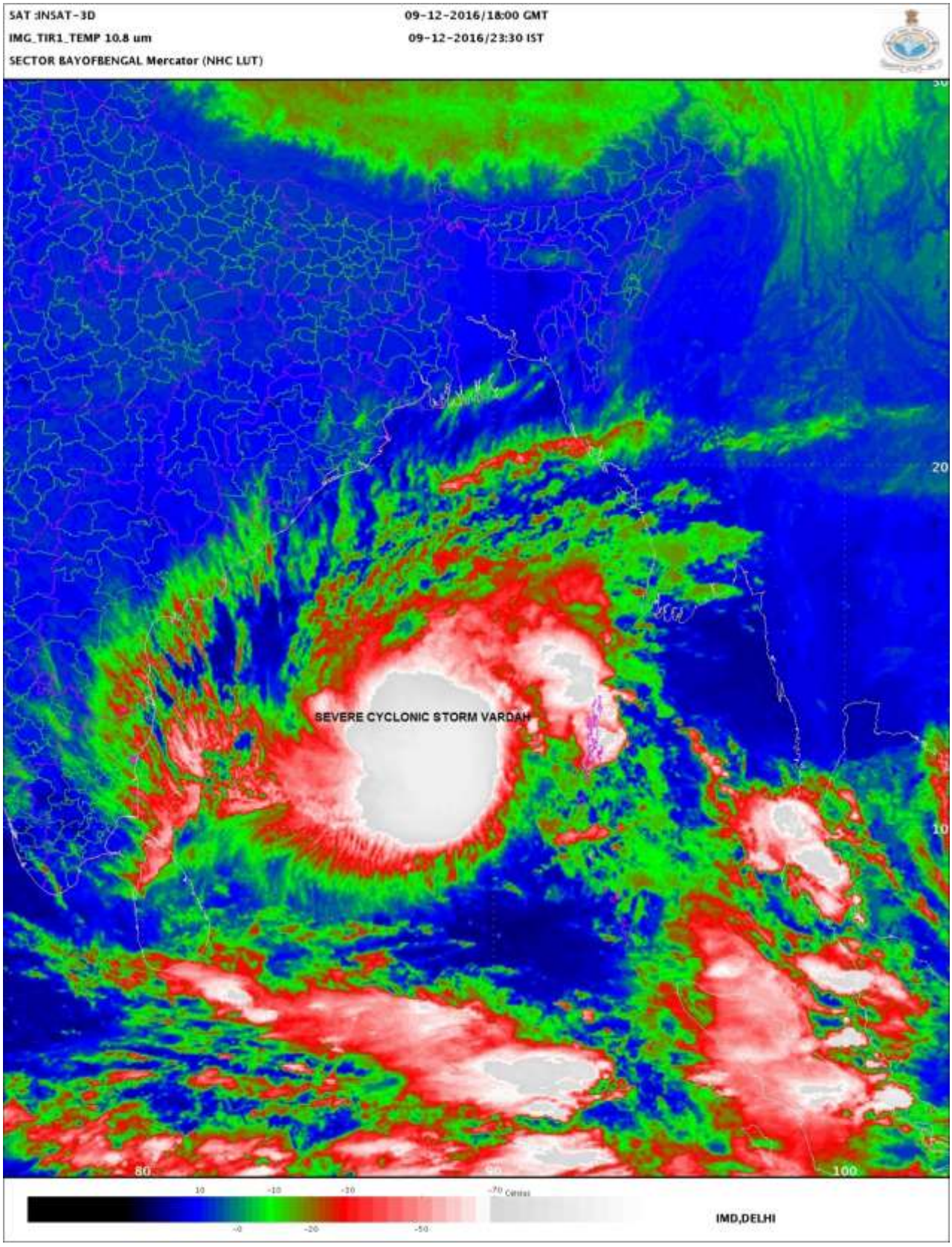
MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 55 KNOTS GUSTING TO 65 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 50X10^{-5} SECOND^{-1} AT SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} TO WEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING > 1. THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND ITS WESTNORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHWEST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11TH 1200 UTC ONWARDS.

(AKHIL SRIVASTAVA)
SCIENTIST-B
RSMC, NEW DELHI



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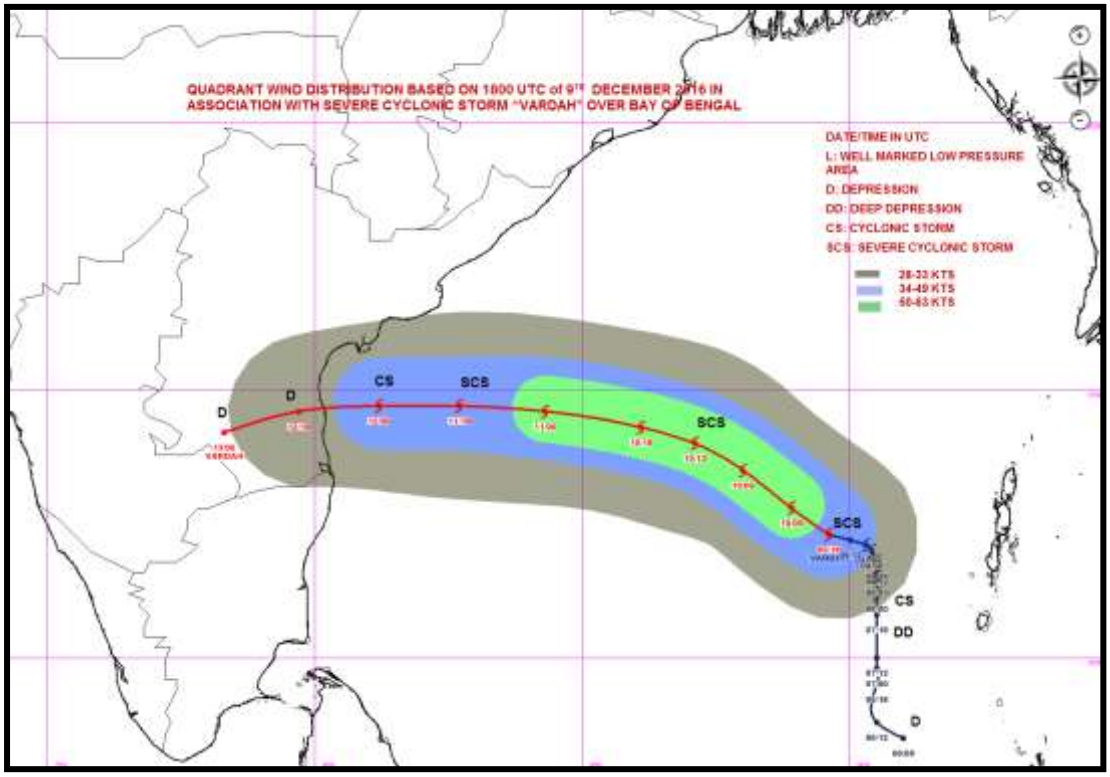

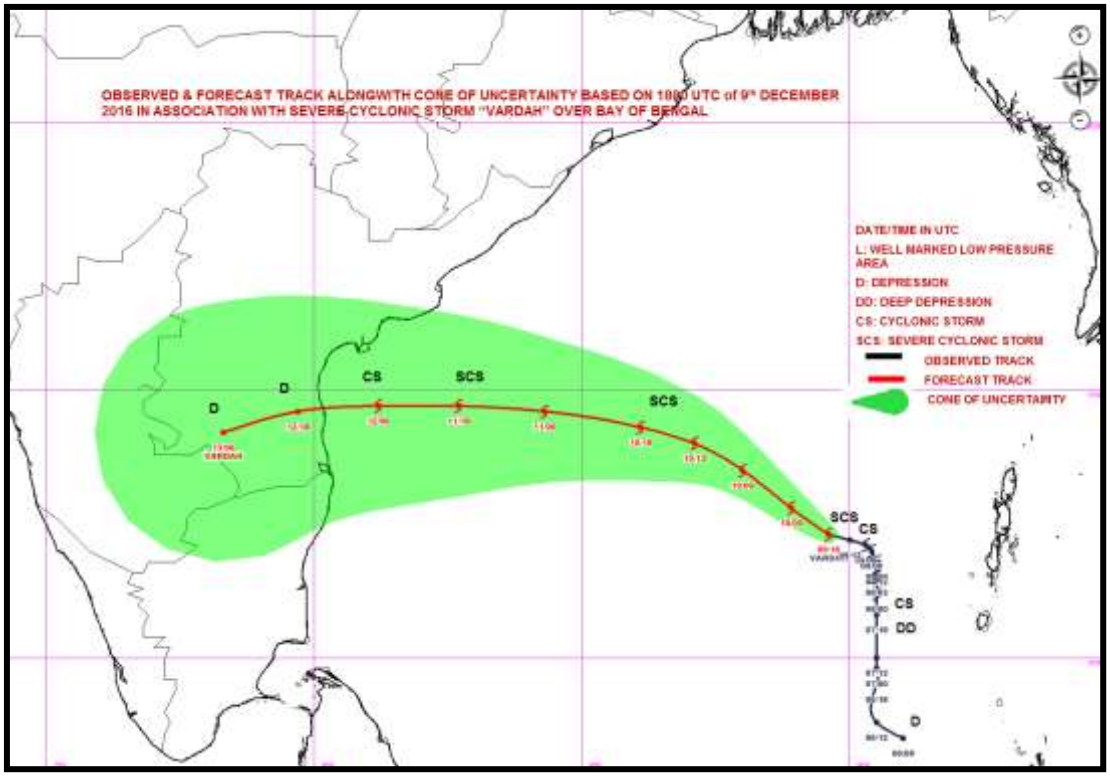

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER SIXTEEN ISSUED AT 0000 UTC OF 10TH DECEMBER 2016 BASED ON 2100 UTC CHARTS OF 09TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS IN PAST 06 HRS WITH A SPEED OF 17 KMPH AND LAY CENTRED AT 2100 UTC OF 9TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.5ºN AND LONGITUDE 89.0ºE, ABOUT 840 KM SOUTH-SOUTHEAST OF VISAKHAPATNAM (43149), 930 KM SOUTHEAST OF MACHILIPATNAM (43185) AND 410 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND INTENSIFY FURTHER DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND MACHILIPATNAM (43185) AROUND AFTERNOON/ EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
09-12-2016/2100	12.5/89.0	90-100 gusting to 110	Severe Cyclonic Storm
10-12-2016/0000	12.8/88.9	95-105 gusting to 115	Severe Cyclonic Storm
10-12-2016/0600	13.5/88.0	100-110 gusting to 120	Severe Cyclonic Storm
10-12-2016/1200	14.0/87.1	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1800	14.3/86.1	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/0600	14.6/84.3	110-120 gusting to 130	Severe Cyclonic Storm
11-12-2016/1800	14.7/82.7	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	14.7/81.2	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	14.6/79.7	40-50 gusting to 60	Depression
13-12-2016/0600	14.2/78.3	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 9.5^{0}N & 15.0^{0}N AND LONGITUDE 86.0^{0}E & 90.0^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 55 KNOTS GUSTING TO 65 KNOTS. THE

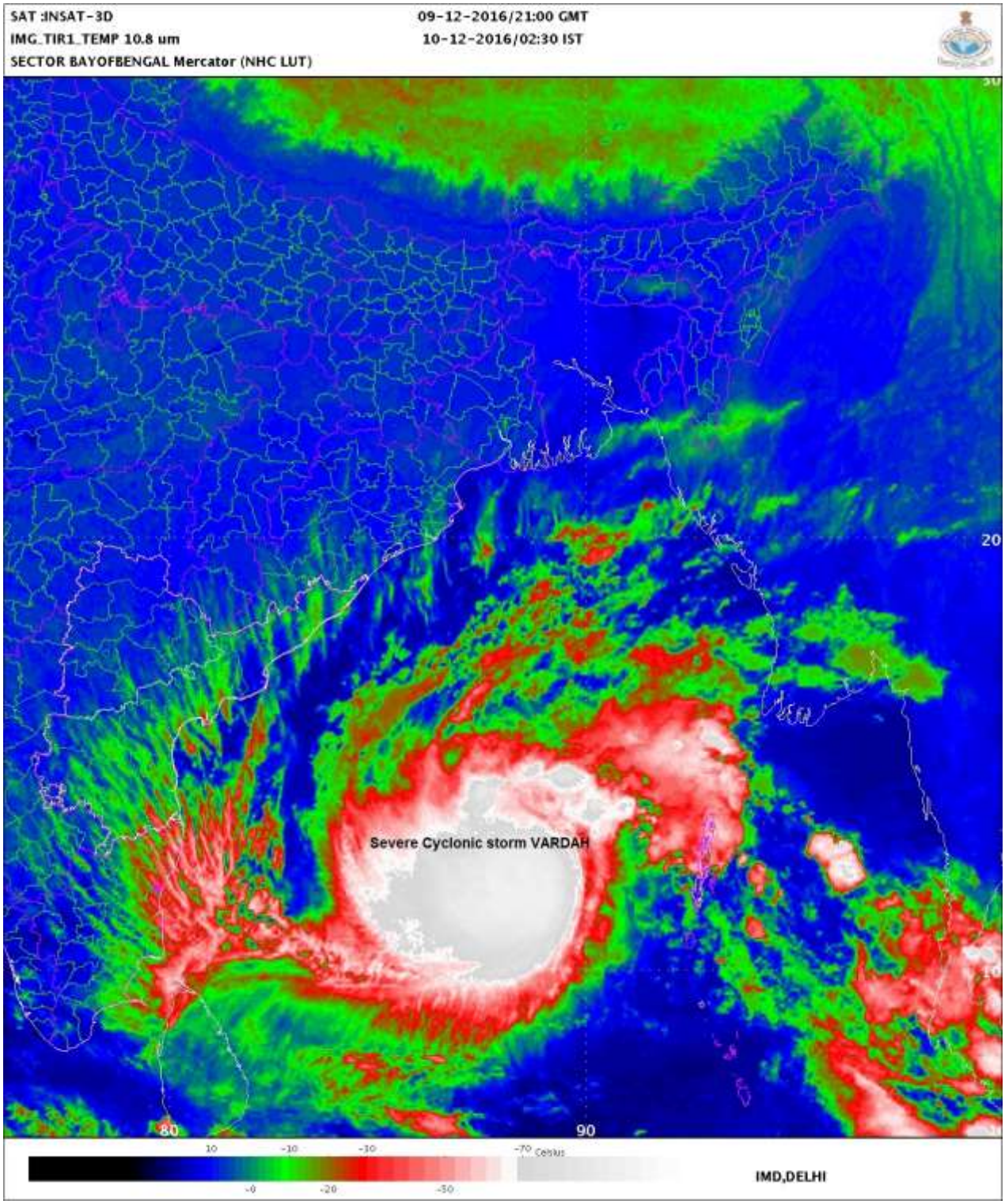
ESTIMATED CENTRAL PRESSURE IS 996 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 50X10^{-5} SECOND^{-1} AT SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} TO WEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 PKNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING > 1. THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS AND ITS WESTNORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHWEST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11TH 1200 UTC ONWARDS.

(AKHIL SRIVASTAVA)
SCIENTIST-B
RSMC, NEW DELHI



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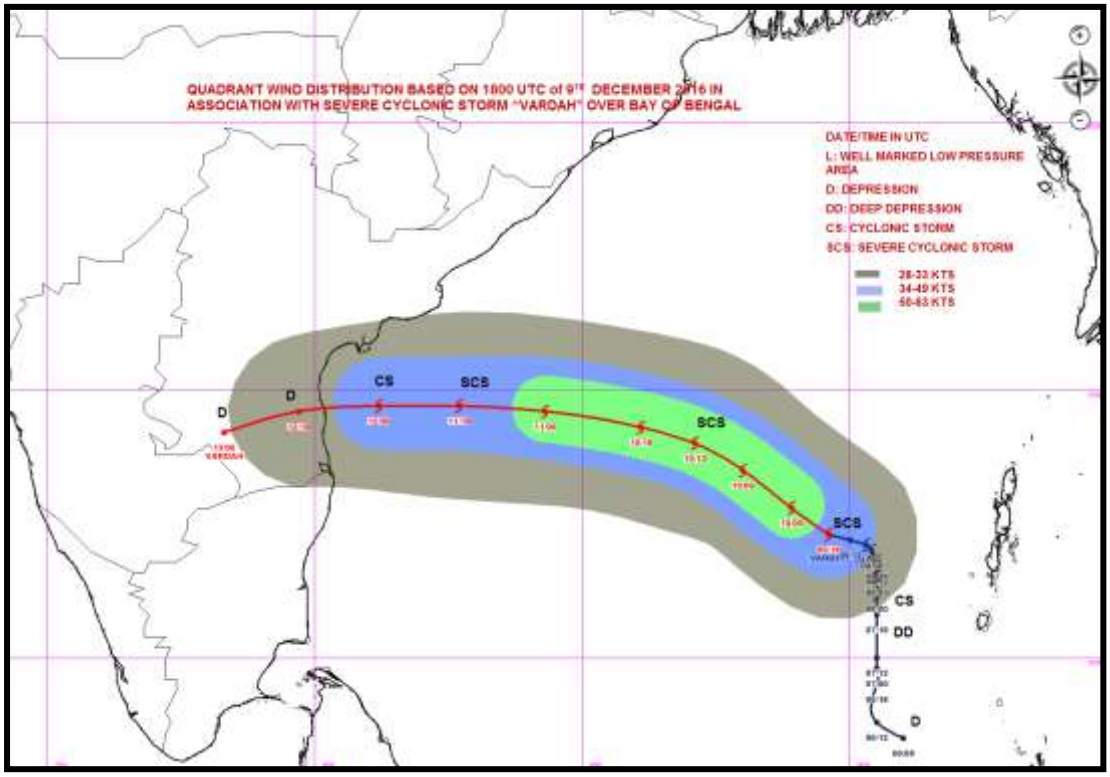

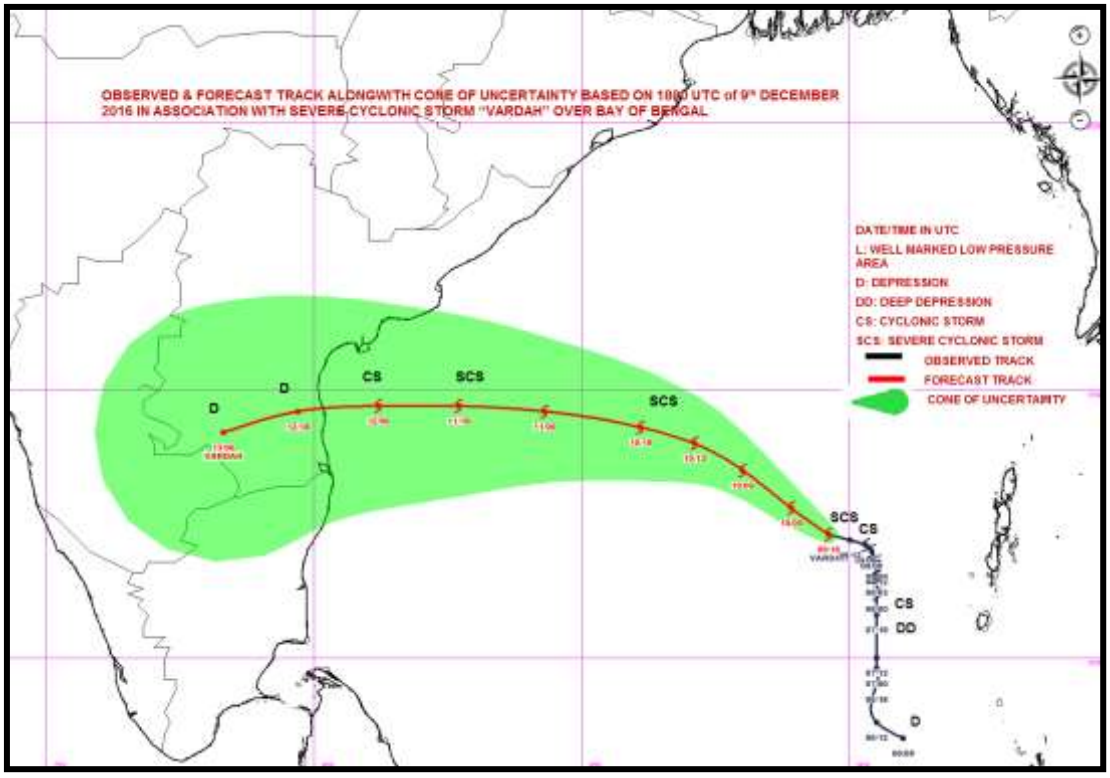

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER SEVENTEEN ISSUED AT 0300 UTC OF 10TH DECEMBER 2016 BASED ON 0000 UTC CHARTS OF 10TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS IN PAST 06 HRS WITH A SPEED OF 22 KMPH AND LAY CENTRED AT 0000 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.6ºN AND LONGITUDE 88.4ºE, ABOUT 790 KM SOUTH-SOUTHEAST OF VISAKHAPATNAM (43149), 870 KM SOUTHEAST OF MACHILIPATNAM (43185) AND 480 KM WEST-NORTHWEST OF PORT BLAIR (43333). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND INTENSIFY FURTHER DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS ANDHRA PRADESH COAST BETWEEN NELLORE (43245) AND MACHILIPATNAM (43185) AROUND AFTERNOON/ EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPI	CATEGORY OF CYCLONIC DISTURBANCE
10-12-2016/0000	12.6/88.4	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
10-12-2016/0600	12.9/87.6	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
10-12-2016/1200	13.2/86.8	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
10-12-2016/1800	13.5/86.0	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/0000	13.8/85.1	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/1200	14.4/83.3	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/0000	14.7/81.6	80-90 GUSTING TO 100	CYCLONIC STORM
12-12-2016/1200	14.7/80.0	40-50 GUSTING TO 60	DEPRESSION
13-12-2016/0000	14.5/78.4	40-50 GUSTING TO 60	DEPRESSION

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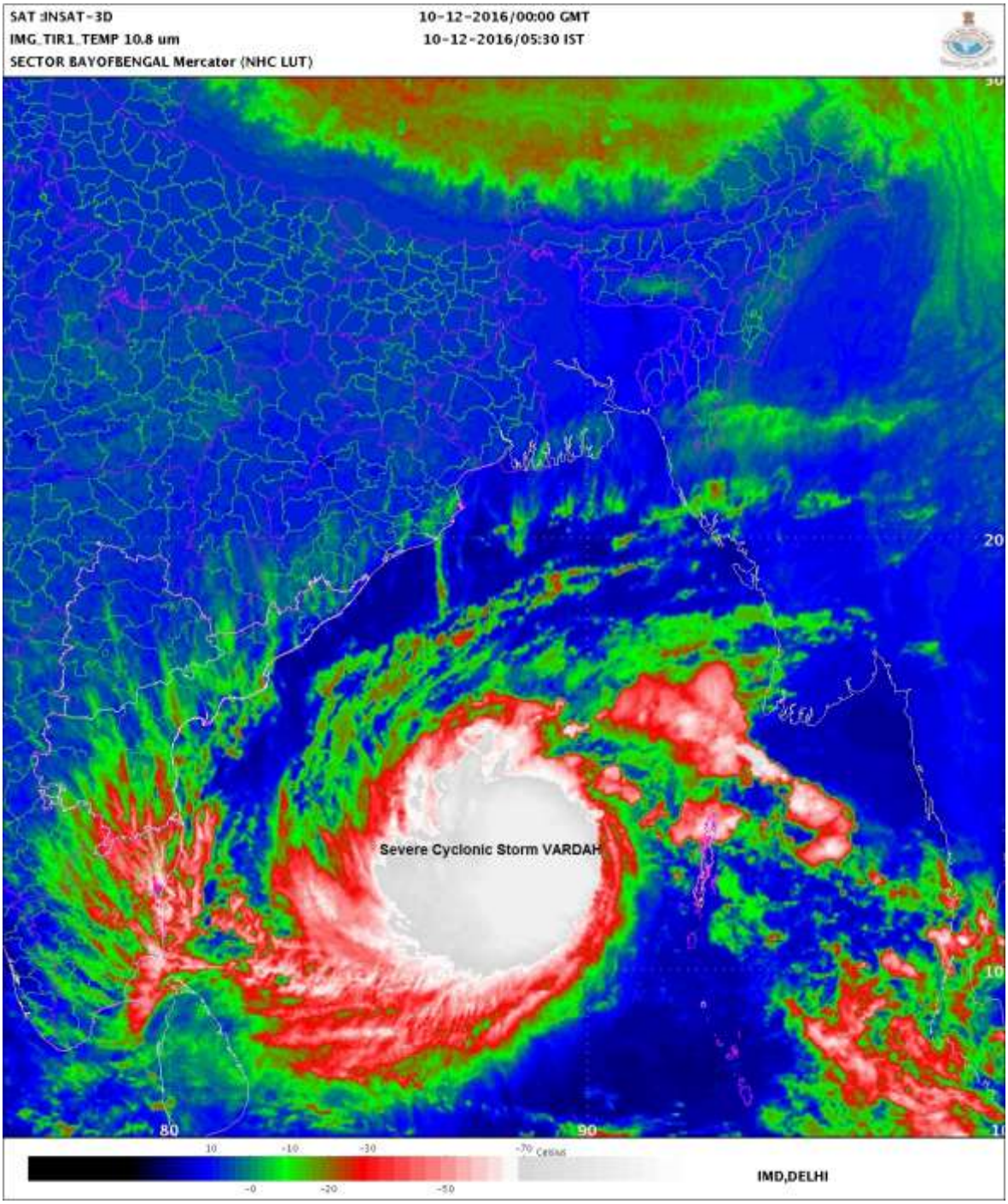
ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.5. CONVECTION SHOWS CENTRAL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 9.5^0N & 15.0^0N AND LONGITUDE 85.0^0E & 90.0^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 55 KNOTS GUSTING TO 65 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 990 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $30X10^{-5}$ SECOND^{-1} AT SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE HAS INCREASED IN PAST SIX HOURS AND IS AROUND $40X10^{-5}$ SECOND^{-1} TO WEST OF THE SYSTEM CENTRE AND THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH INCREASING AMPLITUDE BECOMING >1.

THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS AND ITS WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS. THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHWEST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11^{TH} 1200 UTC ONWARDS.

(AKHIL SRIVASTAVA)
SCIENTIST-B
RSMC, NEW DELHI



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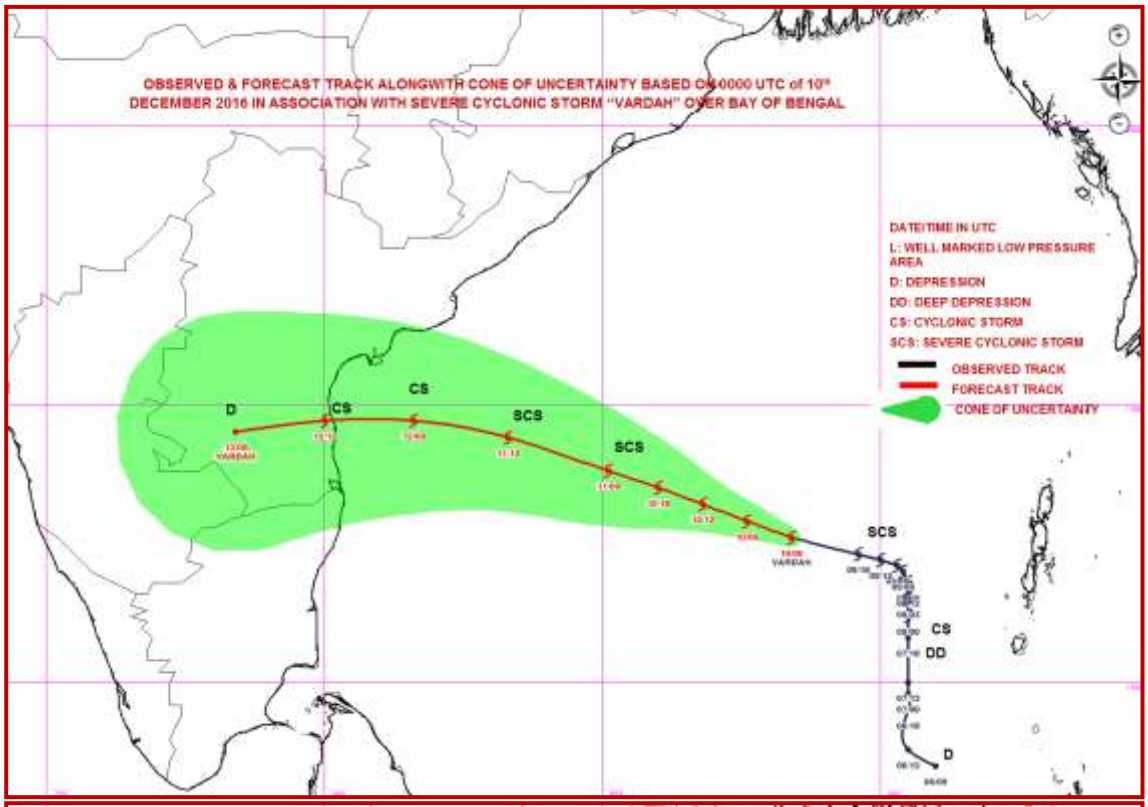

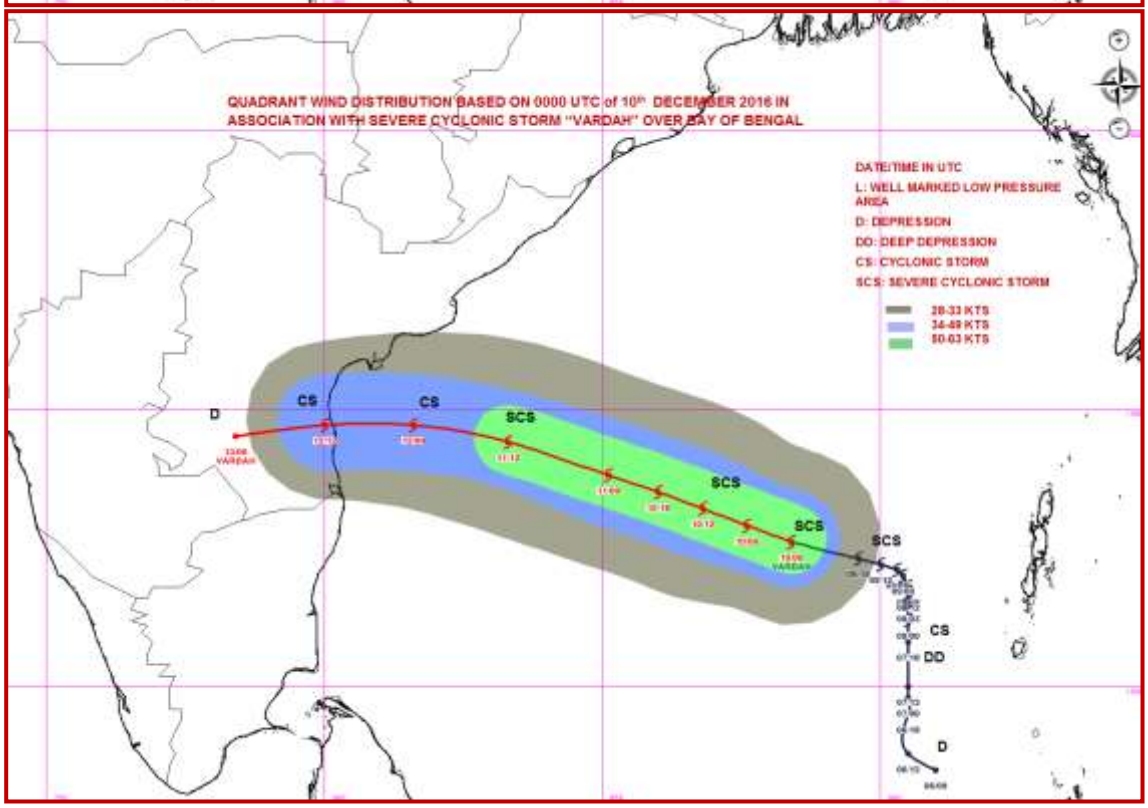

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER EIGHTEEN ISSUED AT 0600 UTC OF 10TH DECEMBER 2016 BASED ON 0300 UTC CHARTS OF 10TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 20 KMPH AND LAY CENTRED AT 0300 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.7ºN AND LONGITUDE 88.0ºE, ABOUT 880 KM EAST-SOUTHEAST OF NELLORE (43245) AND 830 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND FURTHER INTENSIFY SLIGHTLY DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS SOUTH ANDHRA PRADESH COAST BETWEEN NELLORE AND MACHILIPATNAM AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPI	CATEGORY OF CYCLONIC DISTURBANCE
10-12-2016/0300	12.7/88.0	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
10-12-2016/0600	12.9/87.6	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
10-12-2016/1200	13.2/86.8	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
10-12-2016/1800	13.5/86.0	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/0000	13.8/85.1	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/1200	14.4/83.3	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/0000	14.7/81.6	80-90 GUSTING TO 100	CYCLONIC STORM
12-12-2016/1200	14.7/80.0	40-50 GUSTING TO 60	DEPRESSION
13-12-2016/0000	14.5/78.4	40-50 GUSTING TO 60	DEPRESSION

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.5. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER

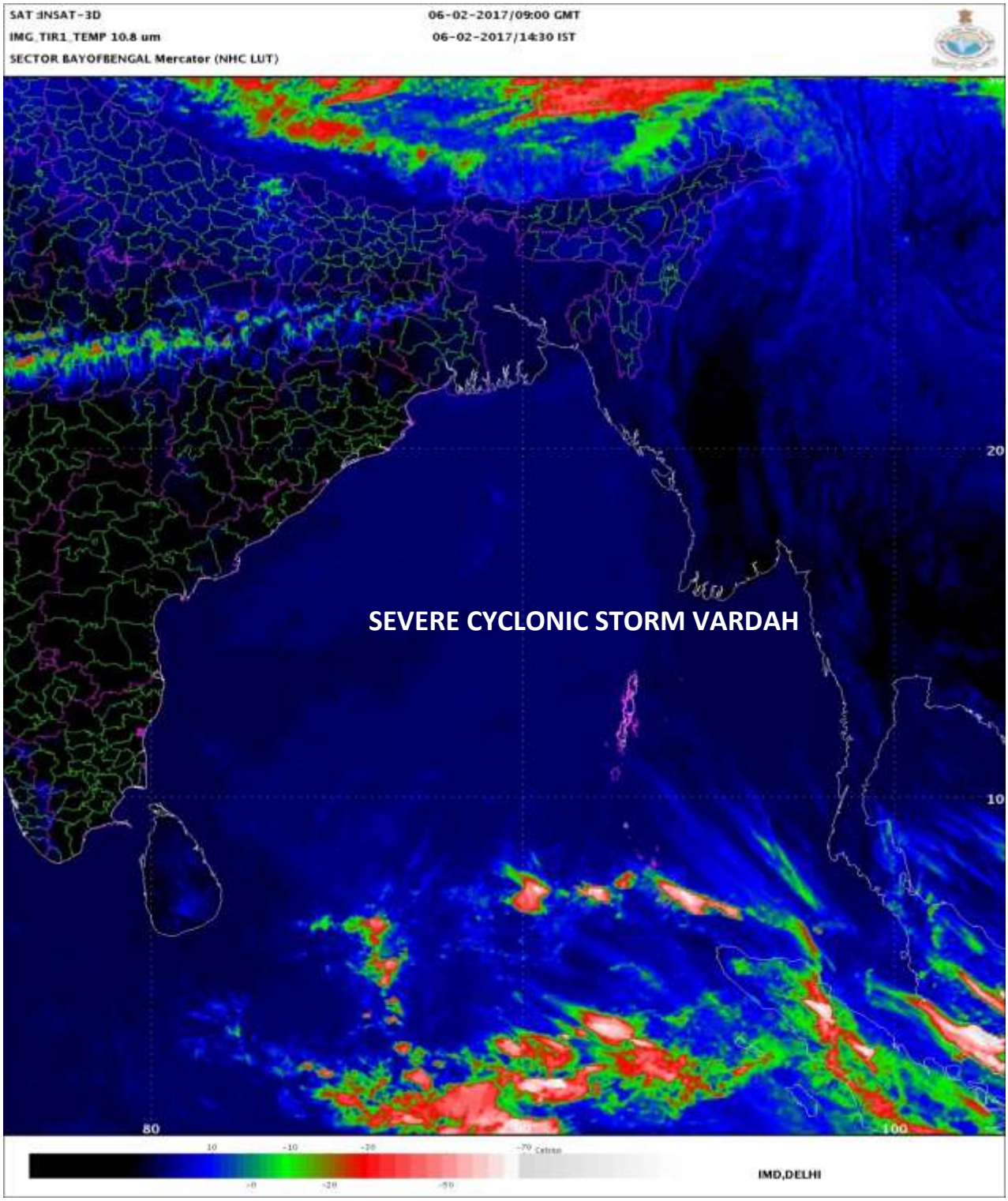
SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 9.0^0N & 16.0^0N AND LONGITUDE 83.0^0E & 90.0^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 55 KNOTS GUSTING TO 65 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 990 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $30X10^{-5}$ SECOND^{-1} AROUND THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ SECOND^{-1} TO WEST-SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE AND IS EXTENDING UPTO MID-TROPOSPHERIC LEVELS. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH DECREASING AMPLITUDE.

THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS AND ITS WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS. THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHEAST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11^{TH} /1200 UTC ONWARDS.

(NEETHA K GOPAL)
SCIENTIST-E
RSMC, NEW DELHI



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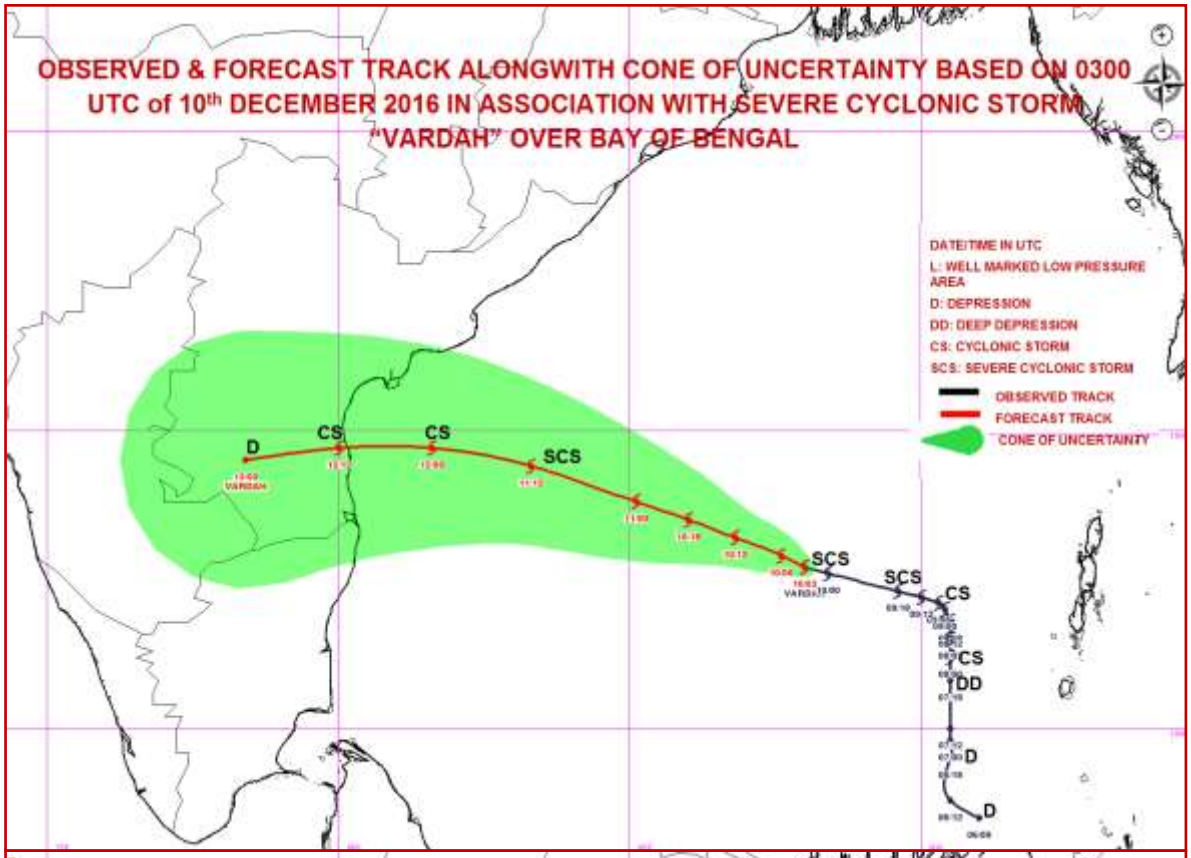

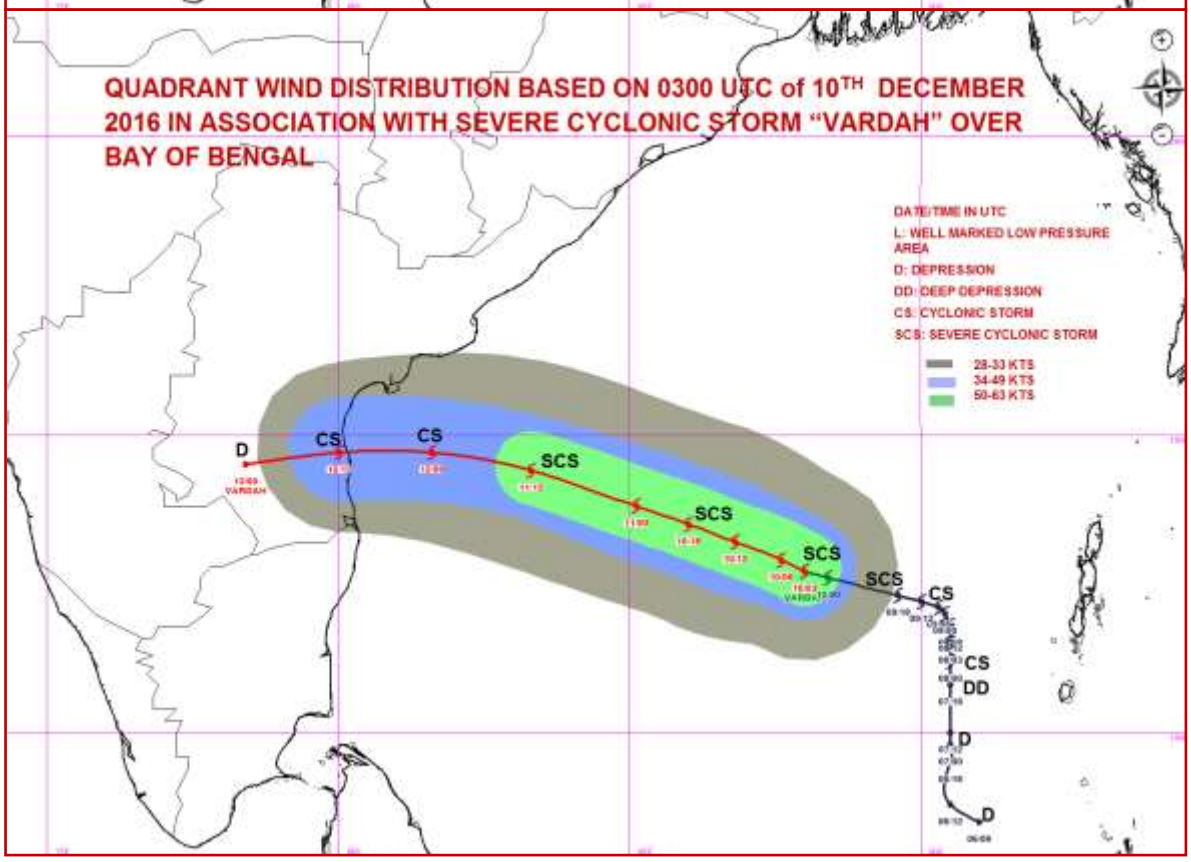

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER NINETEEN ISSUED AT 0900 UTC OF 10TH DECEMBER 2016 BASED ON 0600 UTC CHARTS OF 10TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, VARDAH OVER SOUTHEAST BAY OF BENGAL MOVED FURTHER WEST-NORTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 20 KMPH AND LAY CENTRED AT 0600 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.0ºN AND LONGITUDE 87.4ºE, ABOUT 820 KM EAST-SOUTHEAST OF NELLORE(43245) AND 760 KM EAST-SOUTHEAST OF MACHILIPATNAM(43185). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND FURTHER INTENSIFY SLIGHTLY DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS SOUTH ANDHRA PRADESH COAST BETWEEN NELLORE AND MACHILIPATNAM AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

)ATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
10-12-2016/0600	13.0/87.4	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
10-12-2016/1200	13.2/86.8	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
10-12-2016/1800	13.4/86.0	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/0000	13.6/85.1	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/0600	13.9/84.2	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
11-12-2016/1800	14.2/82.6	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
12-12-2016/0600	14.5/81.0	70-90 GUSTING TO 100	CYCLONIC STORM
12-12-2016/1800	14.5/79.8	55-65 GUSTING TO 75	CYCLONIC STORM
13-12-2016/0600	14.2/78.4	35-45 GUSTING TO 55	DEPRESSION

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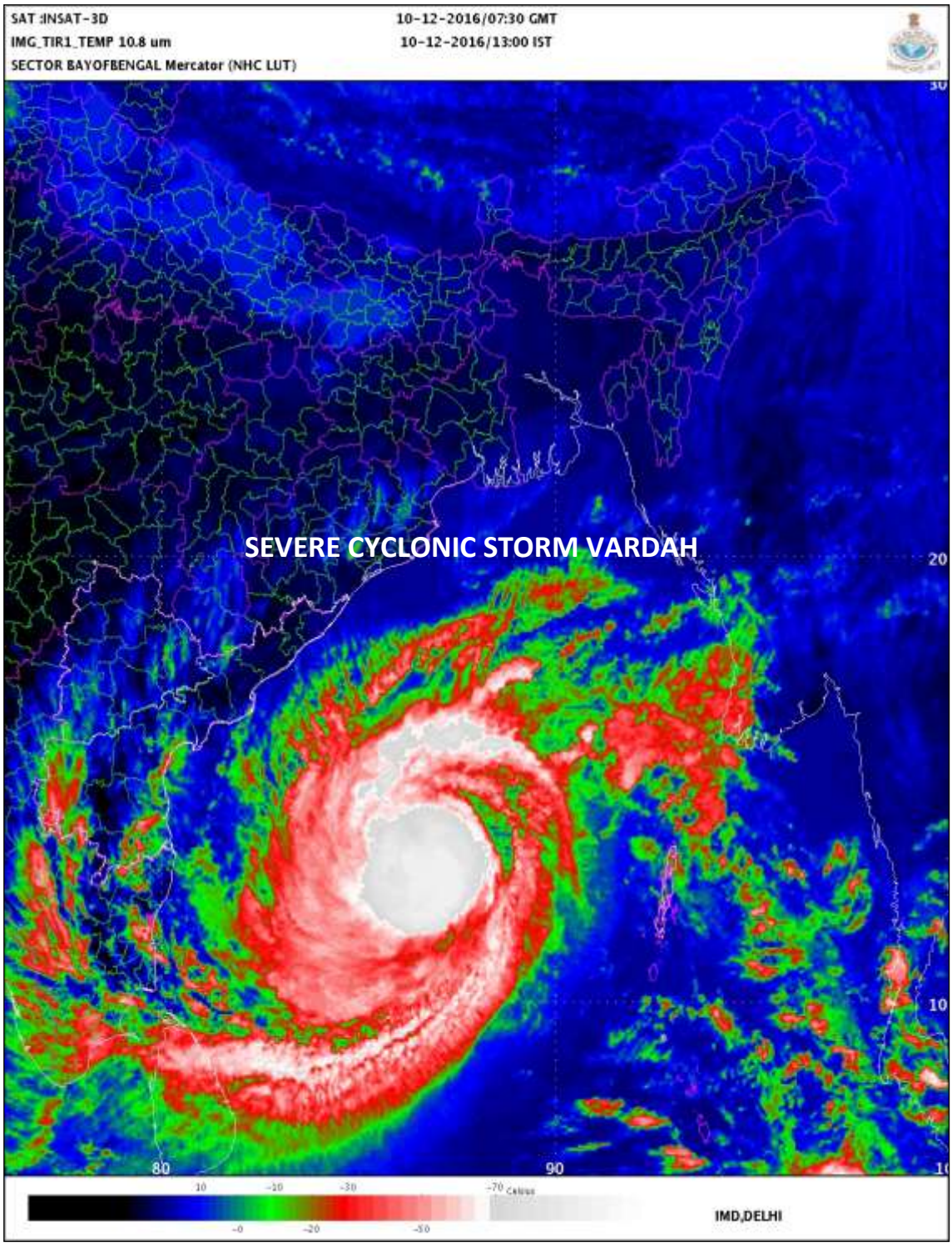
ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.5. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 12.0^0N & 13.7^0N AND LONGITUDE 86.0^0E & 88.5^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 55 KNOTS GUSTING TO 65 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 990 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $30X10^{-5}$ SECOND^{-1} AROUND THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ SECOND^{-1} TO WEST-SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE AND IS EXTENDING UPTO MID-TROPOSPHERIC LEVELS. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH DECREASING AMPLITUDE.

THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS AND ITS WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS. THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHEAST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11^{TH} /1200 UTC ONWARDS.

(NARESH KUMAR)
SCIENTIST-D
RSMC, NEW DELHI



Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY ISSUED AT 1200 UTC OF 10TH DECEMBER 2016 BASED ON 0900 UTC CHARTS OF 10TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED FURTHER WEST-NORTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 23 KMPH AND LAY CENTRED AT 0900 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.1ºN AND LONGITUDE 86.8ºE, ABOUT 750 KM EAST-SOUTHEAST OF NELLORE (43245), 700 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 710 KM EAST OF CHENNAI (43278). THE SYSTEM IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS AND INTENSIFY INTO A VERY SEVERE CYCLONIC STORM DURING NEXT 06 HOURS. IT IS VERY LIKELY TO MAINTAIN ITS PEAK INTENSITY UPTO THE EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS SOUTH ANDHRA PRADESH COAST BETWEEN NELLORE AND MACHILIPATNAM AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
10-12-2016/0900	13.1/86.8	110-120 gusting to 130	Severe Cyclonic Storm
10-12-2016/1200	13.2/86.4	120-130 gusting to 145	Very Severe Cyclonic Storm
10-12-2016/1800	13.4/85.5	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0000	13.6/84.6	130-140 gusting to 155	Very Severe Cyclonic Storm
11-12-2016/0600	13.9/83.8	130-140 gusting to 155	Very Severe Cyclonic Storm
11-12-2016/1800	14.2/82.2	110-120 gusting to 130	Severe Cyclonic Storm
12-12-2016/0600	14.5/80.6	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	14.5/78.8	45-55 gusting to 65	Depression
13-12-2016/0600	14.2/77.3	25-35 gusting to 45	Well Marked Low

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T3.5. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTHEAST AND ADJOINING EASTCENTRAL BAY OF BENGAL BETWEEN 11.4^{0}N & 14.5^{0}N AND

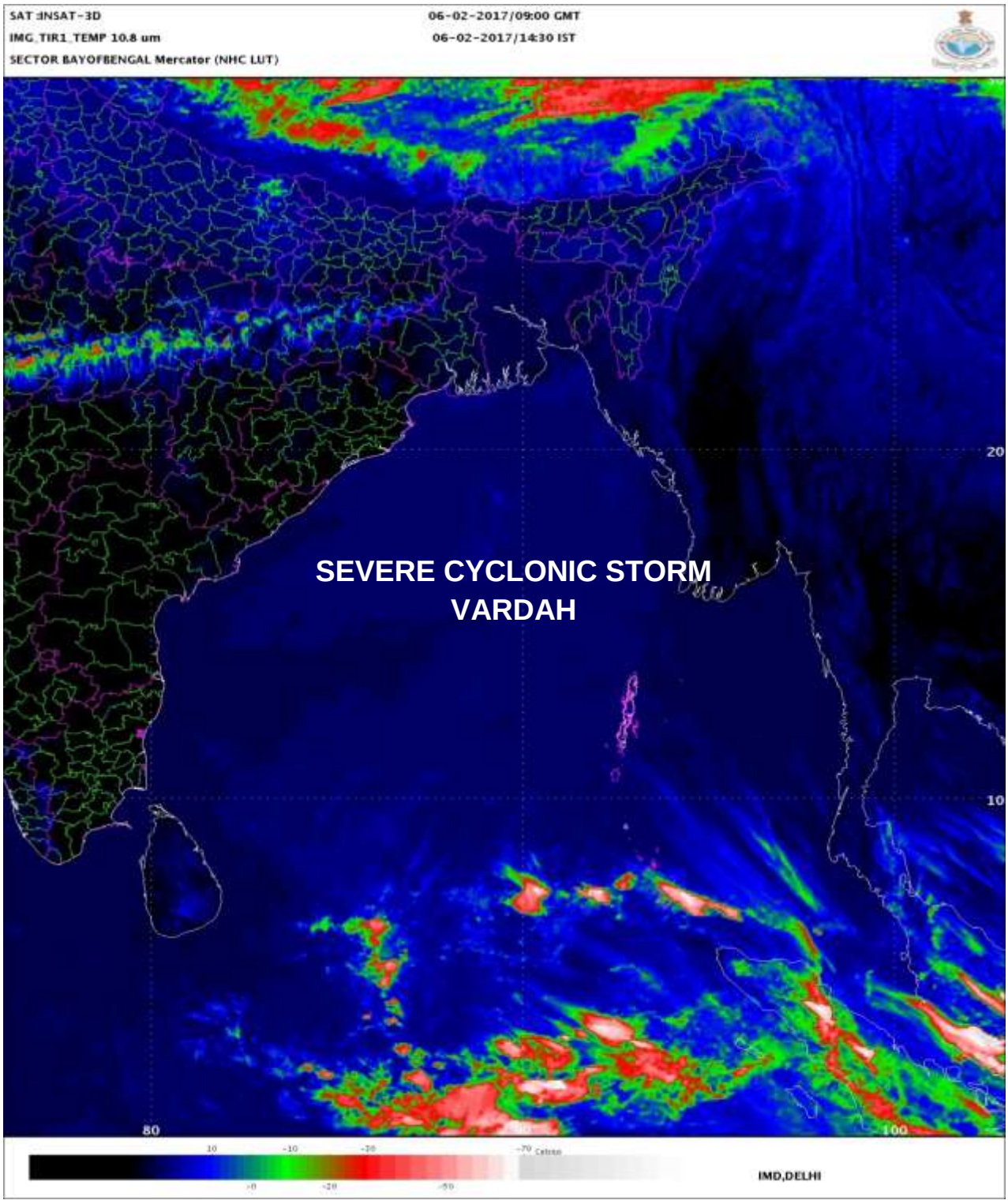
LONGITUDE 84.2^0E & 88.5^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 60 KNOTS GUSTING TO 70 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 988 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $30X10^{-5}$ $SECOND^{-1}$ AROUND THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ $SECOND^{-1}$ TO WEST-SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $250X10^{-6}$ $SECOND^{-1}$ TO THE SOUTH OF THE SYSTEM CENTRE AND IS EXTENDING UPTO MID-TROPOSPHERIC LEVELS. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH DECREASING AMPLITUDE.

THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 06 HOURS AND ITS WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS. THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHEAST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11^{TH} /1200 UTC ONWARDS.

(M. MOHAPATRA)
SCIENTIST-G (SERVICES)
HEAD RSMC, NEW DELHI



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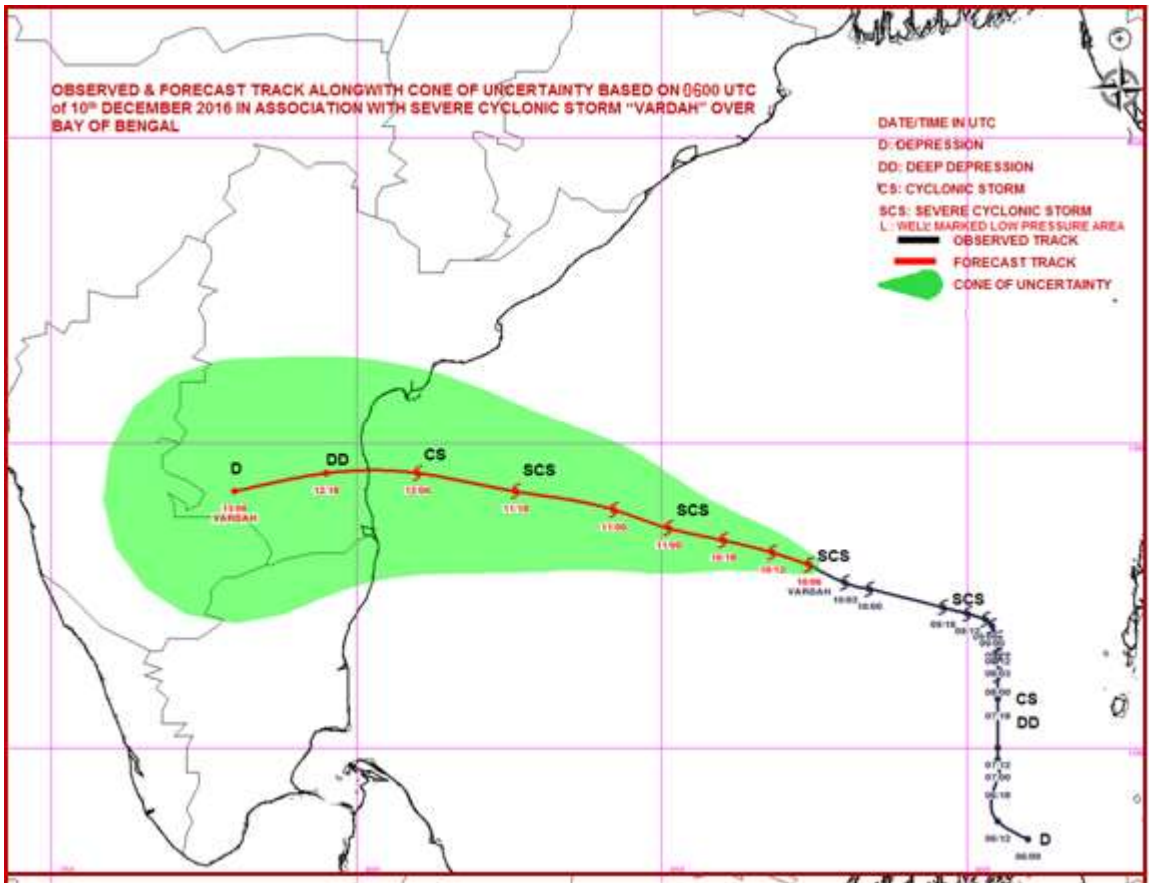

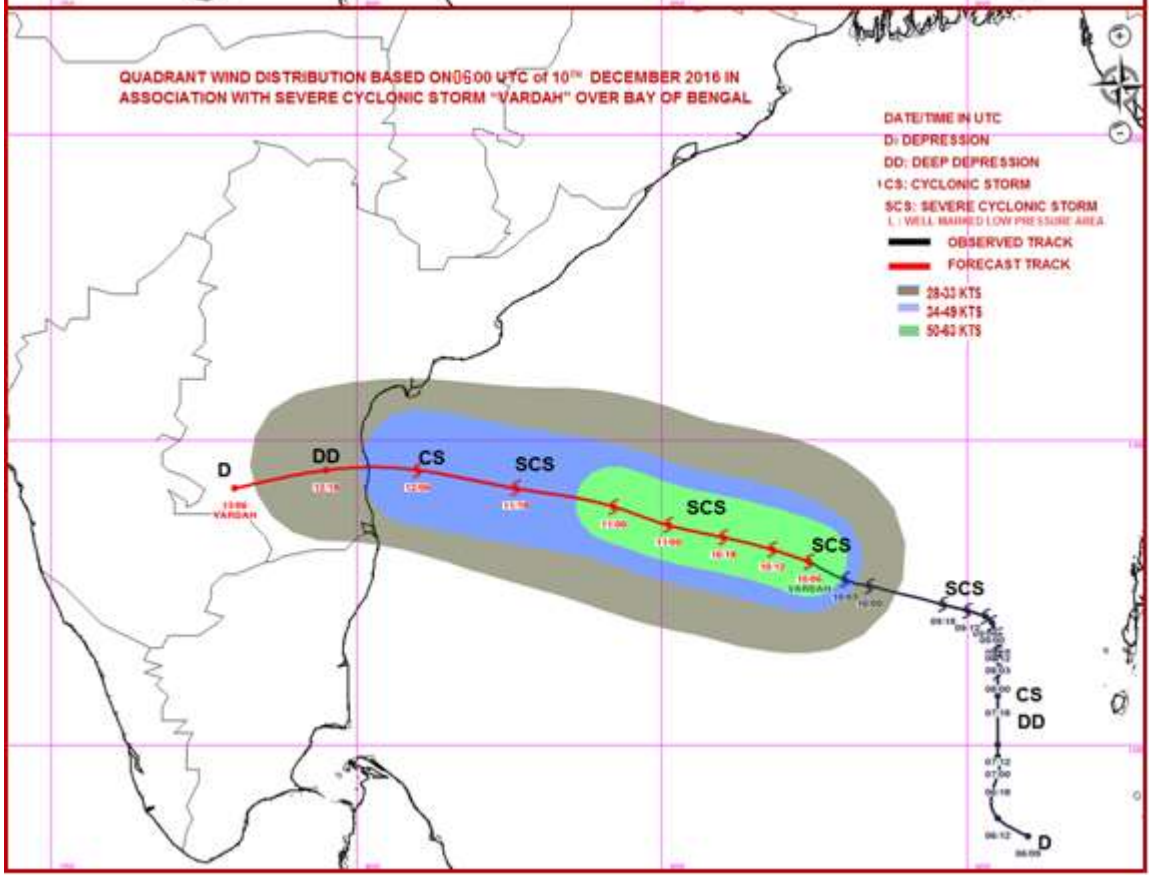

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY ONE ISSUED AT 1500 UTC OF 10TH DECEMBER 2016 BASED ON 1200 UTC CHARTS OF 10TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, **VARDAH** OVER SOUTHEAST BAY OF BENGAL MOVED FURTHER WEST-NORTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 18 KMPH, INTENSIFIED INTO A VERY SEVERE CYCLONIC STORM AND LAY CENTRED AT 1200 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL NEAR LATITUDE 13.2ºN AND LONGITUDE 86.4ºE, ABOUT 710 KM EAST-SOUTHEAST OF NELLORE (43245), 650 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 660 KM EAST OF CHENNAI (43278). THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE WEST-NORTHWESTWARDS AND MAINTAIN ITS PEAK INTENSITY UPTO THE EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS SOUTH ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS SOUTH ANDHRA PRADESH COAST BETWEEN CHENNAI AND ONGOLE AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
10-12-2016/1200	13.2/86.4	120-130 gusting to 145	Very Severe Cyclonic Storm
10-12-2016/1800	13.4/85.5	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0000	13.6/84.6	130-140 gusting to 155	Very Severe Cyclonic Storm
11-12-2016/0600	13.8/83.8	130-140 gusting to 155	Very Severe Cyclonic Storm
11-12-2016/1200	14.0/83.0	120-130 gusting to 145	Very Severe Cyclonic Storm
12-12-2016/0000	14.2/81.4	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/1200	14.4/79.6	60-70 gusting to 80	Cyclonic Storm
13-12-2016/0000	14.3/78.0	35-45 gusting to 55	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN

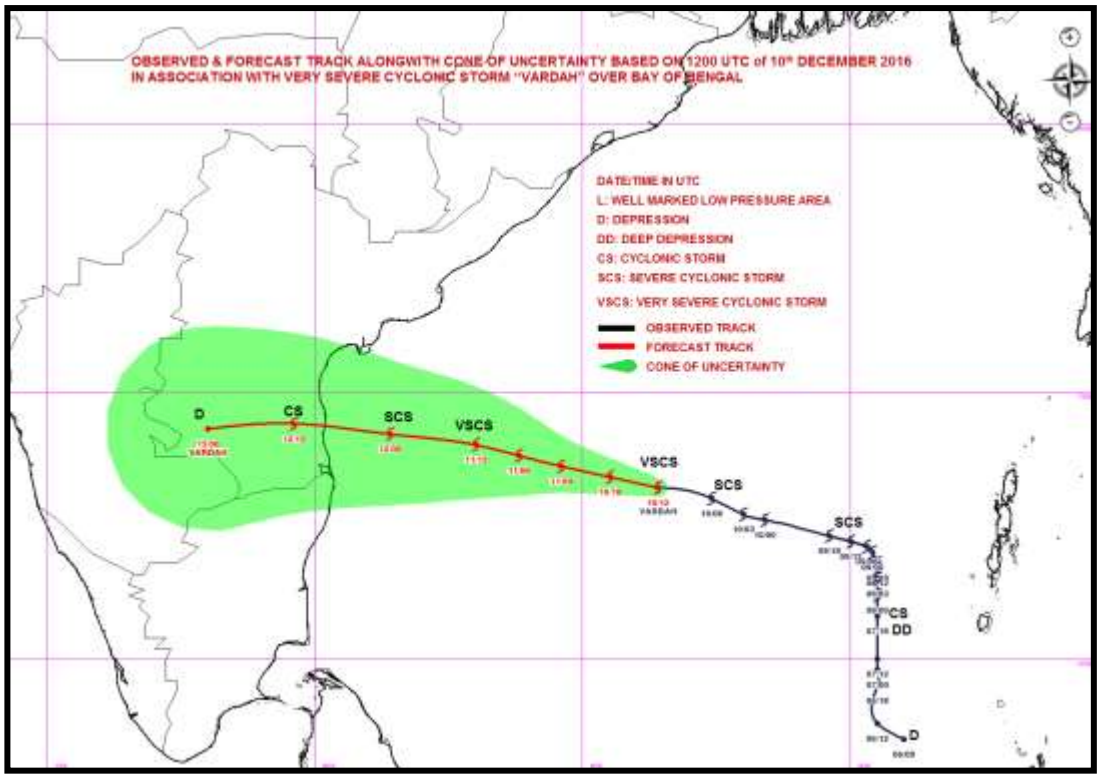
LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER CENTRAL BAY OF BENGAL BETWEEN 10.9^0N & 15.6^0N AND LONGITUDE 83.0^0E & 87.7^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 65 KNOTS GUSTING TO 75 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 985 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

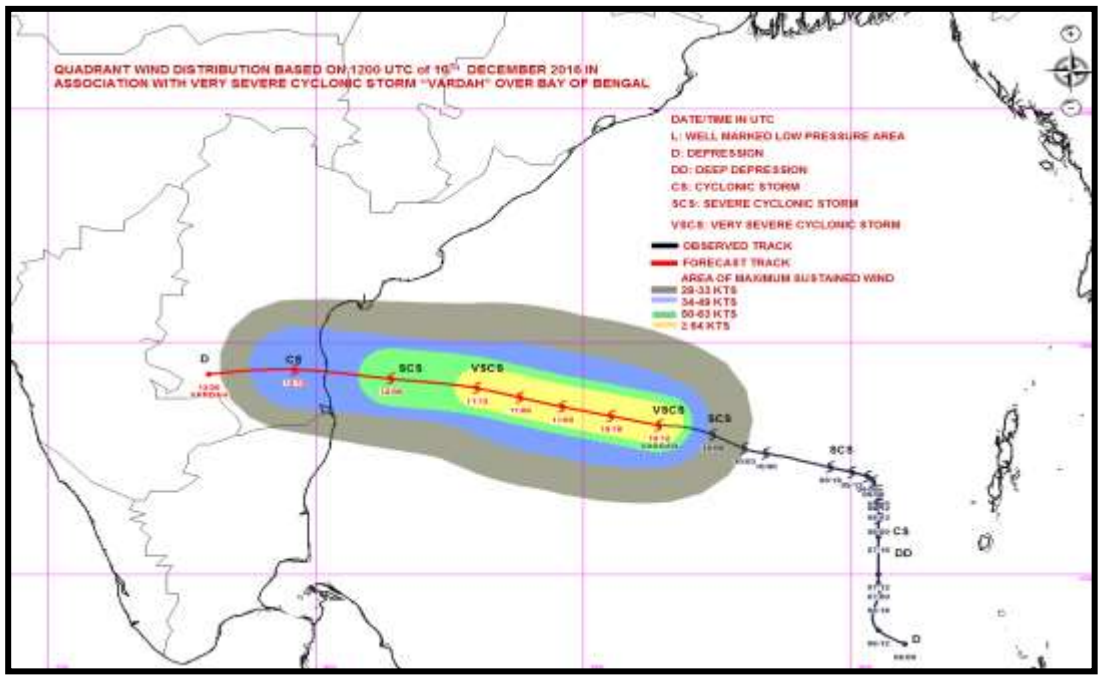
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $30X10^{-5}$ SECOND^{-1} AROUND THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ SECOND^{-1} TO WEST-SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE AND IS EXTENDING UPTO MID-TROPOSPHERIC LEVELS. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH DECREASING AMPLITUDE.

THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 06 HOURS AND ITS WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS. THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHEAST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11^{TH} /1200 UTC ONWARDS.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI





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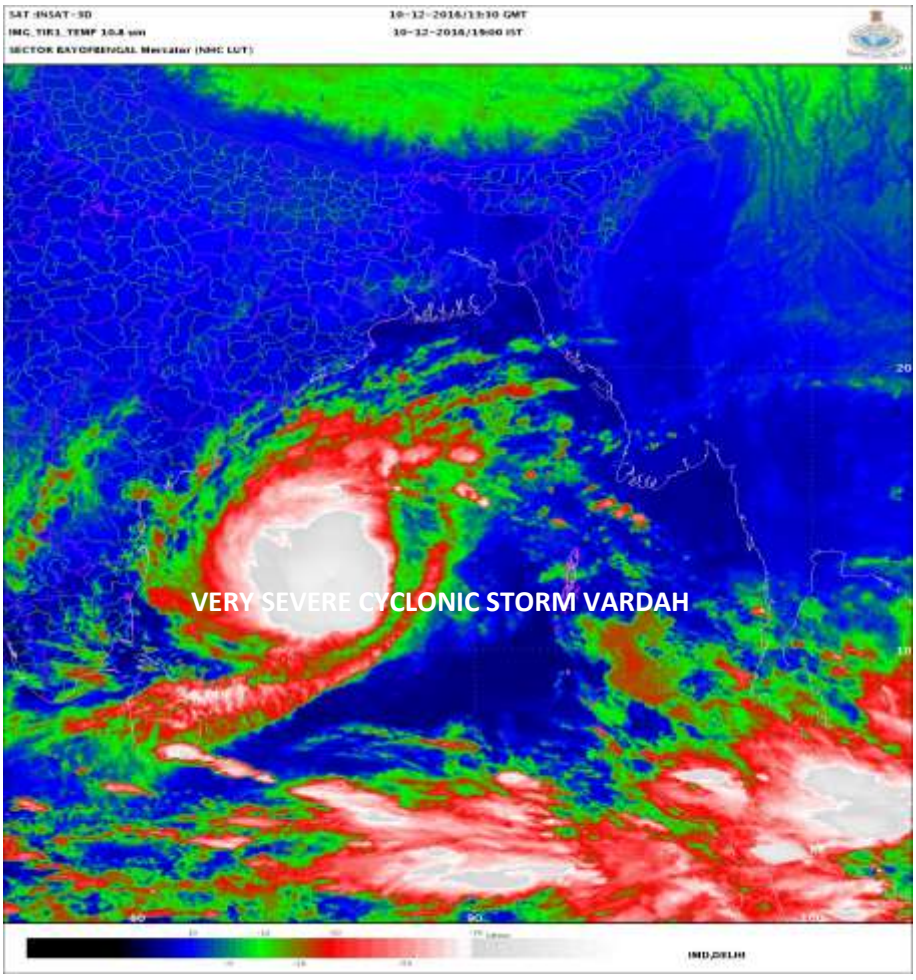

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
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OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)
YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY TWO ISSUED AT 1700 UTC OF 10TH DECEMBER 2016 BASED ON 1500 UTC CHARTS OF 10TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL MOVED FURTHER WEST-NORTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 17 KMPH AND LAY CENTRED AT 1500 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL NEAR LATITUDE 13.3ºN AND LONGITUDE 85.9ºE, ABOUT 650 KM EAST-SOUTHEAST OF NELLORE (43245), 600 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 610 KM EAST-NORTHEAST OF CHENNAI (43278). THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE WEST-NORTHWESTWARDS AND MAINTAIN ITS PEAK INTENSITY UPTO THE EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS SOUTH ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS SOUTH ANDHRA PRADESH COAST BETWEEN CHENNAI AND ONGOLE AROUND AFTERNOON/EVENING OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
10-12-2016/1500	13.3/85.9	120-130 gusting to 145	Very Severe Cyclonic Storm
10-12-2016/1800	13.4/85.5	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0000	13.6/84.6	130-140 gusting to 155	Very Severe Cyclonic Storm
11-12-2016/0600	13.8/83.8	130-140 gusting to 155	Very Severe Cyclonic Storm
11-12-2016/1200	14.0/83.0	120-130 gusting to 145	Very Severe Cyclonic Storm
12-12-2016/0000	14.2/81.4	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/1200	14.4/79.6	60-70 gusting to 80	Cyclonic Storm
13-12-2016/0000	14.3/78.0	35-45 gusting to 55	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN

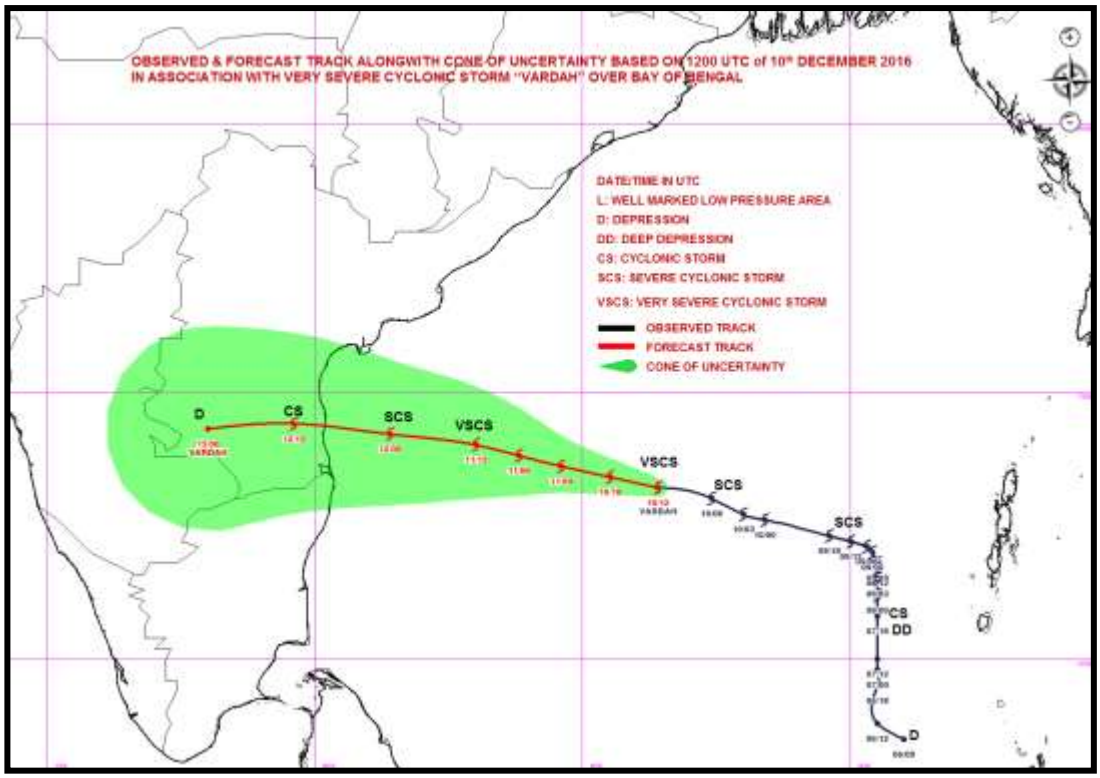
LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 10.0^0N & 15.0^0N AND LONGITUDE 82.5^0E & 87.5^0E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 65 KNOTS GUSTING TO 75 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 985 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

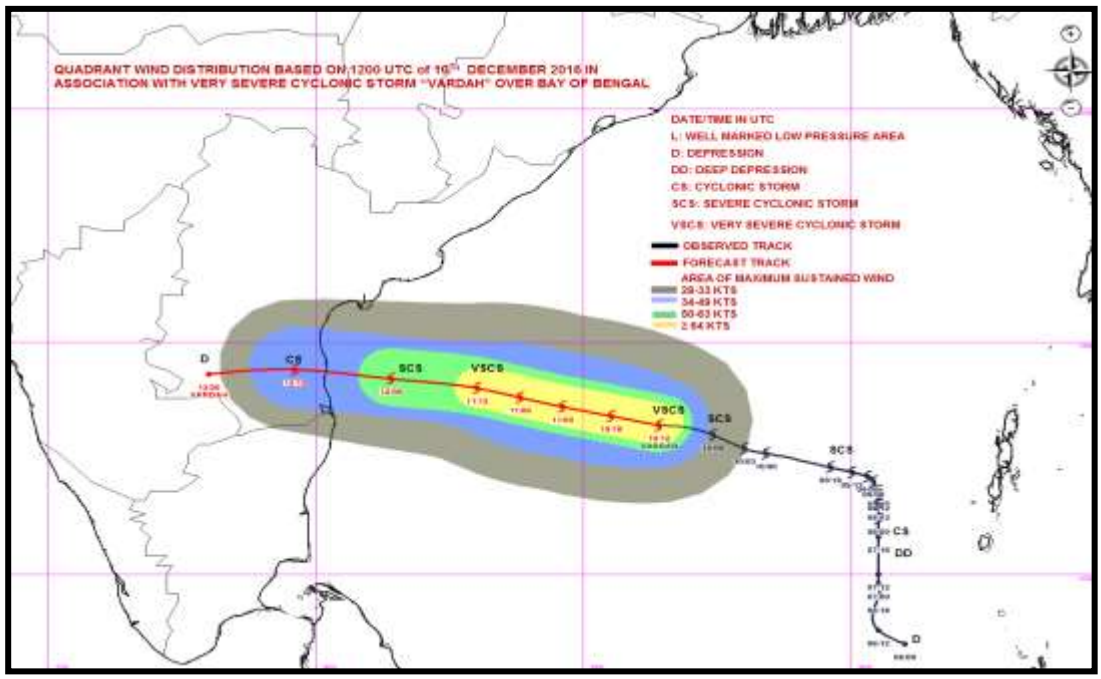
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING $26\text{-}27^0$C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT $30X10^{-5}$ SECOND^{-1} AROUND THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ SECOND^{-1} TO WEST-SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $250X10^{-6}$ SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE AND IS EXTENDING UPTO MID-TROPOSPHERIC LEVELS. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH DECREASING AMPLITUDE.

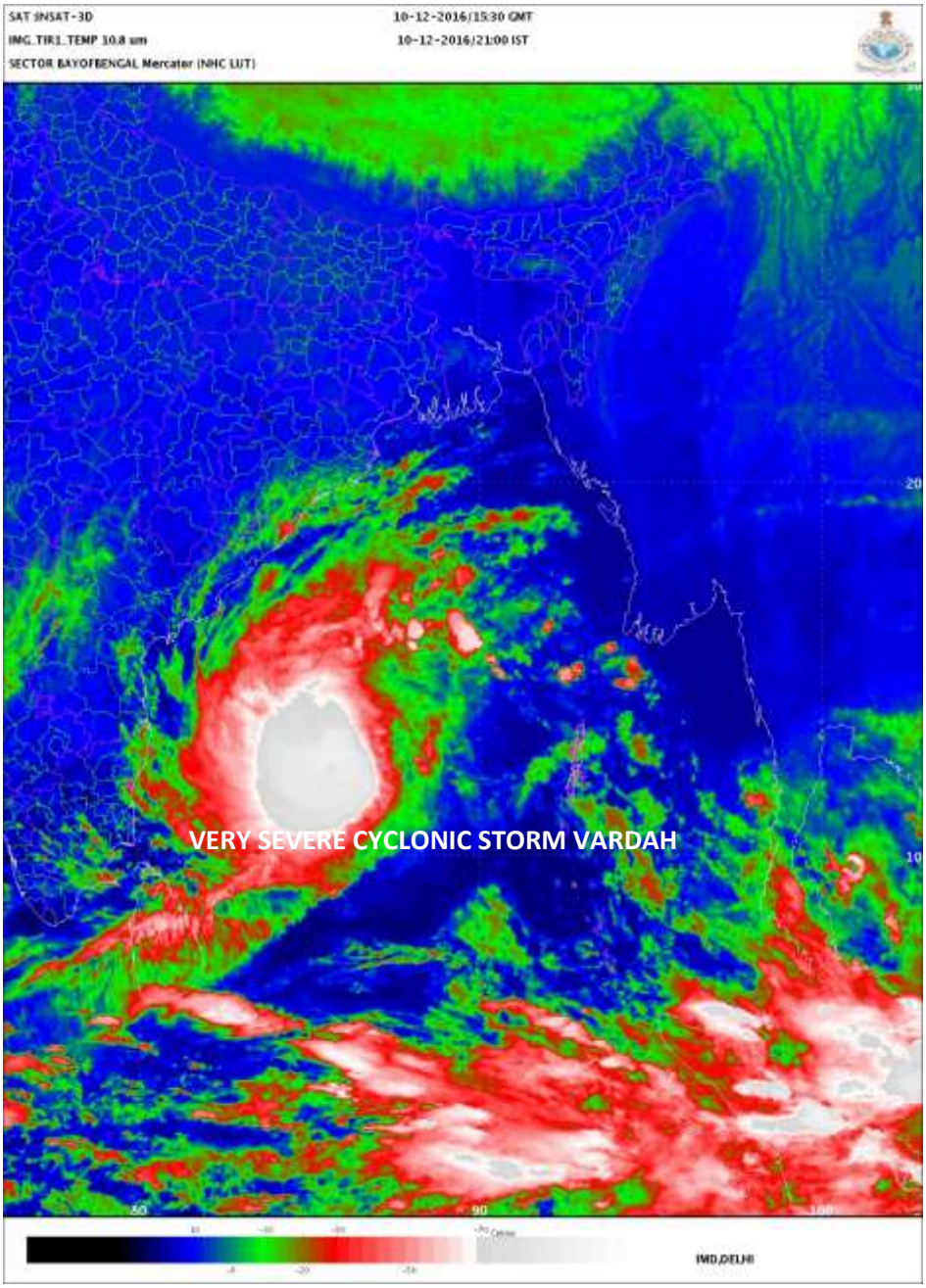
THE ENVIRONMENTAL PARAMETERS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 06 HOURS AND ITS WEST-NORTHWESTWARD MOVEMENT TOWARDS ANDHRA PRADESH COAST DURING NEXT 3 DAYS. THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHEAST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST. IT MAY LEAD TO GRADUAL WEAKENING OF THE SYSTEM FROM 11^{TH} /1200 UTC ONWARDS.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI





Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in



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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY THREE ISSUED AT 2100 UTC OF 10TH DECEMBER 2016 BASED ON 1800 UTC CHARTS OF 10TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL MOVED FURTHER WEST-NORTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 20 KMPH AND LAY CENTRED AT 1800 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL NEAR LATITUDE 13.3ºN AND LONGITUDE 85.3ºE, ABOUT 580 KM EAST-SOUTHEAST OF NELLORE (43245), 550 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 540 KM EAST-NORTHEAST OF CHENNAI (43278). THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE WEST-NORTHWESTWARDS AND MAINTAIN ITS INTENSITY UPTO THE EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS SOUTH ANDHRA PRADESH COAST AND ADJOINING NORTH TAMILNADU COAST. IT IS VERY LIKELY TO CROSS SOUTH ANDHRA PRADESH COAST AND ADJOINING NORTH TAMILNADU COAST BETWEEN CHENNAI AND ONGOLE AROUND AFTERNOON OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
10-12-2016/1800	13.3/85.3	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0000	13.4/84.5	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0600	13.5/83.7	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/1200	13.6/82.8	120-130 gusting to 145	Severe Cyclonic Storm
11-12-2016/1800	13.7/81.9	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	13.7/80.2	90-100 gusting to 110	Cyclonic Storm
12-12-2016/1800	13.5/78.7	35-45 gusting to 55	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 10.0^{0}N & 15.0^{0}N AND LONGITUDE 82.5^{0}E & 86.5^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 65 KNOTS GUSTING TO 75 KNOTS. THE

ESTIMATED CENTRAL PRESSURE IS 985 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 10X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH DECREASING AMPLITUDE.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHEAST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST AND ADJOINING TAMILNADU COAST. IT MAY LEAD TO RAPID WEAKENING OF THE SYSTEM FROM 11TH /1200 UTC ONWARDS.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY FOUR ISSUED AT 0000 UTC OF 11TH DECEMBER 2016 BASED ON 2100 UTC CHARTS OF 10TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL MOVED WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 16 KMPH AND LAY CENTRED AT 2100 UTC OF TODAY, THE 10TH DECEMBER, 2016 OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL NEAR LATITUDE 13.3ºN AND LONGITUDE 85.0ºE, ABOUT 550 KM EAST-SOUTHEAST OF NELLORE (43245), 520 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 510 KM EAST-NORTHEAST OF CHENNAI (43278). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND MAINTAIN ITS INTENSITY UPTO THE EVENING OF 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS SOUTH ANDHRA PRADESH COAST AND ADJOINING NORTH TAMILNADU COAST. IT IS VERY LIKELY TO CROSS SOUTH ANDHRA PRADESH COAST AND ADJOINING NORTH TAMILNADU COAST BETWEEN CHENNAI AND ONGOLE AROUND AFTERNOON OF 12TH DECEMBER 2016.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
10-12-2016/2100	13.3/85.0	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0000	13.4/84.5	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0600	13.5/83.7	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/1200	13.6/82.8	120-130 gusting to 145	Severe Cyclonic Storm
11-12-2016/1800	13.7/81.9	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0600	13.7/80.2	90-100 gusting to 110	Cyclonic Storm
12-12-2016/1800	13.5/78.7	35-45 gusting to 55	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 92º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 10.0^{0}N & 15.0^{0}N AND LONGITUDE 81.5^{0}E & 86.5^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 65 KNOTS GUSTING TO 75 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 985 HPA. SEA CONDITION IS VERY HIGH AROUND SYSTEM CENTRE.

REMARKS

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Website: www.rsmcnewdelhi.imd.gov.in

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 30X10^{-5} SECOND^{-1} AROUND THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 40X10^{-5} SECOND^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTH OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK. THE MADDEN JULIAN OSCILLATION INDEX LIES IN PHASE 2 WITH AMPLITUDE LESS THAN 1. IT WILL MOVE TO PHASE 3 DURING NEXT 3 DAYS WITH DECREASING AMPLITUDE.

THE LATEST TOTAL PRECIPITABLE WATER IMAGERY (TPW) INDICATES COLD AND DRY AIR INCURSION OVER NORTH AND WESTCENTRAL BAY OFF ANDHRA PRADESH, ODISHA COASTS AND ALSO REACHING UPTO THE PERIPHERY OF SOUTHEAST SECTOR OF THE SYSTEM. IN ADDITION, HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH COAST WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO ANDHRA PRADESH COAST AND ADJOINING TAMILNADU COAST. IT MAY LEAD TO RAPID WEAKENING OF THE SYSTEM FROM 11TH /1200 UTC ONWARDS.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI

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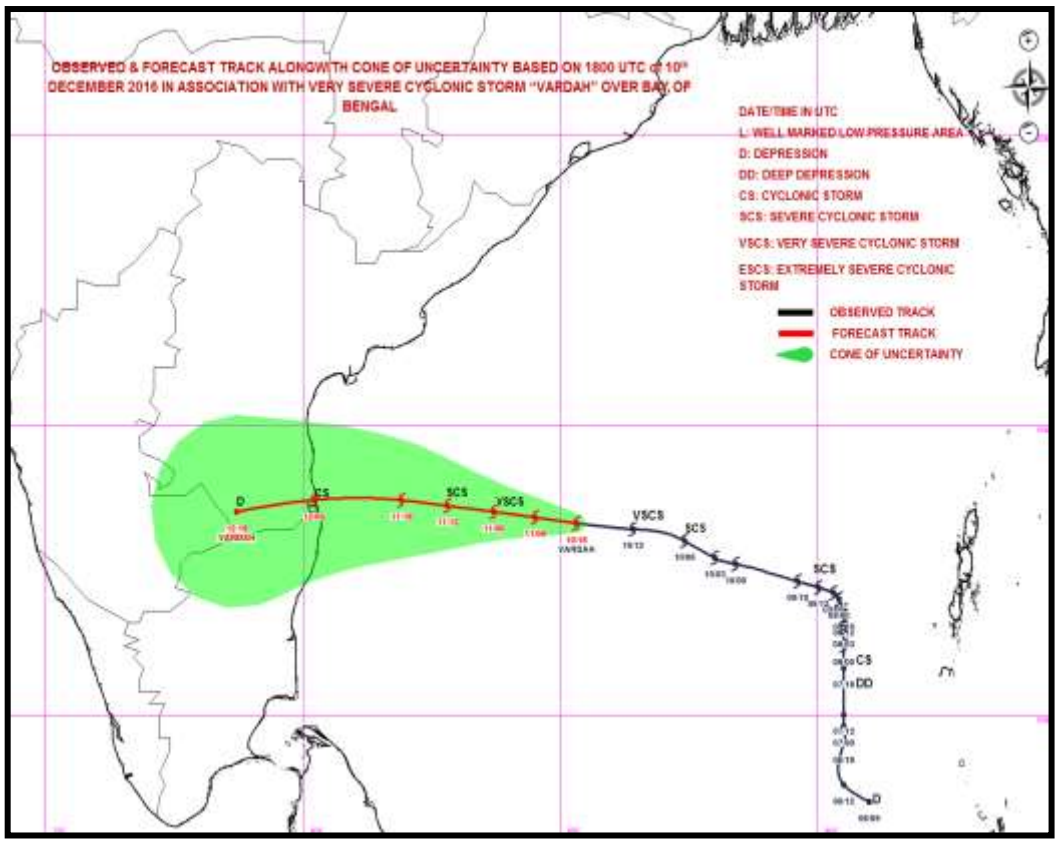

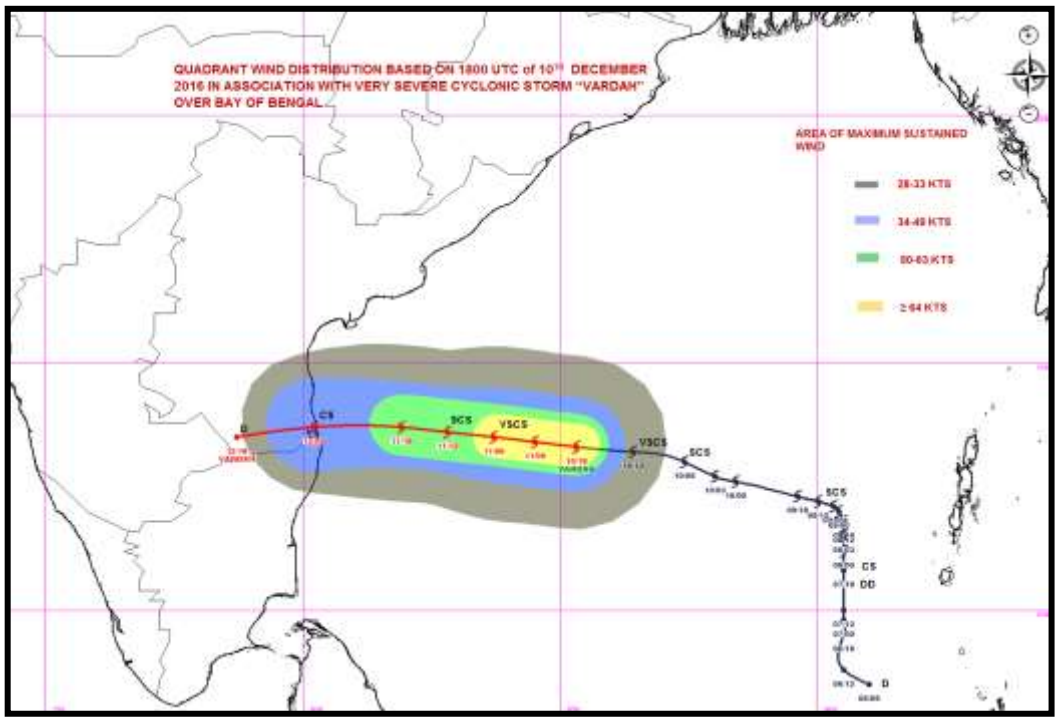

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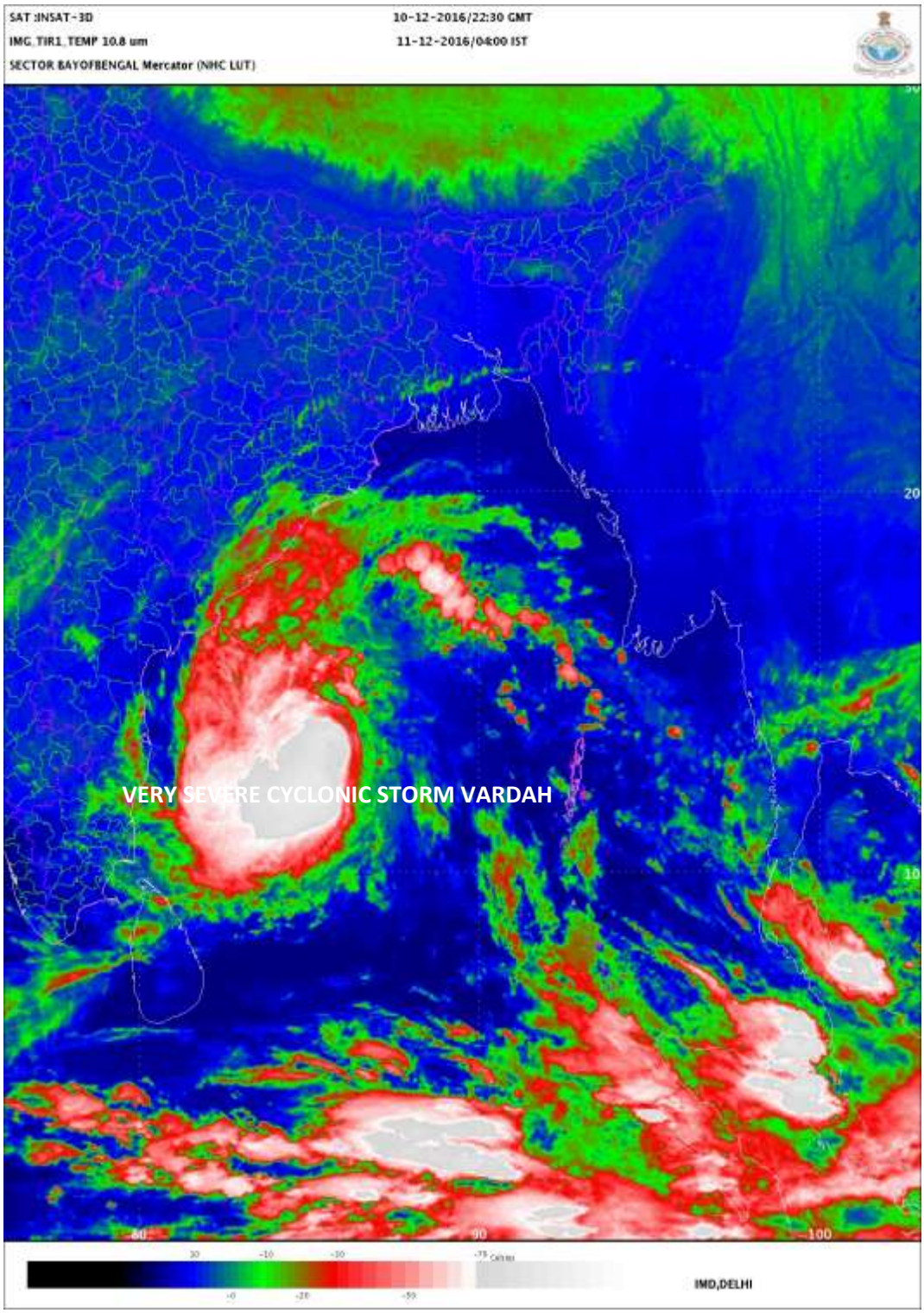

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY FIVE ISSUED AT 0300 UTC OF 11TH DECEMBER 2016 BASED ON 0000 UTC CHARTS OF 11TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WEST CENTRAL AND ADJOINING SOUTH BAY OF BENGAL MOVED FURTHER WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 11 KMPH AND LAY CENTRED AT 0000 UTC OF TODAY, THE 11TH DECEMBER, 2016 OVER WEST CENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.3ºN AND LONGITUDE 84.7ºE, ABOUT 520 KM EAST-SOUTHEAST OF NELLORE (43245), 490 KM EAST-SOUTHEAST OF MACHILIPATNAM (43185) AND 480 KM EAST-NORTHEAST OF CHENNAI (43278). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WEST-SOUTHWESTWARDS AND MAINTAIN ITS INTENSITY UPTO THE EVENING OF TODAY, THE 11TH DECEMBER 2016. THEREAFTER, IT IS LIKELY TO WEAKEN GRADUALLY WHILE MOVING TOWARDS SOUTH ANDHRA PRADESH COAST AND ADJOINING NORTH TAMILNADU COAST. IT IS VERY LIKELY TO CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COAST, CLOSE TO CHENNAI BY 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
11-12-2016/0000	13.3/84.7	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0600	13.2/83.8	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/1200	13.1/82.9	110-120 gusting to 145	Severe Cyclonic Storm
11-12-2016/1800	13.0/82.1	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/0000	12.9/81.3	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1200	12.9/79.6	55-65 gusting to 75	Deep Depression
13-12-2016/0000	13.0/78.0	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CONVECTION SHOWS CURVED BAND PATTERN WITH EMBEDDED IRREGULAR CENTRAL DENSE OVERCAST (CDO). MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 92º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 10.0^{0}N & 16.0^{0}N AND LONGITUDE 80.5^{0}E & 86.0^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

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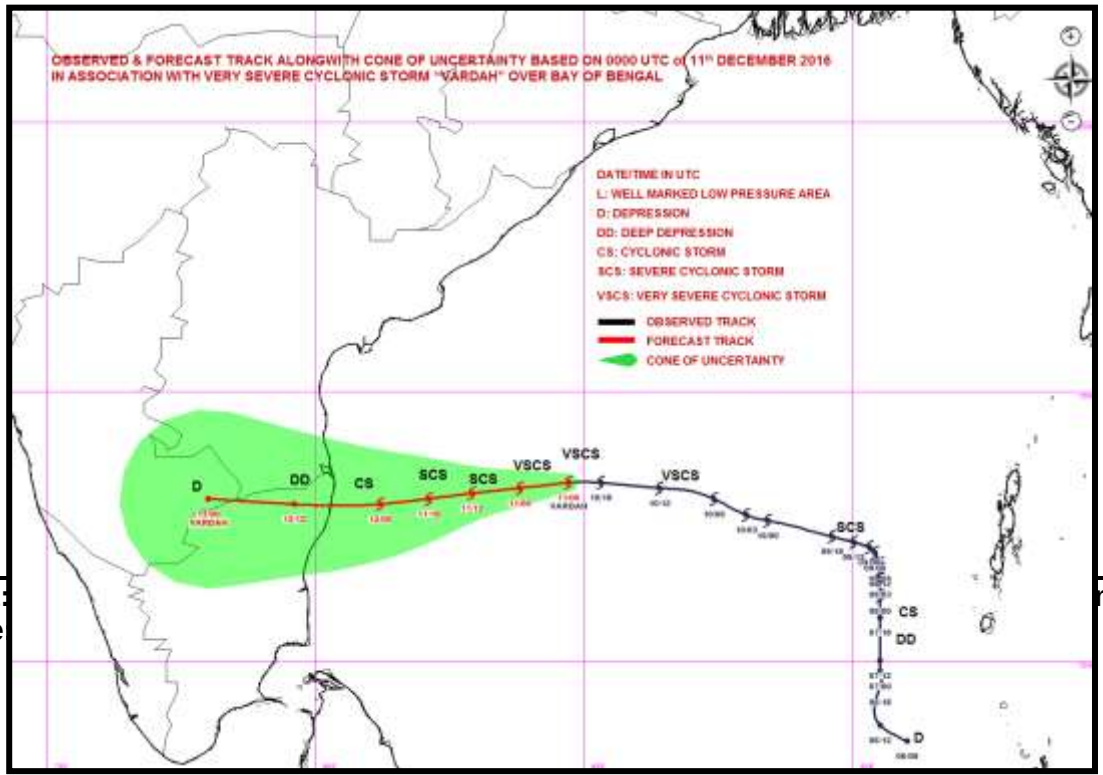
Website: www.rsmcnewdelhi.imd.gov.in

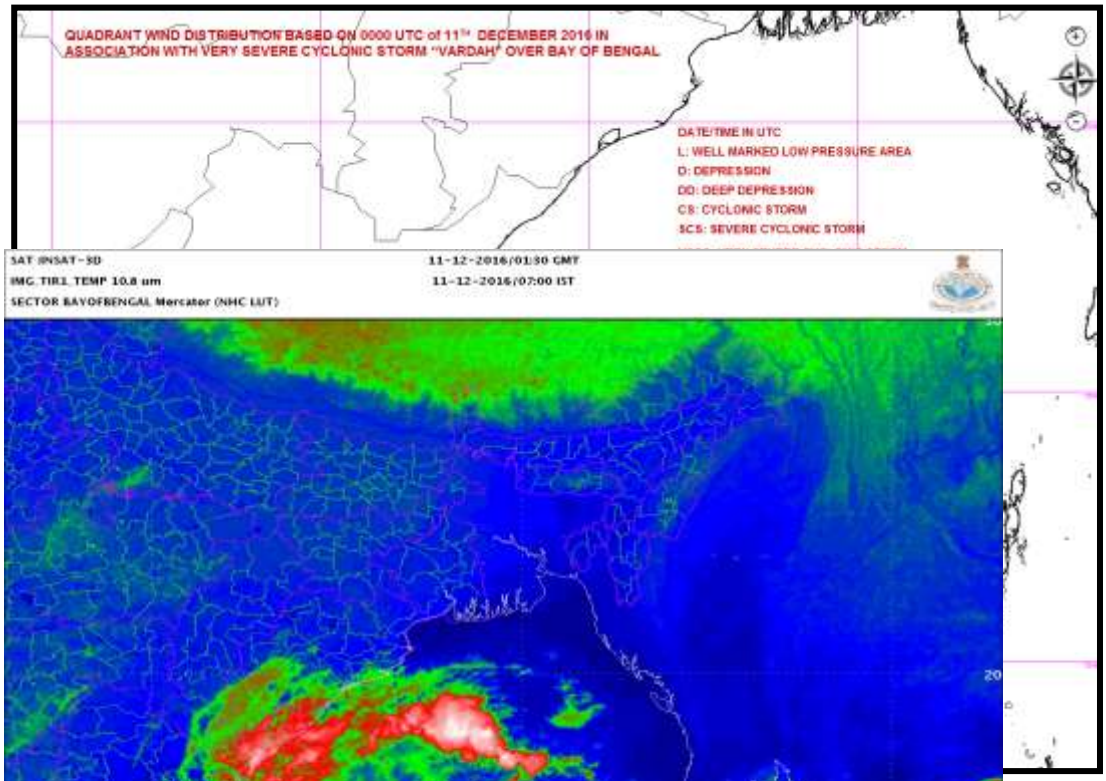
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 40X10^{-5} SECOND^{-1} TO THE SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} SECOND^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 250X10^{-6} SECOND^{-1} TO THE SOUTH-SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

THE HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH AND TAMILNADU COASTS WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO THESE COASTS. IT MAY LEAD TO WEAKENING OF THE SYSTEM FROM 11TH /1200 UTC ONWARDS.

(SHAMBU RAVINDREN)
SCIENTIST-B
IMD, NEW DELHI





Contact **mail.com**
Website

Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in

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)

TROPICAL CYCLONE ADVISORY

RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY SIX ISSUED AT 0600 UTC OF 11TH DECEMBER 2016 BASED ON 0300 UTC CHARTS OF 11TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 13 KMPH AND LAY CENTRED AT 0300 UTC OF TODAY, THE 11TH DECEMBER, 2016 OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.1ºN AND LONGITUDE 84.3ºE, ABOUT 490 KM EAST-SOUTHEAST OF NELLORE (43245), 480 KM SOUTHEAST OF MACHILIPATNAM (43185) AND 440 KM EAST OF CHENNAI. THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WEST-SOUTHWESTWARDS AND WEAKEN GRADUALLY FROM TODAY EVENING ONWARDS WHILE MOVING TOWARDS NORTH TAMILNADU AND ADJOINING SOUTH ANDHRA PRADESH COAST. IT IS VERY LIKELY TO CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COAST, CLOSE TO CHENNAI (43278) AS A CYCLONIC STORM BY 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
11-12-2016/0300	13.1/84.3	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/0600	13.0/83.8	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/1200	12.9/82.9	110-120 gusting to 145	Severe Cyclonic Storm
11-12-2016/1800	12.8/82.1	95-105 gusting to 115	Severe Cyclonic Storm
12-12-2016/0000	12.8/81.2	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1200	12.8/79.6	55-65 gusting to 75	Deep Depression
13-12-2016/0000	12.9/78.0	40-50 gusting to 60	Depression

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CONVECTION SHOWS CURVED BAND PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 92º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 10.0^{0}N & 16.0^{0}N AND LONGITUDE 80.5^{0}E & 86.0^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 984 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR NORTH ANDHRA PRADESH AND ODISHA COASTS. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR, ODISHA AND ANDHRA PRADESH COASTS EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 30X10^{-5} S^{-1} TO THE SOUTHWEST OF THE

Contact: Phone: (91) 11-24652484 FAX: (91) 11-24623220 e-mail :cwdhq2008@gmail.com
Website: www.rsmcnewdelhi.imd.gov.in

SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND $40X10^{-5}$ S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT $250X10^{-6}$ S^{-1} TO THE SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EAST-NORTHEASTERLY AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

THE HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH AND TAMILNADU COASTS WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO THESE COASTS. IT MAY LEAD TO WEAKENING OF THE SYSTEM FROM 11^{TH} /1200 UTC ONWARDS.

(CHARAN SINGH)
SCIENTIST-E
IMD, NEW DELHI

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)

TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY EIGHT ISSUED AT 1200 UTC OF 11TH DECEMBER 2016 BASED ON 0900 UTC CHARTS OF 11TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 20 KMPH AND LAY CENTRED AT 0900 UTC OF TODAY, THE 11TH DECEMBER, 2016 OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.1ºN AND LONGITUDE 83.3ºE, ABOUT 330 KM EAST OF CHENNAI (43278) AND 390 KM EAST-SOUTHEAST OF NELLORE (43245). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN GRADUALLY WHILE MOVING TOWARDS NORTH TAMILNADU AND ADJOINING SOUTH ANDHRA PRADESH COASTS. IT IS VERY LIKELY TO CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A CYCLONIC STORM WITH A WIND SPEED OF 80 TO 90 KMPH GUSTING TO 100 KMPH BY 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time(UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
11-12-2016/0900	13.1/83.3	125-135 gusting to 150	Very Severe Cyclonic Storm
11-12-2016/1200	13.2/82.9	120-130 gusting to 145	Very Severe Cyclonic Storm
11-12-2016/1800	13.2/82.0	110-120 gusting to 130	Severe Cyclonic Storm
12-12-2016/0000	13.2/81.2	90-100 gusting to 110	Severe Cyclonic Storm
12-12-2016/0600	13.2/80.4	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	13.2/78.8	55-65 gusting to 75	Deep Depression
13-12-2016/0600	13.2/77.2	25-35 gusting to 45	Well Marked Low

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 92º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 15.0^{0}N AND LONGITUDE 82.0^{0}E & 85.5^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

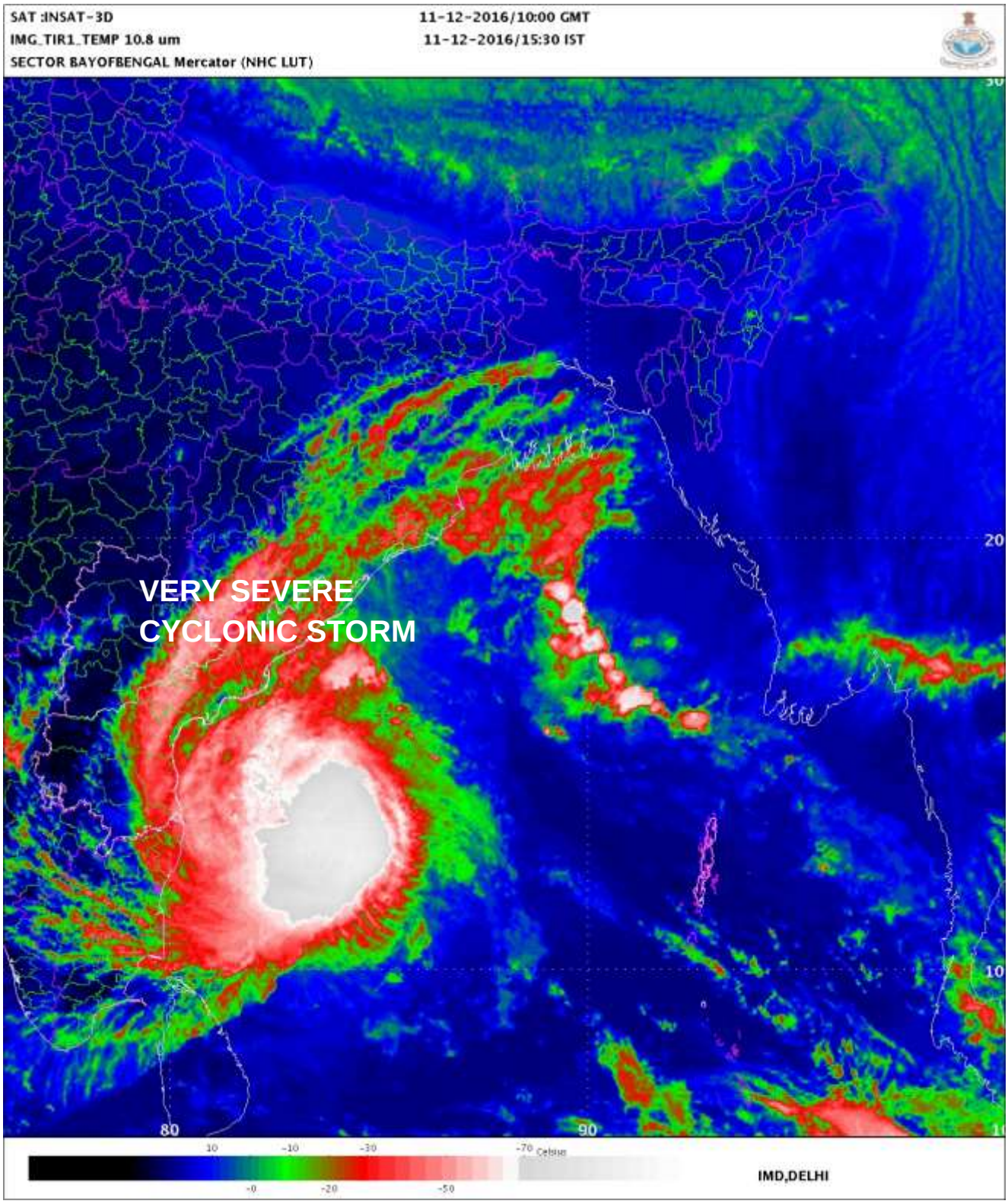
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR ANDHRA PRADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR ANDHRA PRADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20-25X10^{-5} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200-250X10^{-6} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EASTERLY AROUND THE SYSTEM CENTRE. LATEST TOTAL PRECIPITABLE WATER IMAGERY INDICATE THE REDUCTION IN FEEDING OF WARM & MOIST AIR TO THE CORE OF THE

SYSTEM FROM SOUTHEAST DIRECTION. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

THE HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH AND TAMILNADU COASTS WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO THESE COASTS. IT MAY LEAD TO WEAKENING OF THE SYSTEM FROM TODAY, THE 11TH DECEMBER EVENING/NIGHT ONWARDS.

(CHARAN SINGH)
SCIENTIST-E
IMD, NEW DELHI



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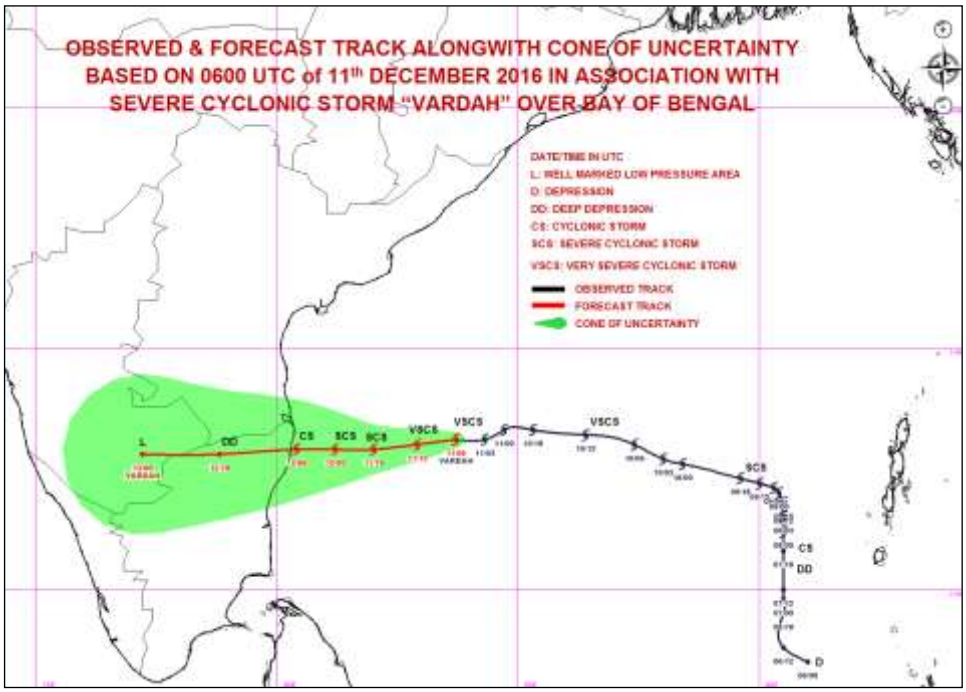

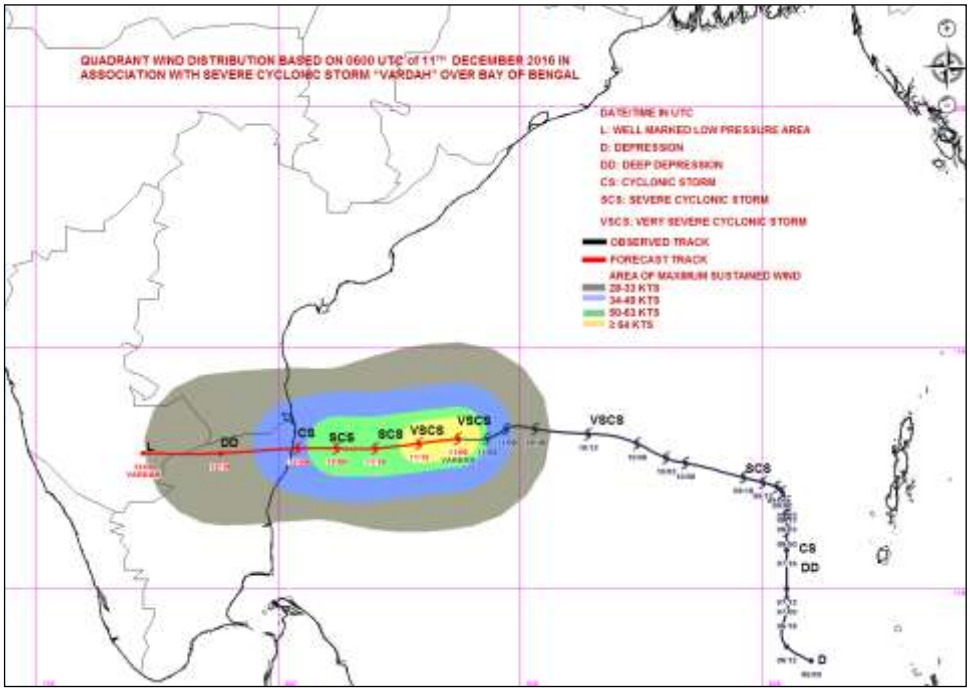

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER TWENTY NINE ISSUED AT 1500 UTC OF 11TH DECEMBER 2016 BASED ON 1200 UTC CHARTS OF 11TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, VARDAH OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED NEARLY WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 13 KMPH AND LAY CENTRED AT 1730 HRS IST OF TODAY, THE 11TH DECEMBER, 2016 OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.3ºN AND LONGITUDE 83.0ºE, ABOUT 300 KM EAST-NORTHEAST OF CHENNAI(43278) AND 350 KM EAST-SOUTHEAST OF NELLORE(43245). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN GRADUALLY WHILE MOVING TOWARDS NORTH TAMILNADU AND ADJOINING SOUTH ANDHRA PRADESH COASTS. IT IS VERY LIKELY TO CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A CYCLONIC STORM WITH A WIND SPEED OF 80 TO 90 KMPH GUSTING TO 100 KMPH BY 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
11-12-2016/1200	13.3/83.0	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STOR
11-12-2016/1800	13.4/82.3	120-130 GUSTING TO 145	VERY SEVERE CYCLONIC STOR
12-12-2016/0000	13.4/81.5	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
12-12-2016/0600	13.4/80.8	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/1200	13.4/80.1	70-80 GUSTING TO 90	CYCLONIC STORM
13-12-2016/0000	13.5/78.5	35-45 GUSTING TO 55	DEPRESSION

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 92º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 15.0^{0}N AND LONGITUDE 82.0^{0}E & 85.5^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

REMARKS

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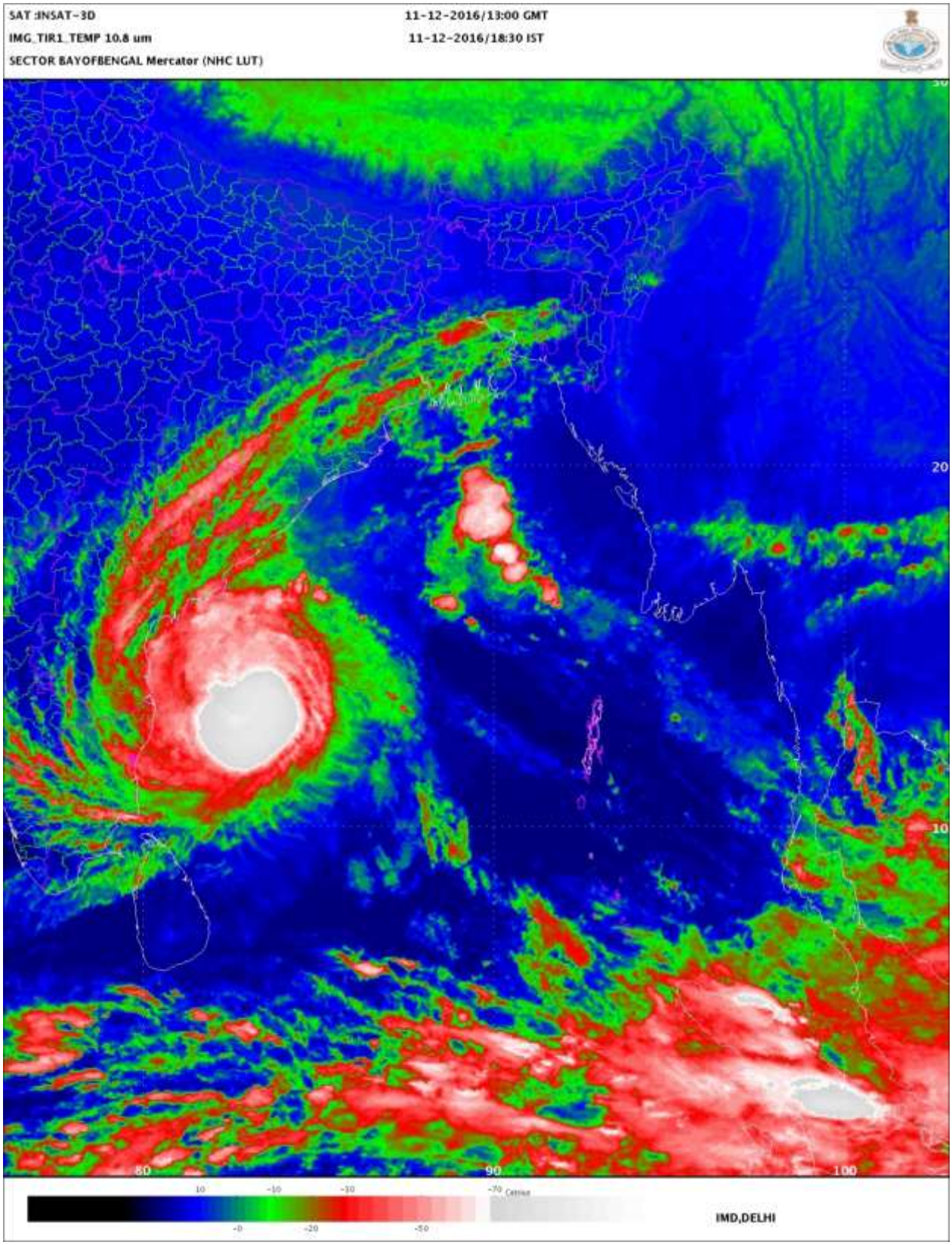
Website: www.rsmcnewdelhi.imd.gov.in

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR ANDHRA PRADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR ANDHRA PRADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20-25X10^{-5} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200-250X10^{-6} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EASTERLY AROUND THE SYSTEM CENTRE. LATEST TOTAL PRECIPITABLE WATER IMAGERY INDICATES THE REDUCTION IN FEEDING OF WARM & MOIST AIR TO THE CORE OF THE SYSTEM FROM SOUTHEAST DIRECTION. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

THE HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH AND TAMILNADU COASTS WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO THESE COASTS. IT MAY LEAD TO WEAKENING OF THE SYSTEM FROM TODAY, THE 11TH DECEMBER EVENING/NIGHT ONWARDS.

(NARESH KUMAR)
SCIENTIST-D
RSMC, NEW DELHI



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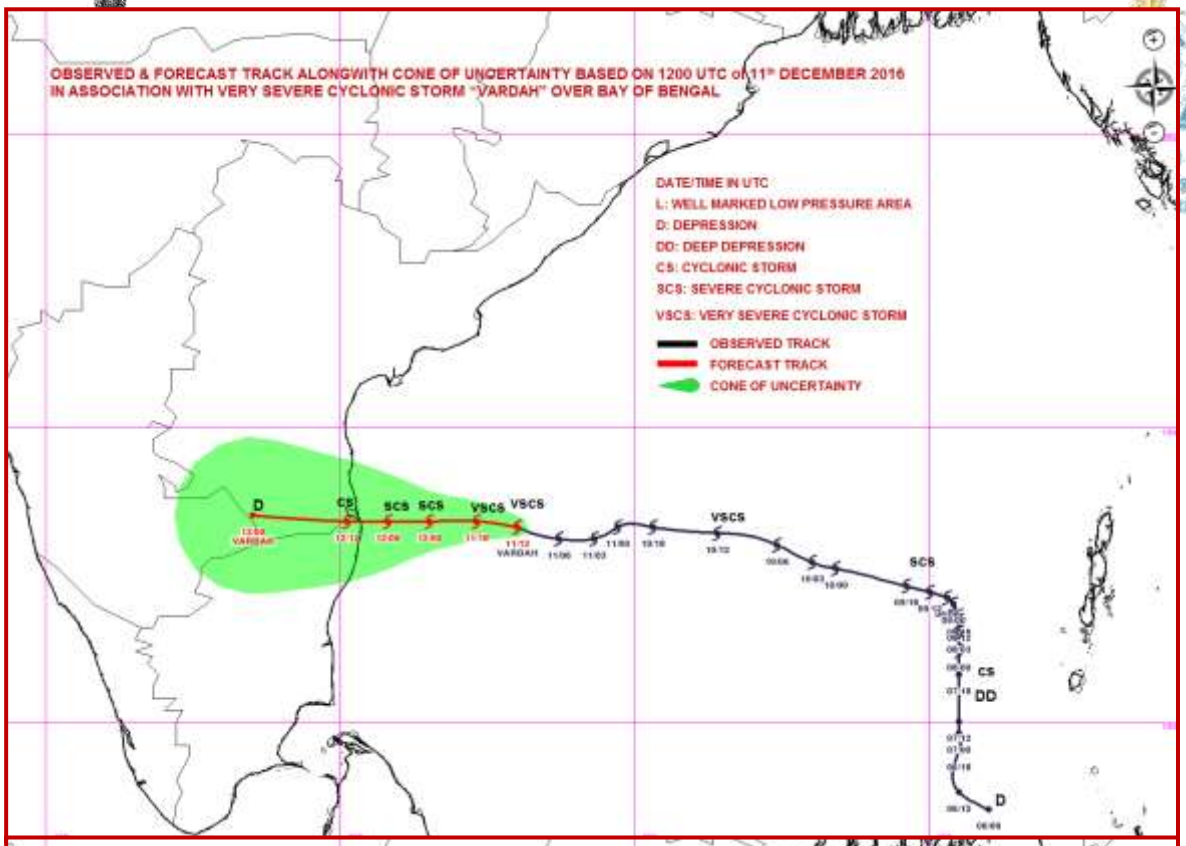

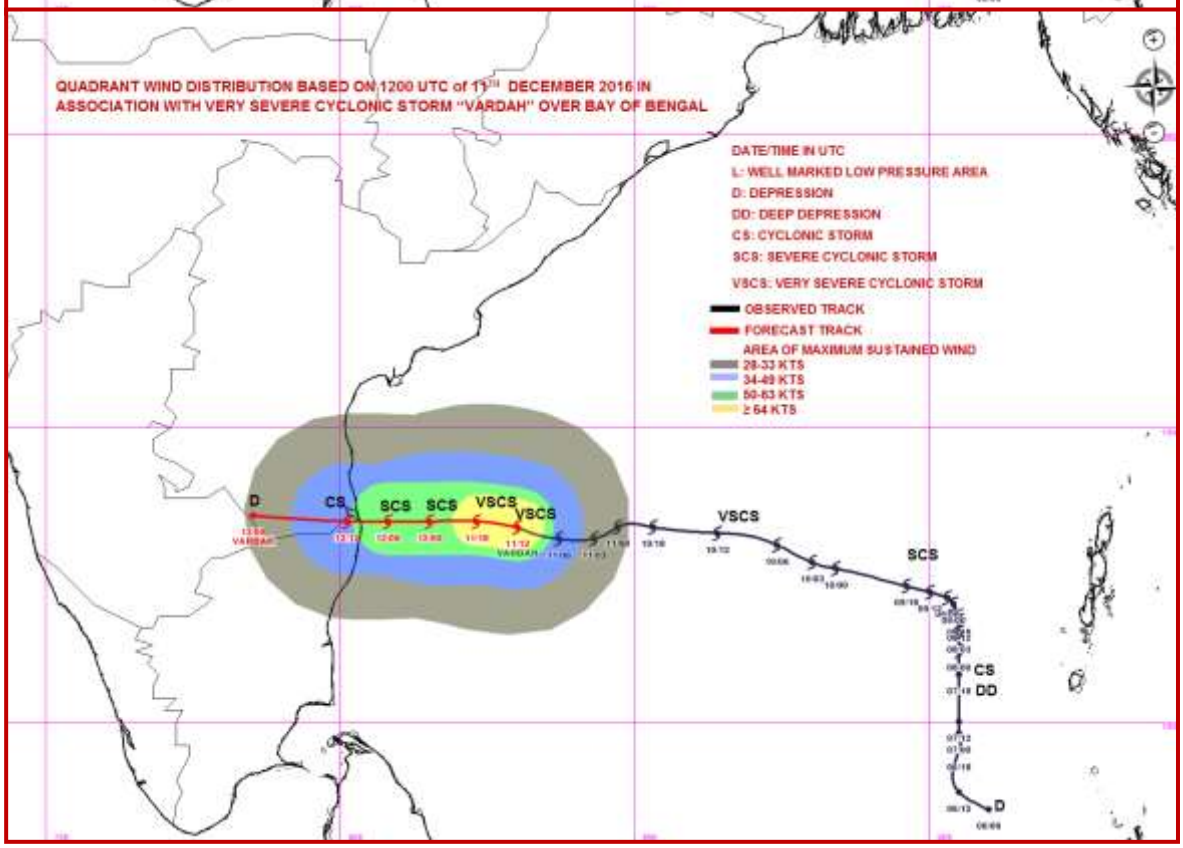

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY ISSUED AT 1700 UTC OF 11TH DECEMBER 2016 BASED ON 1500 UTC CHARTS OF 11TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, VARDAH OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED FURTHER NEARLY WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 15 KMPH AND LAY CENTRED AT 1500 UTC OF TODAY, THE 11TH DECEMBER, 2016 OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.3ºN AND LONGITUDE 82.5ºE, ABOUT 240 KM EAST-NORTHEAST OF CHENNAI(43278) AND 300 KM EAST-SOUTHEAST OF NELLORE(43245). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN GRADUALLY WHILE MOVING TOWARDS NORTH TAMILNADU AND ADJOINING SOUTH ANDHRA PRADESH COASTS. IT IS VERY LIKELY TO CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A CYCLONIC STORM WITH A WIND SPEED OF 80 TO 90 KMPH GUSTING TO 100 KMPH BY 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
11-12-2016/1500	13.3/82.5	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
11-12-2016/1800	13.3/82.3	120-130 GUSTING TO 145	VERY SEVERE CYCLONIC STORM
12-12-2016/0000	13.3/81.5	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
12-12-2016/0600	13.3/80.8	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/1200	13.3/80.1	70-80 GUSTING TO 90	CYCLONIC STORM
13-12-2016/0000	13.4/78.5	35-45 GUSTING TO 55	DEPRESSION

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 92º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 15.0^{0}N AND LONGITUDE 82.0^{0}E & 85.5^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED

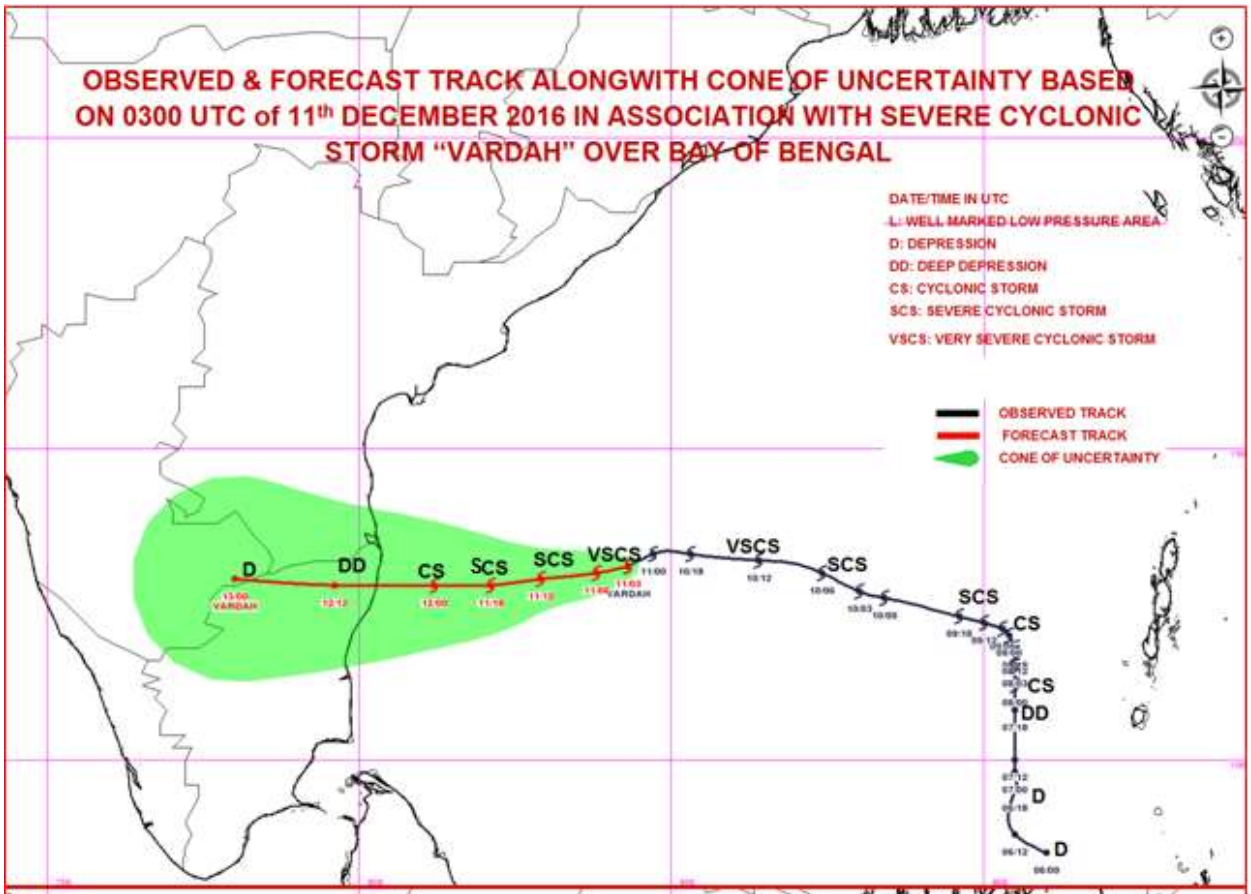
SURFACE WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

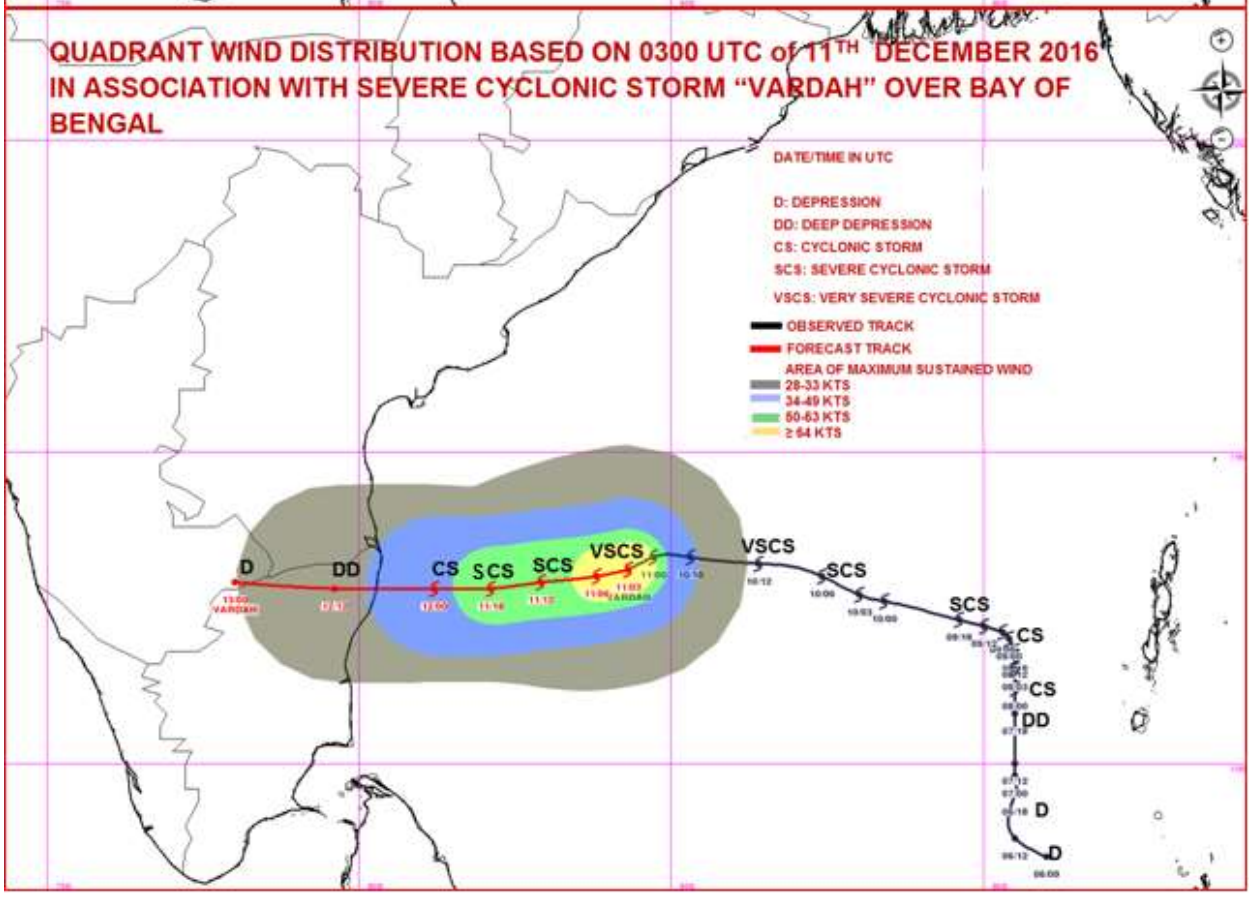
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR ANDHRA PRADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR ANDHRA PRADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20-25X10^{-5} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200-250X10^{-6} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EASTERLY AROUND THE SYSTEM CENTRE. LATEST TOTAL PRECIPITABLE WATER IMAGERY INDICATES THE REDUCTION IN FEEDING OF WARM & MOIST AIR TO THE CORE OF THE SYSTEM FROM SOUTHEAST DIRECTION. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

THE HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH AND TAMILNADU COASTS WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO THESE COASTS. IT MAY LEAD TO WEAKENING OF THE SYSTEM FROM TODAY, THE 11TH DECEMBER EVENING/NIGHT ONWARDS.

(NARESH KUMAR)
SCIENTIST-D
RSMC, NEW DELHI





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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY TWO ISSUED AT 2100 UTC OF 11TH DECEMBER 2016 BASED ON 1800 UTC CHARTS OF 11TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED FURTHER NEARLY WEST-SOUTHWEST-WARDS DURING PAST 06 HRS WITH A SPEED OF 12 KMPH AND LAY CENTRED AT 1800 HRS UTC OF 11TH DECEMBER, 2016 OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.1ºN AND LONGITUDE 82.3ºE, ABOUT 220 KM EAST-NORTHEAST OF CHENNAI (43278) AND 290 KM EAST-SOUTHEAST OF NELLORE (43245). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN GRADUALLY WHILE MOVING TOWARDS NORTH TAMILNADU AND ADJOINING SOUTH ANDHRA PRADESH COASTS. IT IS VERY LIKELY TO CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A CYCLONIC STORM WITH A WIND SPEED OF 80 TO 90 KMPH GUSTING TO 100 KMPH BY 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time (UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
11-12-2016/1800	13.1/82.3	120-130 gusting to 145	Very Severe Cyclonic Storm
12-12-2016/0000	13.1/81.5	110-120 gusting to 130	Severe Cyclonic Storm
12-12-2016/0600	13.1/80.8	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/1200	13.1/80.1	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	13.2/79.3	50-60 gusting to 70	Depression
13-12-2016/0600	13.2/78.1	25-35 gusting to 45	Low

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 88º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 16.0^{0}N AND EAST OF LONGITUDE 84^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED

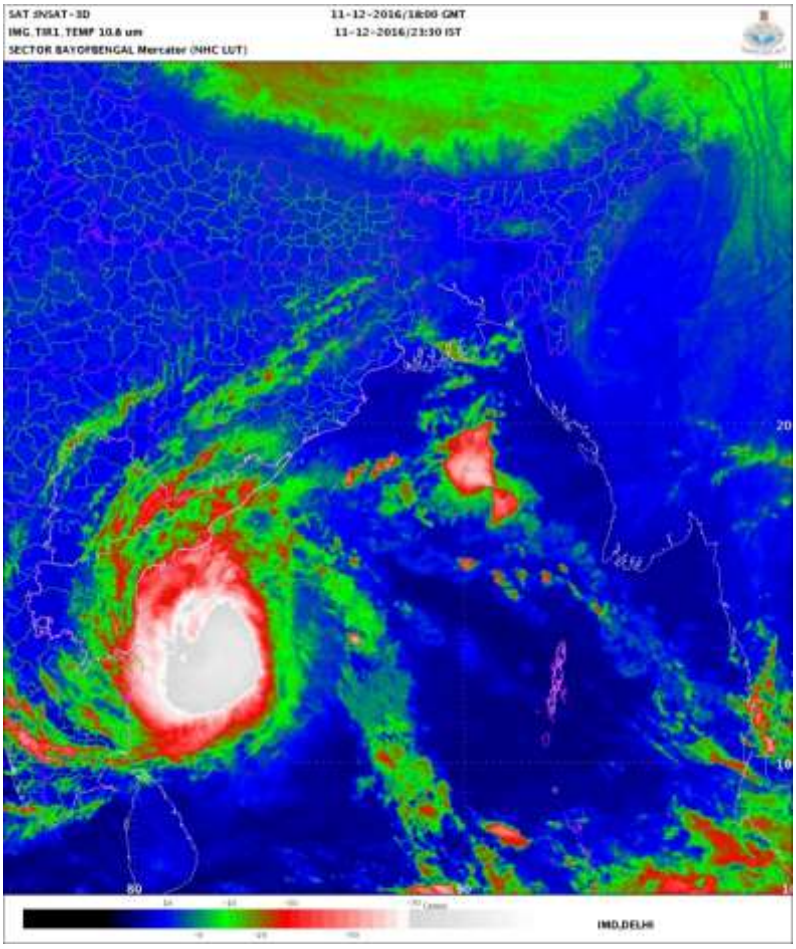
(MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

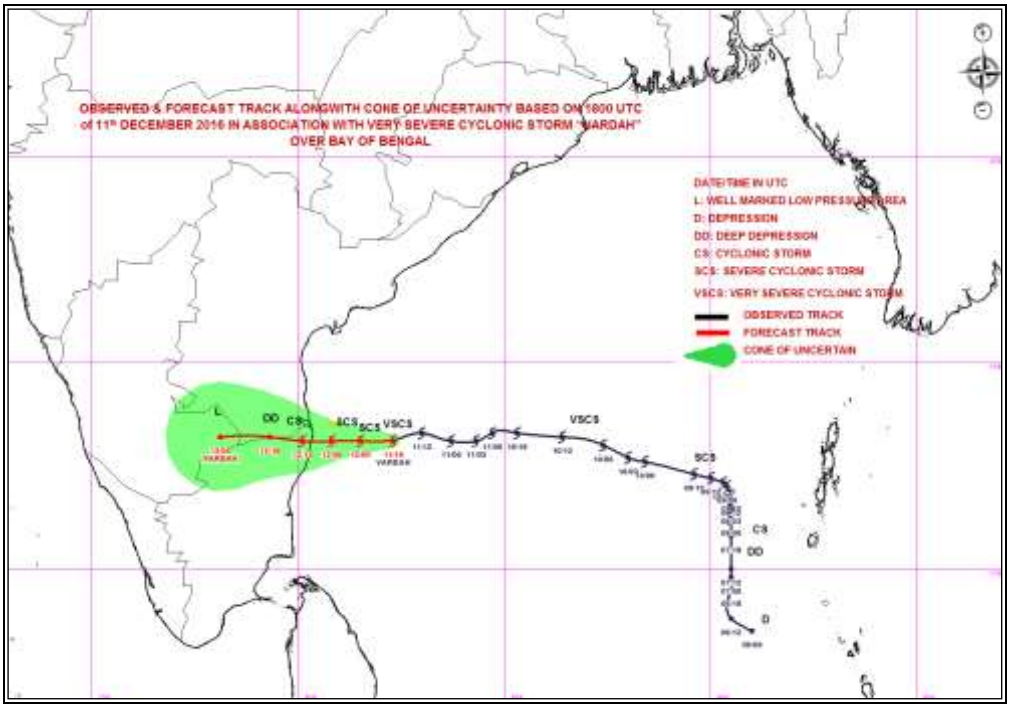
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR ANDHRA PRADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR ANDHRA PRADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20-25X10^{-5} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200-250X10^{-6} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EASTERLY AROUND THE SYSTEM CENTRE. LATEST TOTAL PRECIPITABLE WATER IMAGERY INDICATES THE REDUCTION IN FEEDING OF WARM & MOIST AIR TO THE CORE OF THE SYSTEM FROM SOUTHEAST DIRECTION. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

THE HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH AND TAMILNADU COASTS WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO THESE COASTS. IT MAY LEAD TO WEAKENING OF THE SYSTEM DURING NEXT 24 Hrs.

(D R PATTANAIK)
SCIENTIST-E
IMD, NEW DELHI





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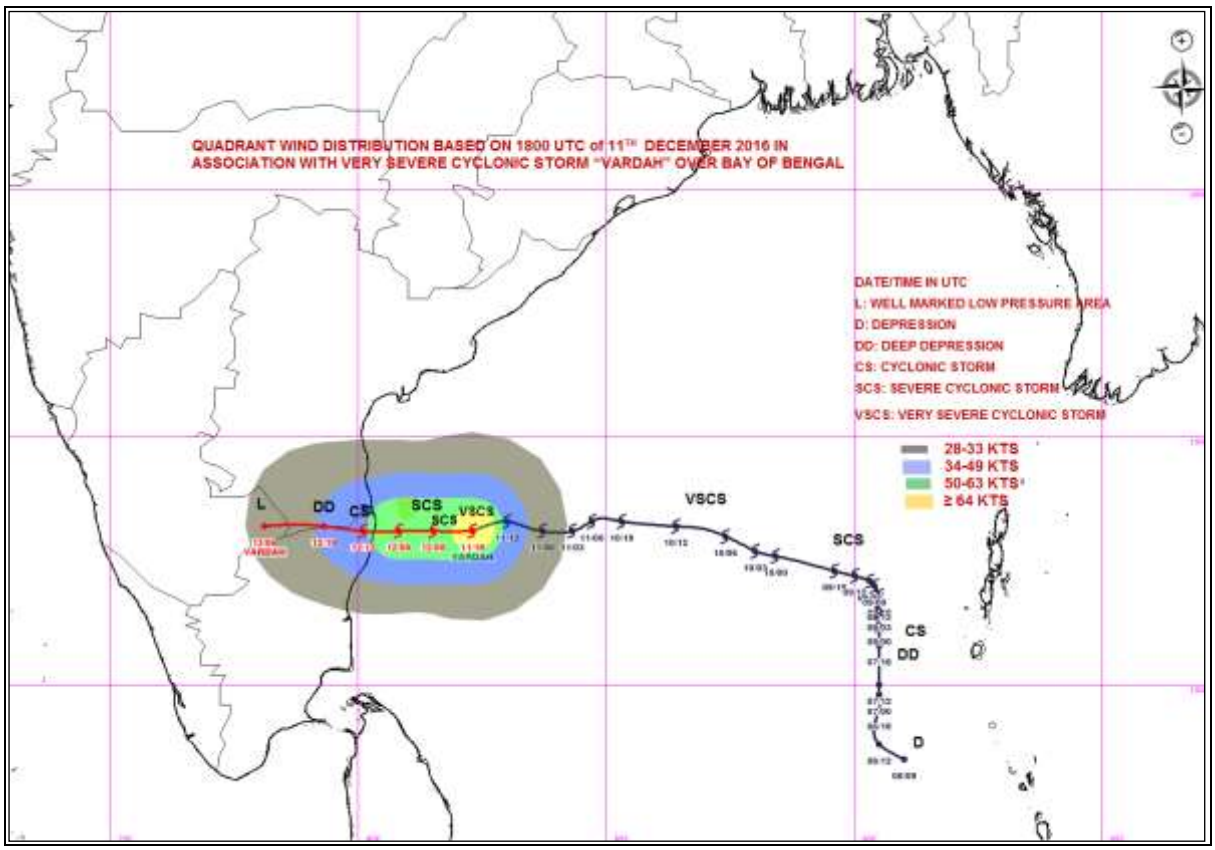

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY TWO ISSUED AT 0000 UTC OF 12th DECEMBER 2016 BASED ON 2100 UTC CHARTS OF 11TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED FURTHER NEARLY WEST-SOUTHWEST-WARDS DURING PAST 06 HRS WITH A SPEED OF 11 KMPH AND LAY CENTRED AT 2100 UTC OF 11th DECEMBER, 2016 OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.2ºN AND LONGITUDE 81.9ºE, ABOUT 180 KM EAST-NORTHEAST OF CHENNAI (43278) AND 250 KM EAST-SOUTHEAST OF NELLORE (43245). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN GRADUALLY WHILE MOVING TOWARDS NORTH TAMILNADU AND ADJOINING SOUTH ANDHRA PRADESH COASTS. IT IS VERY LIKELY TO CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A CYCLONIC STORM WITH A WIND SPEED OF 80 TO 90 KMPH GUSTING TO 100 KMPH BY 12TH DECEMBER 2016 AFTERNOON

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

Date/time (UTC)	Position (lat. ^{0}N/ long. ^{0}E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
11-12-2016/2100	13.2/81.9	120-130 gusting to 145	Very Severe Cyclonic Storm
12-12-2016/0000	13.2/81.5	110-120 gusting to 130	Severe Cyclonic Storm
12-12-2016/0600	13.2/80.8	100-110 gusting to 120	Severe Cyclonic Storm
12-12-2016/1200	13.2/80.1	80-90 gusting to 100	Cyclonic Storm
12-12-2016/1800	13.3/79.3	50-60 gusting to 70	Depression
13-12-2016/0600	13.3/78.1	25-35 gusting to 45	Low

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 88º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 16.0^{0}N AND WEST OF LONGITUDE 84^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

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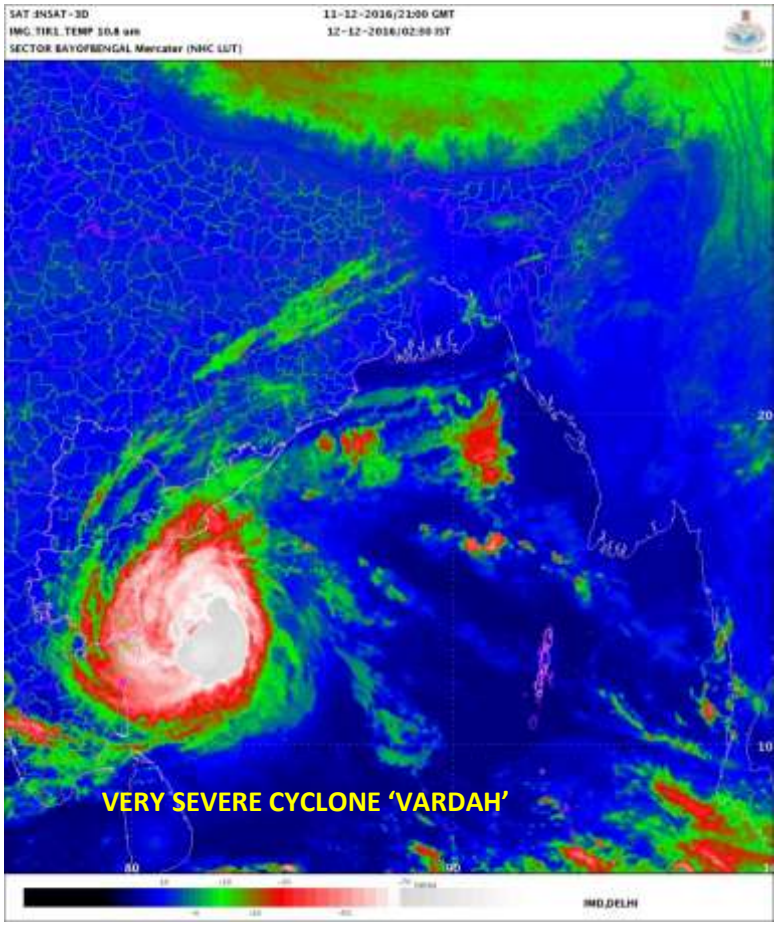
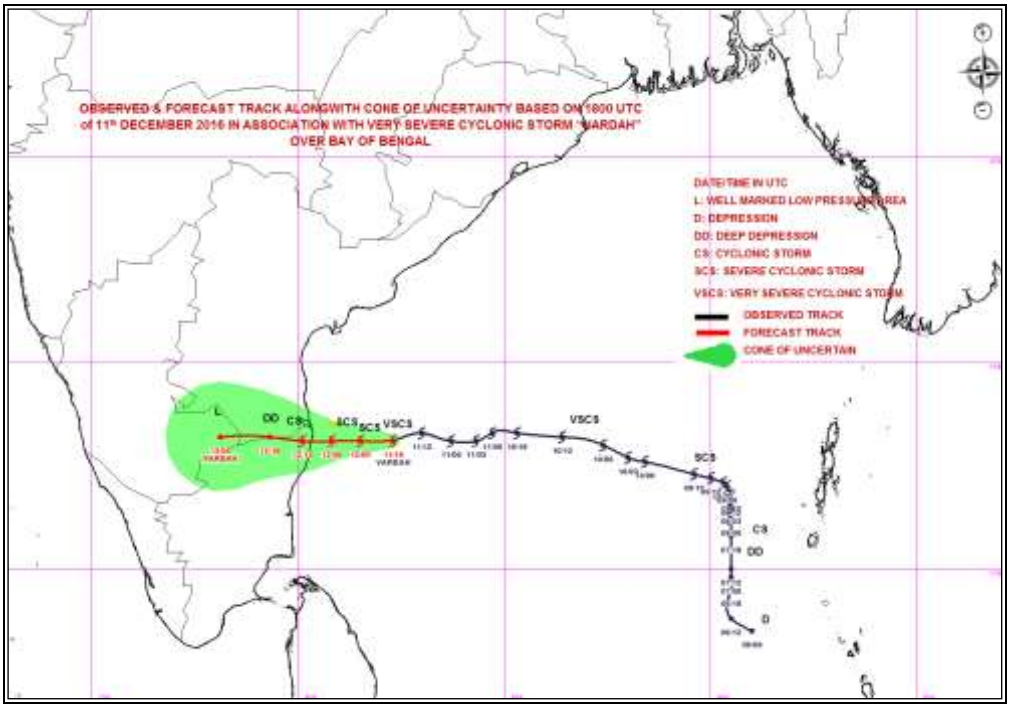
REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR ANDHRA PRADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR ANDHRA PRADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20-25X10^{-5} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200-250X10^{-6} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EASTERLY AROUND THE SYSTEM CENTRE. LATEST TOTAL PRECIPITABLE WATER IMAGERY INDICATES THE REDUCTION IN FEEDING OF WARM & MOIST AIR TO THE CORE OF THE SYSTEM FROM SOUTHEAST DIRECTION. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

THE HIGH VERTICAL WIND SHEAR AND LOWER SST AND OCEAN THERMAL ENERGY NEAR ANDHRA PRADESH AND TAMILNADU COASTS WILL BE UNFAVOURABLE FACTORS WHEN THE SYSTEM REACHES NEARER TO THESE COASTS. IT MAY LEAD TO WEAKENING OF THE SYSTEM DURING NEXT 24 Hrs.

(D R PATTANAIK)
SCIENTIST-E
IMD, NEW DELHI





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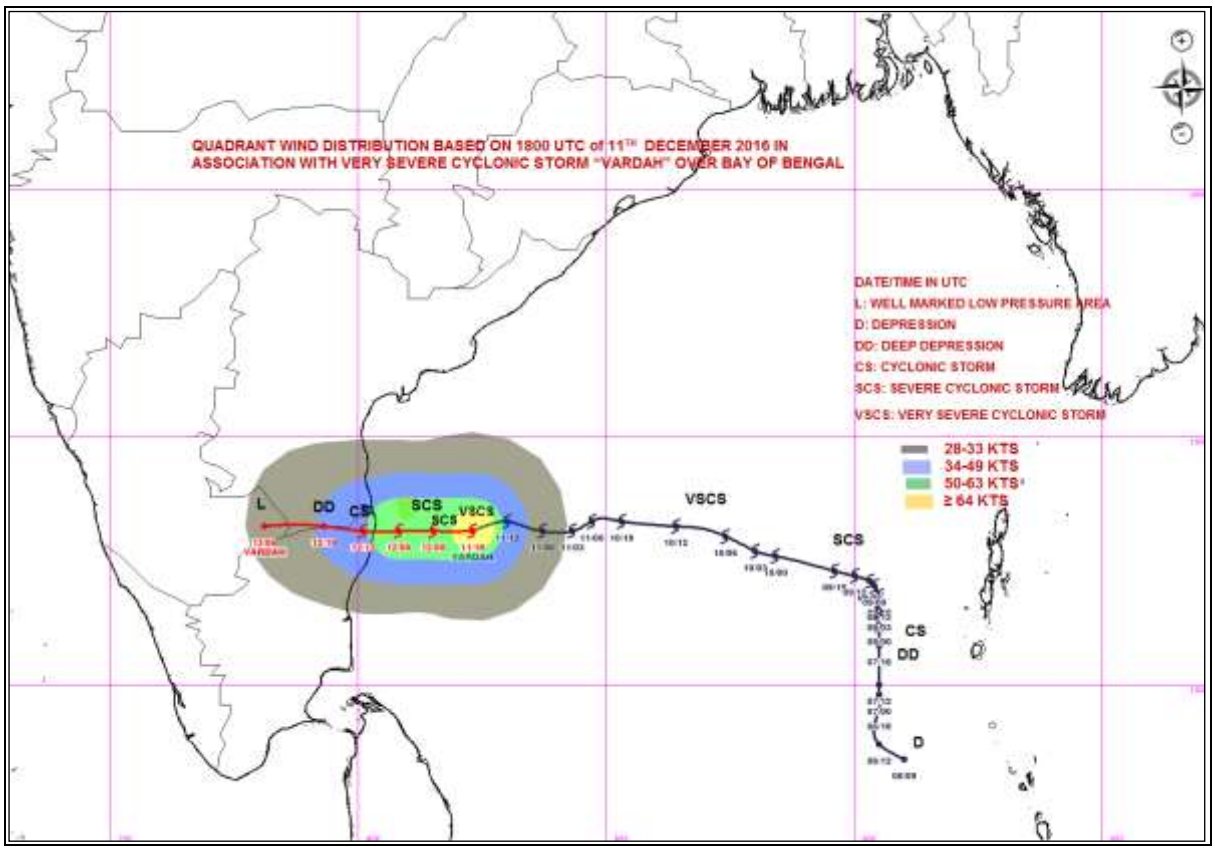

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
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METEOROLOGICAL OFFICE, MALE (MALDIVES)
OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)
YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY THREE ISSUED AT 0300 UTC OF 12TH DECEMBER 2016 BASED ON 0000 UTC CHARTS OF 12TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL MOVED FURTHER NEARLY WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 13 KMPH AND LAY CENTRED AT 0000 UTC OF TODAY, THE 12TH DECEMBER, 2016 OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.2ºN AND LONGITUDE 81.6ºE, ABOUT 150 KM EAST-NORTHEAST OF CHENNAI (43278) AND 220 KM EAST-SOUTHEAST OF NELLORE (43245). THE SYSTEM IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100 TO 110 KMPH GUSTING TO 120 KMPH BY TODAY, THE 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME (UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPI	CATEGORY OF CYCLONIC DISTURBANCE
12-12-2016/0000	13.2/81.6	120-130 GUSTING TO 140	VERY SEVERE CYCLONIC STORM
12-12-2016/0600	13.2/80.8	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
12-12-2016/1200	13.3/80.1	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/1800	13.3/79.3	65-75 GUSTING TO 85	CYCLONIC STORM
13-12-2016/0000	13.4/78.5	40-50 GUSTING TO 60	DEPRESSION

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 88º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 16.0^{0}N AND WEST OF LONGITUDE 84^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

AS REPORTED BY DOPPLER WEATHER RADAR CHENNAI, THE VERY SEVERE CYCLONIC STORM, VARDAH WITH LATEST POSITION OF THE SYSTEM IS CENTRED NEAR 13.2ºN AND

81.3ºE WITH VISIBLE, IRREGULAR-CLOSED SHAPE EYE WITH DIAMETER OF 32.5 KM. MAXIMUM RADIAL VELOCITY IN EYE WALL/SPIRAL BAND REGION IS 49 M/S AT 1.26 KM HEIGHT.

REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR ANDHRA PRADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR ANDHRA PRADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20-25X10^{-5} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200-250X10^{-6} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EASTERLY AROUND THE SYSTEM CENTRE. LATEST TOTAL PRECIPITABLE WATER IMAGERY INDICATES THE REDUCTION IN FEEDING OF WARM & MOIST AIR TO THE CORE OF THE SYSTEM FROM SOUTHEAST DIRECTION. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

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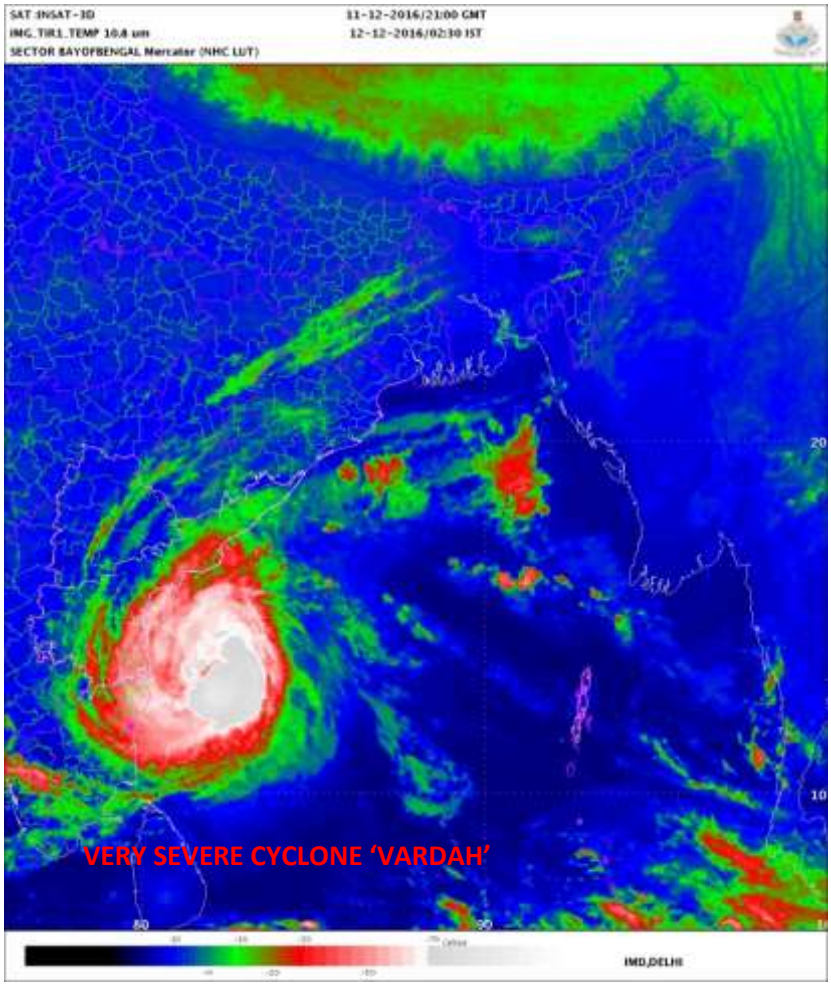
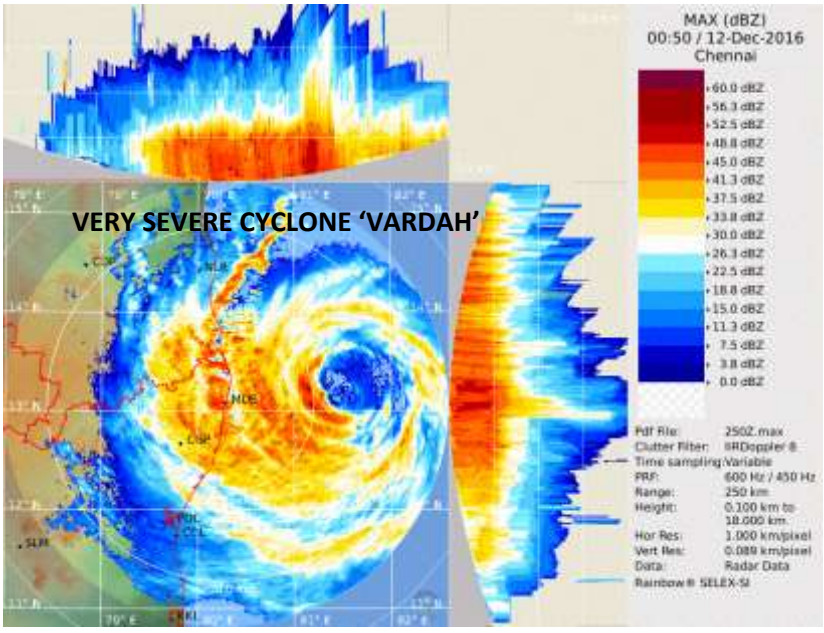
(D R PATTANAIK)
SCIENTIST-E
IMD, NEW DELHI





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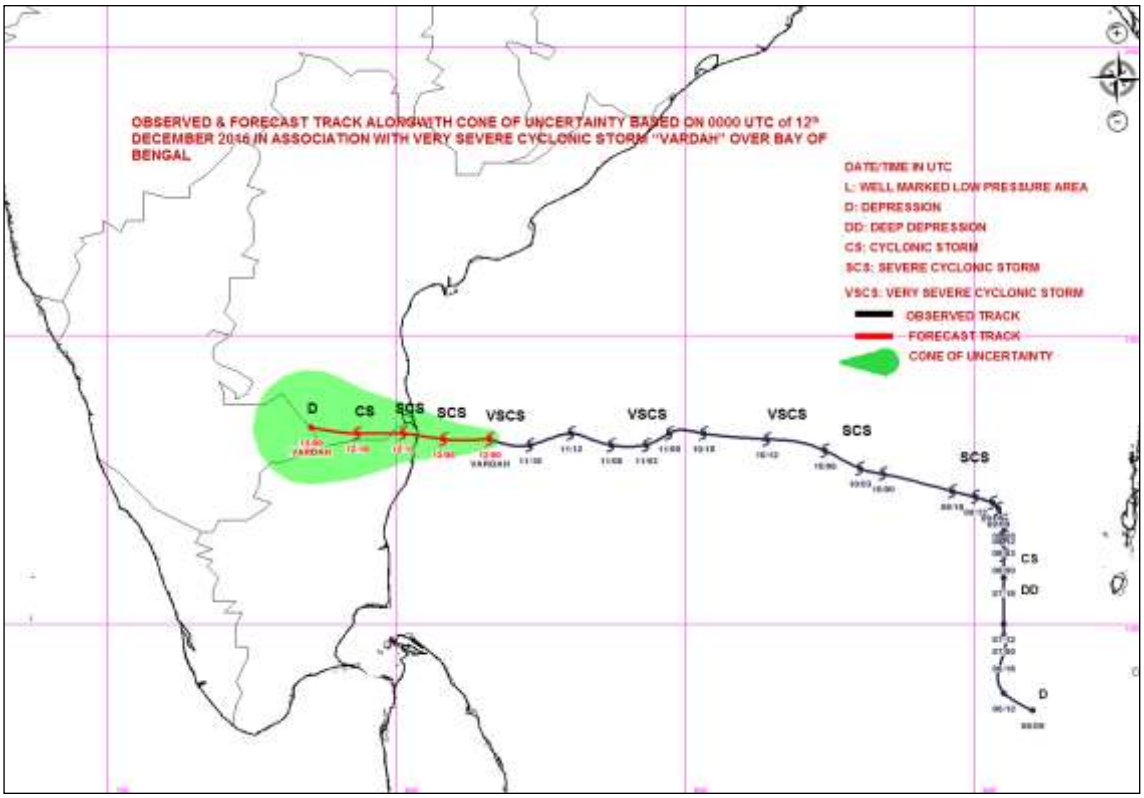

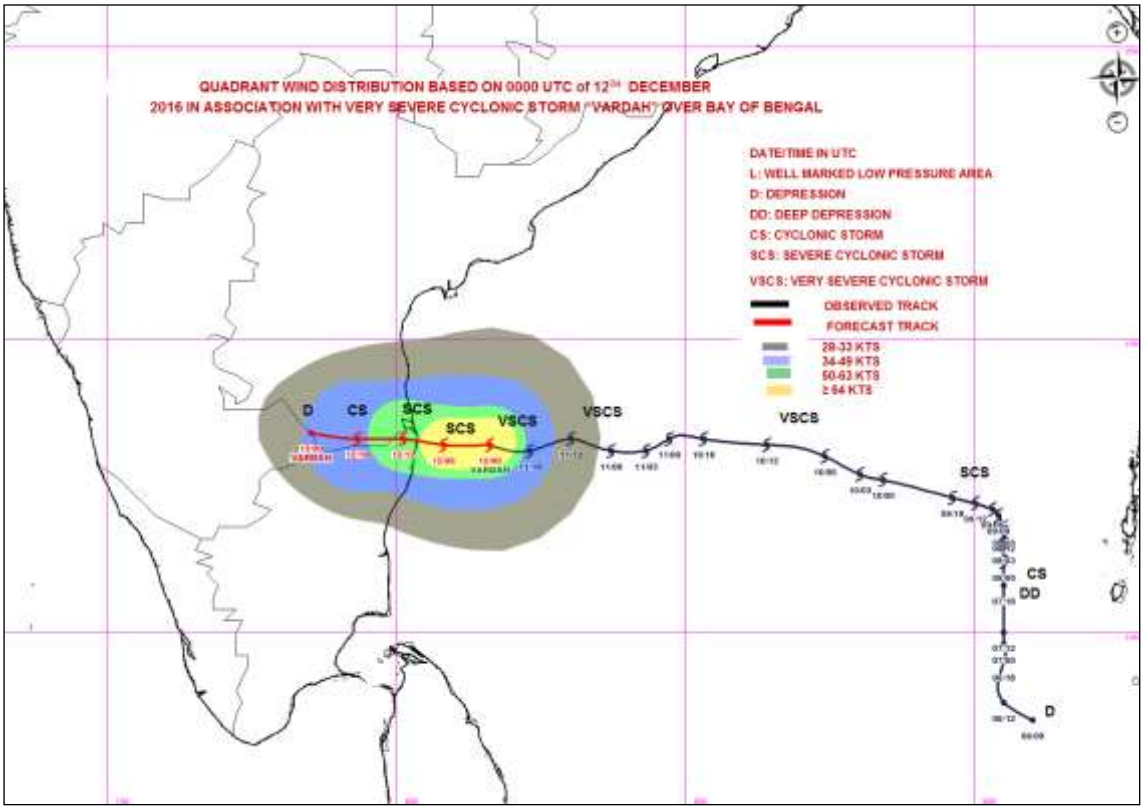

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

FROM: RSMC –TROPICAL CYCLONES, NEW DELHI
TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)
STORM WARNING CENTRE, BANGKOK (THAILAND)
STORM WARNING CENTRE, COLOMBO (SRILANKA)
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YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY four ISSUED AT 0500 UTC OF 12TH DECEMBER 2016 BASED ON 0300 UTC CHARTS OF 12TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, **VARDAH** OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED FURTHER WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 13 KMPH AND LAY CENTRED AT 0300 UTC OF TODAY, THE 12TH DECEMBER, 2016 OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.2ºN AND LONGITUDE 81.2ºE, ABOUT 105 KM EAST-NORTHEAST OF CHENNAI(43278). THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE NEARLY WESTWARDS AND CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100 TO 110 KMPH GUSTING TO 120 KMPH BY TODAY, THE 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME (UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12-12-2016/0300	13.2/81.2	120-130 GUSTING TO 140	VERY SEVERE CYCLONIC STORM
12-12-2016/0600	13.2/80.8	110-120 GUSTING TO 130	SEVERE CYCLONIC STORM
12-12-2016/1200	13.3/80.1	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/1800	13.3/79.3	65-75 GUSTING TO 85	CYCLONIC STORM
13-12-2016/0000	13.4/78.5	40-50 GUSTING TO 60	DEPRESSION

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 88º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 16.0^{0}N AND WEST OF LONGITUDE 84^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 70 KNOTS GUSTING TO 80 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

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REMARKS

THE SEA SURFACE TEMPERATURE (SST) IS AROUND 28-29˚C. THE SST DECREASES TOWARDS NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BECOMING 26-27^{0}C NEAR ANDHRA PRADESH COAST. THE OCEAN HEAT CONTENT IS ABOUT 70-80 KJ/CM^2 OVER THE SYSTEM AND GRADUALLY DECREASES TOWARDS NORTHWEST, BECOMING LESS THAN 50 KJ/CM^2 NEAR ANDHRA PRADESH COAST EXCEPT OVER A SMALL POCKET OF WESTCENTRAL BAY OFF CENTRAL ANDHRA PRADESH COAST WHERE, IT IS 60-70 KJ/CM^2. THE LOW LEVEL CONVERGENCE IS ABOUT 20-25X10^{-5} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE, THE UPPER LEVEL DIVERGENCE IS AROUND 30X10^{-5} S^{-1} TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200-250X10^{-6} S^{-1} TO THE SOUTH & SOUTHWEST OF THE SYSTEM CENTRE. THE WINDS BETWEEN 251-350 MB LEVELS ARE EASTERLY AROUND THE SYSTEM CENTRE. LATEST TOTAL PRECIPITABLE WATER IMAGERY INDICATES THE REDUCTION IN FEEDING OF WARM & MOIST AIR TO THE CORE OF THE SYSTEM FROM SOUTHEAST DIRECTION. THE VERTICAL WIND SHEAR OF HORIZONTAL WIND IS HIGH (20-25 KNOTS) AROUND THE SYSTEM CENTRE AND IS SAME ALONG THE FORECAST TRACK.

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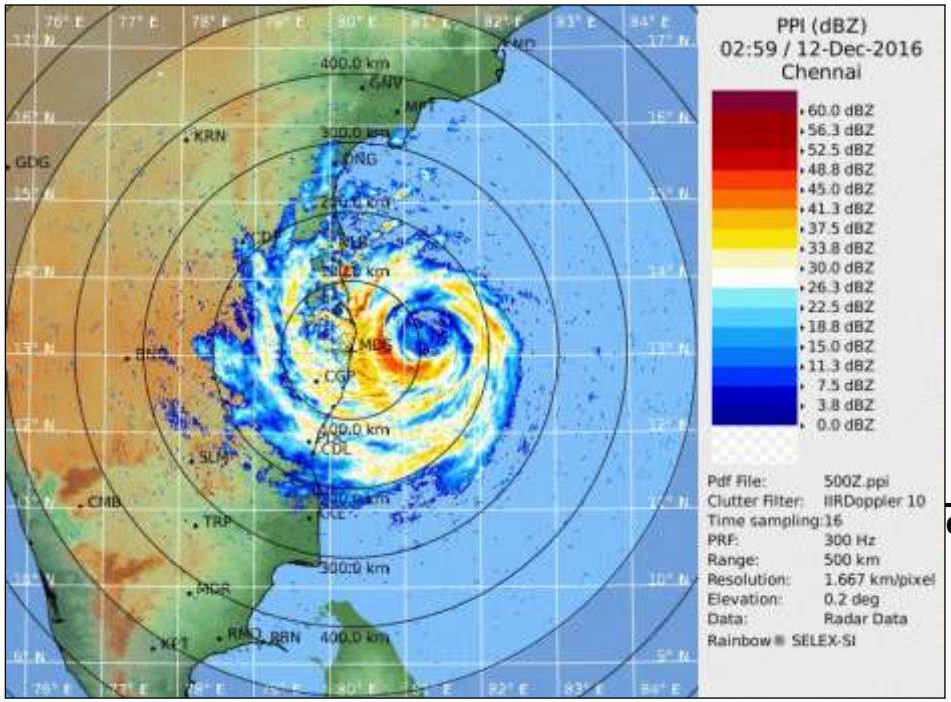
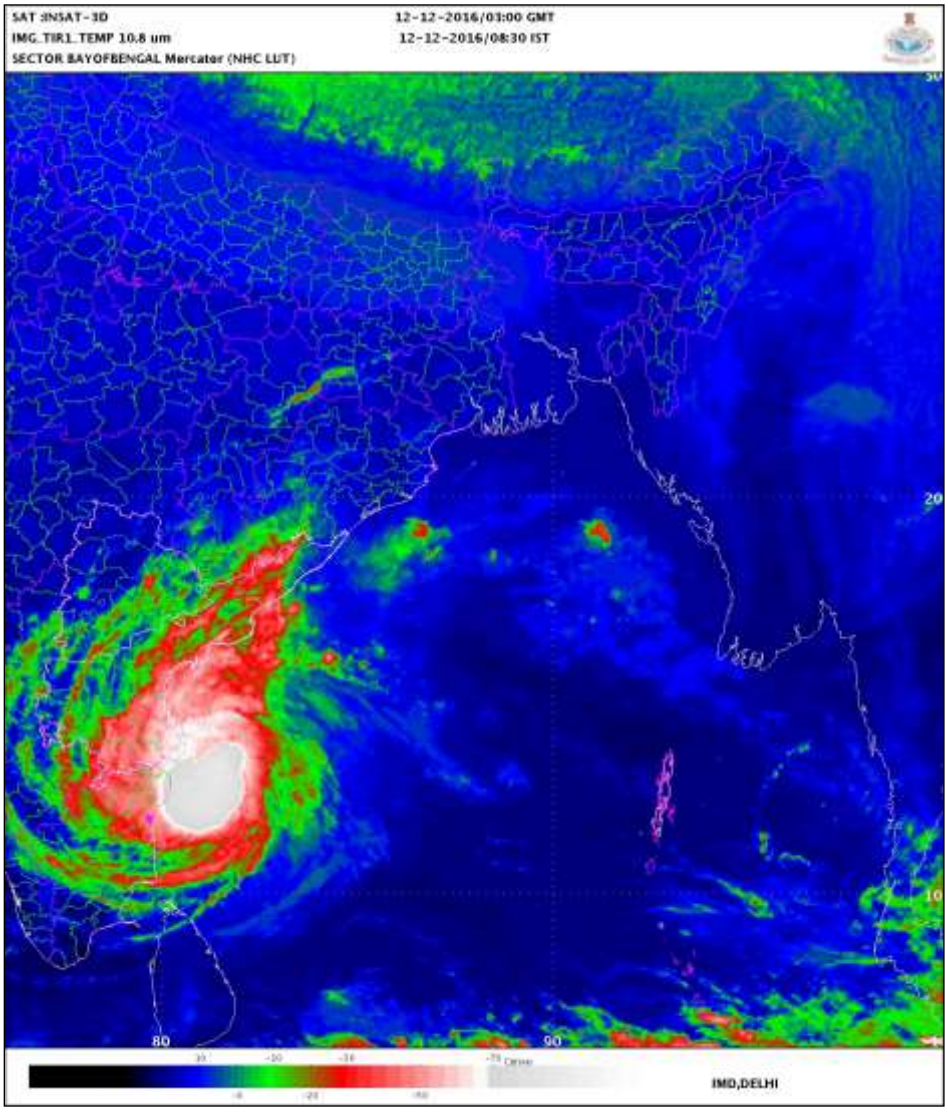
(NARESH KUMAR)
SCIENTIST-D
RSMC, NEW DELHI



dhq2008@gmail.com



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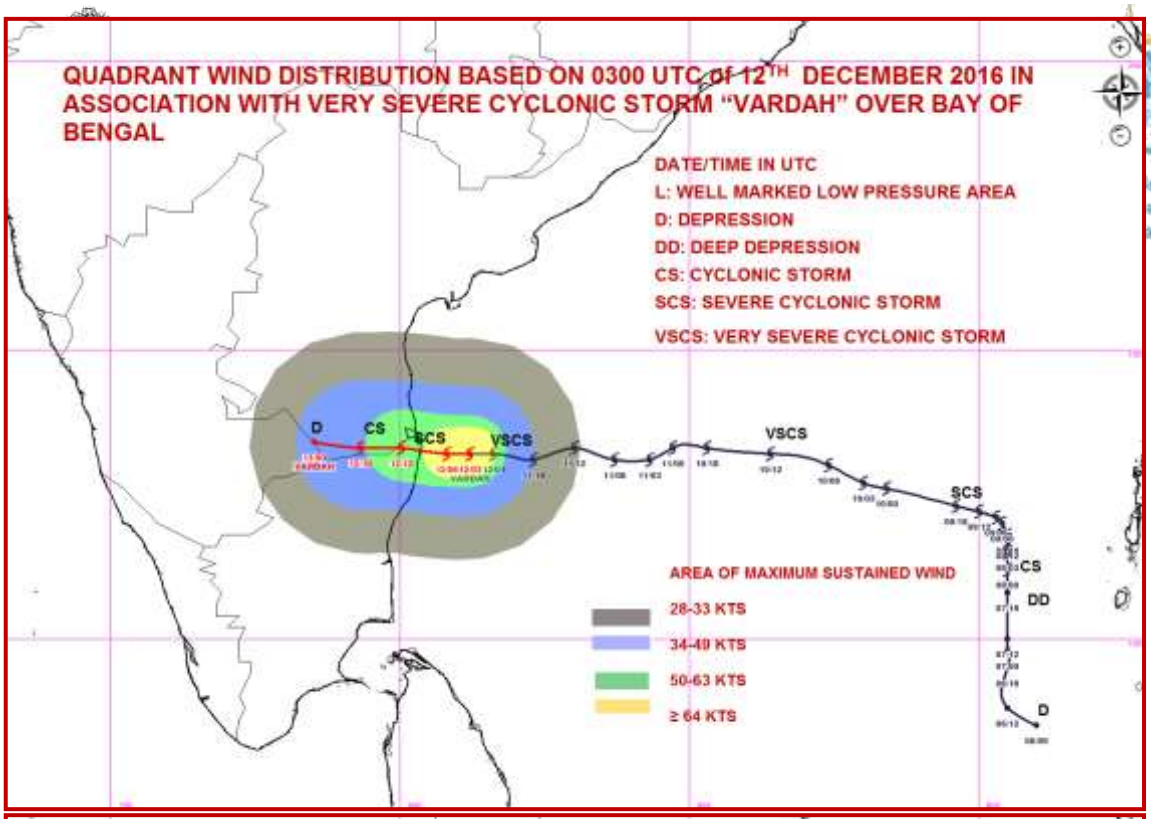

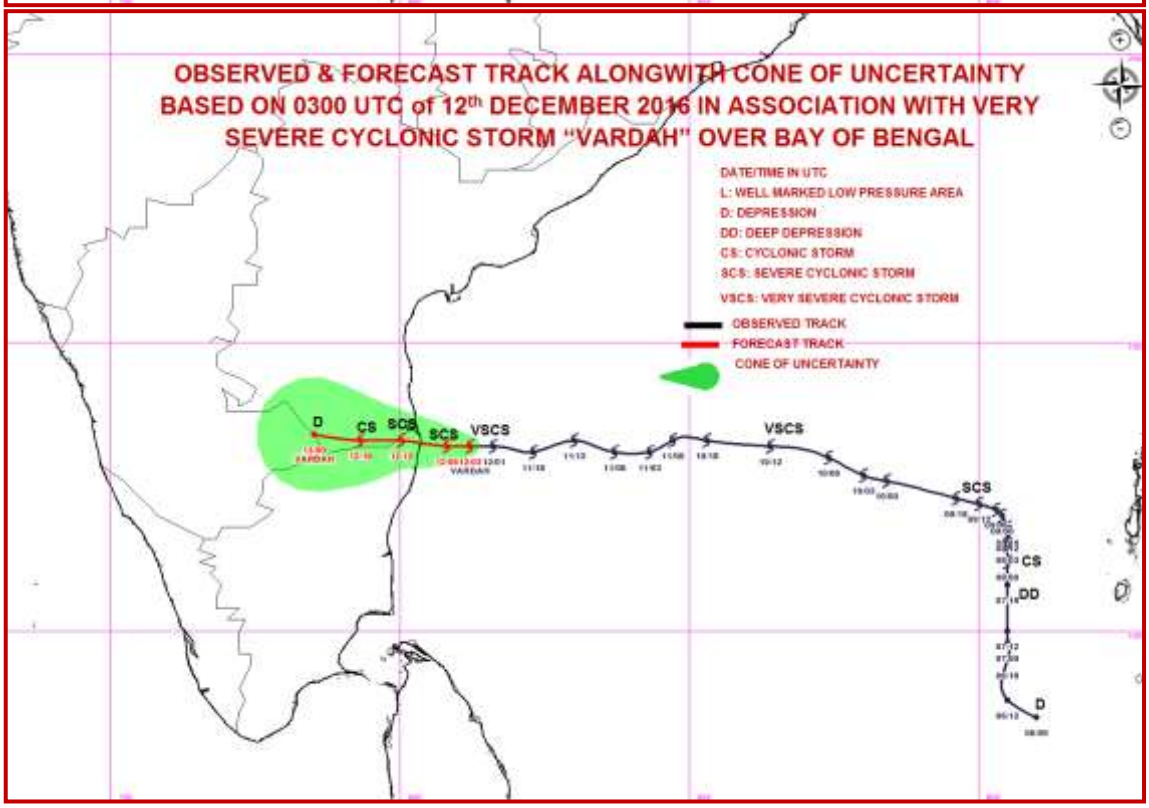

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STORM WARNING CENTRE, KARACHI (PAKISTAN)
METEOROLOGICAL OFFICE, MALE (MALDIVES)
OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)
YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY FIVE ISSUED AT 0730 UTC OF 12TH DECEMBER 2016 BASED ON 0600 UTC CHARTS OF 12TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, VARDAH OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL MOVED FURTHER WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 16 KMPH AND LAY CENTRED AT 0600 UTC OF TODAY, THE 12TH DECEMBER, 2016 OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.2ºN AND LONGITUDE 80.7ºE, ABOUT 50 KM EAST-NORTHEAST OF CHENNAI(43278). THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE NEARLY WESTWARDS AND CROSS NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS, CLOSE TO CHENNAI AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100 TO 110 KMPH GUSTING TO 120 KMPH BY TODAY, THE 12TH DECEMBER 2016 AFTERNOON.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12-12-2016/0600	13.2/80.7	120-130 GUSTING TO 140	VERY SEVERE CYCLONIC STORM
12-12-2016/1200	13.3/80.1	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/1800	13.3/79.3	65-75 GUSTING TO 85	CYCLONIC STORM
13-12-2016/0000	13.4/78.5	40-50 GUSTING TO 60	DEPRESSION

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 88º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 16.0^{0}N AND WEST OF LONGITUDE 84^{0}E. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 65 KNOTS GUSTING TO 75 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 982 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

AS REPORTED BY DOPPLER WEATHER RADAR CHENNAI, THE VERY SEVERE CYCLONIC STORM, VARDAH WITH LATEST POSITION OF THE SYSTEM IS CENTRED NEAR 13.2ºN AND 81.7ºE WITH VISIBLE, IRREGULAR-CLOSED SHAPE EYE WITH DIAMETER OF 42.2 KM. MAXIMUM RADIAL VELOCITY IN EYE WALL/SPIRAL BAND REGION IS 48.0 M/S AT 0.3 KM HEIGHT.

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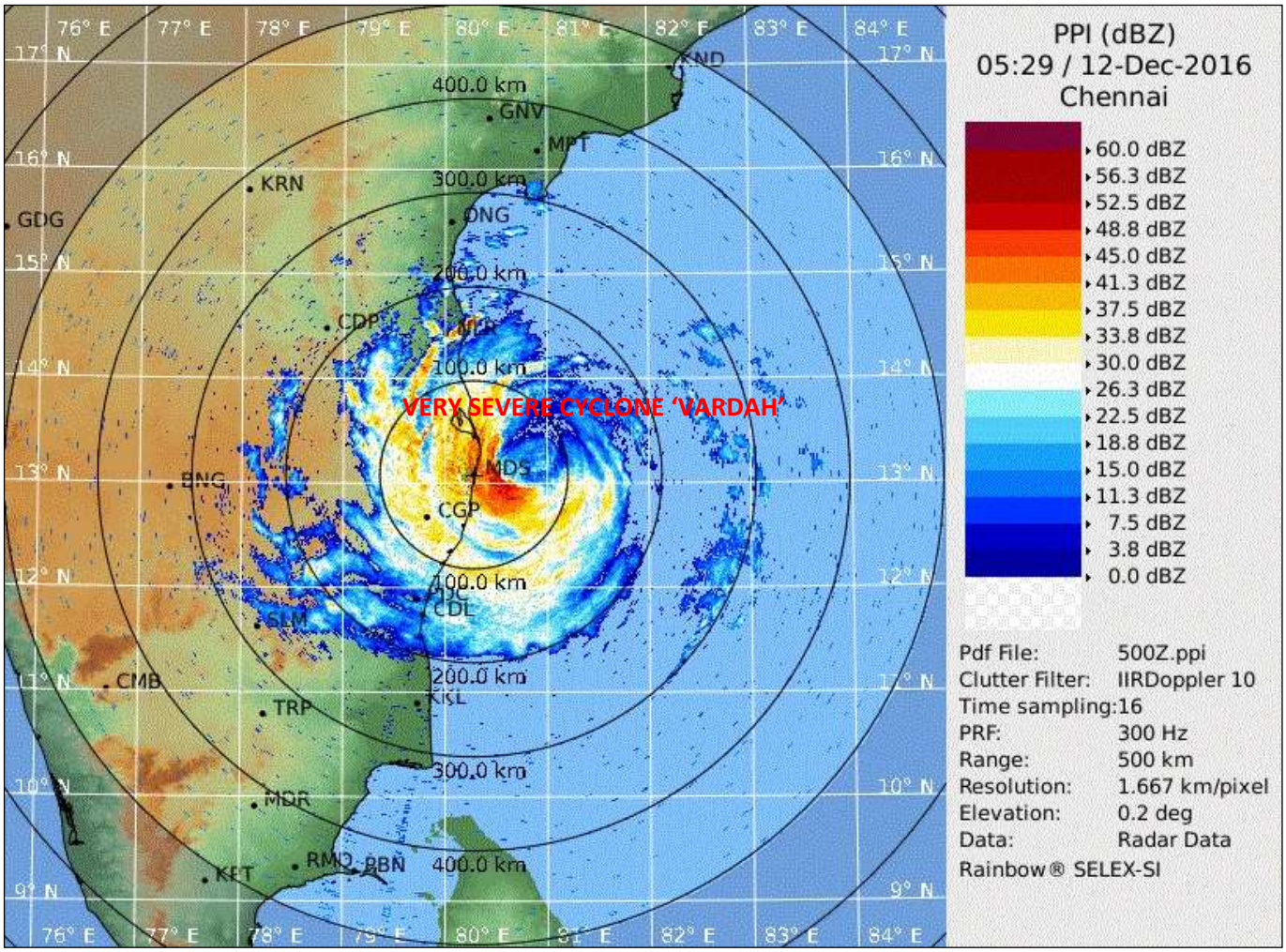
(NARESH KUMAR)
SCIENTIST-D, RSMC, NEW DELHI



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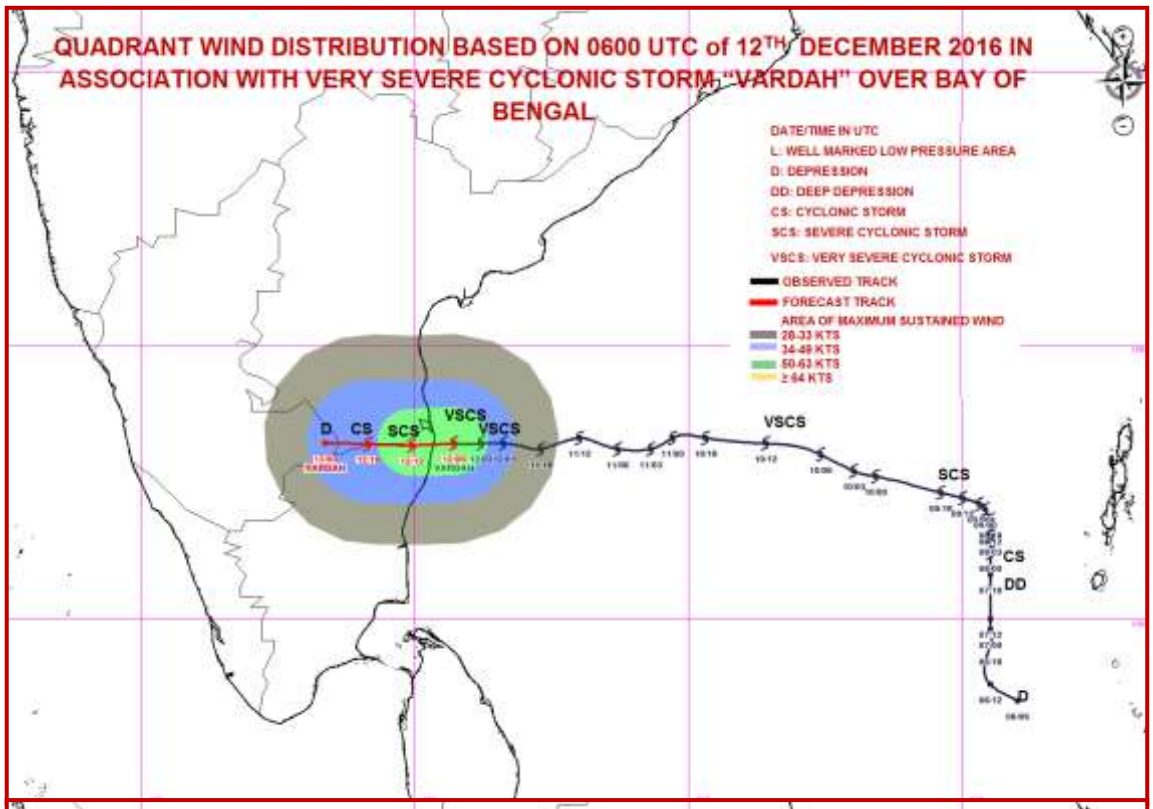

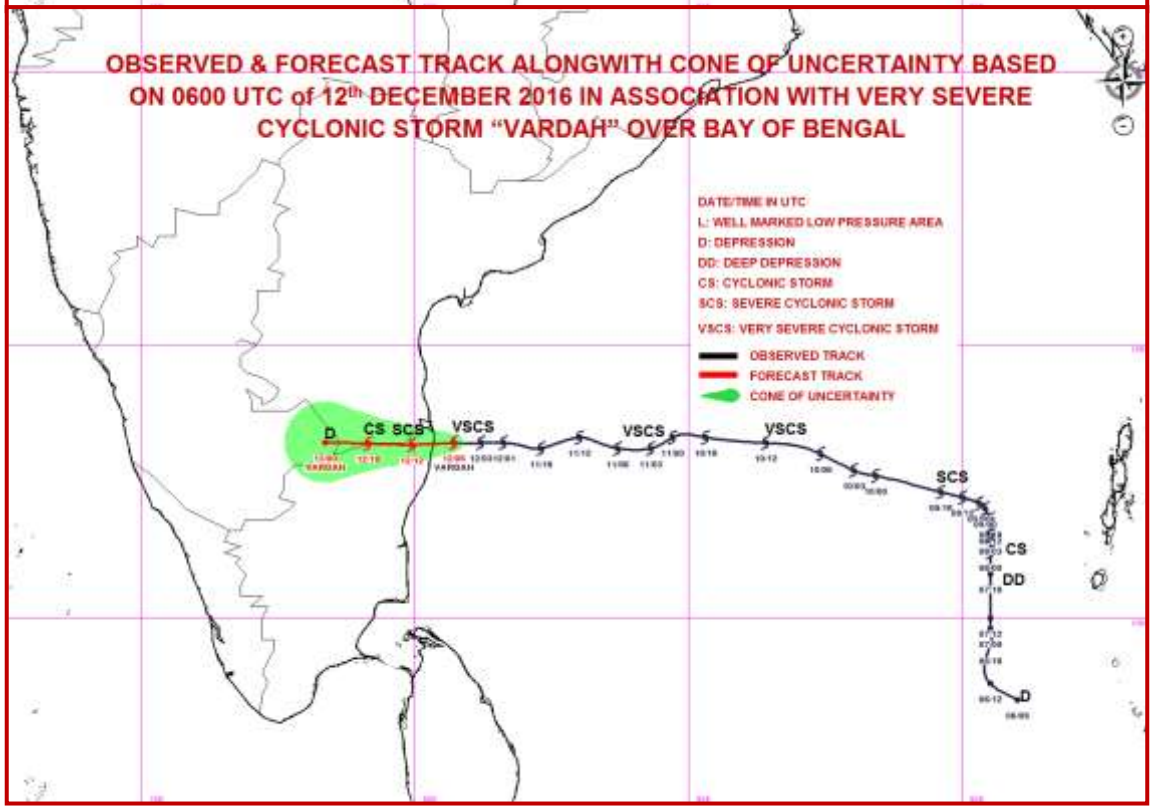

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)
TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY FIVE ISSUED AT 1030 UTC OF 12TH DECEMBER 2016 BASED ON 0900 UTC CHARTS OF 12TH DECEMBER 2016

THE VERY SEVERE CYCLONIC STORM, VARDAH OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL MOVED NEARLY WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 16 KMPH AND LAY CENTRED AT 0900 UTC OF TODAY, THE 12TH DECEMBER, 2016 OVER WEST CENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL NEAR LATITUDE 13.1ºN AND LONGITUDE 80.3ºE, CLOSE TO CHENNAI (43278) COAST. LATEST OBSERVATION INDICATES THAT IT IS IN THE PROCESS OF CROSSING THE NORTH TAMILNADU COAST CLOSE TO CHENNAI AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100 TO 110 KMPH GUSTING TO 120 KMPH.

THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE NEARLY WESTWARDS AND WEAKEN GRADUALLY INTO A CYCLONIC STORM DURING NEXT 06 HOURS.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12-12-2016/0900	13.1/80.3	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
12-12-2016/1200	13.2/79.9	70-80 GUSTING TO 90	CYCLONIC STORM
12-12-2016/1800	13.2/79.1	40-50- GUSTING TO 60	DEPRESSION
13-12-2016/0000	13.2/78.3	20-30 GUSTING TO 40	LOW

ACCORDING TO SATELLITE IMAGERY, THE SYSTEM INTENSITY IS T4.0. CLOUD CONVECTION SHOWS CENTARL DENSE OVERCAST (CDO) PATTERN. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 82º C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 15.0^{0}N, WEST OF LONGITUDE 82^{0}E, SOUTH COASTAL ANDHRA PRADESH ADJOINING RAYALASEEMA AND NORTH COASTAL TAMILNADU. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 55 KNOTS GUSTING TO 65 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 990 HPA. SEA CONDITION IS PHENOMENAL AROUND SYSTEM CENTRE.

AS REPORTED BY DOPPLER WEATHER RADAR CHENNAI, THE SEVERE CYCLONIC STORM, VARDAH WITH LATEST POSITION OF THE SYSTEM IS CENTRED NEAR 13.06ºN AND 80.32ºE WITH VISIBLE, IRREGULAR-CLOSED SHAPE EYE WITH DIAMETER OF 48.1 KM. MAXIMUM RADIAL VELOCITY IN EYE WALL/SPIRAL BAND REGION IS 22.9 M/S AT 0.16 KM HEIGHT.

(NARESH KUMAR)
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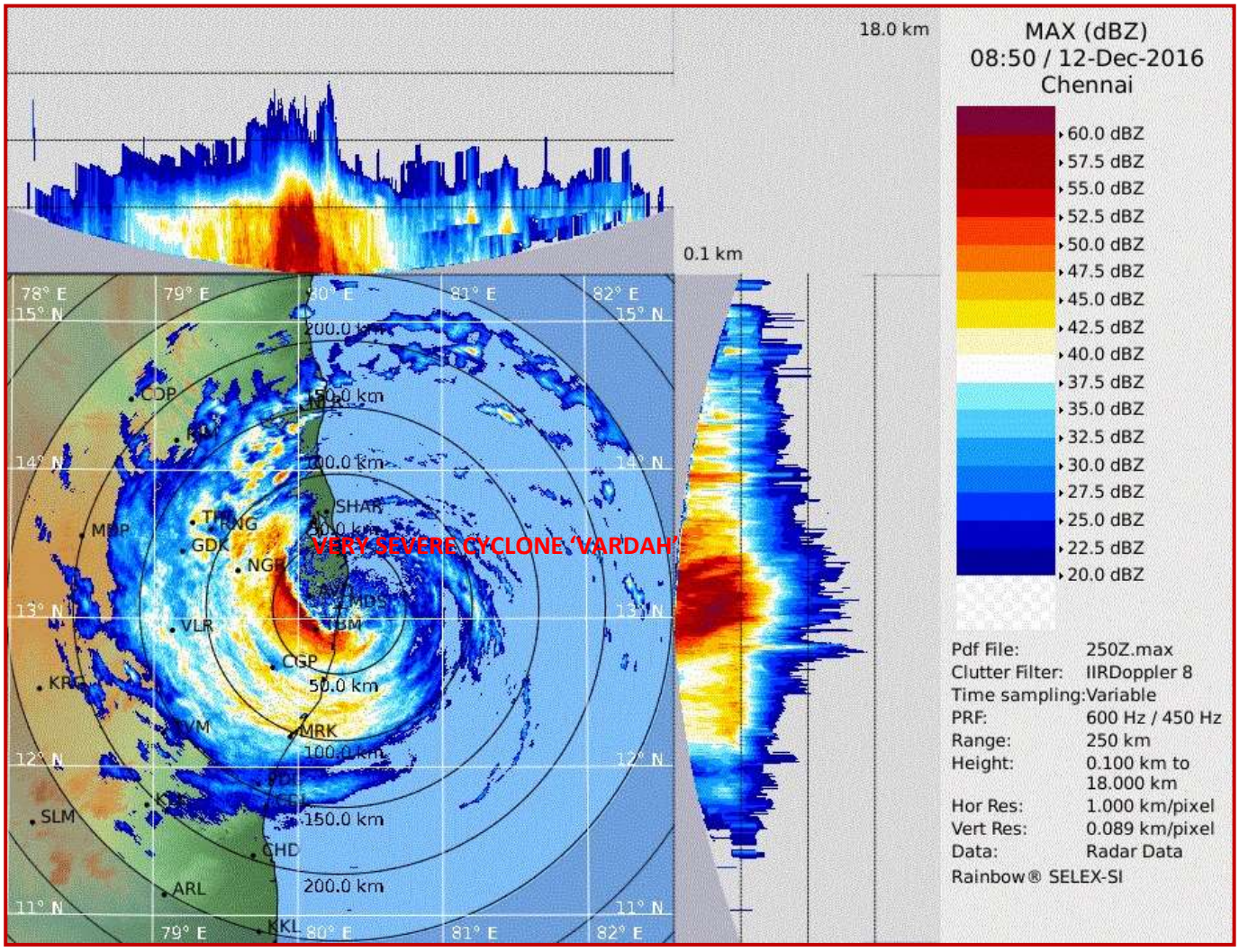

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)

TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY SIX ISSUED AT 1400 UTC OF 12TH DECEMBER 2016 BASED ON 1200 UTC CHARTS OF 12TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, VARDAH OVER WEST CENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL, CLOSE TO CHENNAI COAST MOVED NEARLY WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 15 KMPH, CROSSED NORTH TAMIL NADU COAST CLOSE TO CHENNAI(43278) BETWEEN 0930 TO 1130 UTC OF TODAY, THE 12TH DECEMBER AS A SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED SURFACE WIND SPEED OF 100-110 KMPH GUSTING TO 120 KMPH. IT LAY CENTRED AT 1200 UTC OF TODAY, THE 12TH DECEMBER, 2016 NEAR LATITUDE 13.0ºN AND LONGITUDE 79.9ºE, 40 KM WEST OF CHENNAI. THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE NEARLY WESTWARDS, WEAKEN GRADUALLY INTO A CYCLONIC STORM DURING NEXT THREE HOURS AND FURTHER INTO A DEEP DEPRESSION DURING SUBSEQUENT SIX HOURS.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12-12-2016/1200	13.0/79.9	85-95 GUSTING TO 105	SEVERE CYCLONIC STORM
12-12-2016/1800	12.9/79.1	50-60 GUSTING TO 70	DEEP DEPRESSION
13-12-2016/0000	12.8/78.3	35-45 GUSTING TO 55	DEPRESSION

ACCORDING TO SATELLITE IMAGERY, ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER BAY OF BENGAL BETWEEN 11.0^{0}N & 15.0^{0}N, WEST OF LONGITUDE 82^{0}E, SOUTH COASTAL ANDHRA PRADESH ADJOINING RAYALASEEMA AND NORTH COASTAL TAMILNADU. THE ASSOCIATED MAXIMUM SUSTAINED SURFACE WIND SPEED (MSW) IS ABOUT 50 KNOTS GUSTING TO 60 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 984 HPA.

AS REPORTED BY DOPPLER WEATHER RADAR CHENNAI, THE SEVERE CYCLONIC STORM, VARDAH WITH LATEST POSITION OF THE SYSTEM IS CENTRED NEAR 12.94ºN AND 79.98ºE WITH FULLY SMALL CLOSED SMALL EYE WITH DIAMETER OF 21.1 KM.

(NARESH KUMAR)
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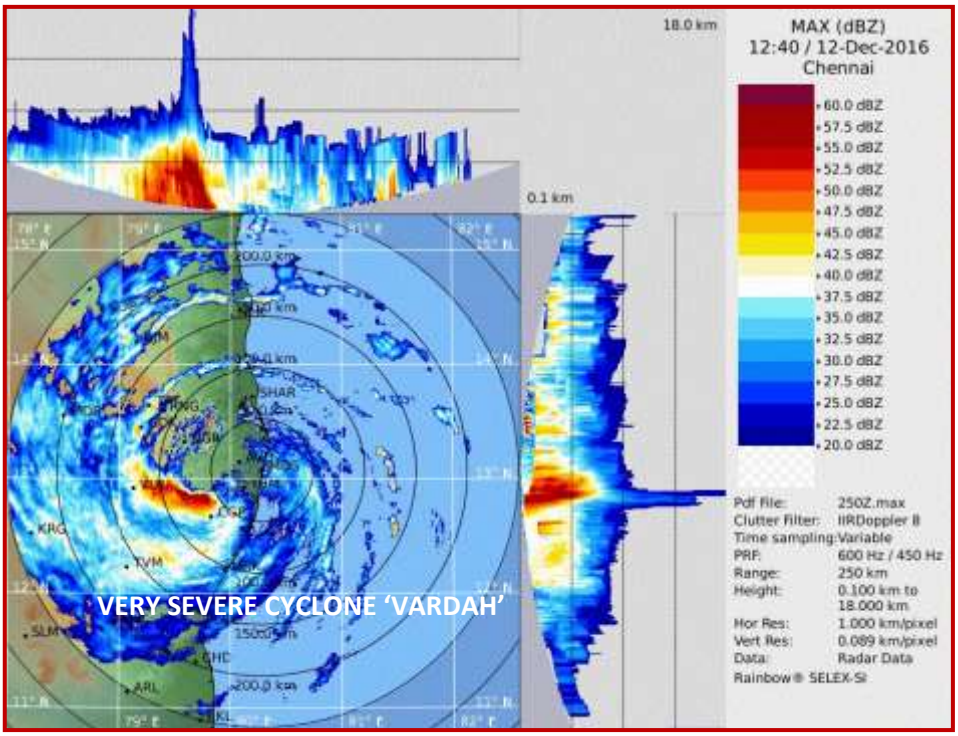

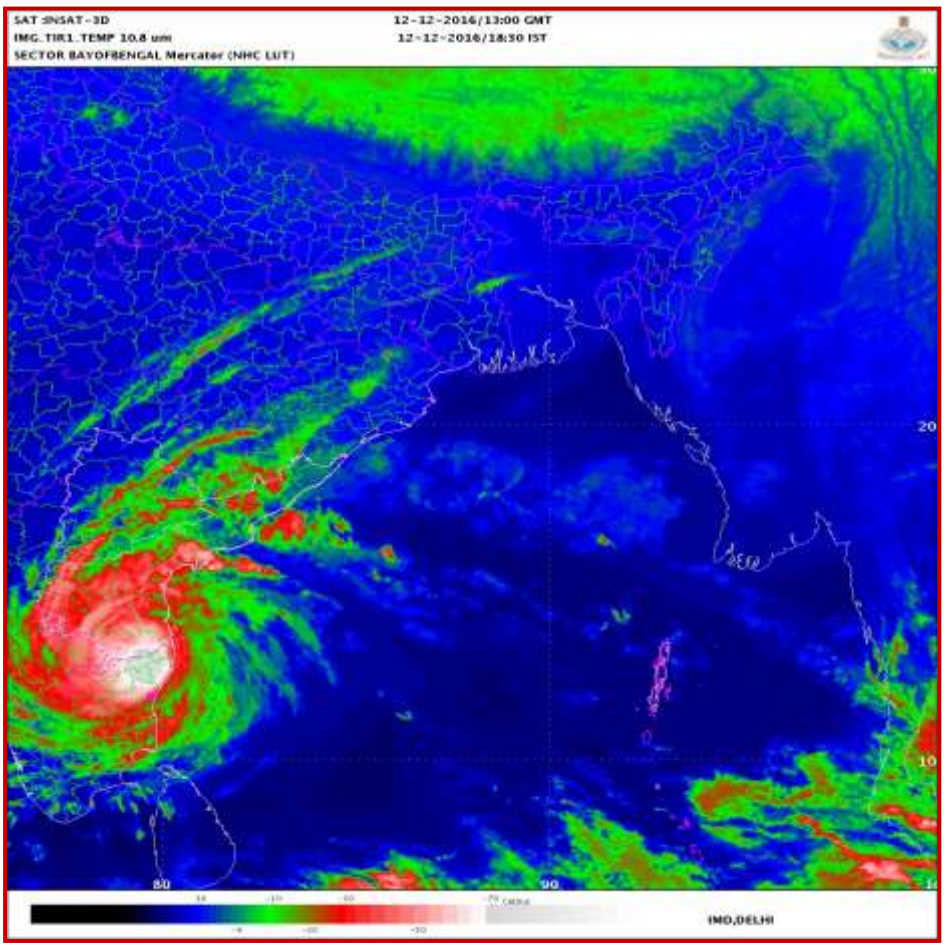

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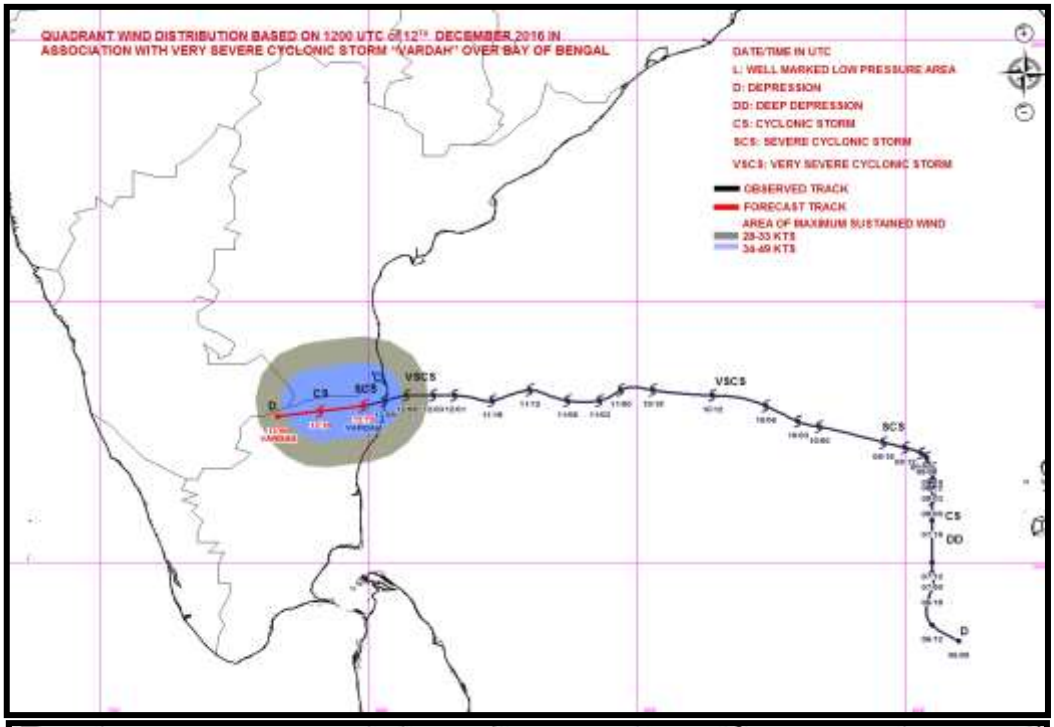

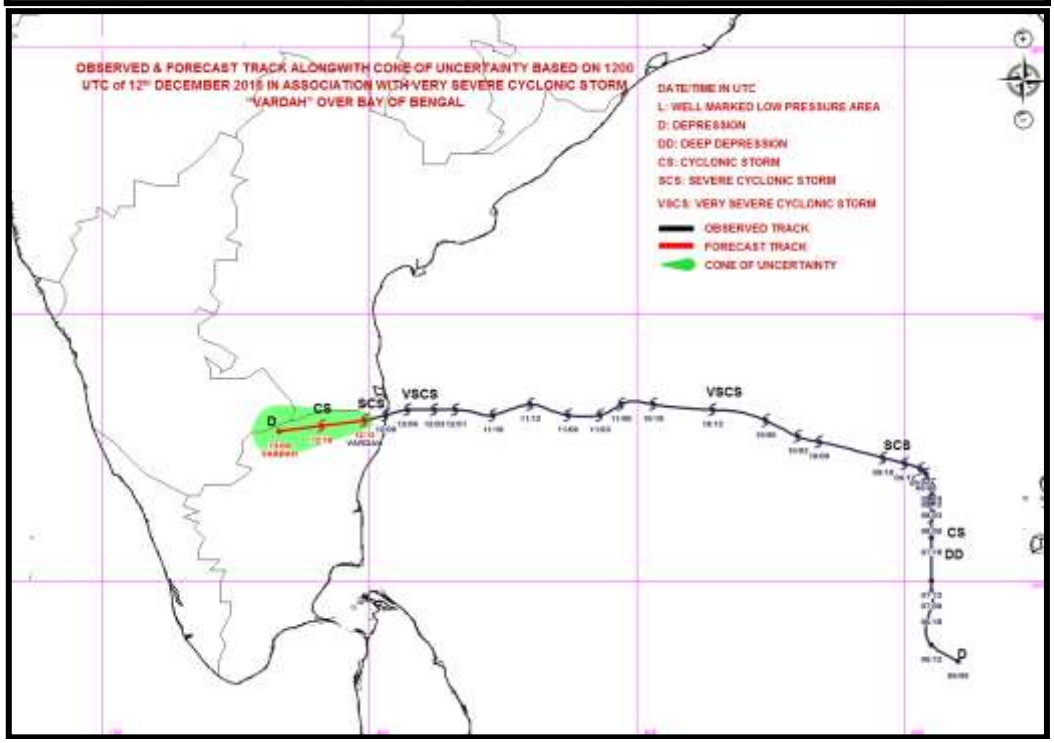

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REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)

TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY SEVEN ISSUED AT 1700 UTC OF 12TH DECEMBER 2016 BASED ON 1500 UTC CHARTS OF 12TH DECEMBER 2016

THE SEVERE CYCLONIC STORM, **VARDAH** OVER COASTAL TAMIL NADU MOVED NEARLY WESTWARDS DURING PAST 06 HRS WITH A SPEED OF 15 KMPH, WEAKENED INTO A CYCLONIC STORM AND LAY CENTRED AT 2030 HRS IST OF TODAY, THE 12TH DECEMBER, 2016 NEAR LATITUDE 12.9ºN AND LONGITUDE 79.5ºE OVER NORTH TAMIL NADU, ABOUT 40 KM EAST OF VELLORE AND 80 KM WEST-SOUTHWEST OF CHENNAI.

THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE NEARLY WESTWARDS, WEAKEN GRADUALLY INTO A DEEP DEPRESSION DURING NEXT THREE HOURS AND FURTHER INTO A DEPRESSION DURING SUBSEQUENT SIX HOURS.

FORECAST TRACK AND INTENSITY OF THE SYSTEM ARE GIVEN IN THE TABLE BELOW:

DATE/TIME(UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12-12-2016/1500	12.9/79.5	60-70 GUSTING TO 80	CYCLONIC STORM
12-12-2016/1800	12.9/79.1	50-60 GUSTING TO 70	DEEP DEPRESSION
13-12-2016/0000	12.8/78.3	35-45 GUSTING TO 55	DEPRESSION

AS REPORTED BY DOPPLER WEATHER RADAR CHENNAI, THE CYCLONIC STORM, VARDAH WITH LATEST POSITION OF THE SYSTEM IS CENTRED NEAR 12.89ºN AND 79.64ºE.

(SHOBHIT KATIYAR)
SCIENTIST-B, RSMC, NEW DELHI

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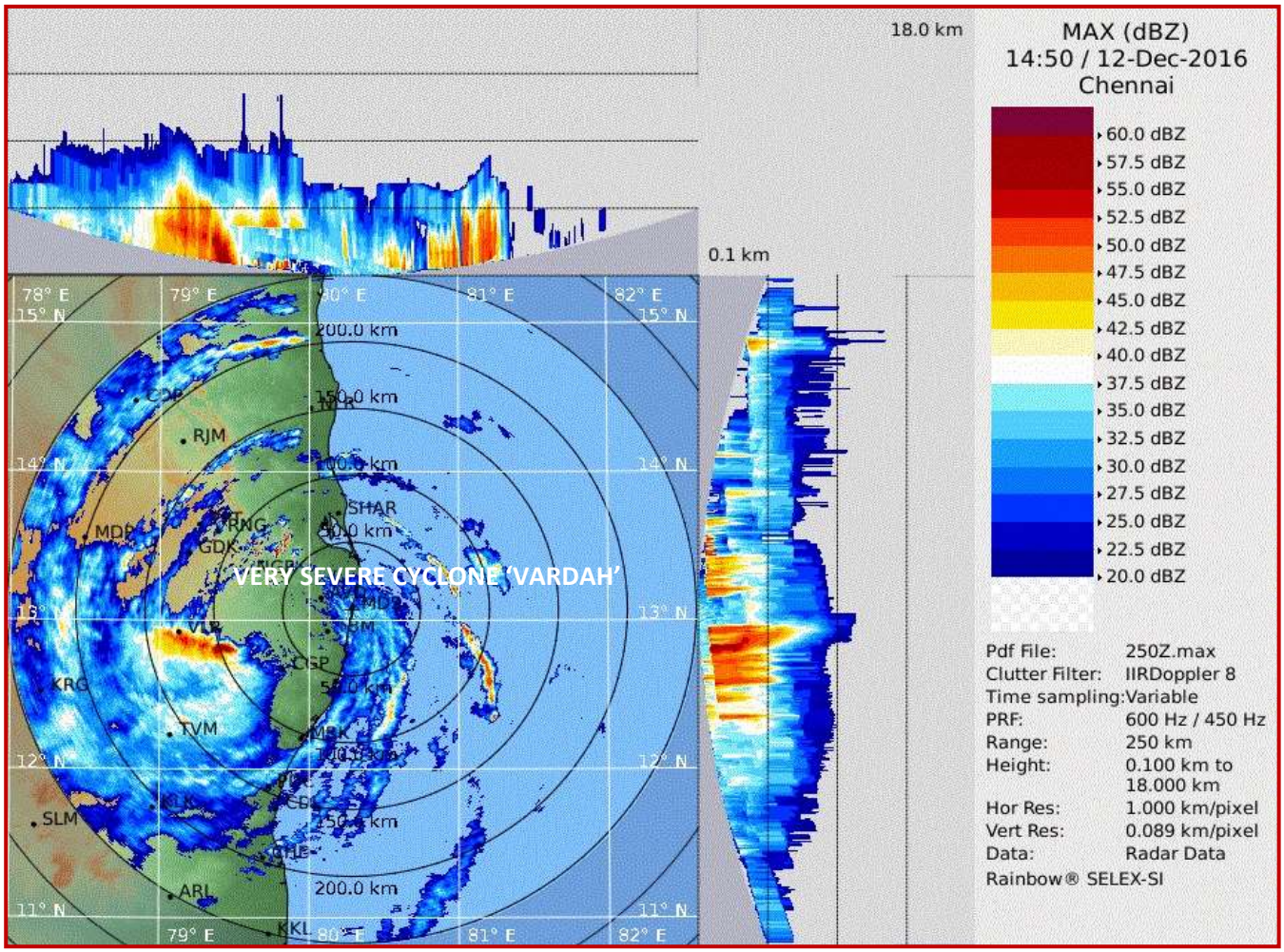

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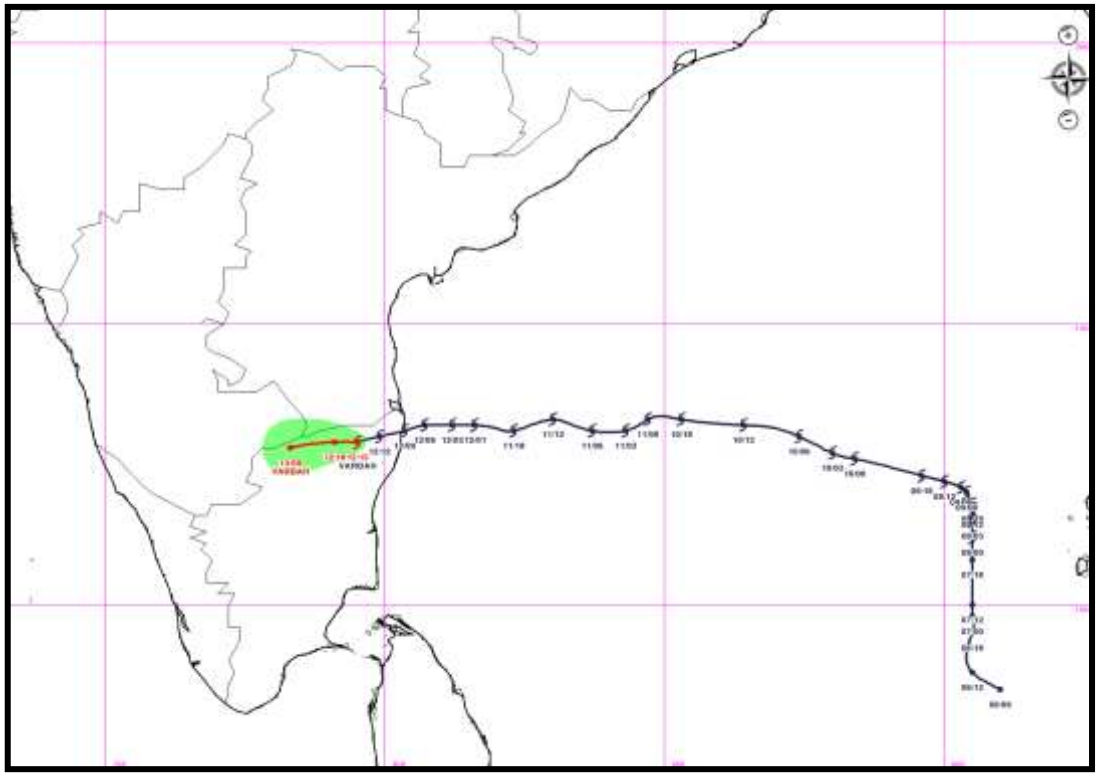

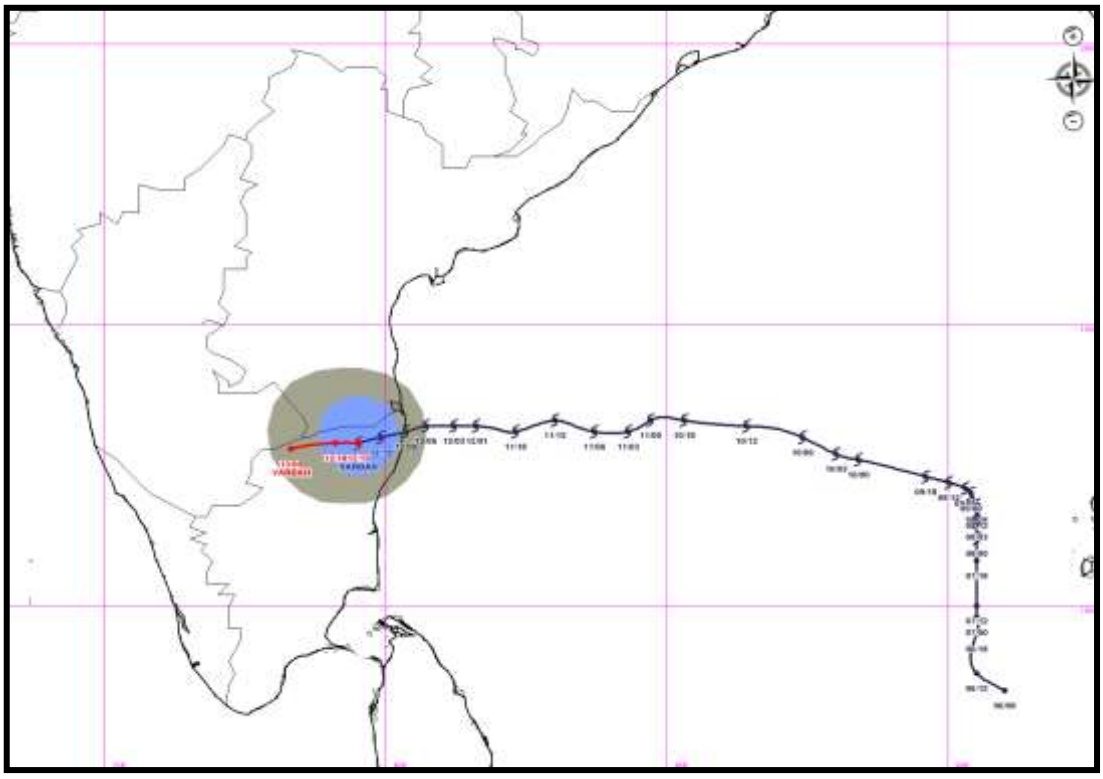

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Website: www.rsmcnewdelhi.imd.gov.in

REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY BULLETIN

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)

TROPICAL CYCLONE ADVISORY
RSMC – TROPICAL CYCLONES, NEW DELHI

TROPICAL STORM 'VARDAH' ADVISORY NUMBER THIRTY EIGHT ISSUED AT 2130 UTC OF 12TH DECEMBER 2016 BASED ON 1800 UTC CHARTS OF 12TH DECEMBER 2016

THE CYCLONIC STORM, **VARDAH** OVER NORTH TAMIL NADU MOVED WEST-SOUTHWESTWARDS DURING PAST 06 HRS WITH A SPEED OF 15 KMPH, WEAKENED INTO A DEEP DEPRESSION AND LAY CENTRED AT 2330 HRS IST OF TODAY, THE 12TH DECEMBER, 2016, OVER NORTH INTERIOR TAMIL NADU NEAR LATITUDE 12.7ºN AND LONGITUDE 79.1ºE, ABOUT 25 KM SOUTHEAST OF VELLORE AND 60 KM EAST-NORTHEAST OF TIRUPPATTUR.

THE SYSTEM IS VERY LIKELY TO CONTINUE TO MOVE NEARLY WEST-SOTHWESTWARDS AND WEAKEN GRADUALLY INTO A DEPRESSION DURING NEXT TWELVE HOURS.

ACCORDING TO SATELLITE IMAGERY, ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER SOUTH COASTAL ANDHRA PRADESH ADJOINING RAYALASEEMA, SOUTH INTERIER KARNATAKA AND NORTH TAMILNADU. THE ESTIMATED CENTRAL PRESSURE IS 1002 HPA.

AS REPORTED BY DOPPLER WEATHER RADAR CHENNAI, THE SEVERE CYCLONIC STORM, VARDAH WITH LATEST POSITION OF THE SYSTEM IS CENTRED NEAR 12.70ºN AND 79.30ºE.

THIS IS THE LAST BULLETIN FOR THIS SYSTEM.

(SHOBHIT KATIYAR)
SCIENTIST-B, RSMC, NEW DELHI

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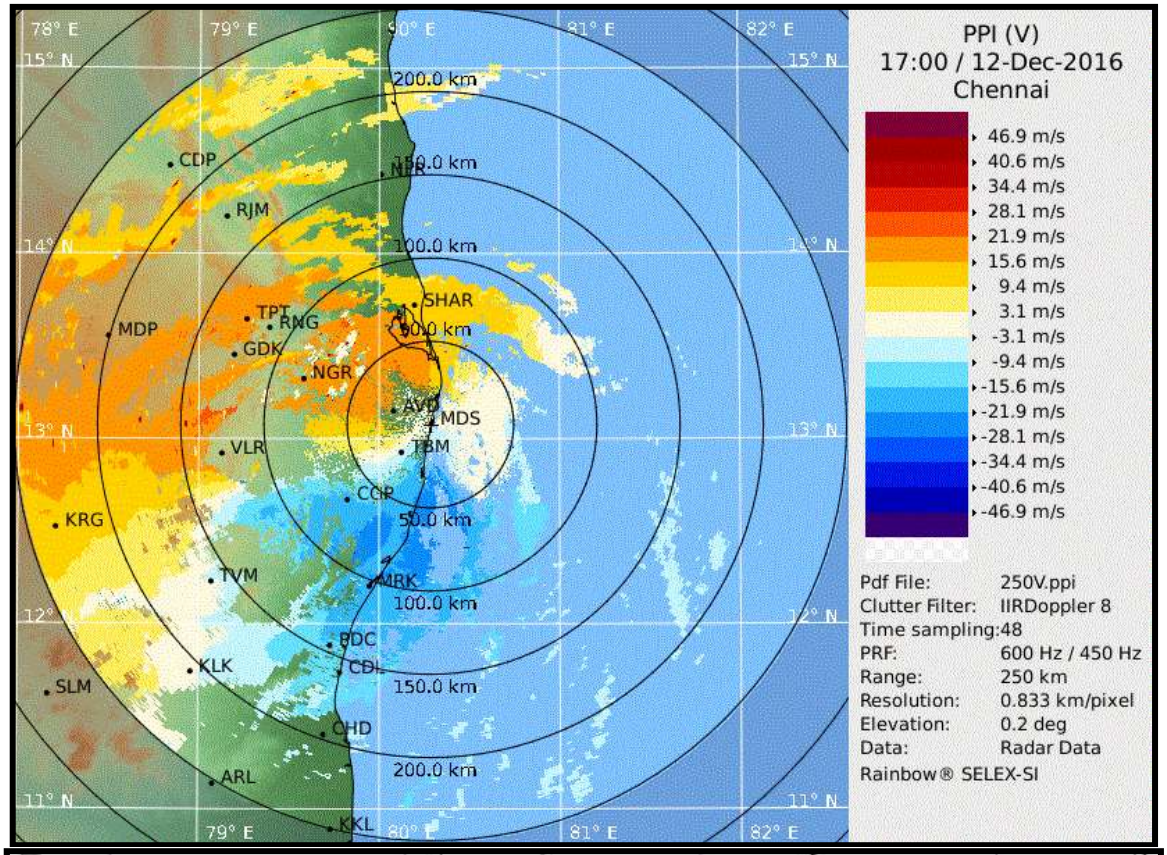

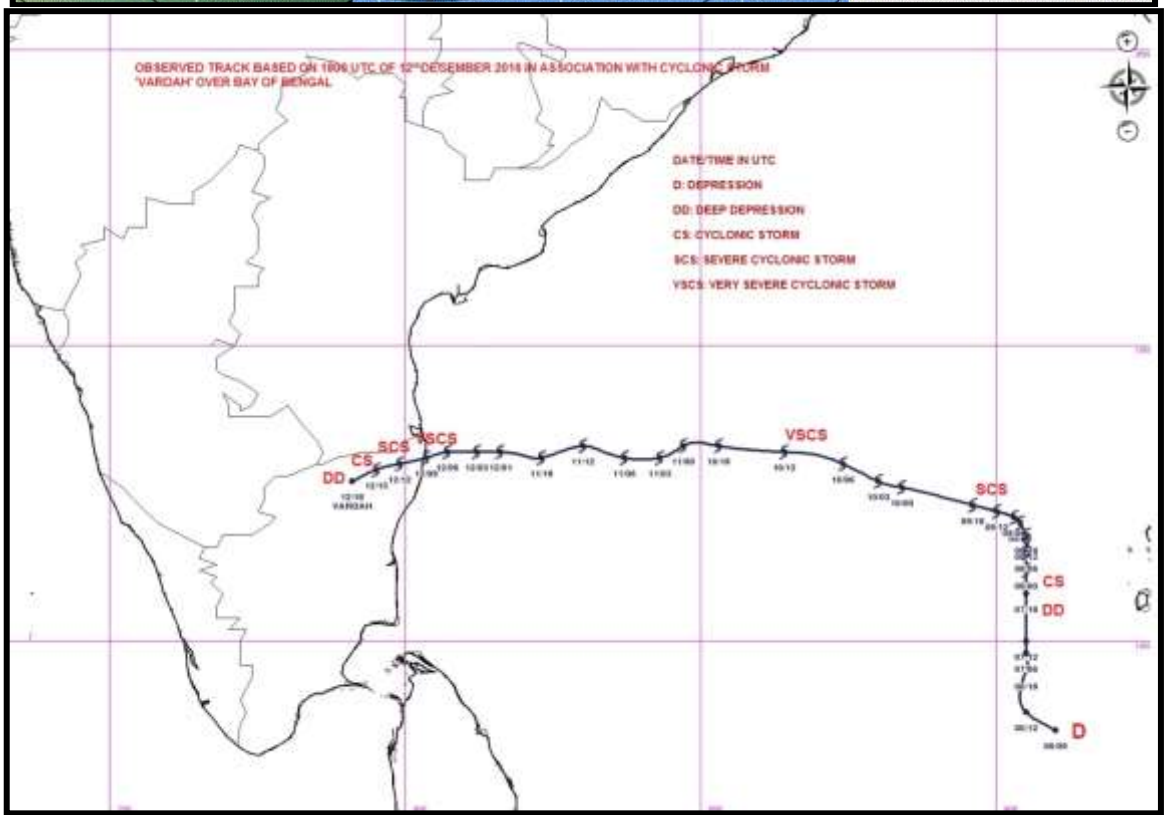

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