



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

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**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 17.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 0600 UTC OF 17 MAY, 2016 BASED ON 0300 UTC OF 17 MAY, 2016.**

YESTERDAY'S WELL MARKED LOW PRESSURE AREA OVER NORTH SRI LANKA AND ADJOINING AREAS OF GULF OF MANNAR AND SOUTHWEST BAY OF BENGAL MOVED NORTH-NORTHWESTWARDS, CONCENTRATED INTO A **DEPRESSION** AND LAY CENTERED AT 11.0°N AND 81.0°E, ABOUT 240 KMS SOUTH-SOUTHEAST OF CHENNAI(43279) AT 0300 UTC OF TODAY, THE 17<sup>TH</sup> MAY, 2016. IT IS LIKELY TO MOVE NORTH-NORTHWESTWARDS DURING NEXT 12 HOURS AND NORTHWARDS THEREAFTER ALONG NORTH TAMIL NADU & SOUTH ANDHRA PRADESH COASTS. IT IS LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 48 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 1.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS EMBEDDED WITH INTENSE TO VERY INTENSE CONVECTION LIE OVER NORTH SRILANKA, TAMILNADU, COMORIN, PALK STRAIT, GULF OF MANNAR, SOUTHWEST BAY OF BENGAL AND THE AREA BETWEEN LATITUDE 9.0° TO 16.0°N & WEST OF LONGITUDE 85.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 20-30 KNOTS GUSTING TO 40 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000HPA.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 100-120 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS (20-30) X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT (20-30)X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 100-150X10<sup>-6</sup>SECOND<sup>-1</sup>, VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG 15.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-3 WITH AMPLITUDE > 1 AND IS FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE DEPRESSION WOULD MOVE NORTH-NORTHWESTWARDS AND INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 48 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 1500 UTC OF 17 MAY 2016.**

**(B.P.YADAV)  
DDGM(S)**



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

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 17.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 1500 UTC OF 17 MAY, 2016 BASED ON 1200 UTC OF 17 MAY, 2016.**

THE DEPRESSION OVER SOUTHWEST BAY OF BENGAL HAS MOVED NORTH-NORTHWESTWARDS, AND LAY CENTERED AT 12.0°N AND 80.7°E, ABOUT 120 KMS SOUTH-SOUTHEAST OF CHENNAI(43279) AT 1200 UTC OF TODAY, THE 17<sup>TH</sup> MAY, 2016. IT IS LIKELY TO MOVE NORTH-NORTHWESTWARDS DURING NEXT 12 HOURS AND NORTHWARDS THEREAFTER ALONG NORTH TAMIL NADU & SOUTH ANDHRA PRADESH COASTS. IT IS LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HOURS. THE SYSTEM IS LIKELY CLOSE TO CHENNAI BY THE MORNING OF 18<sup>TH</sup> MAY 2016. IT WOULD MOVE INITIALLY NORTH-NORTHWEST WARDS THEN THEREAFTER NORTHWARDS AND THEN RECURVE NORTH-NORTHEAST WARDS AND MAY INTENSIFY INTO A CYCLONIC STORM DURING SUBSEQUENT 24 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 1.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS EMBEDDED WITH INTENSE TO VERY INTENSE CONVECTION LIE OVER SRILANKA, TAMILNADU, COMORIN, PALK STRAIT, GULF OF MANNAR, SOUTHWEST BAY OF BENGAL AND ADJOINING WEST CENTRAL BAY BETWEEN LATITUDE 8.0° TO 17.0°N & WEST OF LONGITUDE 87.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 25-35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998HPA.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 100-120 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS (20-30) X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT (20-30)X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 100-150X10<sup>-6</sup>SECOND<sup>-1</sup>, VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG 17.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-3 WITH AMPLITUDE > 1 AND IS FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE DEPRESSION WOULD MOVE NORTH-NORTHWESTWARDS AND INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 2100 UTC OF 17 MAY 2016.**

**(NARESH KUMAR)  
SCIENTIST-D**



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

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**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 0300 UTC OF 18 MAY, 2016 BASED ON 0000 UTC OF 18 MAY, 2016.**

THE DEPRESSION OVER SOUTHWEST BAY OF BENGAL MOVED NEARLY NORTHWARDS IN PAST SIX HOURS AND LAY CENTRED AT 0000 UTC OF TODAY, THE 18TH MAY, 2016 NEAR LATITUDE 13.0° N AND LONGITUDE 80.8 °E, ABOUT 90 KM EAST OF CHENNAI(43279) AND ABOUT 70 KM FROM THE COAST. THE SYSTEM IS LIKELY TO MOVE NORTH-NORTHEASTWARDS AND INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HRS AND FURTHER INTO A CYCLONIC STORM IN DURING NEXT 48 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 1.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS EMBEDDED WITH INTENSE TO VERY INTENSE CONVECTION LIE OVER NORTH TAMILNADU ADJOINING PALK STRAIT, GULF OF MANNAR, SOUTHWEST BAY OF BENGAL AND ADJOINING WEST CENTRAL BAY BETWEEN LATITUDE 7.0° TO 18.0°N & WEST OF LONGITUDE 88.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 25-35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998HPA.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 100-120 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS (5-10) X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT (30-40)X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 150-200, VERTICAL WIND SHEAR OF HORIZONTAL WIND IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG 19.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-3 WITH AMPLITUDE > 1 AND IS FAVOURABLE FOR INTENSIFICATION OF THE SYSTEM. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE DEPRESSION WOULD MOVE NORTH-NORTHEASTWARDS AND INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 1500 UTC OF 18 MAY 2016.**

**(RANJEET SINGH)  
SCIENTIST-F**



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

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 0600 UTC OF 18 MAY, 2016 BASED ON 0300 UTC OF 18 MAY, 2016.**

THE DEPRESSION OVER SOUTHWEST BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS AT A SPEED OF 10 KMPH DURING PAST SIX HOURS, INTENSIFIED INTO A DEEP DEPRESSION AND LAY CENTRED OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL AT 0300 UTC OF TODAY, THE 18<sup>TH</sup> MAY, 2016 NEAR LATITUDE 13.3° N AND LONGITUDE 81.0 °E, ABOUT 170 KM SOUTH-SOUTHEAST OF NELLORE (43245). THE SYSTEM IS LIKELY TO MOVE NORTH-NORTHEASTWARDS ALONG AND OFF ANDHRA PRADESH COAST AND INTENSIFY FURTHER INTO A CYCLONIC STORM DURING NEXT 24 HOURS. THEREAFTER IT IS LIKELY TO MOVE NORTHEASTWARDS ALONG AND OFF NORTH ANDHRA PRADESH & ODISHA COASTS DURING SUBSEQUENT 48 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER NORTH TAMILNADU, ANDHRA PRADESH, SOUTHWEST BAY OF BENGAL AND ADJOINING WESTCENTRAL BAY OF BENGAL BETWEEN LATITUDE 10.0° TO 18.0°N & WEST OF LONGITUDE 88.5° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 30 KNOTS GUSTING TO 40 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 997HPA.

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

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
18-05-2016/0300	13.3/81.0	50-60 GUSTING TO 70	<b>DEEP DEPRESSION</b>
18-05-2016/0600	13.8/81.2	50-60 GUSTING TO 70	DEEP DEPRESSION
18-05-2016/1200	14.4/81.5	50-60 GUSTING TO 70	DEEP DEPRESSION
18-05-2016/1800	14.6/81.7	65-75 GUSTING TO 85	<b>CYCLONIC STORM</b>
19-05-2016/0000	14.9/81.9	65-75 GUSTING TO 85	CYCLONIC STORM
19-05-2016/1200	16.0/82.8	70-80 GUSTING TO 90	CYCLONIC STORM
20-05-2016/0000	17.2/83.7	75-85 GUSTING TO 95	CYCLONIC STORM
20-05-2016/1200	18.6/85.3	75-85 GUSTING TO 95	CYCLONIC STORM
21-05-2016/0000	19.7/87.7	70-80 GUSTING TO 90	CYCLONIC STORM
21-05-2016/1200	21.1/90.6	65-75 GUSTING TO 85	CYCLONIC STORM
22-05-2016/0000	22.5/93.0	50-60 GUSTING TO 70	<b>DEEP DEPRESSION</b>

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 40X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT (150-200)X10<sup>-6</sup> SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE DEEP DEPRESSION IS LIKELY TO MOVE NORTH-NORTHEASTWARDS AND INTENSIFY INTO A CYCLONIC STORM DURING NEXT 24 HOURS AND MOVE NORTHEASTWARDS THEREAFTER.

**THE NEXT BULLETIN WILL BE ISSUED AT 0900 UTC OF 18 MAY 2016.**

**(B.P. YADAV)  
SCIENTIST-F & DDGM (S)**



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

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 0900 UTC OF 18 MAY, 2016 BASED ON 0600 UTC OF 18 MAY, 2016.**

THE DEEP DEPRESSION OVER WESTCENTRAL AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED NEARLY NORTHWARDS AT A SPEED OF 10 KMPH DURING PAST SIX HOURS AND LAY CENTRED OVER AT 0600 UTC OF TODAY, THE 18<sup>TH</sup> MAY, 2016 NEAR LATITUDE 13.8° N AND LONGITUDE 81.0 °E, ABOUT 130 KM SOUTH-SOUTHEAST OF NELLORE (43245). THE SYSTEM IS LIKELY TO MOVE NORTH-NORTHEASTWARDS ALONG AND OFF ANDHRA PRADESH COAST AND INTENSIFY INTO A CYCLONIC STORM DURING NEXT 24 HOURS. THEREAFTER IT IS LIKELY TO MOVE NORTHEASTWARDS ALONG AND OFF NORTH ANDHRA PRADESH & ODISHA COASTS DURING SUBSEQUENT 48 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER NORTH TAMILNADU, ANDHRA PRADESH, SOUTHWEST BAY OF BENGAL AND ADJOINING WESTCENTRAL BAY OF BENGAL BETWEEN LATITUDE 10.0° TO 19.0° N & WEST OF LONGITUDE 88.5° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 30 KNOTS GUSTING TO 40 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996HPA.

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
18-05-2016/0600	13.8/81.0	50-60 gusting to 70	<b>Deep Depression</b>
18-05-2016/1200	14.4/81.5	50-60 gusting to 70	Deep Depression
18-05-2016/1800	14.6/81.7	65-75 gusting to 85	Cyclonic Storm
19-05-2016/0000	14.9/81.9	65-75 gusting to 85	Cyclonic Storm
19-05-2016/0600	15.4/82.4	65-75 gusting to 85	Cyclonic Storm
19-05-2016/1800	16.6/83.4	70-80 gusting to 90	Cyclonic Storm
20-05-2016/0600	17.9/84.5	75-85 gusting to 95	Cyclonic Storm
20-05-2016/1800	19.1/86.5	70-80 gusting to 90	Cyclonic Storm
21-05-2016/0600	20.4/89.2	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1800	21.8/91.8	50-60 gusting to 70	Deep Depression
22-05-2016/0600	23.5/94.0	30-40 gusting to 50	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $40 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $(150-200) \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE DEEP DEPRESSION IS LIKELY TO MOVE NORTH-NORTHEASTWARDS AND INTENSIFY INTO A CYCLONIC STORM DURING NEXT 24 HOURS AND MOVE NORTHEASTWARDS THEREAFTER.

**THE NEXT BULLETIN WILL BE ISSUED AT 1500 UTC OF 18 MAY 2016.**

**(B.P. YADAV)  
SCIENTIST-F & DDGM (S)**



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

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 1500 UTC OF 18 MAY, 2016 BASED ON 1200 UTC OF 18 MAY, 2016.**

THE DEEP DEPRESSION OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL FURTHER MOVED NORTHWARDS AT A SPEED OF 10 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 18<sup>TH</sup> MAY, 2016 NEAR LATITUDE 14.4° N AND LONGITUDE 81.0 °E, ABOUT 200 KM SOUTH OF MACHILIPATNAM (43185) AND 110 KM EAST OF NELLORE (43245). THE SYSTEM IS LIKELY TO MOVE NEARLY NORTHWARDS ALONG AND OFF ANDHRA PRADESH COAST DURING NEXT 12 HRS AND NORTH-NORTHEASTWARDS DURING SUBSEQUENT 48 HOURS. THE SYSTEM IS LIKELY TO INTENSIFY INTO A CYCLONIC STORM BY TOMORROW MORNING, CLOSE TO MACHILIPATNAM AND FURTHER INTENSIFY INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER NORTH TAMILNADU, ANDHRA PRADESH, SOUTHWEST BAY OF BENGAL AND ADJOINING WESTCENTRAL BAY OF BENGAL BETWEEN LATITUDE 11.0<sup>0</sup> TO 19.0°N & WEST OF LONGITUDE 93.0<sup>0</sup> E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93<sup>0</sup> C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 30 KNOTS GUSTING TO 40 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996HPA.

**ASSTD BKN LOW/MED CLOUDS WITH EMBDD INT TO V INT CONVTN OVER N TN AP SW ADJ WC BAY BET LAT 11.0N TO 19.0N WEST OF LONG 93.0E (.) CTT MINUS 93 DEG C (.)**

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

Date/time(UTC)	Position (lat. °N/ long. °E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
18-05-2016/1200	14.4/81.0	50-60 gusting to 70	Deep Depression
18-05-2016/1800	15.2/81.1	50-60 gusting to 70	Deep Depression
19-05-2016/0000	15.8/81.6	70-80 gusting to 90	Cyclonic Storm
19-05-2016/0600	16.0/82.3	90-100 gusting to 110	Severe Cyclonic Storm
19-05-2016/1200	16.5/83.0	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/0000	17.0/83.8	90-100 gusting to 110	Severe Cyclonic Storm
20-05-2016/1200	17.9/85.5	70-80 gusting to 90	Cyclonic Storm
21-05-2016/0000	19.0/87.2	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1200	20.6/90.2	50-60 gusting to 70	Deep Depression



22-05-2016/0000	22.4/92.8	45-55 gusting to 65	Depression
22-05-2016/1200	23.0/93.9	35-45 gusting to 55	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 40X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT (150-200)X10<sup>-6</sup> SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0<sup>0</sup>N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE DEEP DEPRESSION IS LIKELY TO MOVE NORTH-NORTHEASTWARDS AND INTENSIFY INTO A CYCLONIC STORM DURING NEXT 24 HOURS AND MOVE NORTHEASTWARDS THEREAFTER.

**THE NEXT BULLETIN WILL BE ISSUED AT 2100 UTC OF 18 MAY 2016.**

**(B.P. YADAV)  
SCIENTIST-F & DDGM (S)**



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

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 2100 UTC OF 18 MAY, 2016 BASED ON 1800 UTC OF 18 MAY, 2016.**

THE DEEP DEPRESSION OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL FURTHER MOVED NORTHWARDS AT A SPEED OF 06 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 2330 HRS IST OF TODAY, THE 18<sup>TH</sup> MAY, 2016 NEAR LATITUDE 14.7° N AND LONGITUDE 81.2 °E, ABOUT 170KM SOUTHEAST OF MACHILIPATNAM AND 130KM NORTHEAST OF NELLORE. THE SYSTEM IS LIKELY TO MOVE NORTH-NORTHEASTWARDS ALONG AND OFF ANDHRA PRADESH COAST DURING NEXT 06 HRS AND NORTHEASTWARDS DURING SUBSEQUENT 48 HOURS. THE SYSTEM IS LIKELY TO INTENSIFY INTO A CYCLONIC STORM AND IS LIKELY TO BE CLOSE TO MACHILIPATNAM BY TOMORROW MORNING AND FURTHER INTENSIFY INTO A SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER NORTH TAMILNADU, ANDHRA PRADESH, SOUTHWEST KARNATAK ADJOINING WEST CENTRAL BAY OF BENGAL BETWEEN LATITUDE 12.0° TO 20.0°N & WEST OF LONGITUDE 90.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 30 KNOTS GUSTING TO 40 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
18-05-2016/1800	14.7/81.2	50-60 gusting to 70	Deep Depression
19-05-2016/0000	15.5/81.6	70-80 gusting to 90	Cyclonic Storm
19-05-2016/0600	16.1/82.3	90-100 gusting to 110	Severe Cyclonic Storm
19-05-2016/1200	16.7/83.0	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/1800	17.2/83.7	95-105 gusting to 120	Severe Cyclonic Storm
21-05-2016/0600	17.8/84.8	95-105 gusting to 120	Severe Cyclonic Storm
21-05-2016/1800	18.6/86.5	90-100 gusting to 110	Severe Cyclonic Storm
22-05-2016/0600	20.0/89.5	70-80 gusting to 90	Cyclonic Storm
22-05-2016/1800	21.3/92.1	70-80 gusting to 90	Cyclonic Storm
23-05-2016/0600	22.6/93.9	50-60 gusting to 70	Deep Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $40 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $(150-200) \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE DEEP DEPRESSION IS LIKELY TO MOVE NORTHEASTWARDS AND INTENSIFY INTO A CYCLONIC STORM DURING NEXT 06 HOURS AND SEVERE CYCLONIC STORM DURING SUBSEQUENT 12 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 0300 UTC OF 19 MAY 2016.**

**(S.D.KOTAL)  
SCIENTIST-E**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. ONE ISSUED AT 0300 UTC OF 19<sup>TH</sup> MAY 2016  
BASED ON 0000 UTC CHARTS OF 19<sup>TH</sup> MAY 2016.**

THE DEEP DEPRESSION OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL FURTHER MOVED NEARLY NORTHWARDS AT A SPEED OF 08 KMPH DURING PAST SIX HOURS AND INTENSIFIED INTO A CYCLONIC STORM 'ROANU', LAY CENTRED OVER WESTCENTRAL BAY OF BENGAL AT 0000 UTC OF TODAY, THE 19<sup>TH</sup> MAY, 2016 NEAR LATITUDE 15.1° N AND LONGITUDE 81.4 °E, ABOUT 125KM SOUTH-SOUTHEAST OF MACHILIPATNAM (43185), ABOUT AND 350 SOUTHWEST OF VISAKHAPATNAM & 225 KM SOUTHWEST OF KAKINADA. THE SYSTEM IS LIKELY TO MOVE NORTH-NORTHEASTWARDS ALONG AND OFF ANDHRA PRADESH COAST DURING NEXT 24 HRS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM. SUBSEQUENTLY, THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS ALONG & OFF NORTH ANDHRA PRADESH AND ODISHA DURING NEXT 48 HOURS.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDHRA PRADESH ADJOINING ODISHA AND WEST CENTRAL BAY OF BENGAL BETWEEN LATITUDE 12.0<sup>0</sup> TO 20.0<sup>0</sup>N & WEST OF LONGITUDE 90.0<sup>0</sup> E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93<sup>0</sup> C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS VERY ROUGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
19-05-2016/0000	15.1/81.4	70-80 gusting to 90	Cyclonic Storm
19-05-2016/0600	15.6/81.8	70-80 gusting to 110	Cyclonic Storm
19-05-2016/1200	16.1/82.3	90-100 gusting to 110	Severe Cyclonic Storm
19-05-2016/1800	16.6/83.1	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/0000	17.2/84.1	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/1200	18.1/85.6	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/0000	19.3/87.7	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1200	20.9/90.5	70-80 gusting to 90	Cyclonic Storm
22-05-2016/0000	22.7/93.5	50-60 gusting to 70	Deep Depression
22-05-2016/1200	24.0/96.1	30-40 gusting to 50	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 40X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT (150-200)X10<sup>-6</sup> SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 17.0<sup>0</sup>N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTH-NORTHEASTWARDS DURING NEXT 24 HOURS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 0600 UTC OF 19 MAY 2016.**

**(S.D.KOTAL)  
SCIENTIST-E**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. TWO ISSUED AT 0600 UTC OF 19<sup>TH</sup> MAY 2016  
BASED ON 0300 UTC CHARTS OF 19<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS AT A SPEED OF 15 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0300 UTC OF TODAY, THE 19TH MAY, 2016 NEAR LATITUDE 15.6° N AND LONGITUDE 81.6 °E, ABOUT 80 KM SOUTH-SOUTHEAST OF MACHILIPATNAM (43185), ABOUT 290 KM SOUTH-SOUTHWEST OF VISAKHAPATNAM (43149) & 160 KM SOUTH-SOUTHWEST OF KAKINADA (43189). THE SYSTEM IS LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS ALONG AND OFF ANDHRA PRADESH COAST DURING NEXT 12 HOURS, THEREAFTER NORTHEASTWARDS. THE SYSTEM IS LIKELY TO INTENSIFY INTO A SEVERE CYCLONIC STORM BY TONIGHT. CONTINUING MOVING NORTHEASTWARDS, THE SYSTEM IS LIKELY TO CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984) AND COX'S BAZAR (41992) IN THE NIGHT OF 21ST & EARLY MORNING OF 22ND MAY AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDHRA PRADESH ADJOINING TELANGANA, SOUTH ODISHA AND WEST CENTRAL BAY OF BENGAL BETWEEN LATITUDE 12.0° TO 20.0°N & WEST OF LONGITUDE 88.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. THE SATELLITE CLOUD IMAGERIES SHOWS CLOUD DENSE OVERCAST (CDO) PATTERN. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
19-05-2016/0300	15.6/81.6	70-80 gusting to 90	Cyclonic Storm
19-05-2016/0600	15.8/81.9	70-80 gusting to 90	Cyclonic Storm
19-05-2016/1200	16.1/82.3	90-100 gusting to 110	Severe Cyclonic Storm
19-05-2016/1800	16.6/83.1	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/0000	17.2/84.1	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/1200	18.1/85.6	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/0000	19.3/87.7	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1200	20.9/90.5	70-80 gusting to 90	Cyclonic Storm
22-05-2016/0000	22.7/93.5	60-70 gusting to 80	Cyclonic Storm

22-05-2016/1200	24.0/96.1	30-40 gusting to 50	Depression
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**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31.0°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $180-200 \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 17.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTH-NORTHEASTWARDS DURING NEXT 24 HOURS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING BY TONIGHT.

**THE NEXT BULLETIN WILL BE ISSUED AT 0900 UTC OF 19 MAY 2016.**

**(B. P. Yadav)  
SCIENTIST-F & DDGM(S)**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. THREE ISSUED AT 0900 UTC OF 19<sup>TH</sup> MAY 2016 BASED ON 0600 UTC CHARTS OF 19<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL BAY OF BENGAL REMAINED PRACTICALLY STATIONARY AND LAY CENTRED AT 0600 UTC OF TODAY, THE 19<sup>TH</sup> MAY, 2016 NEAR LATITUDE 15.6° N AND LONGITUDE 81.6 °E, ABOUT 80 KM SOUTH-SOUTHEAST OF MACHILIPATNAM (43185), ABOUT 290 KM SOUTH-SOUTHWEST OF VISAKHAPATNAM (43149) & 160 KM SOUTH-SOUTHWEST OF KAKINADA (43189). THE SYSTEM IS LIKELY TO MOVE INITIALLY NORTH-NORTHEASTWARDS ALONG AND OFF ANDHRA PRADESH COAST DURING NEXT 12 HOURS, THEREAFTER NORTHEASTWARDS. THE SYSTEM IS LIKELY TO INTENSIFY INTO A SEVERE CYCLONIC STORM BY TONIGHT. CONTINUING MOVING NORTHEASTWARDS, THE SYSTEM IS LIKELY TO CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984) AND COX'S BAZAR (41992) IN THE NIGHT OF 21<sup>ST</sup> & EARLY MORNING OF 22<sup>ND</sup> MAY AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDHRA PRADESH ADJOINING TELANGANA, SOUTH ODISHA AND WEST CENTRAL BAY OF BENGAL BETWEEN LATITUDE 11.0° TO 20.0°N & WEST OF LONGITUDE 88.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. THE SATELLITE CLOUD IMAGERIES SHOWS CLOUD DENSE OVERCAST (CDO) PATTERN. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
19-05-2016/0600	15.6/81.6	70-80 gusting to 90	Cyclonic Storm
19-05-2016/1200	16.1/82.2	90-100 gusting to 110	Severe Cyclonic Storm
19-05-2016/1800	16.5/82.8	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/0000	16.9/83.2	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/0600	17.5/84.0	90-100 gusting to 110	Severe Cyclonic Storm
20-05-2016/1800	18.7/85.9	70-80 gusting to 90	Cyclonic Storm
21-05-2016/0600	20.1/88.5	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1800	21.6/91.4	70-80 gusting to 90	Cyclonic Storm
22-05-2016/0600	23.4/94.8	50-60 gusting to 70	Deep Depression



**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31.0°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $180-200 \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 18.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTH-NORTHEASTWARDS DURING NEXT 24 HOURS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING BY TONIGHT.

**THE NEXT BULLETIN WILL BE ISSUED AT 1200 UTC OF 19 MAY 2016.**

**(Charan Singh)  
SCIENTIST-E**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. FOUR ISSUED AT 1200 UTC OF 19<sup>TH</sup> MAY 2016 BASED ON 0900 UTC CHARTS OF 19<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL BAY OF BENGAL REMAINED PRACTICALLY STATIONARY AND LAY CENTRED AT 0900 UTC OF TODAY, THE 19<sup>TH</sup> MAY, 2016 NEAR LATITUDE 15.6° N AND LONGITUDE 81.6 °E, ABOUT 80 KM SOUTH-SOUTHEAST OF MACHILIPATNAM (43185), ABOUT 290 KM SOUTH-SOUTHWEST OF VISAKHAPATNAM (43149) & 160 KM SOUTH-SOUTHWEST OF KAKINADA (43189). THE SYSTEM IS LIKELY TO MOVE INITIALLY NORTH-NORTHEASTWARDS ALONG AND OFF ANDHRA PRADESH COAST DURING NEXT 12 HOURS, THEREAFTER NORTHEASTWARDS. THE SYSTEM IS LIKELY TO INTENSIFY INTO A SEVERE CYCLONIC STORM BY TONIGHT. CONTINUING MOVING NORTHEASTWARDS, THE SYSTEM IS LIKELY TO CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984) AND COX'S BAZAR (41992) IN THE NIGHT OF 21<sup>ST</sup> & EARLY MORNING OF 22<sup>ND</sup> MAY AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDHRA PRADESH ADJOINING TELANGANA, SOUTH ODISHA, SOUTH CHATTISGARH AND WEST CENTRAL BAY OF BENGAL BETWEEN LATITUDE 14.0° TO 17.0°N & WEST OF LONGITUDE 86.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. THE SATELLITE CLOUD IMAGERIES SHOWS CLOUD DENSE OVERCAST (CDO) PATTERN. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992HPA.

STORM SURGE OF ABOUT 1.0 TO 1.5 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL DURING NEXT 24 HOURS.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
19-05-2016/0900	15.6/81.6	70-80 gusting to 90	Cyclonic Storm
19-05-2016/1200	16.1/82.2	70-80 gusting to 90	Cyclonic Storm
19-05-2016/1800	16.5/82.8	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/0000	16.9/83.2	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/0600	17.5/84.0	90-100 gusting to 110	Severe Cyclonic Storm
20-05-2016/1800	18.7/85.9	70-80 gusting to 90	Cyclonic Storm
21-05-2016/0600	20.1/88.5	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1800	21.6/91.4	70-80 gusting to 90	Cyclonic Storm

22-05-2016/0600	23.4/94.8	50-60 gusting to 70	Deep Depression
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**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31.0°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $180-200 \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 18.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTH-NORTHEASTWARDS DURING NEXT 24 HOURS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM BY TONIGHT.

**THE NEXT BULLETIN WILL BE ISSUED AT 1500 UTC OF 19 MAY 2016.**

**(Charan Singh)  
SCIENTIST-E**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM ‘ROANU’ ADVISORY NO. FIVE ISSUED AT 1500 UTC OF 19<sup>TH</sup> MAY 2016  
BASED ON 1200 UTC CHARTS OF 19<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM ‘ROANU’ OVER WESTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS AT A SPEED OF 10 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 1200 HRS IST OF TODAY, THE 19TH MAY, 2016 NEAR LATITUDE 16.0° N AND LONGITUDE 81.9 °E, ABOUT 240 KM SOUTHWEST OF VISAKHAPATNAM (43149) AND 110 KM SOUTH-SOUTHWEST OF KAKINADA (43189). THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS ALONG & OFF ANDHRA PRADESH AND ODISHA COASTS AND INTENSIFY INTO A SEVERE CYCLONIC STORM BY TONIGHT. CONTINUING MOVING NORTHEASTWARDS, THE SYSTEM IS LIKELY TO CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984) AND COX’S BAZAR (41992) IN THE NIGHT OF 21<sup>ST</sup>/ EARLY MORNING OF 22ND MAY AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDHRA PRADESH AND WEST CENTRAL BAY OF BENGAL BETWEEN LATITUDE 13.5° NORTH TO 19.0°NORTH & WEST OF LONGITUDE 86.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -88° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992HPA.

STORM SURGE OF ABOUT 1.0 TO 1.5 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
19-05-2016/1200	16.0/81.9	70-80 gusting to 90	Cyclonic Storm
19-05-2016/1800	16.5/82.7	70-80 gusting to 90	Cyclonic Storm
20-05-2016/0000	16.9/83.2	90-100 gusting to 110	Severe Cyclonic Storm
20-05-2016/0600	17.5/84.0	95-105 gusting to 120	Severe Cyclonic Storm
20-05-2016/1200	18.1/85.0	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/0000	19.4/87.2	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1200	20.9/90.0	70-80 gusting to 90	Cyclonic Storm
22-05-2016/0000	22.5/93.1	50-60 gusting to 70	Deep Depression

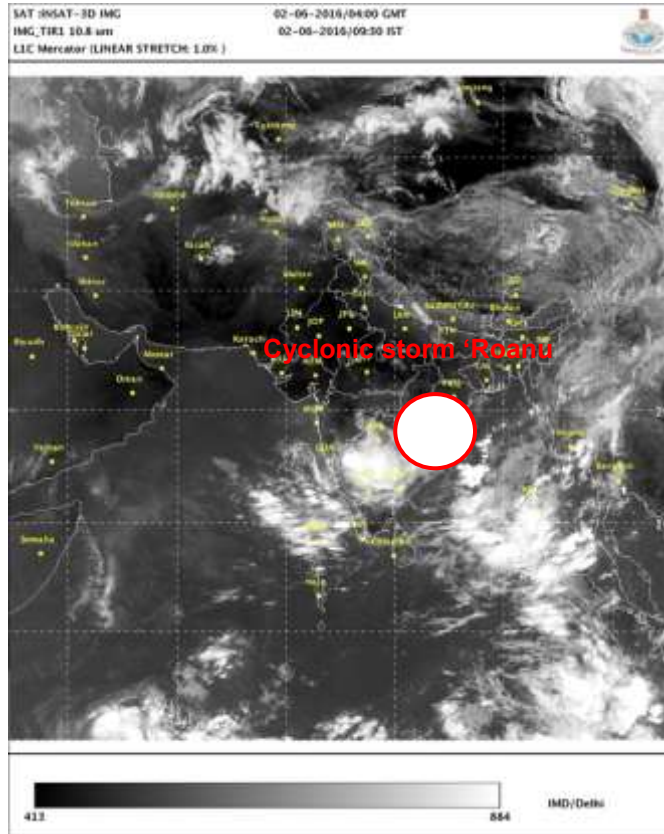
22-05-2016/1200	24.0/95.0	35-45 gusting to 55	Depression
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**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31.0°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 20X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 180-200X10<sup>-6</sup> SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 18.0<sup>0</sup>.N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTHEASTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM BY TONIGHT.

**THE NEXT BULLETIN WILL BE ISSUED AT 1800 UTC OF 19 MAY 2016.**

**(Charan Singh)  
SCIENTIST-E**





**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. SIX ISSUED AT 2100 UTC OF 19<sup>TH</sup> MAY 2016  
BASED ON 1800 UTC CHARTS OF 19<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL BAY OF BENGAL MOVED NORTHEASTWARDS AT A SPEED OF 14 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 1800 UTC OF 19<sup>TH</sup> MAY, 2016 NEAR LATITUDE 16.4°N AND LONGITUDE 82.6°E, ABOUT 160 KM SOUTH-SOUTHWEST OF VISAKHAPATNAM(43149) AND 70 KM EAST-SOUTHEAST OF KAKINADA(43189). THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS ALONG & OFF ANDHRA PRADESH AND ODISHA COAST AND INTENSIFY INTO A SEVERE CYCLONIC STORM BY MORNING. CONTINUING MOVING NORTHEASTWARDS, THE SYSTEM IS LIKELY TO CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA(41984) AND COX'S BAZAR(41992) IN THE NIGHT OF 21<sup>ST</sup>/ EARLY MORNING OF 22<sup>ND</sup> MAY AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDHRA PRADESH AND WEST CENTRAL BAY OF BENGAL BETWEEN LATITUDE 13.5° NORTH TO 20.0°NORTH & WEST OF LONGITUDE 90.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -87° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992HPA.

STORM SURGE OF ABOUT 1.0 TO 1.5 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
19-05-2016/1800	16.4/82.6	70-80 gusting to 90	Cyclonic Storm
20-05-2016/0000	16.9/83.2	70-80 gusting to 90	Cyclonic Storm
20-05-2016/0600	17.5/84.0	90-100 gusting to 110	Severe Cyclonic Storm
20-05-2016/1200	18.1/85.0	90-100 gusting to 110	Severe Cyclonic Storm
20-05-2016/1800	18.7/85.9	70-80 gusting to 90	Cyclonic Storm
21-05-2016/0600	20.1/88.5	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1800	21.6/91.4	50-60 gusting to 70	Deep Depression
22-05-2016/0600	23.4/94.8	35-45 gusting to 55	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31.0°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $150-200 \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 18.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTHEASTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM BY MORNING.

**THE NEXT BULLETIN WILL BE ISSUED AT 0300 UTC OF 20 MAY 2016.**

**(D. R. Pattanaik)  
SCIENTIST 'E'**





**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. SEVEN ISSUED AT 0300 UTC OF 20<sup>TH</sup> MAY 2016 BASED ON 0000 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL BAY OF BENGAL MOVED NORTHEASTWARDS AT A SPEED OF 16 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0000 HRS UTC OF 20<sup>TH</sup> MAY, 2016 NEAR LATITUDE 17.2° N AND LONGITUDE 83.3°E, ABOUT 60 KM SOUTH-SOUTHEAST OF VISAKHAPATNAM (43149) AND 120 KM NORTHEAST OF KAKINADA(43189). THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS ALONG & OFF ANDHRA PRADESH AND ODISHA COAST AND INTENSIFY INTO A SEVERE CYCLONIC STORM BY TONIGHT. CONTINUING MOVING NORTHEASTWARDS, THE SYSTEM IS LIKELY TO CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984)AND COX'S BAZAR(41992) IN THE NIGHT OF 21<sup>ST</sup>/ EARLY MORNING OF 22<sup>ND</sup> MAY AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ANDHRA PRADESH, SOUTH ODISHA, WEST CENTRAL ADJOINING NORTHWEST BAY OF BENGAL BETWEEN LATITUDE 14.0<sup>0</sup> NORTH TO 20.0<sup>0</sup>NORTH & WEST OF LONGITUDE 90.0<sup>0</sup> E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -92<sup>0</sup> C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992HPA.

STORM SURGE OF ABOUT 1.0 TO 1.5 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/0000	17.2/83.3	70-80 gusting to 90	Cyclonic Storm
20-05-2016/0600	17.7/84.1	70-80 gusting to 90	Cyclonic Storm
20-05-2016/1200	18.2/85.0	80-90 gusting to 100	Cyclonic Storm
20-05-2016/1800	18.7/85.9	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/0000	19.9/87.9	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1200	21.4/90.8	70-80 gusting to 90	Cyclonic Storm
22-05-2016/0000	22.3/92.5	50-60 gusting to 70	Deep Depression
22-05-2016/1200	23.0/93.7	35-45 gusting to 55	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 31.0°C, OCEAN THERMAL ENERGY IS ABOUT 150 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $10 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $40 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $100-150 \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 18.0°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTHEASTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM BY TONIGHT.

**THE NEXT BULLETIN WILL BE ISSUED AT 0900 UTC OF 20 MAY 2016.**

**(D. R. Pattanaik)  
SCIENTIST 'E'**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. EIGHT ISSUED AT 0600 UTC OF 20<sup>TH</sup> MAY 2016 BASED ON 0300 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL BAY OF BENGAL MOVED NORTHEASTWARDS AT A SPEED OF 25 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0300 UTC OF 20TH MAY, 2016 OVER WESTCENTRAL & ADJOINING NORTHWEST BAY OF BENGAL, NEAR LATITUDE 18.0° N AND LONGITUDE 84.2°E, ABOUT 40 KM SOUTH-SOUTHEAST OF KALINGAPATNAM (43105), 360 KM SOUTH-SOUTHWEST OF PARADIP (42976) AND 920 KM SOUTHWEST OF CHITTAGONG (41978). THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS ALONG & OFF NORTH ANDHRA PRADESH AND ODISHA COAST AND INTENSIFY INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. THEREAFTER, THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS AND CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984) AND COX'S BAZAR (41992), CLOSE TO CHITTAGONG (41978) IN THE NIGHT OF 21ST MAY, AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ANDHRA PRADESH, ODISHA, WEST CENTRAL AND ADJOINING NORTHWEST BAY OF BENGAL BETWEEN LATITUDE 14.0° NORTH TO 20.0°NORTH AND WEST OF LONGITUDE 90.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/0300	18.0/84.2	70-80 gusting to 90	Cyclonic Storm
20-05-2016/0600	17.7/84.1	70-80 gusting to 90	Cyclonic Storm
20-05-2016/1200	18.2/85.0	80-90 gusting to 100	Cyclonic Storm
20-05-2016/1800	18.7/85.9	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/0000	19.9/87.9	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/1200	21.4/90.8	70-80 gusting to 90	Cyclonic Storm
22-05-2016/0000	22.3/92.5	50-60 gusting to 70	Deep Depression
22-05-2016/1200	23.0/93.7	35-45 gusting to 55	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 140-160 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $100-150 \times 10^{-6}$  SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 17.5°N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTHEASTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 0900 UTC OF 20 MAY 2016.**

**(CHARAN SINGH)  
SCIENTIST 'E'**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. NINE ISSUED AT 0900 UTC OF 20<sup>TH</sup> MAY 2016  
BASED ON 0600 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL & ADJOINING NORTHWEST BAY OF BENGAL MOVED NORTHEASTWARDS AT A SPEED OF 30 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0600 UTC OF 20TH MAY, 2016 OVER SAME AREA NEAR LATITUDE 18.4° N AND LONGITUDE 84.6°E, ABOUT 50 KM EAST-NORTHEAST OF KALINGAPATNAM (43105), 300 KM SOUTH-SOUTHWEST OF PARADIP (42976) AND 870 KM WEST-SOUTHWEST OF CHITTAGONG (41978). THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS ALONG & OFF NORTH ANDHRA PRADESH AND ODISHA COAST AND INTENSIFY INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. THEREAFTER, THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS AND CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984) AND COX'S BAZAR (41992), CLOSE TO CHITTAGONG (41978) IN THE NIGHT OF 21ST MAY, AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ANDHRA PRADESH, ODISHA, WEST CENTRAL AND ADJOINING NORTHWEST BAY OF BENGAL BETWEEN LATITUDE 14.0° NORTH TO 20.0°NORTH AND WEST OF LONGITUDE 90.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT - 93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

STORM SURGE OF ABOUT 1.0 TO 1.5 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/0600	18.4/84.6	70-80 gusting to 90	Cyclonic Storm
20-05-2016/1200	19.3/85.9	80-90 gusting to 100	Cyclonic Storm
20-05-2016/1800	20.0/87.2	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/0000	20.7/88.6	85-95 gusting to 105	Cyclonic Storm
21-05-2016/0600	21.3/90.0	70-80 gusting to 90	Cyclonic Storm

21-05-2016/1800	22.5/92.6	50-60 gusting to 70	Deep Depression
22-05-2016/0600	23.5/95.0	35-45 gusting to 55	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 140-160 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 20X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 100-150X10<sup>-6</sup> SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 17.5<sup>0</sup>N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1. ABOVE SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTHEASTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 1200 UTC OF 20 MAY 2016.**

**(CHARAN SINGH)  
SCIENTIST 'E'**



**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)**

**TROPICAL CYCLONE ADVISORY**  
**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM ‘ROANU’ ADVISORY NO. TEN ISSUED AT 1200 UTC OF 20<sup>TH</sup> MAY 2016  
BASED ON 0900 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM ‘ROANU’ OVER WESTCENTRAL & ADJOINING NORTHWEST BAY OF BENGAL MOVED NORTHEASTWARDS AT A SPEED OF 20 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0900 UTC OF 20<sup>TH</sup> MAY, 2016 OVER NORTHWEST & ADJOINING WESTCENTRAL BAY OF BENGAL NEAR LATITUDE 18.8° N AND LONGITUDE 85.0°E, ABOUT 105 KM EAST-NORTHEAST OF KALINGAPATNAM (43105), 50 KM SOUTH-SOUTHEAST OF GOPALPUR (43049), 240 KM WEST-SOUTHWEST OF PARADIP (42976) AND 800 KM WEST-SOUTHWEST OF CHITTAGONG (41978). THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS ALONG & OFF NORTH ANDHRA PRADESH AND ODISHA COAST AND INTENSIFY INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. THEREAFTER, THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS AND CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA (41984) AND COX’S BAZAR (41992), CLOSE TO CHITTAGONG (41978) IN THE EVENING OF 21<sup>ST</sup> MAY, AS A CYCLONIC STORM.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ANDHRA PRADESH, ODISHA, NORTHWEST AND ADJOINING WESTCENTRAL BETWEEN NORTH OF LATITUDE 16.0° NORTH AND WEST OF LONGITUDE 90.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 35 KNOTS GUSTING TO 45 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

STORM SURGE OF ABOUT 1.0 TO 1.5 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/0900	18.8/85.0	70-80 gusting to 90	Cyclonic Storm
20-05-2016/1200	19.3/85.9	80-90 gusting to 100	Cyclonic Storm
20-05-2016/1800	20.0/87.2	90-100 gusting to 110	Severe Cyclonic Storm
21-05-2016/0000	20.7/88.6	85-95 gusting to 105	Cyclonic Storm

21-05-2016/0600	21.3/90.0	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1800	22.5/92.6	50-60 gusting to 70	Deep Depression
22-05-2016/0600	23.5/95.0	35-45 gusting to 55	Depression

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 140-160 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 20X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 100-150X10<sup>-6</sup> SECOND<sup>-1</sup>, VERTICAL WIND SHEAR IS LOW-MODERATE (5-10 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 17.5<sup>0</sup>N. THE MADDEN-JULIAN OSCILLATION LIES IN PHASE-4 WITH AMPLITUDE > 1.

THE INTENSITY OF THE SYSTEM REMAINED SAME AS THE SYSTEM IS INTERACTING WITH LAND SURFACE, LIES TO THE NORTH OF UPPER AIR RIDGE (17.5<sup>0</sup>N) AND THE MOVEMENT OF THE SYSTEM IS FAST UNDER THE INFLUENCE OF MID & UPPER TROPOSPHERIC WESTERLIES. THE SPEED OF THE SYSTEM IS ABOUT 20-25 KMPH DURING PAST 12 HOURS.

THE INTERPREATION OF PRESENT SYNOPTIC AND ENVIRONMENTAL CONDITIONS, AS WELL AS NUMERICAL WEATHER PREDICTION MODELS SUGGEST THAT THE CYCLONIC STORM 'ROANU' IS LIKELY TO MOVE NORTHEASTWARDS OVER NORTH BAY OF BENGAL TOWARDS SOUTHEAST COAST OF BANGLADESH DURING NEXT 24 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 1500 UTC OF 20 MAY 2016.**

**(CHARAN SINGH)  
SCIENTIST 'E'**





**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. ELEVEN ISSUED AT 1500 UTC OF 20<sup>TH</sup> MAY 2016 BASED ON 1200 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL & ADJOINING NORTHWEST BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 40 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 1730 HRS IST OF 20<sup>TH</sup> MAY, 2016 OVER NORTHWEST & BAY OF BENGAL NEAR LATITUDE 19.7° N AND LONGITUDE 86.5°E, 70 KM SOUTH-SOUTHWEST OF PARADIP (ODISHA), 70 KM SOUTHEAST OF PURI AND 630 KM WEST-SOUTHWEST OF CHITTAGONG (BANGLADESH). THE SYSTEM IS LIKELY TO MOVE NORTHEASTWARDS SKIRTING ODISHA-WEST BENGAL COAST AND CROSS BANGLADESH COAST BETWEEN KHEPUPARA AND COX'S BAZAR, CLOSE TO CHITTAGONG IN THE EVENING OF 21<sup>ST</sup> MAY, AS A CYCLONIC STORM.

THE CONVECTION SHOWS BAND PATTERN. IT ALSO EXHIBITS LARGE SCALE DIURNAL VARIATION DURING PAST TWO DAYS ESPECIALLY WITH RESPECT TO CENTRAL DENSE OVERCAST CLOUDS AND THE CURVED BANDS INTENSITY AND SIZE.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ANDHRA PRADESH, ODISHA, NORTHWEST AND ADJOINING WESTCENTRAL BAY BETWEEN NORTH OF LATITUDE 15.5° NORTH AND WEST OF LONGITUDE 90.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -90° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 40 KNOTS GUSTING TO 50 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/1200	19.7/86.5	70-80 gusting to 90	Cyclonic Storm
20-05-2016/1800	20.5/88.1	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0000	21.3/89.6	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0600	22.1/91.0	80-90 gusting to 100	Cyclonic Storm
21-05-2016/1200	22.9/92.6	60-70 gusting to 80	Cyclonic Storm
22-05-2016/0000	24.2/94.7	40-50 gusting to 60	Depression

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE HAS DECREASED SLIGHTLY DURING PAST SIX HOURS AND IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE HAS ALSO DECREASED AND IS ABOUT  $10 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $200 \times 10^{-6}$  SECOND<sup>-1</sup>, AROUND SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW (5-10 KNOTS) AND IS FAVOURABLE. UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N. THOUGH THE VERTICAL WIND SHEAR IS FAVOURABLE FOR INTENSIFICATION, THE PROXIMITY OF THE SYSTEM TO THE COAST PROVIDES LAND SURFACE INTERACTION OPPOSING THE INTENSIFICATION FURTHER AS THE CYCLONIC STORM MOVES NORTH EASTWARDS IT WILL EXPERIENCE LOWER OCEAN THERMAL ENERGY AND MORE MID-LATITUDE INFLUENCE UNFAVOURABLE FOR INTENSIFICATION. THUS, THE SYSTEM WILL CONTINUE THE CYCLONIC STORM INTENSITY IN THIS MARGINALLY FAVOURABLE ENVIRONMENT

THE MOVEMENT OF THE SYSTEM IS FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS THE DEEP LAYER MEAN WIND IS FAVOURING THE NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF 25-30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

THE NUMERICAL MODELS ARE IN GOOD AGREEMENT WITH RESPECT TO TRACK FORECAST OF THE SYSTEM.

**THE NEXT BULLETIN WILL BE ISSUED AT 1800 UTC OF 20 MAY 2016.**

**(M.MOHAPATRA)  
SCIENTIST 'G' & HEAD R.S.M.C., 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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. TWELVE ISSUED AT 1800 UTC OF 20<sup>TH</sup> MAY 2016 BASED ON 1500 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER WESTCENTRAL & ADJOINING NORTHWEST BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 25 KMPH DURING PAST THREE HOURS AND LAY CENTRED AT 1500 UTC OF 20<sup>TH</sup> MAY, 2016 OVER NORTHWEST BAY OF BENGAL NEAR LATITUDE 20.0° N AND LONGITUDE 87.0°E, 65 KM EAST OF PARADIP (ODISHA),SOUTHEAST AND 560 KM WEST-SOUTHWEST OF CHITTAGONG (BANGLADESH). THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS SKIRTING ODISHA- WEST BENGAL COAST AND CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA AND COX'S BAZAR, CLOSE TO CHITTAGONG IN THE EVENING OF 21<sup>ST</sup> MAY, AS A CYCLONIC STORM.

THE CONVECTION SHOWS BAND PATTERN. IT ALSO EXHIBITS LARGE SCALE DIURNAL VARIATION DURING PAST TWO DAYS ESPECIALLY WITH RESPECT TO CENTRAL DENSE OVERCAST CLOUDS AND THE CURVED BANDS INTENSITY AND SIZE.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ODISHA, NORTHWEST AND ADJOINING NORTHEAST BAY BETWEEN NORTH OF LATITUDE 15.5° NORTH AND WEST OF LONGITUDE 91.0° E. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 40 KNOTS GUSTING TO 50 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/1500	20.0/87.0	70-80 gusting to 90	Cyclonic Storm
20-05-2016/1800	20.5/88.1	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0000	21.3/89.6	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0600	22.1/91.0	80-90 gusting to 100	Cyclonic Storm
21-05-2016/1200	22.9/92.6	60-70 gusting to 80	Cyclonic Storm
22-05-2016/0000	24.2/94.7	40-50 gusting to 60	Depression

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE HAS DECREASED SLIGHTLY DURING PAST SIX HOURS AND IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE HAS ALSO DECREASED AND IS ABOUT  $10 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $200 \times 10^{-6}$  SECOND<sup>-1</sup>, AROUND SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW (5-10 KNOTS) AND IS FAVOURABLE. UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N.

THOUGH THE VERTICAL WIND SHEAR IS FAVOURABLE FOR INTENSIFICATION, THE PROXIMITY OF THE SYSTEM TO THE COAST PROVIDES LAND SURFACE INTERACTION OPPOSING THE INTENSIFICATION FURTHER AS THE CYCLONIC STORM MOVES NORTH EASTWARDS IT WILL EXPERIENCE LOWER OCEAN THERMAL ENERGY AND MORE MID-LATITUDE INFLUENCE UNFAVOURABLE FOR INTENSIFICATION. THUS, THE SYSTEM WILL CONTINUE THE CYCLONIC STORM INTENSITY IN THIS MARGINALLY FAVOURABLE ENVIRONMENT

THE MOVEMENT OF THE SYSTEM IS FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS THE DEEP LAYER MEAN WIND IS FAVOURING THE NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF 25-30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

THE NUMERICAL MODELS ARE IN GOOD AGREEMENT WITH RESPECT TO TRACK FORECAST OF THE SYSTEM.

**THE NEXT BULLETIN WILL BE ISSUED AT 2100 UTC OF 20 MAY 2016.**

**(RANJEET SINGH)  
SCIENTIST 'F'**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. THIRTEEN ISSUED AT 2100 UTC OF 20<sup>ST</sup> MAY 2016 BASED ON 1800 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER NORTHWEST & ADJOINING WESTCENTRAL BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 18 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 1800 UTC OF 20<sup>TH</sup> MAY, 2016 OVER NORTHWEST BAY OF BENGAL NEAR LATITUDE 20.1 ° N AND LONGITUDE 87.5°E, 90 KM EAST OF PARADIP (ODISHA) 510 KM WEST-OF CHITTAGONG (BANGLADESH). THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS SKIRTING ODISHA- WEST BENGAL COAST AND CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA AND COX'S BAZAR, CLOSE TO CHITTAGONG IN THE EVENING OF 21<sup>ST</sup> MAY, AS A CYCLONIC STORM.

THE CONVECTION SHOWS BAND PATTERN. IT ALSO EXHIBITS LARGE SCALE DIURNAL VARIATION DURING PAST TWO DAYS ESPECIALLY WITH RESPECT TO CENTRAL DENSE OVERCAST CLOUDS AND THE CURVED BANDS INTENSITY AND SIZE.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ODISHA, NORTH BAY AND ADJOINING CENTRAL BAY ,NORTH OF LATITUDE 17.0° N.. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 40 KNOTS GUSTING TO 50 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/1800	20.1/87.5	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0000	20.4/88.2	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0600	21.0/89.6	80-90 gusting to 100	Cyclonic Storm
21-05-2016/1200	21.8/91.5	60-70 gusting to 80	Cyclonic Storm
21-05-2016/1800	22.6/93.3	50-60 gusting to 70	Deep Depression
22-05-2016/0000	23.5/95.2	25-35 gusting to 45	Well-marked low

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE HAS DECREASED SLIGHTLY DURING PAST SIX HOURS AND IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE HAS ALSO DECREASED AND IS ABOUT  $10 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $200 \times 10^{-6}$  SECOND<sup>-1</sup>, AROUND SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW (5-10 KNOTS) AND IS FAVOURABLE. UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N.

THOUGH THE VERTICAL WIND SHEAR IS FAVOURABLE FOR INTENSIFICATION, THE PROXIMITY OF THE SYSTEM TO THE COAST PROVIDES LAND SURFACE INTERACTION OPPOSING THE INTENSIFICATION FURTHER AS THE CYCLONIC STORM MOVES NORTH EASTWARDS IT WILL EXPERIENCE LOWER OCEAN THERMAL ENERGY AND MORE MID-LATITUDE INFLUENCE UNFAVOURABLE FOR INTENSIFICATION. THUS, THE SYSTEM WILL CONTINUE THE CYCLONIC STORM INTENSITY IN THIS MARGINALLY FAVOURABLE ENVIRONMENT

THE MOVEMENT OF THE SYSTEM IS FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS THE DEEP LAYER MEAN WIND IS FAVOURING THE NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF 25-30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

THE NUMERICAL MODELS ARE IN GOOD AGREEMENT WITH RESPECT TO TRACK FORECAST OF THE SYSTEM.

**THE NEXT BULLETIN WILL BE ISSUED AT 0300 UTC OF 21 MAY 2016.**

**(RANJEET SINGH)  
SCIENTIST 'F'**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. FOURTEEN ISSUED AT 0000 UTC OF 21<sup>ST</sup> MAY 2016 BASED ON 2100 UTC CHARTS OF 20<sup>TH</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER NORTHWEST & ADJOINING WESTCENTRAL BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 25 KMPH DURING PAST THREE HOURS AND LAY CENTRED AT 2100 UTC OF 20<sup>TH</sup> MAY, 2016 OVER NORTHWEST BAY OF BENGAL NEAR LATITUDE 20.3 ° N AND LONGITUDE 88.2°E, 160 KM EAST OF PARADIP (ODISHA) 230 KM SOUTH OF KOLKATA AND 435 KM WEST-SOUTHWEST OF CHITTAGONG (BANGLADESH). THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS SKIRTING ODISHA- WEST BENGAL COAST AND CROSS SOUTH BANGLADESH COAST BETWEEN KHEPUPARA AND COX'S BAZAR, CLOSE TO CHITTAGONG IN THE EVENING OF 21<sup>ST</sup> MAY, AS A CYCLONIC STORM.

THE CONVECTION SHOWS BAND PATTERN. IT ALSO EXHIBITS LARGE SCALE DIURNAL VARIATION DURING PAST TWO DAYS ESPECIALLY WITH RESPECT TO CENTRAL DENSE OVERCAST CLOUDS AND THE CURVED BANDS INTENSITY AND SIZE.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH COASTAL ODISHA, NORTH BAY AND ADJOINING CENTRAL BAY ,NORTH OF LATITUDE 16.5<sup>0</sup> N.. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93<sup>0</sup> C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 40 KNOTS GUSTING TO 50 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
20-05-2016/2100	20.3/88.2	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0000	20.4/88.2	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0600	21.0/89.6	80-90 gusting to 100	Cyclonic Storm
21-05-2016/1200	21.8/91.5	60-70 gusting to 80	Cyclonic Storm
21-05-2016/1800	22.6/93.3	50-60 gusting to 70	Deep Depression
22-05-2016/0000	23.5/95.2	25-35 gusting to 45	Well-marked low

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE IS VERY LIKELY NEAR THE SYSTEM CENTRE AT THE TIME OF LANDFALL.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE HAS DECREASED SLIGHTLY DURING PAST SIX HOURS AND IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE HAS ALSO DECREASED AND IS ABOUT  $10 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $200 \times 10^{-6}$  SECOND<sup>-1</sup>, AROUND SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW (5-10 KNOTS) AND IS FAVOURABLE. UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N.

THOUGH THE VERTICAL WIND SHEAR IS FAVOURABLE FOR INTENSIFICATION, THE PROXIMITY OF THE SYSTEM TO THE COAST PROVIDES LAND SURFACE INTERACTION OPPOSING THE INTENSIFICATION FURTHER AS THE CYCLONIC STORM MOVES NORTH EASTWARDS IT WILL EXPERIENCE LOWER OCEAN THERMAL ENERGY AND MORE MID-LATITUDE INFLUENCE UNFAVOURABLE FOR INTENSIFICATION. THUS, THE SYSTEM WILL CONTINUE THE CYCLONIC STORM INTENSITY IN THIS MARGINALLY FAVOURABLE ENVIRONMENT

THE MOVEMENT OF THE SYSTEM IS FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS THE DEEP LAYER MEAN WIND IS FAVOURING THE NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF 25-30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

THE NUMERICAL MODELS ARE IN GOOD AGREEMENT WITH RESPECT TO TRACK FORECAST OF THE SYSTEM.

**THE NEXT BULLETIN WILL BE ISSUED AT 0300 UTC OF 21 MAY 2016.**

**(RANJEET SINGH)  
SCIENTIST 'F'**





**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. FIFTEEN ISSUED AT 0300 UTC OF 21<sup>ST</sup> MAY 2016 BASED ON 0000 UTC CHARTS OF 21<sup>ST</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER NORTHWEST BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 25 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0530 HRS IST OF 21<sup>TH</sup> MAY, 2016 OVER NORTHWEST BAY OF BENGAL NEAR LATITUDE 21.0° N AND LONGITUDE 89.0°E, ABOUT 130 KM SOUTHEAST OF SAGAR ISLAND (WEST BENGAL), 160KM SOUTH-SOUTHWEST OF KHEPUPARA (BANGLADESH) AND 320 KM WEST-SOUTHWEST OF CHITTAGONG (BANGLADESH). THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS SKIRTING WEST BENGAL COAST AND CROSS BANGLADESH COAST CLOSE TO CHITTAGONG BY EVENING OF TODAY, THE 21<sup>ST</sup> MAY 2016 AS A CYCLONIC STORM.

THE CONVECTION SHOWS INCREASE IN ORGANISATION DURING PAST SIX HRS. IT CONTINUES TO EXHIBIT LARGE SCALE DIURNAL VARIATION WITH RESPECT TO CENTRAL DENSE OVERCAST CLOUDS AND THE CURVED BANDS INTENSITY AND SIZE.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 3.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER EXTREME NORTHEAST ODISHA, NORTH BAY AND ADJOINING CENTRAL BAY, SOUTH BANGLADESH, TRIPURA, MANIPUR, MIZORAM AND NORTH BAY OF BENGAL TO THE NORTH OF LATITUDE 18.5° N. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 45 KNOTS GUSTING TO 55 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
21-05-2016/0000	20.3/88.2	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0600	20.4/88.2	80-90 gusting to 100	Cyclonic Storm
21-05-2016/1200	21.0/89.6	80-90 gusting to 100	Cyclonic Storm
21-05-2016/1800	21.8/91.5	60-70 gusting to 80	Cyclonic Storm
22-05-2016/0000	22.6/93.3	50-60 gusting to 70	Deep Depression
22-05-2016/0600	23.5/95.2	25-35 gusting to 45	Well-marked low

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE WOULD OCCUR ALONG BANGLADESH DURING NEXT 12 HRS.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE HAS AGAIN INCREASED SLIGHTLY DURING PAST SIX HOURS AND IS ABOUT  $30 \times 10^{-5}$  SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE HAS ALSO INCREASED AND IS ABOUT  $40 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT  $200 \times 10^{-6}$  SECOND<sup>-1</sup>, NEAR SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW TO MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N. THE PROXIMITY OF THE SYSTEM TO THE COAST PROVIDES LAND SURFACE INTERACTION OPPOSING FURTHER INTENSIFICATION. AS THE CYCLONIC STORM MOVES NORTH EASTWARDS IT WILL EXPERIENCE LOWER OCEAN THERMAL ENERGY AND MORE MID-LATITUDE INFLUENCE UNFAVOURABLE FOR INTENSIFICATION ALSO. THUS, THE SYSTEM WILL CONTINUE WITH THE CYCLONIC STORM INTENSITY.

THE MOVEMENT OF THE SYSTEM CONTINUES TO BE FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS. THE DEEP LAYER MEAN WIND FAVOURED THE NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF 25-30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

THE NUMERICAL MODELS ARE IN GOOD AGREEMENT WITH RESPECT TO TRACK FORECAST OF THE SYSTEM.

**THE NEXT BULLETIN WILL BE ISSUED AT 0600 UTC OF 21 MAY 2016.**

**(M. MOHAPATRA)  
SCIENTIST 'G' AND HEAD RSMC, 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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. SIXTEEN ISSUED AT 0600 UTC OF 21<sup>ST</sup> MAY 2016 BASED ON 0300 UTC CHARTS OF 21<sup>ST</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER NORTHWEST BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 40 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0300 UTC OF 21TH MAY, 2016 OVER NORTH BAY OF BENGAL NEAR LATITUDE 21.5° N AND LONGITUDE 90.3°E, ABOUT 270 KM EAST-SOUTHEAST OF SAGAR ISLAND (42903), 55 KM SOUTH OF KHEPUPARA (41984) AND 180 KM WEST-SOUTHWEST OF CHITTAGONG (41978). THE SYSTEM IS LIKELY TO MOVE EAST-NORTHEASTWARDS AND CROSS BANGLADESH COAST CLOSE TO CHITTAGONG (41977) BY EVENING OF TODAY, THE 21ST MAY 2016 AS A CYCLONIC STORM.

THE CONVECTION SHOWS INCREASE IN ORGANISATION DURING PAST SIX HRS. IT CONTINUES TO EXHIBIT LARGE SCALE DIURNAL VARIATION WITH RESPECT TO CENTRAL DENSE OVERCAST CLOUDS AND THE CURVED BANDS INTENSITY AND SIZE.

ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 3.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER GANGETIC WEST BENGAL, NORTH BAY AND ADJOINING CENTRAL BAY, SOUTH BANGLADESH, TRIPURA, MANIPUR, NORTH OF LATITUDE 17.0° N.. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93<sup>0</sup> C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 45 KNOTS GUSTING TO 55 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 990 HPA. THE COASTAL OBSERVATIONS OF BANGLADESH REPORTED AT 0300 UTC OF 21 MAY 2016 ARE AS FOLLOWS:

STATION	STATION INDEX	MSLP (HPA)	PRESSURE TENDENCY (P24) (HPA)	WIND SPEED (DEG./KNOTS)	DIR
CHITTAGONG	41978	994.9	-10.7	120/18	
PATUAKHALI	41960	991.1	-13.6	050/28	
HATIA	41963	992.2	-12.8	130/25	
SITAKUNDU	41965	995.7	-9.7	100/14	

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

Date/time(UTC)	Position (lat. °N/ long. °E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
21-05-2016/0300	21.5/90.3	80-90 gusting to 100	Cyclonic Storm
21-05-2016/0600	21.9/91.0	80-90 gusting to 100	Cyclonic Storm
21-05-2016/1200	22.5/92.1	70-80 gusting to 90	Cyclonic Storm
21-05-2016/1800	23.2/93.6	50-60 gusting to 70	Deep Depression
22-05-2016/0000	23.9/95.1	35-45 gusting to 55	Depression
22-05-2016/1200	25.2/90.8	20-30 gusting to 40	Low pressure area

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE WOULD OCCUR ALONG BANGLADESH COAST DURING NEXT 12 HRS.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS ABOUT 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 40X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200X10<sup>-6</sup> SECOND<sup>-1</sup>, NEAR SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW TO MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N. THE PROXIMITY OF THE SYSTEM TO THE COAST PROVIDES LAND SURFACE INTERECTION OPPOSING FURTHER INTENSIFICATION. AS THE CYCLONIC STORM MOVES NORTH EASTWARDS IT WILL EXPERIENCE LOWER OCEAN THERMAL ENERGY AND MORE MID-LATITUDE INFLUENCE UNFAVOURABLE FOR INTENSIFICATION ALSO. THUS, THE SYSTEM WILL CONTINUE WITH THE CYCLONIC STORM INTENSITY.

THE MOVEMENT OF THE SYSTEM CONTINUES TO BE FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS. THE DEEP LAYER MEAN WIND FAVOURED THE EAST-NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF 30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

THE NUMERICAL MODELS ARE IN GOOD AGREEMENT WITH RESPECT TO TRACK FORECAST OF THE SYSTEM. AFTER LANDFALL, THE SYSTEM WOULD WEAKEN INTO A LOW PRESSURE AREA OVER MYANMAR BY MORNING OF 22<sup>ND</sup> MAY.

**THE NEXT BULLETIN WILL BE ISSUED AT 0900 UTC OF 21 MAY 2016.**

**(M. MOHAPATRA)  
SCIENTIST 'G' AND HEAD RSMC, 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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. SEVENTEEN ISSUED AT 0900 UTC OF 21<sup>ST</sup> MAY 2016 BASED ON 0600 UTC CHARTS OF 21<sup>ST</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER NORTH BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 38 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0300 UTC OF 21<sup>TH</sup> MAY, 2016 OVER NORTHEAST BAY OF BENGAL NEAR LATITUDE 21.9° N AND LONGITUDE 91.0°E, ABOUT 60 KM SOUTH OF HATIA (41963) AND 100 KM WEST-SOUTHWEST OF CHITTAGONG (41978). THE SYSTEM WILL CONTINUE TO MOVE EAST-NORTHEASTWARDS AND CROSS BANGLADESH COAST CLOSE TO CHITTAGONG (41978) BY EVENING OF TODAY, THE 21<sup>ST</sup> MAY 2016 AS A CYCLONIC STORM.

THE CONVECTION CONTINUED SAME ORGANISATION DURING PAST SIX HRS. ACCORDING TO SATELLITE IMAGERIES, THE INTENSITY OF THE SYSTEM IS T 3.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH BAY AND ADJOINING CENTRAL BAY, SOUTH BANGLADESH, TRIPURA, MANIPUR, NORTH OF LATITUDE 17.0° N.. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -86° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 45 KNOTS GUSTING TO 60 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE SAME WIND SPEED WOULD PREVAIL ALONG BANGLADESH COAST AT THE TIME OF LANDFALL. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 983 HPA. THE COASTAL OBSERVATIONS OF BANGLADESH REPORTED AT 0600 UTC OF 21 MAY 2016 ARE AS FOLLOWS:

STATION	STATION INDEX	MSLP (HPA)	PRESSURE TENDENCY (P24) (HPA)	WIND SPEED (DEG./KNOTS)	DIR
CHITTAGONG	41978	988.0	-16.4	150/20	
PATUAKHALI	41960	991.3	-12.8	310/15	
HATIA	41963	983.4	-21.1	130/02	
SITAKUNDU	41965	987.5	-17.1	090/18	

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

Date/time(UTC)	Position (lat. °N/ long. °E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
21-05-2016/0600	21.9/91.0	80-90 gusting to 110	Cyclonic Storm
21-05-2016/1200	22.7/92.4	70-80 gusting to 95	Cyclonic Storm
21-05-2016/1800	23.4/93.9	50-60 gusting to 70	Deep Depression
22-05-2016/0000	24.1/95.4	35-45 gusting to 55	Depression
22-05-2016/0600	24.8/96.9	20-30 gusting to 40	Low pressure area

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE WOULD OCCUR ALONG BANGLADESH COAST DURING NEXT 12 HRS.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS ABOUT 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 40X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200X10<sup>-6</sup> SECOND<sup>-1</sup>, NEAR SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW TO MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N.

THE MOVEMENT OF THE SYSTEM CONTINUES TO BE FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS. THE DEEP LAYER MEAN WIND FAVOURED THE EAST-NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF MORE THAN 30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

AFTER LANDFALL, THE SYSTEM WOULD WEAKEN GRADUALLY INTO A LOW PRESSURE AREA OVER MYANMAR BY MORNING OF 22<sup>ND</sup> MAY.

**THE NEXT BULLETIN WILL BE ISSUED AT 1200 UTC OF 21 MAY 2016.**

**(M. MOHAPATRA)  
SCIENTIST 'G' AND HEAD RSMC, 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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. EIGHTEEN ISSUED AT 1200 UTC OF 21<sup>ST</sup> MAY 2016 BASED ON 0900 UTC CHARTS OF 21<sup>ST</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER NORTHEAST BAY OF BENGAL MOVED EAST-NORTHEASTWARDS AT A SPEED OF 30 KMPH DURING PAST SIX HOURS AND LAY CENTRED AT 0900 UTC OF 21<sup>TH</sup> MAY, 2016 OVER NORTHEAST BAY OF BENGAL NEAR LATITUDE 22.5° N AND LONGITUDE 91.5°E, CLOSE TO SOUTHEAST COAST OF BANGLADESH. LATEST OBSERVATIONS INDICATE THAT THE CYCLONIC STORM ROANU IS IN THE PROCESS OF CROSSING BANGLADESH COAST CLOSE TO NORTH OF CHITTAGONG (41978). AFTER THE COMPLETION OF LANDFALL, IT WOULD CONTINUE TO MOVE EAST-NORTHEASTWARDS AND WEAKEN GRADUALLY INTO A DEEP DEPRESSION BY MIDNIGHT OF TODAY AND INTO A DEPRESSION BY EARLY MORNING OF TOMORROW, THE 22<sup>ND</sup> MAY 2016.

ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH BAY AND ADJOINING CENTRAL BAY, SOUTH BANGLADESH, TRIPURA, MANIPUR, MIZORAM, NORTH OF LATITUDE 17.0° N. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 45 KNOTS GUSTING TO 55 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE SAME WIND SPEED WOULD PREVAIL ALONG BANGLADESH COAST AT THE TIME OF LANDFALL. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 984 HPA. THE COASTAL OBSERVATIONS OF BANGLADESH REPORTED AT 0900 UTC OF 21 MAY 2016 ARE AS FOLLOWS:

STATION	STATION INDEX	MSLP (HPA)	PRESSURE TENDENCY (P24) (HPA)	WIND SPEED (DEG./KNOTS)	DIR
CHITTAGONG	41978	988.8	-13.4	220/26	
SITAKUNDU	41965	986.7	-15.8	090/12	
SANDWIP	41964	987.1	-15.9	230/25	

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

Date/time(UTC)	Position (lat. °N/ long. °E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
21-05-2016/0900	22.5/91.5	80-90 gusting to 110	Cyclonic Storm
21-05-2016/1200	23.0/92.2	65-75 gusting to 85	Cyclonic Storm
21-05-2016/1800	24.0/93.5	55-65 gusting to 75	Deep Depression
22-05-2016/0000	25.0/95.0	40-50 gusting to 60	Depression

**STORM SURGE GUIDANCE FOR BANGLADESH COAST.**

STORM SURGE OF ABOUT 1.0 TO 2 METRE WOULD OCCUR ALONG BANGLADESH COAST DURING NEXT 12 HRS.

**REMARKS:**

THE SEA SURFACE TEMPERATURE IS 30-31°C, OCEAN THERMAL ENERGY IS ABOUT 75-100 KJ/CM<sup>2</sup>, LOW LEVEL CONVERGENCE IS ABOUT 30 X 10<sup>-5</sup> SECOND<sup>-1</sup>, UPPER LEVEL DIVERGENCE IS ABOUT 40X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOW LEVEL RELATIVE VORTICITY IS ABOUT 200X10<sup>-6</sup> SECOND<sup>-1</sup>, NEAR SYSTEM CENTER. VERTICAL WIND SHEAR CONTINUES TO BE LOW TO MODERATE (10-20 KNOTS). UPPER TROPOSPHERIC RIDGE LIES ALONG LATITUDE 16.0°N.

THE MOVEMENT OF THE SYSTEM CONTINUES TO BE FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS. THE DEEP LAYER MEAN WIND FAVOURED THE EAST-NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF MORE THAN 30 KMPH DURING PAST 12 HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS.

AFTER LANDFALL, THE SYSTEM WOULD WEAKEN GRADUALLY INTO A LOW PRESSURE AREA DURING NEXT 24 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 1500 UTC OF 21 MAY 2016.**

**(M. MOHAPATRA)  
SCIENTIST 'G' AND HEAD RSMC, 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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. NINETEEN ISSUED AT 1500 UTC OF 21<sup>ST</sup> MAY 2016 BASED ON 1200 UTC CHARTS OF 21<sup>ST</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' OVER NORTHEAST BAY OF BENGAL MOVED EAST-NORTHEASTWARDS, CROSSED SOUTHEAST COAST OF BANGLADESH NEAR LATITUDE 22.6° N AND LONGITUDE 91.6°E AROUND 1000 UTC, CLOSE TO NORTH OF CHITTAGONG (41978). THE SYSTEM CONTINUED TO MOVE EAST-NORTHEASTWARDS AND LAY CENTRED AT 1200 UTC OF 21<sup>ST</sup> MAY, 2016 OVER BANGLADESH NEAR LATITUDE 22.8° N AND LONGITUDE 92.0°E, ABOUT 130 KM SOUTH-SOUTHWEST OF AIZWAL (42727) AND 65 KM NORTH-NORTHEAST OF CHITTAGONG (41978). IT WOULD CONTINUE TO MOVE EAST-NORTHEASTWARDS AND WEAKEN GRADUALLY INTO A DEEP DEPRESSION BY MIDNIGHT OF TODAY AND INTO A DEPRESSION BY EARLY MORNING OF TOMORROW, THE 22<sup>ND</sup> MAY 2016.

ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTHEAST BAY, TRIPURA, MANIPUR, MIZORAM, SOUTHEAST BANGLADESH AND SOUTH ASSAM.. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -93<sup>0</sup> C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 45 KNOTS GUSTING TO 55 KNOTS AROUND THE SYSTEM CENTRE. THE STATE OF THE SEA IS HIGH AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 990 HPA.

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

<b>Date/time(UTC)</b>	<b>Position (lat. °N/ long. °E)</b>	<b>Maximum sustained surface wind speed (kmph)</b>	<b>Category of cyclonic Disturbance</b>
21-05-2016/1200	22.8/92.0	65-75 gusting to 85	Cyclonic Storm
21-05-2016/1800	23.7/93.6	55-65 gusting to 75	Deep Depression
22-05-2016/0000	24.4/95.2	40-50 gusting to 60	Depression
22-05-2016/0600	25.1/96.8	20-30 gusting to 40	Low pressure area

**REMARKS:**

THE MOVEMENT OF THE SYSTEM CONTINUES TO BE FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS. THE DEEP LAYER MEAN WIND FAVOURED THE EAST-NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF MORE THAN 25 KMPH DURING PAST SIX HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 24 HOURS. THE SYSTEM WOULD WEAKEN GRADUALLY INTO A LOW PRESSURE AREA DURING NEXT 24 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 1800 UTC OF 21 MAY 2016.**

**(M. MOHAPATRA)  
SCIENTIST 'G' AND HEAD RSMC, 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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. TWENTY ISSUED AT 1800 UTC OF 21<sup>ST</sup> MAY 2016 BASED ON 1500 UTC CHARTS OF 21<sup>ST</sup> MAY 2016.**

THE CYCLONIC STORM 'ROANU' MOVED EAST-NORTHEASTWARDS, WEAKENED INTO A DEEP DEPRESSION AND LAY CENTERED AT 1500 UTC OF 21<sup>ST</sup> MAY 2016 OVER MIZORAM NEAR LATITUDE 23.5° N AND LONGITUDE 93.0° E, ABOUT 35 KM NORTH-NORTHEAST OF AIZWAL (42727) AND 180 KM NORTH-NORTHEAST OF CHITTAGONG (41978). IT WOULD MOVE EAST-NORTHEASTWARDS AND WEAKEN FURTHER INTO A DEPRESSION DURING NEXT 6 HOURS

ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER NORTHEAST BAY, TRIPURA, MANIPUR, MIZORAM, SOUTHEAST BANGLADESH AND SOUTH ASSAM. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT - 72° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 30 KNOTS GUSTING TO 40 KNOTS AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA.

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

Date/time(UTC)	Position (lat. °N/ long. °E)	Maximum sustained surface wind speed (kmph)	Category of cyclonic Disturbance
21-05-2016/1500	23.5/93.0	55-65 gusting to 75	Deep Depression
21-05-2016/1800	24.0/93.7	55-65 gusting to 75	Deep Depression
22-05-2016/0000	25.0/95.2	40-50 gusting to 60	Depression
22-05-2016/0600	26.0/96.7	20-30 gusting to 40	Low pressure area

**REMARKS:**

THE MOVEMENT OF THE SYSTEM CONTINUES TO BE FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS. THE DEEP LAYER MEAN WIND FAVOURED THE EAST-NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF MORE THAN 25 KMPH DURING PAST SIX HOURS. SIMILAR CONDITION WILL CONTINUE DURING NEXT 12 HOURS. THE SYSTEM WOULD WEAKEN GRADUALLY INTO A LOW PRESSURE AREA DURING NEXT 12 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 2100 UTC OF 21<sup>ST</sup> MAY 2016.**

**(SHAMBU RAVINDREN)  
SCIENTIST 'B'**



**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)**

**TROPICAL CYCLONE ADVISORY**

**RSMC – TROPICAL CYCLONES, NEW DELHI**

**TROPICAL STORM 'ROANU' ADVISORY NO. TWENTY ONE ISSUED AT 2100 UTC OF 21<sup>ST</sup>  
MAY 2016 BASED ON 1800 UTC CHARTS OF 21<sup>ST</sup> MAY 2016.**

THE DEEP DEPRESSION OVER MIZORAM MOVED EAST-NORTHEASTWARDS, AND LAY CENTERED AT 1800 UTC OF 21<sup>ST</sup> MAY 2016 NEAR LATITUDE 24.0° N AND LONGITUDE 94.0° E, ABOUT 130 KM NORTHEAST OF AIZWAL (42727) AND 85 KM SOUTH-SOUTHEAST OF IMPHAL (42623). IT WOULD MOVE EAST-NORTHEASTWARDS AND WEAKEN FURTHER INTO A DEPRESSION DURING NEXT 6 HOURS

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

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
21-05-2016/1800	24.0/94.0	55-65 GUSTING TO 75	DEEP DEPRESSION
22-05-2016/0000	25.0/95.5	40-50 GUSTING TO 60	DEPRESSION
22-05-2016/0600	26.0/97.0	20-30 GUSTING TO 40	LOW PRESSURE AREA

ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER NORTHEAST BAY, TRIPURA, MANIPUR, MIZORAM, AND SOUTH ASSAM. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -70° C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 30 KNOTS GUSTING TO 40 KNOTS AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 994 HPA.

**REMARKS:**

THE MOVEMENT OF THE SYSTEM CONTINUES TO BE FAST UNDER THE INFLUENCE OF MID LATITUDE WESTERLIES IN MID & UPPER TROPOSPHERIC LEVELS. THE DEEP LAYER MEAN WIND FAVOURED THE EAST-NORTHEASTWARD MOVEMENT OF THE SYSTEM WITH A SPEED OF MORE THAN 19 KMPH DURING PAST SIX HOURS. THE SYSTEM WOULD WEAKEN GRADUALLY INTO A LOW PRESSURE AREA DURING NEXT 12 HOURS.

**THE NEXT BULLETIN WILL BE ISSUED AT 0300 UTC OF 22<sup>ND</sup> MAY 2016.**

**(SHAMBU RAVINDREN)  
SCIENTIST 'B'**



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

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**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 22.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 0300 UTC OF 22<sup>ND</sup> MAY, 2016 BASED ON 0000 UTC OF 22<sup>ND</sup> MAY, 2016**

THE DEEP DEPRESSION OVER MIZORAM MOVED EAST-NORTHEASTWARDS, WEAKENED INTO A DEPRESSION AND LAY CENTERED AT 0000 UTC OF 22<sup>ND</sup> MAY 2016 OVER MYANMAR AND ADJOINING MANIPUR NEAR LATITUDE 24.5° N AND LONGITUDE 94.7° E ABOUT 80 KM EAST-SOUTHEAST OF IMPHAL. IT WOULD MOVE EAST-NORTHEASTWARDS AND WEAKEN FURTHER INTO A WELL MARKED LOW PRESSURE AREA DURING NEXT 12 HOURS.

ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LIE OVER NAGALAND, TRIPURA, MANIPUR, MIZORAM, AND ADJOINING MYANMAR. THE LOWEST CLOUD TOP TEMPERATURE (CTT) IS ABOUT -70<sup>0</sup> C. MAXIMUM SUSTAINED SURFACE WIND SPEED IS ESTIMATED TO BE ABOUT 20 KNOTS GUSTING TO 30 KNOTS AROUND THE SYSTEM CENTRE. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996 HPA.

**THE NEXT BULLETIN WILL BE ISSUED AT 0600 UTC OF 22<sup>ND</sup> MAY 2016.**

**(SHAMBU RAVINDREN)  
SCIENTIST 'B'**



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

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 22.05.2016**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 24 HOURS ISSUED AT 0600 UTC OF 22<sup>ND</sup> MAY, 2016 BASED ON 0300 UTC OF 22<sup>ND</sup> MAY, 2016**

THE DEPRESSION OVER MYANMAR AND ADJOINING MANIPUR WEAKENED INTO A WELL MARKED LOW PRESSURE AREA OVER MYANMAR AND ADJOINING NAGALAND AND MANIPUR AT 0300 UTC OF TODAY, THE 22<sup>ND</sup> MAY 2016.

ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LIE OVER MANIPUR, MIZORAM, NORTH MYANMAR.

**THIS IS THE LAST BULLETIN FOR THIS SYSTEM.**

**BAY OF BENGAL & ANDAMAN SEA:**

BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIE OVER CENTRAL AND ADJOINING NORTHEAST BAY OF BENGAL.

BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LIE OVER REST NORTHEAST BAY OF BENGAL, SOUTHEAST BAY OF BENGAL AND ANDAMAN SEA. SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED ISOLATED WEAK TO MODERATE CONVECTION LIE OVER REST BAY OF BENGAL.

**PROBABILITY OF CYCLOGENESIS OVER BAY OF BENGAL AND ANDAMAN SEA DURING NEXT 72 HOURS:**

24 HOURS	24-48 HOURS	48-72 HOURS
NIL	NIL	NIL

**ARABIAN SEA:**

BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LIE OVER ARABIAN SEA BETWEEN LATITUDE 7.0 TO 17.0°NORTH AND LONGITUDE 60.0° TO 65.0°EAST AND OVER SOUTHEAST ARABIAN SEA, SOUTH OF LATITUDE 10.0°NORTH.

**PROBABILITY OF CYCLOGENESIS OVER ARABIAN SEA DURING NEXT 72 HOURS:**

24 HOURS	24-48 HOURS	48-72 HOURS
NIL	NIL	NIL

**(M. Mohapatra)  
SCIENTIST 'G' & Head, RSMC New Delhi**