



India Meteorological Department

FDP STORM Bulletin No. 106 (20-06-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC Inference (0300UTC of the day):

- ◆ The Southwest Monsoon could not advance further since last one week due to weak monsoon flow in associations with
 - (i) Weak cross equatorial flow
 - (ii) Unfavourable location of active phase of Madden Julian Oscillation (MJO)
 - (iii) an equatorial eastwards propagating oscillations which lay over central & east Pacific Ocean, Western Hemisphere and Africa and (iv) development of low pressure system over northwest pacific Ocean.
- ◆ However, the monsoon circulation is likely to improve from around 24th June with (i) expected movement of active phase of Madden Julian Oscillation (MJO) to west Equatorial Indian Ocean and adjoining Arabian Sea during next 2-3 days and (ii) development of cyclonic circulations over eastern India leading to strengthening of easterlies winds over Gangetic plains. As a result, the Southwest Monsoon is likely to further advance over remaining parts of Assam, some more parts of Maharashtra, Chhattisgarh, Odisha, West Bengal and some parts of Jharkhand, Bihar and Madhya Pradesh between 23rd to 25th June.
- ◆ The Northern Limit of Monsoon continues to pass through Lat. 19°N/ Long 60°E, Lat 19°N/ Long 70°E, Thane (including Mumbai), Ahmednagar, Buldhana, Amravati, Gondia, Titlagarh, Cuttack, Midnapore, Lat. 24°N/ Long 89°E, Goalpara, Bagdogra and Lat 27°N/ Long 87°E.
- ◆ The cyclonic circulation over north Punjab & neighbourhood now lies over north Haryana & neighbourhood and extends upto 1.5 km above mean sea level.
- ◆ The cyclonic circulation over Madhya Maharashtra & neighbourhood now lies over south Konkan & neighbourhood and extends upto 4.5 km above mean sea level.
- ◆ A cyclonic circulation lies over Bihar & adjoining East Uttar Pradesh and extends upto 0.9 km above mean sea level.
- ◆ A trough runs from Bihar to cyclonic circulation over south Konkan and extends upto 1.5 km above mean sea level across Chhattisgarh and Telangana with the above cyclonic circulation over Bihar embedded in this trough.
- ◆ An East West trough runs from cyclonic circulation over Bihar to East Bangladesh and extends upto 0.9 km above mean sea level.
- ◆ The off shore trough at mean sea level from south Maharashtra coast to Kerala coast now runs from Maharashtra coast to Kerala coast.
- ◆ The cyclonic circulation over west central Bay of Bengal & adjoining Coastal Andhra Pradesh now lies over Central Bay of Bengal & neighbourhood between 3.1 km and 7.6 km above mean sea level.

Satellite Observations during past 24 hrs and current observation:

Current Observation (based on 0900UTC imagery of INSAT 3D):

Clouds descriptions within India:

North: Scattered low/medium clouds with embedded isolated weak convection seen over Jammu & Kashmir. Scattered low/medium clouds over Himachal Pradesh, Uttarakhand and South Central Uttar Pradesh.

East: Scattered low/medium clouds with embedded moderate to intense convection seen over Southeast Bihar, Northeast Jharkhand adjoining Central Gangetic West Bengal. Scattered low/medium clouds with embedded weak to moderate convection seen over Sub-Himalayan West Bengal, Sikkim, Assam, Arunachal Pradesh, Nagaland, Manipur, Odisha and Chhattisgarh. Scattered low/medium clouds over rest parts of the region except West Bihar.

West: Scattered low/medium clouds with embedded weak convection seen over Southeast Rajasthan, Madhya Pradesh and Maharashtra.

South: Scattered low/medium clouds with embedded moderate to intense convection seen over Lakshadweep Andaman & Nicobar Islands and weak to moderate convection seen over Kerala adjoining Tamilnadu and Coastal Karnataka. Scattered low/medium clouds over rest parts of the region.

Arabian Sea: Scattered low/medium clouds with embedded intense to very intense convection seen over East-Central adjoining Southeast Arabian Sea.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded intense to very intense convection seen over North of Lat 9.0N Gulf of Martaban, Tenasserim Coast & Andaman Sea Arakan Coast

Past Observation:

Convection:-

Moderate to Intense convection was observed over BIHAR Madhya Pradesh South Chhattisgarh Bihar Jharkhand South Odisha Karnataka Assam Nagaland Kerala Lakshadweep Andaman & Nicobar Islands. Weak to Moderate convection was observed over most parts of rest India.

OLR:-

Up to **150** wm^{-2} was observed over NE Jharkhand SE Bihar Nagaland Mainpuri Kerala South SIK Lakshadweep Andaman & Nicobar Islands
Up to **280** wm^{-2} was observed over Rest Karnataka SM Maharashtra Telangana East TN Rest NE States (.) and between 300-370 w/m^2 over Gujarat, Rajasthan Punjab Haryana Uttar Pradesh.

Synoptic features:

Westerly Trough & Jet-Stream: Westerly Trough roughly along longitude 68.0E & north of latitude 30.0N

Dynamic Features:-

Wind shear up to 30-40 Knots is observed over Peninsula India and 10-20 Knots observed over rest India.
Positive low level convergence (5 Knots) observed over central India, East India and Peninsula India.

Precipitation:

IMR:
Rainfall up-to 20-50 mm observed over Kerala Coastal Karnataka M Maharashtra South Chhattisgarh South Orissa NE Jharkhand Assam Bay islands.

Rainfall up-to 1-20 mm observed over Rest Karnataka Kerala Meghalaya Tamilnadu Lakshadweep.

DWR and RAPID Observations:

Light to Moderate multiple echoes observed on DWR Bhopal, Goa, Gopalpur, Hyderabad, Kolkata, Mumbai, Nagpur, Paradeep, Patna and Vishakhapatnam and light echoes observed on also seen on DWR Agartala, Delhi, Patiala and Thiruvananthapuram at around 1630IST.

RAPID RGB Satellite imagery at 1500 IST indicates significant convection South Bihar, Jharkhand, Gangetic West Bengal, North Odhisha, Madhya Pradesh, Vidarbha, Maharashtra, South Coastal Karnataka, Kerala and Lakshadweep.

Environmental Condition (dust etc) and its Forecast based on 00UTC of date:

Higher Dust concentration was observed over northern Africa, Arab countries and western part of India. Dust concentration is expected to decrease for next few days over IGP and north India.

Particulate matter concentration is expected to remain in moderate to satisfactory category for next 2 days in Delhi.

Delhi – SAFAR analysis & Forecast	20.06.2018	21.06.2018
PM10 (micro-g/m ³)	159	151
PM2.5 (micro-g/m ³)	59	56

2. NWP MODEL GUIDANCE:

NCMRWF (NCUM forecast based on 00UTC the day):

1. Weather Systems:

Low level Cycirs, Troughs: 00UTC of Day 5: CYCIR East UP and Bihar

Confluence & wind Discontinuity regions: 12 UTC Day 0-2: Wind discontinuity is extending from Mumbai to Patna and moving towards east

Synoptic systems: 00 UTC of 500hpa Day5: Lower level trough WB to Bangladesh region.

2. Location of jet and jet core (>60kt) at 500hPa: Nil

3. Convergence at 850 hPa:

Day/Index: Subdivisions with Lower Level Convergence > 15 x 10⁻⁵ /s

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jharkhand, Konkan Goa, Madhya Maharashtra, TN Puducherry, NI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Bihar, East UP, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, East UP, Uttarakhand, Himachal Pradesh, Vidarbha, TN Puducherry, Kerala,

4. Low level Vorticity:-Positive Vorticity:

Day/Index: Subdivisions with Lower Level Vortex > 15 x 10⁻⁵ /s

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jharkhand, Konkan Goa, Madhya Maharashtra, TN Puducherry, NI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Bihar, East UP, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, East UP, Uttarakhand, Himachal Pradesh, Vidarbha, TN Puducherry, Kerala,

5. Showalter Index: -3 to -4[Very unstable]:

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

6. Spatial distribution of TTI: TTI >50 [Scattered Thunderstorms few severe]:

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Gujarat Region, Saurashtra Kutch,

Day1: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan,

Day3: Arunachal Pradesh, Sub Himalayan WB, Bihar, East UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East MP, Chhattisgarh,

Day4: Arunachal Pradesh, Sub Himalayan WB, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, West MP, East MP,

7. Spatial distribution of K Index :> 35[Very Unstable thunderstorm likely]:

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Gujarat Region, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, NI Karnataka,

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Vidarbha, Andaman Nicobar, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Konkan Goa, Madhya Maharashtra, Marathwada, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, Odisha, East MP, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, Jammu Kashmir, Odisha, East MP, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

IMD GFS (T1534) based on 00UTC the day:-

1. Synoptic Systems: The analysis based on 00 UTC indicates a cyclonic circulation over South Konkan and adjoining area. The forecast shows it will persist till day2. The analysis shows a cyclonic circulation over North Haryana and adjoining areas in lower troposphere (850hPa). The forecast shows it will become less marked on day2. The analysis shows a cyclonic circulation over Bihar and adjoining East Uttar Pradesh at (925hPa). The forecast shows it will persist till day3. A trough extends from Bihar to the cyclonic circulation over South Konkan across Chhattisgarh and Telangana. The forecast shows it will become less marked on day2. Analysis shows an East-West oriented Trough extends from Bihar to East Bangladesh and forecast shows it will persist till day2. The analysis shows an off shore Trough at mean sea level extends from Maharashtra coast to Kerala coast and forecast shows it will persist till day3.

2. Location of Jet and Jet Core (>60kt) at 500hPa: There is no jet core over the Indian region for the next 3 days.

3. Low Level Vorticity {850hPa Positive Vorticity (>12 x 10⁻¹/s)}: Low level Positive Vorticity is seen mostly around the cyclonic circulations, from Foothills of Himalaya, Sikkim to NE states, GWB, SHWB, and over Tamil Nadu, Konkan and Goa, coastal Maharashtra, coastal Karnataka, Kerala and NE states during next 3 days.

4. Spatial distribution of T-storm Initiation Index, Lifted Index, Total Total Index, CAPE, CIN and Sweat Index [High potential for thunderstorm]:

T-Storm Initiation Index (> 3): Over parts of Gujarat, Rajasthan, Bihar, Jharkhand, East Uttar Pradesh, Gangetic West Bengal, SHWB, Orissa, Madhya Pradesh, Vidarbha, Madhya Maharashtra, Marathwada, coastal Maharashtra including Mumbai, Telangana, along east coast of India, coastal and Interior Andhra Pradesh, coastal Tamil Nadu, Sikkim, Assam, Tripura and adjoining areas on all 3 days; over some parts of West Uttar Pradesh and Haryana on day 3.

Lifted Index (< -2): over parts of J&K, Himachal Pradesh, Punjab, Haryana, Gujarat, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Madhya Maharashtra, Marathwada, Vidarbha, coastal Tamil Nadu, Telangana, Chhattisgarh, East and west Madhya Pradesh, coastal Andhra Pradesh, along east and west coast of India, Sikkim, NE states during next 3 days.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Rajasthan, West Uttar Pradesh, Madhya Pradesh, Vidarbha, Chhattisgarh, Gujarat, foothills of Himalaya, Sikkim and Arunachal Pradesh on during next 3 days with highest value of the index lies over parts of Northwest Rajasthan and Punjab and adjoining areas.

Sweat Index (> 300): Is seen over the sub-divisions along east and west coast, areas along foothills of Himalayas, Central India, South Peninsular India, NE states and most parts of the country during next 3 days; significant zone lies over parts of Gujarat, Uttarakhand, Himachal Pradesh, Foothills of Himalaya, Sikkim and Arunachal Pradesh.

CAPE (> 1000): Mostly seen over parts of Gujarat, Rajasthan, coastal areas along east coast, GWB, SHWB, Bihar, Jharkhand, coastal Andhra Pradesh, coastal Tamil Nadu, Madhya Pradesh, Vidarbha, North coastal Maharashtra including Mumbai, North Madhya Maharashtra, Telangana, some parts of Chhattisgarh and Orissa, Assam, Sikkim, Tripura and adjoining areas during next 3 days.; over parts of East Uttar Pradesh from day 2 onwards.

CIN (50-150): Mostly seen over Central India, GWB, SHWB, Bihar, Jharkhand, Uttar Pradesh, east coast of India and parts of Peninsular India mainly over most of the parts of the country except J&K, Northern parts of Himachal Pradesh and Uttarakhand on day 1; over most of the parts of the country except J&K, Himachal Pradesh and Uttarakhand and Southern parts of coastal areas along the west coast on day 2 and 3

5. Rainfall Activity:

Above 130 mm Rainfall: over South coastal Maharashtra on day 2.

70-130 mm Rainfall: over parts of South coastal Maharashtra during next 2 days; over parts of Sikkim and Assam on day 3.

40-70 mm Rainfall: over coastal Maharashtra and Kerala during next 3 days; over parts of South Madhya Maharashtra on day 1; over parts of East Madhya Pradesh, Sikkim and NE states on day 2; over parts of Vidarbha, North Interior Karnataka, Chhattisgarh, adjoining Jharkhand and Orissa, Sikkim, Assam and Arunachal Pradesh on day 3.

10-40 mm Rainfall: over parts of J&K, Uttarakhand, coastal and Interior Karnataka, Kerala, coastal Maharashtra, Konkan and Goa, Sikkim, Tamil Nadu, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, Vidarbha, Andhra Pradesh, Madhya Pradesh, Orissa and NE states during next 3 days; over parts of Jharkhand on day 2 and 3; over parts of East Rajasthan on day 3.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, East Rajasthan, Uttar Pradesh, Foothills of Himalaya, GWB, SHWB, Sikkim, NE states, Bihar, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, Vidarbha, Kerala, Interior Karnataka, Konkan & Goa, coastal Maharashtra including Mumbai, Gujarat, Madhya Maharashtra, Marathwada, Tamil Nadu, Telangana and Andhra Pradesh during next 3 days; over parts of West Rajasthan on day 3.

IMD WRF (9km based on 00UTC of the day):

1. Model Reflectivity (Max. dBz):>25 dBZ Model Reflectivity: over parts of J&K, coastal areas along the west coast, Tamil Nadu, Telangana, Konkan and Goa, Vidarbha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Orissa, Andhra Pradesh, Kerala, South Coastal Maharashtra, Southern parts of Madhya Pradesh, Marathwada, Sikkim, NE states and over most of the parts of South Peninsular India during next 3 days; over parts of East Bihar, GWB, SHWB and adjoining areas from day 2.

2. Spatial distribution of Total Total Index, K-Index, CAPE and CIN [High potential for thunderstorm]:

Total Index (> 50): The value of the index below the threshold value is seen over parts of Gujarat, adjoining Southwest Rajasthan, East Uttar Pradesh, Bihar, Jharkhand, Chattisgarh, Madhya Pradesh, Orissa, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidarbha, Sikkim, SHWB, GWB and NE states during next 3 days.

K-Index (> 35): Less than threshold value is observed over most of the part of the country during the next 3 days. Prominent values are found over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Rajasthan, Madhya Pradesh, Vidarbha, coastal Maharashtra including Mumbai, Madhya Maharashtra, Marathwada, Karnataka, Telangana, Chhattisgarh, Andhra Pradesh, Kerala, Tamil Nadu, Gujarat, Orissa, Bihar, Jharkhand, Uttar Pradesh, GWB, SHWB, Foothills of Himalaya, Sikkim and NE states.

CAPE (> 1500): Greater than threshold value over Gujarat, west Rajasthan, coastal areas of west coast, coastal Maharashtra including Mumbai, Konkan & Goa, coastal Karnataka, coastal Kerala, coastal areas along the east coast, SHWB, GWB, Orissa, coastal Andhra Pradesh, coastal Tamil Nadu, Bihar, Jharkhand Orissa, Madhya Pradesh, Vidarbha, Madhya Maharashtra, Marathwada, Telangana and NE states during next 3 days; on day 2 and 3 it remain over same region but also appears over parts East and West Uttar Pradesh.

CIN (50-150): The value of the index lies in the 50-150 range over parts of North India, Northwest India, central India, Bihar Jharkhand, GWB and SHWB, NE states except J&K, Himachal Pradesh, Uttarakhand, Northern parts of West Uttar Pradesh and extreme South Peninsular India on all three days; significant zone with maximum value of index lies over parts of Gujarat, Rajasthan, Punjab, Haryana, Madhya Pradesh and Uttar Pradesh.

3. Rainfall and thunderstorm activity:

Above 200 mm Rainfall: over parts of Sikkim on day 3.

130-200 mm Rainfall: over pockets of Kerala, Sikkim, Arunachal Pradesh and Assam on day 2 and 3; over parts of coastal Karnataka on day 2.

70-130 mm Rainfall: over parts of South coastal Karnataka, Kerala adjoining south Tamil Nadu, Sikkim, Assam, Meghalaya and Arunachal Pradesh on all three days; over parts of Telangana on day 2; over parts of South coastal Maharashtra, Konkan and Goa, East Bihar and SHWB on day 3.

40-70 mm Rainfall: over west coast from South coastal Maharashtra, Konkan and Goa to Kerala and adjoining South Tamil Nadu, Sikkim and NE states during next 3 days; over parts of Telangana adjoining Andhra Pradesh, Marathwada on day 2; over parts of East Bihar, Vidarbha, Southwest Madhya Pradesh and coastal Andhra Pradesh on day 3.

10-40 mm Rainfall: Over parts of J&K, Foothills of Himalaya, Madhya Pradesh, Vidarbha, Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, coastal Maharashtra including Mumbai, Sikkim, Orissa, Telangana, Madhya Maharashtra, Marathwada, Chhattisgarh, Andhra Pradesh, Sikkim and NE states during next 3 days; on day 2 and 3 over parts of Bihar, Jharkhand, GWB and SHWB.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Punjab, Haryana and adjoining areas, Rajasthan, Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, Sikkim, GWB, SHWB, Uttar Pradesh, Bihar, Jharkhand, Orissa, Telangana, Madhya Maharashtra, Marathwada, Vidarbha, coastal Maharashtra including Mumbai, Madhya Pradesh, Andhra Pradesh, Gujarat and NE states during next 3 days.

3. IOP ADVISORY FOR 24 and 48Hrs:

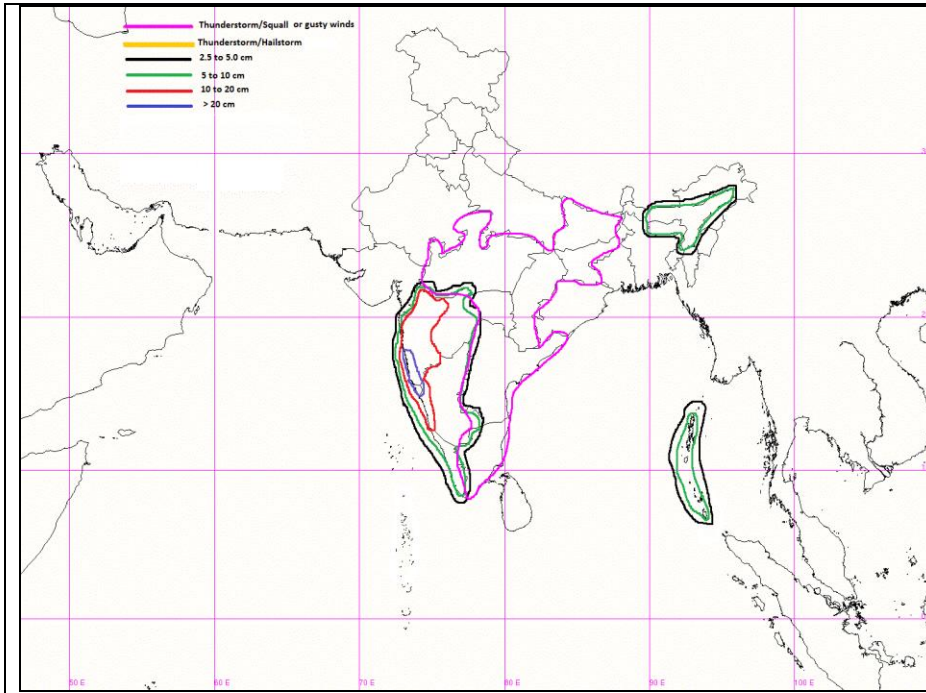
Summary and Conclusions:

- Synoptic analysis indicates that the off shore trough at mean sea level runs from Maharashtra coast to Kerala coast. Also yesterday's cyclonic circulation over Madhya Maharashtra & neighbourhood has shifted to south Konkan & neighbourhood and extends upto 4.5 km above mean sea level. As a consequence of these meteorological conditions, Konkan & Goa is expected scattered heavy rainfall with isolated very heavy and extremely heavy falls on Day 1 & Day 2 while Madhya Maharashtra and Coastal Karnataka are expected isolated heavy to very heavy rainfall on Day 1 & Day 2. Marathwada, Kerala and Interior Karnataka are also likely isolated heavy rainfall on Day 1 & Day 2 with isolated very heavy falls over Kerala on Day1.
- Synoptic analysis also indicates the presence of a cyclonic circulation over Bihar & adjoining East Uttar Pradesh extending upto 0.9 km above mean sea level and a trough running from Bihar to cyclonic circulation over south Konkan extending upto 1.5 km above mean sea level across Chhattisgarh & Telangana with the above cyclonic circulation over Bihar embedded in this trough. Under the influence of these systems, thunderstorm activity accompanied with gusty winds is expected over entire Central India, Bihar, Chhattisgarh, Telangana, Rayalaseema, Coastal Andhra Pradesh and Tamilnadu on Day 1 which is likely to be confined only to Telangana, Rayalaseema, Coastal Andhra Pradesh and Tamilnadu on Day 2.
- The prevailing synoptic conditions together with NWP model analysis also indicates possibility of isolated heavy rainfall over Assam & Meghalaya and Andaman & Nicobar Islands on Day 1 and over Assam & Meghalaya and Arunachal Pradesh on Day 2.

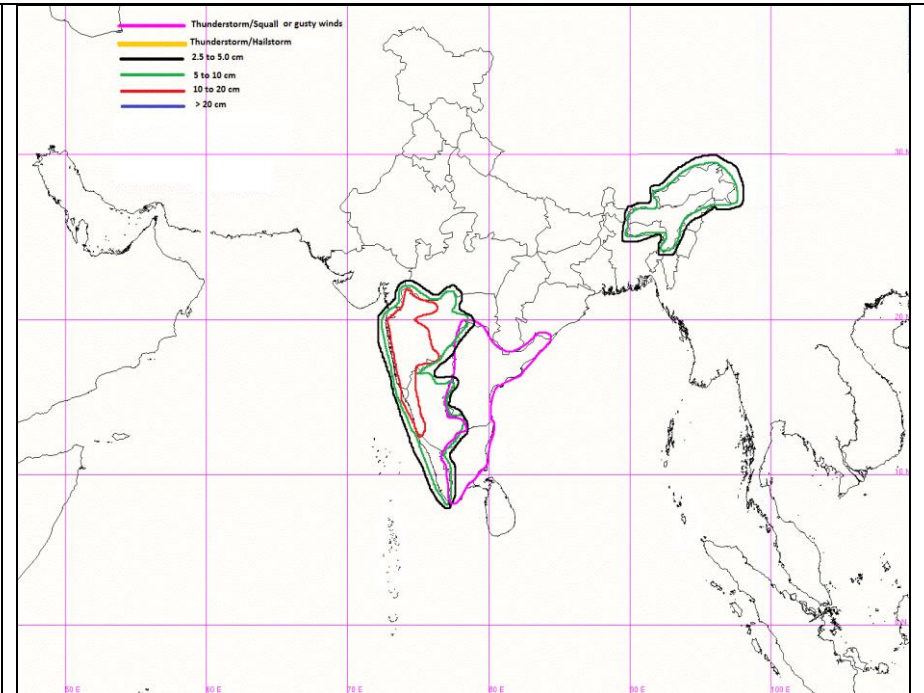
IOP Area for Day-1 & Day-2:

24 hour Advisory for IOP:	48 hour Advisory for IOP:
Significant Rainfall: Andaman & Nicobar Islands Kerala, Karnataka, Konkan & Goa, Madhya Maharashtra, Marathwada Assam & Meghalaya	Significant Rainfall: Kerala, Coastal Karnataka, South Interior Karnataka Konkan & Goa, Madhya Maharashtra, Marathwada Arunachal Pradesh, Assam & Meghalaya
Thunderstorm with squall or gusty winds: Tamilnadu, Rayalaseema, Telangana, Coastal Andhra Pradesh Vidarbha, Madhya Pradesh, Chhattisgarh Jharkhand, Bihar	Thunderstorm with squall or gusty winds: Tamilnadu, Rayalaseema, Telangana, Coastal Andhra Pradesh
Thunderstorm with squall and hail Nil	Thunderstorm with squall and hail Nil
Thunderstorm/Duststorm: Nil	Thunderstorm/Duststorm: Nil

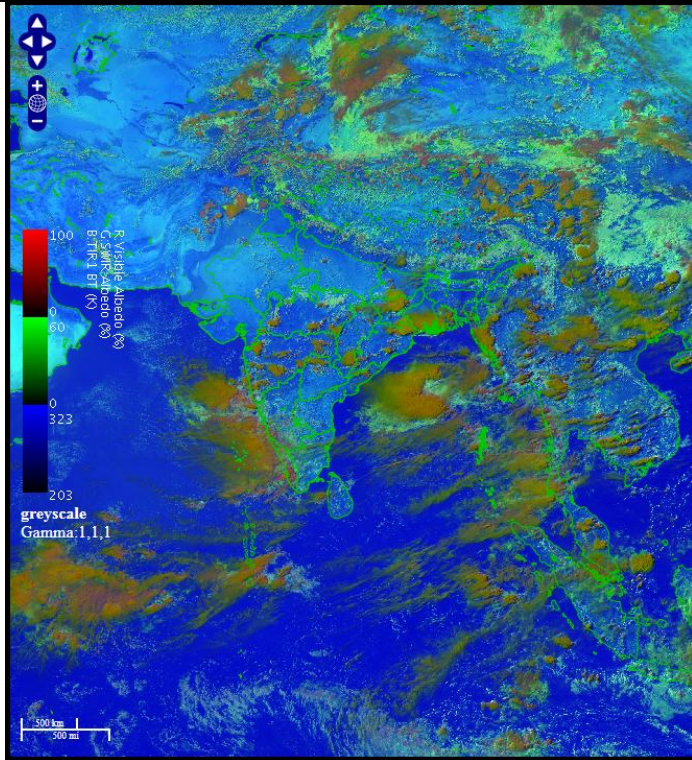
Graphical Presentation of Potential Areas for Severe Weather:



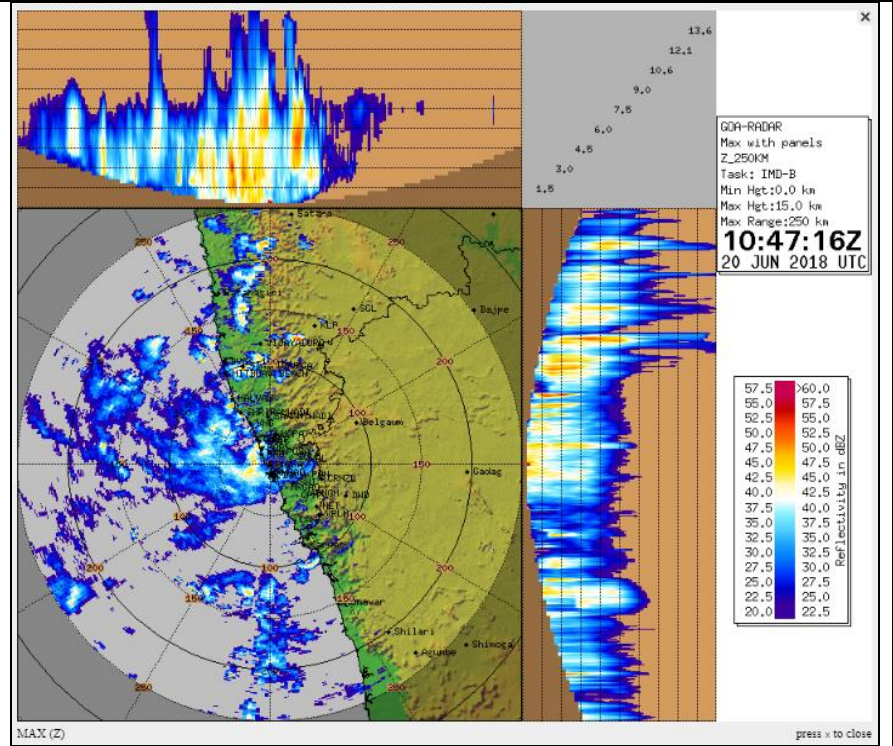
IOP Advisory for 24 hours



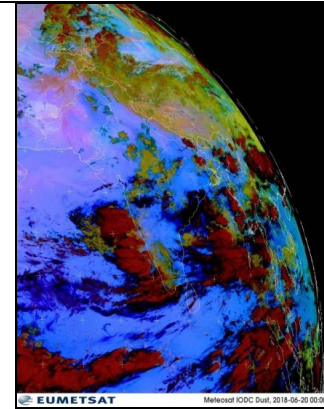
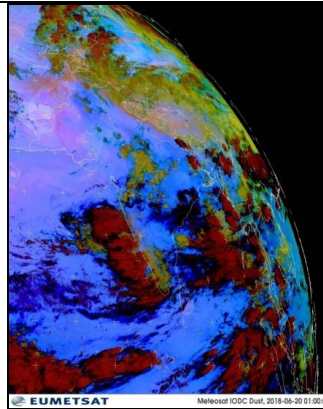
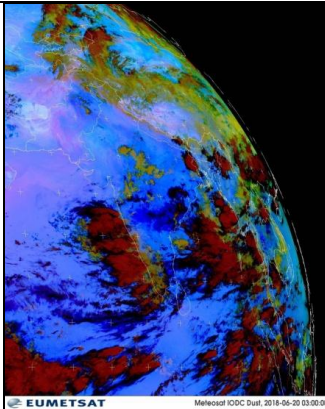
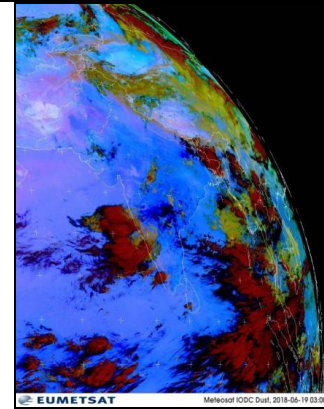
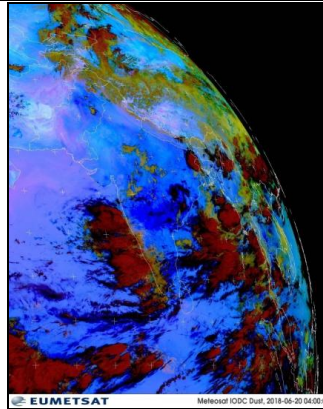
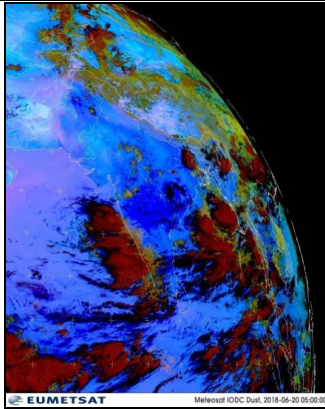
IOP Advisory for 48 hours



RAPID RGB Satellite Imagery at 1500 IST

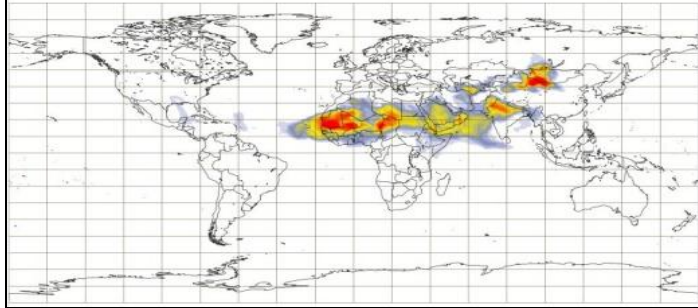


DWR Goa reflectivity at 1617 IST

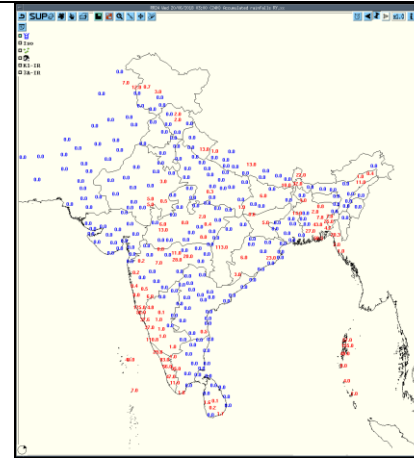


Observed Satellite Dust Images of today

Dust aerosol optical depth at 550 nm (provided by CAMS, the Copernicus Atmosphere Monitoring Service)
 Tuesday 19 Jun, 00 UTC T+24 Valid: Wednesday 20 Jun, 00 UTC

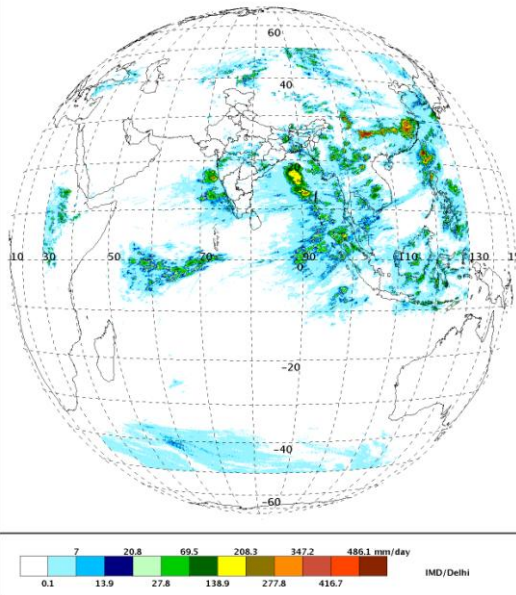


Dust Forecast



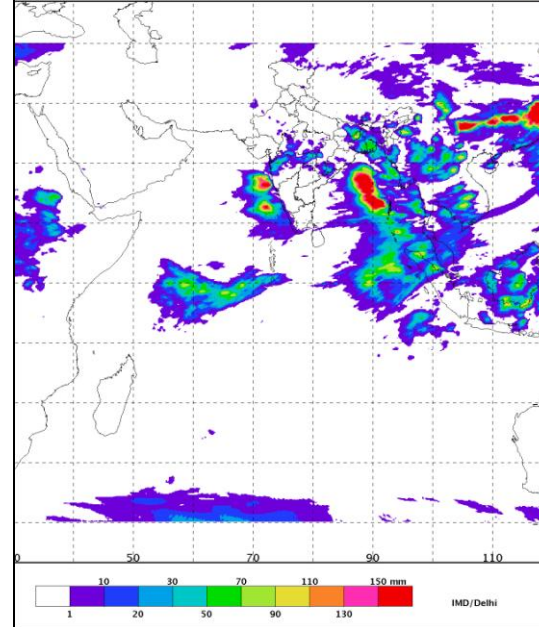
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

SAT :INSAT-3D IMG 19-06-2018 (03:30 GMT) to 20-06-2018 (03:00 GMT)
 Precipitation(HE) Daily
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK

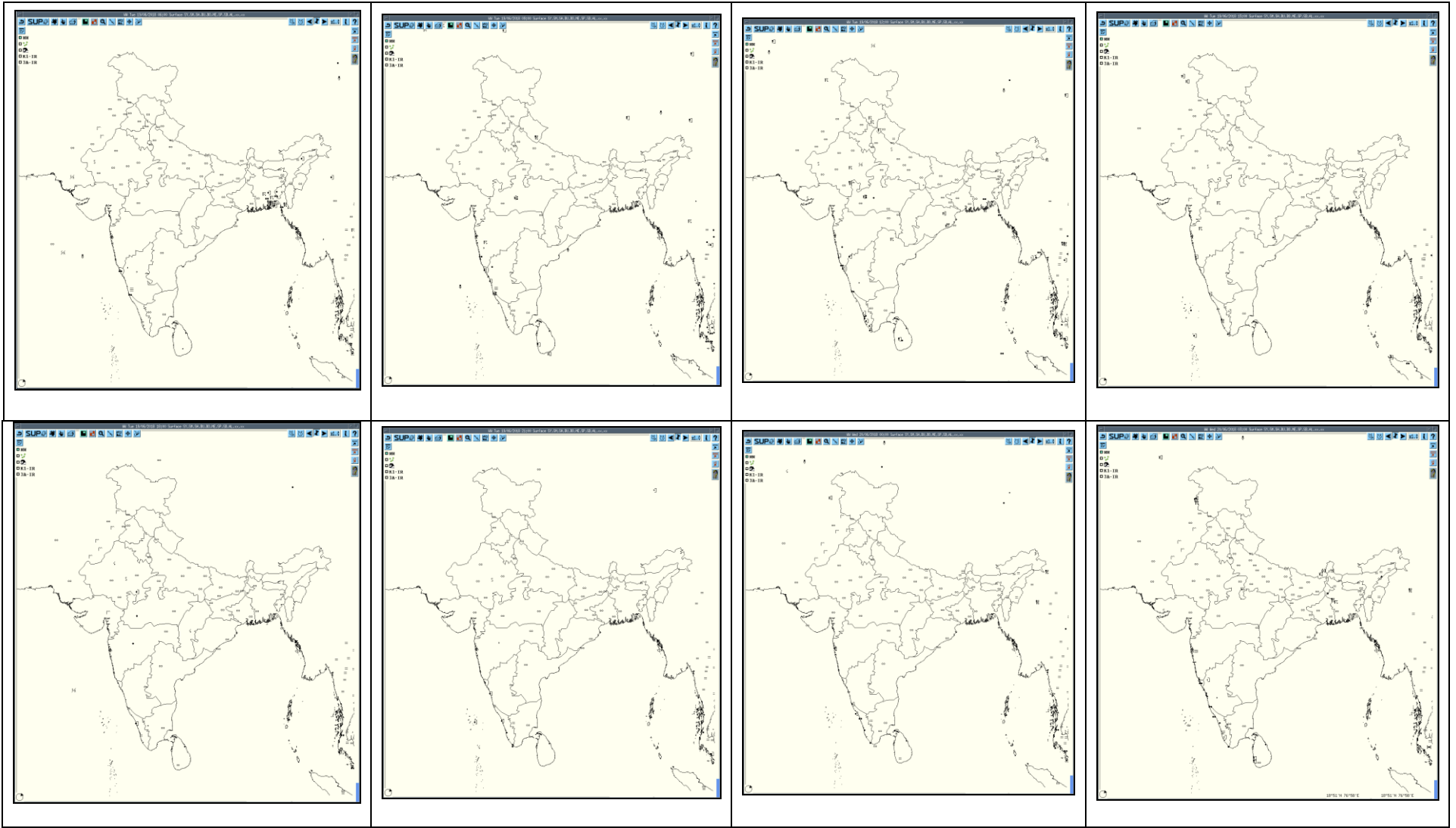


HEM

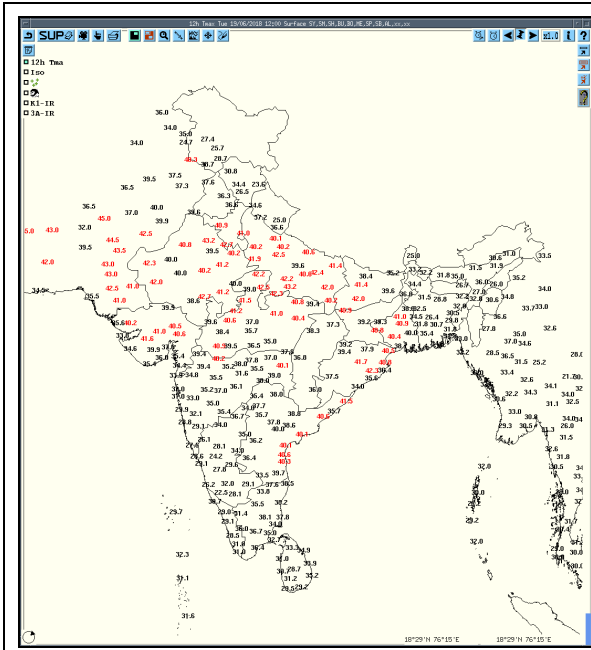
SAT :INSAT-3D IMG 19-06-2018 (03:30 GMT) to 20-06-2018 (03:00 GMT)
 INSAT Multispectral Rainfall(Daily)
 L3G BINNED GEOPHYSICAL PARAMETER GRIDDED



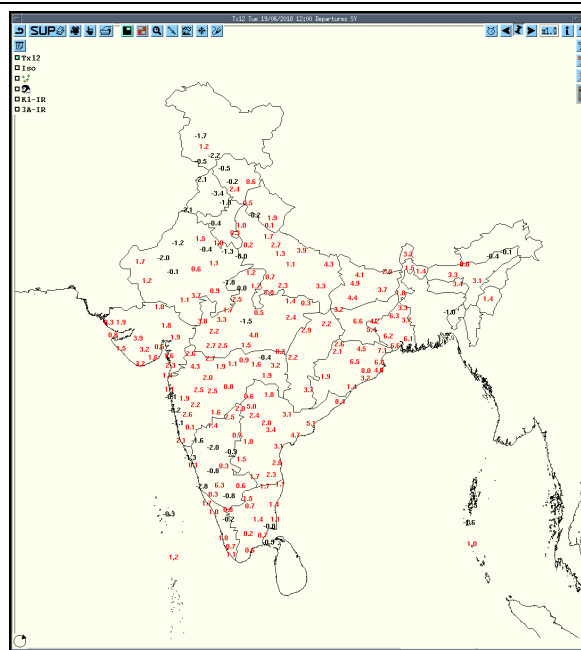
IMR



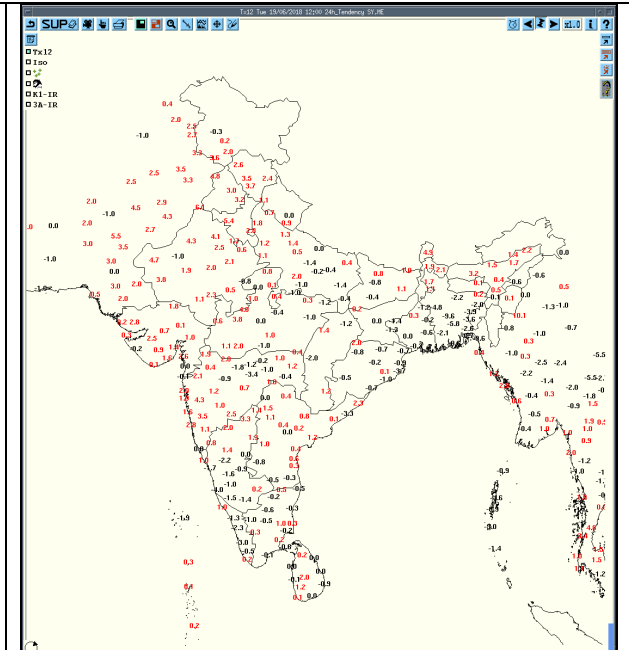
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



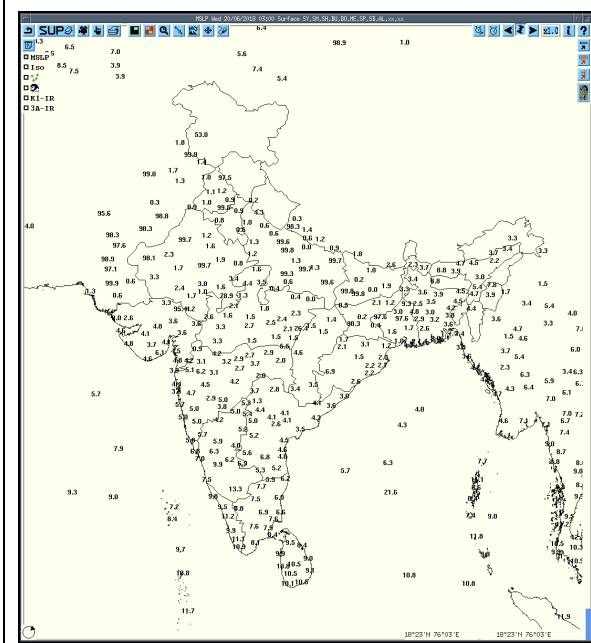
Tmax



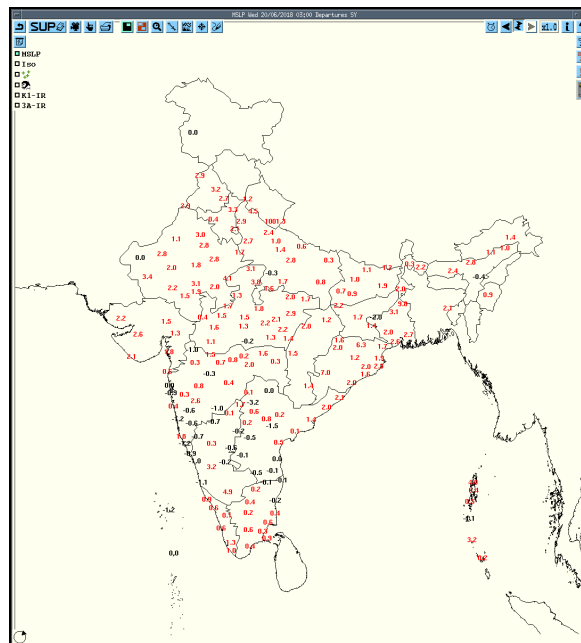
Departure Tmax



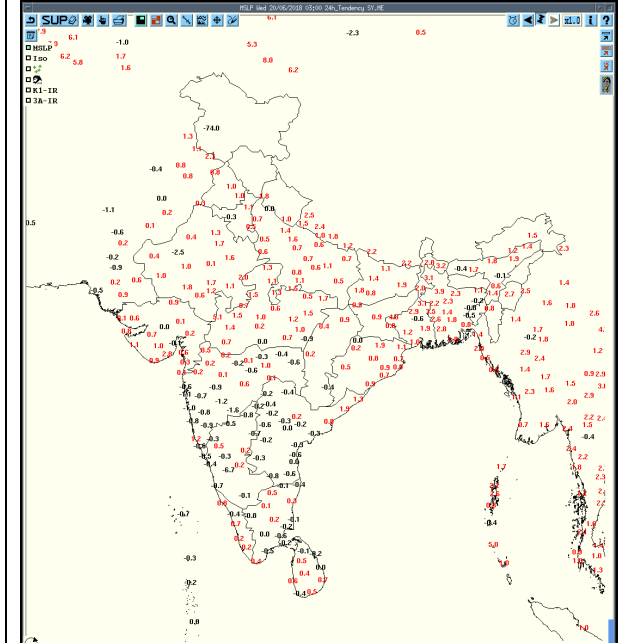
Tendency Tmax



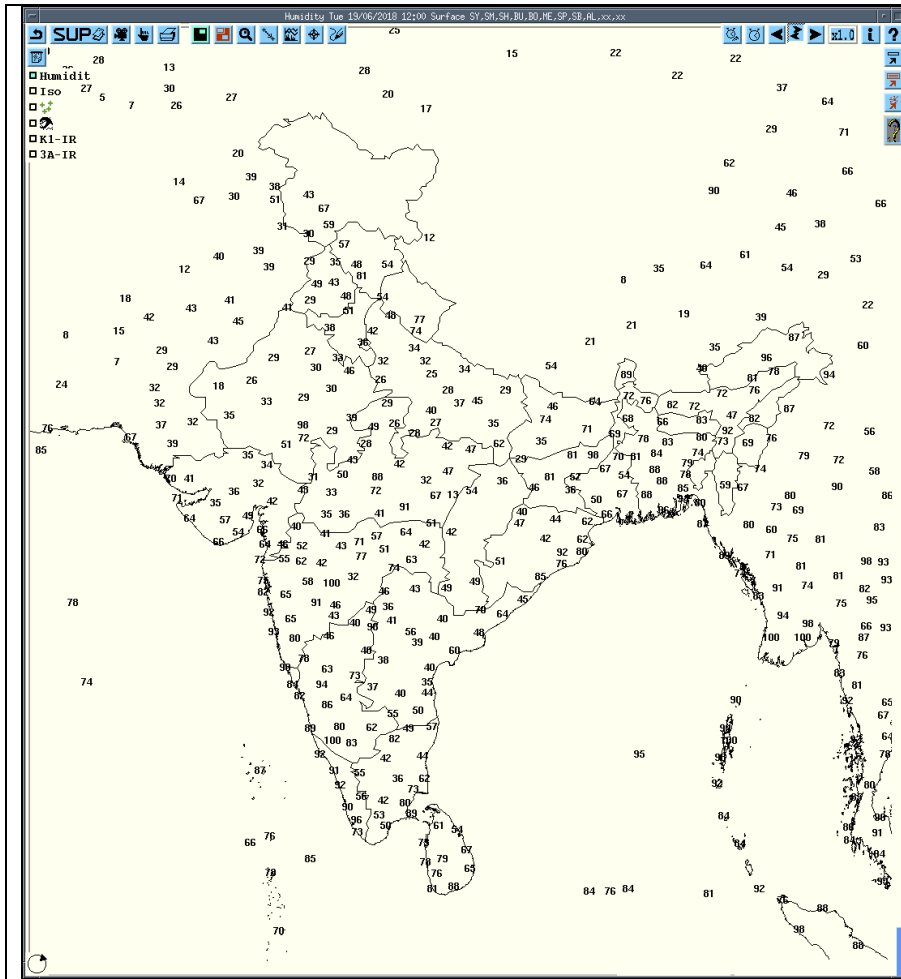
MSLP



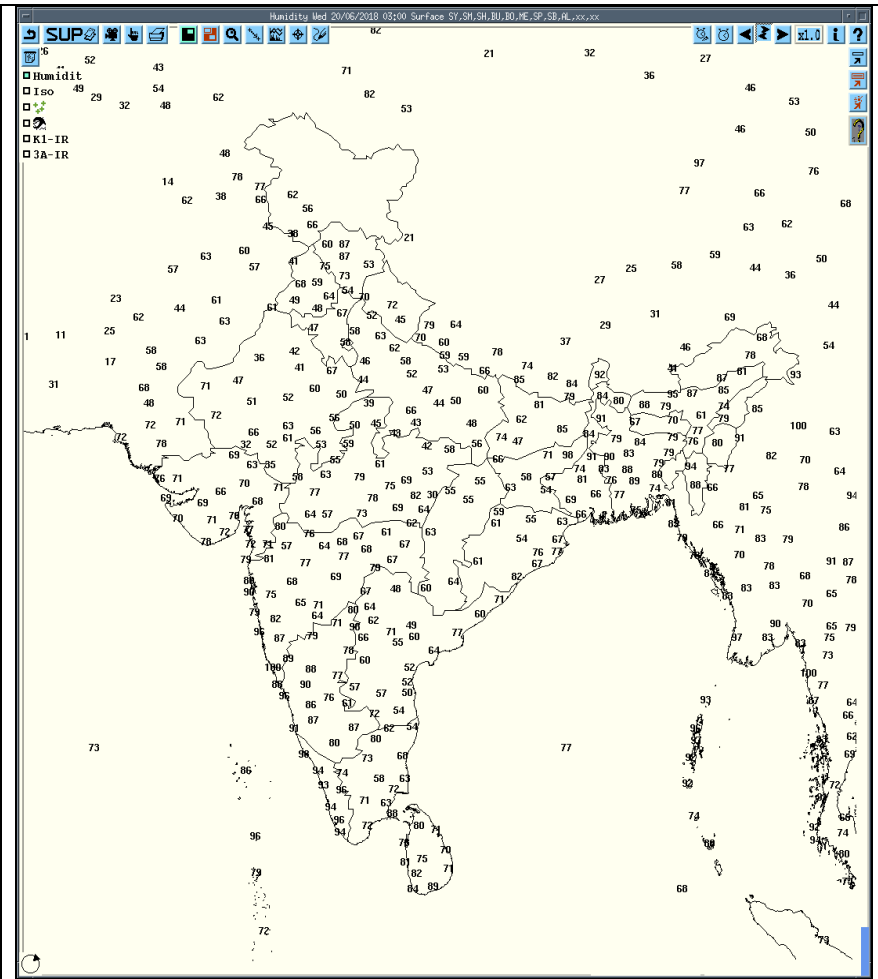
Departure MSLP



Tendency MSLP



RH at 1200UTC yesterday



RH at 0300UTC today

Past 24 hours DWR Report:

DWR Station	Date	Time interval of observation	Organization of the cells (isolated single cell/multiple cells convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station & direction of movement	Remarks	Associated severe weather, if any	Districts affected	
Lucknow	20/06/18	190300-190812	NIL	NIL	NIL	NIL	NIL	
		190812-191042	A Single cell developed at 0812UTC over 150km in NW direction from station with 4km height (echo top 31dbz) and maximum reflectivity 38dbz.	Single cell move towards in SE with 20km/h w.r.t radar station	Single cell weekend and dissipated at 1042UTC over 125km in NW.	TS/RA	Shahjahanpur, Lakhimpur	
		191042 - 191742	NIL	NIL	NIL	NIL	NIL	NIL
		191742 - 192112	A Single cell developed at 1742UTC over 275km in WSW direction from station with 5km height (echo top 33dbz) and maximum reflectivity 48.5dbz.	Single cell move towards in ESE with 25km/h w.r.t radar station	Single cell weekend and dissipated at 2112UTC over 120km in SW from station.	TS/RA	Jalaun, Hamirpur Kanpur	
		192112 - 200300	NIL	NIL	NIL	NIL	NIL	NIL
Patiala	20-06-18	19/06/2018 0300 - 0600	No Significant Echo	-----		-----	-----	
		19/06/2018 0600 -0900	No Significant Echo	-----		-----	-----	
		19/06/2018 0900- 1200	MULTIPLE CELLS DBZ 57.0 HT. 08-10 KM	NE SECTOR MOVEMENT Ely - WARDS		RA/TS	Palampur, Ndaun, Hamirpur, Mandi, Sundernager, Bhunter, Rampur, Nahan, Musoorie, Gangotri, Agsthmuni And Their Adjoining Areas.	
		19/06/2018 1200 - 1500	MULTIPLE CELLS DBZ 58.5 HT. 08-10KM	NE SECTORS MOVEMENT NE WARDS		RA	Hamirpur, Mandi, Sundernager, Bhunter, Rampur And Their Adjoining Areas.	
		19/06/2018 1500 -0252	No Significant Echo	-----		--	-----	

Radars Station Name	Date	Time Interval Of Observation (UTC)	Organisation Of The Cells(Isolated Single Cells/ Multiple Cells/ Convective Regions/ Squall Lines) With Height Of 20 dbZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Patna	20/06/18	190300-190752	NIL	NIL	NIL	NIL	Nil
		190752-191202	Isolated Multiple Cell Maximum Reflectivity: 44.5 dBZ Echo Top:12.5 KM	Range: 106 KM from DWR Patna in South-East direction Movement: South-Easterly	Warning Issued	THUNDER & RAIN	Patna, Nalanda, Nawada, Jehanabad, Samastipur, Begusarai, Lakhisarai
		191202-191402	Isolated Multiple Cell Maximum Reflectivity: 45 dBZ Echo Top:12.5 KM	Range: 163 KM from DWR Patna in South-East direction Movement: South-Easterly	Warning Issued	NIL	Banka, Bhagalpur ,Lakhisarai, Jamui
		191402192232	NIL	NIL	NIL	NIL	Nil
		192232-192352	Isolated Multiple Cell Maximum Reflectivity: 37.5 dBZ, Echo Top: 9.5 KM	Range: 153 KM from DWR Patna in SOUTH-EAST direction Movement: South Easterly	Warning Issued	NIL	Banka, Bhagalpur, Lakhisarai, Begusarai, Jamui
		192352-200300	NIL	NIL	NIL	NIL	NIL
Jaipur	20/06/18	0802 UTC of 19/06/18 to 0222 UTC of 20/06/18	Multiple cell with average height of 6.0km & maximum reflectivity 61.5 dBZ	Multiple cell develop from 0802 UTC of 19/06/18 towards NW W & SW of Jaipur and moved to E, SE Wards at speed 15-20 km/hr	Multiple cell develop from 0802 UTC of 19/06/18 towards NW W & SW of Jaipur and reaches maximum reflectivity from 0842 UTC to 1442 UTC of 19/06/2018 and Died at 0222 UTC OF 20.06.2018.	Dust storm/Thunderrstorm/ Light to moderate rain at Isolated places	Nagaur, Sawai Madhopur, Karauli, Ajmer, Bharatpur, Dholpur, Sikar, Jaipur, Bundi, KOTA, Jhalawar, Baran, Dausa, Churu, Jhunjhunu, Alwar, Rawatbhata, Chittorgarh DISTRICTS.

RadAR Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
VISAKHAPATNAM	19/06/18	0900UTC	Multiple cb cells formed near DWR with max. reflectivity of 58 dBz and height of 10kms	NNW(37kms) & W(18 kms) moving SEly	CB cells are developing	Thunderstorm with rain	Vizianagaram, Visakhapatnam Dist.(AP) and Koraput Dist(Orissa)
VISAKHAPATNAM	19/06/18	1200UTC	Multiple cb cells from SSW to NE near DWR with max. reflectivity of 58 dBZ and height of 10kms	38 km to 100 km moving SEly	CB cells are developed and well matured	Thunderstorm with rain	Srikakulam, Vizianagaram, Visakhapatnam Dist.(AP) and Ganjam, Koraput Dist(Orissa)
VISAKHAPATNAM	19/06/18	1500UTC	Multiple cb cells from SSW, NE to NNW with max. reflectivity of 54 dBZ and height of 9kms	70 km to 168 km moving SEly	CB cells are developed and dissipating started from 1351 UTC	Thunderstorm with rain	Srikakulam, Visakhapatnam Dist.(AP) and Ganjam, Malkangiri Dist(Orissa)
VISAKHAPATNAM	19/06/18	1800UTC	Convective region towards NW with max. reflectivity of 50 dBZ and height of 9kms	161 km(NW) and moving SEly	dissipated	-	Bastar Dist(Orissa)
VISAKHAPATNAM	20/06/18	0000UTC	Multiple cb cells in sea with maximum reflectivity of 55 dbz with height of 8 kms	S (154 kms) moving SE ly	Sinc last observation cb cells are developing and matured at 2001 UTC with max. reflectivity of 55dbz dissipated at 2241 UTC	thunderstorm	Bay of Bengal
Agartala	20/06/18	190300 to 200300	MUTIPLE CELLS FOUND AT 19/0302Z OVER SOUTHERN PARTS OF TRIPURA ; 12KMS ; 42DBZ	OVERHEAD & ENTIRE SOUTH OF TRIPURA ; 30KMPH ; SE'LY	CELL DISSIPATED OVER HILLS OF MIZORAM AT 19/0802Z	TSRA	ALL DIST. OF SOUTH TRIPURA

Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)						
Station	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	19-06-18	1515	1630
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	19-06-18	1950	2040
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	19-06-18	1700	1735
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	19-06-18	1632	1920
Dehradun	Northwest India	Uttarakhand	Thunderstorm	19-06-18	1550	1730
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	19-06-18	1330	1530
Churk	Northwest India	East Uttar Pradesh	Thunderstorm	20-06-18	1640	1700
Orai	Northwest India	West Uttar Pradesh	Thunderstorm	20-06-18	0200	0230
Ajmer	Northwest India	East Rajasthan	Thunderstorm	19-06-18	1710	1755
Bundi	Northwest India	East Rajasthan	Thunderstorm	19-06-18	1645 2115	1715 2130
Jaipur	Northwest India	East Rajasthan	Thunderstorm	19-06-18	1750	1850
Dabok	Northwest India	East Rajasthan	Thunderstorm	19-06-18	1548	1650
Kota	Northwest India	East Rajasthan	Thunderstorm	19-06-18	1740	1750
Akola	Central India	Vidarbha	Thunderstorm	19-06-18	1530 1930	1600 2000
Yeotmal	Central India	Vidarbha	Thunderstorm	19-06-18	1800	1830
Bhopal	Central India	Madhya Pradesh	Hailstorm (Diameter: xx)	19-06-18	1420	1422
Indore	Central India	Madhya Pradesh	Thunderstorm	19-06-18	1832	2050
Jagdalpur	Central India	Chhattisgarh	Thunderstorm	19-06-18	1910	1955
Mana	Central India	Chhattisgarh	Thunderstorm	19-06-18	2200	2310
Agartala	Northeast India	Tripura	Thunderstorm	19-06-18	19/0830	19/1020
Sriniketan	East India	GWB	Thunderstorm	19-06-18	1745	1825
Patna	East India	Bihar	Thunderstorm	19-06-18	1710	1740
Bhubaneswar	East India	Odisha	Thunderstorm	19-06-18	1545	1720
Keonjhar	East India	Odisha	Thunderstorm	19-06-18	1545	1640
Port Blair	Andaman & Nicobar	Andaman & Nicobar	Thunderstorm	20-06-18	0220	0310
Ramagundam	South India	Telangana	Thunderstorm	19-06-18	1700	1800
Visakhapatnam	South India	Coastal Andhra Pradesh	Thunderstorm	19-06-18	1515	1700
Kannur	South India	Kerala	Thunderstorm	19-06-18	1615	1645
Karipur A P	South India	Kerala	Thunderstorm	19-06-18	1005	1205
Mangaluru AP	South India	Coastal Karnataka	Thunderstorm	19-06-18	1155	1350
Panambur	South India	Coastal Karnataka	Thunderstorm	19-06-18	0845 1140	0940 1230

IMPORTANT LINKS:

For NCMRWF NWP products:(<http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php>)

For IMD NWP products:(http://nwp.imd.gov.in/diagpro_new.php)

For Synoptic plotted data and charts

<http://amssdelhi.gov.in/>

<http://www.amsskolkata.gov.in/>

For RANDHRA PRADESHID tool:

http://rAndhra_Pradeshid.imd.gov.in/

Low Level Winds

http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/LLW/MAR_2017/?C=M;O=D

Upper level winds

http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/HLW/MAR_2017/?C=M;O=D

Past24hourHEMandIMRrainfall(upto03UTCoftoday)

IMR: http://satellite.imd.gov.in/img/3Ddaily_imr.jpg

HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg

ForRadarimagesofthepast24hoursincludingmosaicofimages:

http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T- Phigram

http://satellite.imd.gov.in/mAndhra_Pradesh_skm2.html

WEATHER SYMBOLS:



+ thunderstorm



+ heavy thunderstorm



sandstorm or dust storm



squall



hail shower



tropical storm



+ tornado



+ lightning



+ hurricane

∞	haze
~	smoke
⊞	dust or sand storm
≡	fog
⋄	drizzle
•	rain
✱	snow
▽	showers
△	hail
⊞	thunderstorm

Weather Symbols