



India Meteorological Department

FDP STORM Bulletin No. 71 (16-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ The Western Disturbance as an upper air cyclonic circulation over east Iran & neighbourhood now lies over north Pakistan & adjoining Afghanistan at 5.8 km above mean sea level.
- ◆ The other Western Disturbance as a trough in mid tropospheric westerlies with its axis at 5.8 km above mean level roughly along Long. 82°E to the north of lat. 34°N persists.
- ◆ A fresh Western Disturbance as a trough in mid tropospheric westerlies with its axis at 5.8 km above mean level runs roughly along Long 55°E to the north of lat 32°N.
- ◆ The cyclonic circulation over west Uttar Pradesh & neighbourhood extending upto 0.9 km above mean sea level persists.
- ◆ The cyclonic circulation over southeast Rajasthan & adjoining West Madhya Pradesh persists and now extends upto 0.9 km above mean sea level.
- ◆ The trough at 1.5 km above mean sea level from east Uttar Pradesh to Vidarbha across east Madhya Pradesh persists.
- ◆ The cyclonic circulation over east Bihar & neighbourhood persists and now extends upto 0.9 km above mean sea level.
- ◆ The north south trough runs from roughly along Long. 92°E to the north of 24°N between 5.8 km & 7.6 km above mean sea level persists.
- ◆ The north south wind discontinuity from North Interior Karnataka to south Tamilnadu across south Interior Karnataka now runs from South Interior Karnataka to north Interior Tamilnadu and extends upto 0.9 km above mean sea level.
- ◆ The cyclonic circulation over Comorin Maldives area and neighbourhood persists and now extends upto 3.1 km above mean sea level.
- ◆ A cyclonic circulation lies over east Assam & neighbourhood and extends upto 1.5 km above mean sea level.
- ◆ An east west trough runs roughly along latitude 14°N at 5.8 km above mean sea level.
- ◆ The well marked low pressure area over southwest Arabian Sea & neighbourhood now lies over southwest Arabian sea & adjoining west central Arabian sea and gulf of Aden with associated cyclonic circulation extending upto 5.8 km above mean sea level. It is likely to concentrate into a depression during next 24 hours and likely to move west north-westwards towards Yemen Coast across Gulf of Aden during next 48 hours.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

Current Observation (based on 0600UTC imagery of INSAT 3D):

Western Disturbance (WD):

Scattered multi-layered clouds with embedded weak convection were seen over North Afghanistan, extreme North Pakistan, Northwest Jammu & Kashmir and over area between Lat 37.0N To 43.0N Long 66.0E to 90.0E in association with WD over the area.

Clouds descriptions within India:

Isolated low/medium clouds with embedded intense to very intense convection seen over Southeast Gangetic West Bengal, Southeast Tamilnadu and Lakshadweep (**Minimum CTT Minus 84 Deg C**). Broken low/medium clouds with embedded weak to moderate convection seen over Kerala, rest Tamilnadu and Nicobar Islands. Scattered low/medium clouds with embedded weak to moderate convection seen over Jammu & Kashmir, Himachal Pradesh, Southeast Punjab, North Haryana, Delhi, West Uttar Pradesh, North Uttarakhand, Central Chhattisgarh, North Odisha, Bihar Southeast Jharkhand, rest & rest Gangetic West Bengal, Sikkim, Northeast states and Isolated weak convection over North Rajasthan and East Madhya Pradesh. Isolated low/medium clouds seen over Vidarbha and rest Tamilnadu

Arabian Sea:-

Scattered low/medium clouds with embedded intense to very intense convection seen over Lakshadweep, Southeast Arabian Sea Off South Kerala Coast Comorin & Gulf of Mannar.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded intense to very intense convective seen over South Andaman sea South Tenasserim Coast. Scattered low/medium clouds with embedded moderate to intense convective seen over Southwest Bay.

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over J&K Himachal Pradesh Uttarakhand Punjab Haryana Delhi West Uttar Pradesh East Rajasthan West Madhya Pradesh north Chhattisgarh Odisha east Bihar Jharkhand Gangetic West Bengal Sub-Himalayan West Bengal Sikkim Assam Meghalaya Nagaland Manipur Mizoram Tripura South Konkan & Goa Andhra Pradesh south Telangana Rayalaseema Karnataka Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands and weak to moderate convection observed over east Madhya Pradesh Arunachal Pradesh.

OLR:

Upto 230 wm^{-2} observed over J&K North Himachal Pradesh North Uttarakhand Punjab Sub-Himalayan West Bengal Sikkim north-east States south Maharashtra Konkan & Goa Andhra Pradesh Telangana Rayalaseema Karnataka Kerala Tamilnadu Lakshadweep Andaman & Nicobar.

Westerly Trough & Jet Stream: Westerly Trough & Jet Stream are not observed over Indian Region.

Dynamic Features:

Wind Shear 30-40 knots is observed over North India, 15-20 knots over Central India, North-East India and 5-15 knots over south peninsula India.

Negative Positive shear tendency is observed over east Madhya Pradesh north Chhattisgarh adjoining Jharkhand.

Positive Vorticity (850 hPa) more than 50 ($\times 10^{-5}/\text{s}$) is observed over west Uttar Pradesh east Bihar Jharkhand Gangetic West Bengal.

Positive Low Level Convergence is observed over Odisha Meghalaya adjoining Assam.

Precipitation:

Rainfall up to 27.8-139.8 mm was observed over north-west J&K Kerala east Meghalaya south Madhya Maharashtra south Karnataka central Kerala central Tamilnadu (.)

Rainfall up to 0.1-13.9 mm was observed over Punjab north Haryana Delhi west Uttarpradesh east Bihar north Chhattisgarh Gangetic West Bengal Sub-Himalayan West Bengal Sikkim north-east States rest Kerala rest Tamilnadu Lakshadweep Andaman & Nicobar Island.

DWR and RAPID Observations:

Isolated/multiple Strong echoes (dBZ > 55 and height >15km) was observed on DWR Kolkata. Isolated/multiple moderate echoes (dBZ around 45-50 and height>10km) was observed on DWR Chennai, Machilipatnam, Hyderabad, Nagpur, Pradeep, Srinagar, Kochi and Thiruvananthapuram at around 1540IST.

RAPID RGB Satellite imagery at 1430 IST indicated significant convection over Jammu & Kashmir, North Himachal Pradesh, East Uttarakhand, Southwest Madhya Pradesh, North Chhattisgarh, Central Jharkhand adjoining Gangetic West Bengal, Central Odisha, South Interior Karnataka, South Kerala Tamilnadu and Lakshadweep Islands.

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	16.05.2018	17.05.2018
PM10 (micro-g/m ³)	218	185
PM2.5 (micro-g/m ³)	70	60

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:

12UTC of Day 1-3: 850/925 hPa weak CYCIR southeast Arabian Sea tracking west-northwest towards gulf of Aden likely to intensify subsequently

00UTC of Day 1-4: A CYCIR at 925/850hPa off coast Kerala over southeast AS moving towards west with intensification of the system

00UTC of Day 1-4: 850 hPa NE-SW trough from U.P. to N Karnataka across M.P., Maharashtra..

00UTC of Day 2-3: 850 hPa trough over WB-Bangladesh region.

Confluence & Wind Discontinuity Regions: 12 UTC of Day 0, 2-4: 925 hPa N-S discontinuity over Southern Peninsular India

Synoptic Systems: 0 UTC of Day 1-3: Western disturbance as a trough over J&K

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

3. Convergence at 850 hPa:

Day/Index: Subdivisions with Lower Level Convergence > 15×10^{-5} /s

Day0: Jharkhand, Uttarakhand, East Rajasthan, Odisha,

Day1: Jharkhand, Odisha, Chhattisgarh, NI Karnataka, SI Karnataka,

Day2: Assam Meghalaya, NE NMMT, Gangetic WB, Jharkhand, Saurashtra Kutch, Madhya Maharashtra, Chhattisgarh, SI Karnataka,

Day3: Assam Meghalaya, NE NMMT, Jharkhand, West UP, Punjab, Jammu Kashmir, Madhya Maharashtra, Marathwada, Chhattisgarh, Telangana,

Day4: Assam Meghalaya, NE NMMT, Gangetic WB, Jharkhand, Punjab, Himachal Pradesh, Jammu Kashmir, Madhya Maharashtra, NI Karnataka,

4. Low level Vorticity:-Positive Vorticity:

Day/Index: Subdivisions with Lower Level Vortex > 15×10^{-5} /s

Day0: Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP,

Day1: Assam Meghalaya, Gangetic WB, Jharkhand, Bihar, Himachal Pradesh, Jammu Kashmir,

Day2: Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Punjab, Saurashtra Kutch, TN Puducherry,

Day3: Assam Meghalaya, Gangetic WB, Jharkhand, Bihar, Punjab, Konkan Goa, TN Puducherry,

Day4: Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Bihar, Punjab, TN Puducherry,

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP,

Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP,

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka, SI Karnataka,
Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, SI Karnataka,

7. 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, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Jammu Kashmir, TN Puducherry,

Day2: Assam Meghalaya, NE NMMT, Coastal Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, Jammu Kashmir, Odisha,

Day4: Assam Meghalaya, NE NMMT, Himachal Pradesh, Jammu Kashmir,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Himachal Pradesh, Jammu Kashmir, TN Puducherry, SI Karnataka,

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

1. Synoptic Systems: The analysis based on 00 UTC indicates a cyclonic circulation over west Uttar Pradesh and adjoining area. The forecast shows it will persist till day3 with South Eastward shift. Analysis shows another cyclonic circulation over South East Rajasthan and adjoining area at (850hPa). The forecast shows the circulation will persist till day 2 with North Eastward movement. A North- South Trough extends from East Uttar Pradesh to Vidarbha across East Madhya Pradesh. The Trough persists in forecast till day3 with slight eastward shift. A cyclonic circulation is seen over East Bihar and adjoining areas in lower Troposphere. The forecast shows it will persist till day2. A North South Oriented Trough is seen in the analysis extending from South Interior Karnataka to North Tamil Nadu. The forecast shows it will persist till day2. Another cyclonic circulation is seen over East Assam and adjoining area. The forecast shows it will persist till day 3. The analysis indicates a cyclonic circulation over comorin area. The forecast shows it will become less marked in day 2.

2. Location of Jet and Jet Core (>60kt) at 500hPa: Although the presence of strong westerlies is found over Eastern parts of the India and over north western parts of India but 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 along the Foothills of Himalaya, North-South Trough, around the cyclonic circulations, eastern parts of India during next 3 days; Low level Positive Vorticity is also seen over parts of Punjab, North West Rajasthan, Haryana, west Uttar Pradesh, Northern parts of Madhya Pradesh from day 2; parts of Bihar, GWB, Jharkhand, SHWB, Sikkim and adjoining areas have Positive Vorticity on all 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, East and West Uttar Pradesh, Gangetic Plains covering the areas from South west Rajasthan, Uttarakhand, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Madhya Pradesh, Andhra Pradesh, along east and west coast of India, Sikkim, Assam, Tripura and adjoining areas during next 3 days; on day 1 over parts of North West Rajasthan and adjoining Punjab; over some parts of Uttarakhand on day 1 and 3; Significant zone lies over south west Rajasthan, Gujarat, coastal areas along the east coast and west coast, GWB, Bihar, Jharkhand, Orissa, coastal Andhra Pradesh, Telangana, East Uttar Pradesh, coastal Maharashtra, South Madhya Maharashtra Vidarbha, Chhattisgarh and adjoining North Interior Karnataka.

Lifted Index (< -2): Similar to T-storm Index in day 1 it lies over Gujarat, Rajasthan, Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana, Bihar, Jharkhand, Uttar Pradesh, Orissa, GWB, NE states, Telangana, Vidarbha, Chhattisgarh, Andhra Pradesh, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Madhya Maharashtra and Marathwada, Punjab, Haryana, Himachal Pradesh and Uttarakhand. In day 2 and 3 it remains on the same region but disappears over Northwest India including Punjab, Haryana, Himachal Pradesh and Uttarakhand; Significant zone with maximum negative value is found over coastal Orissa, GWB, Telangana, coastal Andhra Pradesh, Bihar, Jharkhand and adjoining East Uttar Pradesh.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over most of the parts of the country except Extreme south Peninsular India on day 1; on day 2 and 3 it is seen over most of the parts of the country except west Rajasthan, Gujarat and extreme south peninsular India; Significant zone with Maximum value of the index lies over J&K, Punjab, Haryana, North West Rajasthan, East Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Orissa, Vidarbha, GWB, Andhra Pradesh, Telangana and North Interior Karnataka.

Sweat Index (> 300): Is seen over the sub-divisions along east and west coast, areas along foothills of Himalayas, NE states, and most parts of the country except central parts of Madhya Pradesh on day 1; and is seen over south peninsular India, along east coast and west coast, eastern part of the country and NE states except over North West India and central parts of Madhya Pradesh on day 2 and 3; The significant zone lies over parts of Gujarat, north coastal Maharashtra, GWB, Jharkhand, Bihar, Orissa, East Uttar Pradesh, Andhra Pradesh, South Chhattisgarh and Telangana.

CAPE (> 1000): Mostly seen over southern peninsular India, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, Andhra Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan and Goa, Telangana, coastal Maharashtra, south Madhya Maharashtra, Marathwada, Gujarat, NE states, Sikkim, Assam, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of South West Rajasthan on day 1; over parts of East Uttar Pradesh and adjoining areas from day 2 onwards; maximum value of the index is seen over parts of GWB, Orissa, coastal Andhra Pradesh, coastal Tamil Nadu, coastal areas along East and West Coast, coastal Gujarat, coastal Maharashtra, Including Mumbai, coastal Karnataka, Konkan and Goa, coastal Kerala, Bihar, Jharkhand, SHWB and East Uttar Pradesh.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala and south Tamil Nadu and the value of the index lies in the above range over most of the parts of the country except parts of J&K on day 1; on day 2 and 3 it is seen over most of the parts of the

country except Central Parts of Madhya Pradesh, J&K, Punjab, Haryana, Himachal Pradesh, and North West Rajasthan; the maximum value of the index is seen over parts of Orissa and adjoining Chhattisgarh on day 3.

5. Rainfall Activity:

70- 130 mm Rainfall: over some parts of Tripura and adjoining areas on day 1.

40-70 mm Rainfall: over parts of Orissa, Tripura and adjoining areas on day 1; over parts of Tripura and adjoining area on day 2; over some parts of Orissa and adjoining Andhra Pradesh on day 3.

10-40 mm Rainfall: over parts of J&K, Foothills of Himalayas, Kerala, Karnataka, Andhra Pradesh, Tamil Nadu, Orissa, GWB, SHWB, Bihar, Jharkhand, Sikkim and NE states during next 3 days; over parts of Himachal Pradesh on day 3.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Punjab, Haryana, Uttar Pradesh, Uttarakhand, Foothills of Himalaya, SHWB & Sikkim and NE states, Bihar, Jharkhand, GWB, Orissa, Chhattisgarh, Kerala, Interior Karnataka, Konkan & Goa, coastal Maharashtra, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidarbha and Andhra Pradesh during next 3 days; on day 1 over parts of Madhya Pradesh.

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

1. Model Reflectivity (Max. dBz): >25 dBZ Model Reflectivity: On day 1, over parts of J&K, Kerala, Karnataka, Tamil Nadu, Sikkim, GWB, Jharkhand, SHWB, Orissa, NE states and some parts of Punjab. On day 2 over parts of J&K, Himachal Pradesh, Uttarakhand, SHWB and NE states; On day 3 mostly over parts of J&K, Himachal Pradesh, Uttarakhand, GWB, Orissa, Kerala, some parts of south Chhattisgarh, Assam, Meghalaya, Tripura and adjoining areas.

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

Total Index (> 50): Above threshold value is observed over most parts of the country except extreme south peninsular India, extreme southern parts of west coast and the east coast, southern parts of Karnataka, coastal Maharashtra, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, East Uttar Pradesh, Bihar, Jharkhand, Orissa, Sikkim and NE states during next 3 days; below threshold value of the index is also seen over parts of Telangana on day 1 and coastal Maharashtra on day 3.

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 NE states, Interior Karnataka, Telangana, Chhattisgarh, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Bihar, Jharkhand, GWB and adjoining areas and Foothills of Himalayas.

CAPE (> 1500): Greater than threshold value over parts of Gujarat, coastal areas of west coast, coastal Maharashtra, Konkan & Goa, coastal areas along the east coast, SHWB, GWB, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Bihar, Jharkhand, Telangana, Rayalaseema, Vidarbha and south Chhattisgarh during next 3 days; Some parts of South West Rajasthan on day 1; over some parts East Uttar Pradesh on day 2 and 3; Maximum value of the index is seen over the parts of Orissa, GWB, coastal Andhra Pradesh, coastal Tamil Nadu, Kerala, Karnataka, Telangana, coastal Maharashtra, coastal Gujarat, Konkan and Goa, Jharkhand and South Madhya Maharashtra.

CIN (50-150): It covers most of the parts of the country except central parts of the Madhya Pradesh, J&K and NE states on day 1; over most of the parts of country except J&K, central parts of the Madhya Pradesh, Northwest India and NE states on day 2 and 3; Inland extension is also nearly similar to CAPE. Only, it has significant larger values over parts of west India including west Rajasthan, Gujarat, East Uttar Pradesh, parts of Vidarbha and Madhya Pradesh, eastern parts of the country, Bihar, Jharkhand, Chhattisgarh, Orissa, GWB, Andhra Pradesh and adjoining areas, Telangana, South Madhya Maharashtra, Marathwada.

3. Rainfall and thunderstorm activity:

130- 200 mm Rainfall: over some parts of Tripura and adjoining areas on day 2 and 3 and over some parts of Mizoram on day 2.

70-130 mm Rainfall: over parts of Tripura during next 3 days; over parts of Mizoram and Meghalaya on day 2; over parts of South Assam and Meghalaya on day 3.

40- 70 mm Rainfall: over parts of Assam, Meghalaya, Mizoram, Tripura and adjoining areas during next 3 days; over parts of GWB and Orissa on day 1; over some parts of South Kerala on day 2; over parts of J&K and Orissa on day 3.

10- 40 mm Rainfall: over parts of J&K, Himachal Pradesh, Foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Sikkim, GWB, Orissa and NE states during all 3 days; over parts of Bihar, Jharkhand, coastal and South Madhya Maharashtra on day 1; over some parts of Himachal Pradesh on day 2 and 3.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Chhattisgarh, Sikkim, Bihar, Jharkhand, Orissa, Andhra Pradesh, Telangana, South Madhya Maharashtra, Marathwada, south coastal Maharashtra, Sikkim and NE states, Konkan and Goa during next 3 days; over parts of East Rajasthan and Madhya Pradesh on day 1.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over almost entire Indian region with maxima over Gujarat region and also coastal Odisha and adjoining Gangetic West Bengal. On day 2, there is not much change, except a decrease in probability of thunderstorm initiation over Northwest India. SWEAT index, which also accounts for the wind shear between 850 and 500 hPa levels, also indicates a similar pattern on day 1 and 2. The 850-200 hPa wind shear is very high over Northwest India on day 1, and increases over extreme North India on day 2.

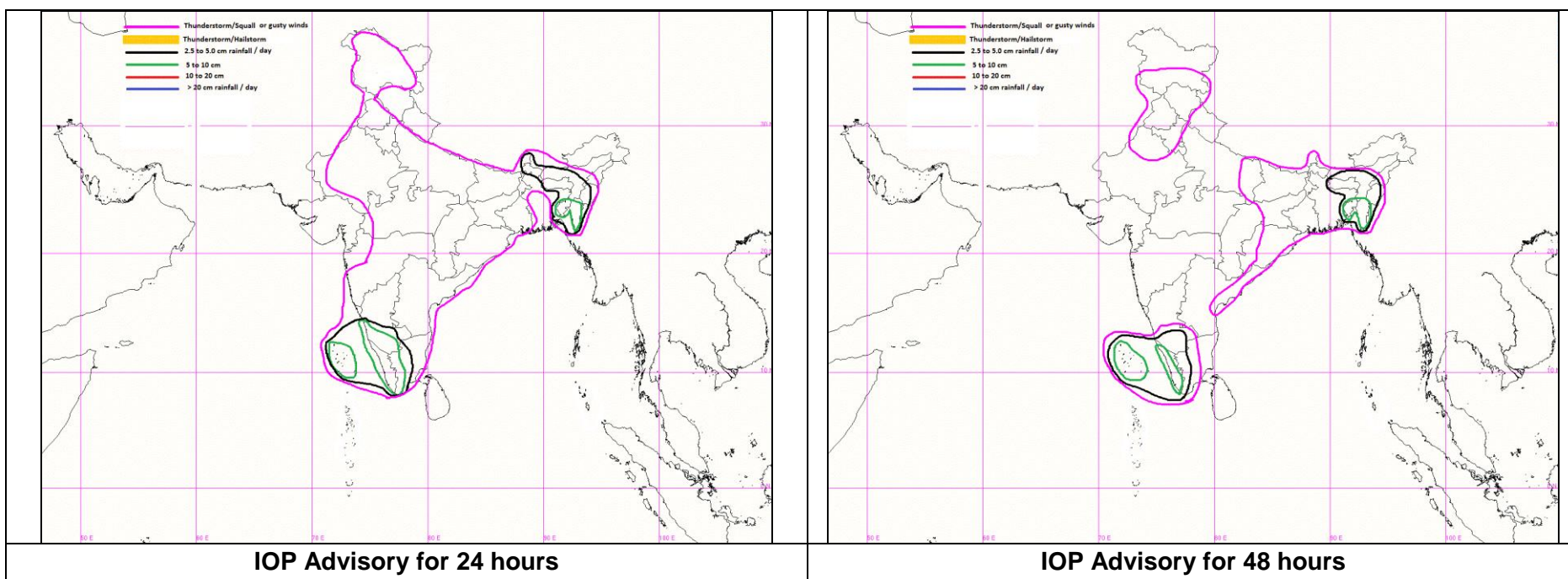
o Synoptic analysis indicates that over north India there are four weather systems in the lower levels in the 00 UTC charts. There is a cyclonic circulation over west Uttar Pradesh & neighbourhood. There is also a cyclonic circulation over southeast Rajasthan & adjoining West Madhya Pradesh. There is a north-south trough at from east Uttar Pradesh to Vidarbha. There is also a cyclonic circulation over east Bihar & neighbourhood. There is another cyclonic circulation over east Assam & neighbourhood. ECMWF and IMD GFS deterministic models indicate that an east-west trough over north India is likely to become prominent in the afternoon of today. This pattern, accompanied by strengthening of easterlies over north India on the periphery of the cyclonic circulation over east Bihar, is favourable for occurrence of convection over the North, northeast and east Indian region. Model analysis also indicates that there is a high low level shear (upto 700 hPa) which is also favourable for occurrence of convection over Northwest Indian region. However, since maximum temperatures have fallen over Northwest India (excluding Rajasthan), widespread thunderstorm activity seems less likely over Northwest India. Considering all factors, conditions are most favourable for thunderstorm occurrence over East India and east peninsular India and thunderstorms accompanied by Duststorm over Rajasthan.

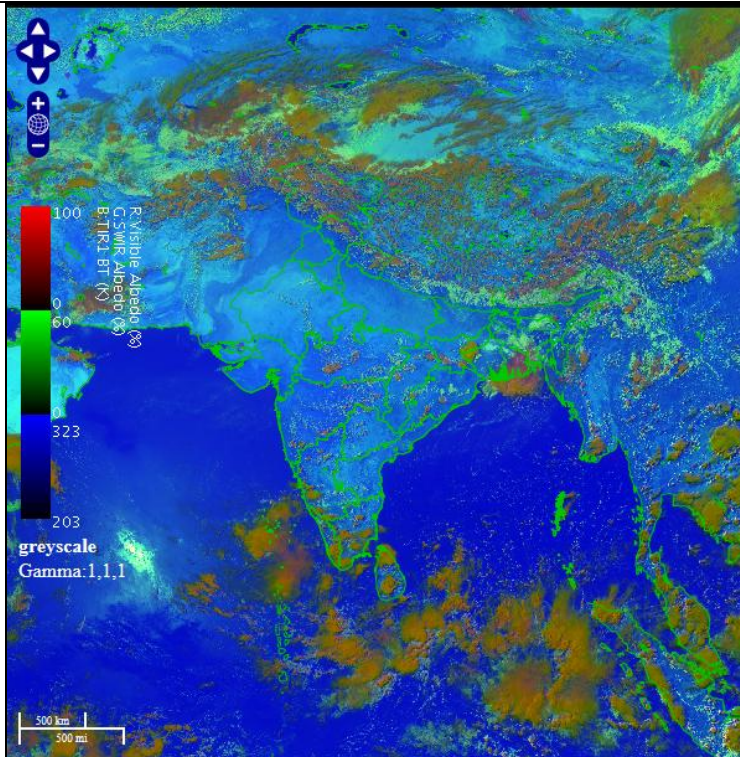
o There is also a north south wind discontinuity from North Interior Karnataka to south Tamilnadu in the lower levels and a cyclonic circulation over Comorin Maldives area and neighbourhood. There is also an east west trough along latitude 14°N at 5.8 km. A well marked low pressure area over southwest Arabian Sea & neighbourhood now lies over southwest Arabian sea & adjoining west central Arabian sea and gulf of Aden with associated cyclonic circulation. The peninsular Indian region is likely to experience thunderstorm activity on day 1 with heavy rainfall over the extreme south central peninsula. On day 2, with a westward shift of the weather systems, the weather is likely to continue over the southwest peninsula.

IOP Area for Day-1 & Day-2:

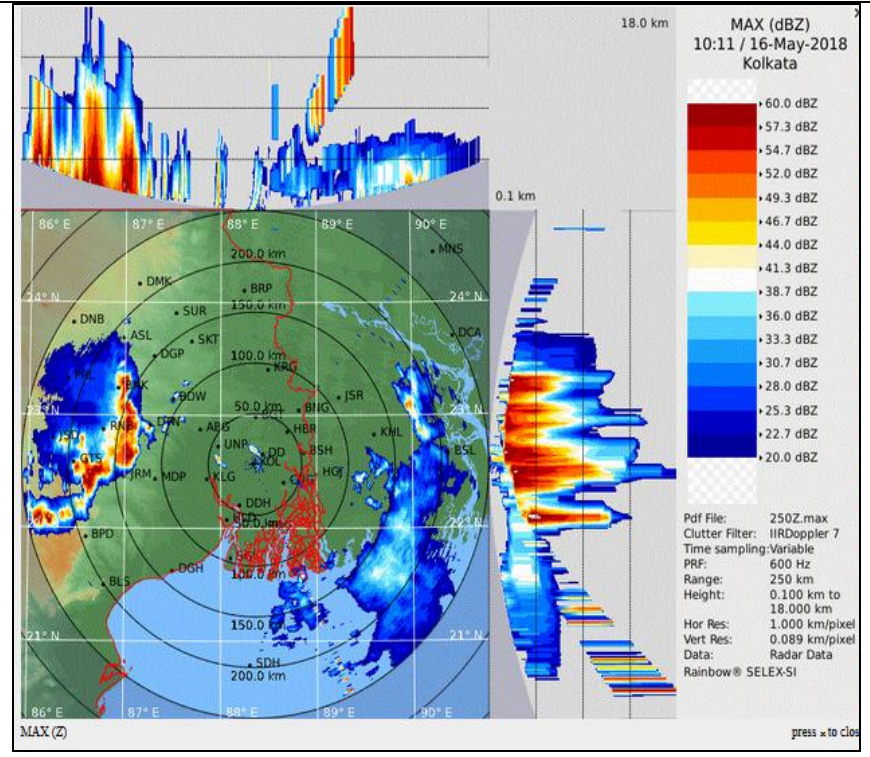
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p>Significant Rainfall: Interior Tamil Nadu, South Interior and Coastal Karnataka, Kerala, Lakshadweep Assam and Meghalaya, Manipur, Mizoram, Tripura Sub Himalayan West Bengal and Sikkim</p> <p>Thunderstorm with squall or gusty winds: Tamilnadu, Kerala, Lakshadweep, Karnataka, Rayalaseema, Coastal Andhra Pradesh, Madhya Maharashtra, Konkan and Goa, Marathwada Vidarbha, Chhattisgarh, Madhya Pradesh Punjab, Haryana, Chandigarh, Delhi, Uttar Pradesh Jammu and Kashmir, West Bengal and Sikkim, Odisha, Bihar, Jharkhand Manipur, Mizoram, Tripura, Assam and Meghalaya</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Rajasthan</p>	<p>Significant Rainfall: Interior Tamilnadu, South Interior Karnataka, Kerala, Lakshadweep Assam and Meghalaya, Mizoram, Tripura,</p> <p>Thunderstorm with squall or gusty winds: Tamil Nadu, Kerala, Lakshadweep, Interior Karnataka, Coastal Andhra Pradesh, Punjab, Haryana, Chandigarh, Delhi, Uttar Pradesh Jammu and Kashmir, Himachal Pradesh, West Bengal and Sikkim, Odisha, Bihar, Jharkhand Manipur, Mizoram, Tripura, Assam and Meghalaya</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: North Rajasthan</p>

Graphical Presentation of Potential Areas for Severe Weather:

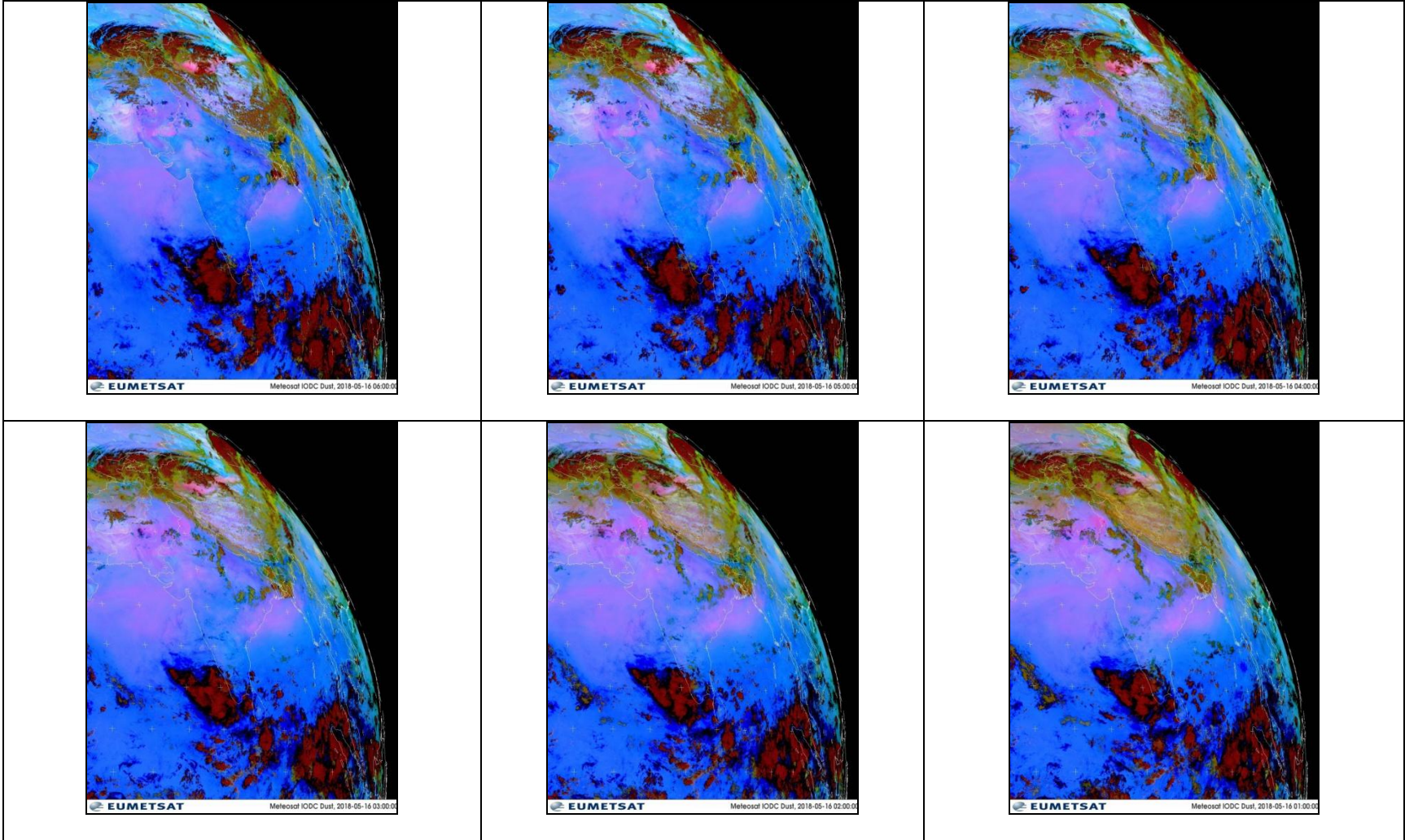




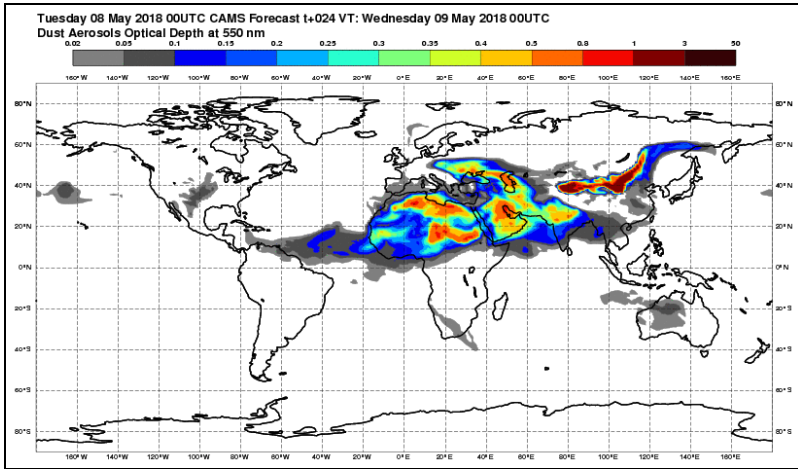
RAPID RGB Imagery at 1430 IST of the Day



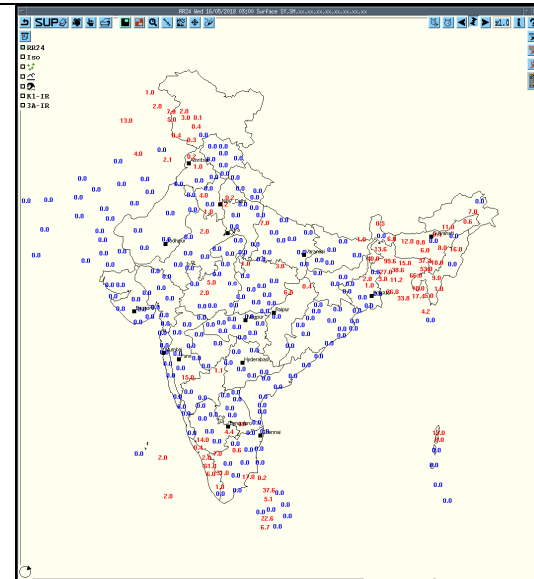
DWR Kolkata Reflectivity Image at 1541 IST



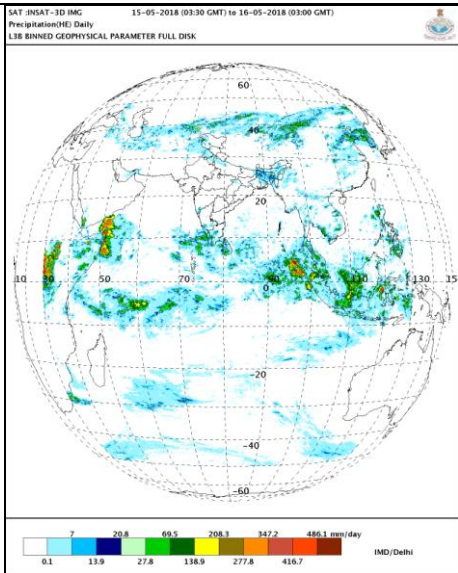
Observed Satellite Dust Images of today



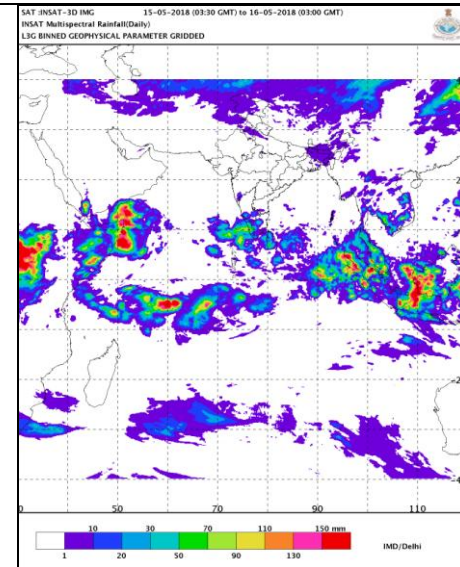
Dust Forecast



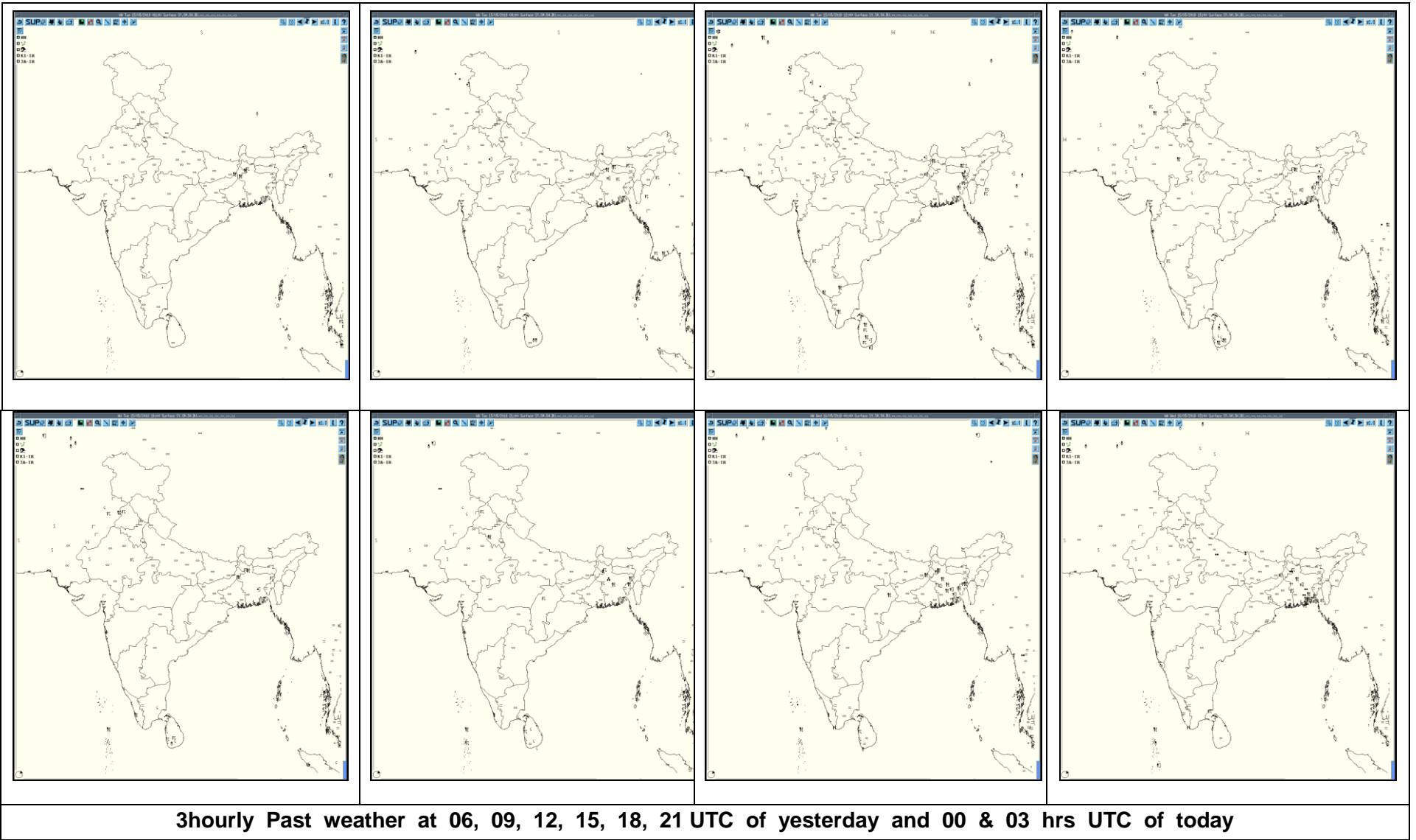
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

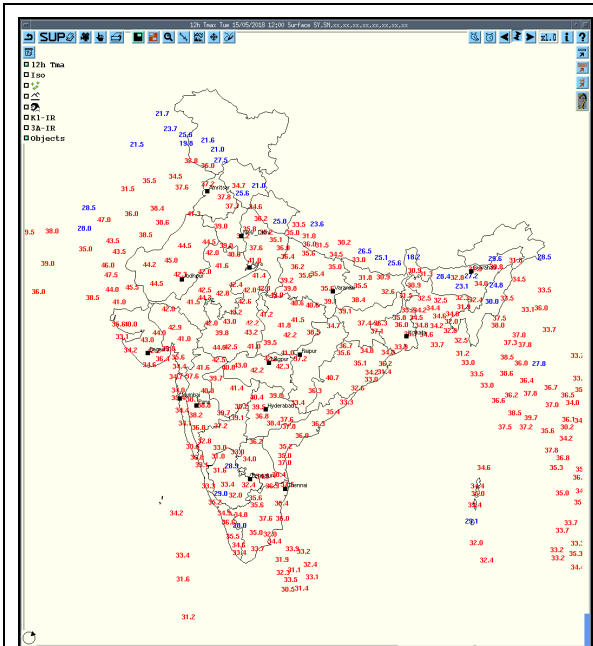


IMR

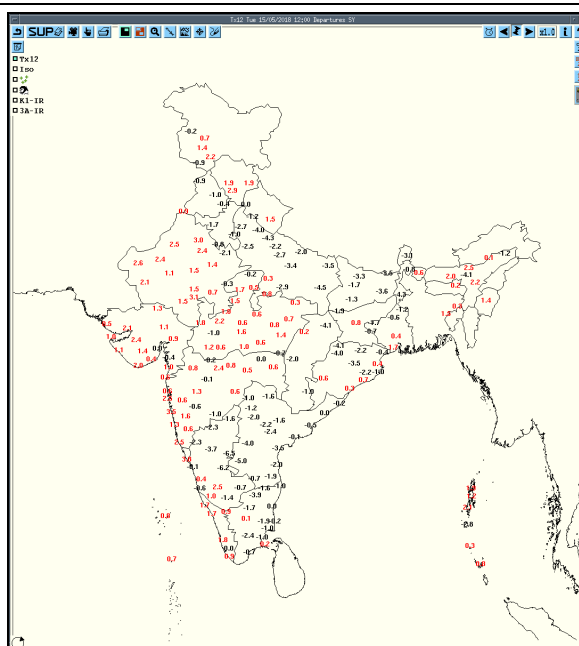


HEM

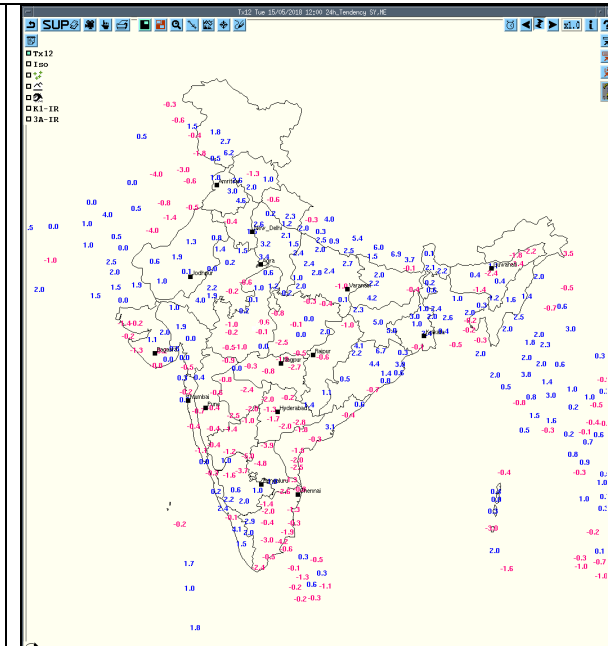




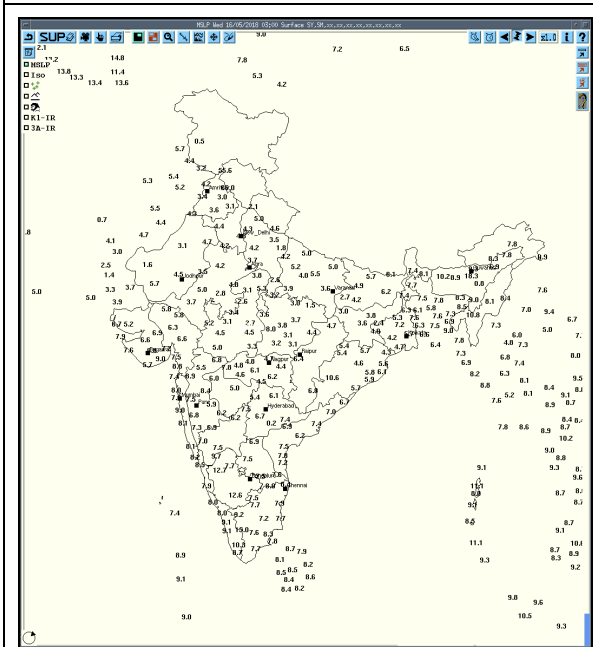
Tmax



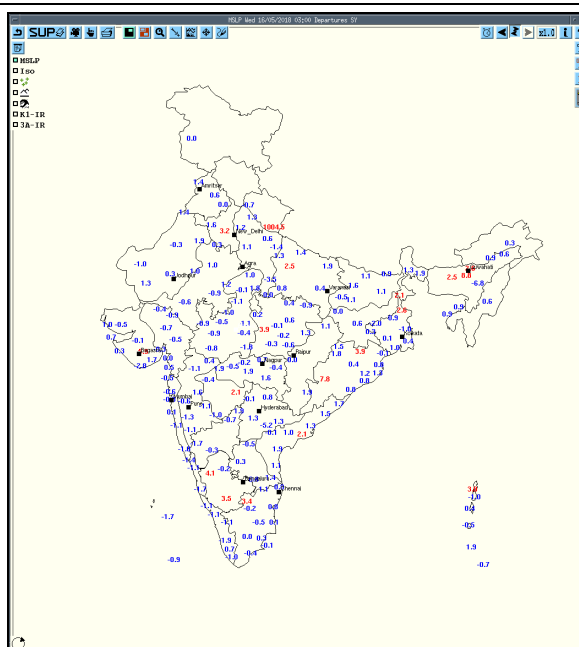
Departure Tmax



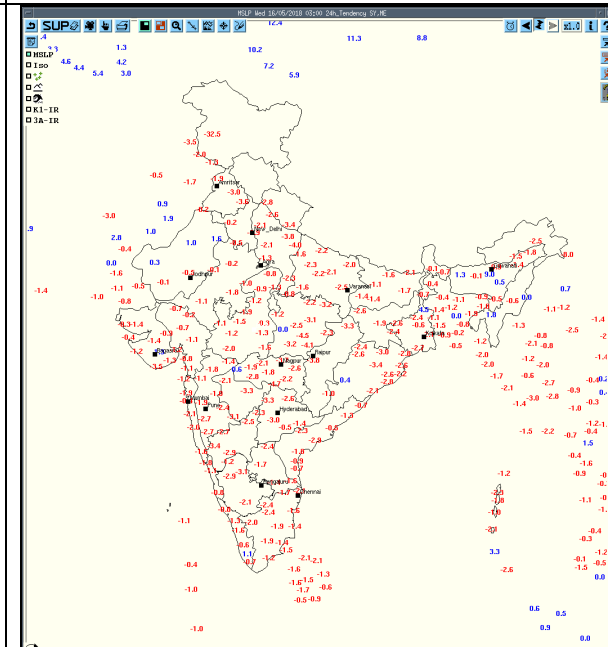
Tendency Tmax



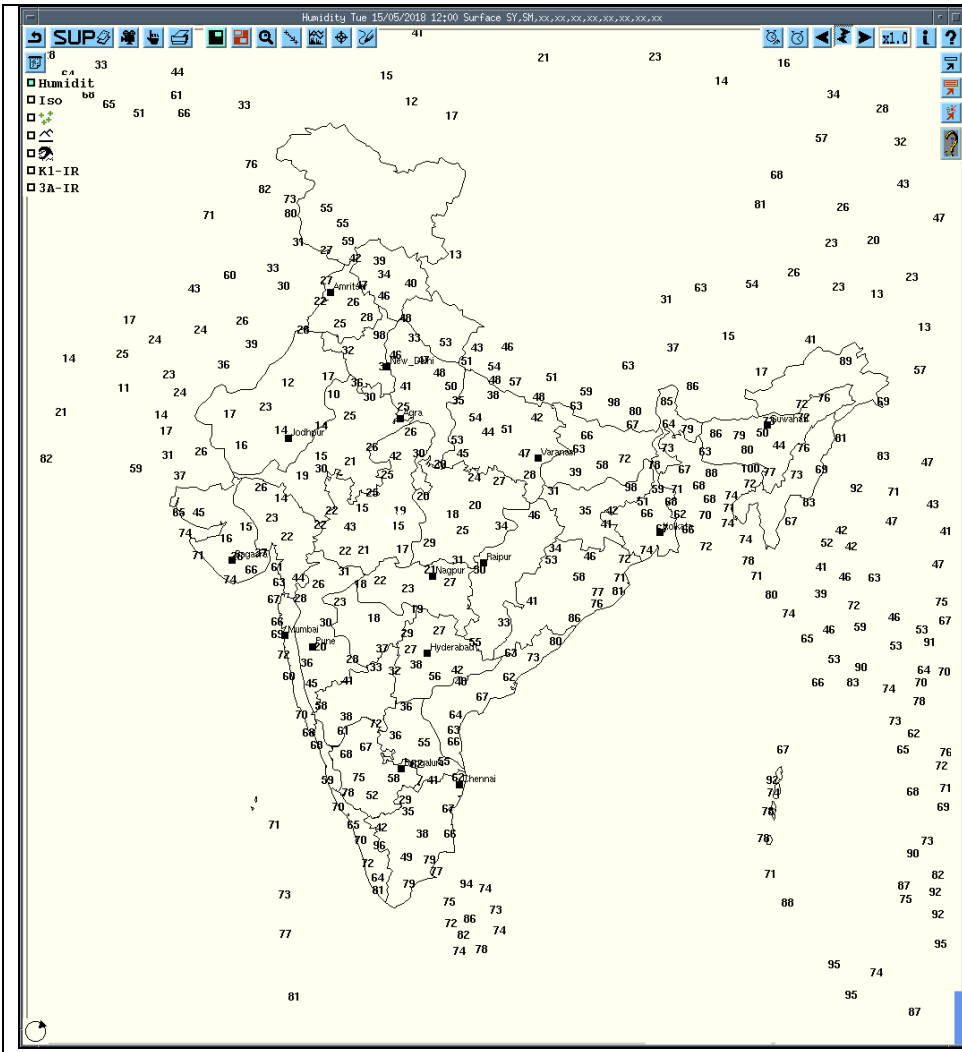
MSLP



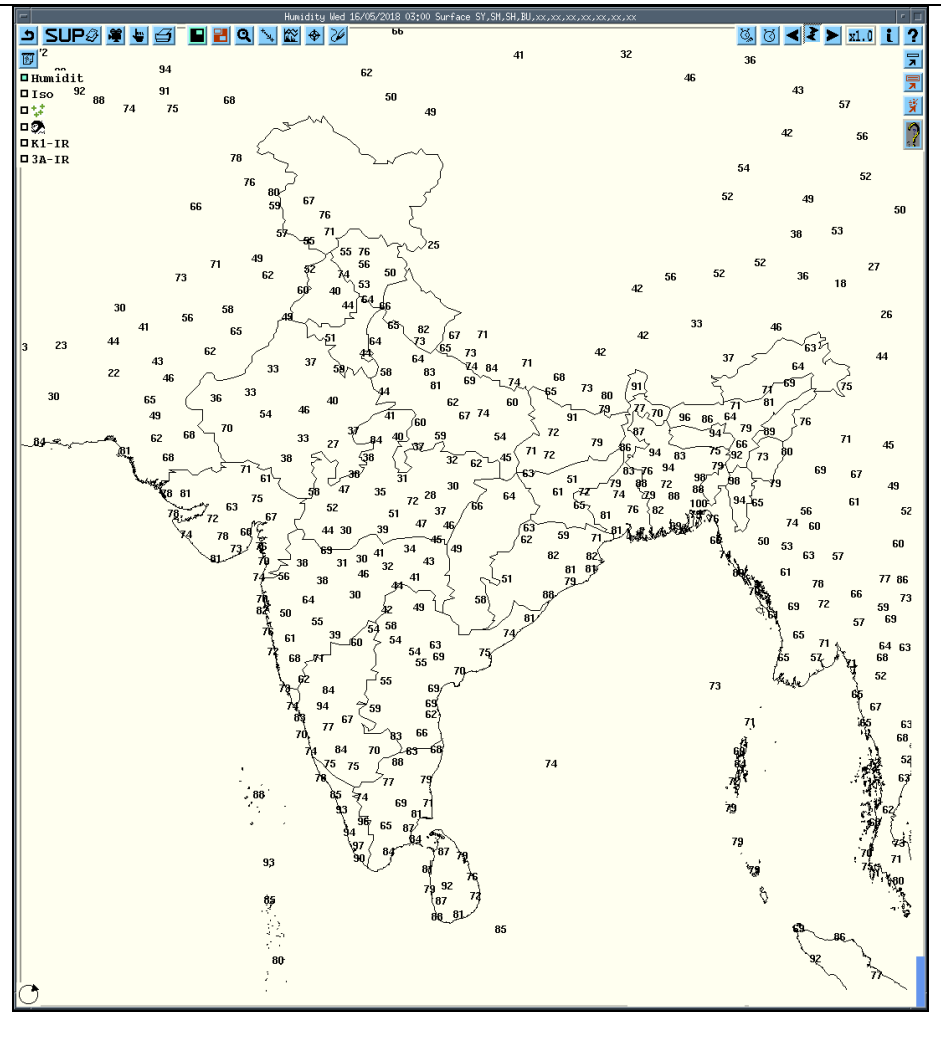
Departure MSLP



Tendency MSLP



RH at 1200UTC yesterday



RH at 0300UTC today

Past 24 hours DWR Report:

Radar 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	16/05/2018	150300-150400	Single cell Lat-25.70N Long-87.45E Maximum Reflectivity: 47 dBZ Echo Top: 10 KM	Range: 237.8 KM from DWR Patna in NE direction Movement: Westerly	Warning issued	Thunder Storm, Rain	Purnia
		150400-160300	NIL	N/A	N/A	N/A	N/A
Agartala	16/05/18	150300 to 160300	Squall Line Formation at 150700Z over S-B'DESH;15KMS;60dBZ	230 Kms SW;30Kmph;SE'ly	Cell persisted till 151230z	+TSRA	ALL districts in Tripura
Kolkata	15-05-2018	0301-1821 UTC	NIL	NIL	NOSIG ECHO	NIL	NIL
	15-05-2018	1821-0321 UTC	Isolated Single cell with maximum with maximum reflectivity of 58.5 dBz at 2241 UTC and maximum height of more than 8.02 Km at 2321 UTC	Coming from North moving SE-ward	Single big cell coming from North at 1821 UTC at a distance 248.5 Km from radar. Matured and dissipate at 0321 UTC in EAST at a Distance of 208.6 km from Radar.	Thunderstorm /Rain/Hail	N/A
	16-05-2018	0001-0300 UTC	Multi single cells with maximum with maximum reflectivity of 58.0 dBz at 0201 UTC and maximum height of more than 14.62 Km at 0201 UTC	Coming from NE moving SE-ward	Multi isolate cells merged and developed into big cell coming from NW at 0001 UTC at a distance 149.7 Km from radar. Matured and continuing after 0300 UTC	Thunderstorm /Rain/Hail	N/A
	16-05-2018	0121-0300 UTC	Multi single cells with maximum with maximum reflectivity of 54.0 dBz at 0251 UTC and maximum height of more than 4.32 Km at 0251 UTC	Coming from West moving SE-ward	Multi isolate cells merged and developed into big cell coming from West at 0121 UTC at a distance 223.5 Km from radar. Matured and continuing after 0300 UTC	Thunderstorm /Rain/Hail	N/A

Realised past 24hrs TS/SQ/HS Data:**Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)**

Name of Station Reporting	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	15-05-18	1605	1625
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	15-05-18	1450	1520
Bundi	Northwest India	East Rajasthan	Thunderstorm	15-05-18	1500	1515
Alwar	Northwest India	East Rajasthan	Thunderstorm	15-05-18	2030	2100
Jaipur AP	Northwest India	East Rajasthan	Thunderstorm	15-05-18	1345 1955 2230	1410 2030 2310
Sikar	Northwest India	East Rajasthan	Thunderstorm	15-05-18	2045	2115
Pilani	Northwest India	East Rajasthan	Thunderstorm	15-05-18	1800	2300
Kota A.P	Northwest India	East Rajasthan	Thunderstorm	15-05-18	1515	1535
Ganganagar	Northwest India	West Rajasthan	Thunderstorm	15-05-18	2148	2155
Shahjahanpur	Northwest India	West Uttar Pradesh	Thunderstorm	16-05-18	0700	0800
Jhansi	Northwest India	West Uttar Pradesh	Thunderstorm	16-05-18	1900	2030
Hissar	Northwest India	Haryana	Thunderstorm	16-05-18	0100	0300
Amritsar	Northwest India	Punjab	Thunderstorm	15/16-05-18	2315	0500
Ludhiana	Northwest India	Punjab	Thunderstorm	15/16-05-18	During at Night	
Safdarjung	Northwest India	Delhi	Squall (Dir-NW, Max. Speed-98kmph)	16-05-18	0301	0303
Palam	Northwest India	Delhi	Squall (Dir-W, Max. Speed-105kmph)	16-05-18	0251	0253
Coohbehar	East India	SHWB	Thunderstorm	15-05-18	1255	1350
Coohbehar	East India	SHWB	Squall (Dir-S, Max. Speed-52kmph)	16-05-18	1250	1252
Malda	East India	SHWB	Thunderstorm	1/16-05-18	1055 2050 2250	1235 2150 0140
Sriniketan	East India	GWB	Thunderstorm	15-05-18	Dawn-0600	
Purnia	East India	Bihar	Thunderstorm	15-05-18	0850 1120 0450	1020 1140 0720
Jamshedpur	East India	Jharkhand	Thunderstorm	15-05-18	0825	0830
Port Blair	A and N Islands	A and N Islands	Thunderstorm	15-05-18	1310	1510
Gwalior	Central India	Madhya Pradesh	Thunderstorm	15-05-18	1848	1900
Ambikapur	Central India	Chhattisgarh	Thunderstorm	16-05-18	0505	0630
Pendra Road	Central India	Chhattisgarh	Thunderstorm	15/16-05-18	1805 0220	1845 0400
Sholapur	West India	Madhya Maharashtra	Thunderstorm	15-05-18	1840	1930

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)

Name of Station Reporting	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Itanagar	Northeast India	Arunachal Pradesh	Thunderstorm	15-05-18	15/1837	15/1945
Guwahati	Northeast India	Assam	Thunderstorm	15-05-18	15/1320	15/1800
Silchar	Northeast India	Assam	Thunderstorm	15-05-18	15/1842	15/2400
N/Lakhimpur	Northeast India	Assam	Thunderstorm	15-05-18	15/2050	15/2140
Dhubri	Northeast India	Assam	Thunderstorm	15-05-18	15/1400	15/1600
Barapani	Northeast India	Meghalaya	Thunderstorm	15-05-18	15/1325	15/1415
Lengpui	Northeast India	Mizoram	Thunderstorm	15/16-05-18	15/2000 16/0530	15/2130 16/0620
Kailasahar	Northeast India	Tripura	Thunderstorm	15/16-05-18	15/0950 15/1115 15/1800 16/0320	15/1015 15/1300 15/2040 15/0550
Agartala	Northeast India	Tripura	Thunderstorm	15/16-05-18	15/1720, 16/0330	15/1950 16/0800
CIAL Kochi	South India	Kerala	Thunderstorm	15-05-18	1504	1705
Thiruvananthapuram AP	South India	Kerala	Thunderstorm	16-05-18	0430	0830
Thiruvananthapuram C	South India	Kerala	Thunderstorm	15/16-05-18	2035 0420	2045 0830
Minicoy	Lakshadweep	Lakshadweep	Thunderstorm	15-05-18	2300	2401
Kalaburgi	South India	North Interior Karnataka	Thunderstorm	15-05-18	2030	2330
Belgaum AP	South India	South Interior Karnataka	Thunderstorm	15-05-18	1720 2015	1740 2045
Bengaluru City	South India	South Interior Karnataka	Thunderstorm	15-05-18	1725 2040	1730 2230
Bengaluru HAL AP	South India	South Interior Karnataka	Thunderstorm	15-05-18	2030	2240
Yelahanka IAF	South India	South Interior Karnataka	Thunderstorm	15-05-18	1710	2130
Bengaluru BIAL	South India	South Interior Karnataka	Thunderstorm	15-05-18	1810	2109
Madikeri	South India	South Interior Karnataka	Thunderstorm	15-05-18	1627	1940

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

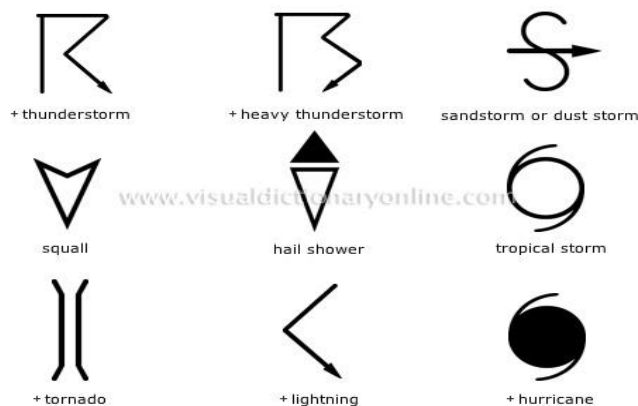
For Radar images of the past 24 hours including mosaic of images:

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

Satellite sounder based T- Phigram

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

WEATHER SYMBOLS:



	haze
	smoke
	dust or sand storm
	fog
	drizzle
	rain
	snow
	showers
	hail
	thunderstorm

Weather Symbols