



India Meteorological Department

FDP STORM Bulletin No. 53 (28-04-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ The Western Disturbance as a cyclonic circulation over north Pakistan & adjoining Jammu & Kashmir at 3.1 km above mean sea level with a trough aloft with its axis at 5.8 Km above mean sea level roughly along Long. 75°E and Lat. 32°N persists.
- ◆ The cyclonic circulation over West Uttar Pradesh & neighbourhood now lies over southeast Uttar Pradesh & neighbourhood at 1.5 km above mean sea level. A trough runs from this system to Coastal Karnataka across west Vidarbha and Madhya Maharashtra and extends upto 0.9 km above mean sea level.
- ◆ A trough at mean sea level runs from northwest Rajasthan to north Chhattisgarh and extends upto 0.9 km above mean sea level.
- ◆ The cyclonic circulation over West Bengal & adjoining Bihar now lies over Gangetic West Bengal & neighbourhood between 1.5 km and 2.1 km above mean level. A trough extends from this cyclonic circulation to Manipur across Bangladesh and Meghalaya at 1.5 Km above mean sea level.
- ◆ The north-south wind discontinuity from North Interior Karnataka to Lakshadweep area now runs from south Madhya Maharashtra to Comorin area across interior Karnataka and interior Tamilnadu at 0.9 km above mean sea level.
- ◆ The trough in easterlies from Comorin area to Rayalaseema now runs from Maldives area to Madhya Maharashtra across coastal Karnataka at 1.5 km above mean sea level.
- ◆ The cyclonic circulation over south Andaman sea and neighbourhood now lies over Andaman Sea & neighbourhood between 1.5 and 3.1 km above mean sea level.
- ◆ A fresh Western Disturbance likely to affect Western Himalayan region from 01st May onwards.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

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

Intense Precipitation Advisory for next 3 hrs:

Moderate rainfall spell (>5mm/hr) is likely over extreme Northeast Bihar adjoining Sub-Himalayan West Bengal. Light rainfall spell (<5mm/hr) is likely over North Jammu & Kashmir, Northwest Himachal Pradesh, East Meghalaya, Assam, south Kerala, South Tamilnadu and Andaman & Nicobar Islands (for details kindly refer to <http://sigma.cptec.inpe.br/scope/>).

Thunderstorm Advisory for Next 3 Hrs:

Thunderstorm cells over extreme Northeast Bihar adjoining Sub-Himalayan West Bengal, East Meghalaya, East Assam, Arunachal Pradesh and extreme South Kerala adjoining South Tamilnadu. (for details kindly refer to <http://www.rapid.imd.gov.in/>).

Western Disturbance (WD):

Scattered multi-layered clouds seen over Jammu & Kashmir, Himachal Pradesh, North Uttarakhand, Tibet adjoining China in association with Western Disturbance over the area.

Scattered multi-layered clouds seen over Caspian Sea, Persian Gulf, Iran, Afghanistan & neighbourhood in association with another Western Disturbance over the area.

Clouds descriptions within India:

Scattered low/medium clouds with embedded moderate to intense convection seen over Jammu & Kashmir, Himachal Pradesh, (minimum CTT minus 58deg C), East Bihar, adjoining North Sub-Himalayan West Bengal, & adjoining Nepal (minimum CTT minus 74deg C), East Meghalaya, Central Assam, (minimum CTT minus 51deg C), Arunachal Pradesh (minimum CTT minus 48deg C), extreme Northwest Madhya Pradesh, (minimum CTT minus 46deg C) and South Tamilnadu. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over North Uttarakhand, extreme Southwest Uttar Pradesh, North Chhattisgarh, Jharkhand, Sikkim, Meghalaya, Manipur, Northeast Rajasthan, rest Madhya Pradesh, North Vidarbha, Southwest South Interior Karnataka, Kerala, North Tamilnadu and Andaman & Nicobar Islands. Scattered low/medium clouds seen over North Punjab, South Uttarakhand, East Uttar Pradesh, rest Rajasthan, rest Maharashtra, North Telangana, North Coastal Andhra Pradesh, rest Karnataka, Lakshadweep and rest parts of East India.

Arabian Sea:-

Scattered low/medium clouds with embedded intense to very intense convection seen over Comorin adjoining Southeast Arabian Sea.

Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded intense to very intense convective cloud clusters seen over North Andaman Sea north of lat 9.0deg N, and Tenasserim Coast (minimum CTT minus 81deg C).

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over Jammu & Kashmir North Himachal Pradesh Uttarakhand Jharkhand North Odisha West Bengal Sikkim North-East States Kerala Tamilnadu Andaman & Nicobar islands and weak convection was observed over Punjab Haryana Delhi North Rajasthan Madhya Pradesh Uttar Pradesh Bihar Chhattisgarh South Odisha North Coastal Andhra Pradesh & Karnataka.

OLR :- .

Up-to 230 wm^{-2} observed over Jammu & Kashmir North Himachal Pradesh Uttarakhand Sikkim North-East States Kerala Andaman & Nicobar island and

Up-to 250 wm^{-2} observed over South-East Jharkhand adjoining West Bengal Tamilnadu.

Synoptic Features:

Trough in Westerlies runs roughly along Longitude **76.0°E** & north of Latitude **33.0°N**.

Dynamic Features:

Up to 30- 60 kts **wind shear** is observed over North India, Central India & North East India and 15-20 kts over south peninsula India.

Negative wind Shear tendency is observed over Gujarat South-West Madhya Pradesh Maharashtra.

Negative Low Level Convergence is observed over Rajasthan Bihar.

Positive Vorticity is observed over North Rajasthan Haryana Delhi Uttar Pradesh Bihar Jharkhand Maharashtra.

Precipitation:

IMR:

Rainfall up-to 30-50 mm observed over Kerala and.

Rainfall up-to 20-30 mm observed over Uttarakhand and

Rainfall up-to 01-10 mm observed over Jammu and Kashmir Himachal Pradesh East Jharkhand North-East Odisha Gangetic West Bengal Tamilnadu Andaman & Nicobar islands.

HEM :

Rainfall up-to 140 mm observed over Uttarakhand and up-to 70 mm over South Kerala

Rainfall up-to 07 mm observed over Himachal Pradesh East Jharkhand North-East Odisha Gangetic West Bengal North-East States North Kerala South Tamilnadu Andaman & Nicobar islands.

RADAR and RAPID RGB Observation:

Isolated/multiple significant echoes are seen on DWR Patiala (dBZ around 50, height 12-14km), Visakhapatnam (dBZ around 50, height 13-14km), and Thiruvananthapuram & Kochi (dBZ around 45, height 13-15km) domains at around 1530 IST. Light to moderate isolated/multiple echoes are also seen on DWR Agartala, Bhopal Delhi, Jaipur and Patna domains at around 1530IST.

RAPID RGB Satellite imagery at 1430IST indicates significant convection over Himachal Pradesh, Assam & Meghalaya, Arunachal Pradesh, North Madhya Pradesh adjoining East Rajasthan, East Bihar and adjoining Sub-Himalayan West Bengal, South Kerala, South Tamilnadu, Lakshadweep and Andaman & Nicobar 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. Widespread higher concentration of dust is observed over North India. Higher concentration of dust to persist for next two days.

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

Delhi – SAFAR analysis & Forecast	28.04.2018	29.04.2018
PM10 (micro-g/m ³)	260	286
PM2.5 (micro-g/m ³)	107	118

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:

12UTC of Day 1-2: Heat low over Pakistan and adjoining west Rajasthan and trough in MSLP from Rajasthan to Odisha

00UTC of Day 1-4: 850 hPa N-S trough from central to southern peninsular India

00UTC of Day 1-3: 850 hPa west - east trough over NW India. A CYCIR in Day 1 over southwest U.P

00UTC of Day 1: 850 and 925 hPa CYCIR over Rajasthan and adjoining Pakistan

Confluence & Wind Discontinuity Regions

12 UTC of Day 0-3: 925 hPa N-S discontinuity over Southern Peninsular India

Synoptic Systems:

12 UTC of Day 3: Fresh WD approaching J &K and western Himalayan region.

00UTC of Day 1-5: 850 hPa Strong southwesterlies from BoB leading moisture incursion over Bangladesh and east northeast India

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: NE_NMMT, Jharkhand, East_RJ, Odisha, West_MP, Madhya_Maharashtra, Marathwada, Vidarbha, TN_Puducherry, NI_Karnataka, SI_Karnataka, Kerala,

Day1: West_RJ, East_RJ, Odisha, Madhya_Maharashtra, Marathwada, Coastal_AP, TN_Puducherry, NI_Karnataka, SI_Karnataka, Kerala,

Day2: Assam_Meghalaya, East_UP, West_RJ, Odisha, Marathwada, NI_Karnataka, SI_Karnataka,

Day3: Arunachal_Pradesh, Gangetic_WB, Jharkhand, West_MP, Madhya_Maharashtra, Marathwada, Chhattisgarh, NI_Karnataka, SI_Karnataka,

Day4: Jharkhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, East_RJ, Odisha, West_MP, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, NI_Karnataka, SI_Karnataka

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Assam_Meghalaya, Jharkhand, Bihar, West_UP, Hry_Chnd_Delhi, East_RJ, Odisha, West_MP, Coastal_AP,

Day1: Gangetic_WB, Jharkhand, Bihar, East_UP, Himachal_Pradesh, Jammu_Kashmir, Coastal_AP,

Day2: Bihar, East_UP, East_RJ, Odisha, East_MP,

Day3: Assam_Meghalaya, Jharkhand, Himachal_Pradesh, Jammu_Kashmir, East_MP, TN_Puducherry,

Day4: Gangetic_WB, Jharkhand, Bihar, East_UP, Punjab, Jammu_Kashmir, Odisha, Madhya_Maharashtra, Coastal_AP, TN_Puducherry

Day4: Assam_Meghalaya, Gangetic_WB, Jharkhand, Bihar, Himachal_Pradesh, Odisha, Madhya_Maharashtra

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, Odisha, Konkan_Goa, Madhya_Maharashtra, Coastal_AP, Coastal_Karnataka, NI_Karnataka, SI_Karnataka,

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Himachal_Pradesh, Odisha, Konkan_Goa, Madhya_Maharashtra, Chhattisgarh, Coastal_AP, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chnd_Delhi, Himachal_Pradesh, Odisha, East_MP, Konkan_Goa, Coastal_AP, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, Odisha, East_MP, Chhattisgarh, Coastal_AP, Telangana, TN_Puducherry, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, West_MP, East_MP, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, 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, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, West_MP, East_MP, Chhattisgarh, Coastal_AP,

Day1: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, Guj_Reg, Saurashtra_Kutch, Vidarbha, Chhattisgarh, Coastal_AP,

Day2: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Saurashtra_Kutch, Chhattisgarh, Coastal_AP,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, West_MP, East_MP, Vidarbha, Chhattisgarh, Coastal_AP, Telangana,

Day4: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, East_RJ, Odisha, West_MP, East_MP, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, TN_Puducherry,

7. K-Index :-> 35[Very Unstable thunderstorm likely]:

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, West_UP, Uttarakhand, Himachal_Pradesh, Odisha, Konkan_Goa, Madhya_Maharashtra, Chhattisgarh, Coastal_AP, Telangana, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day1: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, East_UP, West_UP, Uttarakhand, Himachal_Pradesh, Odisha, Madhya_Maharashtra, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day2: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Odisha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, SI_Karnataka, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, East_MP, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, SI_Karnataka, Kerala

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Assam_Meghalaya, Sub_Himalayan_WB, Bihar, Odisha, Andaman_Nicobar,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Uttarakhand, Odisha, Andaman_Nicobar,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, East_UP, Uttarakhand, Odisha,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Bihar, East_UP, Uttarakhand, Andaman_Nicobar,

Day5: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, Uttarakhand, Jammu_Kashmir, Odisha, Andaman_Nicobar, Coastal_AP,

***** Rainfall > 8cm over some parts of Bangladesh in Day 2-4**

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a cyclonic circulation in lower troposphere (925hPa) over North west Rajasthan and adjoining Punjab region. The forecast shows it will move eastward and lies over North Haryana and adjoining areas on day2. The analysis shows a Trough from South East Uttar Pradesh to South Madhya Maharashtra across west Vidarbha. The forecast shows south-eastward shift of the trough till day 3. Another Trough is seen in the analysis in the lower troposphere (925hPa) extending from northwest Rajasthan to north Chhattisgarh. The forecast shows it will persist till day3. A North- South oriented Trough extends from south Madhya Maharashtra to Comorin area interior Karnataka and Tamil Nadu. The forecast indicates it will become less marked in next 48 hours.

2. Location of Jet and Jet Core (>60kt) at 500hPa:

Although the presence of strong westerlies is found over Eastern parts of India but no jet core over the Indian region for the next 3 days.

3. Low Level Vorticity (850hPa Positive Vorticity ($>12 \times 10^{-1}/s$):

Low level Positive Vorticity is seen mostly along the North- South Trough, the trough from Rajasthan up to Chhattisgarh, along the cyclonic circulation, over parts of Punjab, Haryana, Delhi, adjoining West Uttar Pradesh, Madhya Pradesh and NE states during Next 3 days; It is Inferred that some parts of GWB, Bihar, Jharkhand and Orissa on day 1 and 3..

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): The threshold value of the index > 3 is seen over parts of Punjab, Haryana and Delhi, Gujarat, coastal areas of Gangetic West Bengal and Kolkata, SHWB parts of Orissa, Bihar, Jharkhand, Uttarakhand, Uttar Pradesh, Rajasthan, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Karnataka Konkan and Goa, Tamil Nadu, coastal Maharashtra including Mumbai, Konkan & Goa, Vidarbha, Madhya Maharashtra, Madhya Pradesh Chhattisgarh, coastal areas along the east coast and west coast, Sikkim, Assam, Meghalaya, Tripura and adjoining area during next 3 days; Maximum value of the index is seen over parts of GWB, SHWB, Orissa, Bihar, Jharkhand, Uttar Pradesh, Chhattisgarh, Telangana, Gujarat, South West Rajasthan, Andhra Pradesh, coastal Maharashtra, coastal Karnataka, Kerala and coastal Tamil Nadu on all 3 days; over parts of Uttarakhand, Haryana, Delhi and adjoining areas on day 3.

Lifted Index (< -2): The threshold value of the index is below -2 over parts of Gujarat, Rajasthan, Punjab, Haryana, Delhi, Uttar Pradesh, Uttarakhand, East Madhya Pradesh, Bihar, Jharkhand, Andhra Pradesh, Karnataka, Telangana, Rayalaseema, Konkan and Goa, Kerala, Tamil Nadu, southern part of west coast, coastal areas along the east coast, Chhattisgarh, Vidarbha, Marathawada, Orissa, GWB, SHWB, Assam, Meghalaya, Tripura and adjoining areas on all 3 days; maximum negative value of the index less than -10 is seen over parts of GWB on day 1; over parts of GWB and Orissa on day 2; over parts of Orissa, Bihar, GWB, SHWB, Jharkhand, coastal Andhra Pradesh and some parts of East Uttar Pradesh on day 3.

Total Total Index (> 50): The threshold value of the index is > 50 is seen over most of the parts of the country except Gujarat, Madhya Maharashtra, Marathawada and south peninsular India during next 3 days; the maximum value of the index >60 is seen over parts of East Uttar Pradesh, Orissa, GWB, Bihar and Jharkhand on day 3.

Sweat Index (> 300): Although the threshold value of the Index >300 is seen in most parts of the country except central parts of Madhya Pradesh and west Vidarbha during next 3 days; maximum value of the index greater than 800 is seen over parts of Bihar, GWB, SHWB, Orissa, Jharkhand during next 3 days; over parts of East Uttar Pradesh, Chhattisgarh and Andhra Pradesh on day 2 and 3; over some parts of East Madhya Pradesh on day 3;

CAPE (> 1000): Mostly in areas of southern peninsular India, along west coast and east coast, parts of Orissa, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Tamil Nadu, Karnataka, coastal Maharashtra including Mumbai, Gujarat, Konkan and Goa, East Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, GWB, SHWB, Sikkim, Assam, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of west Uttar Pradesh on day 1; over parts of Haryana, Delhi and west Uttar Pradesh on day 1; over parts of Rajasthan on day 2 and 3; over parts of Punjab, Haryana, Delhi, Uttarakhand and West Uttar Pradesh on day 3; Maximum value of the index greater than 2500 is seen mostly over parts of GWB, coastal Orissa, coastal Andhra Pradesh, Coastal Tamil Nadu during next 3 days; over parts of Bihar and Jharkhand on day 2 and 3; over parts of coastal Kerala, Uttar Pradesh, coastal Karnataka, Konkan and Goa, south Chhattisgarh, Northern parts of Madhya Pradesh and Gujarat on day 3.

CIN (50-150): Although the threshold value of the Index lies in the range of (50–150) over most part of the country except central parts of Madhya Pradesh, northern parts of Madhya Maharashtra, Marathwada, and West Vidarbha region during next 3 days; maximum value of the index greater than 400 is seen over parts of Gujarat, South West Rajasthan, Bihar, Jharkhand, Orissa, Uttar Pradesh, Chhattisgarh adjoining east Madhya Pradesh and Telangana on day 1; over parts of Gujarat, west Rajasthan, West Uttar Pradesh, Haryana, Punjab, Himachal Pradesh and adjoining Uttarakhand region, Orissa, Chhattisgarh on day 2; over parts of GWB, Bihar, East Uttar Pradesh, Rajasthan, Orissa and Jharkhand on day 3..

5. Rainfall Activity:

40- 70 mm Rainfall: over parts of GWB and Kolkata and adjoining areas during next 3 days; over parts of Orissa on day 1; over parts of Tripura and adjoining areas on day 2; over parts of Arunachal Pradesh, Tripura and adjoining areas on day 3.

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

Up to 10 mm rainfall: Over parts of J&K, Foothills of Himalaya, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Uttar Pradesh, Sikkim, NE states, GWB, SHWB, Orissa, Madhya Pradesh, Andhra Pradesh, Kerala, Karnataka, Tamil Nadu, Bihar, Jharkhand, Chhattisgarh and Telangana during next 3 days; over parts of Rajasthan and Telangana on day 2 and 3; over parts of Vidarbha, Delhi and adjoining areas 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, GWB, Sikkim, Orissa, Chhattisgarh, Bihar, Jharkhand, Vidarbha and NE states on day 1; over parts of Orissa, GWB, Bihar, Jharkhand, SHWB, North Madhya Pradesh and NE states on day 2; over parts of East Uttar Pradesh, East Madhya Pradesh adjoining Chhattisgarh, GWB, Orissa, Bihar, Jharkhand, Sikkim, SHWB, NE states on day 3; maximum value of the Model reflectivity is seen over parts of GWB, SHWB adjoining Orissa, Bihar, Jharkhand and NE states on day 3; over parts of GWB, SHWB and NE states from day 1 onwards.

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, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, Bihar, Jharkhand, GWB, NE states and North East Uttar Pradesh during the next 3 days; the maximum value of the index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, GWB, Orissa, Madhya Maharashtra, Marathwada, Vidarbha, Jharkhand, Telangana, Chhattisgarh, Karnataka and Gujarat 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.

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, Bihar, Jharkhand, Uttar Pradesh, Chhattisgarh, Vidarbha, Orissa, GWB and Kolkata, SHWB, Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Rayalaseema, Extreme south peninsular India, Assam, Meghalaya, Tripura and adjoining areas on all 3 days; over some parts of south West Rajasthan from day 2 onwards; over parts of Punjab, Haryana Delhi, Himachal Pradesh, Uttarakhand and some parts of north Madhya Pradesh and adjoining areas on day 3; Maximum value of the index greater than 3500 is seen over the parts of Orissa, coastal Andhra Pradesh, GWB, Jharkhand and Tamil Nadu during next 3 days; over parts of Karnataka, Kerala and Telangana on day 2; over parts of Bihar, Karnataka, Telangana, Chhattisgarh and some parts of East Uttar Pradesh on day 3.

CIN (50-150): Although the threshold value of the Index lies in the range of (50–150) over most part of the country except central parts of Madhya Pradesh, west Vidarbha and north Madhya Maharashtra and Marathawada during next 3 days; the maximum value of the index > 400 is seen over parts of Gujarat, Rajasthan, Bihar, Jharkhand, GWB, Orissa, Chhattisgarh, Coastal Maharashtra, Vidarbha, Uttar Pradesh, Telangana Madhya Pradesh, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Rajasthan, West Madhya Pradesh, Andhra Pradesh and North Karnataka, Konkan and Goa during next 3 days..

3. Rainfall and Thunderstorm Activity:

Above 130 mm Rainfall: over some parts of Tripura and adjoining areas on day 2.

70- 130 mm Rainfall: over parts of Assam, Meghalaya, Tripura, Arunachal Pradesh and adjoining areas on day 2 and 3; over some parts of Bihar on day 3.

40- 70 mm Rainfall: over parts of GWB, Orissa, Assam, Arunachal Pradesh, Meghalaya, Tripura and adjoining areas on day 2 and 3; over parts of Bihar, Jharkhand and Sikkim on day 3.

10- 40 mm Rainfall: over parts of Sikkim, Foothills of Himalaya, GWB, SHWB, Bihar, Jharkhand and NE states during next 3 days, over parts of Himachal Pradesh, Uttarakhand, Kerala and Tamil Nadu on day 1; over parts of Orissa, Kerala and Andhra Pradesh on day 2; GWB, Bihar, Jharkhand, Orissa, SHWB on day 1 and 2; over parts of GWB and East Uttar Pradesh on day 3; over some parts of East Uttar Pradesh and Orissa on day 3.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Kerala, Tamil Nadu, Orissa, Andhra Pradesh, Bihar, Jharkhand, East Uttar Pradesh, foothills of Himalaya, GWB, SHWB, Sikkim and NE states during next 3 days; over some parts of West Uttar Pradesh on day 2 and 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

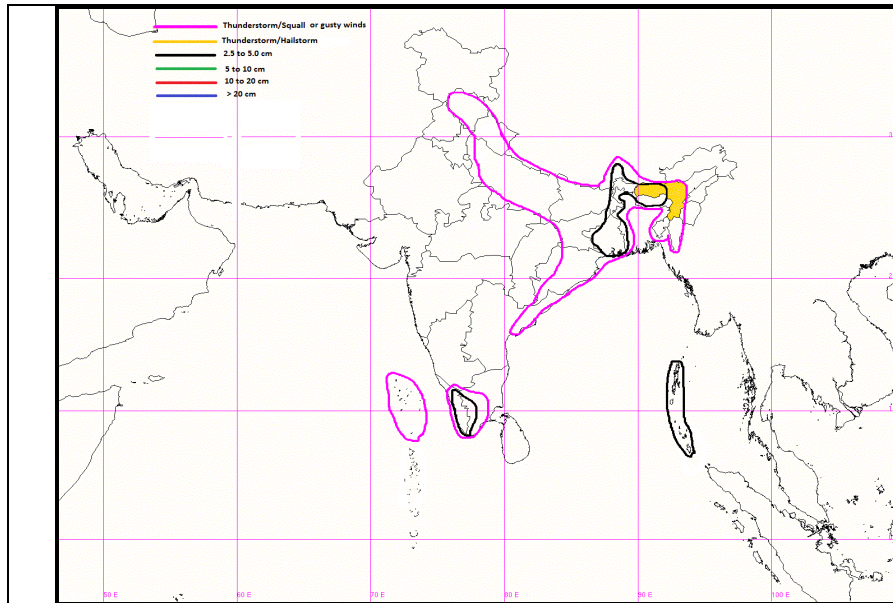
Summary and Conclusions:

- o Most thermodynamic indices (T-STORM Initiation Index, TTI Index, K-Index, Lifted Index, CAPE, CINE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over North Indian plains, East India, southeast peninsular coast and Gujarat Region of India on day 1 with a maximum probability of occurrence over Jharkhand, Chhattisgarh, Odisha and West Bengal. The area expands westwards into central India on day 2. SWEAT index, which also accounts for the wind shear between 850 and 500 hPa levels, also indicates a similar region on day 1, increasing on day 2 over the East India but decreasing over the North Indian plains. Reflectivity values from IMD WRF model indicate high probability of convection over Gangetic West Bengal and Tripura on day 1 and day 2. The 850-200 hPa wind shear maxima are maximum over northwest and central India and northeast India on day 1 and increases to cover entire North India on day 2.
- o Synoptic analysis indicate that trough at mean sea level runs from northwest Rajasthan to north Chhattisgarh. There is also one cyclonic circulation over southeast Uttar Pradesh & neighbourhood in the lower levels. There is another cyclonic circulation over Gangetic West Bengal & neighbourhood in the lower levels and a trough extends from this cyclonic circulation to Manipur. Models (ECMWF and IMD GFS deterministic model) indicate that the Bay of Bengal Anticyclone has shifted northwards and is pumping moisture into north India. As a result, widespread thunderstorm activity is expected on day 1 and 2, sometimes accompanied by associated phenomena such as heavy rainfall and hail throughout North and East India on day 1 and 2.
- o There is also a northsouth wind discontinuity from south Madhya Maharashtra to Comorin area at 0.9 km above mean sea level and a trough in easterlies from Maldives area to Madhya Maharashtra. ECMWF and IMD GFS deterministic models indicate that the trough is likely to persist during the next two days. Associated thunderstorm activity will be observed over south peninsular India on both day 1 and 2.

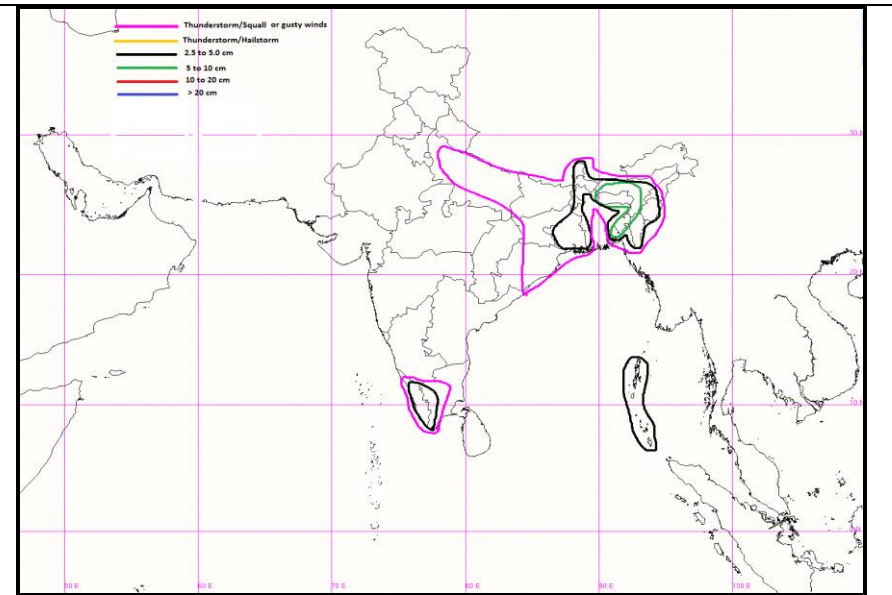
Day-1 & Day-2:

24hour Advisory for IOP:	48hour Advisory for IOP:
<p>Significant Rainfall: Tamil Nadu, Kerala West Bengal and Sikkim Assam and Meghalaya Andaman and Nicobar Islands</p> <p>Thunderstorm with squall or gusty winds: Interior Tamil Nadu, Kerala, Coastal Andhra Pradesh Uttarakhand, Himachal Pradesh, Uttar Pradesh Bihar, Jharkhand, West Bengal, Sikkim, Odisha Nagaland, Manipur, Mizoram and Tripura</p> <p>Thunderstorm with squall and hail Assam and Meghalaya</p> <p>Thunderstorm/Duststorm: West Uttar Pradesh</p>	<p>Significant Rainfall: Assam and Meghalaya, Nagaland, Manipur, Mizoram and Tripura, Tamil Nadu, Kerala West Bengal, Sikkim Andaman and Nicobar Islands</p> <p>Thunderstorm with squall or gusty winds: Interior Tamil Nadu, Kerala, Assam and Meghalaya, Nagaland, Manipur, Mizoram and Tripura, Bihar, Jharkhand, West Bengal, Sikkim, Odisha Uttar Pradesh</p> <p>Thunderstorm with squall and hail Nil</p>

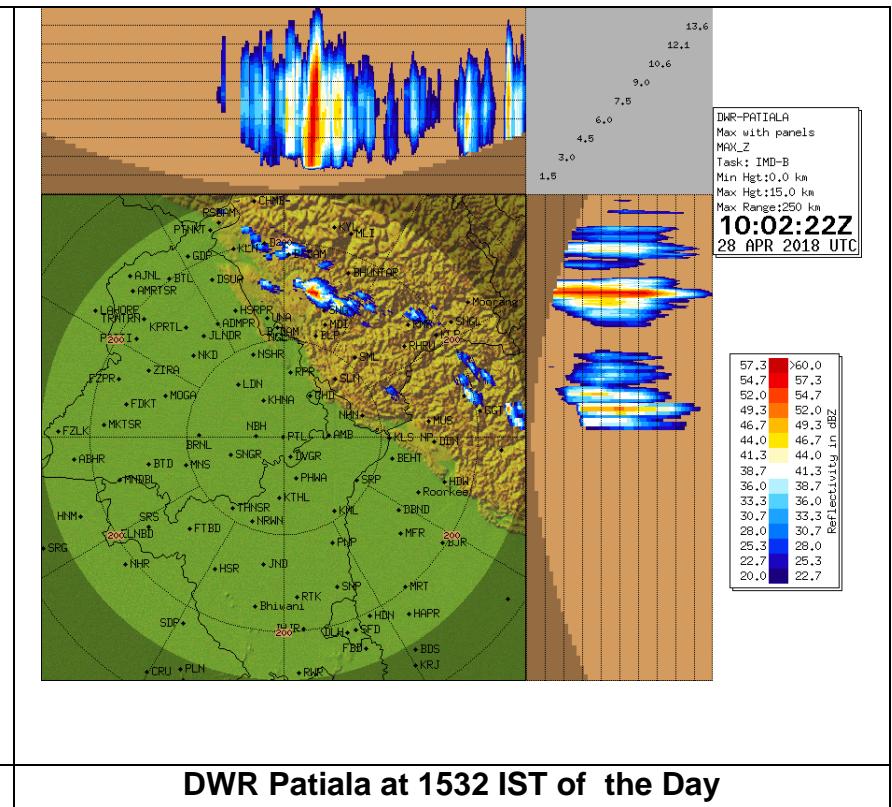
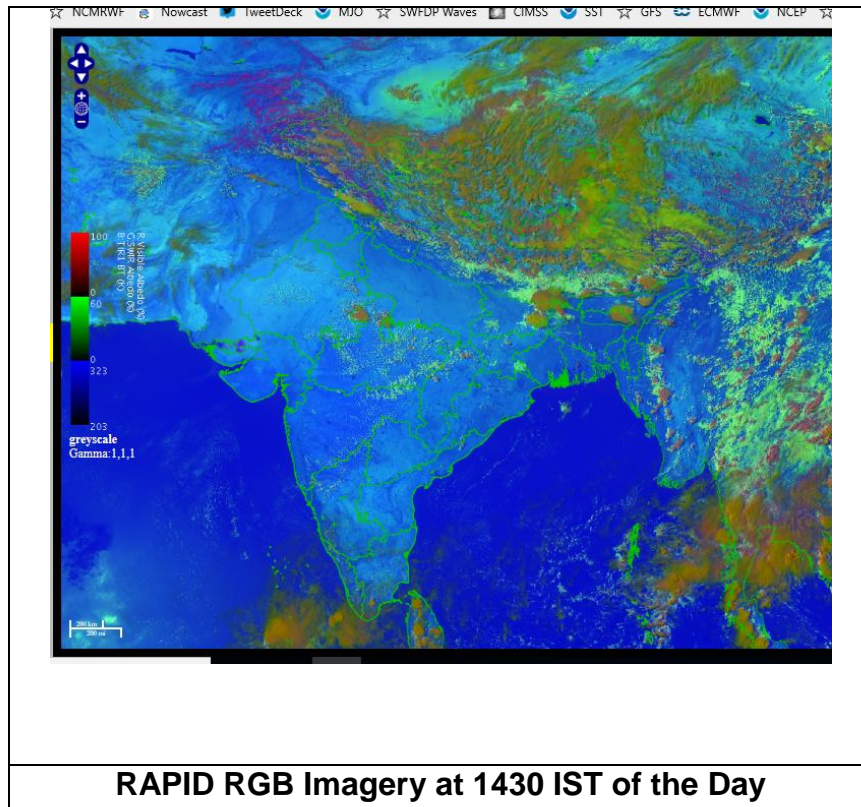
Graphical Presentation of Potential Areas for Severe Weather:

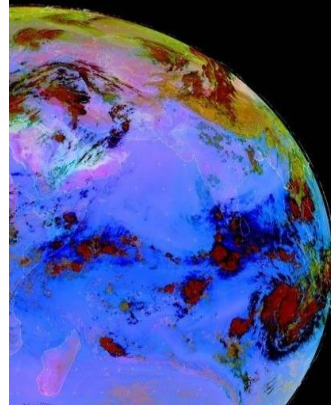
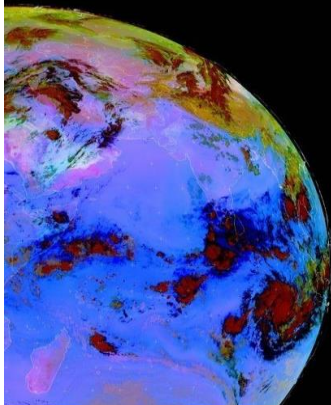
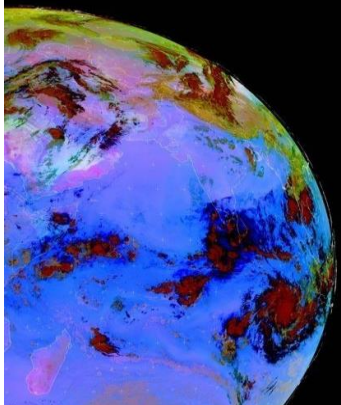
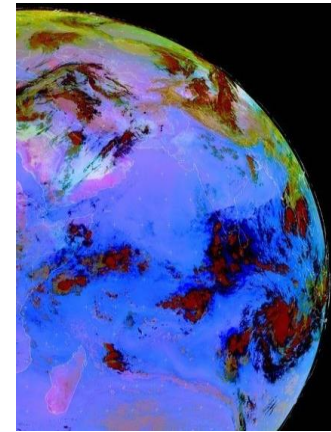
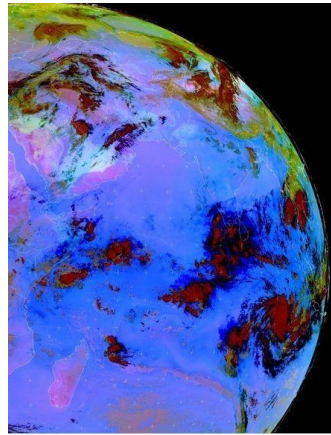
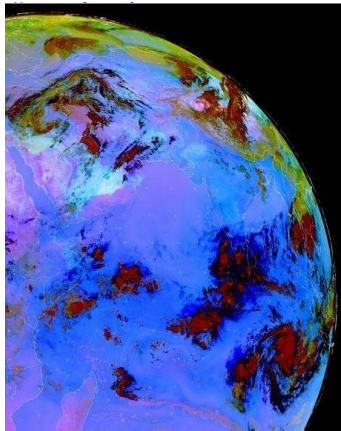


IOP Advisory for 24 hours



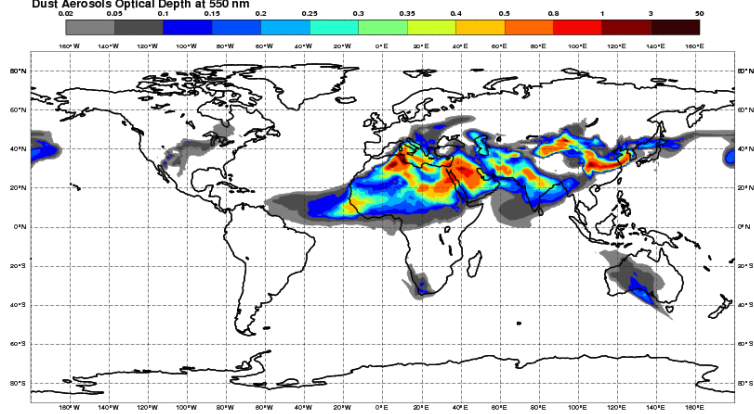
IOP Advisory for 48 hours



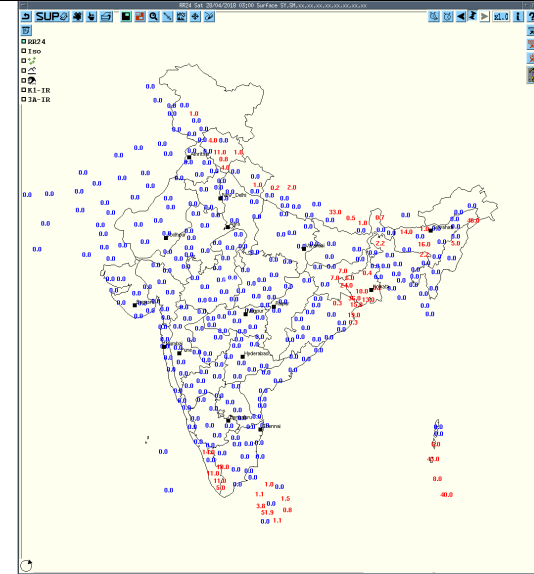


Observed Satellite Dust Images on 28-04-2018

Friday 27 April 2018 00UTC CAMS Forecast t+120 VT: Wednesday 02 May 2018 00UTC
 Dust Aerosols Optical Depth at 550 nm

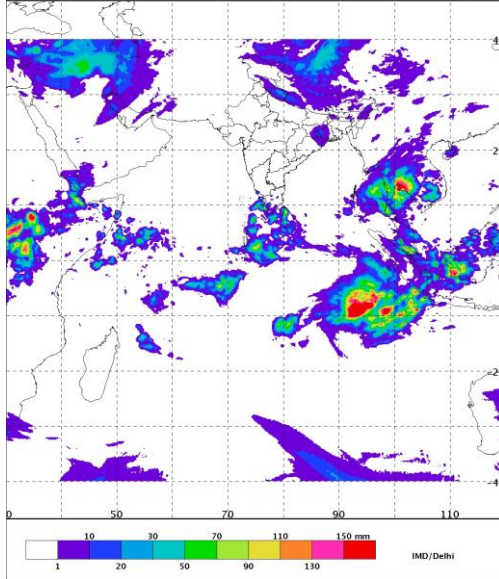


Dust Forecast



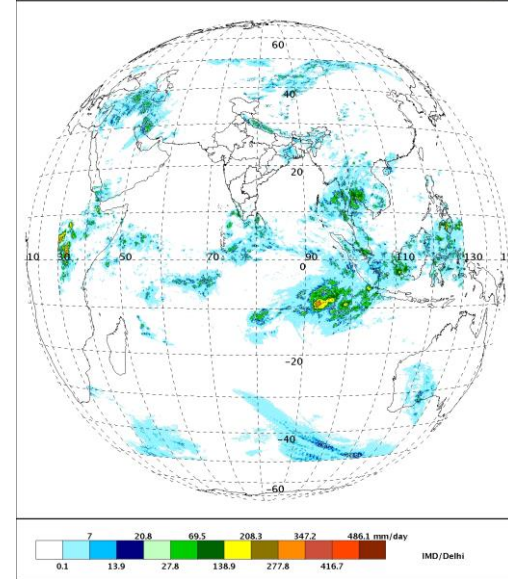
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

SAT INSAT-3D IMG 27-04-2018 (03:30 GMT) to 28-04-2018 (03:00 GMT)
 INSAT Multispectral Rainfall(Daily)
 L3G BINNED GEOPHYSICAL PARAMETER GRIDDED

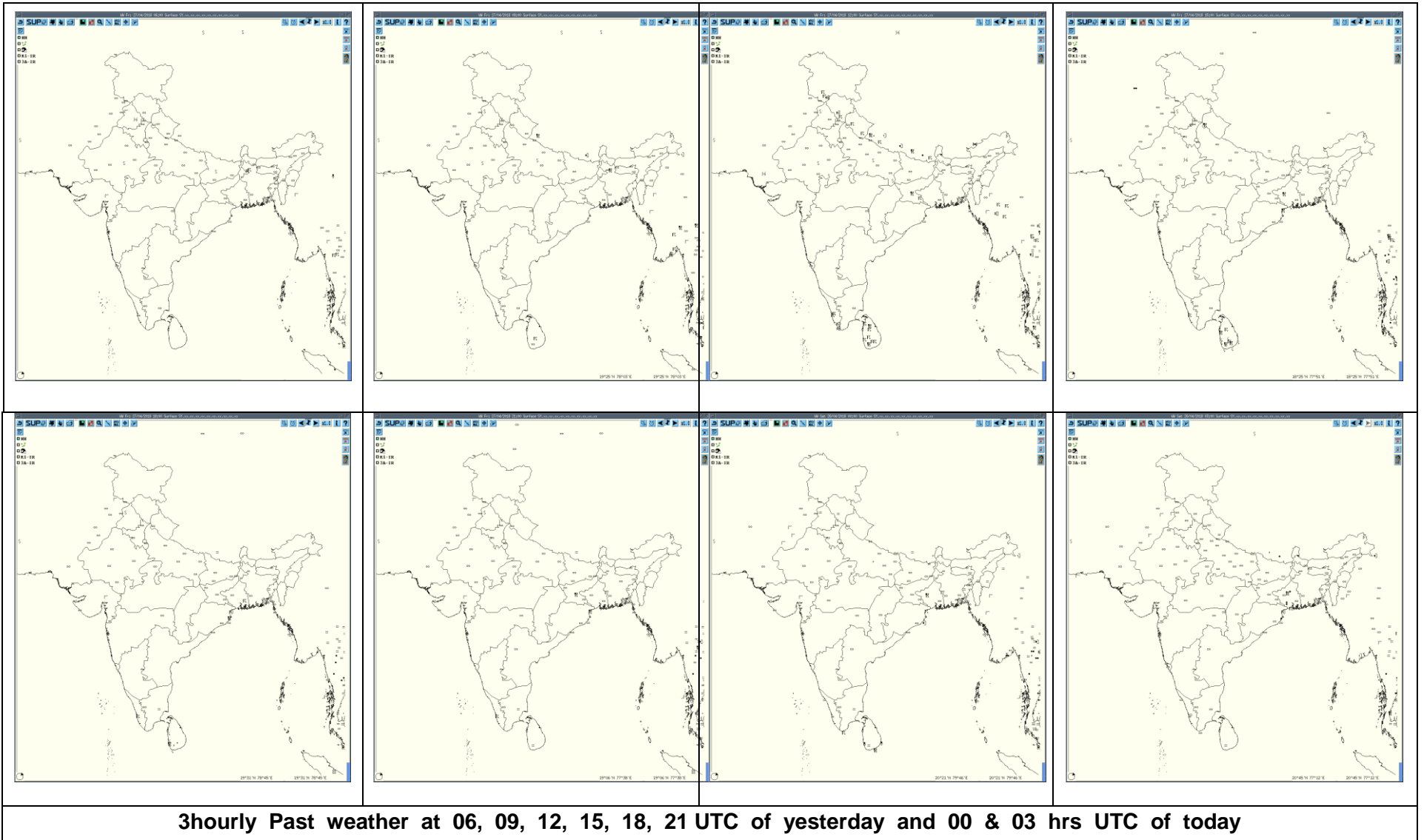


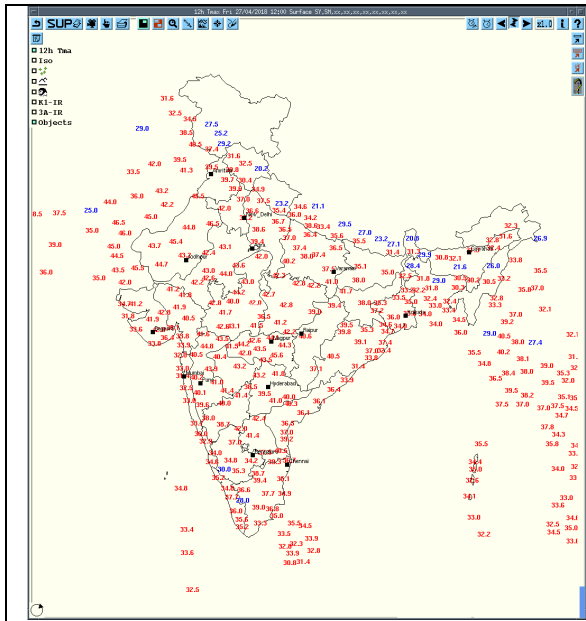
IMR

SAT INSAT-3D IMG 27-04-2018 (03:30 GMT) to 28-04-2018 (03:00 GMT)
 Precipitation(HE) Daily
 L3G BINNED GEOPHYSICAL PARAMETER FULL DISK

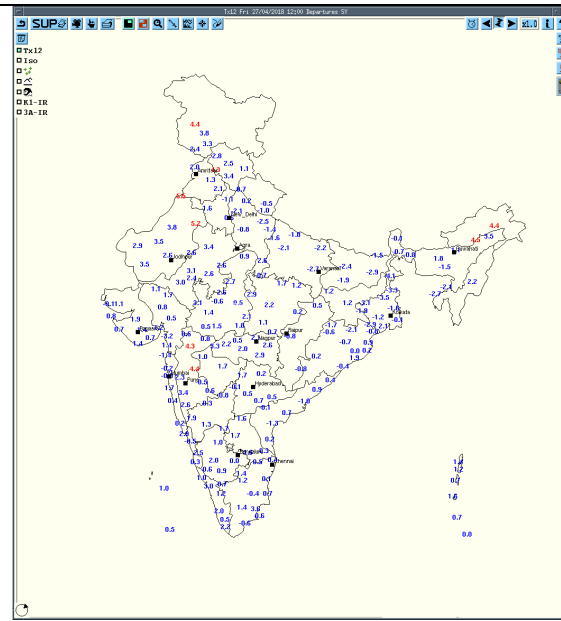


HEM

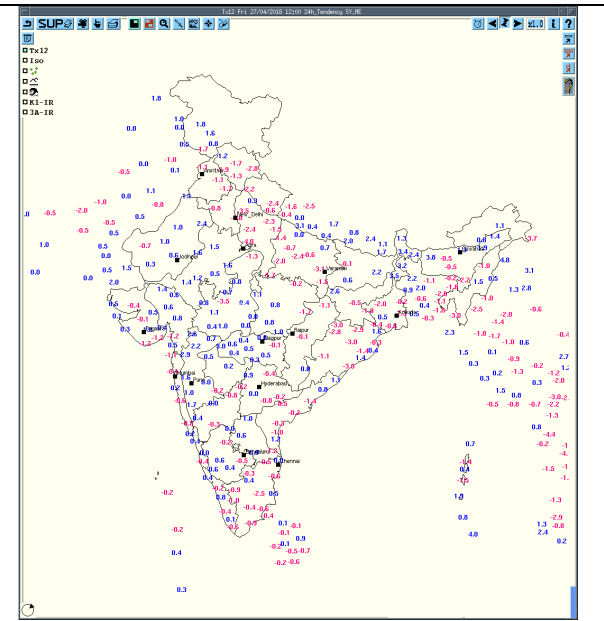




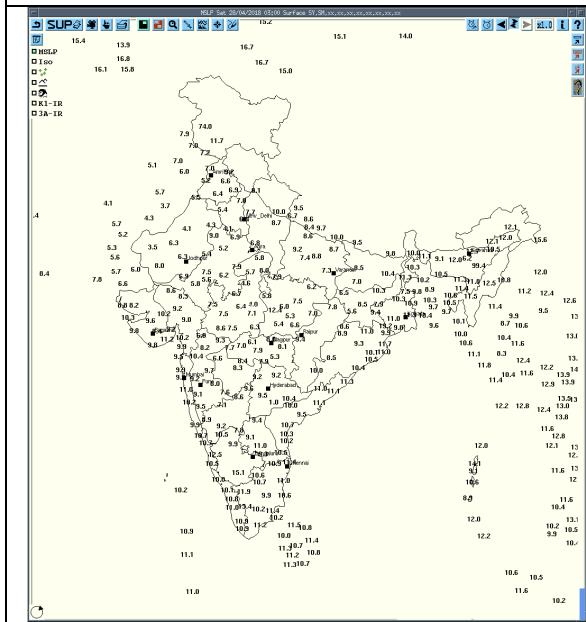
Tmax



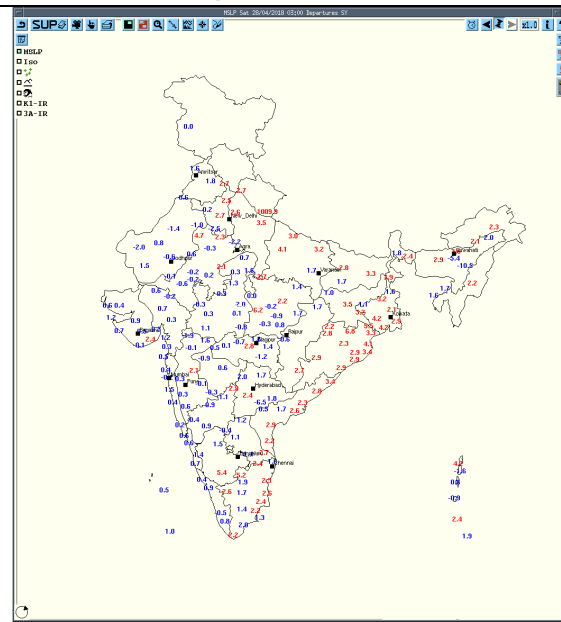
Departure Tmax



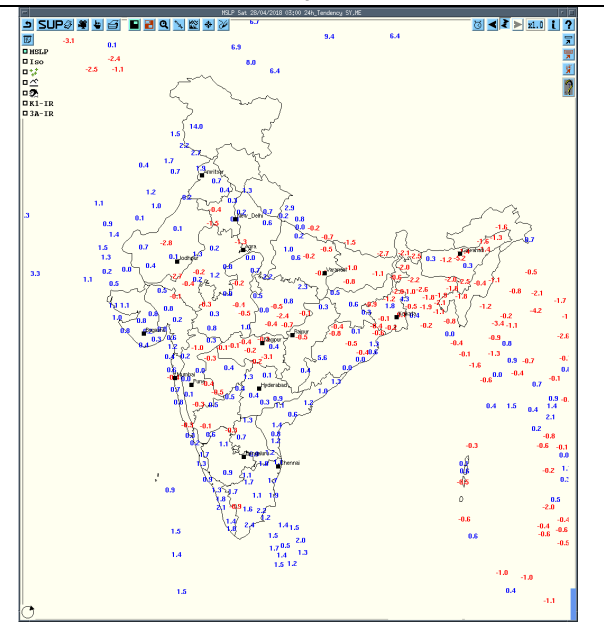
Tendency Tmax



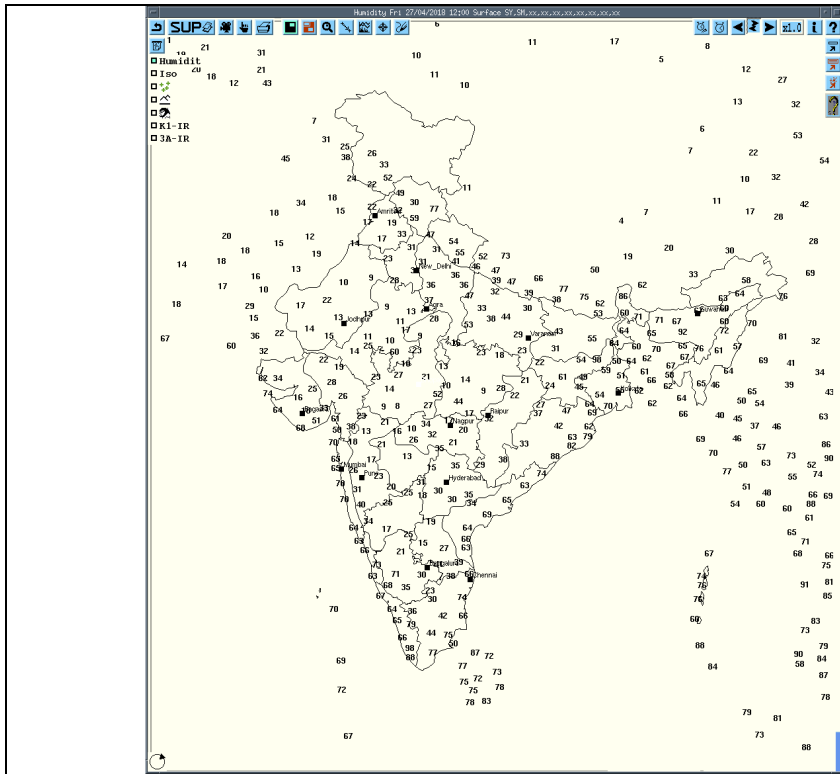
MSLP



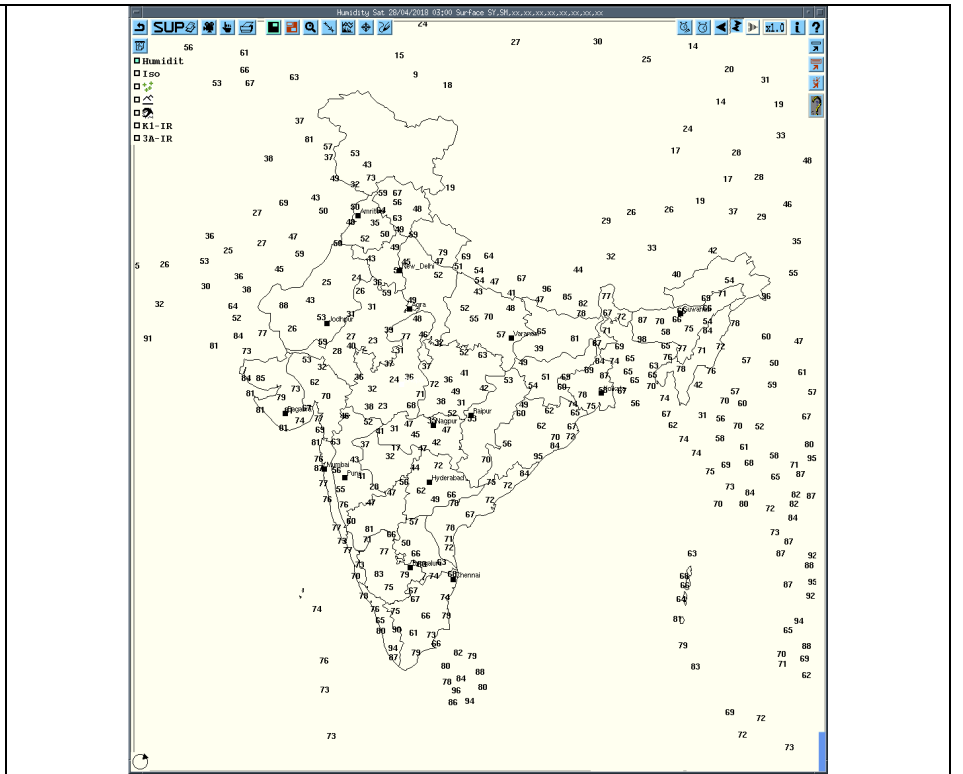
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

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	
Patiala	28-04-18	270300 - 270900	NO ECHO	--	--	--	--	
		270900- 271200	MULTIPLE CELLS dbz 65.0 Ht.12 - 14 KM	N, NW, E SECTORS. MOVMENT TOWARDS E- DIRECTION		HAIL/RA/TS	UNA, NAHAN, KALSI, BILASPUR AND ADJ. AREAS.	
		271200 - 271500	MULTIPLE CELLS dbz 58.5 Ht. 11 - 13 KM	NW, E SECTORS. MOVMENT TOWARDS E- DIRECTION		RA/TS	SOLAN, SHIMLA, NALAGRAH, RUPNAGAR, KALSI AND ADJ. AREAS.	
		271500- 280252	No Echo	--	--	--	--	
Lucknow	28-04-18	270300- 280300	No significant cell for U.P., Indian Region.	--	--	--	--	
Patna	28-04-18	270300- 280300	Nil	Nil	Nil	Nil	Nil	
Jaipur	28-04-18	270915- 280000	Multiple cell with average height of 3.8 km & maximum reflectivity 43.0 dBZ	Multiple cell develop from 0915 UTC of 27/04/2018 towards SSW of Jaipur and moved to SE Wards at speed 25-30 km/hr	Multiple cell develop from 0915 UTC on 28/04/2018 towards SSW of Jaipur and reaches maximum reflectivity during 0915 (27.04.18) TO 0000 UTC OF 28/04/2018.	Light to moderate rain at a isolated places	NAGAUR, AJMER, JAIPUR, TONK , SIKAR, DAUSA, SAWAIMADHOPUR	
Agartala	28-04-18	270300- 280300	No Significant echo					

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	28-04-18	270600	Cb cell of maximum reflectivity of 52 dbz with height of 9 kms	E (246 kms) moving SE ly	Since last observation and cb cells dissipated at 0441 UTC	NIL	NIL
		270900	Multiple cb cells in the NW with max reflectivity 50 dbz and height 9kms.	85kms(NW) for the cb at 08:51 UTC. Moving Southerly.	Started formation from 08:11 UTC.	Dissipating.	DANTEWADA DIST and Nabarangapur.
		271200	Multiple cb cells from W TO NE out of which has max reflectivity 61dbz and height 13kms.	231kms(NE) and moving southerly.	Reported cb at 11:21UTC.	Likely to be intensified.	NAYAGARH(ODISSA)
		271500	Multiple cb cells from W to NE with maximum reflectivity 58dbz and height 12kms.	123KM (W), 209(NE) KM and moving southerly.	CB formed since last observation and dissipating from 13:01UTC.	-	Malkangiri (ODISSA)

Radar Station Name	Date	Time Interval of Observation (UTC)	Organisation of 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
Kolkata	28-04-18	270302-271010	NIL	NIL	NOSIG ECHO	NIL	NIL
		271010-272141	i) Isolated cell with maximum reflectivity of 60.0 dBz at 1112 UTC and maximum height of 10.25 Km at 1112 UTC ii) Isolated cell with maximum reflectivity of 64.5 dBz at 1442 UTC and maximum height of 9.52 Km at 1442 UTC	ESE (79.4 km) Moving in East-ward direction with a speed of 40 kmph. EAST (304.4km) Moving in SE-ward direction	Cell started forming at 1021 UTC at ESE (79.4 Km) from radar. Matured, transformed into a big celled system in 1112 UTC, dissipated in ESE at 1302 UTC at a distance 96.8 km from radar. Isolated Cell started forming at 1010 UTC at EAST (304.4 Km) from radar. Matured and transformed into multi celled system celled system in 1110 UTC, dissipated in SE at 1800 UTC at a distance 130.8 km from radar.	Thunderstorm /Rain Thunderstorm /Rain	N/A N/A
		272141-280301	Multi Isolated cell developed with maximum reflectivity of 59.5 dBz at 2321 UTC and maximum height of 13.08 Km at 0012 UTC	WEST (213.1 km) Moving in East-ward direction.	Multi isolated Cells started forming at 2141 UTC at WEST (213.1 Km) from radar. Matured, transformed into a multi celled system in 2301 UTC, continued.	Thunderstorm /Rain	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)
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	27-04-18	1515 1720	1520 1735
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	27-04-18	1515	1520
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	27-04-18	1505	1740
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	27-04-18	1600	1640
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	27-04-18	1531	1750
			Hailstorm (diameter:0.9cm)	27-04-18	1645	1650
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	27-04-18	1620	1828
Dehradun	Northwest India	Uttarakhand	Thunderstorm	27-04-18	1920	2045
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	27-04-18	1650	1732
Tehri	Northwest India	Uttarakhand	Thunderstorm	27-04-18	1650	1740
Vanasthali (Tonk)	Northwest India	East Rajasthan	Thunderstorm	27-04-18	1800	1830
Barapani	Northeast India	Meghalaya	Thunderstorm	27-04-18	1540	1600
Shillong	Northeast India	Meghalaya	Thunderstorm	27-04-18	1210	1450
Ambikapur	Central India	Chhattisgarh	Thunderstorm	27-04-18	1815	1840
Gangtok	East India	Sikkim	Thunderstorm	27-04-18	1410	1630
Tadong	East India	Sikkim	Thunderstorm	27-04-18	1555	1610
Alipore	East India	West Bengal (GWB)	Thunderstorm	27-04-18	2200	2300
Dum Dum	East India	West Bengal (GWB)	Thunderstorm	27-04-18	2220	2230
Diamond Harbour	East India	West Bengal (GWB)	Thunderstorm	27-04-18	2200	2225
Haldia	East India	West Bengal (GWB)	Thunderstorm	27-04-18	2128	2140
Digha	East India	West Bengal (GWB)	Thunderstorm	27/28-04-18	272040, 280800	272300, 280830
Asansol	East India	West Bengal (GWB)	Thunderstorm	28-04-18	0400	0715
Bankura	East India	West Bengal (GWB)	Thunderstorm	27/28-04-18	271950, 280350	272200, 280730
			Hailstorm (diameter: 1.0cm)	27-04-18	2025	2030
Sriniketan	East India	West Bengal (GWB)	Thunderstorm	28-04-18	280635	280725
Ranchi	East India	Jharkhand	Thunderstorm	27/28-04-18	271520, 271720, 272050, 280150	271640, 271750, 272140, 280250
Jamshedpur	East India	Jharkhand	Thunderstorm	27-04-18	1700	2000
Balasore	East India	Odisha	Thunderstorm	27/28-04-18	272005, 280150, 280510	272240, 280300, 280750
Chandbali	East India	Odisha	Thunderstorm	27-04-18	2245	2325

Paradeep	East India	Odisha	Thunderstorm	28-04-18	0550	0630
Keonjhar	East India	Odisha	Thunderstorm	27/28-04-18	271940, 282315	272105, 280100
Alappuzha	South India	Kerala	Thunderstorm	27-04-18	2015	2150
Karipur A P	South India	Kerala	Thunderstorm	27-04-18	1958	2130
Thiruvananthapuram City	South India	Kerala	Thunderstorm	27-04-18	1330	1620

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

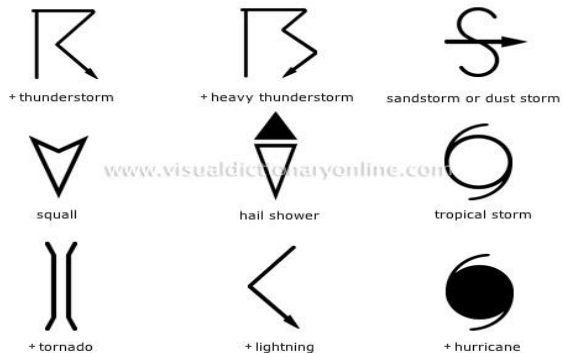
For Radar images of the past 24 hours including mosaic of images:

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	