



India Meteorological Department

FDP STORM Bulletin No. 102 (16-06-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC Inference (0300UTC of the day):

- ◆ The Northern Limit of Monsoon (NLM) 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, Baghdogra and Lat. 27°N/ Long. 87°E. Further advance of southwest monsoon is not likely during next 6-7 days due to the likely prevalence of weak monsoon pattern.
- ◆ The Western disturbance as a trough in mid-tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 70°E to the north of Lat. 32°N persists.
- ◆ The cyclonic circulation extending upto 1.5 km above mean sea level over central Pakistan and adjoining Punjab now lies over Central Pakistan and adjoining areas of northwest Rajasthan and Punjab.
- ◆ Another cyclonic circulation extending upto 0.9 km above mean sea level lies over northern parts of Haryana and neighbourhood.
- ◆ The cyclonic circulation at 0.9 km above mean sea level over northeast Bihar and adjoining Sub-Himalayan West Bengal & Sikkim persists.
- ◆ The cyclonic circulation at 7.6 km above mean sea level over eastcentral Arabian Sea off Karnataka coast now lies over Eastcentral Arabian Sea of South Maharashtra-Goa coasts.
- ◆ The trough in westerlies at 7.6 km above mean sea level now runs from north Bihar to Telangana across Jharkhand, Odisha and south Chhattisgarh.
- ◆ The off shore trough at mean sea level now runs from Goa coast to Kerala coast.
- ◆ A cyclonic circulation lies over south Gujarat and neighbourhood between 3.1 & 3.6 km above mean sea level.
- ◆ A cyclonic circulation at 7.6 km above mean sea level lies over Lakshadweep-Maldives area.

Satellite Observations during past 24 hrs and current observation:

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

Clouds descriptions within India:

North: Isolated low/medium clouds with embedded moderate to intense convection seen over North Punjab. Scattered low/medium clouds seen over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, adjoining Uttar Pradesh, East-central Punjab, North Haryana and East Uttar Pradesh.

East: Broken low/medium clouds with embedded intense to very intense convection seen over South Bangladesh. Isolated low/medium clouds with embedded moderate to intense convection seen over extreme Northeast Assam, adjoining Arunachal Pradesh. Broken low/medium clouds

with embedded weak convection seen over South Bihar, Jharkhand, Odisha, Western parts of Gangetic west Bengal, North Sub-Himalayan West Bengal, rest Northeastern States and rest Bangladesh. Scattered low/medium clouds over rest parts of the region.

West: Scattered low/medium clouds seen Konkan & Goa, West Maharashtra, Marathawada and Southeast Gujarat.

South: Broken low/medium clouds with embedded intense to very intense convection seen over Andaman Islands. Broken low/medium clouds seen over South Kerala, South Tamilnadu, Nicobar Islands and Lakshadweep. Scattered low/medium clouds with embedded weak convection seen over rest Kerala, rest Tamilnadu, Karnataka, South Andhra Pradesh and Rayalaseema.

Arabian Sea:

Scattered low/medium clouds with embedded moderate to intense convection seen over Southeast Arabian Sea & moderate convection seen over South Arabian Sea south of lat 10.0N and Maldives.

Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded intense to very intense convection seen over East-central Bay & adjoining area and South Bay south of lat 13.0N and Andaman Sea, Gulf of Martaban and Tenasserim coast.

Past Observation: Not Received

DWR and RAPID Observations:

Moderate multiple echoes are seen on DWR Patiala (dBZ 45-50 & height 9-10km), DWR Srinagar (dBZ around 50 & height 8-9km) and DWR Kolkata {(dBZ 50-55 & height 13-14 km(over Bangladesh))} at around 1545IST. Light to moderate isolated/multiple echoes are also seen on DWR Goa, Mumbai, Gopalpur, Paradeep, Visakhapatnam, Kochi, Thiruvananthapuram, Chennai, Agartala, Patna domains at around 1545 IST.

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 over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	16.06.2018	17.06.2018
PM10 (micro-g/m ³)	512	376
PM2.5 (micro-g/m ³)	119	96

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs: 00&12UTC of Day 0-3: At850hPaCYCIR over Punjab & adjoining Pakistan region

00UTC of Day 0-5: At 850hPa, a trough from Bihar to Tripura and Assam via Orissa, BOB and Bangladesh

00UTC of Day 0-4: At 500 hPa CYCIR over south east MP and moving towards further south east on Day-3

Confluence & wind Discontinuity regions: 12UTC: NIL

Synoptic systems: 00 &12 UTC of Day 0-3: WD as a trough over Pakistan, J&K Region.

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

3. Convergence at 850 hPa:

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

Day0: Assam_Meghalaya,

Day1: Assam_Meghalaya, NE_NMMT, Saurashtra_Kutch,

Day2: Arunachal_Pradesh, TN_Puducherry,

Day3:

Day4:

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Arunachal_Pradesh, Assam_Meghalaya, Jharkhand, Bihar, East_UP, Uttarakhand, TN_Puducherry,

Day1: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Uttarakhand, TN_Puducherry, Kerala,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Uttarakhand, TN_Puducherry, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Bihar, Uttarakhand, West_RJ, TN_Puducherry, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Bihar, Uttarakhand, Himachal_Pradesh, 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, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, Chhattisgarh, Coastal_AP, Telangana, TN_Puducherry,

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, Guj_Reg, Saurashtra_Kutch,

Day2: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, Guj_Reg, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha, Coastal_AP,

Day3: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, NI_Karnataka,

Day4: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Bihar, East_UP, West_UP, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, Guj_Reg, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, NI_Karnataka,

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, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir,

Day1: Arunachal_Pradesh, Sub_Himalayan_WB, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, Saurashtra_Kutch,

Day2: Arunachal_Pradesh, Sub_Himalayan_WB, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, West_MP, Guj_Reg, Saurashtra_Kutch,

Day3: Arunachal_Pradesh, Sub_Himalayan_WB, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha,

Day4: Arunachal_Pradesh, Sub_Himalayan_WB, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana

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, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry,

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka,

Day3: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, West_MP, East_MP, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka, SI_Karnataka

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Bihar, Uttarakhand, Jammu_Kashmir, Konkan_Goa, Madhya_Maharashtra, Andaman_Nicobar, Coastal_Karnataka, SI_Karnataka, Kerala,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, West_UP, Uttarakhand, Hry_Chd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Konkan_Goa, Madhya_Maharashtra, Andaman_Nicobar, Coastal_Karnataka, SI_Karnataka, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Punjab, Konkan_Goa, Madhya_Maharashtra, Andaman_Nicobar, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Konkan_Goa, Andaman_Nicobar, Coastal_Karnataka, SI_Karnataka, Kerala,

Day5: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Konkan_Goa, Andaman_Nicobar, Coastal_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 central Pakistan adjoining Northwest Rajasthan and Punjab in lower troposphere (850hPa). The forecast shows it will persist till day3. The analysis shows another cyclonic circulation over North Haryana and adjoining areas at (925hPa). The forecast shows it will become less marked on day2. The analysis shows cyclonic circulation over Northeast

Bihar, adjoining SHWB and Sikkim at (925hPa). The forecast show it will persist till day3. The analysis shows an off shore Trough extends from Goa coast to Kerala coast in lower Troposphere (925hPa). The forecast shows it will persist till day2.

2. Location of Jet and Jet Core (>60kt) at 500hPa: Although the presence of strong westerlies is found over South Peninsular and NE states 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 around the cyclonic circulations, from J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Sikkim up to NE states, GWB, SHWB, over South Peninsular India including Kerala, Tamil Nadu, Konkan and Goa during next 3 days; over some parts of North Haryana and adjoining areas on day1.

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 Punjab, Haryana, Gujarat, Rajasthan, East Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, west Madhya Pradesh, along east coast of India, coastal Andhra Pradesh, coastal Tamil Nadu, Sikkim, Assam, Tripura and adjoining during next 3 days; over parts of, west Uttar Pradesh, Chhattisgarh, Orissa, Vidharbha and Telangana on day 1.

Lifted Index (< -2): over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Gujarat, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, coastal Tamil Nadu, Telangana, Chhattisgarh, East and west Madhya Pradesh, coastal Andhra Pradesh, along east and west coast of India, Sikkim, NE states and extreme south coastal parts of the country on day 1 and 2; on day 3 it is seen over Northwest India including J&K, Himachal Pradesh, Rajasthan, Punjab, Haryana, Delhi, Gujarat, Bihar, Jharkhand, GWB, NE states, along the east coast, Madhya Pradesh, Chhattisgarh, Vidharbha, Orissa Telangana and Andhra Pradesh; significant zone with maximum negative value of the index lies over parts of GWB, coastal Orissa, coastal Andhra Pradesh, Gujarat, Rajasthan and Punjab.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Northwest Rajasthan, Uttar Pradesh, Sikkim, Foothills of Himalaya and Arunachal Pradesh, Madhya Pradesh, Bihar, Jharkhand, GWB, SHWB, Orissa, Chhattisgarh, Vidharbha, Telangana, Orissa and Andhra Pradesh on day 1; it remains over same region on day 2 but disappear over parts of Vidharbha and appears over most of the parts of Rajasthan and Gujarat; on day 3 it is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Northwest Madhya Pradesh, west Uttar Pradesh, Gujarat, Sikkim and Arunachal Pradesh; significant zone with highest value of the index lies over parts of Punjab, Haryana and Rajasthan.

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 J&K, Himachal Pradesh, Uttarakhand, Punjab, Rajasthan, Foothills of Himalaya, Sikkim, Arunachal Pradesh, GWB, coastal Orissa, coastal Andhra Pradesh and adjoining areas.

CAPE (> 1000): Mostly seen over parts of coastal Gujarat, West Rajasthan, parts of Punjab, along east coast, GWB, SHWB, coastal Orissa, Bihar, East Uttar Pradesh, coastal Andhra Pradesh, coastal Tamil Nadu, Sikkim and NE states during next 3 days; over parts of West Uttar Pradesh on day 1; over parts of Haryana, Delhi and adjoining areas from day 2; on day 3 over parts of Northwest Madhya Pradesh and adjoining areas; significant zone with highest value of the index lies over parts of GWB, SHWB, Bihar, coastal Orissa, coastal Andhra Pradesh, Assam, Tripura, Mizoram and adjoining areas.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala, Tamil Nadu and south Peninsular India, central, North and Northwest India mainly the value of index lies in above range over most of the parts of the country except J&K and coastal areas along the west coast; significant zone with highest value of the index lies over parts of West Rajasthan.

5. Rainfall Activity:

70-130 mm Rainfall: over parts of coastal Maharashtra including Mumbai and adjoining Madhya Maharashtra on day 2; over parts of South coastal Maharashtra, coastal Karnataka, Konkan and Goa on day 3.

40-70 mm Rainfall: over parts of Sikkim, Assam, Arunachal Pradesh and coastal Maharashtra on day 1; over parts of Sikkim, Assam, coastal Maharashtra including Mumbai and adjoining Madhya Maharashtra on day 2; over coastal Maharashtra adjoining Madhya Maharashtra, coastal Karnataka, Konkan and Goa on day 3.

10-40 mm Rainfall: over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Sikkim, NE, coastal and Interior Karnataka, coastal Kerala adjoining Tamil Nadu, coastal Maharashtra including Mumbai, adjoining Madhya Maharashtra, Konkan and Goa, South Gujarat, East Bihar and SHWB during next 3 days; over parts coastal Andhra Pradesh and Marathwada on day 2; over parts of Madhya Maharashtra adjoining Marathwada, Telangana and parts of Punjab on day 3.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Northwest Rajasthan, Uttar Pradesh, Foothills of Himalaya, GWB, SHWB, Sikkim, NE states, Bihar, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, Vidharbha, 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 Haryana, Delhi and adjoining area on day 1 and 2.

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, Himachal Pradesh, Punjab, North Haryana, Uttarakhand, Kerala, Tamil Nadu, Sikkim, SHWB, NE states, coastal Andhra Pradesh, East Bihar and coastal Maharashtra; On day 2 over parts of Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, coastal Maharashtra including Mumbai, South Gujarat, , SHWB, J&K, Himachal Pradesh, Punjab, Haryana, Uttarakhand, Sikkim and NE states; on day 3 over parts of Kerala, coastal and Interior Karnataka, Telangana, Andhra Pradesh, Tamil Nadu, Konkan and Goa, coastal Maharashtra including Mumbai, South Gujarat, Sikkim, J&K, Himachal Pradesh and NE states

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

Total Index (> 50): Below threshold value is observed over parts of Gujarat, Punjab, Haryana, Delhi, Rajasthan, Uttar Pradesh, coastal areas of west coast, coastal Maharashtra, Konkan & Goa, coastal areas along the east coast, South Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, North Bihar, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Chhattisgarh, Telangana, Madhya Pradesh, Vidharbha and NE states on day 1 and 2; it remains over same region on day 3 disappears over parts of Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi and West Uttar Pradesh.

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, Vidharbha, 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 parts of Gujarat, East and West Uttar Pradesh, Uttarakhand, Punjab, Himachal Pradesh, Rajasthan coastal areas of west coast, coastal Maharashtra including Mumbai, Konkan & Goa, coastal Karnataka, Konkan and Goa, coastal Kerala, coastal areas along the east coast, SHWB, GWB, Orissa, coastal Andhra Pradesh, coastal Tamil Nadu, Bihar, Jharkhand and NE states during next 3 days; over parts of Haryana and adjoining areas on day 2 and 3; over parts of J&K on day 3; Maximum value of the index is seen over the parts of Bihar, Jharkhand, GWB, SHWB, coastal Orissa, coastal Andhra Pradesh, Assam, Tripura, Mizoram, Meghalaya, Manipur and coastal Gujarat.

CIN (50-150): The value of the index lies in above range over most of the parts of the country on day 1; over most of the parts of the country except South Madhya Maharashtra, Marathwada and coastal area along the west coast on day 2 and 3; Maximum value of the index is seen over the parts of west Rajasthan, GWB, Orissa and coastal Gujarat..

3. Rainfall and thunderstorm activity:

Above 130 mm Rainfall: over parts of Assam and Sikkim on day 1; over some parts of J&K, Assam, Meghalaya, coastal Maharashtra, Konkan and Goa on day 2; over parts of Assam, Meghalaya, Nagaland, South coastal Maharashtra, Konkan and Goa on day 3.

70-130 mm Rainfall: over parts of Sikkim, Assam, Meghalaya and Arunachal Pradesh on day 1; over parts of J&K, Assam, Meghalaya, Nagaland, Sikkim and adjoining areas on day 2; over parts of coastal Maharashtra including Mumbai, adjoining Madhya Maharashtra, coastal and Interior Karnataka, Konkan and Goa, coastal Kerala on day 2 and 3; over parts of Assam, Meghalaya, Nagaland and Arunachal Pradesh on day 3.

40-70 mm Rainfall: over parts of Kerala, coastal and interior Karnataka, coastal Maharashtra including Mumbai, adjoining Madhya Maharashtra, Konkan & Goa, South Gujarat, Sikkim and NE states during next 3 days; over parts of East Bihar on day 1; over parts of J&K on day 2; over parts of South Tamil Nadu and Marathwada on day 3.

10-40 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, coastal Maharashtra including Mumbai, Madhya Maharashtra, Gujarat, Sikkim, Foothills of Himalaya and NE states during next 3 days; over parts of Punjab, Haryana, Andhra Pradesh and Tamil Nadu on day 1; over parts of Punjab, West Madhya Pradesh adjoining East Rajasthan, Madhya Maharashtra and Marathwada on day 2; over parts of West Madhya Pradesh, Madhya Maharashtra, Marathwada, Vidharbha, Telangana, Andhra Pradesh and adjoining areas on day 3.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Punjab, Haryana, Delhi 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, Vidharbha, coastal Maharashtra including Mumbai, Madhya Pradesh, Andhra Pradesh, Gujarat and NE states during next 3 days.

3. IOP ADVISORY FOR 24 and 48Hrs:

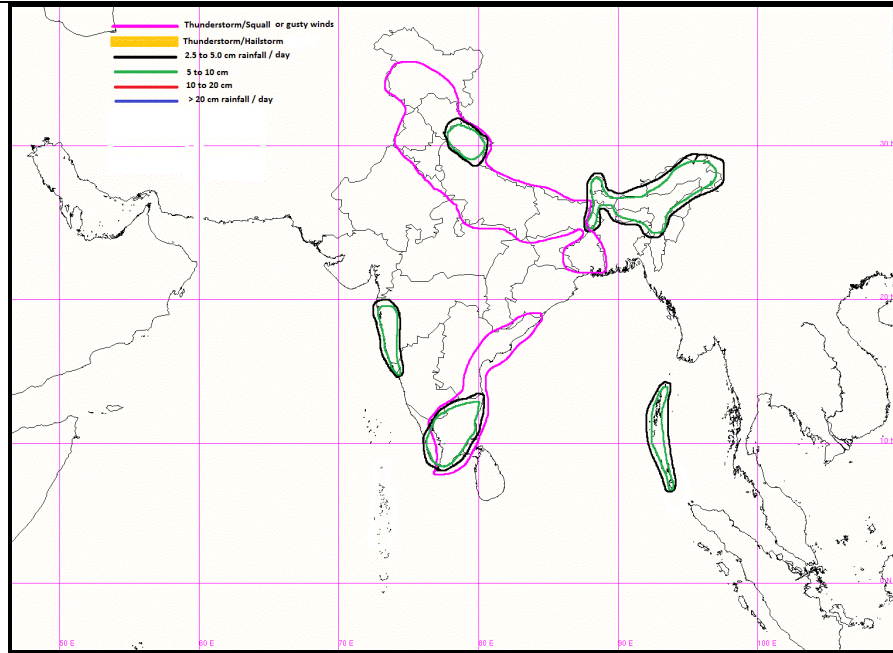
Summary and Conclusions:

- Amongst the stability indices, K index is indicating favourable conditions over parts of east India and over foothills of Himalayas. CAPE is favourable over plains of north India, over extreme western India and eastern coastal belt. The lifted index is favourable over most parts of the country except central India and adjoining east India; whereas TT Index indicates Madhya Pradesh and adjoining east Rajasthan to be the favourable areas for convective clouds to form.
- The synoptic analysis indicates the Western disturbance as a trough in mid-tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 70°E to the north of Lat. 32°N persists. In the lower levels, easterlies are expected to prevail for two days over the northern plains and foothills. In addition, a cyclonic circulation is seen over Central Pakistan and adjoining areas of northwest Rajasthan and Punjab extending upto 1.5 km above mean sea level. Another cyclonic circulation extending upto 0.9 km above mean sea level lies over northern parts of Haryana and neighbourhood. This situation is likely to trigger thunderstorms at isolated places accompanied with squall/gusts for 48 hours over western Himalayan regions and adjoining plains. Uttarakhand is also likely to get heavy rain at isolated places on day 1 and day 2. Rajasthan is likely to experience dust storms associated with thunderstorms due to the limited moisture availability.
- The cyclonic circulation at 0.9 km above mean sea level over northeast Bihar and adjoining SubHimalayan West Bengal & Sikkim persists. Bihar is likely to get isolated convective activity on day 1 and day 2. The prevailing flow pattern is conducive for Sub Himalayan West Bengal to experience isolated heavy rainfall on both days.
- The off shore trough at mean sea level now runs from Goa coast to Kerala coast. This system is likely to cause isolated heavy rainfall over Konkan and coastal Karnataka.

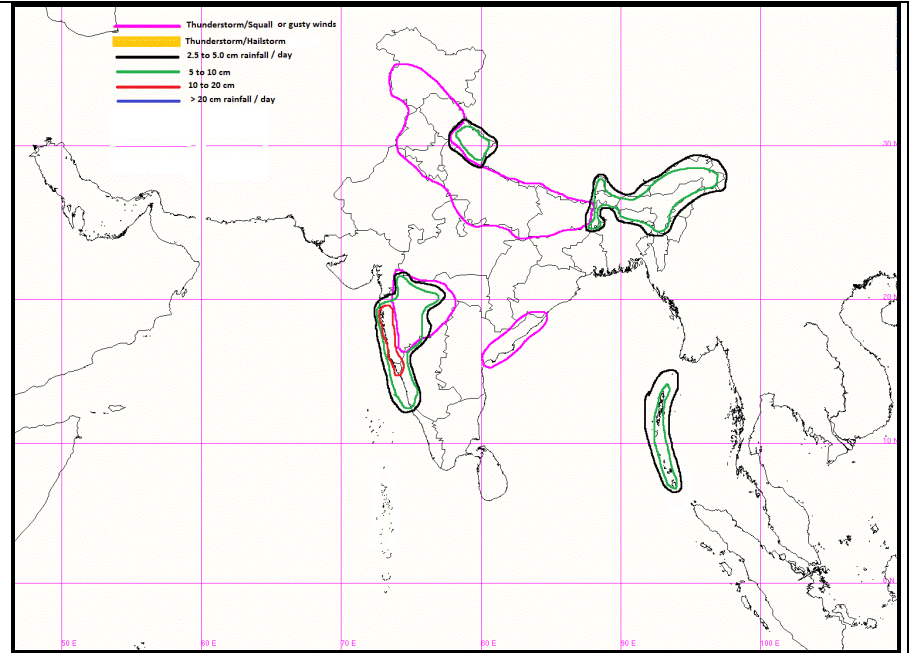
IOP Area for Day-1 & Day-2:

24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p>Significant Rainfall: Uttarakhand Assam & Meghalaya, Arunachal Pradesh Sub-Himalayan West Bengal & Sikkim, Andaman & Nicobar Islands Kankan & Goa Tamilnadu, Kerala</p> <p>Thunderstorm with squall or gusty winds: Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Chandigarh, Delhi, Uttar Pradesh Bihar, Gangetic West Bengal Coastal Andhra Pradesh, Tamilnadu</p> <p>Thunderstorm with squall and hail Nil</p> <p>Thunderstorm/Duststorm: Rajasthan</p>	<p>Significant Rainfall: Konkan & Goa, Madhya Maharashtra Coastal Karnataka Uttarakhand Assam & Meghalaya, Arunachal Pradesh Sub-Himalayan West Bengal & Sikkim, Andaman & Nicobar Islands</p> <p>Thunderstorm with squall or gusty winds: Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Chandigarh, Delhi, Uttar Pradesh Bihar Madhya Maharashtra, Marathawada North Coastal Andhra Pradesh</p> <p>Thunderstorm with squall and hail Nil</p> <p>Thunderstorm/Duststorm: Rajasthan</p>

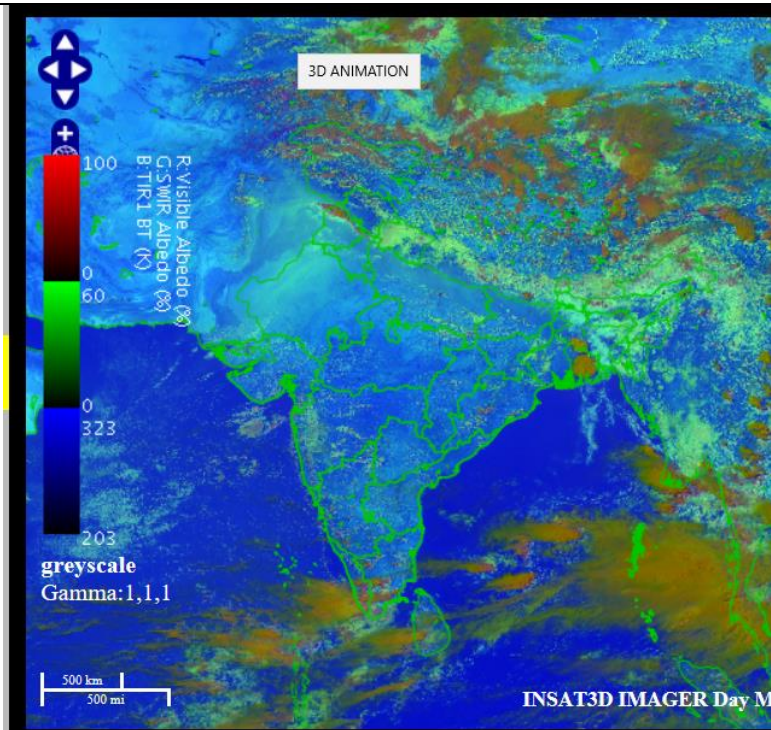
Graphical Presentation of Potential Areas for Severe Weather:



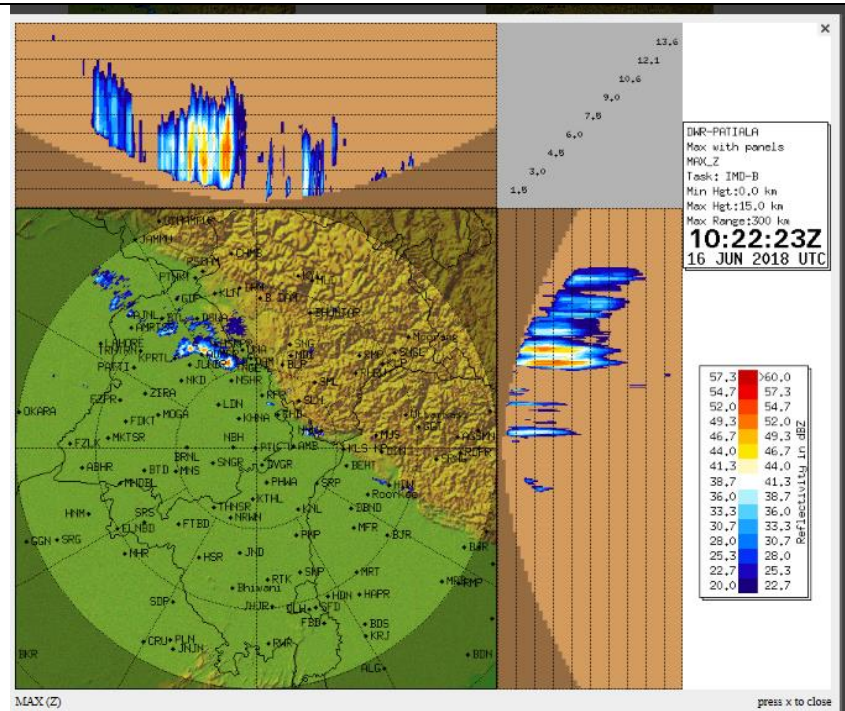
IOP Advisory for 24 hours



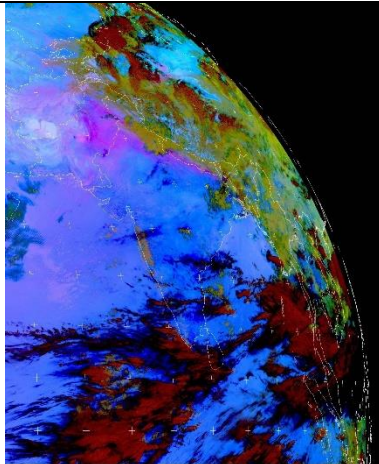
IOP Advisory for 48 hours



RAPID RGB Satellite Imagery at 1430 IST

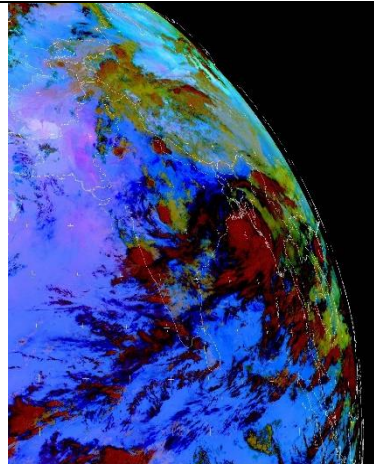


DWR Patiala reflectivity at 1552 IST



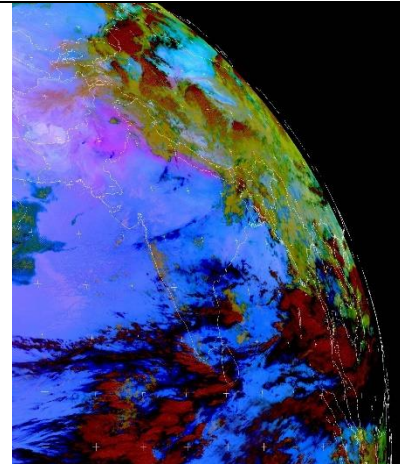
EUMETSAT

Meteosat IODC Dust, 2018-06-16 04:00:00



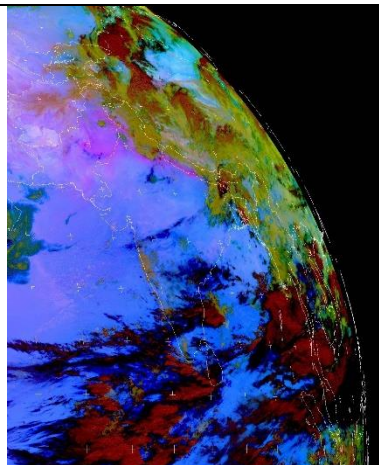
EUMETSAT

Meteosat IODC Dust, 2018-06-16 03:00:00



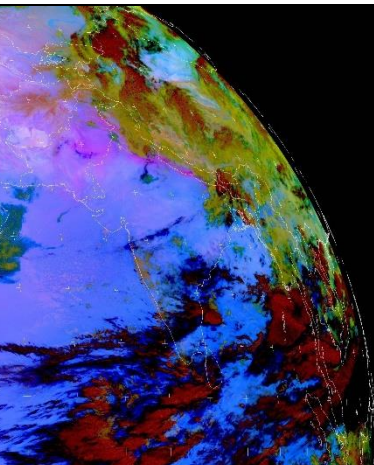
EUMETSAT

Meteosat IODC Dust, 2018-06-16 02:00:00



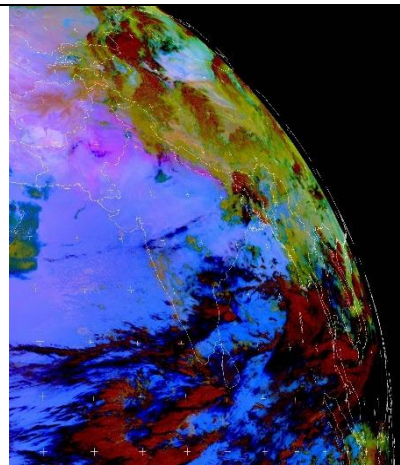
EUMETSAT

Meteosat IODC Dust, 2018-06-16 01:00:00



EUMETSAT

Meteosat IODC Dust, 2018-06-16 00:00:00

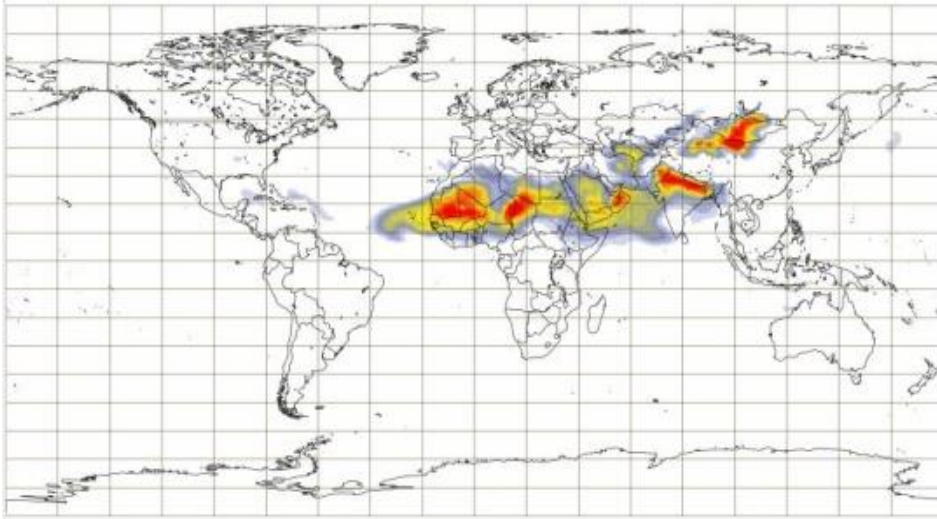


EUMETSAT

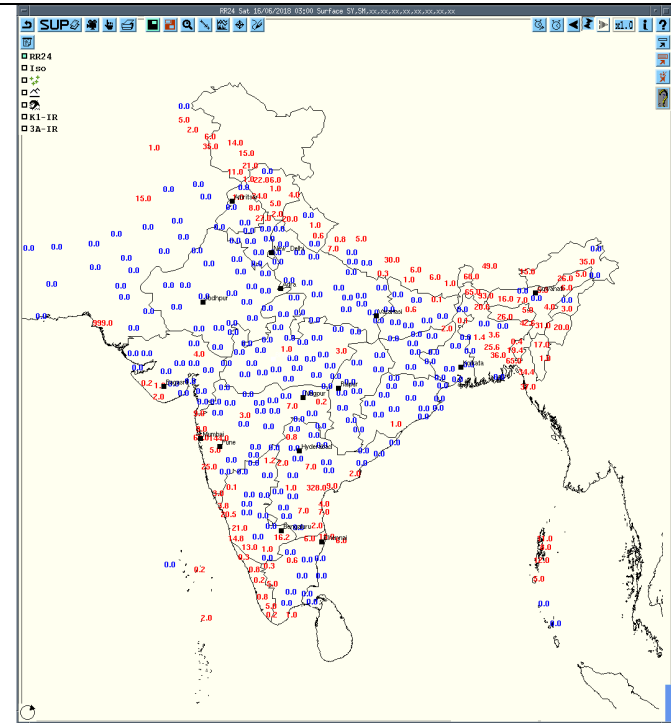
Meteosat IODC Dust, 2018-06-15 23:00:00

Observed Satellite Dust Images of today

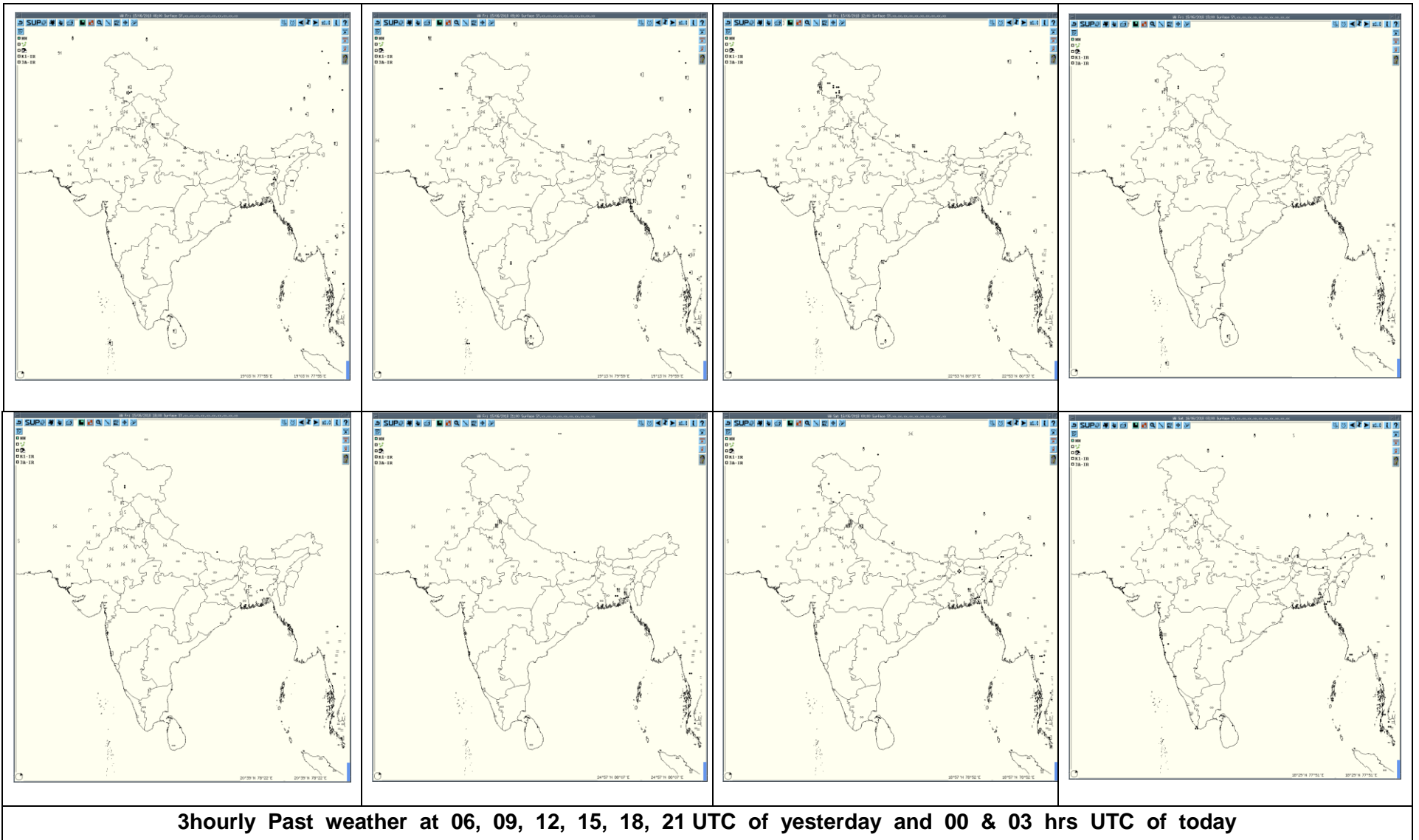
Dust aerosol optical depth at 550 nm (provided by CAMS, the Copernicus Atmosphere Monitoring Service)
Friday 15 Jun, 00 UTC T+120 Valid: Wednesday 20 Jun, 00 UTC



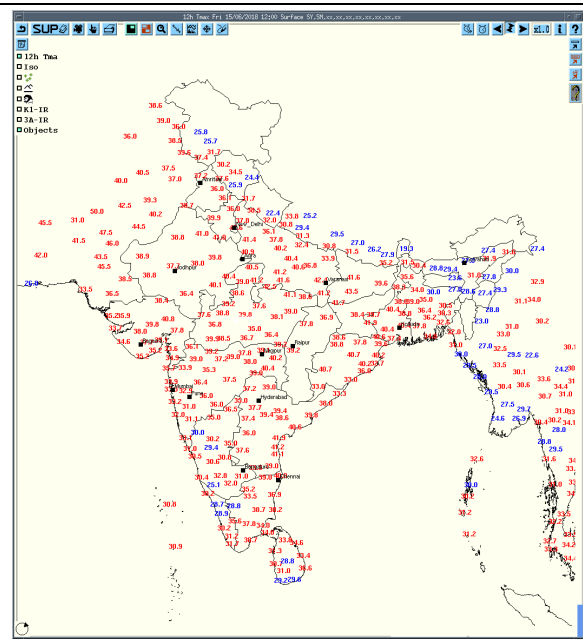
Dust Forecast



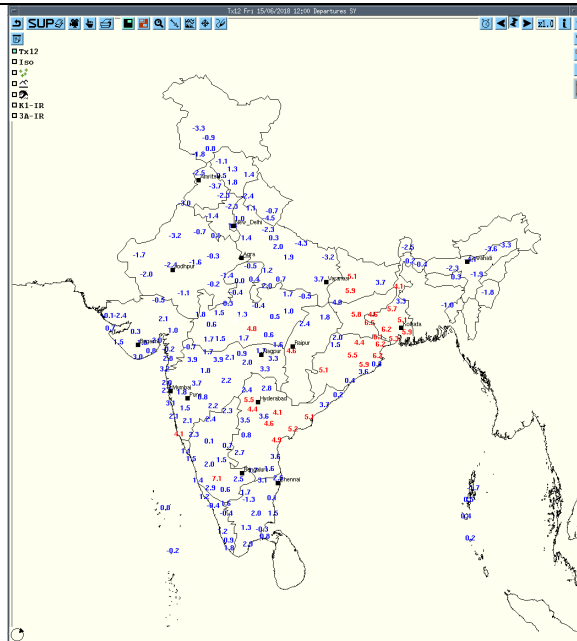
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



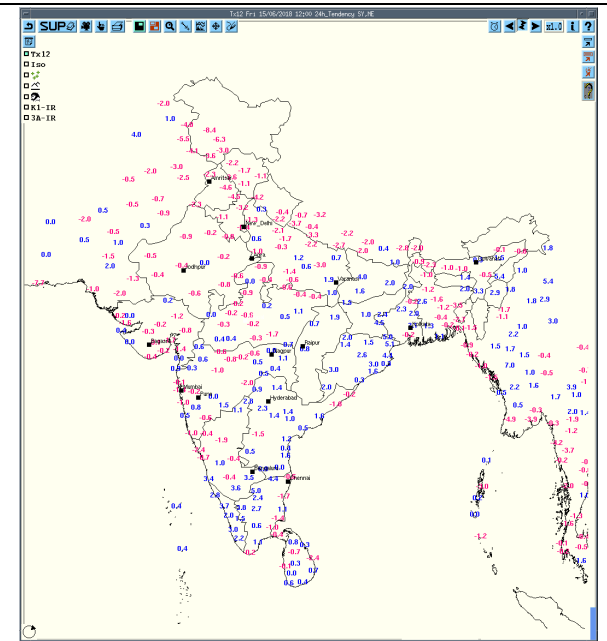
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



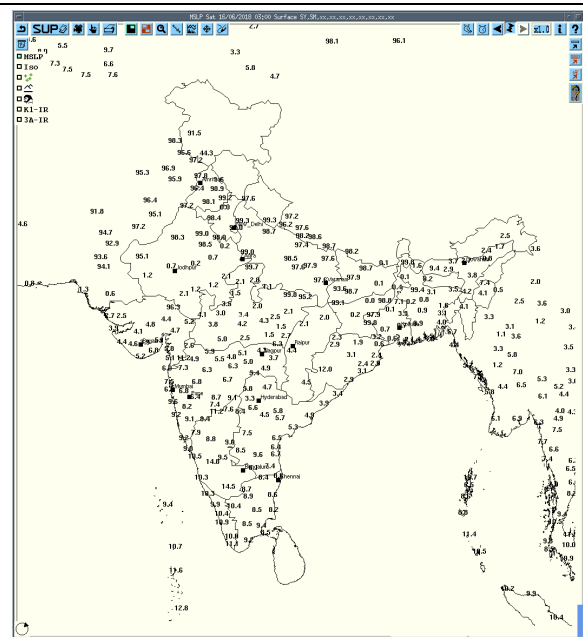
Tmax



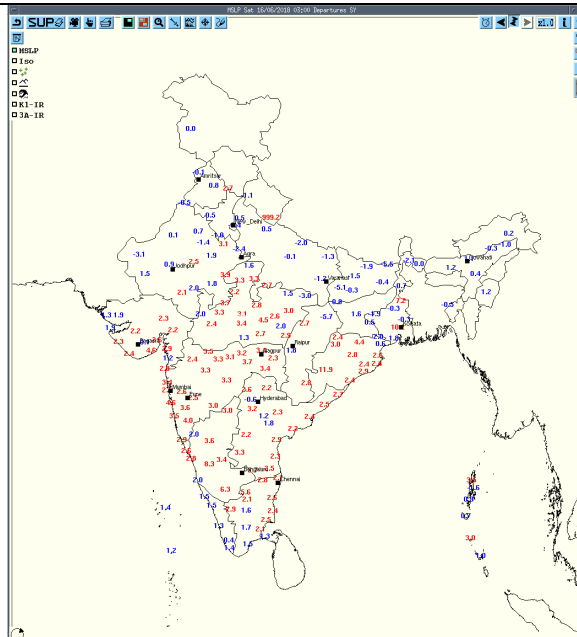
Departure Tmax



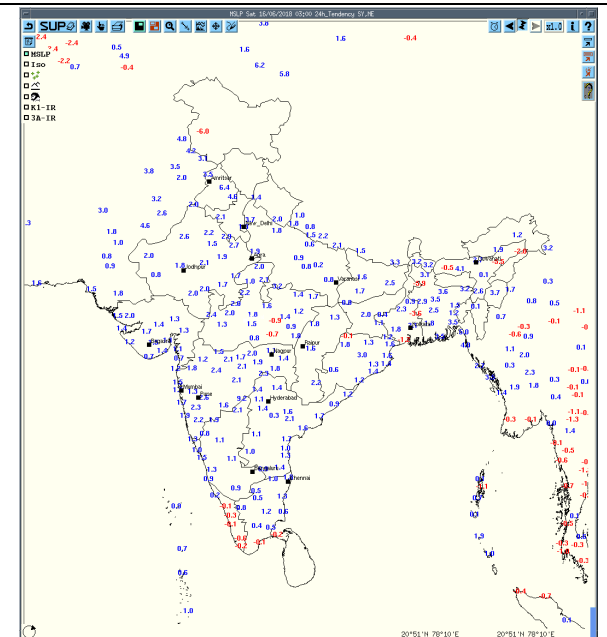
Tendency Tmax



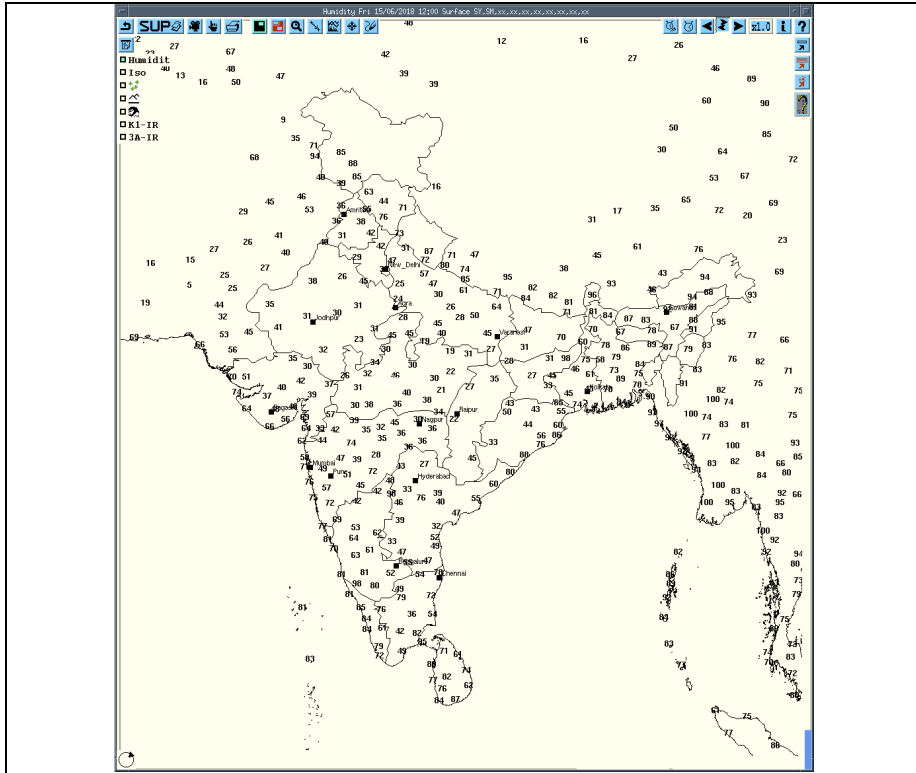
MSLP



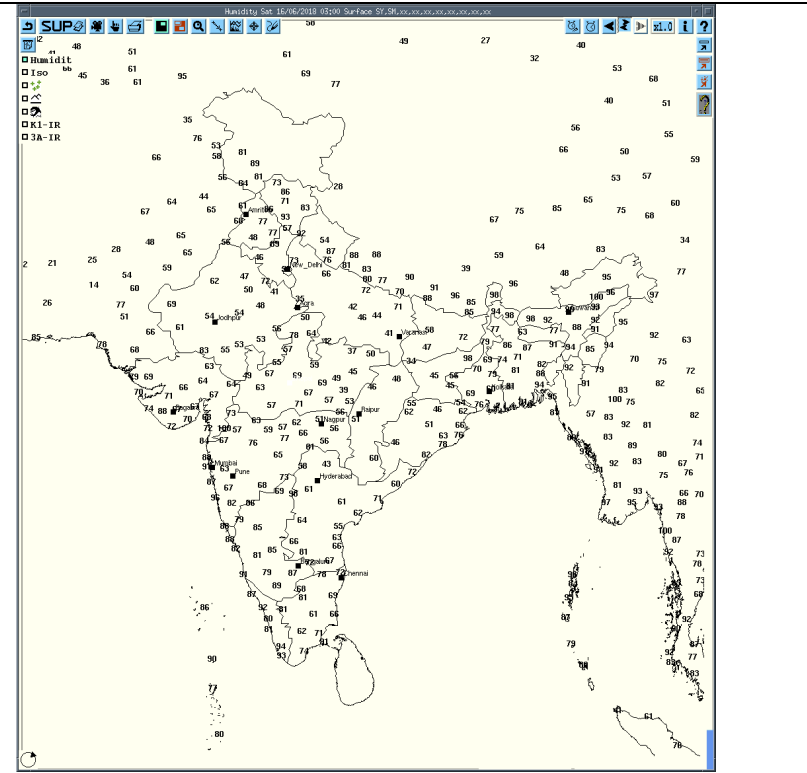
Departure MSLP



Tendency MSLP



RH at 1200UTC yesterday



RH at 0300UTC today

Past 24 hours DWR Report:

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	Associa ted severe weather if any	Districts affected
Patiala	16-06-18	150300 - 151500	NO SIGNIFICANT ECHO=	---	---		---
		151500 - 151800	MULTIPLE CELLS DBZ 49.5 HT. 08-13 KM	N,NE SECTORS MOVEMENT SE WARDS		RA/TS	Palampur,Hamirpur,Kullu,Jammu, RS –DAM ,Pathankot and their adjoining areas
		151800 - 152100	MULTIPLE CELLS DBZ 56.5 HT. 09-13 KM	NW,N,NE SECTORS DIRECTION SE WARDS		RA/TS	Ajnala,Amritsar,Kapurthala,Adampur,Jalla ndhar,Ludhiana,Pathankot,Mukerian,Patia la,Dundernagar,Shimla,Nahan and their adjoining areas
		152100- 160000	MULTIPLE CELLS DBZ 56.0 HT. 11-13 KM	NW,NE,SW Sectors Direction SE wards		RA/TS	Ludhiana,Patiala,Chandigarh,Khanna,Sirhi nd,Kapurthala,Kaithal,Karnal,Yamunanag ar,Behat,Saharanpur and their adjoining areas.
		160000- 160252	MULTIPLE CELLS DBZ 53.0 HT. 09-12 KM	NW,NE,SE Sectors Direction SE wards		-----	Dasua, Mukerian, Adampur, Roopnagar, Chandigarh,Patiala,Ambala,Yamunanagar ,Nahan,Dehradun,Rishikesh,Haridwar,Ro orkie,Saharanpur and their adjoining areas.
Agartala	16-06-18	150300- 160300* (DWR operational from 0600 to 2000IST)	A.)MLTPL CELLS FORMING SQUALL LINE AT 150130Z;16 KMS, 48 DBZ. B.)ANOTHER CELL FORMEDE AT 150420Z; 10 KMS; 46 DBZ	A.)OVERHEAD,E/SE ; 30 KMPH ; E'LY B.)100 TO 150 KMS S'LY; 30 KMPH; SE'LY	A.)CELL DISSIPIATED OVER HILLS OF MIZORAM AT 15/0622Z B.)CELL DISSIPATED OVER HILLS OF MIZORAM AT 150910Z	A.)TSR A B.)TSR A	A.)ALL DIST. OF TRIPURA. B.)NOT KNOWN

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	16-06-18	150300-160300	NIL	NIL	NIL	NIL	NIL
Patna	16-06-18	150300 - 152000	NIL	NIL	NIL	NIL	NIL
		152000 - 152200	Multiple Cell Maximum Reflectivity: 44 dBZ Echo Top: 9.3 KM	Range: 80.7 KM from DWR Patna in SOUTH direction Movement: EAST	NIL	Thunderstorm	GAYA
		152200 - 152400	Multiple Cell Maximum Reflectivity: 42.5 dBZ Echo Top: 8.0 KM	Range: 146 KM from DWR Patna in South-East direction Movement: EAST	NIL	Thunderstorm	Jamui, Banka and Munger
Jaipur	16-06-18	150300-160300	NIL	NIL	NIL	NIL	NIL

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	16-06-18	151200	Isolated single cells with max. reflectivity of 60 dBz and height of 13 kms	N(180 kms) moving Ely	CB cells are formed and developing to 60dBz at 1151 UTC		Rayagada, Kandhamal Dist. (Orissa)
		151500	Multiple cells with max. reflectivity of 56 dBz and height of 14 kms	N(173 KMS), NNE(225 KMS) moving ESEly	Since last observation CB cells are developing and max. reflectivity of 56dBz at 1311 UTC		Rayagada, Kandhamal Gajapati Dist. (Orissa)
		151800	Multiple cells with max. reflectivity of 55 dBz and height of 13 kms	NE(150 KMS) moving Ely	Since last observation CB cells are developed and dissipating from 1611UTC		Srikakulam Dist. (AP) Gajapati , Ganjam Dist. (Orissa)

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)
Srinagar	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	0905	1000
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1615	1620
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1035 1530	1045 1550
Kukernag	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1120 1610	1130 1625
Jammu	Northwest India	Jammu & Kashmir	Thunderstorm	16-06-18	0525	0600
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1020 1750	1030 1920
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1700	2200
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1950	2340
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1330	2230
Gulmarg	Northwest India	Jammu & Kashmir	Thunderstorm	15-06-18	1100 1400 1910	1140 1730 2025
Dehradun	Northwest India	Uttarakhand	Thunderstorm	16-06-18	0410	0455
Pantnagar	Northwest India	Uttarakhand	Thunderstorm	15-06-18	1700	1810
Ambala	Northwest India	Haryana	Thunderstorm	16-06-18	0210	0625
Patiala	Northwest India	Punjab	Thunderstorm	16-06-18	0145	0500
Ludhiana	Northwest India	Punjab	Thunderstorm	15/16-06-18	During Night	
Chandigarh	Northwest India	Chandigarh	Thunderstorm	16-06-18	0115 0400	0300 0715
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	15-06-18	2133	2230
Dhubri	Northeast India	Assam	Thunderstorm	15-06-18	2035	2325
Imphal	Northeast India	Manipur	Thunderstorm	16-06-18	0610	0655
Lengpui	Northeast India	Mizoram	Thunderstorm	15-06-18	0850	0950
Vijayawada AP	South India	Coastal Andhra Pradesh	Thunderstorm	15-06-18	1900	1950
Bapatla	South India	Coastal Andhra Pradesh	Thunderstorm	15-06-18	1445	1745
Ongole	South India	Coastal Andhra Pradesh	Thunderstorm	15-06-18	1930	2000
Kavali	South India	Coastal Andhra Pradesh	Thunderstorm	15-06-18	1800	1830
Nellore	South India	Coastal Andhra Pradesh	Thunderstorm	15-06-18	2050	2140
Port Blair	South India	Andaman & Nicobar	Thunderstorm	16-06-18	0639	0830
			Squall from SW with max speed 69kmph	16-06-18	0637	0639
			Squall from SW with max speed 78kmph	16-06-18	0823	0824

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

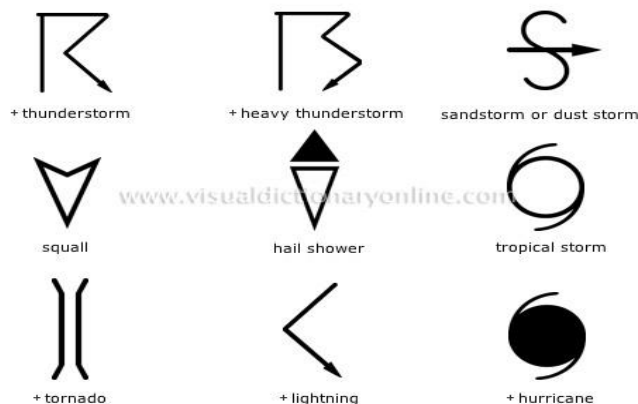
For Radar images of the past 24 hours including mosaic of images:

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