



India Meteorological Department

FDP STORM Bulletin No. 67 (12-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ♦ The Western Disturbance as a trough in mid & upper tropospheric levels with its axis at 5.8 km above mean sea level now runs roughly along Long 60°E to the north of Lat. 28°N.
- ♦ The East-West trough from east Bihar to Nagaland now lies extending from West Uttar Pradesh to Nagaland across East Uttar Pradesh, Bihar, Sub-Himalayan West Bengal at 1.5 km above mean sea level.
- ♦ A north-south trough extends from Haryana to northwest Madhya Pradesh across East Rajasthan and extends upto 0.9 km above mean sea level.
- ♦ The cyclonic circulation over southeast Arabian Sea & adjoining Lakshadweep persists and now extends upto 2.1 km above mean sea level.
- ♦ A low pressure area is likely to develop over central parts of South Arabian Sea around 15th May 2018 and same is likely to intensify further and move west-north-westwards subsequently.

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 moderate to intense convection were seen over Iran, Afghanistan, North Pakistan, West Jammu & Kashmir, and over the area between 37.0deg N to 47.0deg N, long 60.0deg E to 80.0deg E in association with Western Disturbance over the area.

Clouds descriptions within India:

Broken low/medium clouds with embedded intense to very intense convection seen over Lakshadweep (minimum CTT minus 82deg C). Broken low/medium clouds with embedded moderate to intense convection seen over North Interior Karnataka and Bay Islands. Scattered low/medium clouds with embedded moderate to intense convection seen over East Meghalaya. Scattered low/medium clouds with embedded weak to moderate convection seen over South Madhya Maharashtra, extreme South Konkan, rest Karnataka, South Kerala and Telangana. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over East Jammu & Kashmir and extreme North Punjab. Scattered low/medium clouds seen over South Punjab, extreme South Haryana, North Uttarakhand, East Sub-Himalayan West Bengal, Sikkim, Northeast Assam, East Arunachal Pradesh, Nagaland, Manipur, extreme North Rajasthan, West Madhya Pradesh, North Madhya Maharashtra, and rest parts of South

India.

Arabian Sea:-

Broken low/medium clouds with embedded intense to very intense convection seen over Southeast adjoining East Central Arabian Sea off South Kerala Coast and Lakshadweep. Scattered low/medium clouds with embedded moderate to intense convective seen over South Arabian Sea between lat 5.0deg n to 13.0deg N, long 60.0deg e to 70.0deg E.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded weak to moderate convective seen over Southwest & East central Bay and North Andaman Sea, Comorin and Gulf of Martaban.

Past Weather:

Convection (during last 24 hrs):

Intense to Very Intense convection was observed over Karnataka Kerala Tamilnadu (.)

Moderate to Intense Convection was observed over NW Rajasthan north Punjab Chhattisgarh Odisha east Jharkhand Gangetic West Bengal Sub Himalayan West Bengal north-east states north coastal Andhra Pradesh Rayalaseema and weak to moderate convection over Telangana (.)

OLR: - .

Upto 230 wm^{-2} observed over Karnataka Kerala Tamilnadu south konkan & Goa Lakshadweep Sikkim east Assam Meghalaya Arunachal Pradesh Nagaland Manipur Mizoram

Dynamic Features:

Wind Shear 30-60 kts is observed over North India, Central India, North-East India and 10-20 kts over south peninsular India.

Positive shear tendency is observed over Jammu & Kashmir and negative wind shear is observed North- east India.

Positive Vorticity (850 hPa) more than 50 ($\times 10^{-5}/\text{s}$) is observed over Himachal Pradesh Uttarakhand east Madhya Pradesh Vidarbha .)

Positive Low Level Convergence is observed over Indian Region except Tripura & south Gujarat

Precipitation:

HEM:-

Rainfall up to 208.3 mm was observed over Kerala.

Rainfall up to 27.8-139.8 mm was observed over south Odisha east Meghalaya Nagaland Manipur Mizoram north coastal Andhra Pradesh Karnataka west Tamilnadu.

Rainfall up to 07-20.8mm was observed over Rest North-East states rest Tamilnadu.

Rainfall up to 0.1-07mm was observed over south Chhattisgarh south Gangetic West Bengal south Konkan & Goa.

DWR and RAPID Observations:

Isolated/multiple moderate echoes are seen on DWR Srinagar (dBZ around 50 and height 10-12km), Patiala & Delhi (dBZ around 50 and height 13-14km), Nagpur (dBZ 45-50 and height 13-14km), Kolkata (dBZ 50-55 and height around 15km), Chennai (dBZ around 50 and height 10km), Machilipatnam (dBZ 45-50 and height 12-13km), Visakhapatnam (dBZ >50 and height >15km), Hyderabad (dBZ 45 and height 10-12km) and Agartala ((dBZ 45-50 and height 13-14km) at around 1530IST.

RAPID RGB Satellite imagery at 1400 IST indicated significant convection over Jammu & Kashmir, Punjab, Haryana, East Madhya Pradesh adjoining Chhattisgarh, Arunachal Pradesh, East Assam, East Meghalaya, Nagaland, South Madhya Maharashtra, North Interior Karnataka, Tamilnadu, Kerala, 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. Dust concentration is expected to increase over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	12.05.2018	13.05.2018
PM10 (micro-g/m ³)	272	245
PM2.5 (micro-g/m ³)	113	103

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:

00&12UTC of Day 2-5: 925 hPa weak CYCIR western Arabian Sea.

00UTC of Day2-5: 850 hPa trough over central India SWto NE over N Karnataka, Maharashtra, MP and UP.

12UTC of Day3-5: 850 hPa trough over Bihar-WB region.

Confluence & Wind Discontinuity Regions:

12 UTC of Day 0-2: 925 hPa N-S discontinuity over Southern Peninsular India

Synoptic Systems:

12 UTC of Day 3-4: anticyclone off Gujarat coast at 500 hPa.

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, Hry_Chhd_Delhi, Himachal_Pradesh, Jammu_Kashmir, East_RJ, East_MP, Madhya_Maharashtra, Chhattisgarh,

Day1: Jharkhand, East_UP, West_UP, Hry_Chhd_Delhi, Punjab, East_RJ, Vidarbha, Chhattisgarh,

Day2: Jharkhand, West_UP, Hry_Chhd_Delhi, Punjab, Odisha, TN_Puducherry, SI_Karnataka,

Day3: Assam_Meghalaya, Madhya_Maharashtra, Chhattisgarh, Telangana, NI_Karnataka,

Day4: Assam_Meghalaya, NE_NMMT, Madhya_Maharashtra, Rayalseema

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Jharkhand, Himachal_Pradesh,

Day1: Jharkhand, East_UP, West_UP, Odisha,

Day2: Hry_Chhd_Delhi, TN_Puducherry,

Day3: Assam_Meghalaya, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, West_RJ, Saurashtra_Kutch,

Day4: Assam_Meghalaya, Gangetic_WB, Jharkhand, Uttarakhand

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, East_UP, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day1: 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, Konkan_Goa, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day2: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Vidarbha, 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, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, Konkan_Goa, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_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, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, West_MP, Saurashtra_Kutch, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, NI_Karnataka,

Day1: 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, East_RJ, Odisha, East_MP, Konkan_Goa, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, NI_Karnataka, SI_Karnataka,

Day2: Arunachal_Pradesh, 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, Guj_Reg, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, Coastal_Karnataka, NI_Karnataka,

Day3: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, East_MP, Konkan_Goa, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, Coastal_Karnataka, NI_Karnataka, SI_Karnataka,

Day4: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, East_MP, Konkan_Goa, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka, SI_Karnataka, Kerala,

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, East_MP, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka,

Day2: Arunachal_Pradesh, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, Madhya_Maharashtra, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka,

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

Day4: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, Uttarakhand, Punjab, 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:

Day1: Arunachal_Pradesh, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, Chhattisgarh, Andaman_Nicobar, Kerala,

Day2: Assam_Meghalaya, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Himachal_Pradesh, Odisha, Vidarbha, Chhattisgarh, Andaman_Nicobar, Telangana, TN_Puducherry,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Gangetic_WB, East_UP, Punjab, Jammu_Kashmir, Odisha, Coastal_AP, Telangana, TN_Puducherry, SI_Karnataka,

Day4: Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Jharkhand, Bihar, Himachal_Pradesh, Jammu_Kashmir, Odisha,

Day5: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Bihar, Jammu_Kashmir, TN_Puducherry,

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a East- West Trough extending from West Uttar Pradesh to Nagaland across East Uttar Pradesh, Bihar, Sub Himalayan West Bengal. The forecast shows the Trough will persist for next 48 hours. Another North- South Trough is seen in the analysis from Haryana to North west Rajasthan East Rajasthan. The forecast shows the Trough will persist till day2 with slight eastward movement. The forecast shows a cyclonic circulation over north west Rajasthan and adjoining areas in next 24 hours. The above cyclonic circulation will merge with the North- South Trough from day2 onwards. A Trough is seen in the analysis extending from North Telangana and adjoining south east Vidarbha to North of Tamil Nadu at (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 Eastern and North Eastern parts of India on day 1 and 2; over north western parts of the India on day 3 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 North- South Trough, around the cyclonic circulations, along Foothills of Himalaya from J&K to NE states during next 3 days; Low level Positive Vorticity is also seen over parts of Punjab, North West Rajasthan, Haryana, Delhi, west Uttar Pradesh, Northern parts of Madhya Pradesh from day 1; parts of Bihar, GWB, Jharkhand, SHWB, Sikkim and NE states and South Peninsular India 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 Uttar Pradesh, Gangetic Plains covering the areas from west Rajasthan, Punjab, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, Jharkhand, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Madhya Maharashtra, Marathawada, Vidarbha, Chhattisgarh, coastal Andhra Pradesh, Assam, Arunachal Pradesh, Meghalaya, Tripura and adjoining areas, along east and west coast of India on day 1; In day 2 and 3 It remains over the same region along east and west coast and also appears over West Uttar Pradesh, Northern parts of West Rajasthan and parts of East Rajasthan, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Madhya Pradesh and adjoining areas; Significant zone lies over south west Rajasthan, Gujarat, Eastern parts of the country, north-eastern states, coastal areas along the east coast and west coast, GWB, Bihar, Jharkhand, Orissa, coastal Andhra Pradesh, Telangana, Interior Karnataka, East and West Uttar Pradesh and adjoining areas.

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, East 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 Marathawada. In day 2 and 3 it cover most of the parts of Northwest India including Punjab, Haryana, Delhi, West Uttar Pradesh, J&K, Himachal Pradesh and Uttarakhand; Significant zone with maximum negative value is found over GWB, coastal Orissa and coastal Andhra 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 during next 3 days; Significant zone with Maximum value of the index lies over J&K, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Uttar Pradesh, East Madhya Pradesh, Chhattisgarh, Orissa, GWB, Andhra Pradesh, Telangana, East Vidarbha, Bihar and Jharkhand.

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 during next 3 days; The significant zone lies over parts of GWB, Jharkhand, Bihar, Orissa, Chhattisgarh and East Uttar Pradesh.

CAPE (> 1000): Mostly seen over southern peninsular India, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, East Uttar Pradesh, south west Rajasthan, Andhra Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan and Goa, Vidarbha, Telangana, coastal Maharashtra, south Madhya Maharashtra, Marathawada, Gujarat, NE states, Sikkim, Assam, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of West Uttar Pradesh, Punjab, North West Rajasthan, Haryana, Delhi, Himachal Pradesh and Uttarakhand on day 2 and 3; maximum value of the index is seen over parts of Bihar, Jharkhand, GWB, SHWB, Orissa, Assam Tripura and adjoining areas, Andhra Pradesh,

Tamil Nadu, coastal areas along East and West Coast, coastal Gujarat, northern parts of coastal Maharashtra, coastal Karnataka and coastal Kerala.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala and south Tamilnadu and the value of the index lies in the above range over most of the parts of the country except central parts of Madhya Pradesh during next 3 days; the maximum value of the index is seen over Gujarat, South West Rajasthan, GWB, SHWB, Bihar, Jharkhand, East Uttar Pradesh, Assam, Arunachal Pradesh, Tripura and adjoining areas, J&K and Punjab.

5. Rainfall Activity:

70- 130 mm Rainfall: over some parts of coastal Orissa and adjoining GWB on day 2

40-70 mm Rainfall: over parts of Andhra Pradesh, Rayalaseema on day 1; over some parts of Orissa and adjoining GWB on day 2 and 3; over Foothills of Himalaya on day 2.

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

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

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, Punjab, Himachal Pradesh, Uttarakhand, Sikkim, GWB, Kerala, Karnataka, Tamil Nadu, Telangana, Andhra Pradesh, coastal Maharashtra, south Madhya Maharashtra, some parts of Vidarbha, Chhattisgarh, Orissa and NE states. On day 2 over parts of J&K, Punjab, Himachal Pradesh, Uttarakhand, Haryana, Rajasthan, West Uttar Pradesh, East Uttar Pradesh, Vidarbha, Chhattisgarh, GWB, Orissa, Sikkim, Assam, Arunachal Pradesh and adjoining areas, Kerala, Tamil Nadu; On day 3 mostly over parts of J&K, Punjab, Himachal Pradesh, Uttarakhand, Haryana, Uttar Pradesh, Bihar, GWB, Orissa, Andhra Pradesh, Telangana, Chhattisgarh, Sikkim and NE states.

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, South Madhya Maharashtra, Marathawada, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, Bihar, Jharkhand, Orissa, Andhra Pradesh, Sikkim and NE states and East Uttar Pradesh during next 3 days..

K-Index (> 35): Less than threshold value is observed over most of the part of the country during the next 3 days. Prominent values are found over parts of NE states, Interior Karnataka, Telangana, Chhattisgarh, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Bihar, East Uttar Pradesh, Jharkhand, GWB and adjoining areas.

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, coastal Maharashtra, South West Rajasthan extending over East Uttar Pradesh, Bihar, Jharkhand, Telangana, Rayalaseema during next 3 days; Some parts of West Uttar Pradesh, Punjab, Himachal Pradesh on day 1; over parts of Punjab, North West Rajasthan, Haryana, Delhi, West Uttar Pradesh, Himachal Pradesh, Uttarakhand, Northern parts of Madhya Pradesh on day 2 and 3; Maximum value of the index is seen over the parts of Orissa, GWB, SHWB, Bihar, Jharkhand, Andhra Pradesh, coastal Tamil Nadu, Kerala, Karnataka, Telangana, coastal Maharashtra, coastal Gujarat, Chhattisgarh, Tripura and adjoining areas.

CIN (50-150): It covers most of the parts of the country except central parts of the Madhya Pradesh during next 3 days; Inland extension is also nearly similar to CAPE. Only, it has significant larger values over parts of west India including west Rajasthan, Gujarat, Punjab, Haryana, Delhi and adjoining areas, 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, Marathawada and adjoining areas.

3. Rainfall and thunderstorm activity:

70-130 mm Rainfall: over parts of Tamil Nadu on day 1; over parts of GWB on day 2 and 3; over parts of Tripura and adjoining areas on day 3.

40- 70 mm Rainfall: over parts of Gangetic West Bengal during next 3 days; over parts of Tamil Nadu and Arunachal Pradesh on day 1; along Foothills of Himalaya adjoining North Bihar on day 2 and 3; over parts of Tripura and adjoining areas on day 3.

10- 40 mm Rainfall: over parts of J&K, Himachal Pradesh, Kerala, Tamil Nadu, coastal Maharashtra, Interior Karnataka, Orissa, Chhattisgarh, Andhra Pradesh, Telangana, Sikkim, GWB, SHWB and NE states during next 3 days; over parts of Uttar Pradesh, Bihar and Jharkhand on day 2 and 3; over some parts of Punjab and East Madhya Pradesh on day 3.

Up to 10 mm Rainfall: Over parts of Kerala, Tamil Nadu, Karnataka, Chhattisgarh, Sikkim, Bihar, Jharkhand, Orissa, Andhra Pradesh, Telangana, South Madhya Maharashtra, Marathawada, East Vidarbha, NE states, J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi and adjoining areas, west Uttar Pradesh and East Uttar Pradesh during next 3 days; over parts of North West Rajasthan and East Madhya Pradesh on day 2 and 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

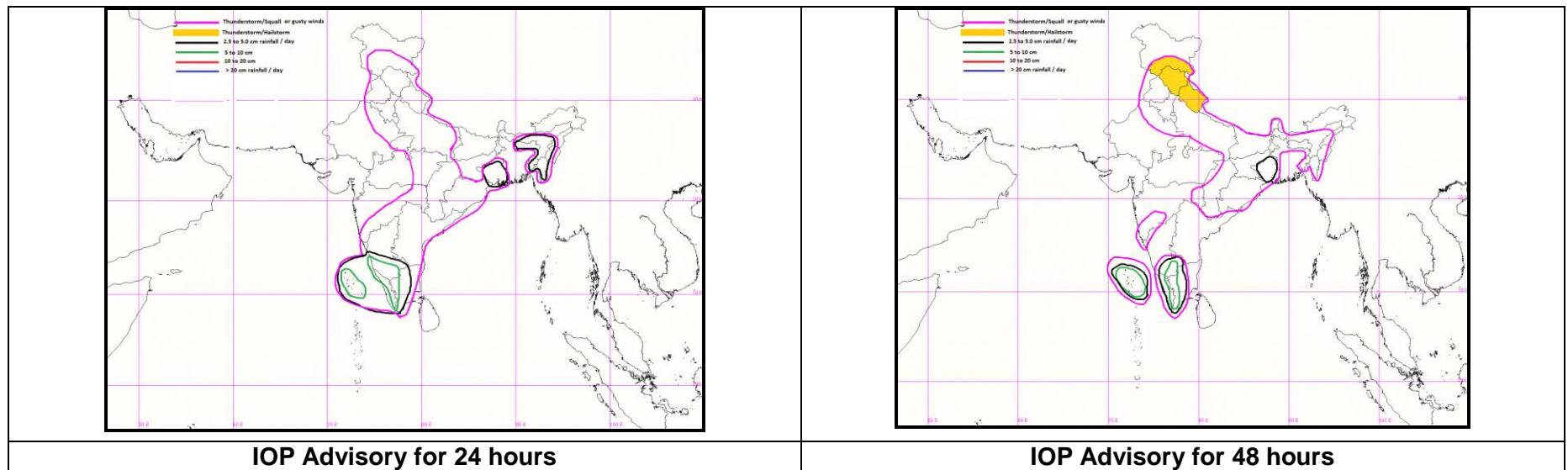
Summary and Conclusions:

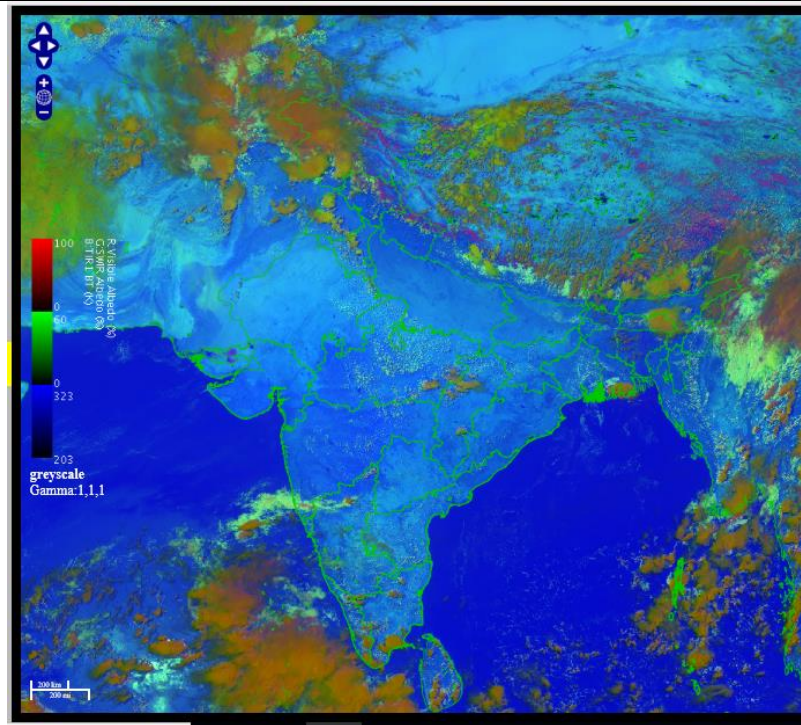
- o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over Northeast, East and peninsular India on day 1, increasing on day 2 to cover almost entire India. CAPE shows an identical pattern except increasing over East India on day 2. SWEAT index, which also accounts for the wind shear between 850 and 500 hPa levels, indicates highest probability of thunderstorm occurrence over entire Indian region, with highest probability over East India on day 1 and increasing over the same region on day 2. The 850-200 hPa wind shear is very high over east India on day 1, and decreasing over the entire region on day 2.
- o Synoptic analysis indicates that there is a east-west trough in the lower levels from West Uttar Pradesh to Nagaland. There is also a northsouth trough in the lower levels from Haryana to northwest Madhya Pradesh across East Rajasthan. ECMWF and IMD GFS deterministic models indicate that there is a wind maximum over West Uttar Pradesh on day 1. All factors indicate that there is a strong possibility of thunderstorms accompanied by gusty or squally winds over North India on day 1 and day 2.
- o The cyclonic circulation over southeast Arabian Sea & adjoining Lakshadweep has deepened in the same location. Associated rainfall is likely to occur over the south peninsular India on day 1. On day 2, with a slight shift westward of the cyclonic circulation, rainfall is likely to decrease over the region on day 2.
- o Since the high values of thermodynamic parameters over West India are mostly due to high temperatures in the low levels, the region is unlikely to get any weather on account of the unavailability of moisture or a synoptic system to trigger the rainfall occurrence.

IOP Area for Day-1 & Day-2:

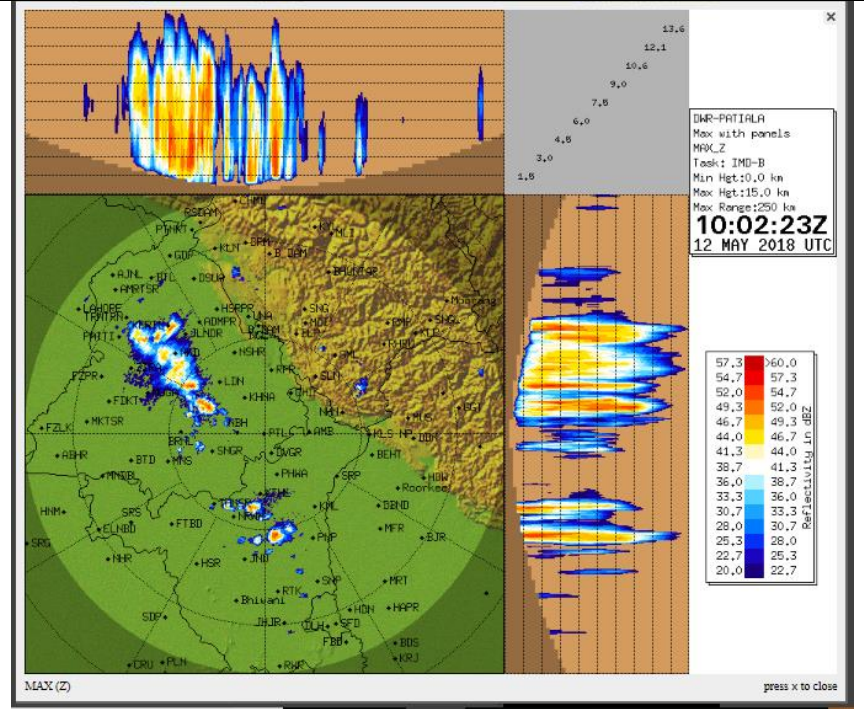
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p>Significant Rainfall: Interior Tamil Nadu, Coastal Karnataka, South Interior Karnataka, Lakshadweep, Kerala Assam and Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Gangetic West Bengal</p> <p>Thunderstorm with squall or gusty winds: Tamil Nadu,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

Graphical Presentation of Potential Areas for Severe Weather:

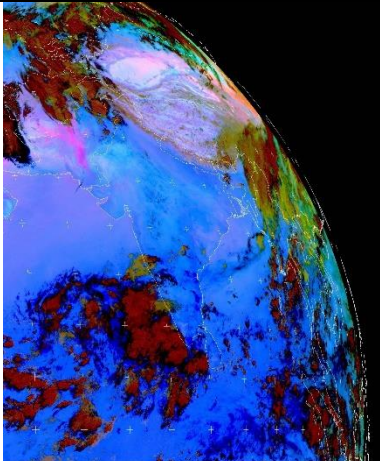




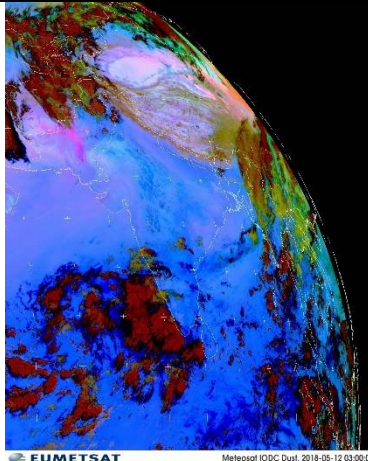
RAPID RGB Imagery at 1400 IST of the Day



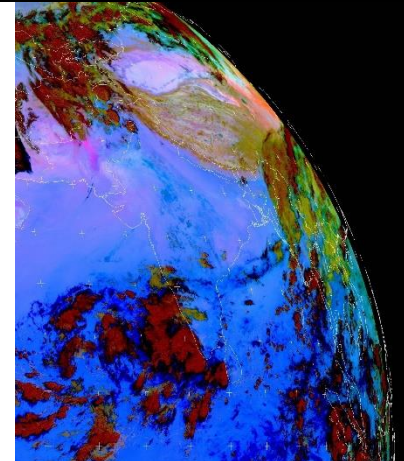
DWR Patiala Reflectivity Image at 1532 IST



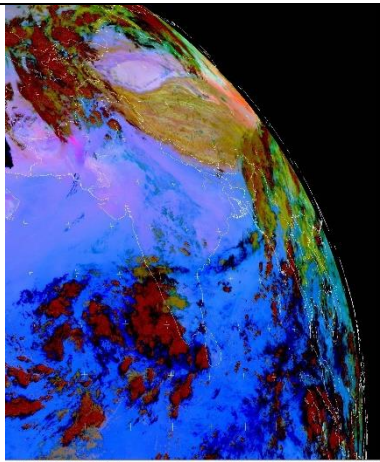
Meteosat IODC Dust, 2018-05-12 04:00:00



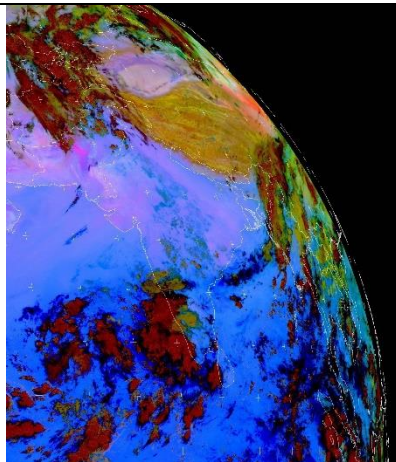
Meteosat IODC Dust, 2018-05-12 03:00:00



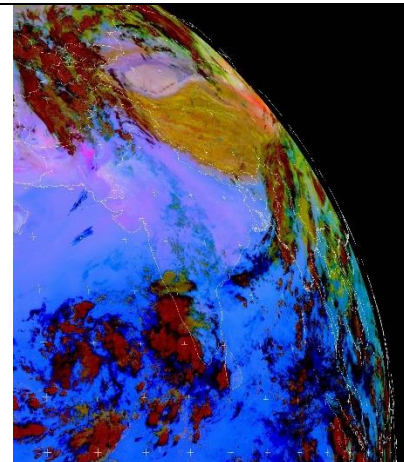
Meteosat IODC Dust, 2018-05-12 02:00:00



Meteosat IODC Dust, 2018-05-12 01:00:00

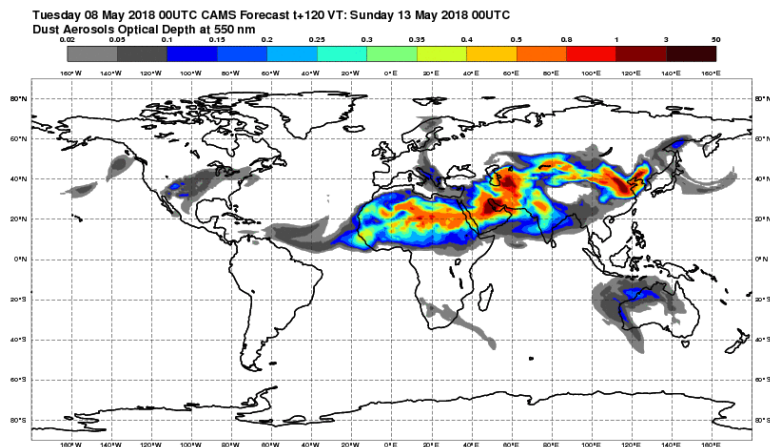


Meteosat IODC Dust, 2018-05-12 00:00:00

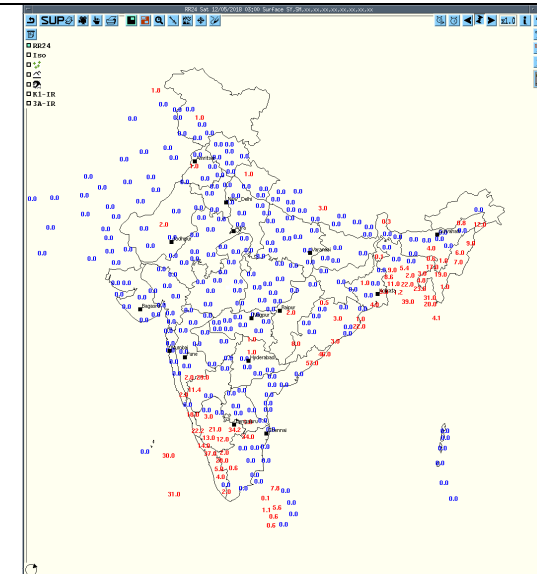


Meteosat IODC Dust, 2018-05-11 23:00:00

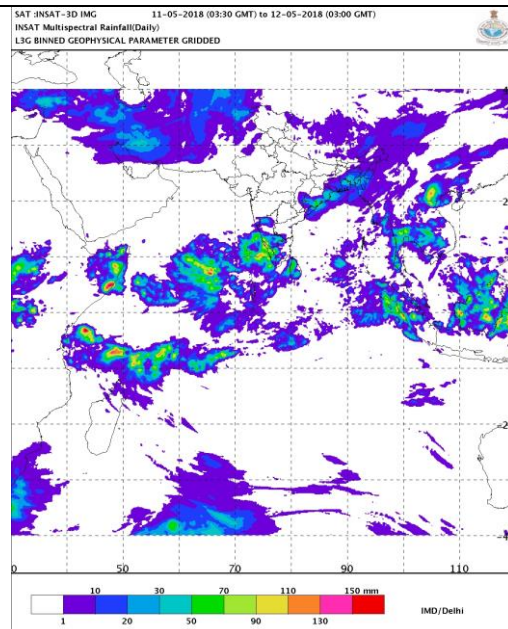
Observed Satellite Dust Images of today



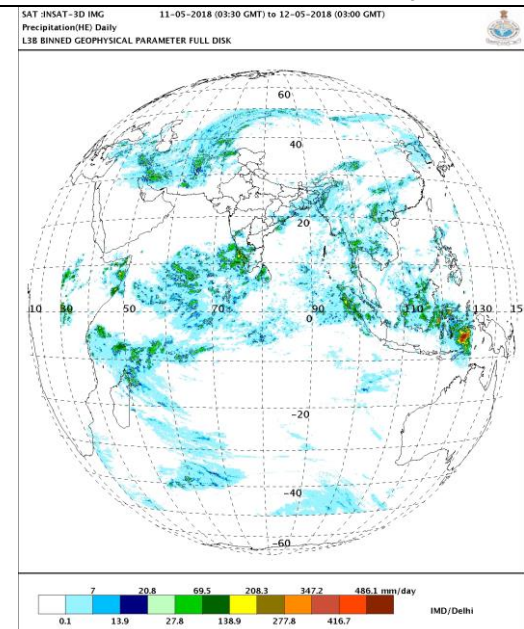
Dust Forecast



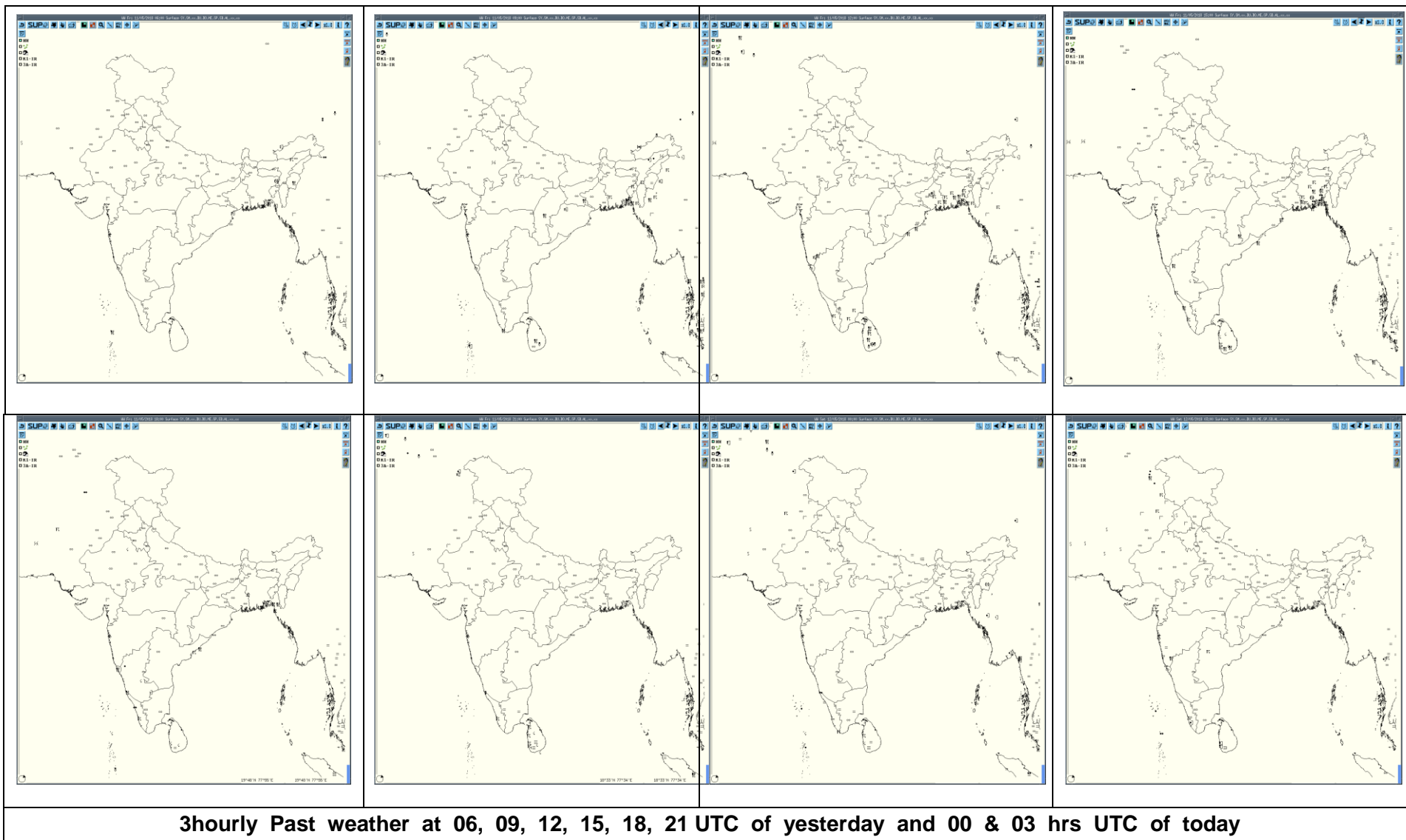
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



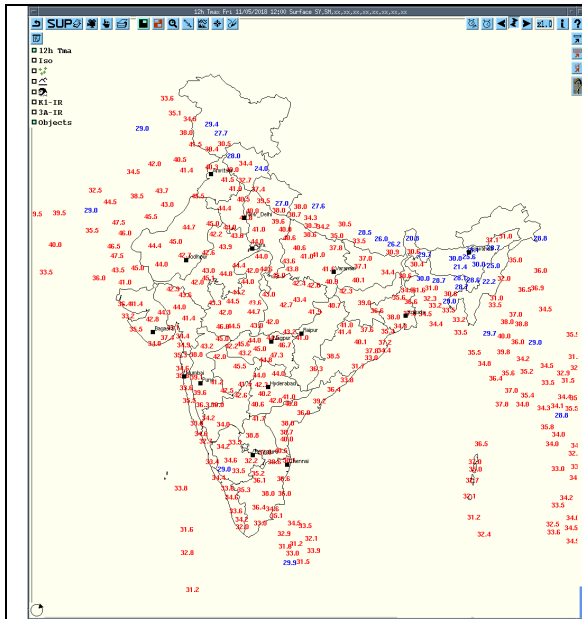
IMR



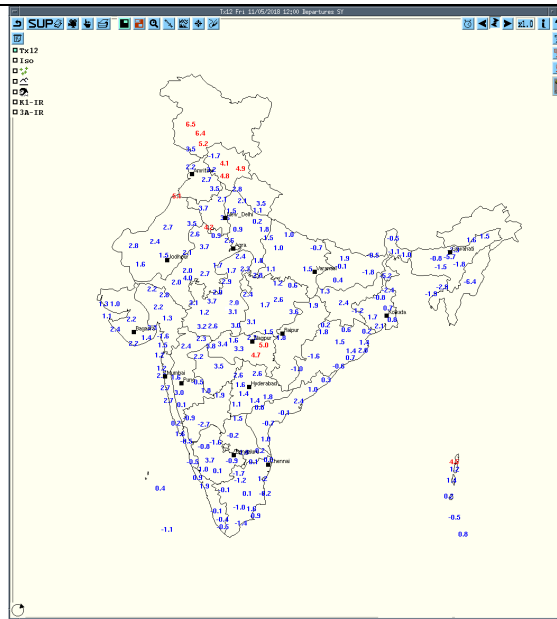
HEM



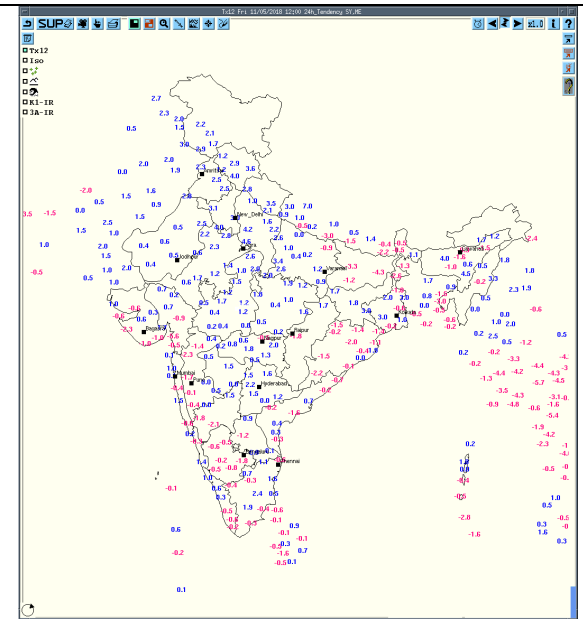
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



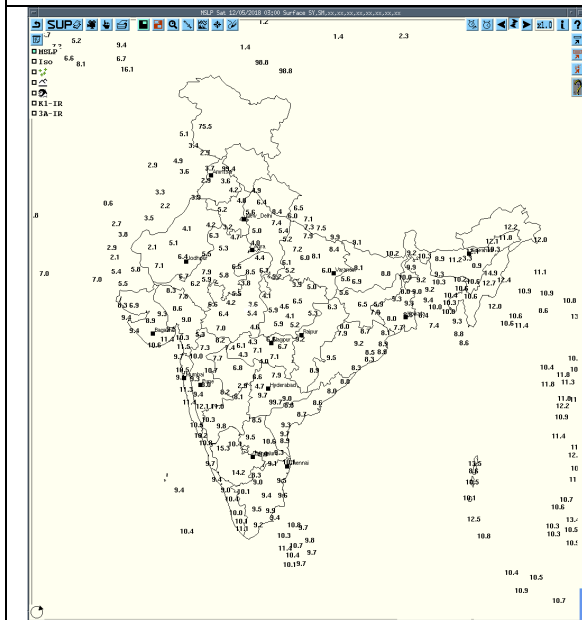
Tmax



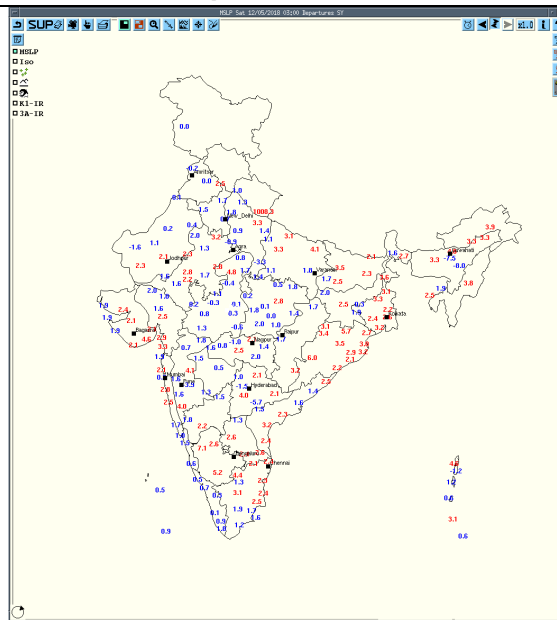
Departure Tmax



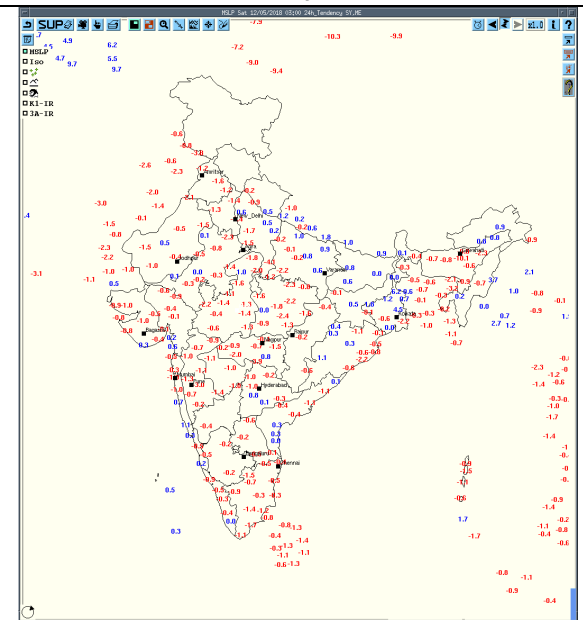
Tendency Tmax



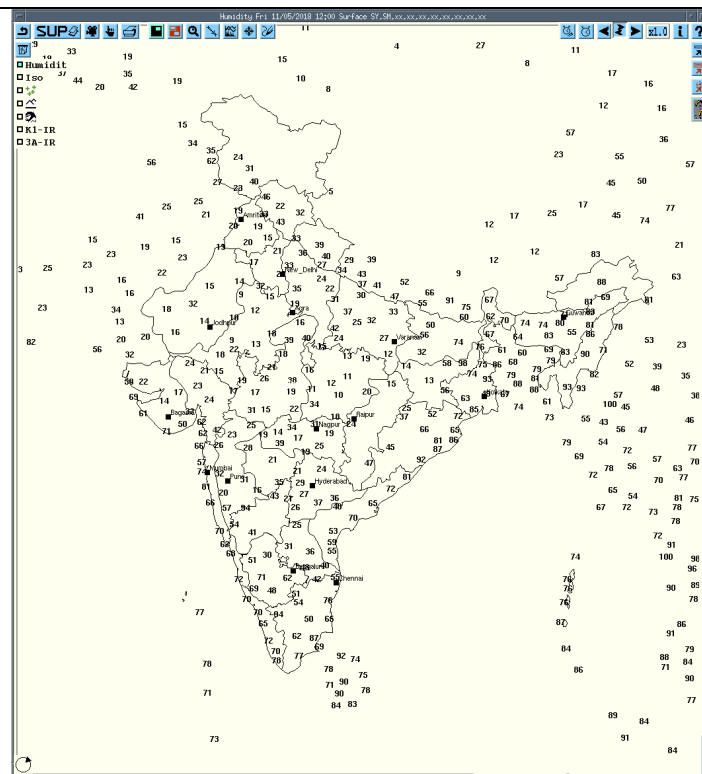
MSLP



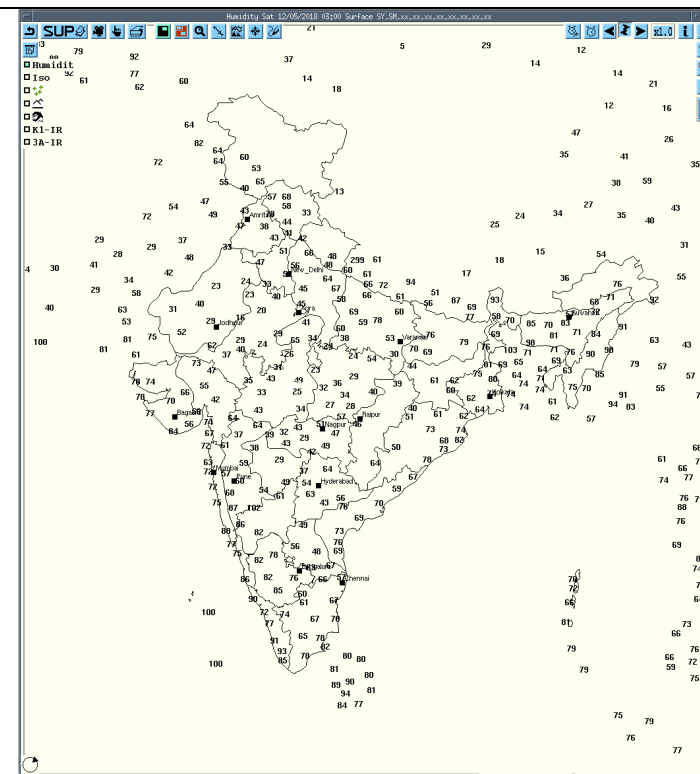
Departure MSLP



Tendency MSLP



RH at 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	Formation w.r.t radar station and Direction of movement.	Remarks	Associated severe weather if any	Districts affected
Patiala	12-05-18	110300 - 110600	ISOLATED DBZ 38.0 HT 8-9 KM	NW SECTION, MOVEMENT TOWARDS NORTH DIRECTION	---	---	AMRITSAR, TARN TARAN
		110600-120252	No Echo	--	--	--	--
Jaipur	12-05-18	111022-111332	Multiple cell with average height of 6.0 km & maximum reflectivity 39:50 dBZ	Multiple cell develop from 10:22 UTC of 11/05/2018 towards NW of Jaipur and moved to E Wards at speed 15--20 km/hr	Multiple cell develop from 1022 UTC on 11/05/2018 towards NW, of Jaipur and reaches maximum reflectivity during 12:12 to 12:42 UTC of 11/05/2018 and died 13:32 UTC.	Dust storm/Thunder storm with Light rain at Isolated places	Bikaner, Churu, Jhunjhunu, Pilani, Sikar Districts.
		111702-111802	Multiple cell with average height of 4.5 km & maximum reflectivity 39:00 dBZ	Multiple cell develop from 17:02 UTC of 11/05/2018 towards NW of Jaipur and moved to E Wards at speed 15-20 km/hr	Multiple cell develop from 1702 UTC on 11/05/2018 towards NW of Jaipur and reaches maximum reflectivity during 17:32 to 17:52 UTC of 11/05/2018 and died 1802 UTC.	Dust storm/Thunder storm with Light rain at Isolated places	Churu, Jhunjhunu, Districts.
Lucknow	12-05-18	110300-120300	Nil	--	--	--	--
Patna	12-05-18	110300-120300	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	12-05-18	110900	Multiple CB cells towards W to N with maximum reflectivity 54dbz and height 14kms.	60 kms (W) and 128kms(N), moving SEly	Formed at 07:31 UTC and developing.	Thunderstorm with rain	Visakhapatnam (AP) and Rayagada (Odissa)
		111200	Multiple CB cells towards W to N with maximum reflectivity 60 dbz and height 18kms.	65kms to 86 kms and moving SEly	Formed since last observation and developed.	Thunderstorm with rain	Visakhapatnam (AP) and Ganjam(Odissa)
		111500	Multiple CB cells towards NW to NE with maximum reflectivity 60 dbz and height 14kms.	120kms to 185 kms and moving SEly	Formed since last observation and well developed.	Thunderstorm with rain	Srikakulam(AP) and Nabarangapur, Ganjam and Rayagada(Odissa)
		111800	Multiple CB cells around Visakhapatnam with maximum reflectivity 58 dbz and height 14kms.	30kms and moving Sly	Formed since last observation and well developed.	Thunderstorm with rain	Srikakulam, Vizianagaram and Visakhapatnam (AP) and Koraput, Ganjam and Rayagada(Odissa)
		120000	Convective region with maximum reflectivity 58 dbz and height 17kms.	S (15 to 100 kms) & SW(15 to 135 KMS) moving Sly	Formed since last observation and well developed with max. reflectivity of 58dBz and start dissipating from 2011UTC.	Thunderstorm with rain	Visakhapatnam East Godavari Dist. Koraput, Ganjam and Rayagada(Odissa)
		120300	Isolated single cells with maximum reflectivity 42 dbz and height 10kms.	NW(160,180 KMS) moving Sly	CB cells are formed at 0011UTC and developed to max. reflectivity to 2dBz with 10kms height and dissipated at 0201 UTC.		Koraput Dist. (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	12-05-18	110301-110751	NIL	NIL	NOSIG ECHO	NIL	NIL
		110751	1)Multi cell system with maximum reflectivity of 60.0 dBz at 1141 UTC and maximum height of 16.24 Km at 1151 UTC	NW (237.9 km) Moving in SE-ward direction.	Multi Single cell coming from NW at 0751 UTC at a distance 237.9 Km) from radar. Matured, later transformed into a big cell system and merged with cell no. 3 at 1221 UTC, and crossed Indo-B'Desh Border completely(in E at a Distance of 62.1 km from Radar)at 1451 UTC	Thunderstorm/ Rain/Hail/Squall line	N/A
		110831	2)Single big cell with maximum reflectivity of 59.5 dBz at 1011 UTC and maximum height of 7.92 Km at 1011 UTC	W (247.0 km) Moving in SE-ward direction	Single isolated big cells developed at W at 0831 UTC at a distance 247.0 km from radar. Matured and dissipated at 1231 UTC in SW at a distance of 231.8 km from radar.	Thunderstorm / Rain	N/A
		110821-111451	3)Single cell developed into multi cell system with maximum reflectivity of 62.5 dBz at 1051 UTC and maximum height of 16.92 Km at 951UTC	NNW (87.0 km) Moving in SE-ward direction.	Single cell coming from NNW at 0821 UTC at a distance 87.0 Km) from radar. Matured, later transformed into a big cell system and merged with cell no. 1 at 1221 UTC	Thunderstorm/ Rain/Hail/Squall line	N/A
		111501-112400	NIL	NIL	NOSIG ECHO	NIL	NIL
		120001-120301	NIL	NIL	NOSIG ECHO	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
Agartala	12-05-18	110300-120300* (*DWR operation from 0600 to 2000IST)	SQUALL LINE FORMATION OVER w-TRP,KHOWAI,DHALAI,UNO KOTI & N-TRP@110300Z;13 KMS;60dBZ	overhead;30KMPH;E'LY	Dissipated at 110552z	+TSRA	All Districts of TRP, MIZORAM & MANIPUR
			MLTPL CELL FORMATION OVER S-B'DESH@110500Z;14KMS; 57Dbz	160KMS SOUTH;30KMPH,E'LY	Dissipated @ 110830z	+TSRA	GOMATI, S-TRP & MIZORAM
			SQUALL LINE FORMATION OVER S-B'DESH@111042Z,18KMS, 60dBZ	160-200 kms South;30 Kmph, E'ly.	Dissipated over S-TRP and adj B'DESH at 111300z	+TSRA	S-TRP.
			MLTPL CELL FORMATION BECOMING SQUALL LINE AT 111100Z;18 KMS;60dBZ	160-180 kms South'30 kmph, E'ly	Cell persisted till 111400z	+TSRA	W-TRP, DHALAI, & S- TRP

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)
Phalodi	Northwest India	West Rajasthan	Thunderstorm	11-05-18	1900	1940
Jagdalpur	Central India	Chhattisgarh	Thunderstorm	11-05-18	1930	2130
Raipur	Central India	Chhattisgarh	Thunderstorm	11-05-18	1350	1600
Mana	Central India	Chhattisgarh	Thunderstorm	11-05-18	1350	1700
Kolhapur	West India	Madhya Maharashtra	Thunderstorm	11-05-18	1710	1715
Alipore	East India	West Bengal (GWB)	Thunderstorm	11-05-18	1735	1820
			Squall from NW with max wind 64kmph	11-05-18	1750	1751
Dum Dum	East India	West Bengal (GWB)	Thunderstorm	11-05-18	1722	1925
			Squall from N with max wind 46kmph	11-05-18	1825	1826
			Squall from NE with max wind 50kmph	11-05-18	1905	1906
Diamond Harbour	East India	West Bengal (GWB)	Thunderstorm	11-05-18	1745	1840
Haldia	East India	West Bengal (GWB)	Thunderstorm	11-05-18	1735	1855
Bankura	East India	West Bengal (GWB)	Thunderstorm	11-05-18	1500	1600
Sriniketan	East India	West Bengal (GWB)	Thunderstorm	11-05-18	1635	1640
Jamshedpur	East India	Jharkhand	Thunderstorm	11-05-18	1340	1500
Bhubaneswar	East India	Odisha	Thunderstorm	11-05-18	0830	0915
Balasore	East India	Odisha	Thunderstorm	11-05-18	1005	1050
Balasore	East India	Odisha	Thunderstorm	11-05-18	1720	1800
Jharsuguda	East India	Odisha	Thunderstorm	11-05-18	1405	1415
Chandbali	East India	Odisha	Thunderstorm	11-05-18	1945	2045
Paradeep	East India	Odisha	Thunderstorm	11-05-18	1955	2055
Paradeep	East India	Odisha	Squall from N with max wind 68kmph	11-05-18	2000	2004
Puri	East India	Odisha	Thunderstorm	11-05-18	1710	1745
Gopalpur	East India	Odisha	Thunderstorm	11-05-18	1115	1345
Itanagar	Northeast India	Arunachal Pradesh	Thunderstorm	11-05-18	1115	1340
Silchar	Northeast India	Assam	Thunderstorm	11-05-18	0845, 1600	1320, 1600
N/Lakhimpur	Northeast India	Assam	Thunderstorm	11-05-18	1205	1245
Barapani	Northeast India	Meghalaya	Thunderstorm	11-05-18	1055	1240
Shillong	Northeast India	Meghalaya	Thunderstorm	11-05-18	1030	1120
Imphal	Northeast India	Manipur	Thunderstorm	11/12-05-18	111040, 120600	111230, 120700
Lengpui	Northeast India	Mizoram	Thunderstorm	11-05-18	0920	1450

Agartala	Northeast India	Tripura	Thunderstorm	11-05-18	1725	2050
Kailashahar	Northeast India	Tripura	Thunderstorm	11-05-18	0830 1440	0935 1600
Ramagundam	South India	Telangana	Thunderstorm	12-05-18	0545	0615
Kalingapatnam	South India	Andhra Pradesh (CAP)	Thunderstorm	11-05-18	1930	2300
Hyderabad	South India	Telangana	Thunderstorm	12-05-18	0810	0830
Tuni	South India	Andhra Pradesh (CAP)	Thunderstorm	11/12-05-18	112320	120015
Visakhapatnam	South India	Andhra Pradesh (CAP)	Thunderstorm	11-05-18	2150	2340
Kakinada	South India	Andhra Pradesh (CAP)	Thunderstorm	12-05-18	0030	0100

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(upto03UTCof today)

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

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

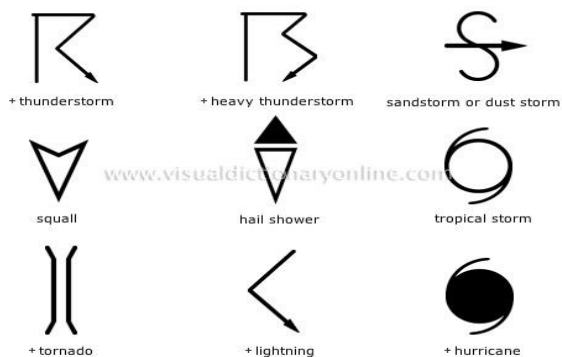
For Radar images of the past 24 hours including mosaic of images:

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	