



India Meteorological Department

FDP STORM Bulletin No. 77 (22-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ Conditions are becoming favourable for the advance of Southwest monsoon into South Andaman Sea & neighbourhood during next 2-3 days.
- ◆ The depression over southwest Arabian sea moved northwestwards with a speed of 11 kmph during past 6 hours and intensified into a Deep Depression and lay centred at 0830 hours IST of 22nd May 2018 over southwest Arabian Sea near lat 9.2°N & long 57.2°E, about 520 km southeast of Socotra islands and 930 km south - south east of Salalah (Oman). It is very likely to intensify further into a cyclonic storm during next 24 hours and into a severe cyclonic storm in subsequent 24 hours. It is very likely to move northwestwards and reach south Oman - southeast Yemen coasts by 26th May 2018 morning.
- ◆ The Western Disturbance as a cyclonic circulation over Afghanistan and adjoining Pakistan now lies over north Pakistan & neighbourhood at 3.1 km above mean sea level with the trough aloft with its axis at 5.8 km above mean sea level running roughly along Long 66°E to the north of lat 28°N.
- ◆ The cyclonic circulation over northeast Madhya Pradesh & neighbourhood now lies over northeast Madhya Pradesh and adjoining East Uttar Pradesh and extends upto 1.5 km above mean sea level. A trough runs from this cyclonic circulation to North Interior Karnataka across west Vidarbha & Marathwada and extends upto 1.5 km above mean sea level.
- ◆ A cyclonic circulation lies over southwest Rajasthan & neighbourhood at 1.5 km above mean sea level.
- ◆ The cyclonic circulation over east Bihar between 1.5 & 3.1km above mean sea level now lies over east Bihar and adjoining Sub-Himalayan West Bengal.
- ◆ The cyclonic circulation over eastern parts of Assam & neighbourhood persists and now extends upto 0.9 above mean sea level.
- ◆ The cyclonic circulation over Srilanka and adjoining Southwest Bay of Bengal between 1.5 & 5.8 km above mean sea level persists.
- ◆ The cyclonic circulation over north Tamilnadu & neighbourhood at 1.5 km above mean sea level persists.
- ◆ A feeble cyclonic circulation lies over south interior Karnataka & neighbourhood at 1.5 km above mean sea level

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

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

Vortex over south-west Arabian Sea:

Vortex over south-west Arabian Sea centered within a half deg of 9.5N/57.1E. Intensity T 2.0. Associated broken low/medium clouds with embedded intense to very intense convection over south-west Arabian Sea between lat 7.0N to 15.3N long 51.0E to 62.0E (minimum CTT minus 93 deg C).

Western Disturbance (WD) :

Scattered multi/layered clouds with embedded moderate to intense convection over extreme North Pakistan, East Afghanistan, North Jammu & Kashmir, Himachal Pradesh, Uttrakhand and over area between lat 35.0N to 42.0N long 65.0E to 80.0E in associated WD over the area.

Clouds Descriptions within India:

NORTH:

Scattered low/medium clouds with embedded isolated weak to moderate convection over Northwest Jammu & Kashmir. Isolated low/medium clouds seen over rest Jammu & Kashmir Himachal Pradesh, Punjab and North Uttarakhand.

EAST:

Scattered low/medium clouds with embedded moderate to intense convection seen over Sikkim Sub Himalayan West Bengal, Arunachal Pradesh Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura. Isolated low/medium clouds seen over Bihar Jharkhand, Chhattisgarh and Gangetic West Bengal.

WEST:

Scattered low/medium clouds with embedded moderate to intense convection seen over Madhya Maharashtra, Marathwada. Isolated low/medium clouds with embedded weak to moderate convection over Southeast Gujarat, Konkan & Goa and Madhya Pradesh.

SOUTH:

Scattered low/medium clouds with embedded moderate to intense convection seen over Andhra Pradesh, Karnataka, Kerala, Tamilnadu, Lakshadweep, Andaman Islands and isolated weak to moderate convection over Telangana, Nicobar Islands. Scattered low/medium clouds over rest parts of the region.

ARABIAN SEA:

Scattered low/medium clouds with embedded intense to very intense convection seen over Southeast Arabian Sea & East Central Arabian Sea off Western coast of peninsula.

BAY OF BENGAL & ANDAMAN SEA:

Broken low/medium clouds with embedded moderate to intense convection seen over South and Central bay Andaman Sea.

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over J&K Himachal Pradesh Punjab Haryana Bihar Jharkhand Gangetic west Bengal Arunachal Assam Meghalaya Nagaland Madhya Pradesh S Chhattisgarh Maharashtra Telangana Andhra Pradesh Kerala Tamilnadu Andaman & Nicobar islands Lakshadweep Islands.

OLR:-

Upto **200** wm^{-2} was observed over Karnataka Kerala Tamilnadu.

Upto **230** wm^{-2} was observed over S Chhattisgarh NW Jharkhand Arunachal Pradesh Nagaland NE Telangana Andhra Pradesh.

Synoptic Features:

Westerly Trough & Jet Stream: Trough in Westerlies runs roughly along Longitude 65.0E north of Latitude 30.0N. No Jet Stream is observed over India.

Dynamic Features:

Wind shear up to 20 Knots is observed over central southern and Eastern parts over India.

No tendency in the shear is observed over India

A positive Vorticity field is observed over Madhya Pradesh Marathwada Rajasthan Foothills of Himalayas and Gangetic West Bengal.

Positive low level convergence observed over Kerala Tamilnadu Karnataka Maharashtra and Madhya Pradesh.

Precipitation:

IMR:

Rainfall Up to **150** mm was observed over Tamilnadu

Rainfall Up to **130** mm was observed over East Central Karnataka

Rainfall Up to **30** mm was observed over Kerala rest of Karnataka AP SW Maharashtra South Telangana NE Jharkhand.

Rainfall Up to **10** mm was observed over Assam Arunachal Pradesh J & K Chhattisgarh Orissa.

DWR and RAPID Observations:

Moderate to strong multiple echoes (dBZ around 55 and height >15km) were seen on DWR Kolkata domain at around 1530IST. Isolated/multiple moderate echoes were also seen on DWR Agartala (dBZ around 45 and height 14km), Gopalpur (dBZ around 45 and height >15km), Hyderabad (dBZ around 45 and height 10km), Nagpur (dBZ 45-50 and height 12-14km), Paradeep (dBZ 45-50 and height 10-13km), Patna (dBZ 45 and height 12-13km), Thiruvananthapuram (dBZ 45-50 and height >15km) and Visakhapatnam (dBZ around 50 and height 15km) at around 1530IST.

RAPID RGB Satellite imagery at 1430 IST indicated significant convection over Gangetic West Bengal, Jharkhand, East Madhya Pradesh, Chhattisgarh, South Tamilnadu adjoining Kerala, West Assam, Meghalaya and Nagaland & adjoining Arunachal Pradesh.

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 for next few days over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	22.05.2018	23.05.2018
PM10 (micro-g/m ³)	210	189
PM2.5 (micro-g/m ³)	72	65

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:

00 & 12UTC of Day 1-4: A weak CYCIR at 850 hPa over BOB off Tamil Nadu/AP coast. System gradually intensifies in Day 3-4

00UTC of Day 1-3: 850hPa N-S trough from MP to AP across MH, Telangana region. Associated CYCIR over MP in day 2-3

00UTC of Day1-4: Depression over southwest AS getting further intensified and tracking towards coast of Oman

Confluence & Wind Discontinuity Regions:

12 UTC of Day 0-3: 850hPa SW-NE line of discontinuity extending from Maharashtra to WB.

Synoptic Systems:

00 UTC of Day 1-4: Western disturbance as a trough over Pakistan approaching J&K in Day 1

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

3. Convergence at 850 hPa:

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

Day0: Jharkhand, Uttarakhand, Odisha, East MP, Madhya Maharashtra, Chhattisgarh, NI Karnataka,

Day1: Jharkhand, East RJ, West MP, East MP, Vidarbha, Chhattisgarh,

Day2: Jharkhand, Himachal Pradesh, West MP, East MP, Chhattisgarh, Rayalaseema, NI Karnataka, SI Karnataka,

Day3: Jharkhand, East MP, Rayalaseema, TN Puducherry, SI Karnataka,

Day4: Assam Meghalaya, Jharkhand, Uttarakhand, Himachal Pradesh, East MP, Madhya Maharashtra, Vidarbha, Chhattisgarh, TN Puducherry, NI Karnataka, SI Karnataka

4. Low level Vorticity:-Positive Vorticity:

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

Day0: East UP, Uttarakhand, Himachal Pradesh, Odisha, Chhattisgarh,

Day1: Arunachal Pradesh, Assam Meghalaya, Jharkhand, Uttarakhand, Himachal Pradesh, Odisha, TN Puducherry,

Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Bihar, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Chhattisgarh, TN Puducherry, Coastal Karnataka, Kerala

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

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

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Sub Himalayan WB, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East MP, Konkan Goa, Vidarbha, Chhattisgarh, Telangana, Rayalaseema, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Sub Himalayan WB, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Telangana, Rayalaseema,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, SI Karnataka,

Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Telangana,
Day4: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Konkan Goa, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Uttarakhand, Jammu Kashmir, Odisha, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Jammu Kashmir, Odisha, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

Day3: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Saurashtra Kutch, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Gujarat Region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, TN Puducherry,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir, TN Puducherry, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Rayalaseema, TN Puducherry, SI Karnataka, Kerala,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Coastal AP, TN Puducherry, 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 South West Rajasthan in lower Troposphere (925hPa). The forecast shows it will merge with the trough in next 24 hours. The analysis shows another cyclonic circulation over North East Madhya Pradesh and adjoining East Uttar Pradesh. The forecast shows it will persist till day2. The analysis shows a North- South Trough extends from this cyclonic circulation up to North Interior Karnataka across west Vidarbha and Marathwada. The forecast shows the trough will persist till day2. Analysis shows another cyclonic circulation over East Assam and adjoining areas. The forecast shows it will persist till day 2, another cyclonic circulation over North Tamil Nadu and adjoining area in lower Troposphere (850hPa). The forecast shows the circulation will persist for next 48 hours and become less marked thereafter. A cyclonic circulation is seen over East Bihar and adjoining SHWB in lower Troposphere (850hPa). The forecast shows it will merge with the Trough in next 24 hours. A feeble cyclonic circulation is seen over south Interior Karnataka and adjoining areas at (850hPa). The forecast shows it will become less marked on day2.

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

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

3. Low Level Vorticity {850hPa Positive Vorticity (>12 x 10⁻¹/s)}:

Low level Positive Vorticity is seen mostly from J&K up to Foothills of Himalaya, along the North- South Trough, around the cyclonic circulations, central parts of India during next 3 days; Low level Positive Vorticity is also seen over parts of North West India from day 2 onwards and over parts of NE states on day 2 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): over parts of Gujarat, Uttar Pradesh, Gangetic Plains, Uttarakhand, Bihar, Jharkhand, Gangetic West Bengal, GWB, SHWB, Orissa, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, East Madhya Pradesh, Andhra Pradesh, along east and west coast of India, Tripura and adjoining areas during next 3 days; over parts of South East Rajasthan on day 1 and 3 and over south west Rajasthan on day 3; over parts of Uttarakhand from day 2 onwards; Significant zone lies over Gujarat, coastal areas along the east coast and west coast, GWB, SHWB, Bihar, Jharkhand, East Uttar Pradesh, Orissa, Andhra Pradesh, coastal Tamil Nadu, Telangana, coastal Maharashtra, Vidarbha, Chhattisgarh, Interior Karnataka, South Madhya Maharashtra and Marathwada.

Lifted Index (< -2): Similar to T-storm Index lies over Gujarat, Rajasthan, Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana, Bihar, Jharkhand, Madhya Pradesh, Orissa, GWB, SHWB, Assam, Arunachal Pradesh, Meghalaya, Mizoram, Tripura and adjoining areas, Telangana, Vidarbha, Chhattisgarh, Andhra Pradesh, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Madhya Maharashtra and Marathwada during next 3 days, it also appears over Uttar Pradesh and Uttarakhand from day 2 onwards; Significant zone with maximum negative value is found over East Uttar Pradesh, Andhra Pradesh, Telangana and Bihar.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over parts of J&K, Himachal Pradesh, Chhattisgarh, Telangana, Vidarbha, Madhya Pradesh, Andhra Pradesh, Orissa, Interior Karnataka, Madhya Maharashtra, Marathwada, Sikkim and Arunachal Pradesh on day 1; over most of the parts of the country except west and North west India including Gujarat, West Madhya Pradesh, Punjab, Haryana and adjoining areas, Assam, Tripura, Meghalaya, Mizoram and adjoining areas Rajasthan on day 2 and 3; Significant zone with Maximum value of the index lies over Telangana, East Madhya Pradesh, Chhattisgarh, Vidarbha, Uttar Pradesh, Uttarakhand, Orissa and Andhra Pradesh.

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 Rajasthan, central parts of Madhya Pradesh, Punjab, Haryana, Himachal Pradesh and adjoining Uttarakhand, North west India during next 3 days; significant zone lies over parts of Uttar Pradesh, Bihar, Chhattisgarh, Vidarbha, East Madhya Pradesh, Orissa

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

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala and Tamil Nadu and whole south Peninsular India the value of the index lies in the above range over most of the parts of the country except North central parts of Madhya Pradesh, J&K, West Rajasthan, Himachal Pradesh, Uttarakhand, Punjab, Haryana, North and North west India during next 3 days; significant zone with highest value of the index lies over parts of Gujarat adjoining west Madhya Pradesh, Vidarbha, Madhya Maharashtra, North coastal Maharashtra, North Andhra Pradesh, Bihar and adjoining East Uttar Pradesh..

5. Rainfall Activity:

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

40-70 mm Rainfall: over parts of Sikkim, Assam, Arunachal Pradesh, Tripura, Mizoram, Nagaland and adjoining areas during next 3 days; over parts of South Interior Karnataka on day 1 and 2.

10-40 mm Rainfall: over parts of Kerala, Karnataka, Tamil Nadu, Orissa, Andhra Pradesh, East Bihar, Sikkim and NE states during next 3 days; over parts of South Chhattisgarh on day 1 and 2; over parts of GWB and SHWB on day 1.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, East Uttar Pradesh, Foothills of Himalaya, GWB, SHWB, Sikkim, NE states, Bihar, Jharkhand, Orissa, Chhattisgarh, Vidarbha, Kerala, Interior Karnataka, Konkan & Goa, coastal Maharashtra, South Madhya Maharashtra, Tamil Nadu, Telangana, Rayalaseema and Andhra Pradesh during next 3 days; over parts of and Madhya Pradesh and Marathwada on day 1 and 2; over parts of Uttarakhand on day 2 and 3.

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

1. Model Reflectivity (Max. dBz):

>25 dBZ Model Reflectivity: On day 1, over parts of J&K, Kerala, Karnataka, Tamil Nadu, NE states, Telangana, South Madhya Maharashtra adjoining Marathwada and Orissa, GWB, SHWB, Sikkim and adjoining North Bihar; On day 2 over parts of Karnataka, Kerala, Tamil Nadu, Orissa, Bihar, Jharkhand, GWB, SHWB, NE states, Sikkim, East Vidarbha adjoining Madhya Pradesh, J&K and some parts of Himachal Pradesh; On day 3 mostly over parts of Karnataka, adjoining South Madhya Maharashtra, Kerala, Tamil Nadu, East Madhya Pradesh, Vidarbha, some parts of Punjab, Haryana and adjoining areas, Himachal Pradesh, Uttarakhand, Haryana, SHWB, adjoining Bihar, Jharkhand, 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, southern parts of west coast and the east coast, parts of Karnataka, coastal Maharashtra, South Madhya Maharashtra, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, Bihar, Jharkhand, East Uttar Pradesh, Orissa Sikkim and NE states during next 3 days; below threshold value of the index is also seen over parts of Chhattisgarh and Vidarbha on day 1 and 2; over parts of Telangana on day 1 and over parts of South Gujarat on day 3.

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

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

CIN (50-150): It covers most of the parts of the country except J&K and North west India on day 1; it remains over most of the parts of country on day 2 except over J&K, North west India, North Madhya Maharashtra and Marathwada, Punjab, Haryana, Himachal Pradesh and Uttarakhand and West Madhya Pradesh; it remains over the same region on day 3 but appears over J&K, Punjab, Haryana, Himachal Pradesh and Uttarakhand; it has significant larger values over parts of Eastern and Western parts of the country including Gujarat, Madhya Maharashtra, Marathwada, East and West Uttar Pradesh, parts of Vidarbha, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh, Orissa, GWB, Telangana, North Interior Karnataka, Andhra Pradesh and some parts of Bihar and Jharkhand during next 3 days..

3. Rainfall and thunderstorm activity:

Above 130 mm Rainfall: over parts of Assam on day 2 and 3; over parts of SHWB on day 2.

70- 130 mm Rainfall: over parts of Sikkim, Assam and adjoining areas during next 3 days; over parts of South Interior Karnataka and Arunachal Pradesh on day 1; over parts of SHWB and South Kerala on day 2.

40- 70 mm Rainfall: over parts of Kerala, Sikkim and NE states during next 3 days; over parts of South Interior Karnataka and GWB on day 1; over parts of SHWB, GWB, South Interior Karnataka and Tamil Nadu on day 3.

10- 40 mm Rainfall: Over parts of J&K, Foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Sikkim and NE states during next 3 days; over parts of Bihar, Jharkhand, Orissa and Andhra Pradesh on day 1 and 2; over parts of South Chhattisgarh on day 2; over parts of Himachal Pradesh on day 3.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Chhattisgarh, Sikkim, Bihar, Jharkhand, Orissa, Andhra Pradesh, Telangana and NE states during next 3 days; over parts of East Madhya Pradesh and Vidarbha on day 1 and 2; over parts of South Madhya Maharashtra on day 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

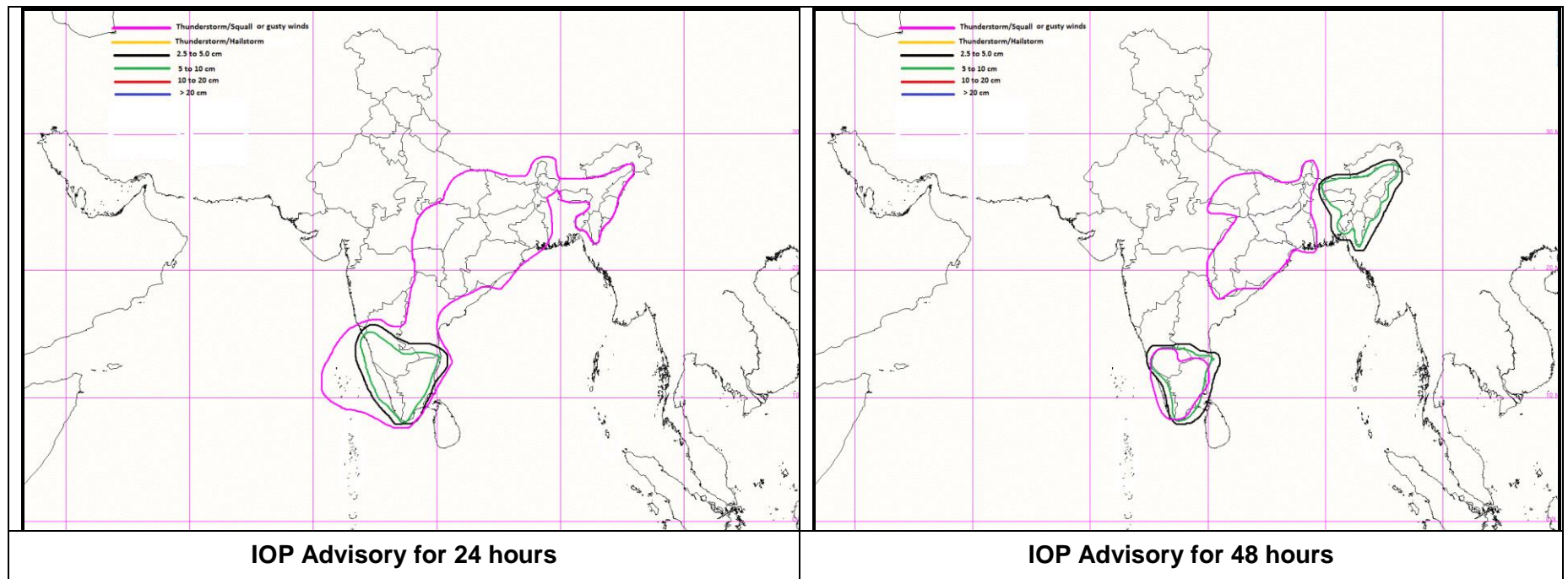
Summary and Conclusions:

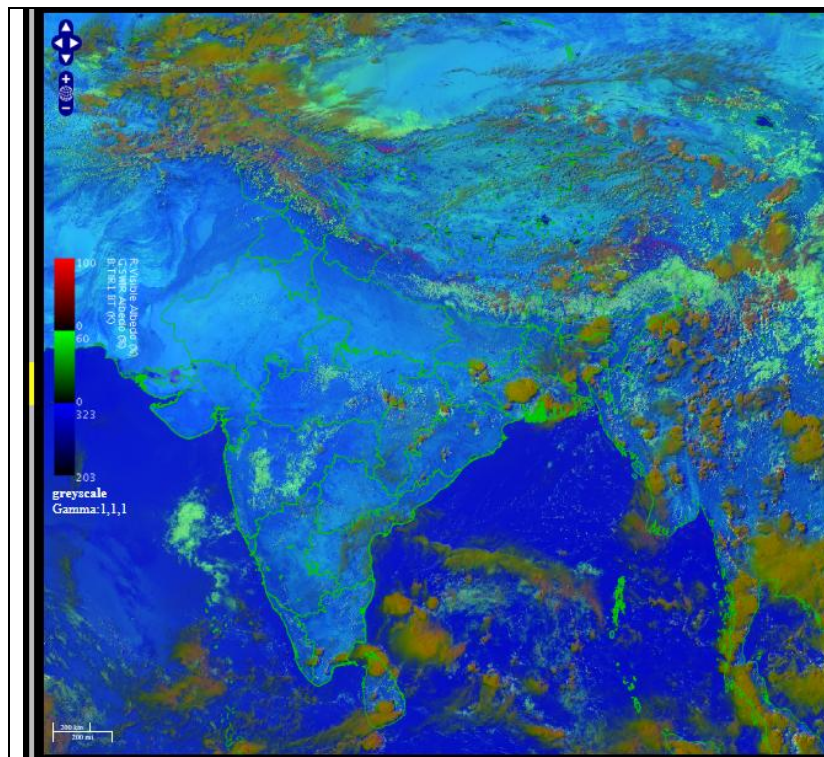
- Synoptic analysis indicates that there is a cyclonic circulation over north Tamilnadu & neighbourhood and a feeble cyclonic circulation over south interior Karnataka & neighbourhood. This system may give rise to heavy rainfall activity over Kerala Tamilnadu and south Interior Karnataka on Day-1. The thunderstorm with gusty winds may also likely over Telangana, Rayalaseema and South Interior Karnataka and Tamilnadu on Day-1.
- The cyclonic circulation over northeast Madhya Pradesh and adjoining East Uttar Pradesh and a trough runs from this cyclonic circulation to North Interior Karnataka across west Vidarbha & Marathwada. These systems will give rise to the thunderstorm with gusty winds activity mainly over East MP, Chhattisgarh, Orissa and GWB on Day-1.
- The thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CAPE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over east and east peninsular Indian region as well as west peninsular region with highest probability over GWB and Coastal Karnataka on Day-1.

IOP Area for Day-1 & Day-2:

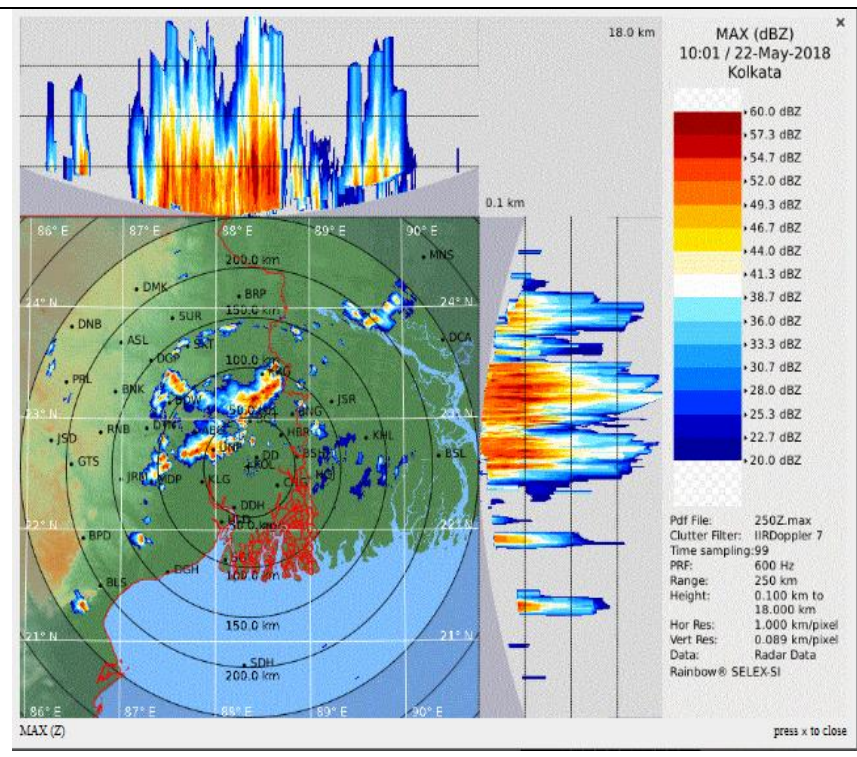
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p>Significant Rainfall: Tamil Nadu, Kerala, Coastal and South Interior Karnataka</p> <p>Thunderstorm with squall or gusty winds: Tamil Nadu, Kerala, Coastal and South Interior Karnataka, Rayalaseema, Telangana, Lakshadweep, Chhattisgarh, Vidarbha, East Madhya Pradesh, West Bengal, Sikkim, Odisha, Bihar, Jharkhand, Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura, East Uttar Pradesh</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Rajasthan</p>	<p>Significant Rainfall: Tamil Nadu, Kerala, South Interior Karnataka, Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura</p> <p>Thunderstorm with squall or gusty winds: Tamil Nadu, Kerala, South Interior Karnataka, Chhattisgarh, West Bengal, Sikkim, Odisha, Bihar, Jharkhand, East Uttar Pradesh</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Nil</p>

Graphical Presentation of Potential Areas for Severe Weather:

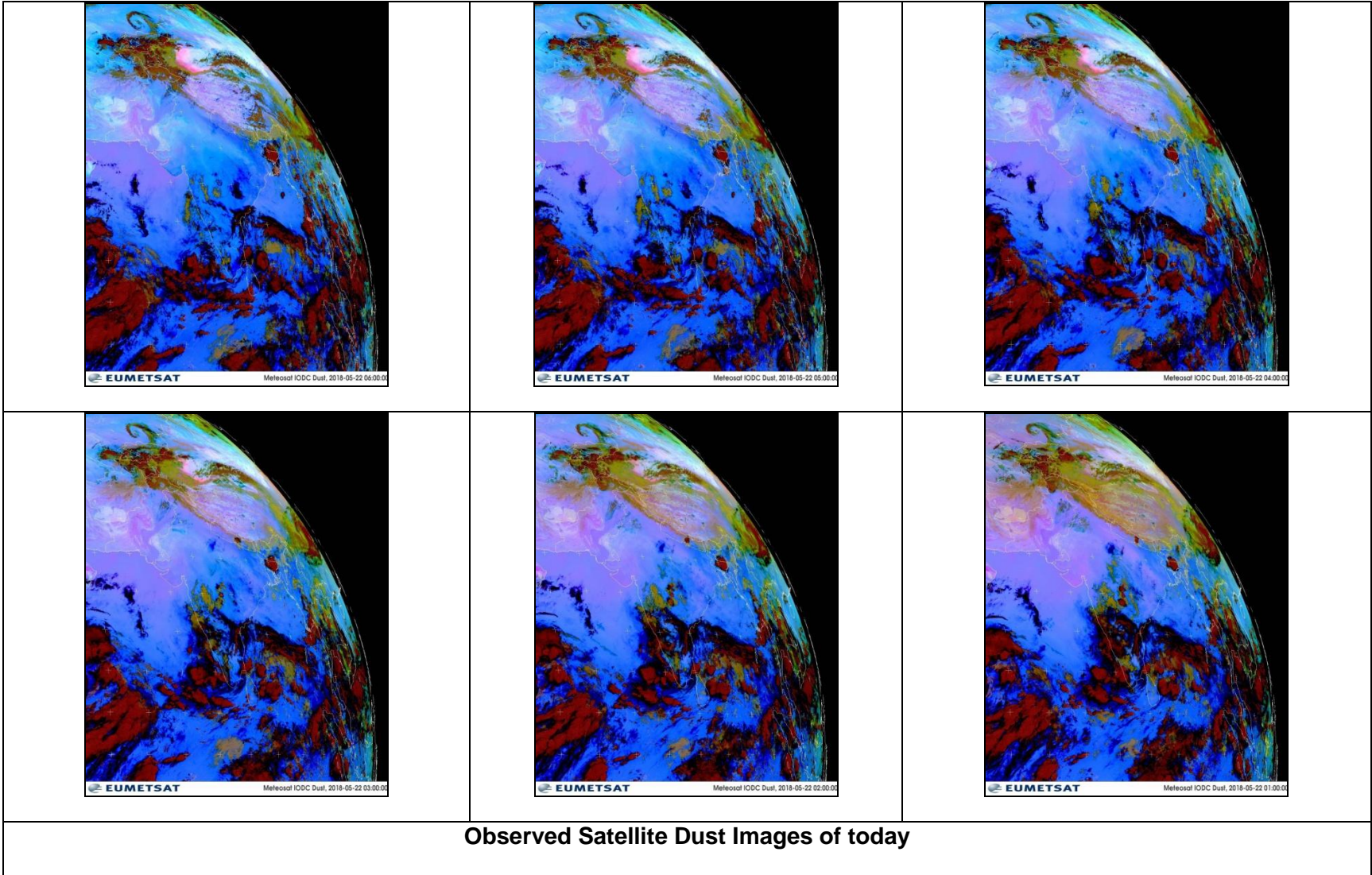


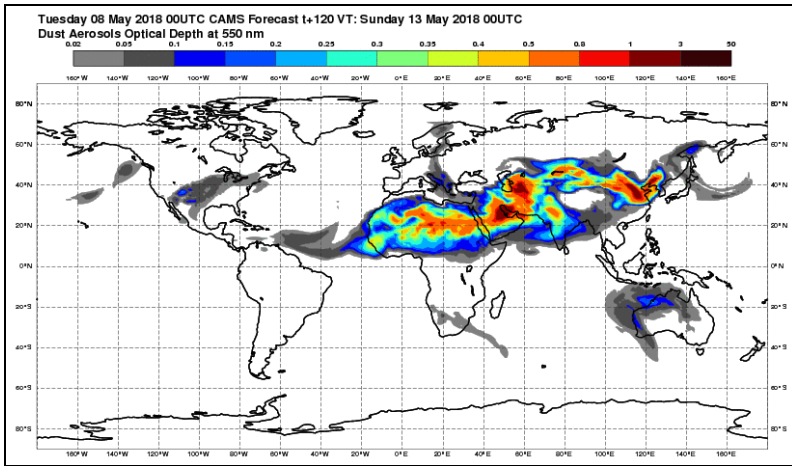


RAPID RGB Imagery at 1430 IST of the Day

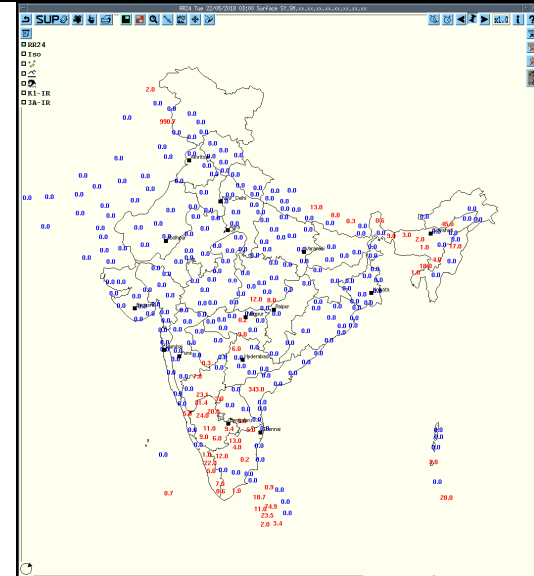


DWR Kolkata reflectivity image at 1531 IST

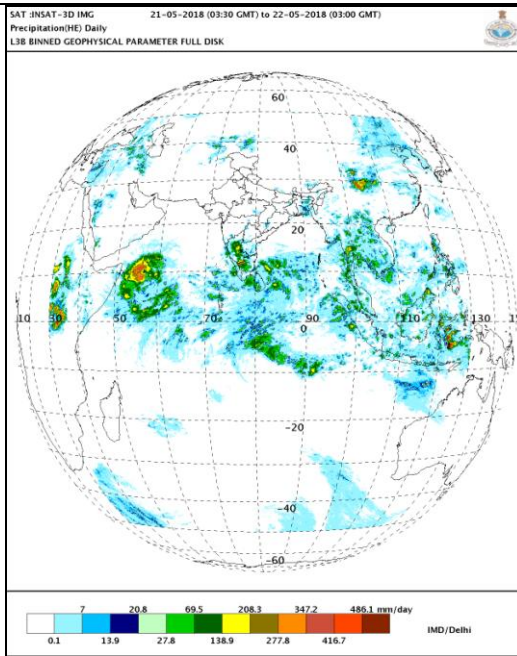




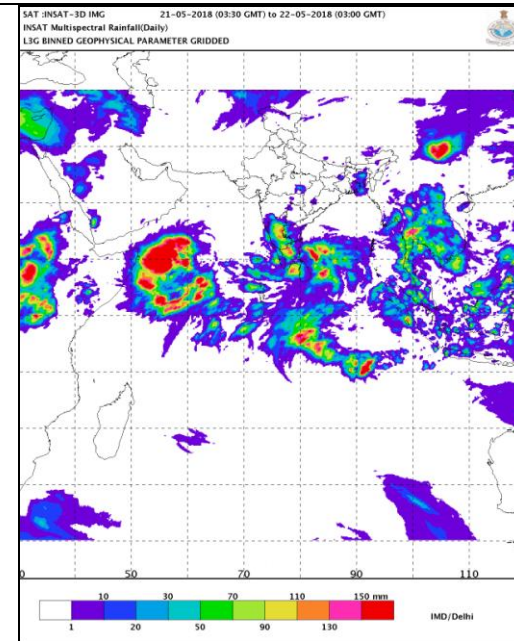
Dust Forecast



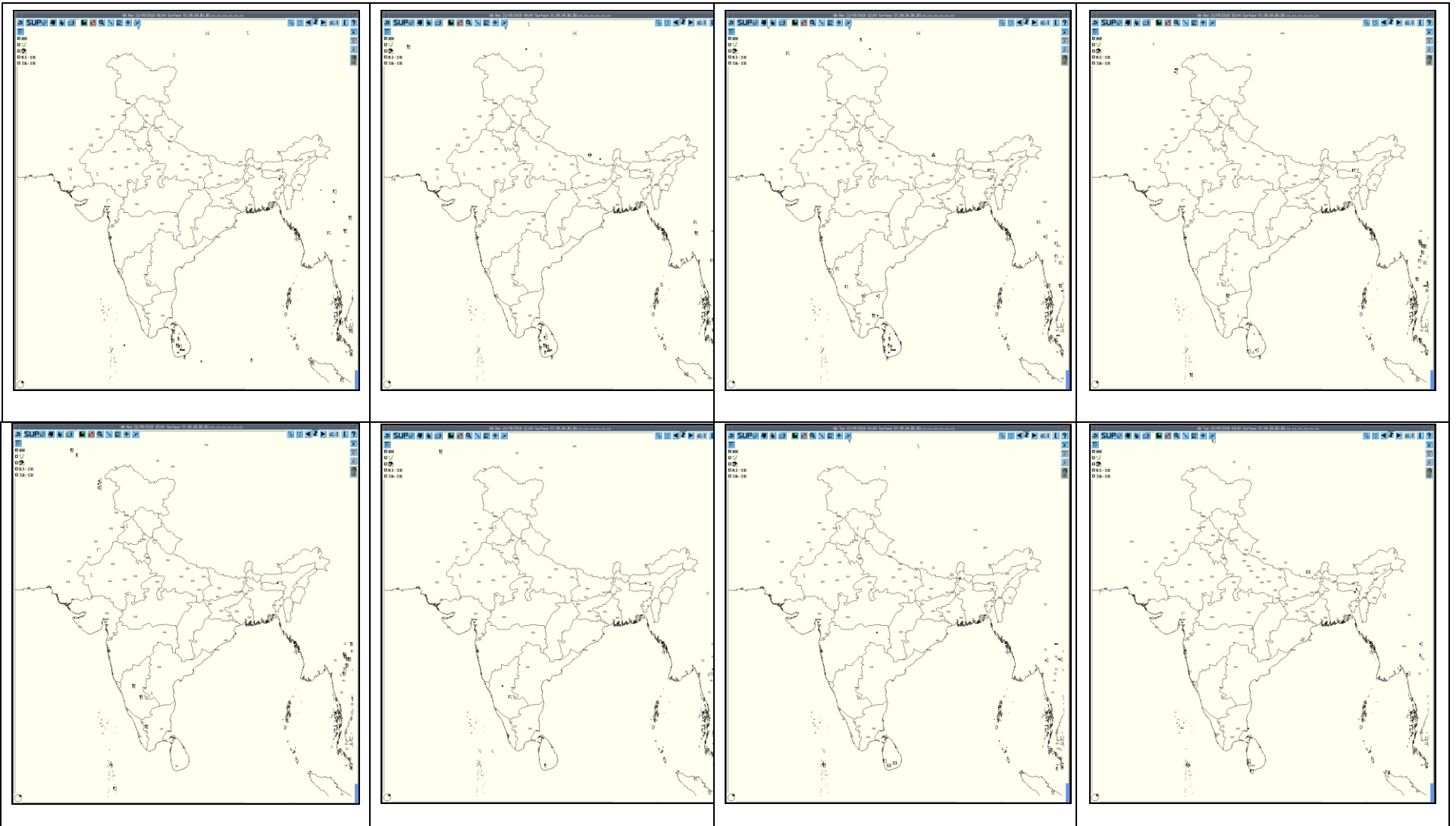
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



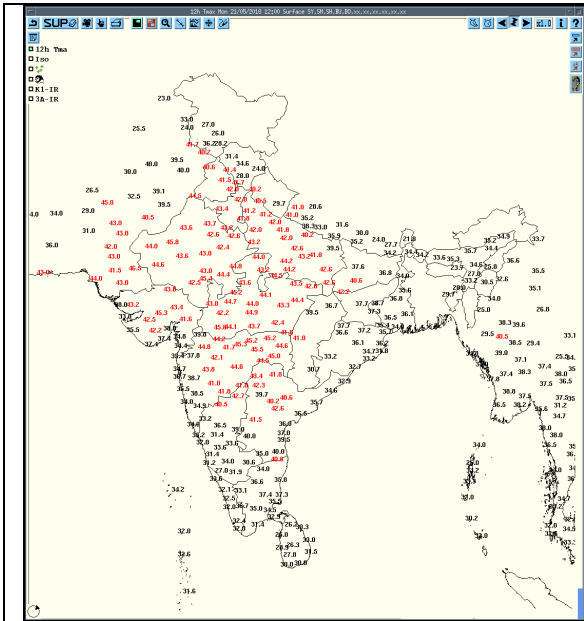
HEM



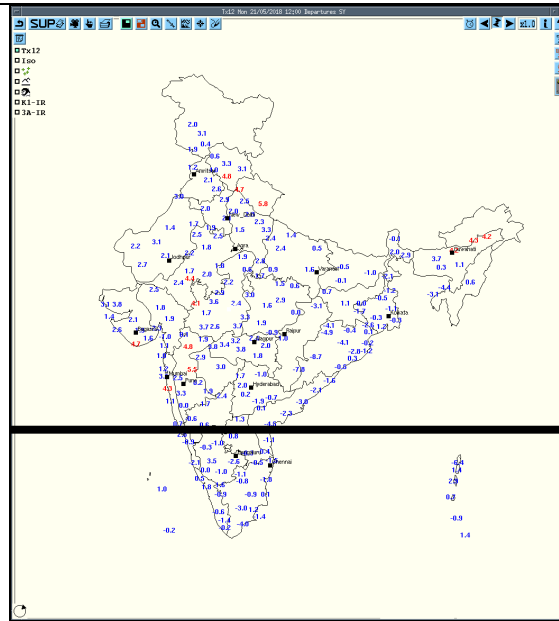
IMR



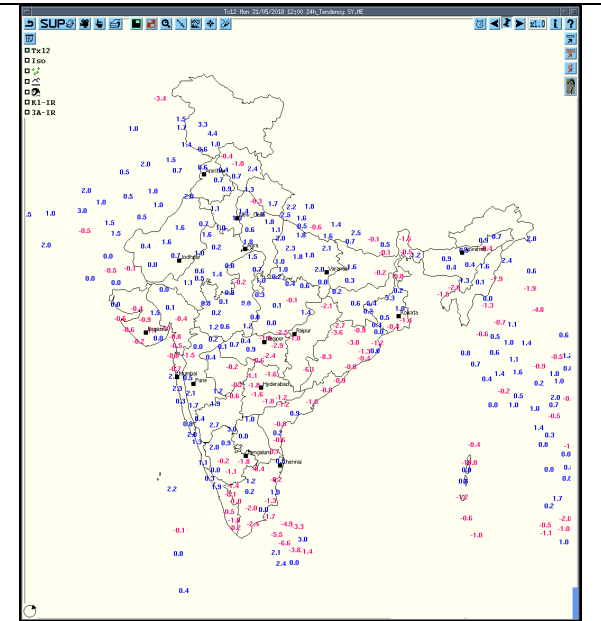
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



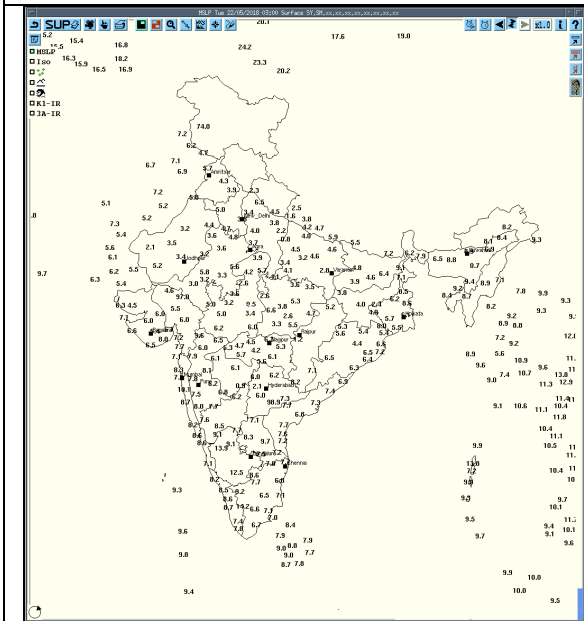
T_{max}



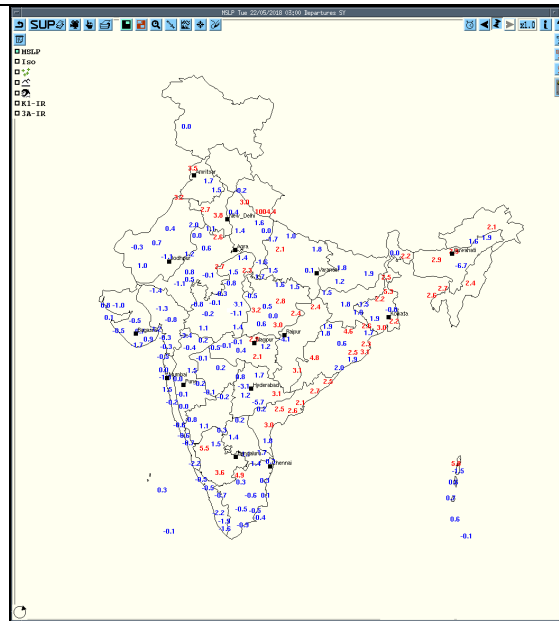
Departure T_{max}



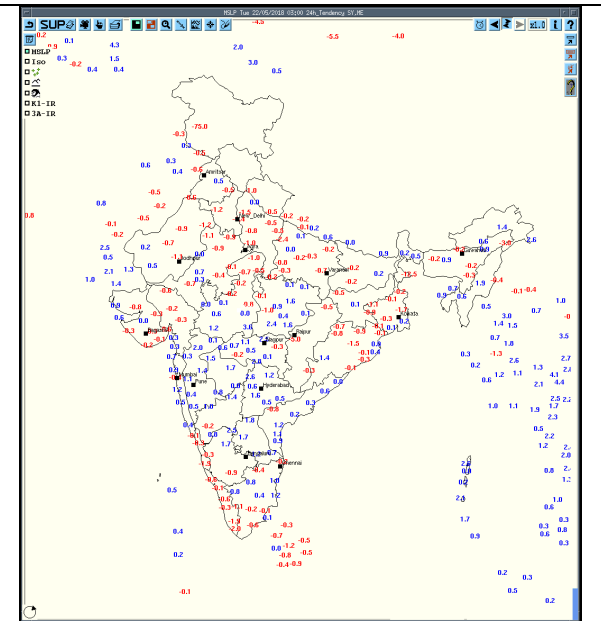
Tendency T_{max}



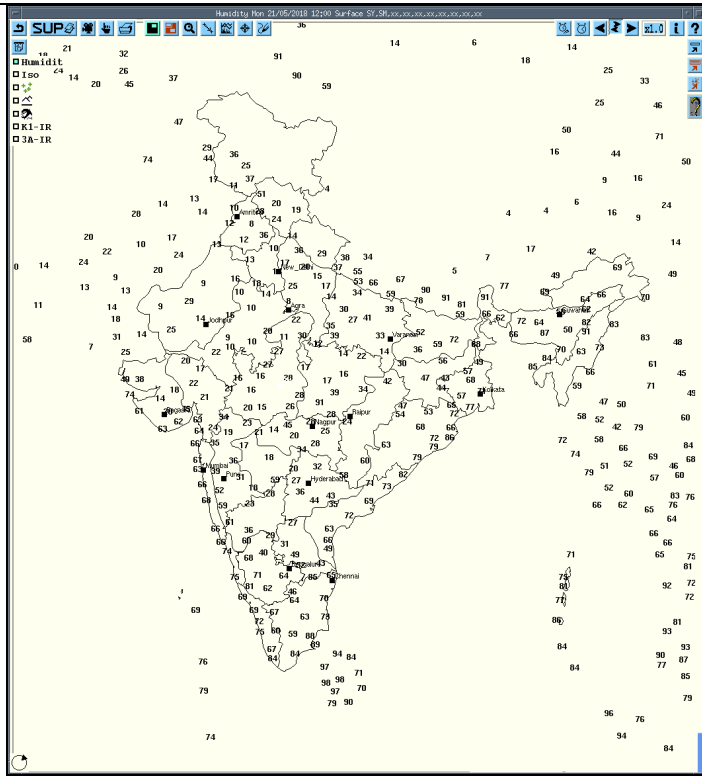
MSLP



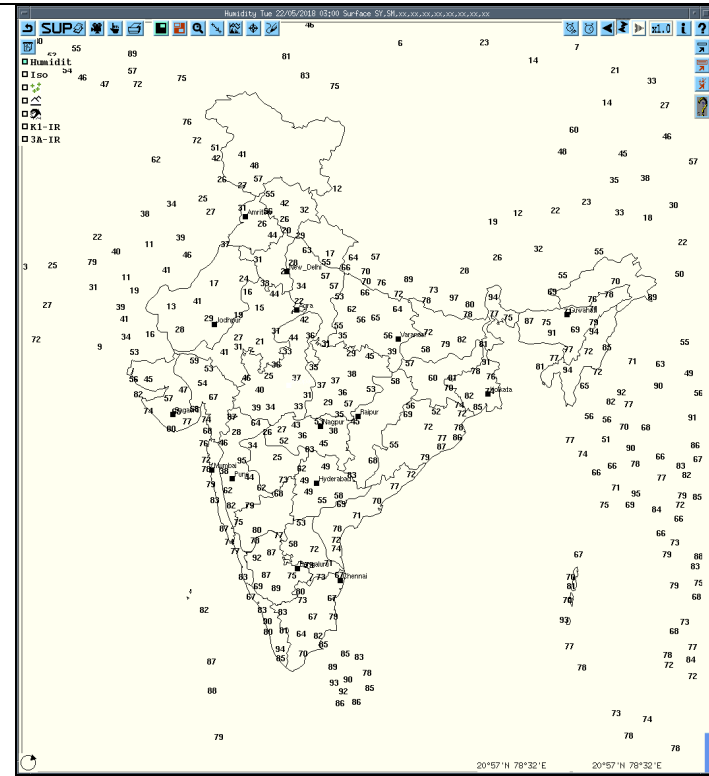
Departure MSLP



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	Associated severe weather if any	Districts affected
Agartala							
Jaipur	22-05-18	210300-220300 (* Radar shut-down from 211615IST to 211715IST & 220612IST to 220655 IST due to power cut)	Nil	Nil	Nil	Nil	Nil
Patiala	22-05-18	210300-220252	No Significant Echo	--	--	--	--
Lucknow	22-05-18	212322-212342	Single cells with average Height of 5 KM with Max Reflectivity of 41dBZ.	N(170KM) Stationary Cell, did not moved.	Single cells Started forming at 2322 UTC at N(170km),intensified at 2332 UTC with max Reflectivity of 41.0 dBZ and dissipated at 2342 UTC at N(170KM).	NIL	NIL
		220002-220112	Single cells with average Height of 8 KM with Max Reflectivity of 51.5dBZ.	ENE(250KM) Moving in S'yly direction at speed of 43km/hr.	Single cells Started forming at 0002 UTC at ENE(250km),intensified at 0022 UTC with max Reflectivity of 51.5 dBZ and dissipated at 0112 UTC at ENE(240KM) from DWR LKN.	TS /RA	NIL

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	22-05-18	210301 – 211011	NIL	NIL	NOSIG ECHO	NIL	NIL	
		211011-211211	Isolated single cell developed with maximum reflectivity of 57.0 dBz at 1021 UTC and maximum height 16.21Km at 1031 UTC	Formed NNW(24.283 deg E/87.211 deg N) Moving Slowly in E-ward direction	Isolated single cell formed (at a distance of 223.2 Km NNW from Radar) at 1021 UTC not Matured and dissipated at 1211 UTC (NNW at a distance 193.4 km from Radar)	Thunderstorm /Rain	N/A N/A	
		211221-220301	NIL	NIL	NOSIG ECHO	NIL	NIL	
Patna	22-05-18	210300 - 210752	NIL	N/A	N/A	N/A	N/A	
		210752 - 210932	Single Cell LAT 24.8825N LONG 87.1504E Maximum Reflectivity: 42.5 dBZ Echo Top: 12.5 KM	Range: 222.8 KM from DWR Patna in ESE direction Movement: towards Stationary	Warning issued	N/A	BANKA	
		210932 - 211022	NIL	N/A	N/A	N/A	N/A	N/A
		211022 - 211352	Single Cell LAT 26.6841N LONG 85.5704E Maximum Reflectivity: 41 dBZ Echo Top: 6.2 KM	Range: 131.7 KM from DWR Patna in NNE direction Movement: towards Stationary	Warning issued	N/A	SITAMADHI, MADHUBANI	
		211352 - 220300	NIL	N/A	N/A	N/A	N/A	N/A

Radars 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	22-05-18	210600	Isolated single cells with max. reflectivity of 39 dBz and height of 9 kms	NW(215, 236 KMS) moving Sly	CB cells are formed and developed to 39 dBz and 9 kms at 0321UTC & dissipated at 0411UTC.	-	Kalahand (Orissa)
		211200	A CB cell with reflectivity 47dbz and height 6kms.	209kms(W) Moving SW ly.	-	-	-

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)
Wardha	Central India	Vidarbha	Thunderstorm	22-05-18	0630	0705
Yeotmal	Central India	Vidarbha	Thunderstorm	22-05-18	0530	0600
Itanagar	Northeast India	Arunachal Pradesh	Thunderstorm	21-05-18	0200	0410
Guwahati	Northeast India	Assam	Thunderstorm	21-05-18	1710, 1815	2015, 2150
N/Lakhimpur	Northeast India	Assam	Thunderstorm	21-05-18	0400	0440
Silchar	Northeast India	Assam	Thunderstorm	21-05-18	1500	1600
Barapani	Northeast India	Meghalaya	Thunderstorm	21-05-18	1500	1520
Agartala	Northeast India	Tripura	Thunderstorm	22-05-18	0240	0410
Karaikal	South India	Coastal Tamilnadu	Thunderstorm	22-05-18	0620	0715
Salem	South India	North interior Tamilnadu	Thunderstorm	21-05-18	1450	1518
Dharmapuri	South India	North interior Tamilnadu	Thunderstorm	21-05-18	1730	2000
Karipur AP	South India	Kerala	Thunderstorm	22-05-18	0022	0510
Kurnool	South India	Rayalaseema	Thunderstorm	21-05-18	1740	1850
Anantapur	South India	Rayalaseema	Thunderstorm	21-05-18	2040	2145

IMPORTANT LINKS:

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

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

For Synoptic plotted data and charts

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

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

For RANDHRA PRADESHID tool:

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

Low Level Winds

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

Upper level winds

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

Past24hourHEMandIMRrainfall(upto03UTCoftoday)

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

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

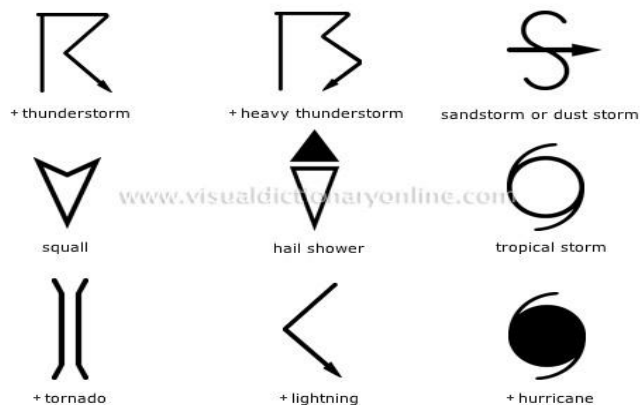
ForRadarimagesofthepast24hoursincludingmosaicofimages:











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

Satellite sounder based T- Phigram

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

WEATHER SYMBOLS:



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

Weather Symbols