



India Meteorological Department

FDP STORM Bulletin No. 9 (15-03-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ The well marked low pressure area over Lakshadweep and adjoining southeast Arabian Sea persists. Associated cyclonic circulation extends upto mid-tropospheric level. System is likely to move north-northwestwards and weaken gradually over southeast & adjoining eastcentral Arabian Sea during next 24 hours.
- ◆ The Western Disturbance as a cyclonic circulation now lies over north Pakistan and adjoining Jammu & Kashmir at 3.1 km above mean sea with a trough aloft in mid & upper tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 70°E to the north of Lat. 25°N.
- ◆ The induced upper air cyclonic circulation over Punjab & neighbourhood now lies over Punjab & adjoining Haryana and extends upto 1.5 km above mean sea level.
- ◆ A trough runs from the above system to Telangana, across southwest Uttar Pradesh, East Madhya Pradesh and East Vidarbha and extends upto 1.5 km above mean sea level.
- ◆ The trough from east Bihar to Manipur across north Bangladesh has become less marked however the embedded cyclonic circulation over Sub-Himalayan West Bengal and adjoining Bihar & Jharkhand now lies over east Bangladesh & neighbourhood and extends upto 2.1 km above mean sea level.
- ◆ The cyclonic circulation over north Madhya Maharashtra & adjoining Madhya Pradesh extending upto 1.5 km above mean sea level has become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

Current Observation (based on 0300UTC imagery of INSAT 3D):

VORTEX:

Vortex over SE Arabian Sea now centered within a half degree of Lat 9.2N/72.2E, Intensity T1.0 RPT T1.0, centre not well defined in IR imageries, associated broken low/medium clouds with embedded intense to very intense convection seen over area between Lat 5.2N to 13.5N Long 70.5E to 76.0E and Lakshadweep (**Minimum CTT Minus 85 Deg C**).

WESTERN DISTURBANCE (WD):

Broken low/medium clouds with embedded moderate to intense convection was observed over Jammu & Kashmir (**Minimum CTT Minus 60 Deg C**), North Himachal Pradesh (**MINIMUM CTT MINUS 56 DEG C**) and over the area between Lat 37.0N to Lat 47.0N Long 75.0E to 96.0E in association with WD over the area.

Clouds description within India:

Scattered low/medium clouds seen over rest Himachal Pradesh, Punjab, Haryana, Sikkim, Assam, East Meghalaya, Nagaland, North Manipur, Madhya Pradesh, Maharashtra, Goa, Telangana, Rayalaseema, Andhra Pradesh and isolated over Delhi.

Scattered low/medium clouds with embedded weak convection seen over Odisha, Chhattisgarh, Northwest Jharkhand, Bihar and Arunachal Pradesh. Scattered low/medium clouds with embedded weak to moderate convection seen over Uttar Pradesh, Haryana, North Punjab, North Rajasthan and rest Karnataka. Broken low/medium clouds with embedded intense to very North Interior Karnataka, North Kerala (**MINIMUM CTT MINUS 45 DEG C**) and Lakshadweep (**MINIMUM CTT MINUS 85 DEG C**).

Arabian Sea:

Broken low medium clouds with embedded moderate to intense convection seen over rest Southeast Arabian Sea Comorin adjoining Indian.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded isolated moderate to intense convection seen over North Srilanka, Gulf of Mannar. No significant clouds over Bay of Bengal and Andaman Sea.

Past Weather:

Convection (during last 24 hrs):-

Intense to very Intense convection was observed over Kerala South interior Karnataka Tamilnadu Lakshadweep and Moderate to intense convection observed over J&K Himachal Pradesh Uttarakhand Haryana North-East States and weak to Moderate convection observed over Madhya Pradesh Karnataka Maharashtra Rayalaseema South Coastal Andhra Pradesh.

OLR:

Upto 150 was observed over North and South Jammu & Kashmir

Upto 230 wm^{-2} observed over rest J&K North Himachal Pradesh Haryana North Uttarakhand east Uttar Pradesh east Madhya Pradesh North West and South Bihar North Jharkhand south Chhattisgarh Sikkim Arunachal Pradesh Nagaland Manipur Assam Meghalaya Kerala Tamilnadu

Upto 250 wm^{-2} observed over Karnataka Rayalaseema South Coastal Andhra Pradesh & rest North-East States.

Synoptic features:

Westerly Trough & Jet-Stream: Trough in westerlies roughly along Longitude 65°E to the north of Latitude 25°N.

Dynamic Features:

Negative shear tendency is observed over north Rajasthan Punjab Jammu & Kashmir Himachal Pradesh East Uttar Pradesh Bihar Jharkhand Gangetic West Bengal North-East States and Positive shear tendency over rest parts of India.

Medium to high wind shear is observed over North & Central India and low wind shear over South Peninsula region.

A positive Vorticity field is observed over Jammu & Kashmir Himachal Pradesh Punjab Haryana Rajasthan Uttar Pradesh North Maharashtra north Chhattisgarh Bihar Jharkhand Gangetic West Bengal.

Negative Low Level Convergence is observed over East Uttar Pradesh north Bihar West Bengal and Positive Low Level Convergence over rest parts of India.

Precipitation:**IMR:**

Rainfall 70-90 mm observed over North Jammu & Kashmir, South Interior Karnataka and

Rainfall 30-50 mm observed over rest J&K Kerala and

Rainfall 1-10 mm observed over rest J&K North Himachal North Uttarakhand North Arunachal Pradesh rest Karnataka Kerala Tamilnadu South Andhra Pradesh

HEM:

Rainfall upto 140 mm observed over West J&K south Tamilnadu north Kerala south Karnataka and

Rainfall upto 14 mm observed over North Kerala North Tamilnadu Karnataka North-East States.

RADAR and RAPID RGB Observation:

No convection was seen in Radar Composite at 1450IST.

Light convection is seen over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, South Interior Karnataka and Central parts of Tamilnadu in RAPID RGB Satellite imagery at 1400IST.

Environmental condition (dust etc) and its forecast based on 00UTC of date:

Higher Dust concentration was observed over Arab countries and north- western part of India. Dust concentration is expected to decrease over north-western part of India for next five days. PM10 concentration is expected to increase over IGP in next five days. Particulate matter concentration is expected to remain in moderate to poor category for next 2 days in Delhi.

| Delhi – SAFAR analysis & Forecast | 15.03.2018 | 16.03.2018 |
|--|-------------------|-------------------|
| PM10 (micro-g/m ³) | 238 | 215 |
| PM2.5 (micro-g/m ³) | 106 | 95 |

2. NWP MODEL GUIDANCE:

NCMRWF (NCUM Forecasts based on 00 UTC of the day):-

1. Weather Systems: Low level CYCIRs, Troughs:

12 UTC of Day 0-1: CYCIR over Arabian Sea moving west-northwestward

12 UTC of Day 0: 850 hPa Trough over Punjab and adjoin area

12 UTC of Day 0-4: Trough at 850 hPa over East and NE India & adjoining Bangladesh in Day 0-3

00 UTC of Day 0-2: Trough at 850 hPa over Central India

Confluence & wind Discontinuity regions:

12 UTC of Day 0- 4: NE–SW wind discontinuity over central India extending from Maharashtra-Madhya Pradesh-Chhattisgarh-Odisha.

In Day 0-2 N-S wind discontinuity over southern peninsular India

Synoptic Systems: 12 UTC of Day 0-3: Anticyclone at 925 hPa over Bay of Bengal leading to moisture incursion over Indian land

12UTC of Day 0-1:At 500 hPa Western disturbance as trough over J&K.

2. Location of jet and jet core (>60kt) at 500hPa: Weaker core winds at 12 UTC on all days except Day 1 over India.

3. Convergence at 850 hPa:

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

Day0: NE NMMT, Jharkhand, Odisha, Coastal AP, Rayalaseema, SI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, Jharkhand, East Rajasthan, Odisha, East Madhya Pradesh, Chhattisgarh, Coastal AP, Rayalaseema, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, Gangetic WB, Jharkhand, Odisha, East Madhya Pradesh, Chhattisgarh, Coastal Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Odisha, Madhya Maharashtra, Coastal AP,

Day4: Odisha, Madhya Maharashtra, Coastal AP,

4. Spatial distribution of Low level Vorticity:

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

Day0: Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Odisha, Vidarbha, NI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, Uttarakhand, Himachal Pradesh, Odisha, East Madhya Pradesh, Chhattisgarh, Coastal AP, Telangana,

Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Himachal Pradesh, Coastal AP,

Day3: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Odisha, Coastal AP,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Himachal Pradesh

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Sub Himalayan WB, Bihar, Punjab, Himachal Pradesh, Jammu Kashmir,

Day1: Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir, Coastal AP, Tamilnadu Puducherry,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Coastal Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Kerala

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, Sub Himalayan WB, Rayalaseema, Tamilnadu Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day1: Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, Rayalaseema, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Tamilnadu Puducherry, Coastal Karnataka, SI Karnataka,

Day3: NE NMMT, Coastal Karnataka,

Day4: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Coastal Karnataka, NI Karnataka, Kerala

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

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, West Madhya Pradesh,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Himachal Pradesh, Jammu Kashmir,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Punjab, Himachal Pradesh, Jammu Kashmir, Telangana, Tamilnadu Puducherry, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu Puducherry, Coastal Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Coastal AP, Rayalaseema, Tamilnadu Puducherry, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Tamilnadu Puducherry, Kerala,

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

1. Synoptic Systems:

The analysis based on 00 UTC shows an induced cyclonic circulation in the lower tropospheric levels over Punjab and adjoining areas associated with the trough in upper level westerlies gradually moves eastward in day 1 over west Uttar Pradesh and adjoining areas and moving further eastward it lies as a trough over East Uttar Pradesh in day 2. A trough in lower troposphere is seen from Punjab to Telangana extending over west Uttar Pradesh, East Madhya Pradesh and east Vidharbha. The trough orients along nearly northeast-southwest direction from North Bihar to Madhya Maharashtra in day 1 and persists in day 2. The eastern end of the trough moves southward and extends from GWB to Madhya Maharashtra in day 3. In the analysis, another north-south oriented trough over SHWB, Assam and Meghalaya region to GWB persists for 3 days. The cyclonic circulation over Southeast Arabian associated with the well-

marked low pressure area over the region gradually weakens as it moves further north-westward direction over east-central Arabian Seas in next 3 days.

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

Although the presence of strong westerlies is found 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)}:

Mostly associated with the cyclonic circulation and along the trough also seen along foothills of Himalayas from Punjab to north eastern states during next 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 (> 4): Higher than threshold value 4 over parts of Gujarat, Rajasthan, East Uttar Pradesh, parts of Assam, Meghalaya and Tripura, south Konkan & Goa, coastal Andhra Pradesh and Tamil Nadu in day 1. During day 2: over parts of East Madhya Pradesh, Telangana, Chhattisgarh Jharkhand, Gangetic West Bengal and SHWB. Over North-eastern States, Gangetic west Bengal and Odisha, Andhra Pradesh, Rayalaseema, Interior Karnataka, coastal Karnataka and south Konkan & Goa on day 3.

Lifted Index (< -2): the spatial coverage of the index nearly follows the pattern of T-storm initiation index during all three days over peninsular India and North-Eastern India but it does not show any significant zone over central and east India.

Total Total Index (> 50) : Above threshold value mostly over parts of GWB and Orissa and most parts of northwest India and adjoining areas on day1 and 2. It extends eastward over Gangetic plains during day 3.

Sweat Index (> 300): Mostly it follows the spatial coverage pattern of T-Storm Initiation Index and some areas over J & K, Himachal and Uttarakhand.

CAPE (> 1000): Mostly along southern part of west coast and east coast during next 3 days.

CIN (50-150): Over parts of Gujarat and adjoining Rajasthan, East Uttar Pradesh and coastal Andhra Pradesh on day 1. Over parts of Vidarbha, East Madhya Pradesh, Chhattisgarh, Jharkhand and GWB on day 2, over parts Jharkhand, Orissa, GWB, Assam and Meghalaya on day3.

5. Rainfall Activity:

40-70 mm Rainfall: over parts of Arunachal Pradesh in day 1 and 2, over parts of South interior Karnataka, adjoining Tamilnadu and Rayalaseema in day 3.

10-40 mm Rainfall: Over Kerala and costal and south interior Karnataka and parts of Arunachal Pradesh on day 1; over parts of Arunachal Pradesh, south interior Karnataka, Rayalaseema, coastal Andhra Pradesh and Adjoining Tamilnadu on day 2; Over parts of NNMT, Arunachal Pradesh, Kerala, south interior Karnataka, adjoining Rayalaseema and Tamilnadu on 3.

Up to 10 mm rainfall: Over rest of the peninsular India during next 3 days. Over parts of J & K, Himachal Pradesh, Uttarakhand, Uttar Pradesh and rest of NE States on day 1, over parts of Marathwada, Vidarbha, East Madhya Pradesh, Chhattisgarh, Jharkhand, Orissa and GWB during next 2 days.

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

1. Model Reflectivity (Max. dBz):

> 20 dBZ Model Reflectivity: On day 1 over parts of J&K, Himachal, Punjab, Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, Vidharbha, Madhya Pradesh, Madhya Maharashtra, Konkan and Goa and Arunachal Pradesh; During day 2, over parts of Arunachal Pradesh, Telangana and adjoining south Chhattisgarh and Marathwada; On day 3, Arunachal Pradesh, Marathwada and North Interior Karnataka.

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

Total Total Index (> 50) : Above threshold value is observed over most parts of the country except south peninsula, Bihar, Jharkhand Orissa and eastern states on day 1 and 2, Above threshold value is observed over most parts of the country except south peninsula on day 3.

K-Index (> 35): Less than threshold value is observed over the country during the next 2 days.

CAPE (> 1000): Greater than threshold value over the southern part of west coast, east coast, and parts of Kerala, Tamil Nadu, Konkan and Goa NE states during the next 72 hours. Over some parts of Rajasthan, Uttar Pradesh, coastal Andhra Pradesh, Tamil Nadu, Konkan and Goa and adjoining areas during next 24 hours.

CIN (50-150): Mostly over Punjab, Haryana, Uttar Pradesh, west coast, east coast, Gangetic West Bengal and parts of north eastern states during next 3 days.

3. Rainfall and thunderstorm activity:

Rainfall 40-70 mm: over parts of Arunachal Pradesh on day 1 and 2.

Rainfall 10-40 mm: over parts of J&K, Himachal Pradesh and Uttarakhand on day1; over parts of Kerala, South interior Karnataka, south Tamil Nadu on day 1 and 2; over coastal Karnataka, Konkan and Goa and Kerala on day 3; Over parts of Assam, Arunachal Pradesh, Tripura and adjoining areas during next 3 days.

Rainfall up to 10 mm: over parts of J&K, Himachal Pradesh and Uttarakhand, Uttar Pradesh, parts of Rajasthan, Bihar, Jharkhand, Chhattisgarh, East Madhya Pradesh, Vidarbha, South Maharashtra and Chhattisgarh on day1; over eastern states, GWB, south interior Karnataka, Rayalaseema, Kerala Tamilnadu and Andhra Pradesh on day 1 and 2; over Madhya Maharashtra, Konkan and Goa, coastal Karnataka and Kerala on day 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

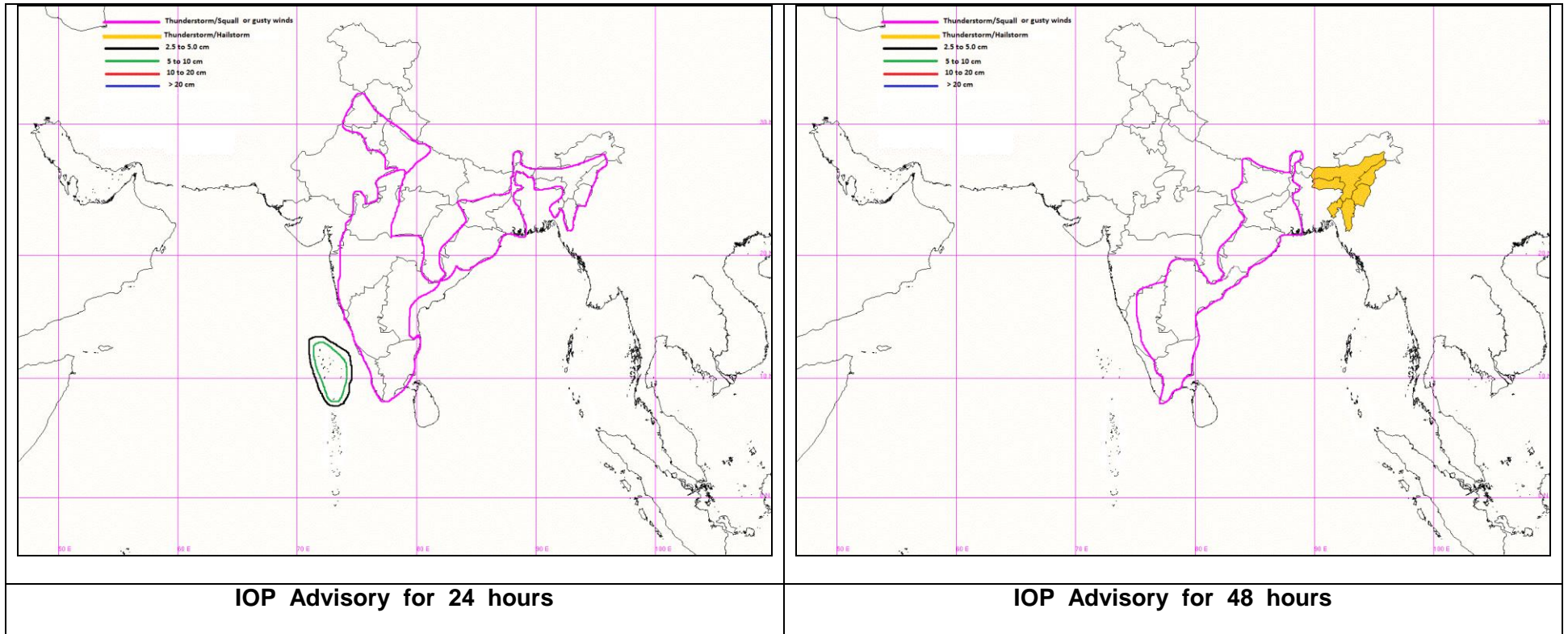
Summary and Conclusions:

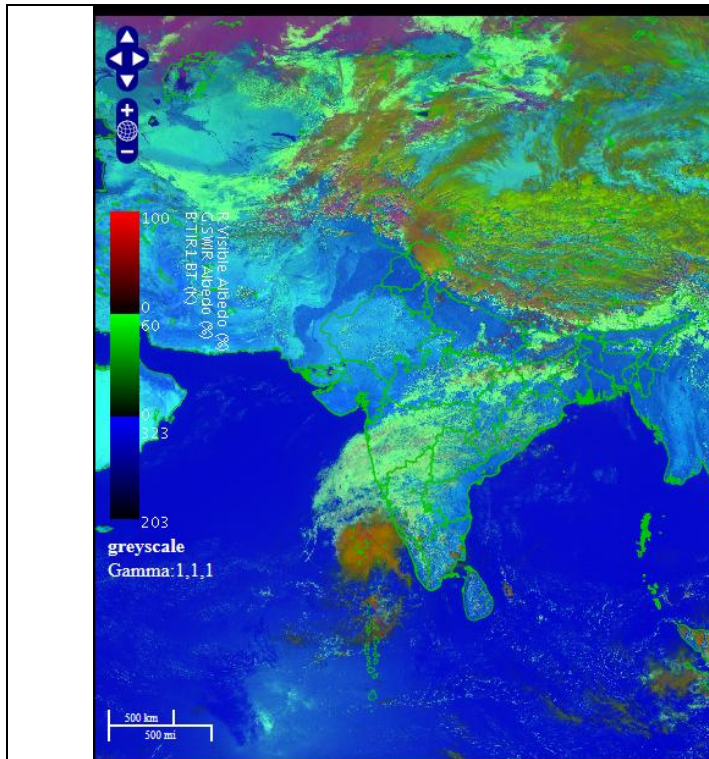
- Present western disturbance lies over north Pakistan and adjoining Jammu & Kashmir and induced cyclonic circulation over Punjab and adjoining Haryana and considering model guidance; due to the above system Jammu & Kashmir experienced widespread precipitation activity during next 24 hours. The associated cloud mass from western parts of western Himalayan region moved eastwards. Thunderstorm with gusty winds likely over northwest Uttar Pradesh during next 24 hours.
- Due to trough from Punjab to Telangana across central India in lower levels and moisture incursion from Bay of Bengal through anti-cyclone over southwest Bay of Bengal and south westerly flow in mid-tropospheric levels westerly over north peninsular India and favourable dynamic conditions and model guidance; the thunderstorm with gusty winds likely over some parts of northern Peninsular, east and adjoining central India during next 48 hours.
- Due to upper air cyclonic circulation over east Bangladesh & neighbourhood in lower levels and upper air strong westerly flow over the region and model guidance indicated that the thunderstorm with gusty winds and hailstorm likely over Assam & Meghalaya and Nagaland, Manipur, Mizoram, Tripura on 16th and 17th March.

Day-1 & Day-2:

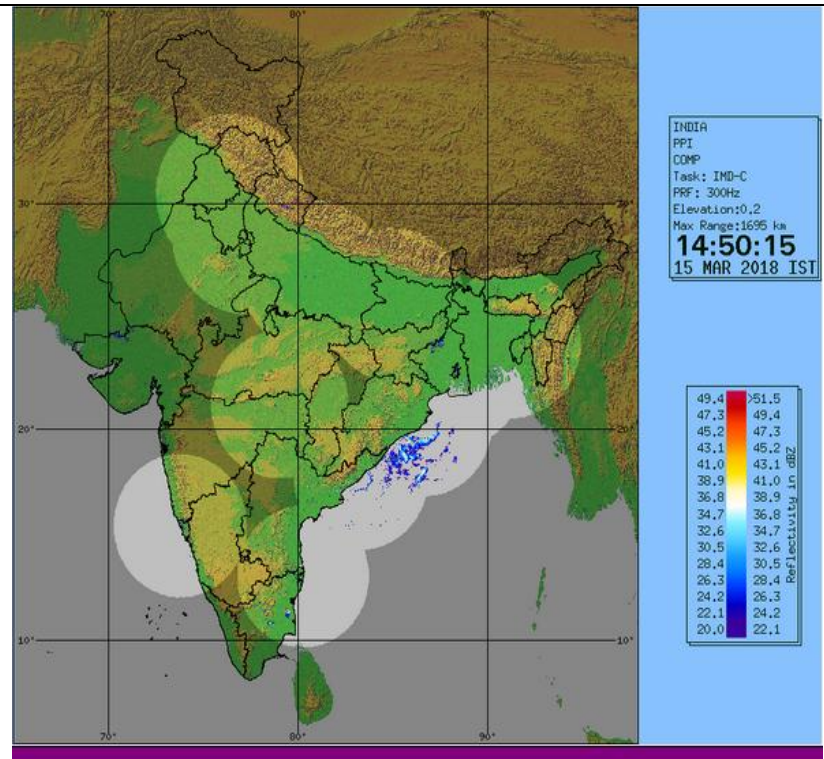
| | |
|--|--|
| 24 hour Advisory for IOP: Rainfall: Lakshadweep and Minicoy Islands Thunderstorm with associated phenomenon: Punjab, Haryana, Delhi, West Uttar Pradesh West Bengal & Sikkim, Jharkhand, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, West Madhya Pradesh, Vidarbha South Konkan & Goa, South Madhya Maharashtra, Marathwada Tamilnadu, Kerala, Karnataka, Telangana, Rayalaseema, | 48 hour Advisory for IOP: Rainfall: NIL Thunderstorm with associated phenomenon: West Bengal & Sikkim, Bihar, Jharkhand, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, North Interior Karnataka, South Interior Karnataka Telangana, Rayalaseema, Coastal Andhra Pradesh, Tamilnadu |
|--|--|

Graphical Presentation of Potential Areas for Severe Weather:

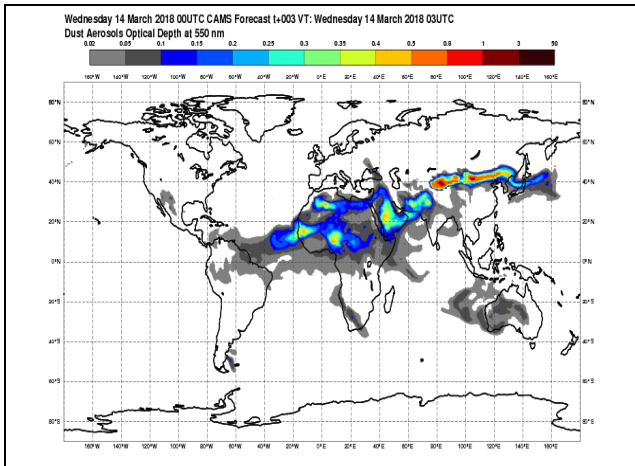




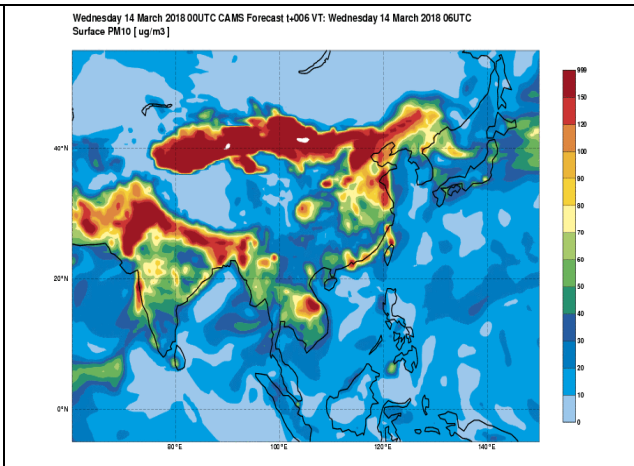
RAPID RGB Imagery at 1400IST of the Day



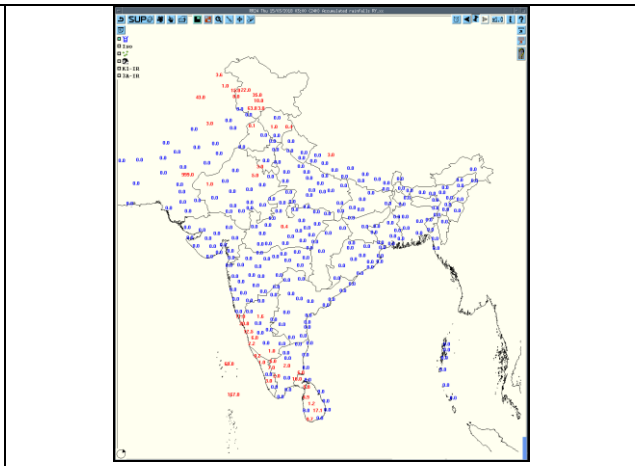
DWR Composite at 1450 IST of the Day



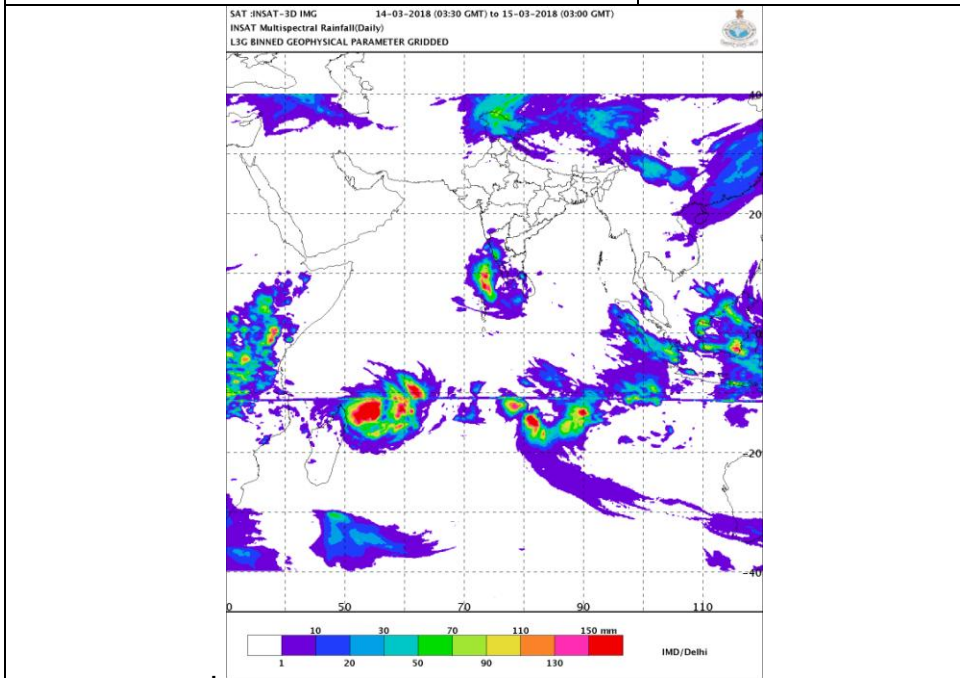
Forecast Dust Concentration



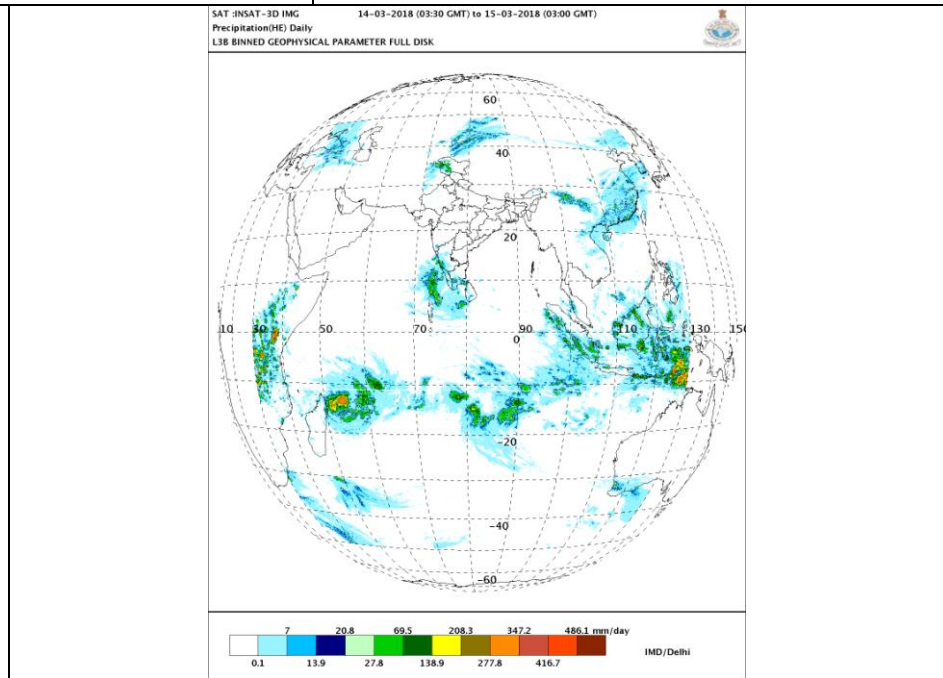
PM10 Forecast



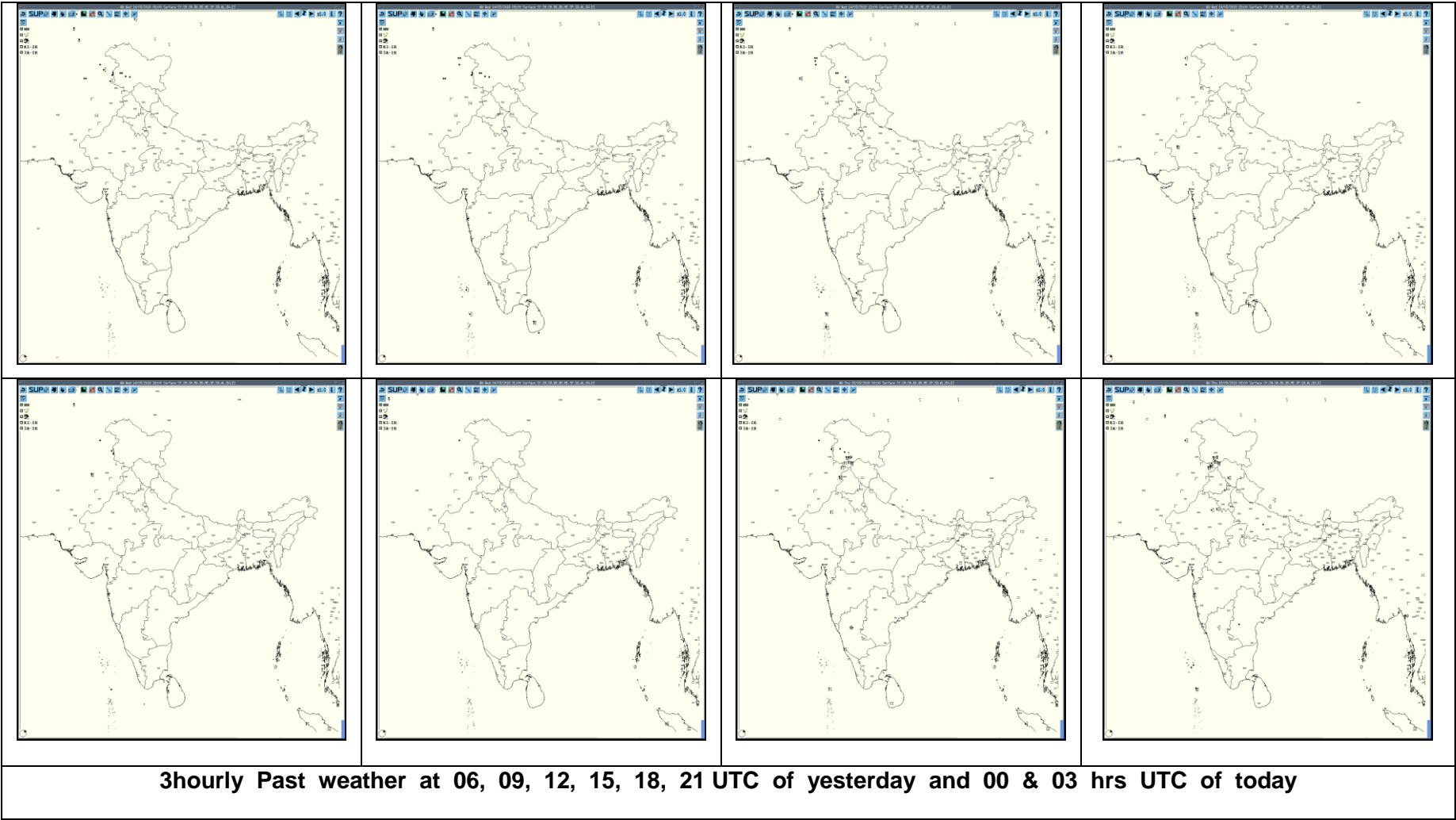
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



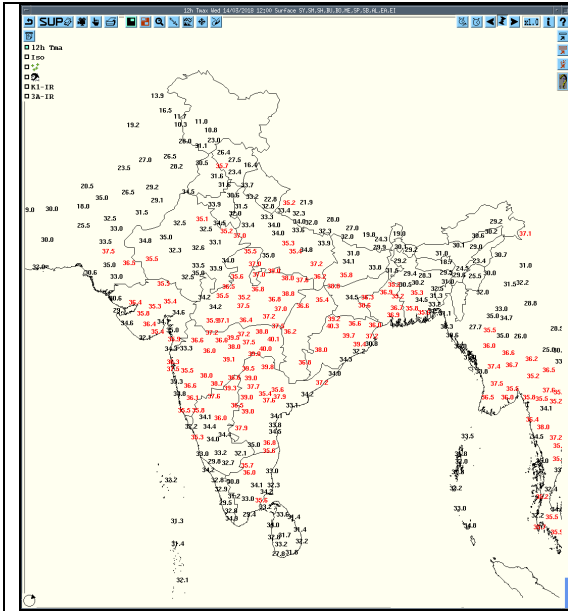
IMR



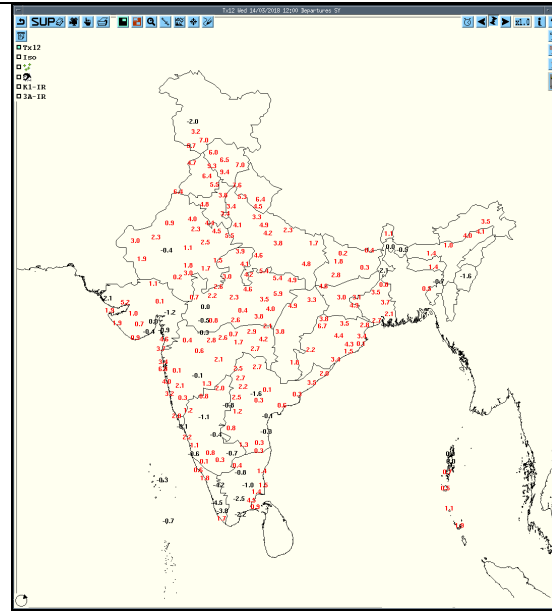
HEM



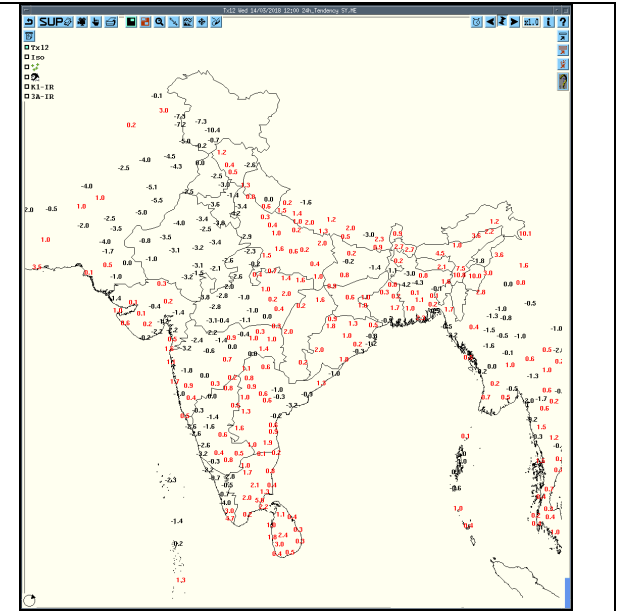
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



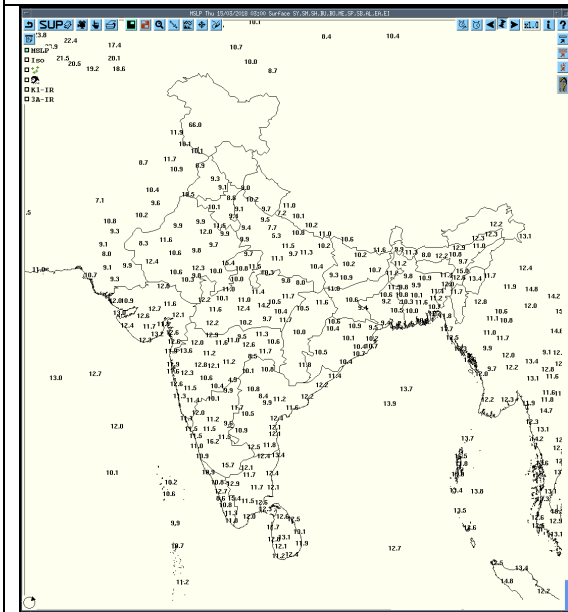
Tmax



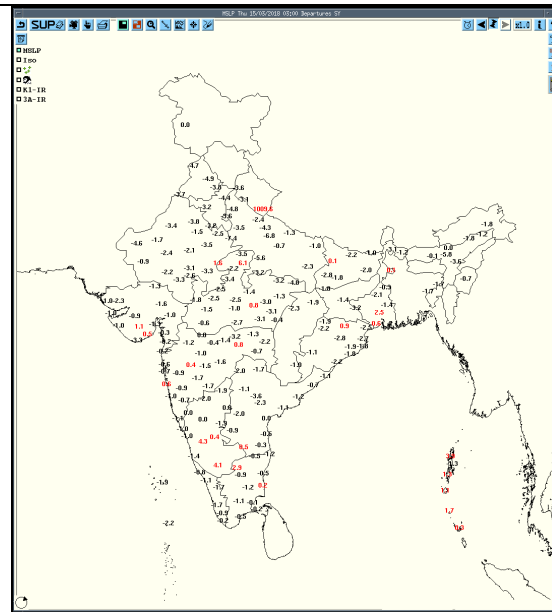
Departure Tmax



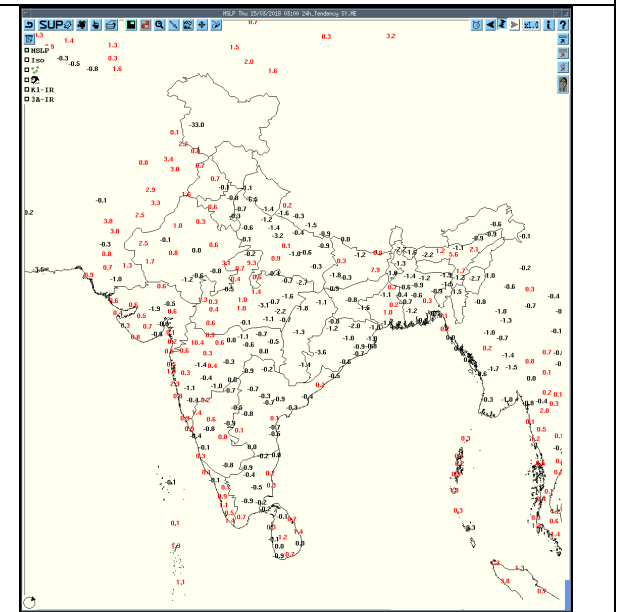
Tendency Tmax



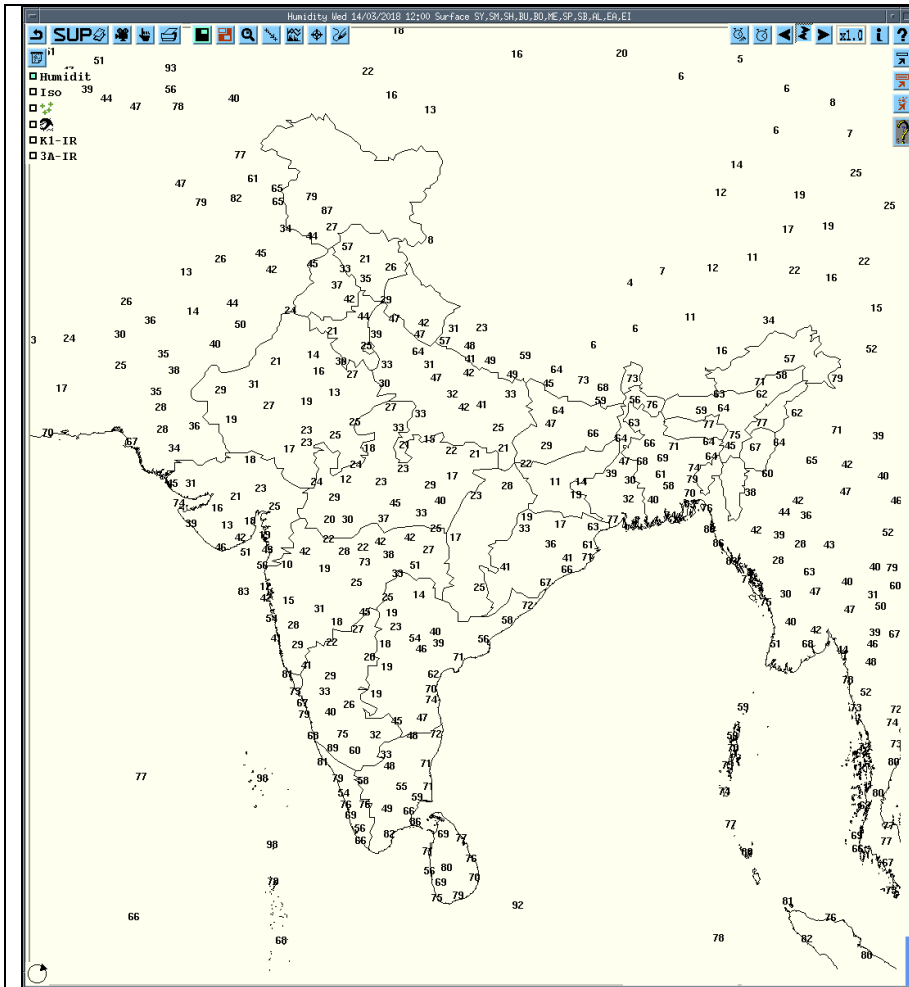
MSLP



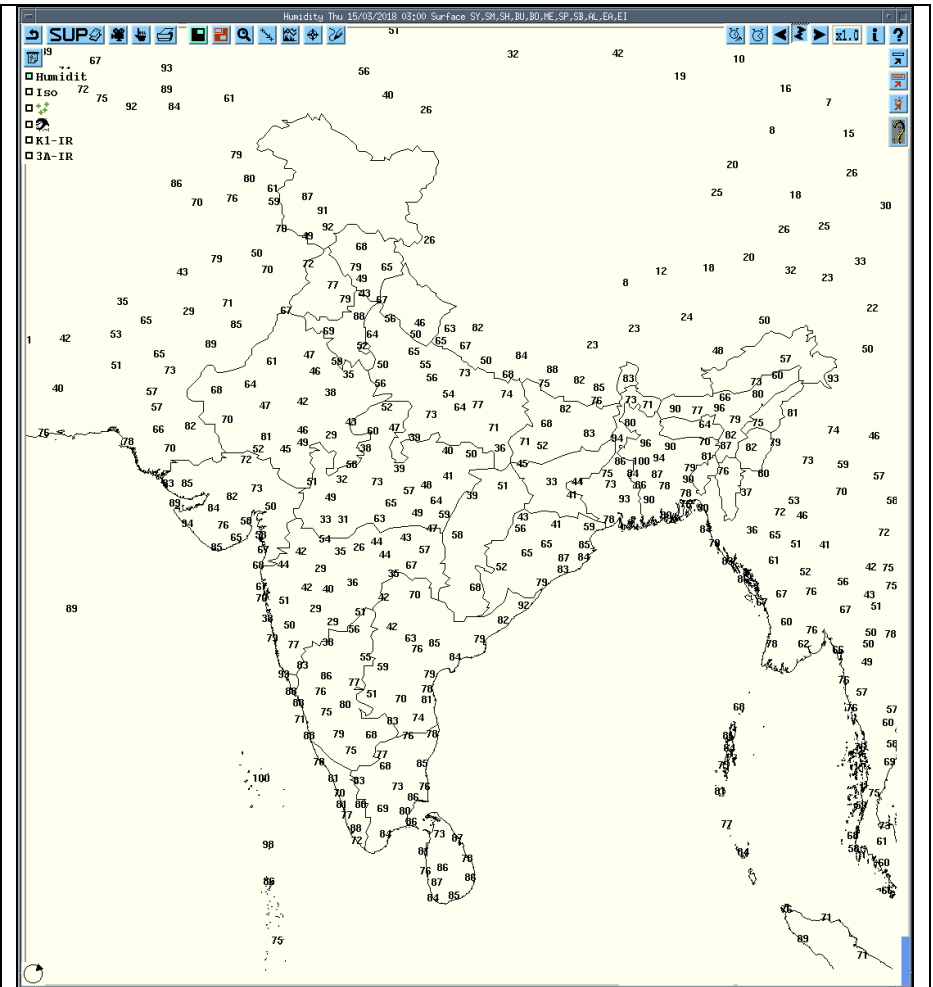
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

| DWR Station Name | Date of Report | 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 |
|------------------|----------------|------------------------------------|--|---|---|---|---|
| Agartala | 15/03/18 | 14/0300 - 15/0300 | ISLTD SINGLE,47 dBZ, Ht 8kms approx. | 100Kms ESE(Dhalai dist and adjoining Bangladesh)/No movement | Dissipated locally. | Not known. | Not Known. |
| Lucknow | 15/03/18 | 14/0300 - 15/0300 | NIL | NIL | NIL | NIL | NIL |
| Jaipur | 15/03/18 | 14/1832- 15/0302 | Multiple cell with average height 4.0 km and maximum reflectivity 49.0 dBZ | Multiple cell develop from 1832 UTC of 23/01/2018 in W, WNW, Jaipur and moved N, NE wards at speed 25-30 km/hr | Cell starts forming from 14.03.2018 in W, WNW of Jaipur and reaches maximum reflectivity during 2342-0122 UTC of 15/03/2018 (continues.) | Thunderstorm/ rain at Isolated places | Alwar, Churu, Sikar, Jhunjhunu, and Nagaur district |

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

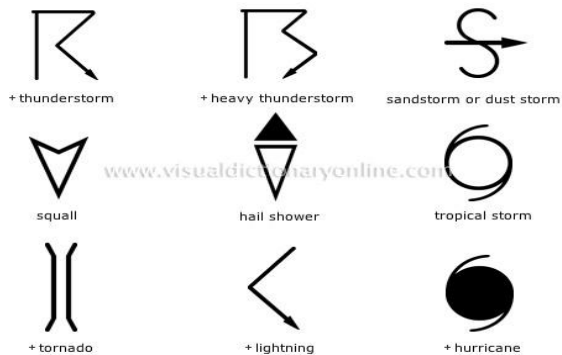
ForRadarimagesofthepast24hoursincludingmosaicofimages:

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 | |