



## India Meteorological Department

### FDP STORM Bulletin No. 5 (11-03-2018)

#### 1. CURRENT SYNOPTIC SITUATION:

##### NWFC INFERENCE (0300UTC of the Day):

- ♦ The low pressure area over southwest Bay of Bengal and adjoining Equatorial Indian Ocean & south Sri Lanka coast now lies over Equatorial Indian Ocean & southwest Bay of Bengal & south Sri Lanka coast and associated cyclonic circulation extends upto mid tropospheric levels. It is likely to move west north-westwards and become a well marked low pressure area during next 48 hours and depression during subsequent 24 hours over southeast Arabian Sea.
- ♦ The other trough of low at mean sea level from Lakshadweep area to Konkan along the west coast persists.
- ♦ The fresh western Disturbance as an upper air cyclonic circulation at 3.1 km above mean sea level over eastern parts of Afghanistan and neighbourhood now lies over East Afghanistan & adjoining Pakistan.
- ♦ The cyclonic circulation over south Pakistan & adjoining west Rajasthan now lies over southwest Rajasthan & neighbourhood at 1.5 km above mean sea level.
- ♦ The north south trough in the westerlies along Long. 88°E to the north of Lat. 25°N now runs roughly along Long. 90°E to the north of Lat. 24°N at 3.1 km above mean sea level.
- ♦ The cyclonic circulation over south Konkan & adjoining Madhya Maharashtra now lies over north Madhya Maharashtra & neighbourhood at 0.9 km above mean sea level.

##### SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

**Western Disturbance (WD):** Scattered multi-layered clouds seen over Northeast Iran North Afghanistan adjoining North Pakistan and over area between Lat 38.0N to 48.0N Long 70.0E to 90.0E in association with Western Disturbance over the area

**LOW LEVEL CIRCULATION (LLC):** Broken low/medium clouds with embedded intense to very intense convection seen over South Srilanka exterior Southwest Bay adjoining Indian Ocean between Equator to Lat 7.5N Long 74.0.0E to 84.0E association with Low Level Circulation over the area (Minimum CTT minus 79 Deg C)

##### Clouds descriptions within India:

Scattered low/medium clouds with embedded isolated weak convection seen over Jammu & Kashmir, Himachal Pradesh, North Uttarakhand Vidarbha., South Tamilnadu, and Nicobar Island. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over West Sub Himalayan West Bengal, Sikkim, Arunachal Pradesh, Northeast Assam and Northeast Meghalaya. Scattered low/medium clouds seen over Chhattisgarh, Odisha, Jharkhand, Nagaland, exterior North Telangana, South Kerala, North Tamilnadu, and Andaman Islands. Isolated low/medium clouds seen over Madhya Pradesh, Madhya Maharashtra and Marathwada.

##### Arabian Sea:

Scattered low medium clouds with embedded moderate embedded isolated weak intense convection seen over Gulf of Mannar Comorin and exterior Southeast Arabian Sea.

##### Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded moderate to intense convection over rest South Bay South of Lat. 9.0N and rest Scattered low/medium clouds with embedded isolated weak convection seen over Andaman Sea

### **Past Weather:**

#### **Convection (during last 24 hrs):**

Weak to Moderate convection was observed over J&K Punjab Himachal Pradesh Uttarakhand Sikkim Arunachal Pradesh North-East Assam Nagaland Madhya Pradesh Maharashtra Kerala Tamilnadu.

#### **OLR:-**

Upto 230 w-m-2 was observed over J&K North Himachal Pradesh North Uttarakhand Sikkim Arunachal Pradesh Kerala Tamilnadu.

**Westerly Trough & Jet-Stream:** Westerly trough & Jet Stream are not observed.

#### **Dynamic Features:**

Negative shear tendency is observed over East Uttar Pradesh Bihar Extreme South Tamilnadu and Positive shear tendency over rest parts of India. Medium to high wind shear is observed over North & Central India. A positive Vorticity field is observed over Himachal Pradesh Uttarakhand North Uttar Pradesh Bihar Maharashtra. Negative low level convergence is observed over Kerala Tamilnadu and Positive Low Level Convergence over rest parts of India.

#### **Precipitation:**

##### **IMR:**

Rainfall upto 10 mm observed over J & K North-East Himachal Pradesh Arunachal Pradesh.

##### **HEM:**

Rainfall upto 14 mm observed over Arunachal Pradesh.

#### **RADAR and RAPID Observation:**

Light to moderate convection was seen in DWR Nagpur and Patna at 1700 IST.

Light convection is seen over Vidarbha, North Telangana and South Odisha in RAPID RGB Satellite imagery at 1630IST.

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

Higher Dust concentration was observed over north Africa and Arab countries. Dust concentration is expected to increase 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 category for next 2 days in Delhi.

Delhi – SAFAR analysis & Forecast	11.03.2018	12.03.2018
PM10 (micro-g/m <sup>3</sup> )	122	140
PM2.5 (micro-g/m <sup>3</sup> )	69	80

## **2. NWP MODEL GUIDANCE:**

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

**1. Synoptic Systems:** The analysis based on 00 UTC shows a north-south oriented trough over north Madhya Maharashtra persists and becomes less marked during next 24 hours. The cyclonic circulation over south Pakistan and adjoining west Gujarat lies as trough during next 72 hours. Forecasts also show the north-west to south-east trough from Bihar to Bangladesh persists during next 3 days. Contour at 500 hPa shows a feeble Western Disturbance would affect northwest parts of India during day4 to day5.

**2. Location of Jet and Jet Core (>60kt) at 500hPa):** Presence of no jet core over the Indian region for the next 3 days.

**3. Low Level Vorticity {850hPa Positive Vorticity (>12 x 10<sup>-1</sup>/s)}:** Mostly along the west coast and over north Madhya Maharashtra, along the foot hill of Himalaya, parts of central India and 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 the Gangetic West Bengal on day2. Less than threshold value 4 all over the country but it is 3-3.5 along west coast and east coast during next 3 days.

**Lifted Index ( < -2):** Higher than threshold value -2 all over the country during next 3 days but it is less than threshold value -2 over the Gangetic West Bengal on day 1 and day2 and over extreme south peninsula during day2 to day3.

**Total Total Index ( > 50) :** Above threshold value over the central parts of India during next 3 days.

**Sweat Index ( > 300):** Mostly along Andhra Pradesh coast, Odisha coast and over the Gangetic West Bengal during next 3 days.

**CAPE ( > 1000):** Mostly along southern parts of west coast, east coast and Gangetic West Bengal during next 3 days.

**CIN (50-150):** Mostly along east coast, west coast and over parts of north eastern states during next 72 hours.

#### **5. Rainfall activity**

Up to 10 mm rainfall: over parts of north eastern states during next 3 days and 20-40 mm over NMMT on day3.

Up to 10 mm rainfall: over parts of J&K, Maharashtra, Chhattisgarh, Odisha, Tamilnadu and Kerala during on day1.

Up to 10-20 mm rainfall: over parts of Tamilnadu and J&K on day2.

Up to 10 -40 mm rainfall: over J&K on day3.

Up to 10 mm rainfall: over Himachal Pradesh and Uttarakhand during next 3 days.

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

**1. Model Reflectivity (Max.dBz):** 5-20 dBZ Model reflectivity over parts of J&K during next 3 days and over parts of Arunachal Pradesh on day2 and day3 and 5-15 dBZ over parts of central India and Andhra Pradesh during next 48 hours.

#### **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, J&K and Arunachal Pradesh during next 72 hour.

**K-Index ( > 35):** Less than threshold value is observed over the country during the next 72 hour.

**CAPE ( > 1000):** Greater than threshold value over the Odisha coast, southern part of west coast, southern parts of east coast, Gangetic West Bengal and parts of northeastern states during the next 72 hours.

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

**3. Rainfall and thunderstorm activity:** Rainfall up to 10 mm over parts of J&K on day1, 10-40 mm on day2 and 10-20 mm on day3.

Rainfall up to 10 mm: over Arunachal Pradesh during next 72 hours.

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

**Not Received**

### 3. IOP ADVISORY FOR 24 and 48Hrs:

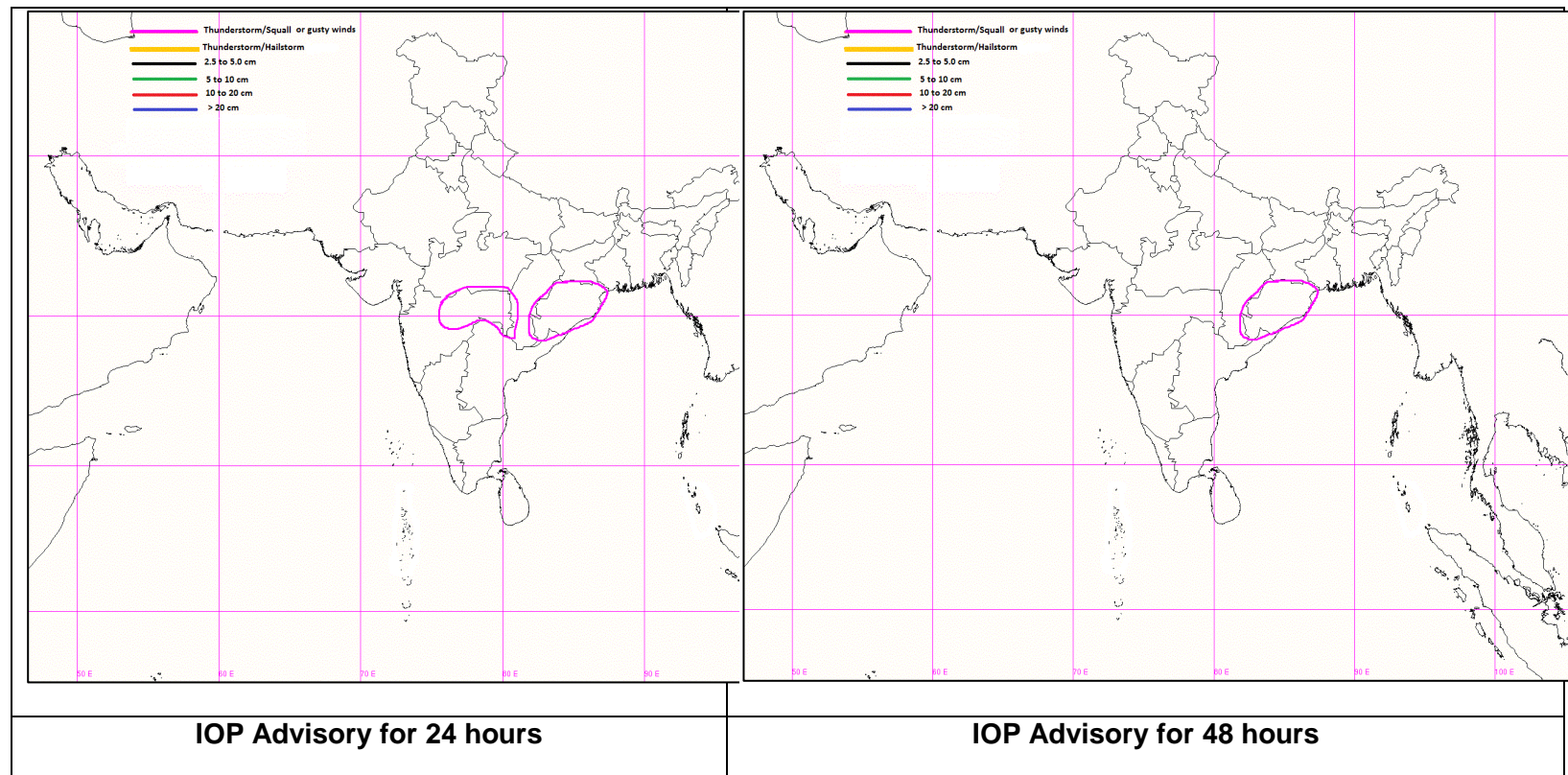
#### Summary and Conclusions:

##### Day-1 & Day-2:

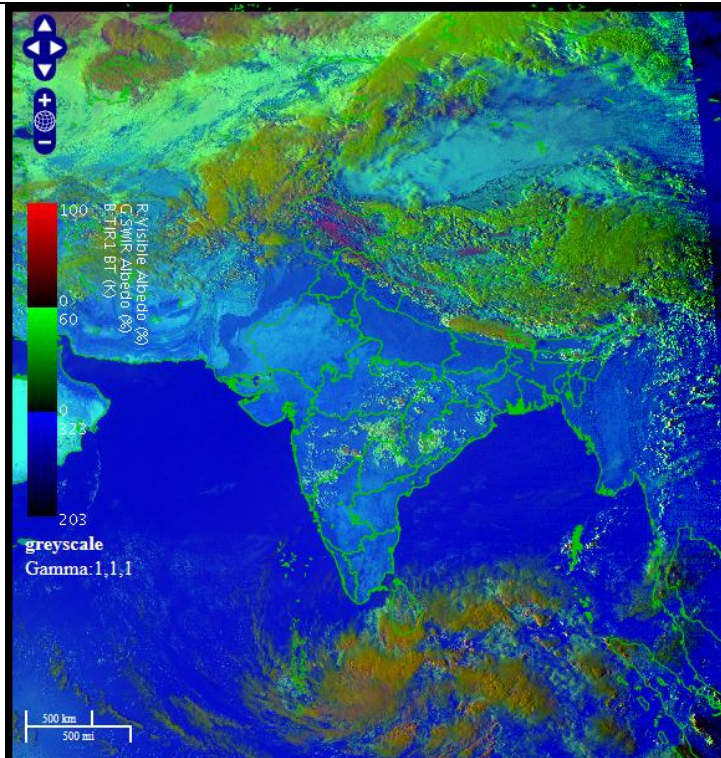
In association with the cyclonic circulation over north Madhya Maharashtra & neighbourhood at 0.9 km above mean sea level, and associated moisture incursion and wind convergence over Vidarbha, thunderstorms are likely over Vidarbha, Odisha on day 1 and over Odisha over day 2,.

<b>24 hour Advisory for IOP:</b> <b>Rainfall:</b> Nil <b>Thunderstorm with associated phenomena:</b> Vidarbha and Odisha	<b>48 hour Advisory for IOP:</b> <b>Rainfall:</b> Nil <b>Thunderstorm with associated phenomena:</b> Odisha
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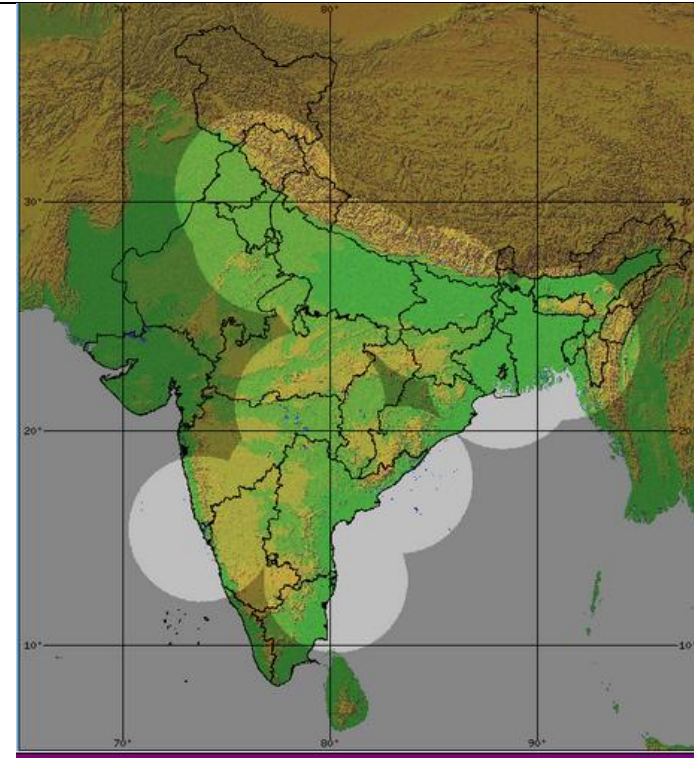
#### Graphical Presentation of Potential Areas for Severe Weather:



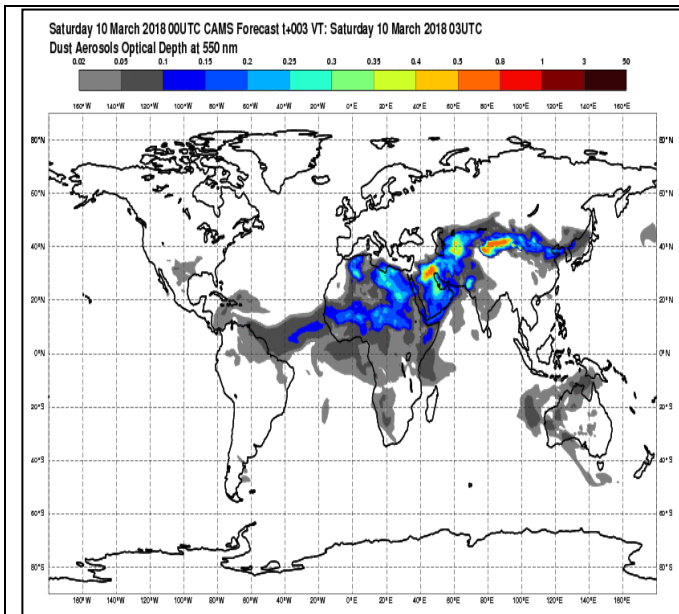




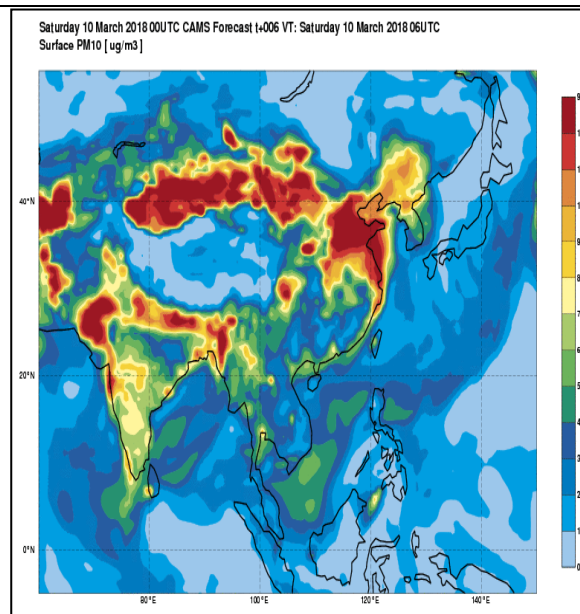
**RAPID RGB Imagery at 1630IST of the Day**



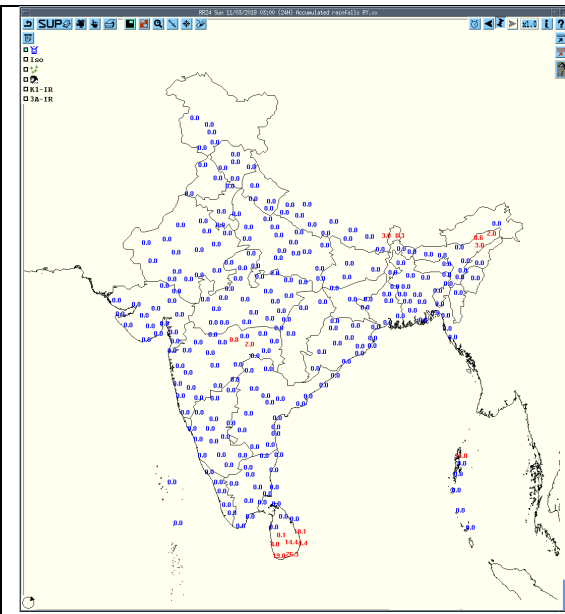
**DWR Composite at 1630 IST of the Day**



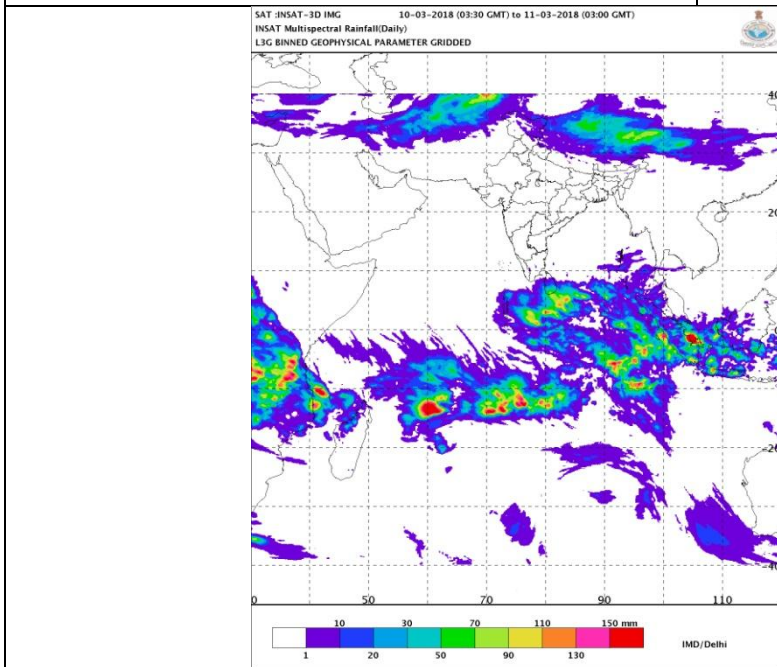
Forecast Dust Concentration



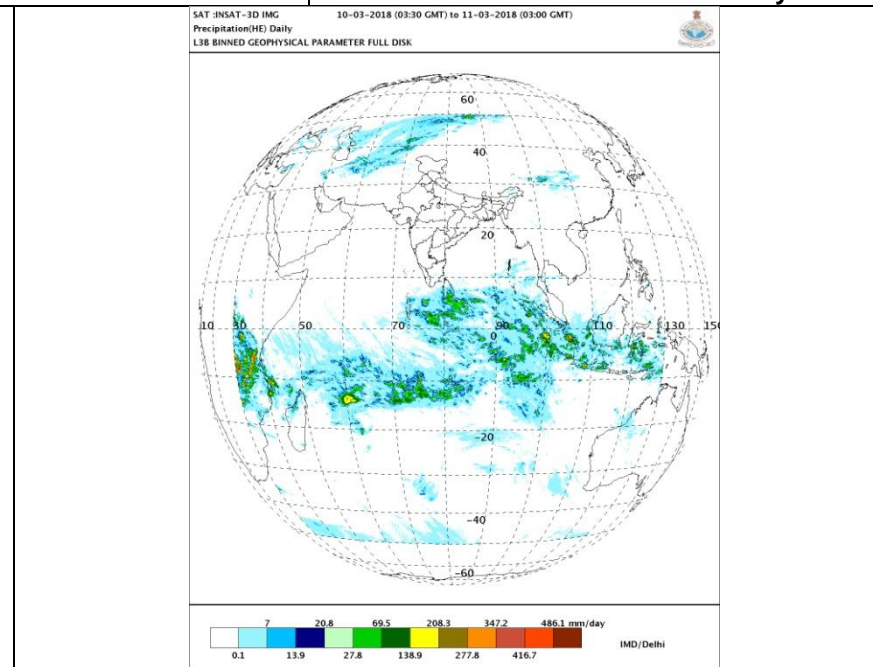
PM10 Forecast



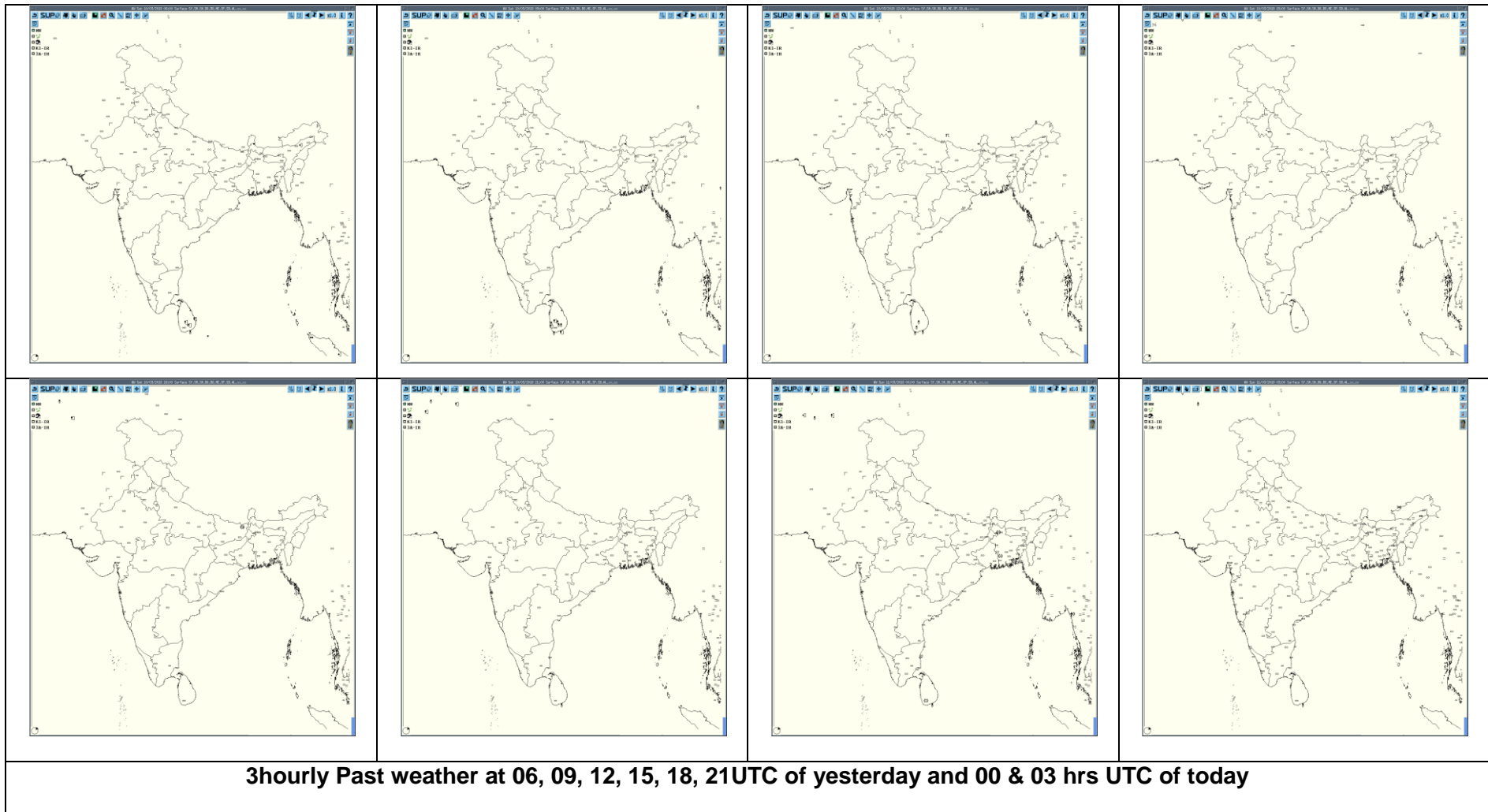
Accumulated 24 Hour rainfall (in red)  
recorded at 0300UTC of today

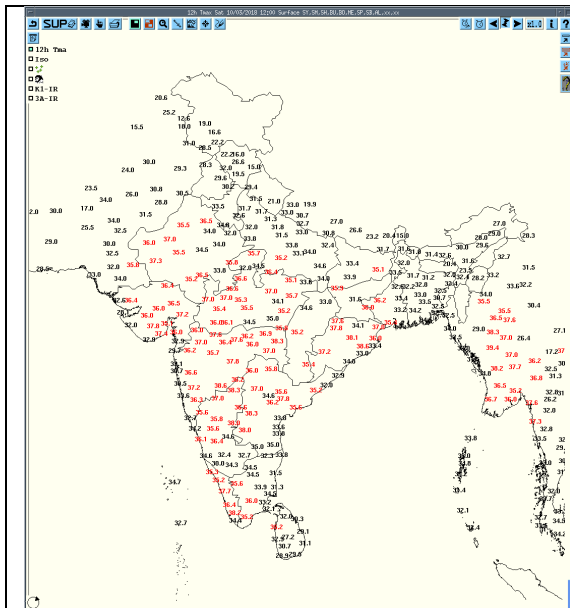


IMR

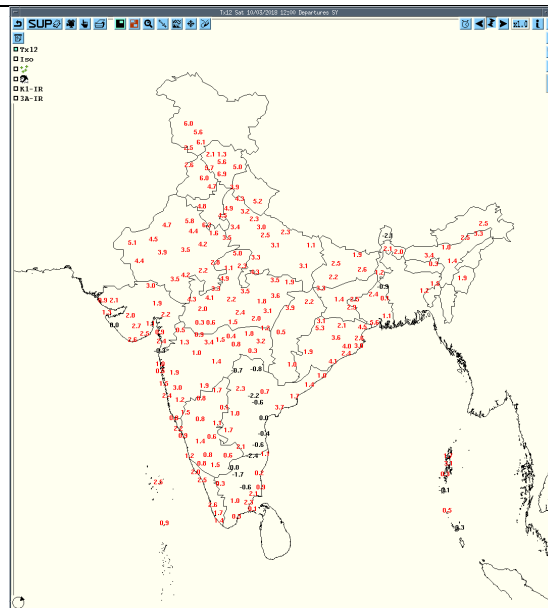


HEM

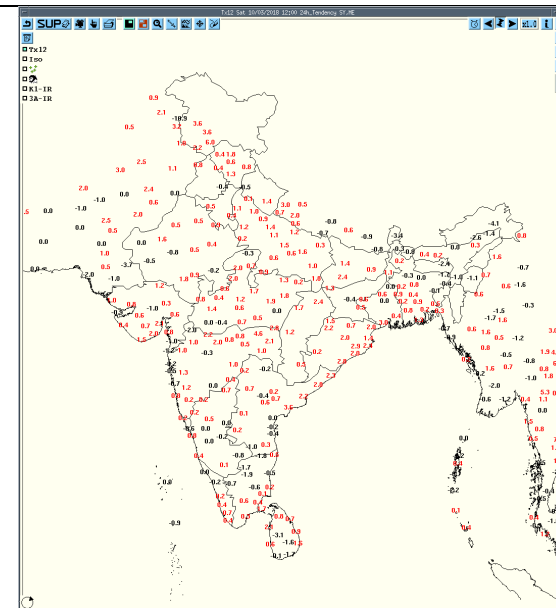




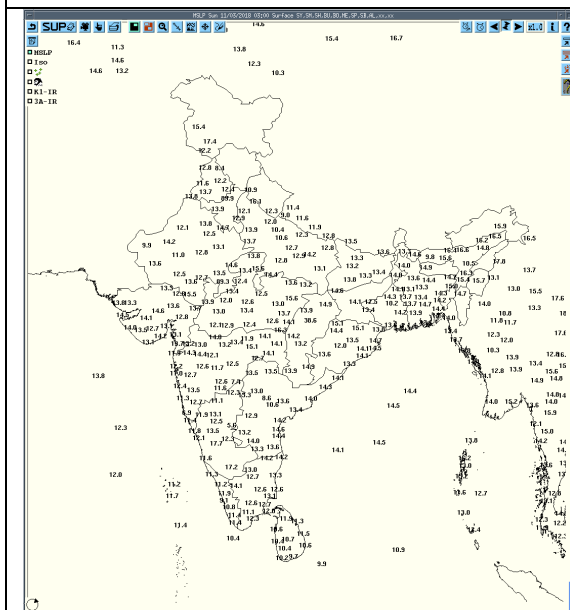
Tmax



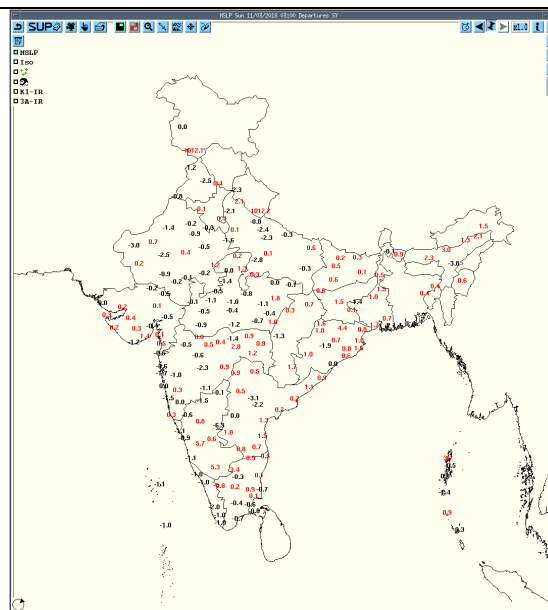
Departure Tmax



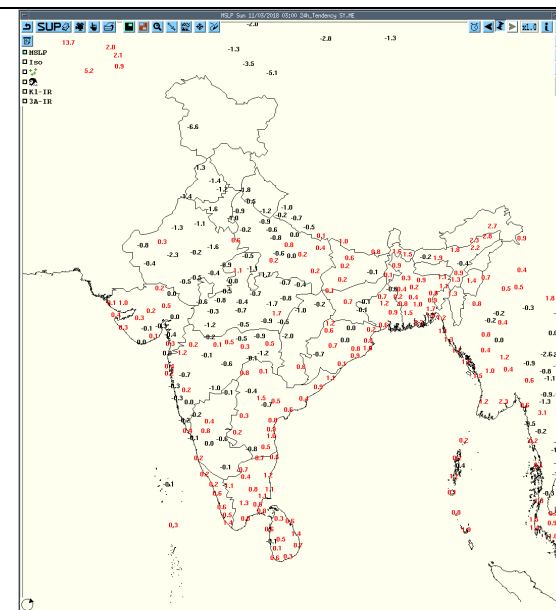
Tendency Tmax



MSLP

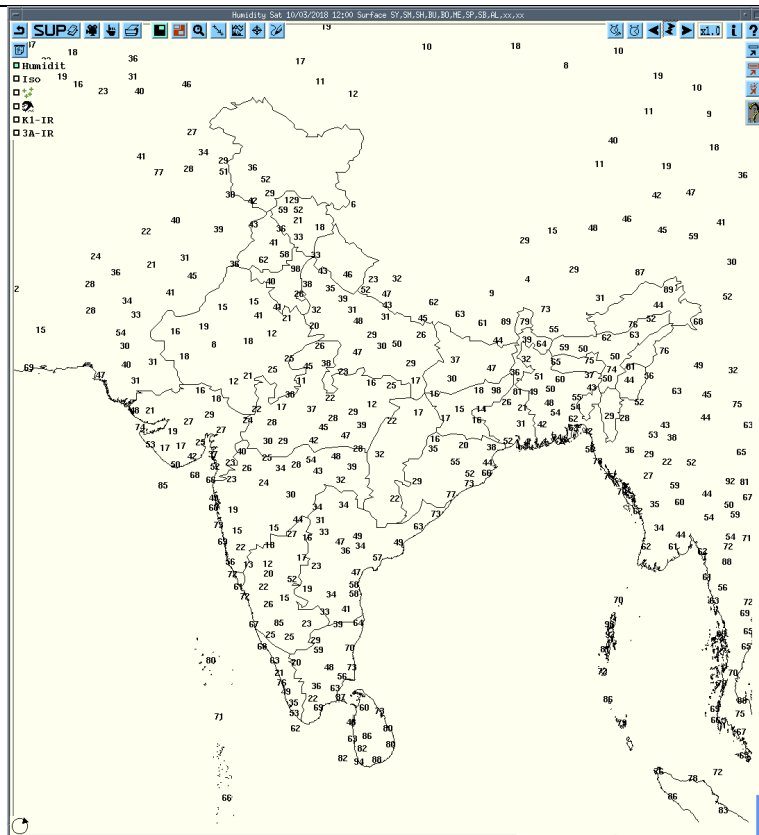


Departure MSLP

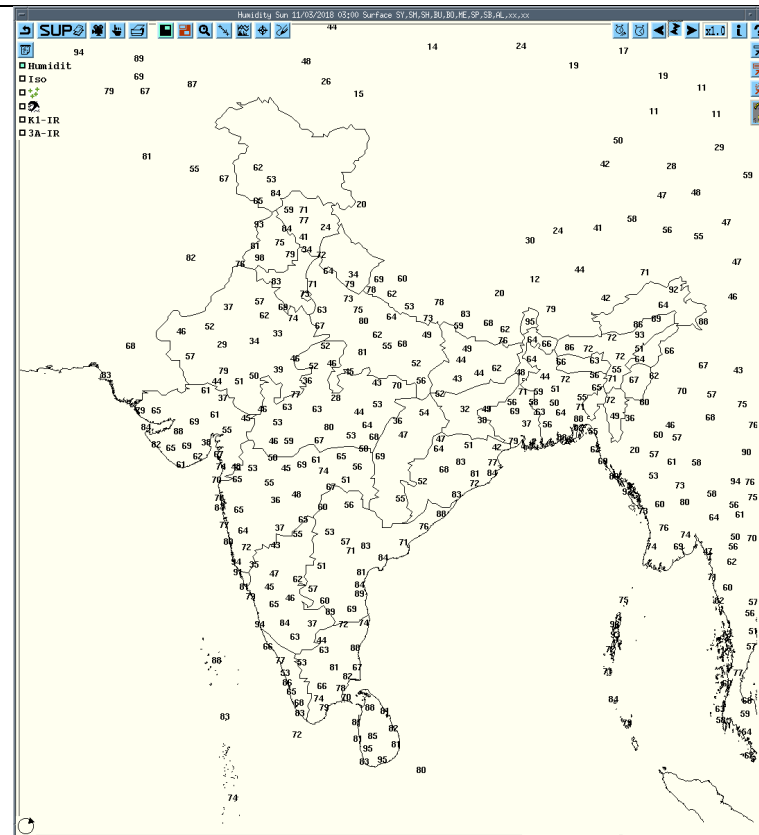


Tendency MSLP





**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	11-03-18	100300 - 110300	Nil	Nil	Nil	Nil	Nil
Jaipur	11-03-18	100300 - 110300	Nil	Nil	Nil	Nil	Nil
Lucknow	11-03-18	100300 - 110300	Nil	Nil	Nil	Nil	Nil
Patna	11-03-18	100300 - 110300	Nil	Nil	Nil	Nil	Nil
Vishakhapatnam	11-03-18	100300 - 110300	Nil	Nil	Nil	Nil	Nil

### Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24 hours 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)
Jorhat	North India	Assam	Thunderstorm	10-03-18	10/2120	10/2400
Barapani	North India	Meghalaya	Thunderstorm	10-03-18	10/1830	10/2000

### 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](http://nwp.imd.gov.in/diagpro_new.php))

For Synoptic plotted data and charts

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

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

For RAPID tool:

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

Past24hourHEMandIMRainfall(upto03UTCof today)

IMR: [http://satellite.imd.gov.in/img/3Ddaily\\_imr.jpg](http://satellite.imd.gov.in/img/3Ddaily_imr.jpg)

HEM: [http://satellite.imd.gov.in/img/3Ddaily\\_he.jpg](http://satellite.imd.gov.in/img/3Ddaily_he.jpg)

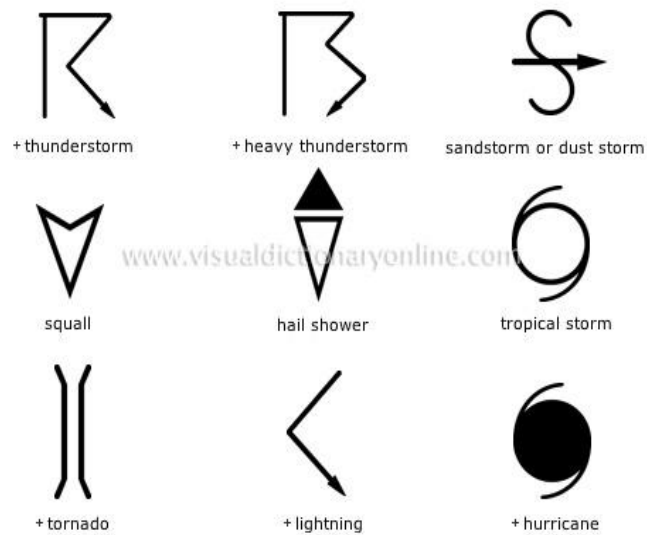
For Radar images of the past 24 hours including mosaic of images:

[http://ddgmui.imd.gov.in/dwr\\_img/](http://ddgmui.imd.gov.in/dwr_img/)

Satellite sounder based T- Phigram

[http://satellite.imd.gov.in/map\\_skm2.html](http://satellite.imd.gov.in/map_skm2.html)

## WEATHER SYMBOLS:



∞	haze
~	smoke
⌘	dust or sand storm
≡	fog
⌚	drizzle
•	rain
✱	snow
▽	showers
△	hail
⌚	thunderstorm
<b>Weather Symbols</b>	