



India Meteorological Department

FDP STORM Bulletin No. 3 (09-03-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ♦ The Western Disturbance as an upper air cyclonic circulation at 3.1 km above mean sea level over north Pakistan & neighbourhood persists with a trough aloft in mid & upper tropospheric westerlies with its axis at 5.8 Km above mean sea level running roughly along Long 72°E to the north of Lat 30°N.
- ♦ The other Western Disturbance as a trough in mid tropospheric westerlies with its axis at 5.8 Km above mean sea level roughly along Long. 62°E to the north of Lat. 28°N has become less marked.
- ♦ A cyclonic circulation extending upto 0.9 km above mean sea level lies over south Pakistan & adjoining west Rajasthan.
- ♦ The cyclonic circulation over eastern parts of Bangladesh and neighbourhood persists and now lies between 1.5 km & 2.1km above mean sea level.
- ♦ The cyclonic circulation over north Madhya Maharashtra and neighbourhood now lies over south Konkan & adjoining Madhya Maharashtra between 0.9 km & 2.1km above mean sea level.
- ♦ The trough of low at mean sea level from Lakshadweep area to Konkan along the west coast persists.
- ♦ The other trough of low at mean sea level over Equatorial Indian Ocean and adjoining central parts of south Bay of Bengal persists.
- ♦ The cyclonic circulation over Maldives - Comorin area extending upto 0.9 km above mean sea level persists.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Western Disturbance (WD):

Scattered multi-layered clouds seen over Jammu & Kashmir and over area between Lat. 37.0N to 48.0N Long. 69.0 E to 80.0 E in association with WD over the area.

Westerly Trough:

Trough in westerlies runs roughly along long 72.0°E & north of lat 30.0°N.

Clouds descriptions within India:

Scattered low/medium clouds with embedded isolated weak convection seen over Himachal Pradesh, North Uttarakhand and isolated low/medium clouds over South Punjab, Central Rajasthan, North Madhya Maharashtra, Central Chhattisgarh, Vidarbha adjoining Madhya Pradesh. Scattered low/medium clouds over Sikkim, Arunachal Pradesh, Assam, Nagaland, North Manipur, Tamilnadu Kerala Karnataka, Andhra Pradesh, Rayalaseema and Lakshadweep Islands.

ANDAMAN SEA & BAY OF BENGAL:

Arabian Sea:

Scattered low medium clouds with embedded weak to moderate convection seen over East Comorin & Neighbourhood and isolated over Southeast Arabian Sea..

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded intense to very intense convection seen over South Bay and South of Lat 9.0N. Scattered low medium clouds with embedded moderate to intense convection seen over Southwest & Southeast Bay & Srilanka.

Past Weather:**Convection (during last 24 hrs):**

Weak to Moderate convection was observed over J&K, north Punjab, Himachal Pradesh, Uttarakhand, Madhya Pradesh, Maharashtra, Chhattisgarh, Jharkhand, west Bihar.

OLR:-

Upto 230 Wm^{-2} was observed over J&K North Himachal Pradesh North Uttarakhand South-West Madhya Pradesh N Maharashtra central Chhattisgarh north Sikkim Arunachal Pradesh & Tamilnadu.

Westerly Trough & Jet-Stream: Trough in westerlies roughly along longitude 65.0°E & north of latitude 25.0°N .

Dynamic Features:

Negative shear tendency is observed over J&K Himachal Pradesh Uttarakhand & Punjab 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 south Jammu & Kashmir Himachal Pradesh Uttarakhand west Gujarat west Maharashtra.

Negative low level convergence is observed over Jammu & Kashmir Himachal Pradesh Uttarakhand South coastal Andhra Pradesh and Positive Low Level Convergence over rest parts of India.

Precipitation:**IMR:**

Rainfall upto 20-30 mm was observed over W J&K

Rainfall upto 10-20 mm was observed over some parts of J&K extreme North Himachal Pradesh.

Rainfall upto 1-10 mm was observed over rest J&K North Himachal Pradesh North Uttarakhand extreme South Tamilnadu & some parts of NC Arunachal Pradesh.

HEM:

Rainfall upto 1-14 mm was observed over W J&K & extreme South Tamilnadu.

RADAR and RAPID Observation:

Light to moderate Convection was seen in domain of DWR Jaipur and Nagpur at 1700 IST.

Light convective clouds were seen over Central Rajasthan, West & Southeast Madhya Pradesh adjoining Vidarbha and South Coastal 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 to poor category for next 2 days in Delhi.

Delhi – SAFAR analysis & Forecast	09.03.2018	10.03.2018
PM10 (micro-g/m ³)	230	242
PM2.5 (micro-g/m ³)	123	129

2. NWP MODEL GUIDANCE:

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

1. Synoptic Systems: The analysis based on 00 UTC shows a low level cyclonic circulation over north Madhya Maharashtra and adjoining areas persists and forecast shows it as north-south oriented trough from day1 to day3. Another quasi-stationary cyclonic circulation over west Gujarat and adjoining Pakistan persists up to day2. Forecasts also show a feeble cyclonic circulation over north eastern parts of India and lies over the north Bangladesh and adjoining areas on 3 days. Contour at 500 hPa shows a feeble Western Disturbance over J&K and would less marked on day1.

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 ($>12 \times 10^{-1}/s$)}: Mostly along the trough at 850 hPa over Madhya Maharashtra and adjoining areas, parts of west Gujarat, Rajasthan, central India and along the foot hill of Himalaya 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): 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 but it is less than threshold value -2 along west coast and east coast during next 3 days.

Total Total Index (> 50) : Above threshold value over the most parts of west Gujarat, some parts of Rajasthan, Uttarakhand and west Uttar Pradesh during next 3 days.

Sweat Index (> 300): Mostly along east coast, along west coast, Gujarat and adjoining areas of Rajasthan, Gangetic West Bengal and Arunachal Pradesh during next 3 days.

CAPE (> 1000): Mostly along southern parts of west coast during next 48 hours.

CIN (50-150): Mostly along east coast, west coast, and over parts of Gujarat and Andhra Pradesh during next 72 hours.

5. Rainfall Activity:

Up to 10 mm rainfall over J & K, Himachal Pradesh, Uttarakhand, parts of north eastern states during next 3 days.

Up to 10 mm rainfall over Kerala and north Andhra Pradesh on day2 and Tamilnadu on day3.

Up to 40 mm Tamilnadu on day4 and day5.

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

1. Model Reflectivity (Max.dBz): 5-20 dBZ Model reflectivity over parts of J&K on day1 and day3, over parts of Arunachal Pradesh during next 72 hours and 5-15 dBZ over Andhra Pradesh on day2.

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 extreme south peninsula, J&K and NE states during next 72 hour.

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

CAPE (> 1000): Mostly over Panjab during next 24 hours and along Kerala coast, over Andhra Pradesh coast during next 3 days and over Gangetic West Bengal on day3.

CIN (50-150): Mostly over Panjab, along west coast and east coast during next 3 days and over Gangetic plain during next 24 hours.

3. Rainfall and thunderstorm activity: Rainfall activity (10-20 mm) over parts of J&K, Himachal Pradesh and Uttarakhand during next 24 hours and over J&K on day3.

Rainfall activity (10-40 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 eastern parts of Bangladesh and neighbourhood between 1.5 km & 2.1km, and associated moisture feeding from the Bay of Bengal, thunderstorms are likely over Northeast Assam and neighbourhood on day 1. On day 2, the circulation is likely to decrease in intensity. However, the remnant moisture is likely to continue the thunderstorm activity, with less intensity over Northeast Assam and adjoining east Arunachal Pradesh. Associated with the western disturbance, moisture feeding from the anticyclone over the Arabian Sea is likely to result in isolated thunderstorms over East Rajasthan, central Madhya Pradesh and Vidarbha. Moisture feeding from the Bay of Bengal is likely to result in isolated thunderstorms over coastal Odisha.

24 hour Advisory for IOP:

Rainfall:
Nil

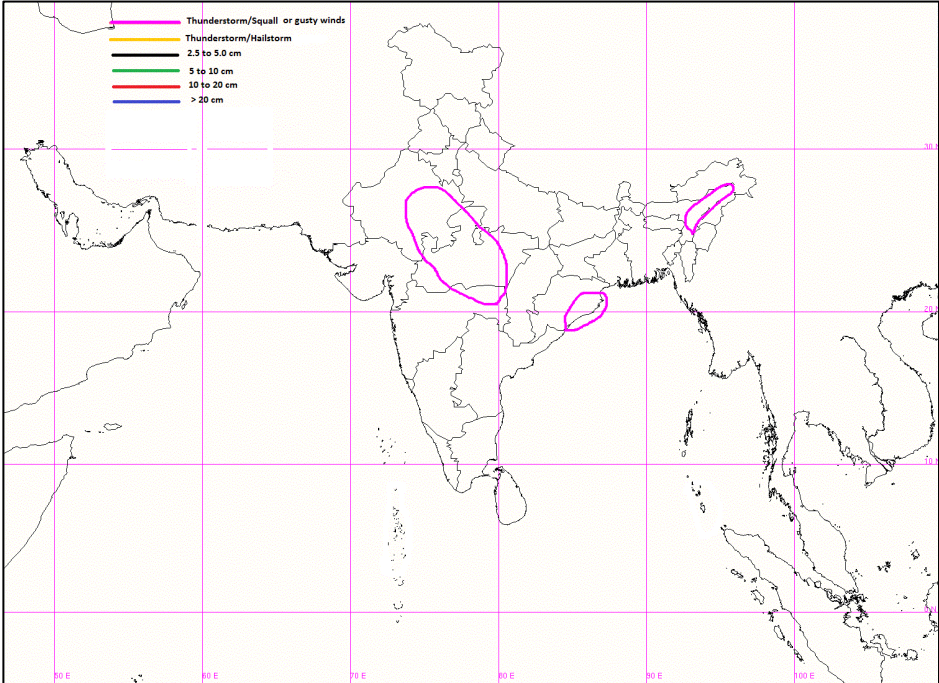
Thunderstorm with associated phenomena:
Northeast Assam, East Rajasthan

48 hour Advisory for IOP:

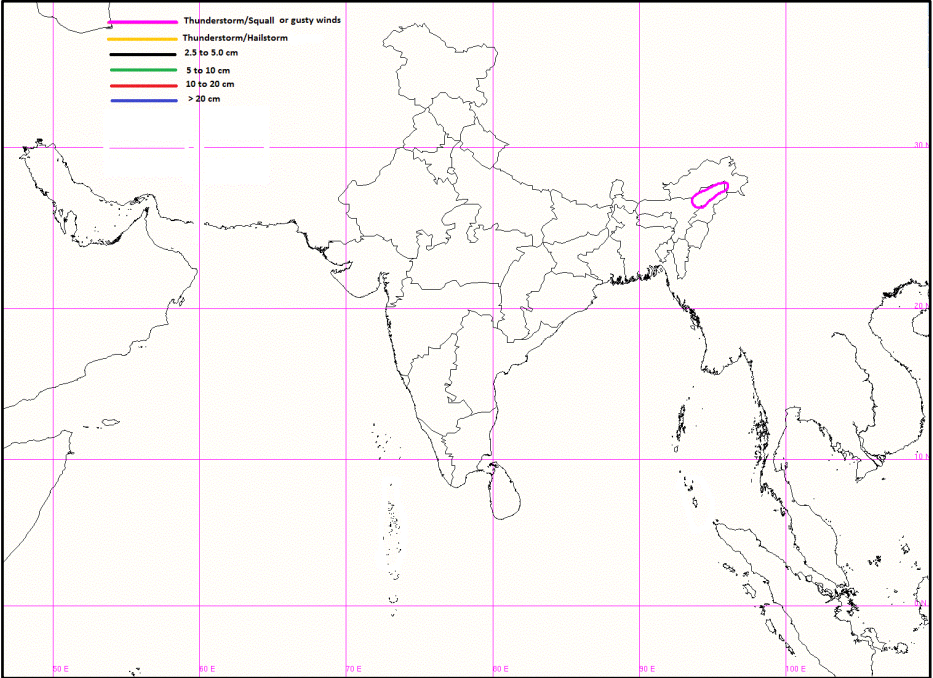
Rainfall:
Nil

Thunderstorm with associated phenomena:
Northeast Assam

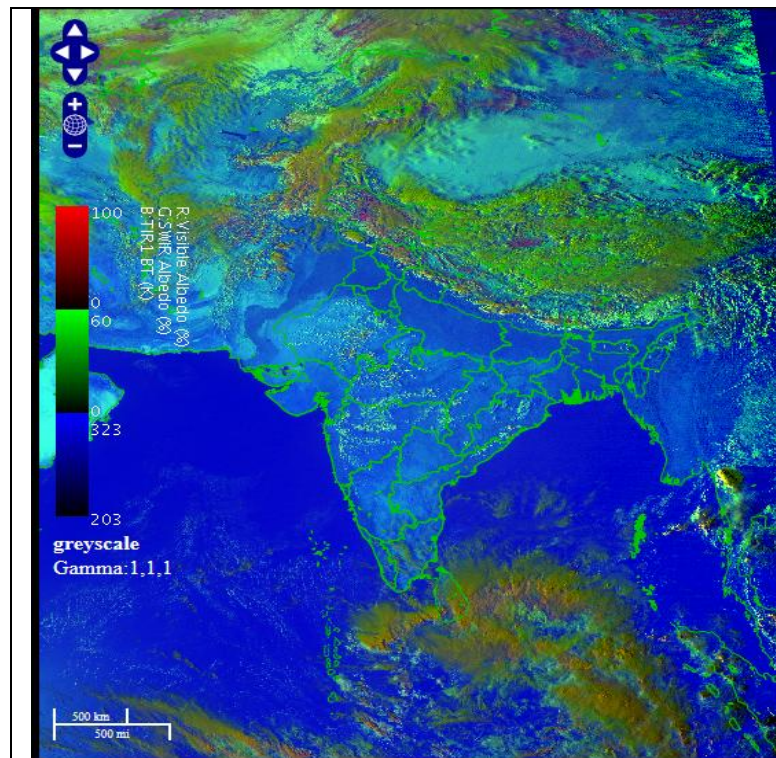
Graphical Presentation of Potential Areas for Severe Weather:



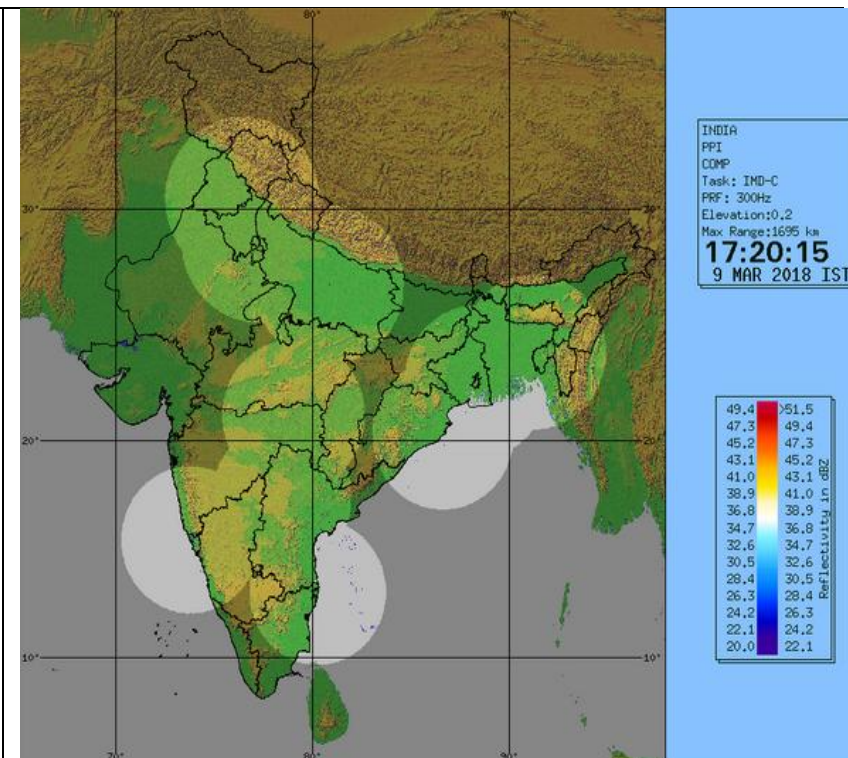
IOP Advisory for 24 hours



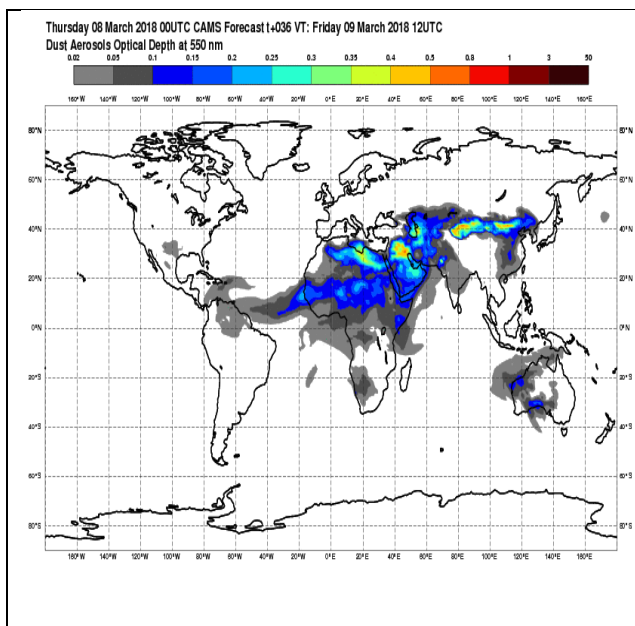
IOP Advisory for 48 hours



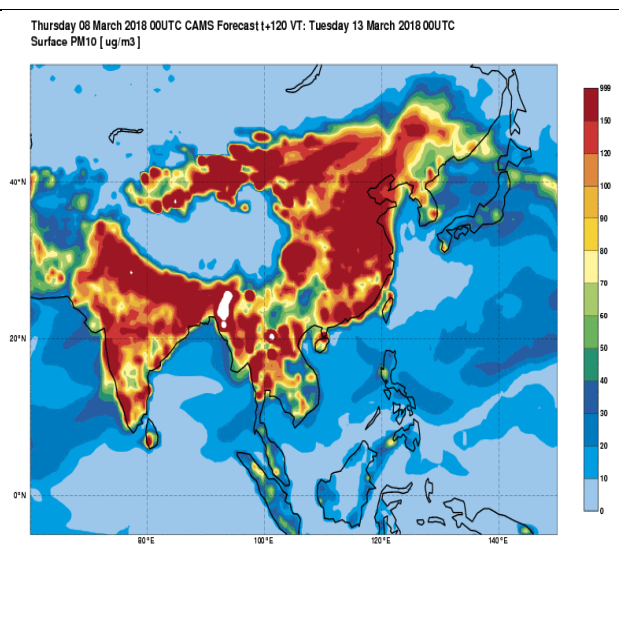
RAPID RGB Imagery at 1630IST of the Day



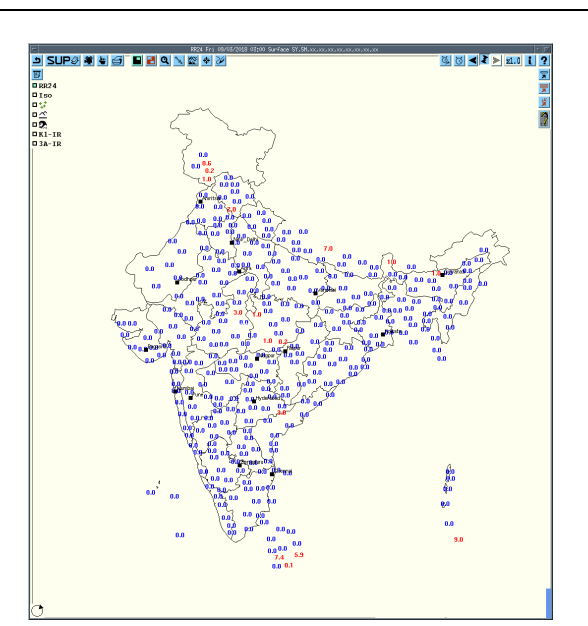
DWR Composite at 1720 IST of the Day



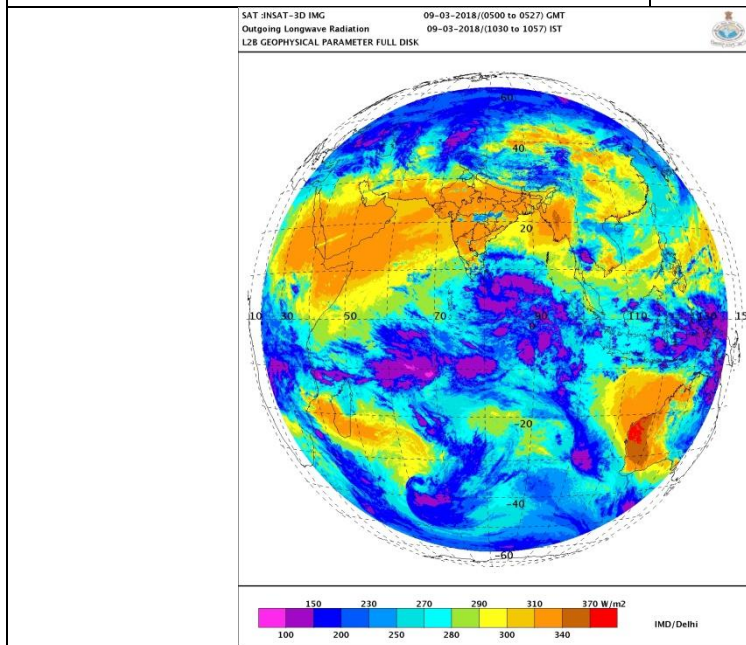
Forecast Dust Concentration for 12UTC of today



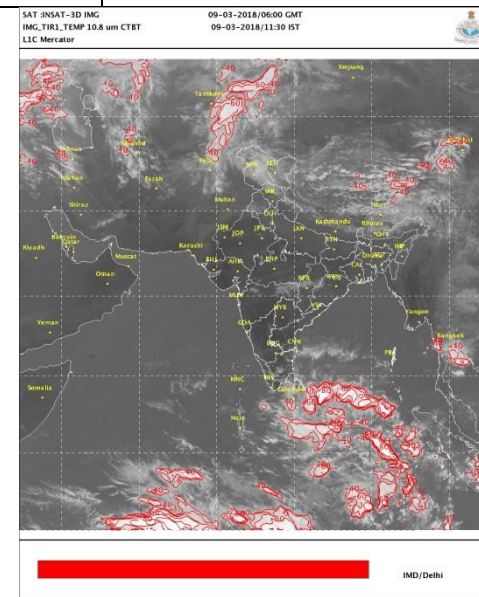
PM10 Forecast valid for 00UTC of 13th March



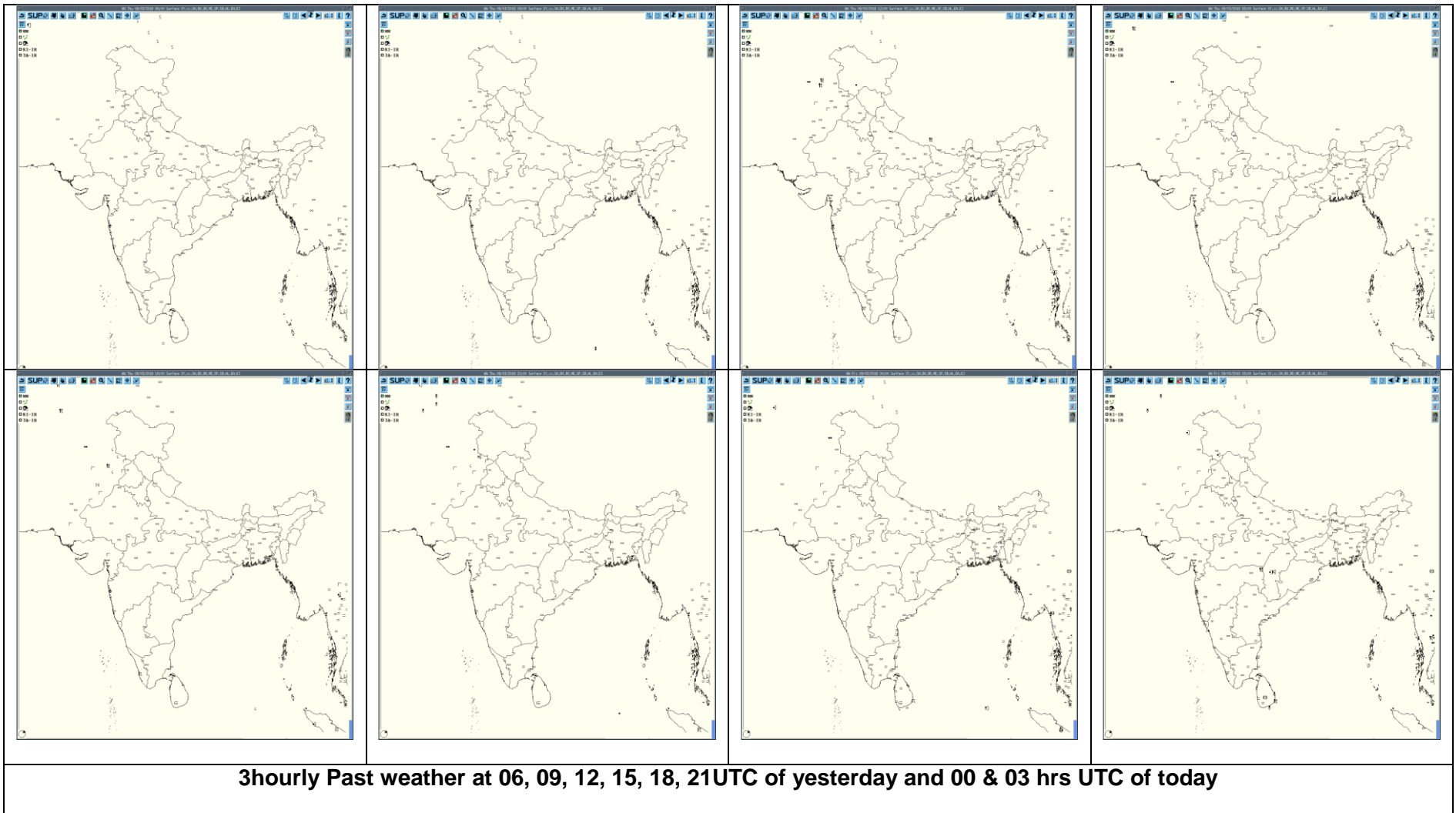
**Accumulated 24 Hour rainfall (in red)
recorded at 0300UTC of today**

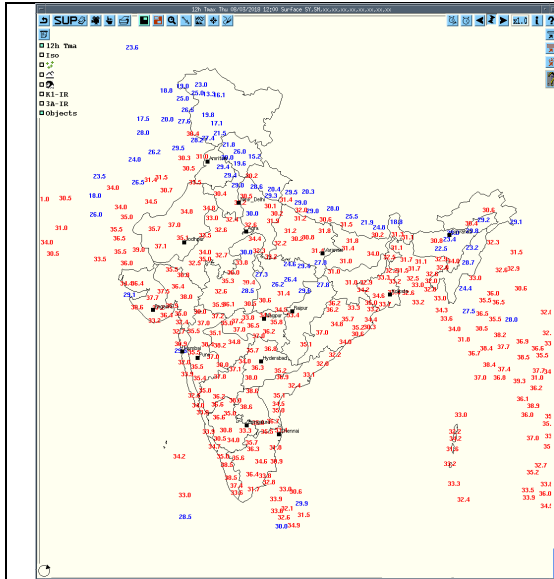


INSAT 3D OLR Imagery (1000-1027 IST today)

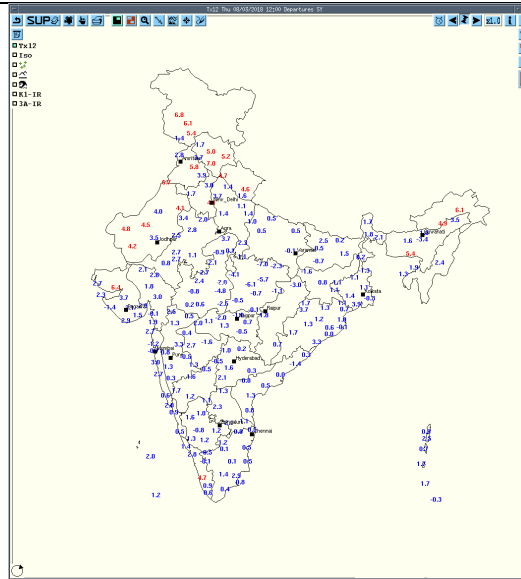


INSAT 3D CTBT Imagery (1130 IST today)

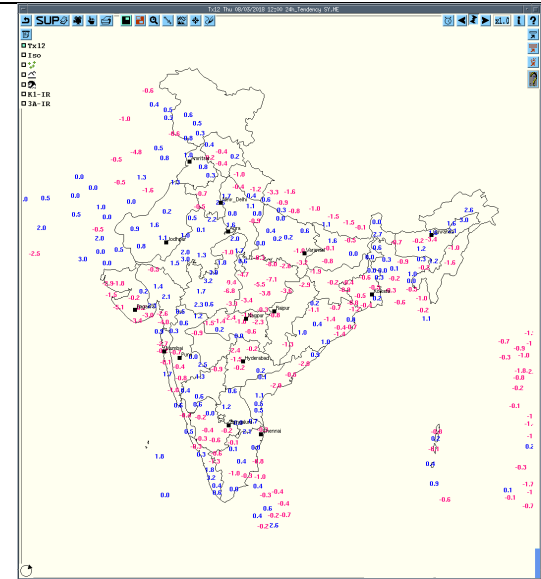




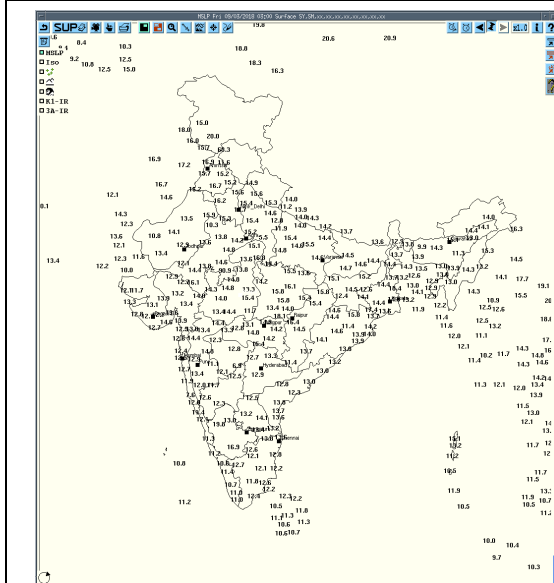
Tmax



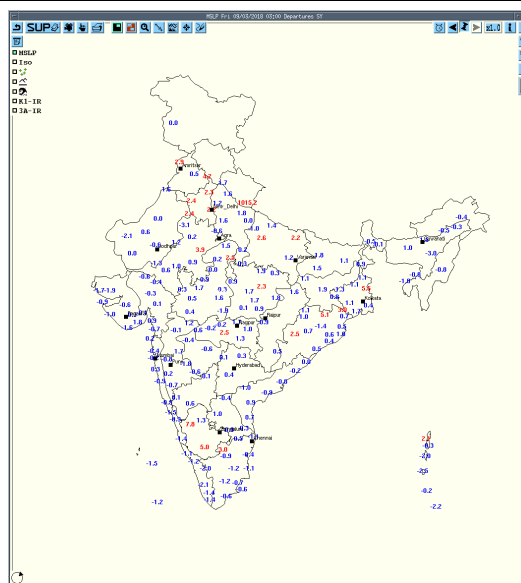
Departure Tmax



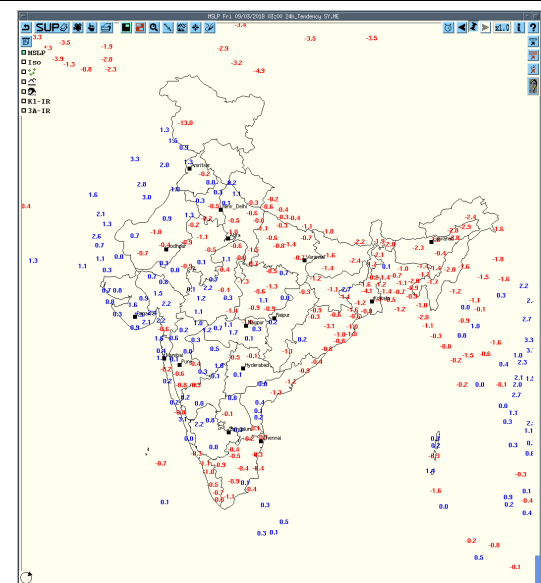
Tendency Tmax



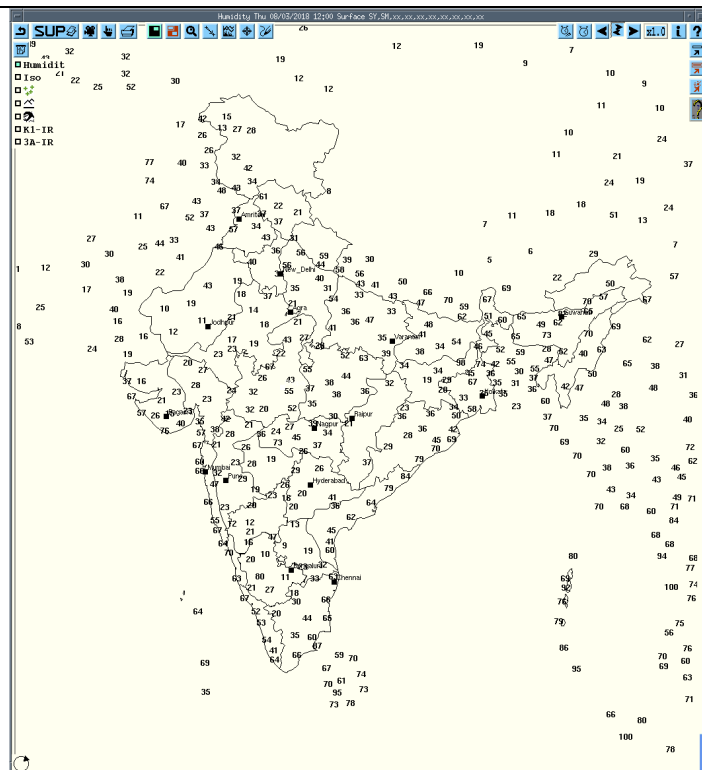
MSLP



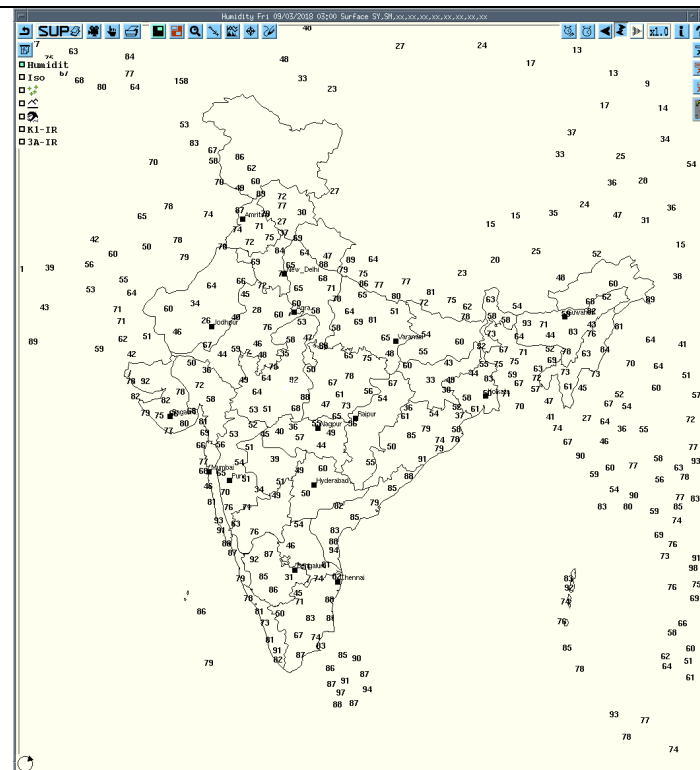
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

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 Commence ment (IST)	Time of end (IST)
Gondia	Central India	Vidarbha	Thunderstorm	09-03-18	0815	0830 cont....
Sagar	Central India	East Madhya Pradesh	Thunderstorm	09-03-18	0835	1140
Chindwada	Central India	East Madhya Pradesh	Thunderstorm	08-03-18	1930	2215
Raipur	Central India	Chhattisgarh	Thunderstorm	09-03-18	0738	0810

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	09-03-18	080300 - 090300	Nil	Nil	Nil	Nil	Nil
Jaipur	09-03-18	080300 - 090300	Nil	Nil	Nil	Nil	Nil
Patiala	09-03-18	08/0300 - 081500	No Echo	--	--	--	--
		081500 - 081800	Multiple Cells Dbz 52.0 Ht=6-7km	In NW Sector Moving Towards E Sector	--	--	Chandigarh, Nahan
		081800 - 090000	No Echo	--	---	--	--
		090000 - 090252	Multiple Cells Dbz 37.5 Ht6-8 Km	NW Sector Moving Towards 6-8 Km	--	--	Ludhiana, Moga, Khanna, Nawanshahar
Patna	09-03-18	080300 - 090300	Nil	Nil	Nil	Nil	Nil
Lucknow	09-03-18	080300 – 090300	Nil	Nil	Nil	Nil	Nil
Kolkata	09-03-18	080301 – 090300	Nil	Nil	No Echo	Nil	Nil

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 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

Upper level winds

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

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

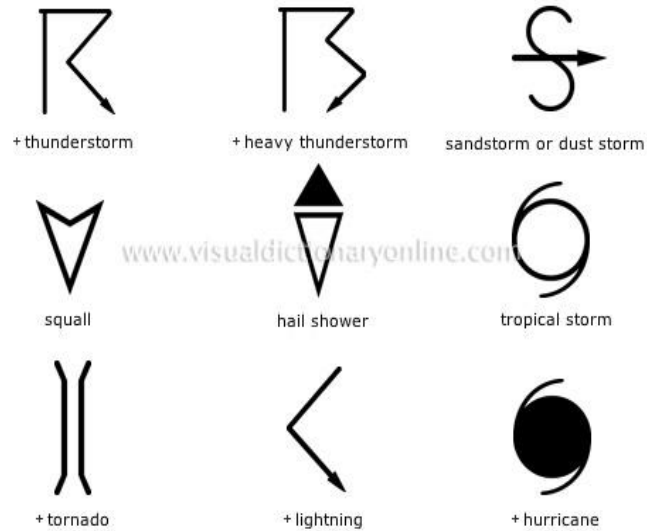
For Radar images of the past 24 hours including mosaic of images:

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

Satellite sounder based T- Phigram

http://satellite.imd.gov.in/map_skm2.html

WEATHER SYMBOLS:



∞	haze
~	smoke
⊞	dust or sand storm
≡	fog
⌚	drizzle
•	rain
*	snow
▽	showers
△	hail
⌚	thunderstorm
Weather Symbols	