India Meteorological Department

FDP STORM Bulletin No. 15(20-03-2017)

1. CURRENT SYNOPTIC SITUATION at 0300 UTC of 20-03-2017:

SYNOPTIC FEATURES:

A western disturbance as an upper air cyclonic circulation lies over northwest Pakistan & adjoining Afghanistan and extends upto 3.1 km above mean sea level.

A trough in mid-tropospheric westerlies with its axis at 5.8 km above mean sea level runs roughly along longitude 86.0°E and north of latitude 22.0°N.

The upper air cyclonic circulation over northern parts of West Bengal & neighbourhood now extends upto1.5 km above mean sea level.

The upper air cyclonic circulation over East Madhya Pradesh & neighbourhood extending upto 0.9 km above mean sea level has become less marked.

The trough from the cyclonic circulation over East Madhya Pradesh & neighbourhood to south Tamilnadu across Vidarbha, Telangana and Rayalaseema now runs from the cyclonic circulation over northern parts of West Bengal & neighbourhood to interior Tamilnadu across interior Odisha, Telangana and Rayalaseema and extends upto 0.9 km above mean sea level.

The feeble Western Disturbance as an upper air cyclonic circulation over eastern parts of Jammu & Kashmir and neighbourhood at 3.1 km above mean sea level with trough aloft roughly along longitude 76.0°E and north of latitude 35.0°N has moved away east north-eastwards.

The upper air cyclonic circulation over southeast Rajasthan & adjoining West Madhya Pradesh extending upto 0.9 km above mean sea level has become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

Clouds (based on 0900 UTC imagery of INSAT3D)):

Broken low/medium clouds with embedded isolated weak to moderate convection over northwest Bihar, Sub-Himalayan West Bengal, Sikkim, north-eastern states and south Kerala. Scattered low/medium clouds with embedded weak to moderate convection over Nicobar Islands.

Scattered low/medium clouds over J & K, north Himachal Pradesh, north Uttarakhand, Andhra Pradesh, Tamilnadu and rest Kerala.

Arabian Sea:

No Significant clouds over the region.

Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded moderate to intense convection over Andaman Sea. Scattered low/medium clouds with embedded isolated weak to moderate convection over north Bay of Bengal.

Convection:

No convection was observed over North, West and Central India

Moderate convection was observed over Nicobar Islands with CTT > 250° K.

OLR upto 250 wm^{-2} was over J&K, N HP N Uttarakhand and Up to 200 wm^{-2} was over North East States

Jet Stream:
Jet stream observed in upper level over central India roughly along Lat 25.0 degree N
Dynamic Features:
A positive vorticity field is seen over east J&K, Himachal Pradesh Uttarakhand Uttar Pradesh Karnataka Kerala Tamilnadu Andhra Pradesh, Orissa Meghalaya and Nagaland Manipur Mizoram Tripura
Precipitation:
IMR: Rainfall upto 10mm was observed over Jammu Kashmir, HP, Uttarakhand, East Bihar, Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya, and East Assam.
HEM: Rainfall up to 7 mm was observed over Bihar, Arunachal, Assam, South Gangetic West Bengal, North Coastal Andhra Pradesh, South Kerala, Nicobar islands.

RADAR observation:
Convection appears to be in progress over Coastal Andhra Pradesh and adjoining Tamilnadu in DWR Composite at 1620hrs IST and RGB satellite imagery at 1600 hrs IST. RGB satellite imagery also indicates isolated convective cells over Kerala, East UP and Bihar.

Environmental condition (dust etc) and its forecast based on 00UTC of date:
No significant dust concentration observed over Arabian Peninsula but it was observed over west Rajasthan. Dust concentration is expected to increase over northern India for next three days.

2. NWP MODEL GUIDANCE:

NCMRWF (NCUM Forecasts based on 00 UTC of the day):-
1. Weather Systems:
Feeble trough at 12UTC in forecasts over J & K on all days from Day 0-4.
Wind discontinuity only in Day 0-1: at 925 and 850 hPa extends over Karnataka, Telangana and Odisha. With entire belt shifting northwards in Day 3 and 4 (Maharashtra, Chhattisgarh, Odisha).
850hPa anticyclonic flow over Rajasthan and Gujarat in Day-1 moves over Arabian Sea in Day 2-4.
2. Location of jet and jet core at 500hPa:-500hPa Jet core (>60kt):
East UP, Bihar and Jharkhand in day-0 to Day-1. Weak in magnitude on all Days.
3. Convergence at 850 hPa:
EastUP Bihar and Jharkhand in Day-0 to Day-1. Weak in magnitude on all Days.
4. Low level Vorticity:-Positive Vorticity (>15 x 10^{-5}/s):
Lower values at 12UTC on all days. At 00UTC high values along the west coast over peninsula.
5. Showalter Index: -3 to -4[Very Unstable]:
Day-0&1: East coast parys of AP and Odisha
Day-1-2: High values along west coast over Kerala and Karnataka.
Day-4-5: High values along west coast over Kerala and Karnataka; Additionally J & K and HP region.
6. K-Index :> 35[Very Unstable thunderstorm likely]:
Day-0&1: East coast parts of AP and Odisha
Day-1-2: High values along west coast over Kerala and Karnataka.
Day-4-5: High values along west coast over Kerala and Karnataka; Additionally J & K and HP region.

7. Spatial distribution of TTI: TTI >44 [Scattered Numerous Thunderstorms]:
Day 0-1 high values of TTI west coast in Kerala and Karnataka.. Day-3-4 TN, Kerala – Karnataka coast; Additionally J & K and HP region.
8. Rainfall and thunder storm activity: Day-1-3: (>4cm/day) Parts of Odisha, WB, Bangladesh and adjoining Mizoram
Day-2-3: (>4cm/day) Parts of J & k Region. Day-3-4(>4cm/day) over J & K region

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

1. Weather Systems:
In the analysis, a CYCIR GWB and north-south trough persists extending from east Assam and adjoin areas to Bay of Bengal in next 5 days. In day 4, an embedded CYCIR appears over GWB.
Another weak quasi-stationary CYCIR is seen over interior Karnataka, Marathawada and adjoining areas towards north-west direction during next 4 days.
2. Location of jet and jet core at 500 hPa:**-500 hPa Jet core (>60kt):**
The Jet at 500 hPa does not exist over India during next 5 days. In the analysis, a deep trough in westerly lies over east India which moves eastward over north-eastern states and adjoining areas in day 1.
3. Low level Vorticity:-Positive Vorticity (>15x10^{-5}/s):
Mainly along foothill of Himalaya and north-eastern states during next 5 days mainly in the morning hours. The significant vorticity zones associated with the cyclonic circulations are seen over Karnataka and Konkan-Goa during next 5 days only in morning hours.
4. Spatial distribution of T-Storm Initiation Index, Lifted Index, Total Total Index, CAPE, CINE and Sweat Index(High potential for thunderstorm]:
T-Storm Initiation Index (> 4): No significant zone is seen over the country during next 5 days.
Lifted Index (< -2): The areas with index less than threshold lies along east coast regions for next 5 days with maxima over GWB, Orissa and coastal AP. During the same period, the index also crosses threshold along the west coast over Kerala, parts of coastal Karnataka and Konkan-Goa.
Sweat Index (> 400): Then significant zones are confined along east coast of India over GWB, Orissa and coastal AP with maximum values over GWB and Orissa till 4. The index crosses threshold over J&K and adjoining areas from day 1 - 4.
Total Total Index (> 50) : Above threshold value in some parts of central India adjoining parts of the country from day 1 up to day 5. The values are maxima during evening hours.
CAPE (> 1000): Mostly along east coast of India over Gangetic West Bengal, Orissa, coastal Andhra Pradesh and Tamilnadu coast during next 2 days and then again in day 4 and5. The CAPE values also above threshold over Kerala and parts of coastal Karnataka, Konkan-Goa during day 3-5.
CIN (50-150): Maximum CIN values are found in some areas along east coast over GWB, Odisha, coastal AP and Tamilnadu from Day-1 to Day-5. The CIN values are higher along west coast and maxima over costal Gujarat and adjoining west Rajasthan
5. Rainfall and thunderstorm activity:
10-40 mm rainfall over north-eastern states and Kerala and adjoining Konkan & Goa during next 2 days. In day 2 and 3, J & K and adjoining areas.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day 1 & Day 2:

The upper air cyclonic circulation over northern parts of West Bengal & neighbourhood seen yesterday upto 0.9 km amsl. has deepened and now extends upto1.5 km amsl. Under its effect thunderstorm activity accompanied by squall and hail activity and rainfall is likely to increase over Northeast India. Thunderstorm activity accompanied by wind squalls is also likely to increase over East India. This activity is likely to decrease on day 2 as the cyclonic circulation decreases in intensity.

Associated with the trough extending southwards from the above cyclonic circulation along the east Peninsular coast, thunderstorm activity, is also likely to occur in East Bihar on day 1 and Coastal Andhra Pradesh on day 1 and 2.

On day 2, associated with a fresh Western Disturbance, frequency of thunderstorms accompanied by squall and hail is likely to increase over Jammu and Kashmir.

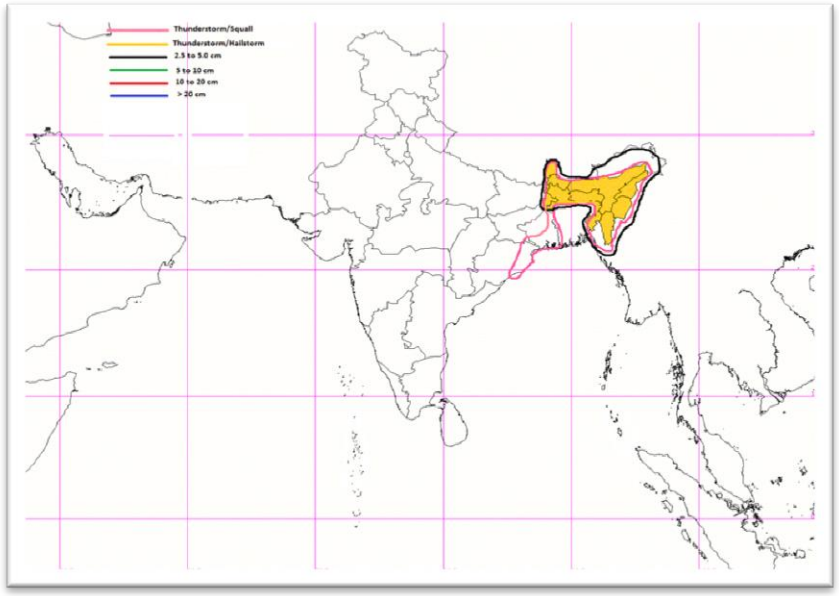
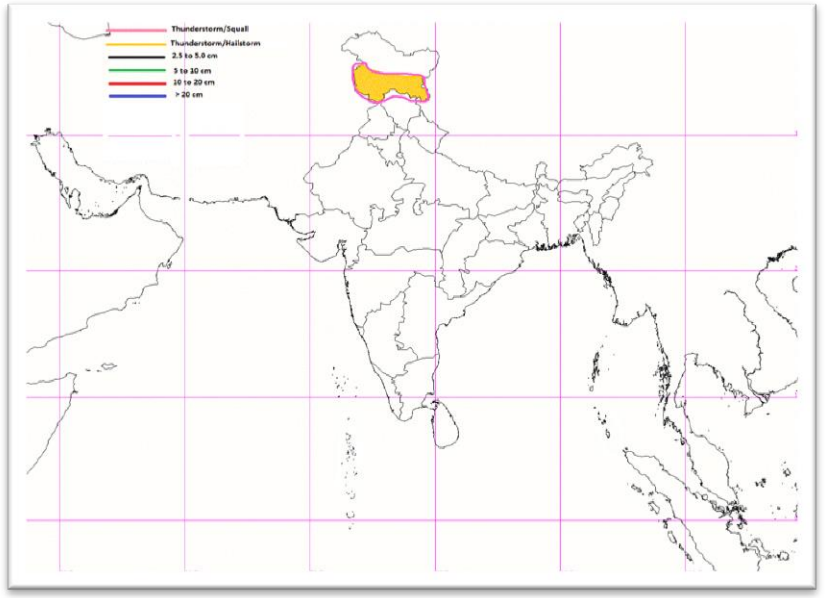
24 hour Advisory for IOP:

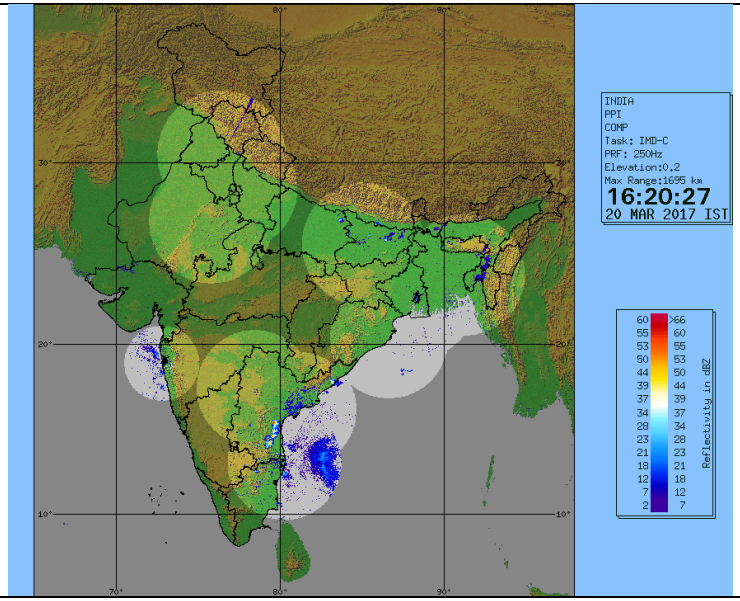
Sub Himalayan West Bengal, Sikkim, Assam, Arunachal Pradesh, Nagaland, Manipur, Mizoram and Tripura
Coastal Gangetic West Bengal and Coastal Orissa

48 hour Advisory for IOP:

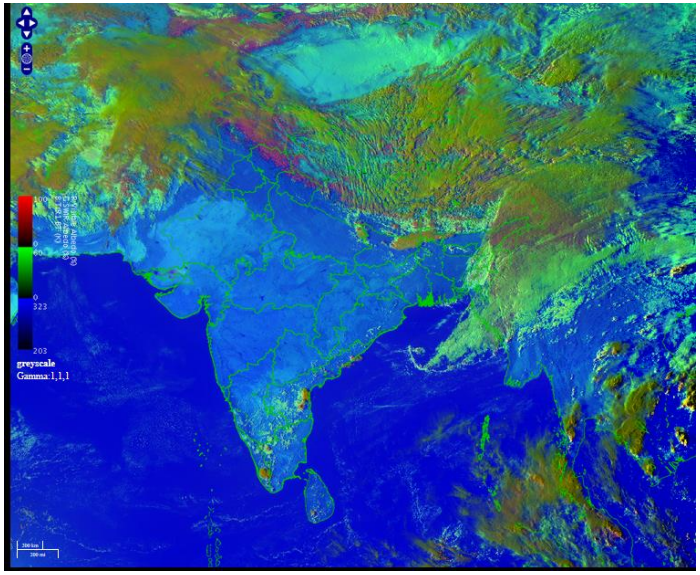
Jammu and Kashmir

ForNCMRWFNWPproducts:(http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php)
ForIMDNWPproducts:(http://nwp.imd.gov.in/diagpro_new.php)
ForSynopticplotteddataandcharts
http://amssdelhi.gov.in/
http://www.amsskolkata.gov.in/
ForRAPIDtool:
http://rapid.imd.gov.in/
LowLevelWinds
http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/LLW/MAR_2017/?C=M;O=D
Upperlevelwinds
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-Phi gram
http://satellite.imd.gov.in/map_skm2.html

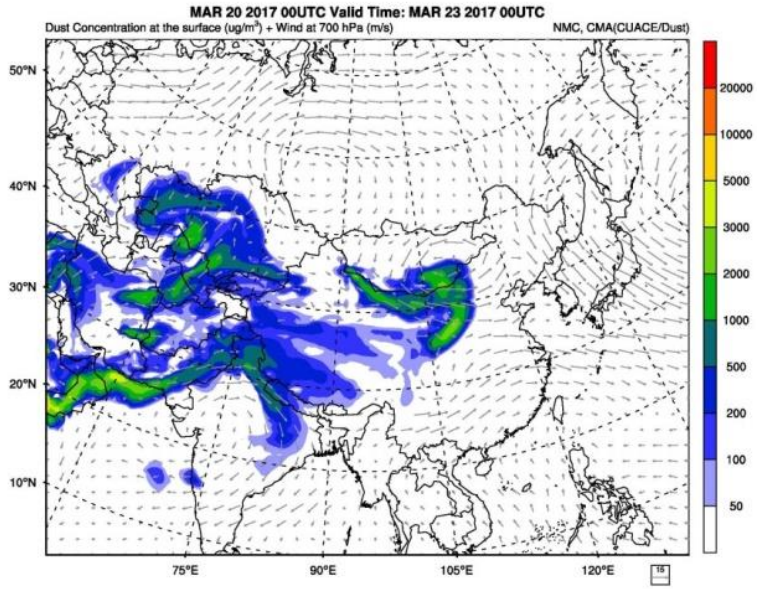
	
IOP Advisory for 24hours	**IOP Advisory for 48hours**



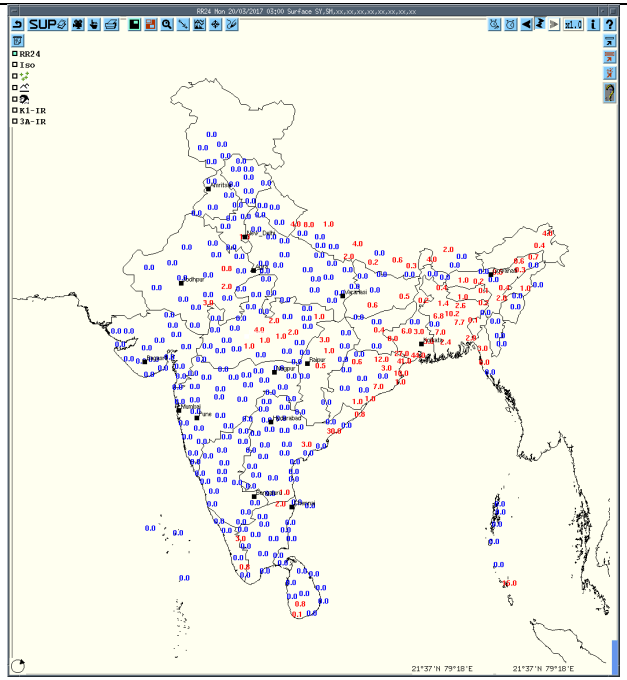
DWR Composite at 1620 hrs IST



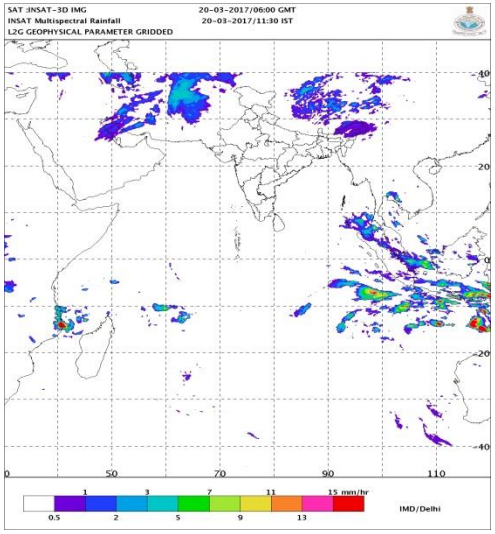
RGB Image of INSAT3D at 1600hrs IST



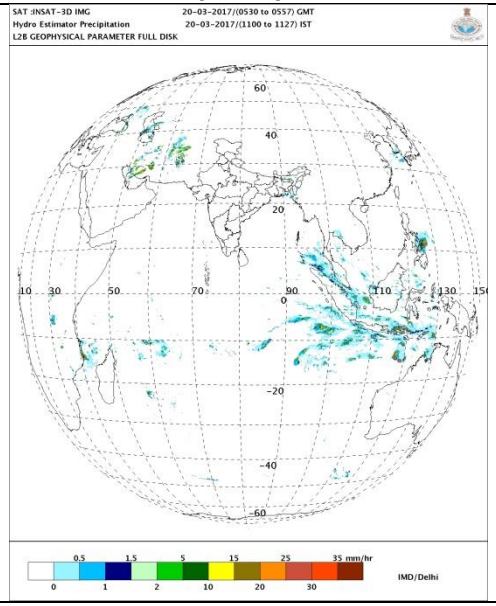
Forecast Dust Concentration at ooUTC of 23 March



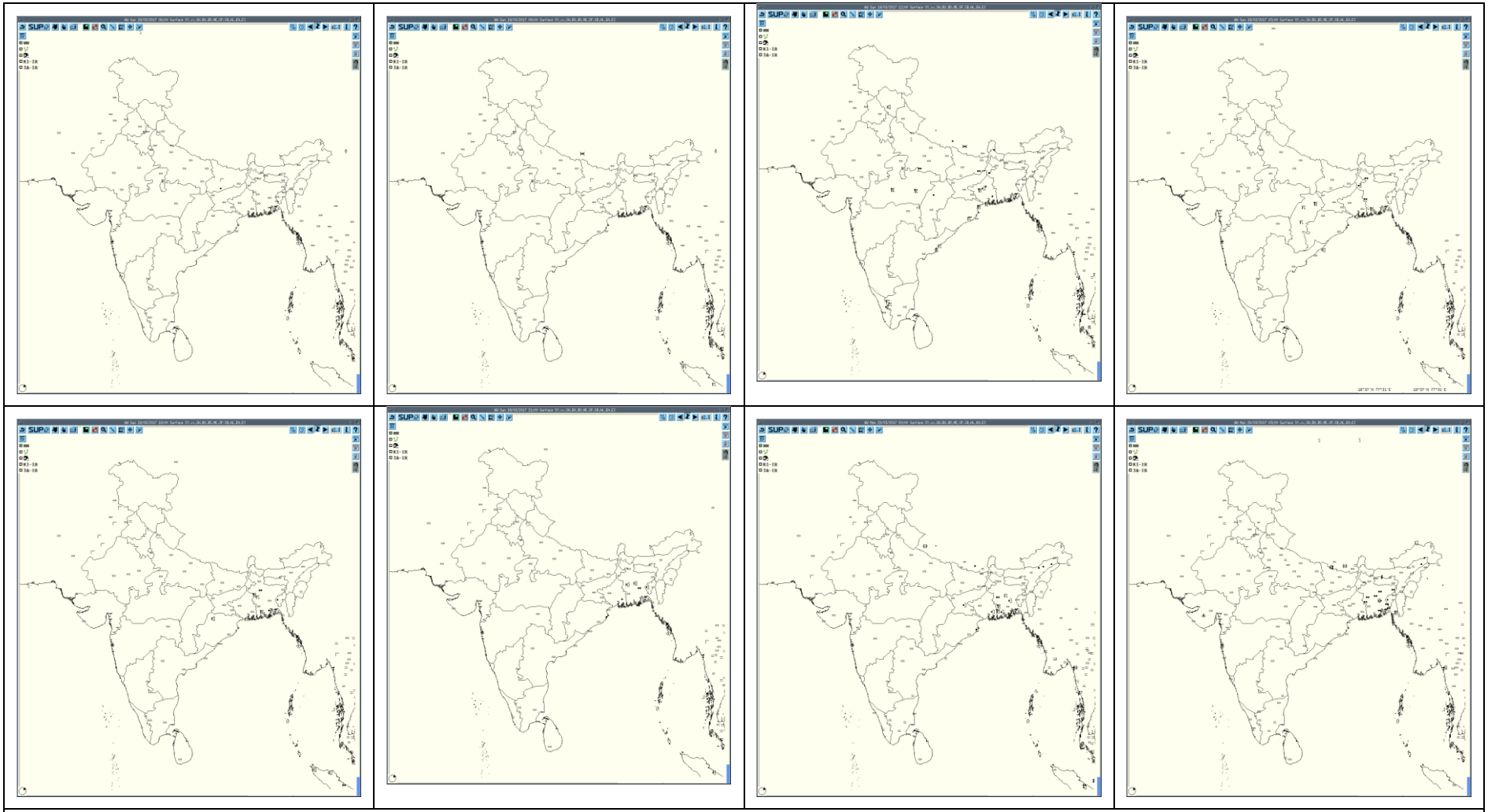
Accumulated 24 Hour rainfall (in red) recorded at 0300 UTC of today



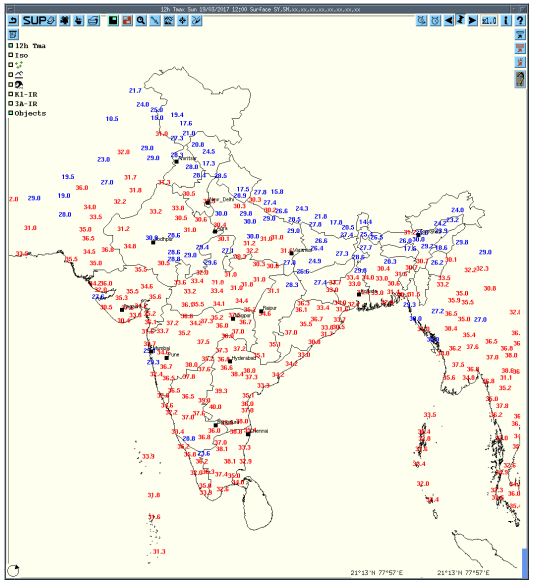
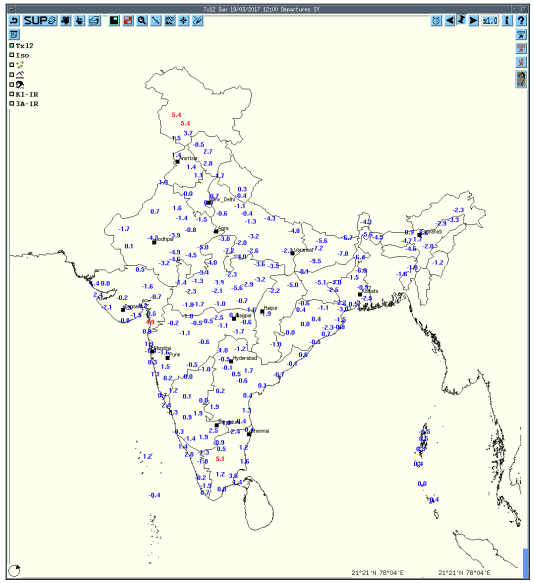
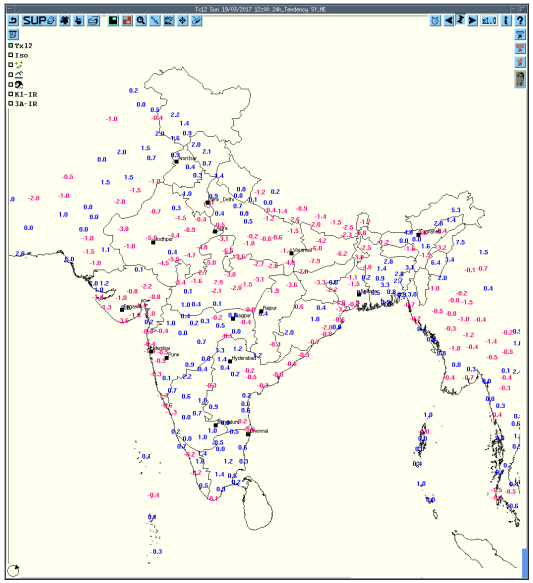
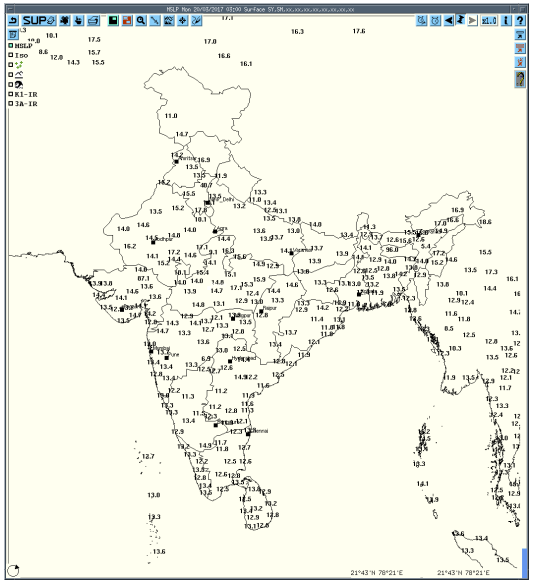
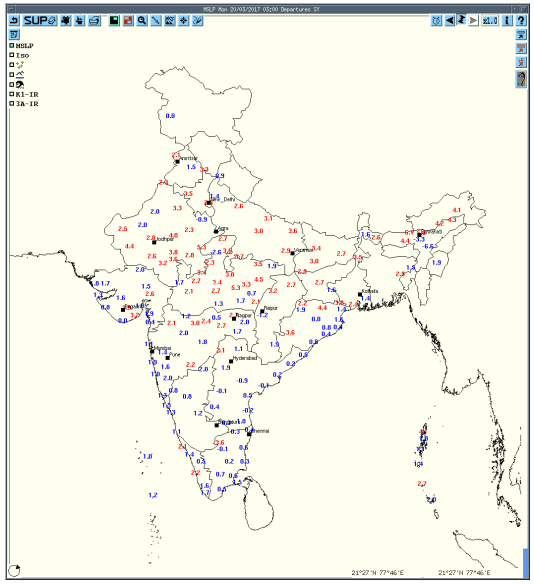
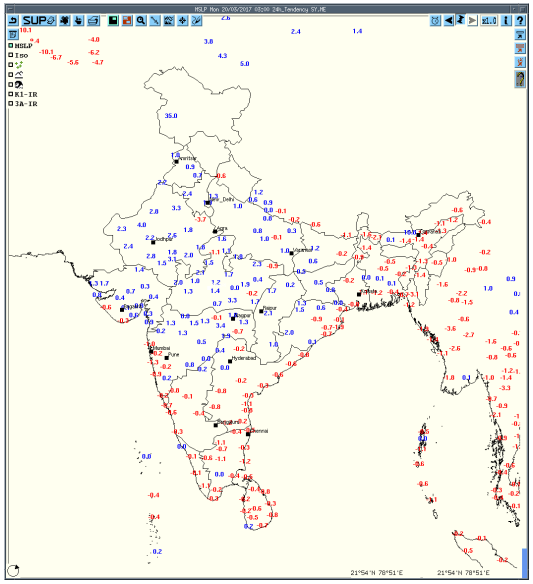
IMR Rainfall

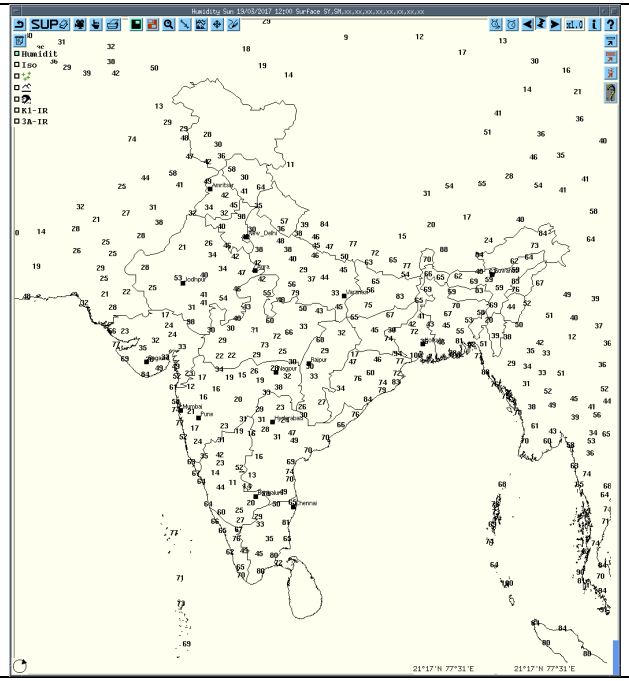
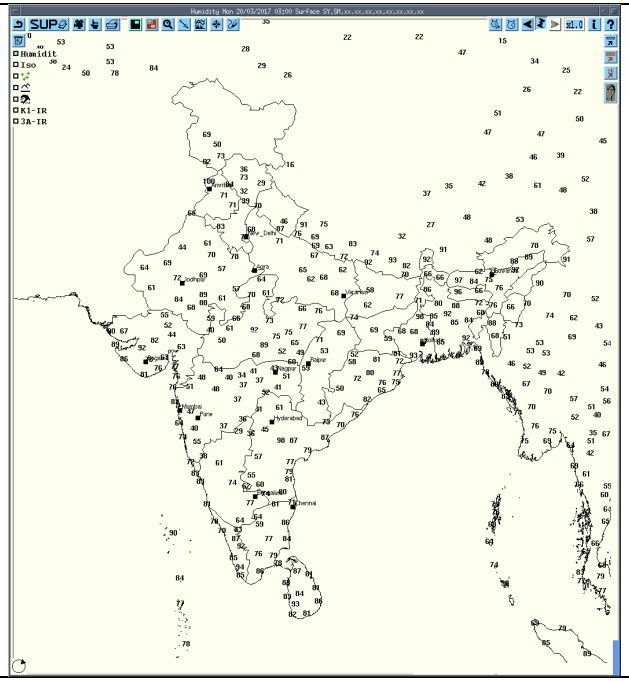


HEM Rainfall



3 hourly 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 12 UTC yesterday	**RH 03 UTC today**

Realized weather past 24 hours					
Date	**Time of Reporting**	**Name of Station Reporting**	**Region**	**STATE**	**Weather Event**
19-03-2017	0600 UTC	Nil	Nil	Nil	Nil
19-03-2017	0900 UTC	Nil	Nil	Nil	Nil
19-03-2017	1200 UTC	Sunder Nagar	Northwest India	Himachal Pradesh	Thunderstorm
		Bhopal	Central India	Madhya Pradesh	Thunderstorm
		Jabalpur	Central India	Madhya Pradesh	Thunderstorm
		Bankura	East India	West Bengal	Thunderstorm
		Haldia	East India	West Bengal	Thunderstorm
		Digha	East India	West Bengal	Thunderstorm
		Bhubaneswar	East India	Odisha	Thunderstorm
		Tuni	South India	Andhra Pradesh	Thunderstorm
		Coonoor	South India	Tamilnadu	Thunderstorm
		Coimbatore	South India	Tamilnadu	Thunderstorm
19-03-2017	1500 UTC	Ambikapur	Central India	Chhattisgarh	Thunderstorm
		Pendra Road	Central India	Chhattisgarh	Thunderstorm
		Raipur	Central India	Chhattisgarh	Thunderstorm
		Calingapatnam	South India	Andhra Pradesh	Thunderstorm
19-03-2017	1800 UTC	Digha	East India	West Bengal	Thunderstorm
		Jharsuguda	East India	Odisha	Thunderstorm
20-03-2017	2100 UTC	Nil	Nil	Nil	Nil
20-03-2017	0000 UTC	Nil	Nil	Nil	Nil
20-03-2017	0300 UTC	Nil	Nil	Nil	Nil

Name of Station Reporting	Region	STATE	Weather Event	Date	Time of Commencement (IST)	Time of end (IST)
Sunder Nagar	NW India	Himachal Pradesh	Thunderstorm	19-03-17	1605	1750
Banda	NW India	Uttar Pradesh	Thunderstorm	19-03-17	1645	1720
Jaipur	NW India	Rajasthan	Thunderstorm	19-03-17	1514	1850
Chittorgarh	NW India	Rajasthan	Thunderstorm	19-03-17	2115	2140
Sagar	Central India	Madhya Pradesh	Thunderstorm	19-03-17	1330	1615
Pendra Road		Chhattisgarh	Thunderstorm	19-03-17	1655 1900	1705 2100
Bilaspur		Chhattisgarh	Thunderstorm	19-03-17	1550 2100	1625 2135
Alipore	East India	West Bengal	Thunderstorm	19-03-17	1745	1817
Dum Dum	East India	West Bengal	Thunderstorm	19-03-17	1750	1840
Dum Dum	East India	West Bengal	Lightening	19-03-17	1750	1930
Haldia	East India	West Bengal	Thunderstorm	19-03-17	1638	1810
Haldia	East India	West Bengal	Lightening	19-03-17	1810	1910
Digha	East India	West Bengal	Thunderstorm	19-03-17	1535 2010	1645 2040
Digha	**East India**	**West Bengal**	**Hailstorm (Diameter 5-10 cm)**	**19-03-17**	**1645**	**1705**
Digha	**East India**	**West Bengal**	**Thunder-squall (NW/44 Kmph)**	**20-03-17**	**0350**	**0352**
Asansol	East India	West Bengal	Thunderstorm	19-03-17	1400	1445
Jamshedpur	East India	Jharkhand	Thunderstorm	19-03-17	1530 2300	1620 2330
Bhubaneswar	East India	Odisha	Thunderstorm	19-03-17	1550	1740
Jharsuguda	East India	Odisha	Thunderstorm	19-03-17	2200	2235
Jharsuguda	East India	Odisha	Lightening	19-03-17	2115	2245
Paradeep	East India	Odisha	Thunderstorm	20-03-17	0325	0405
Paradeep	East India	Odisha	Lightening	19-03-17	2215	2400
Paradeep	East India	Odisha	Lightening	20-03-17	0000	0400
Tezpur	NE India	Assam	Thunderstorm	20-03-17	0240	0250
Calingapatnam	South India	Andhra Pradesh	Thunderstorm		1900	2000
Tuni	South India	Andhra Pradesh	Thunderstorm		1545	1730
Vijayawada AP	South India	Andhra Pradesh	Thunderstorm		1450	1535
Masulipatnam	South India	Andhra Pradesh	Thunderstorm		1540	1600

Severe Weather warning based on DWR observation	
Name of issuing Radar station	**DWR Lucknow**
Geo-coordinates of issuing Station(Lat, Long,Alt)	26 0 46' 07'' N , 80 0 53' 07''E , 127.71 M
Date and time of issue in UTC (yyyyMMddhhmm)	201703200600 UTC
Nature of severe weather expected	Nil
Name of issuing Radar station	**DWR KARAIKAL**
Geo-coordinates of issuing Station(Lat, Long,Alt)	Lat:10.91381N,Long:79.84141E/Alt:25masl
Date and time of issue in UTC (yyyyMMddhhmm)	201703200700 UTC
Nature of severe weather expected	DWR U/S
Name of issuing Radar station	**DWR NAGPUR**
Geo-coordinates of issuing Station(Lat, Long,Alt)	Lat:21.1458°N,Long:79.0882°E
Date and time of issue in UTC (yyyyMMddhhmm)	---
Nature of severe weather expected	----
Name of issuing Radar station	**DWR MUMBAI**
Geo-coordinates of issuing Station(Lat, Long,Alt)	Lat–18˚54'04", Long-72˚48'32"/HeightAMSL–3.22meters.
Date and time of issue in UTC (yyyyMMddhhmm)	---
Nature of severe weather expected	---
Name of issuing Radar station	**DWR HYDERABAD**
Geo-coordinates of issuing Station(Lat, Long,Alt)	Lat–17.2562^{o}NLong-78.7656^{o}E
Date and time of issue in UTC (yyyyMMddhhmm)	201703200600 UTC
Nature of severe weather expected	Nil
Name of issuing Radar station	**DWR AGARTALA**
Geo-coordinates of issuing Station(Lat, Long,Alt)	23.89°N,91.25°E,16mabovemsl
Date and time of issue in UTC (yyyyMMddhhmm)	201703200610
Nature of severe weather expected	Nil
Name of issuing Radar station	**DWR KOLKATA**
Geo-coordinates of issuing Station(Lat, Long,Alt)	22.5705° N / 88.353° E, 7m above msl
Date and time of issue in UTC (yyyyMMddhhmm)	201703200711 UTC
Nature of severe weather expected	Nil
Name of issuing Radar station	**DWR Machilipatnam**
Geo-coordinates of issuing Station(Lat, Long,Alt)	LAT: 16.12' LONG: 81.09' ALT: 3.05m.
Date and time of issue in UTC (yyyyMMddhhmm)	201703200601 UTC
Nature of severe weather expected	Nil

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
NAGPUR	19/03/17 & 20/03/17	0312-2352 & 0000-0302	Nil	Nil	No Echoes	Nil	Nil