India Meteorological Department
FDP STORM Bulletin No. 28 (02-04-2017)

1. CURRENT SYNOPTIC SITUATION at 0300 UTC of the Day:

SYNOPTIC FEATURES:

The Western Disturbance as an upper air cyclonic circulation over north Pakistan and neighbourhood, now seen over Jammu & Kashmir and neighbourhood and extends upto 3.6 km above mean sea level. The trough aloft in mid & upper tropospheric westerlies along Longitude 72.0°E and north of Latitude 32.0°N now runs roughly along Longitude 80.0°E and north of Latitude 32.0°N.

The trough from west Vidarbha to south Konkan across Marathawada & south Madhya, Maharashtra, now runs from west Vidarbha to Coastal Karnataka across Telangana & North Interior Karnataka extending upto 0.9 km above mean sea level.

The upper air cyclonic circulation over south Pakistan and adjoining West Rajasthan now lies over southwest Rajasthan & neighborhood between 1.5 km & 2.1 km above mean sea level.

The upper air cyclonic circulation over north Bangladesh & neighbourhood persists and now extends upto 0.9 km above mean sea level. The trough from this cyclonic circulation to south Odisha across Gangetic West Bengal also persists and now extends upto 0.9 km above mean sea level.

The fresh Western Disturbance likely to affect Western Himalayan region from 3rd night and adjoining plains from 4th April onwards.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

Clouds (based on 0900UTC imagery of INSAT 3D):

Convective Activity:

Cell No.	Date/Time (UTC)	Location & Area	CTBT (minus Deg. C)	Movement
1	01/0800	Meghalaya, Assam, Nagaland Manipur	70	Developing
	0900	E Meghalaya Assam, W Arunachal Pradesh Nagaland Manipur	71	Expanding
	1000	E Meghalaya Assam, W Arunachal Pradesh Nagaland Manipur	71	
	1100	E Meghalaya Assam Nagaland Manipur	80	
	1200	E Meghalaya Assam Nagaland Manipur	83	Eastwards
	1500	Do	70	
	1700	Do	66	
	2130	Do	62	NE-Wards
	02/0000	O	62	Do
	0300	Do	62	Do
	0400	Do	62	Do
	0500	Do	60	Do
	0600	Do	58	Do
	0900	Do	60	Do

Scattered multi-layered clouds were seen over North Pakistan and neighbourhood in association with western disturbance over the area. Scattered low/medium clouds seen over Jammu & Kashmir, North Himachal Pradesh, North Uttarakhand, Chhattisgarh, Odisha and Nicobar islands. Scattered medium/high were seen over southeast Madhya Pradesh, Vidarbha.
Broken low/medium clouds with embedded moderate to intense convection were seen over east Meghalaya, Assam, adjoing Arunachal Pradesh, Nagaland adjoining Manipur. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Sikkim.

Arabian Sea:

No Significant clouds over the region.

Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded moderate to intense convection were seen over south Andaman Sea and South Bay.

Convection: Light to moderate convection was observed over J&K and North East parts of India.

OLR:-

Upto 200 wm^{-2} was over North East J&K North East India. Upto 230 wm^{-2} was over Rest J&K North Himachal Pradesh, North Uttarakhand.
Up to 250 wm^{-2} was over Central Assam. Up to 270 wm^{-2} was over North Interior Karnataka adjoining South Madhya Maharashtra.

Jet Stream: No Jet stream and no trough observed over India.

Dynamic Features: A positive Vorticity field is seen over Uttarakhand, Uttar Pradesh, Bihar, West Bengal Vidarbha, South Chhattisgarh and North Interior Karnataka.
Low wind shear observed over south and moderate wind shear observed over North West India and weak to moderate wind shear observed over central India .
Positive shear tendency observed over the Andhra Pradesh and Negative shear tendency observed over rest India.
Positive Low Level Convergence observed over Central India Coastal Andhra Pradesh and Odisha.

Precipitation:

IMR: Rainfall upto **90**mm was observed over south Assam. Rainfall upto **50**mm was observed over East Meghalayalaya East Assam West & Extreme East Arunachal Pradesh Nagaland Manipur. Rainfall upto **10**mm was observed over J&K Himachal Pradesh North Uttarakhand North Interior Karnataka adjoining South Madhya Maharashtra.
HEM: Rainfall upto 70mm was observed over south Interior Karnataka, Meghalaya East Arunachal Pradesh South Assam Nagaland and Manipur.

RADAR and RAPID observation:

Isolated significant convection was observed over convection were seen over Meghalaya, Assam, Mizoram and Andhra Pradesh in DWR Composite at 1600hrs IST.
RAPID RGB Imagery of at 1600hrs IST also indicates convective cells over east Meghalaya, Assam, adjoing Arunachal Pradesh, Nagaland adjoining Manipur and Odisha.

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

No significant dust concentration observed over Arabian Peninsula and west Rajasthan. Dust concentration is expected to increase over west Rajasthan for next three days.

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

00 UTC analysis shows CYCIR over UP, Bihar, GWB and adjoining areas. The trough from this system extends to coastal Odisha through WB and is persisting till 3th day.

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.

3. Low level Vorticity:-Positive Vorticity 850hPa (>12 x 10^{-1}/s):

Analysis shows the low level positive vorticity mainly along foothill of Himalayas, over east UP, GWB and few pockets of Maharashtra, Karnataka and NE stats and is persisting till 4/5days.

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):

Significant zones are noticed over GWB, Odisha, Jharkhand, Bihar, and eastern coast adjoining Bangladesh during next 4/5 days and coastal region of Gujarat also shows significant value from day 2 to day 4.

Lifted Index (< -2):

The areas with index less than -2 lies along east coast regions, GWB, Odisha, coastal AP, Bihar and adjoining areas with gradually the LI areas with less than -2 mainly extended towards south-eastern coastal regions and west costal region of India.

Sweat Index (> 400):

The significant zones are confined along east coast of India over Andhra coast, GWB, Odisha, Bangladesh and adjoining regions and very high value of SI observed over WB, Bihar, and east UP, Bangladesh and NE region for day 1 to day 4. Some parts of western Gujarat states and Karnataka coast along with few pockets in J & K also indicated the value > 400 K for next 5 days.

Total Total Index (> 50):

Above threshold value in most parts of central India and adjoining northern parts of India from day 1 to day 4 particularly at 12 UTC of each day.

CAPE (> 1000):

Mostly along east coast of India over Gangetic West Bengal, Odisha, Bihar, Jharkhand and adjoining regions and Kerala and parts of coastal Karnataka during next 5 days. The CAPE values above threshold values are also observed over Coastal Gujarat region from day 2 to day 3.

CINE (50-150):

Maximum CIN values are found in some areas along east coast over GWB, Odisha, coastal AP and Tamil Nadu and also over Bihar, Jharkhand and Goa & Konkan from Day-1 to Day-5 and Maximum CIN value over Gujarat region during next day 1 to day 4.

5. Rainfall and thunderstorm activity:

10-40 mm rainfall shows over isolated place of NE States, the rainfall over NE states likely to continue during subsequent 4 to 5 days and rainfall shows over J & K, Punjab and H.P from day 4 to day 5.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day 1 & Day 2:

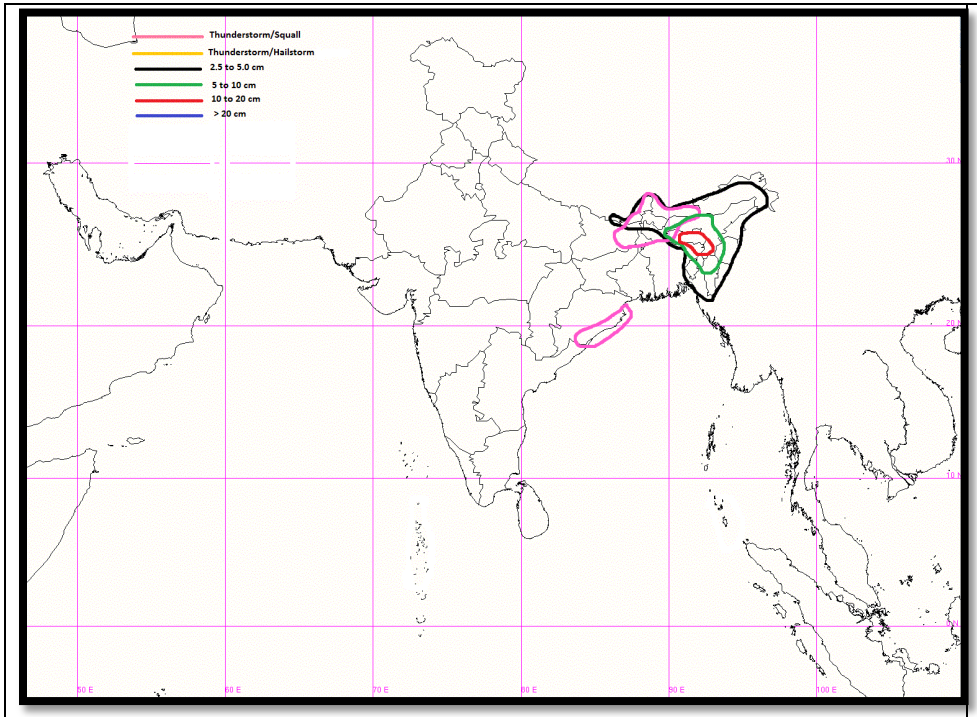
Presently, the upper air cyclonic circulation over north Bangladesh & neighborhood persists and now extends upto 0.9 km above mean sea level. Due to this entire north eastern states will experience rainfall activities in Day-1 and Day-2. Meghalaya, South Assam and adjoining area will receive heavy to very heavy rainfall on Day-1. The trough from this cyclonic circulation to south Odisha across Gangetic West Bengal also persists and now extends upto 0.9 km above mean sea level which may result thundersqull activities over Sub Himalayan West Bengal, Sikkim and East Bihar on Day-1. The fresh Western Disturbance likely to affect Western Himalayan region from 3rd night and adjoining plains from 4th April onwards.

The guidance from the NWP model output from ECMWF, IMD1534 and NCEP, IITM GFS, NCUM, NEPS and Satellite imageries are also suggesting the similar area of rainfall activities on Day1 and Day2.

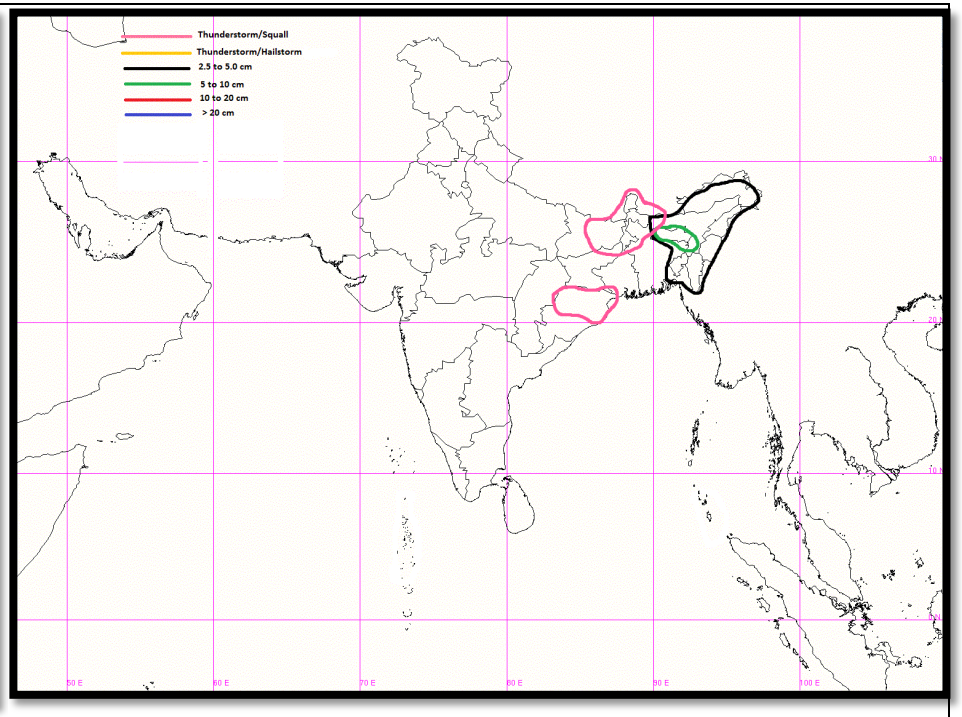
24 hour Advisory for IOP:
Sub Himalayan West Bengal, Sikkim, Assam, Meghalaya, Arunachal Pradesh.
Nagaland, Manipur, Mizoram and Tripura, Coastal Orissa and East Bihar.

48 hour Advisory for IOP:
Assam, Meghalaya, Arunachal Pradesh. Nagaland, Manipur, Mizoram and Tripura, Coastal Orissa, East Bihar and North GWB

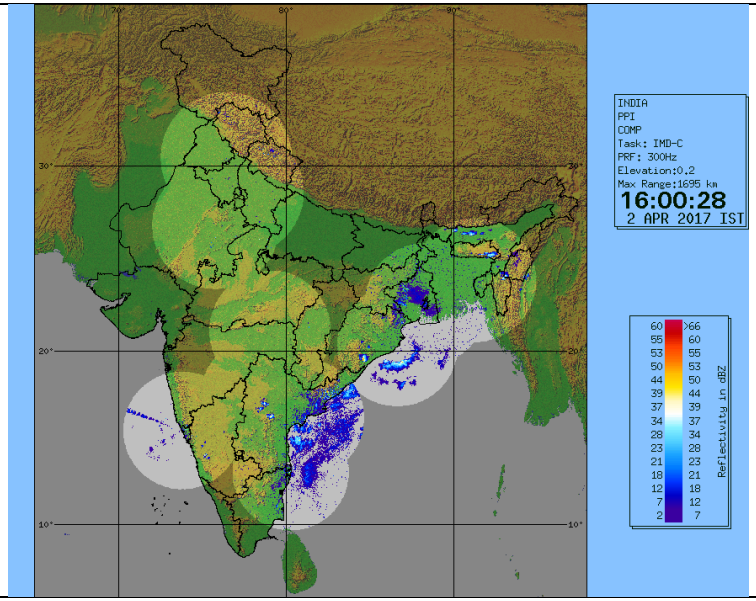
ForNCMRWFNWPproducts:(http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php)
ForIMDNWPproducts:(http://nwp.imd.gov.in/diagpro_new.php)
ForSynopticplotteddataandcharts
http://amssdelhi.gov.in/
http://www.amsskolkata.gov.in/
ForRAPIDtool:
http://rapid.imd.gov.in/
LowLevelWinds
http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/LLW/MAR_2017/?C=M;O=D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



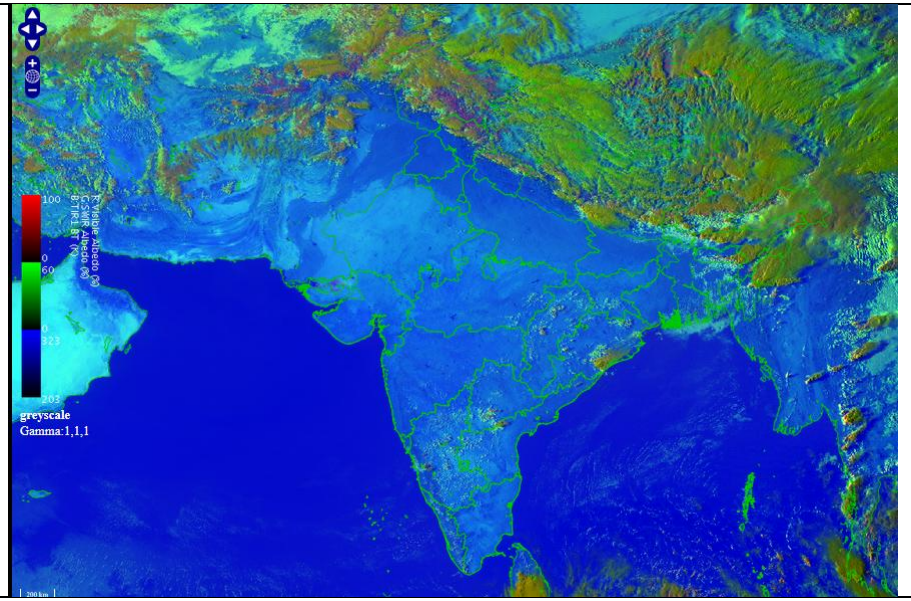
IOP Advisory for 24 hours



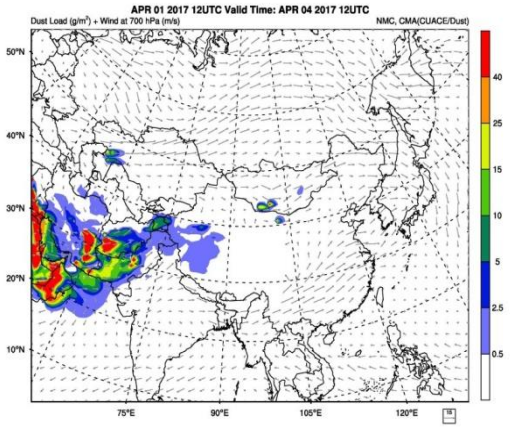
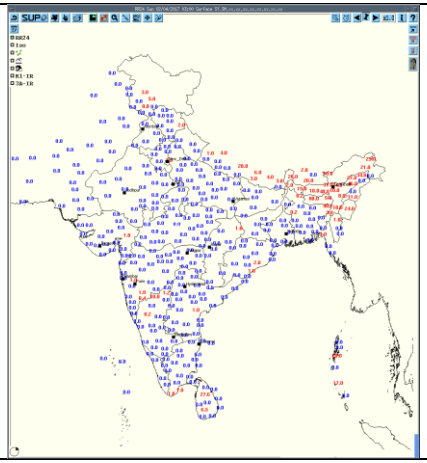
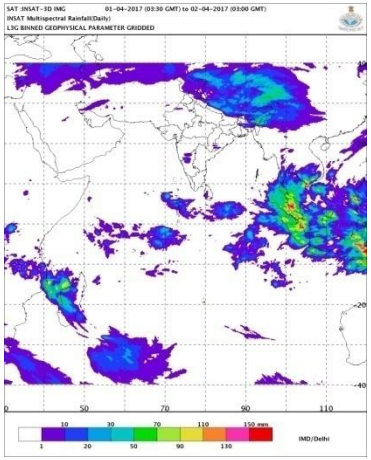
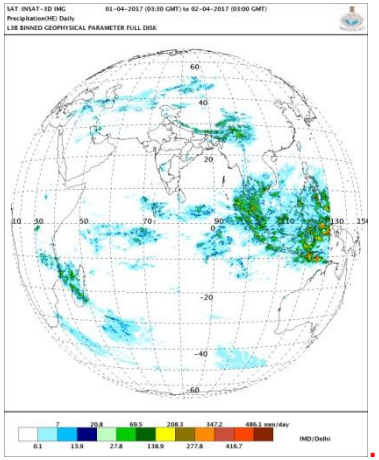
IOP Advisory for 48 hours

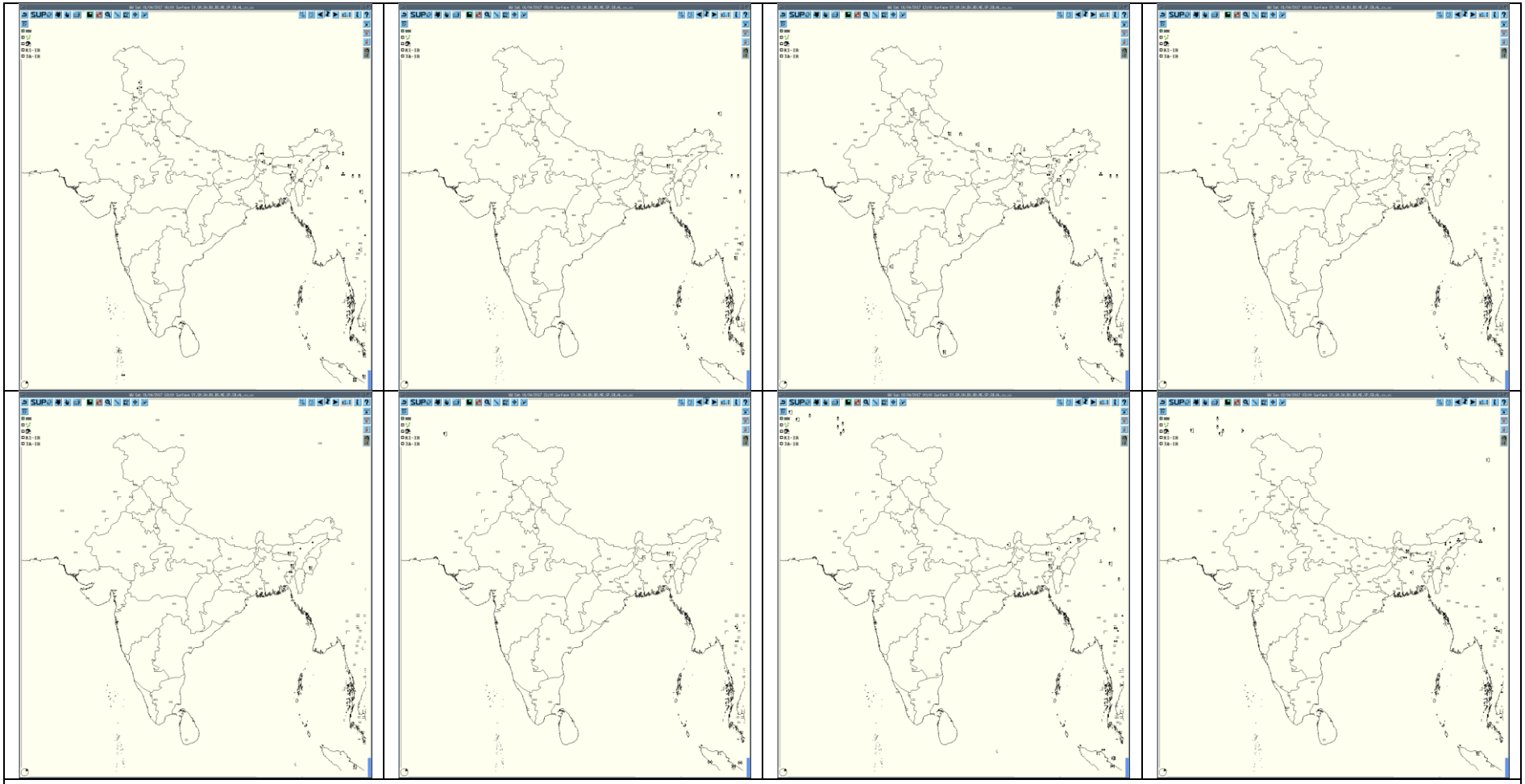


DWR Composite at 1600 hrs IST

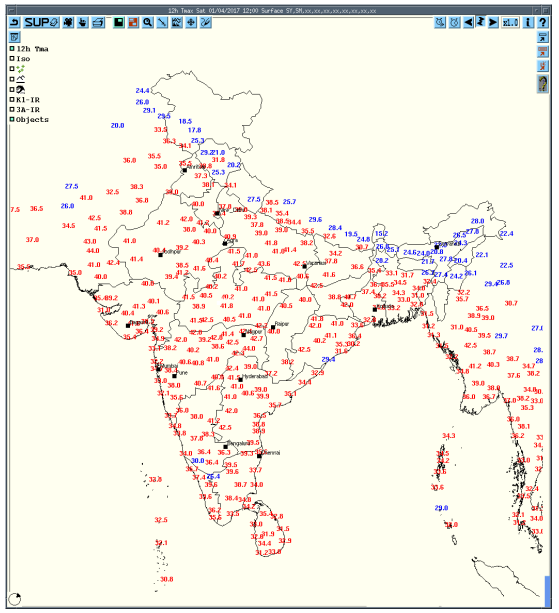


RAPID RGB Image of INSAT 3D at 1600 hrs IST

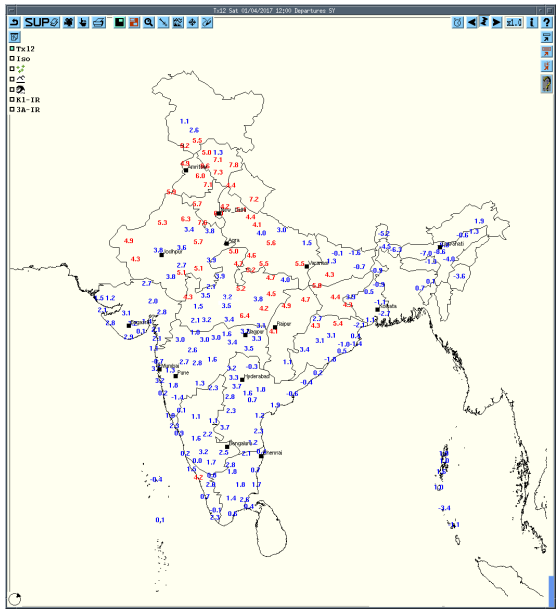
	
Forecast Dust Concentration at 12 UTC of 04 April	**Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today**
	
IMR Rainfall	**HEM Rainfall**



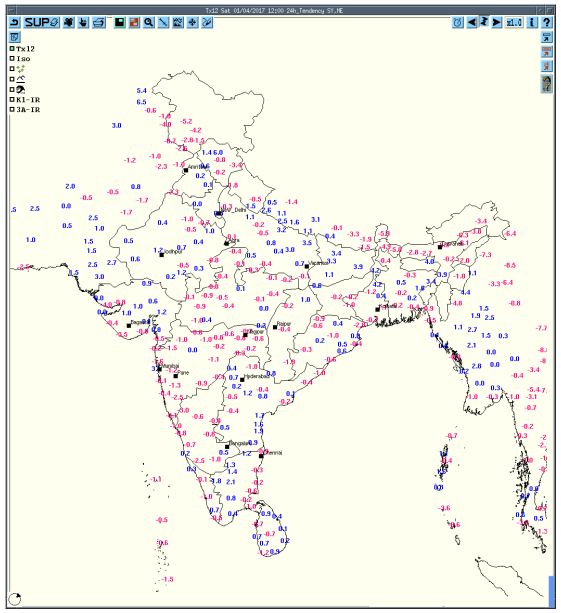
3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today



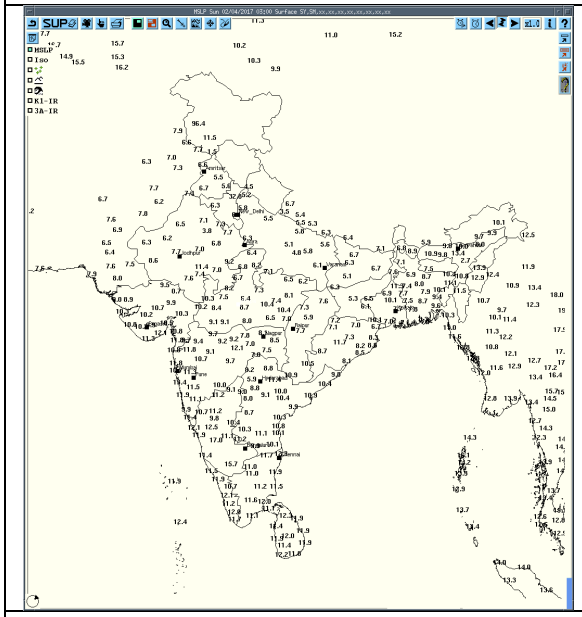
Tmax



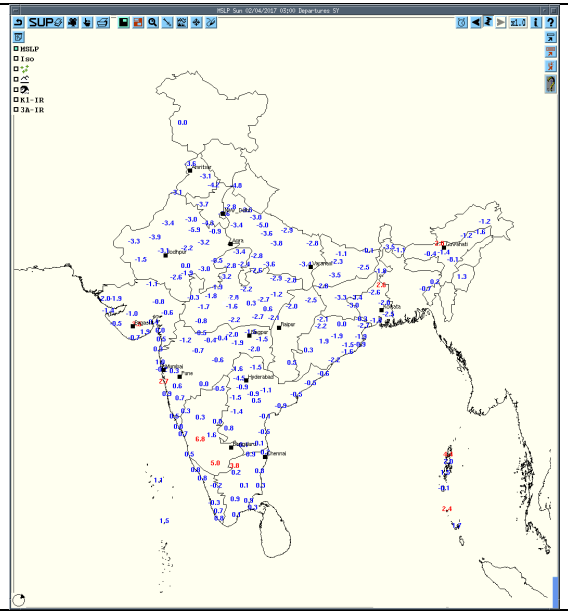
Departure Tmax



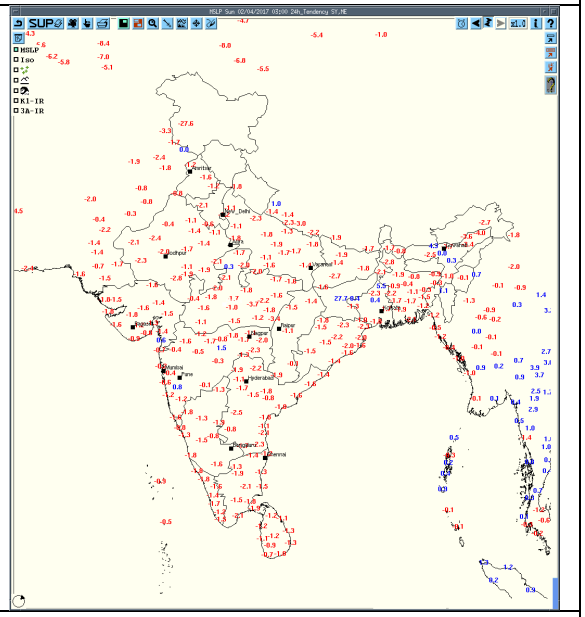
Tendency Tmax



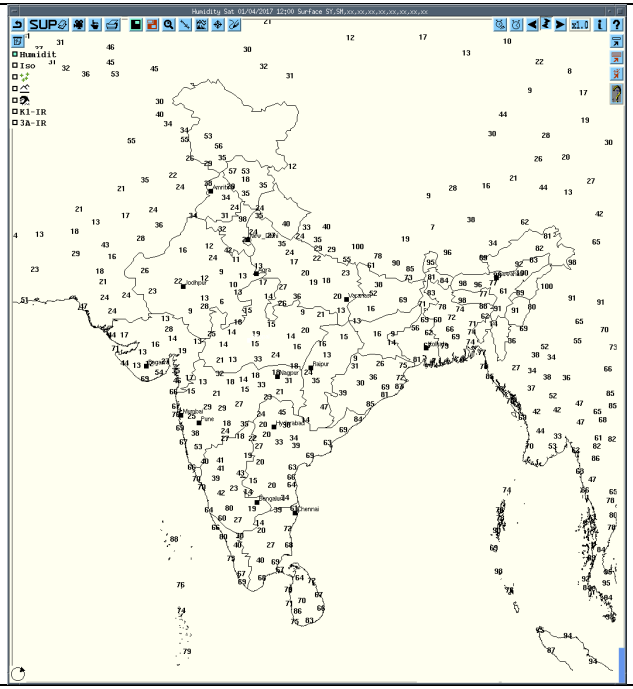
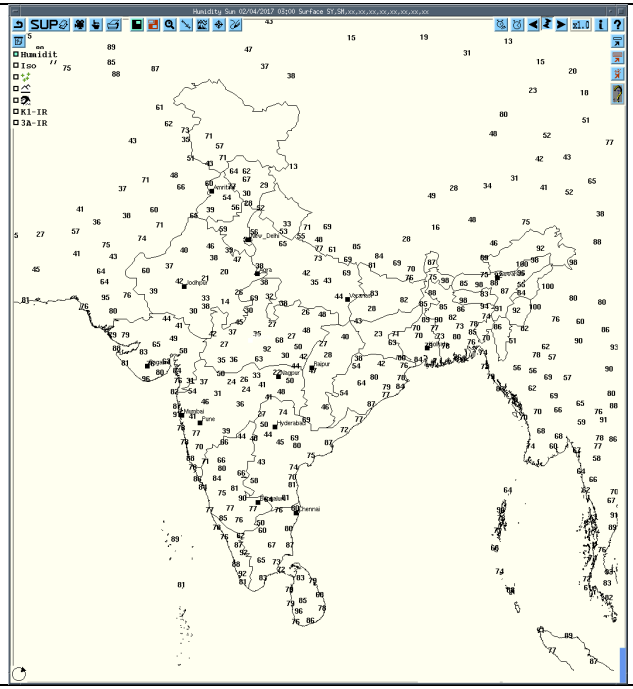
MSLP



Departure MSLP



Tendency MSLP

	
RH at 12UTC yesterday	**RH at 03UTC today**

Realized weather past 24 hours (based on SYNERGIE data)					
Date	**Time of Reporting**	**Name of Station Reporting**	**Region**	**STATE**	**Weather Event**
01-04-2017	0600UTC	Silchar	Northeast India	Assam	Thunderstorm
		Guwahati	Northeast India	Assam	Thunderstorm
		Kailasahar	Northeast India	Tripura	Thunderstorm
01-04-2017	0900UTC	Tejpur	Northeast India	Assam	Thunderstorm
		Guwahati	Northeast India	Assam	Thunderstorm
01-04-2017	1200UTC	Sundernagar	Northeast India	Assam	Thunderstorm
		Majbat	Northeast India	Assam	Thunderstorm
		Tejpur	Northeast India	Assam	Thunderstorm
		Silchar	Northeast India	Assam	Thunderstorm
		Imphal	Northeast India	Manipur	Thunderstorm
		Belgaum	South India	Karnataka	Thunderstorm
01-04-2017	1500UTC	Imphal	Northeast India	Manipur	Thunderstorm
01-04-2017	1800UTC	Guwahati	Northeast India	Assam	Thunderstorm
		Imphal	Northeast India	Manipur	Thunderstorm
01-04-2017	2100UTC	Guwahati	Northeast India	Assam	Thunderstorm
02-04-2017	0000UTC	Guwahati	Northeast India	Assam	Thunderstorm
		Silchar	Northeast India	Assam	Thunderstorm
		Dibrugarh	Northeast India	Assam	Thunderstorm
02-04-2017	0300UTC	Imphal	Northeast India	Manipur	Thunderstorm

Realized TS/HS/SQ during past 24 hours ending at 0300UTC of today (received from RMCs/MCs)						
Name of Station Reporting	**Region**	**STATE**	**Weather Event**	**Date**	**Time of Commencement (IST)**	**Time of end (IST)**
Pahalgam	Northwest India	J & K	TSRA	01-04-17	0845	0910
Itanagar	Northwest India	Arunachal Pradesh	TSRA	01-04-17	01/1435	01/1630
Jorhat	Northwest India	Assam	TSRA	01-04-17	01/1700	02/0500
Silchar	Northwest India	Assam	TSRA	01-04-17	01/0720 01/1450 01/2200	01/1100 01/1900 02/0040
Silchar	Northwest India	Assam	TSRA	02-04-17	02/0610	02/0710
Dibrugarh	Northwest India	Assam	TSRA	02-04-17	02/0500	02/0830
N/Lakhimpur	Northwest India	Assam	TSRA	01-04-17	01/1600	01/1700
N/Lakhimpur	Northwest India	Assam	TSRA	02-04-17	02/0340	02/0435
Tezpur	Northwest India	Assam	TSRA	01-04-17	01/1425 01/1810 01/2140	01/1700 01/2125 01/2150
Dhubri	Northwest India	Assam	TSRA	02-04-17	02/0810	02/0820
Guwahati	Northwest India	Assam	TSRA	01-04-17	01/0920 01/2110	01/1850 02/2400
Guwahati	Northwest India	Assam	TSRA	02-04-17	02/0000	02/0715
Barapani	Northwest India	Meghalaya	TSRA	01-04-17	01/1350	01/1450
Cherrapunjee	Northwest India	Meghalaya	TSRA	01-04-17	01/1235 01/1825	01/1600 01/2400
Cherrapunjee	Northwest India	Meghalaya	TSRA	02-04-17	02/0000	02/0830
Shillong	Northwest India	Meghalaya	TSRA	02-04-17	02/0230	02/0400
Imphal	Northwest India	Manipur	TSRA	01-04-17	01/0830 01/1705	01/0920 02/2400
Imphal	Northwest India	Manipur	TSRA	02-04-17	02/0000 02/0635	02/0115 02/0820
Gangtok	Northwest India	Sikkim	TSRA	01-04-17	1200 1815	1210 2315
Jagdalpur	Central India	Chhattisgarh	TSRA	01-04-17	1645	1655

Past 24 hours DWR Report:

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
Agartala	02/04/17	010300 UTC - 010600 UTC	Multiple Cells with Maximum Height **15 Km** and maximum reflectivity **54 dBZ**	NNE(110 KM) at 0120 UTC of 01.04.17 from DWR Agartala moving SE-wards at around 30 kmph	Cell dissipated at 0600 UTC of 01.04.17 over South Assam	N/A	N/A
		010510 UTC – 010830 UTC	Single Cell with Maximum Height of **15 km** and maximum reflectivity **43 dBZ**	NW (220 KM) from DWR Agartala moving ESE-wards at around 25 kmph	Cell dissipated at 0830 UTC of 01.04.17 South Meghalayalaya & adjoining Bangladesh	N/A	N/A
		010630 UTC – 010820 UTC	Multiple Cells with Maximum Height **16 Km** and maximum reflectivity **48 dBZ**	North (160 KM) from DWR Agartala moving SE-wards at around 40 kmph	Cell dissipated at 0820 UTC of 01.04.17 over South Assam	N/A	N/A
		010740 UTC - 011350 UTC	Single Cell with Maximum Height **14 Km** and maximum reflectivity **47 dBZ**	WNW(350 KM) from DWR Agartala moving SE-wards at around 30 kmph	Cell dissipated at 1350 UTC of 01.04.17 over Bangladesh	N/A	N/A
		011740 UTC - 020200 UTC	Multiple Cells with Maximum Height **15 Km** and maximum reflectivity **55 dBZ**	N(150 KM) from DWR Agartala moving SE-wards at around 50 kmph	Cell dissipated at 0200 UTC of 02.04.17 over Manipur	N/A	N/A
Jaipur	02/04/17	01/0300-02/0300	Nil	Nil	Nil	Nil	Nil
Patiala	02/04/17	01/0300-02/0300	Nil	Nil	Nil	Nil	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
Paradeep		02/04/17	1430-1630 UTC	Convective regions with average height of 7 km having maximum reflectivity of 30 dBZ with very small areas showing reflectivity values in the range of 30- 35 dBZ observed during late evening to night over the sea.	Mainly concentrated in the sea areas to the south of the RADAR(170-240 degrees) at a distance of 90-120kms from the RADAR. Increased dBZ values observed between 1500 to 1600UTC.	NIL	NIL
			2000-2030 UTC	Convective regions with average height of 6 km having maximum reflectivity of 30 dBZ with very small areas showing reflectivity values in the range of 30- 35 dBZ observed after midnight over the sea.	Mainly concentrated in the sea areas to the south of the RADAR(140-200 degrees) at a distance of 90-120kms from the RADAR.	NIL	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	02/04/17	0301-0722	NIL	NIL	NO ECHO	NIL	NIL
		0742-1431	Isolated multiple cells with maximum height of 14.22 Km at 0831 UTC and maximum reflectivity of 61.5 dBz at 0901 UTC, merged into a single cell at 1042 with max. height of 17.55 km at 1201 UTC and max. reflectivity of 64.5 dBz at 1201 UTC	NNE (234.3km) moving in ESE-ly ENE-ly direction at speed of 33.5 kmph	Cell started forming at 0801 UTC at NNE (234.3 Km) from radar, Matured. Moved towards Bangladesh, spited into two cells at 1241 UTC	Thunderstorm/ Hailstorm/ Rain	N/A
		0001-0300	NIL	NIL	NO ECHO	NIL	NIL