



India Meteorological Department
FDP STORM Bulletin No. 20(25-03-2017)

1. CURRENT SYNOPTIC SITUATION at 0300 UTC of 25-03-2017:

SYNOPTIC FEATURES:

The upper air cyclonic circulation over east Bihar & neighbourhood now lies over west Assam & neighbourhood and extends upto 0.9km above mean sea level.

An upper air cyclonic circulation lies over Comorin area & neighbourhood and extends upto 1.5 km above mean sea level.

Another upper air cyclonic circulation lies over North Interior Karnataka & neighbourhood and extends upto 1.5 km above mean sea level.

The trough in lower level westerlies from northeast Madhya Pradesh to south Madhya Maharashtra now runs from northeast Madhya Pradesh to North Interior Karnataka across Vidarbha & Marathwada and extends upto 0.9 km above mean sea level.

The trough in lower level easterlies from north Kerala to Telangana across Interior Karnataka at 1.5 km above mean sea level has become less marked.

A fresh Western Disturbance likely to affect Western Himalayan region from 27th onwards.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Scattered multi/layered clouds were seen over west J & K in association with western disturbance over the area.

Scattered low/medium clouds with embedded weak to moderate convection were seen over northeastern states. Scattered low/medium clouds over rest J & K, north Himachal Pradesh, Uttarakhand, west Uttar Pradesh adjoining Haryana and Sikkim.

Arabian Sea:-

No significant clouds over the region.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds over east-central Bay of Bengal and south Andaman Sea.

Convection:

Moderate convection was observed over North West and North East parts of India.

OLR:- Upto 340 wm^{-2} was over Gujarat Madhya Pradesh Maharashtra Chhattisgarh Odisha Jharkhand South West Bengal Telangana Andhra Pradesh Karnataka North Tamilnadu, Upto 310 wm^{-2} was over South Rajasthan South Uttar Pradesh South Bihar Tripura Mizoram Upto 300 wm^{-2} was over North Uttar Pradesh North Bihar North West Rajasthan Assam Manipur , Upto 290 wm^{-2} was over Haryana Extreme North West Uttar Pradesh. Upto 280 wm^{-2} was over South Punjab South Himachal Pradesh Meghalaya Nagaland and Up to 200 wm^{-2} was over J&K. North Himachal Pradesh extreme Uttarakhand

Jet Stream:

No Jet stream was observed over India.

Dynamic Features:

A positive Vorticity field is seen over Uttar Pradesh Bihar West Bengal Coastal Karnataka and Coastal Odisha.

Moderate wind shear observed over North India and Low wind shear observed over South India.

Positive shear tendency observed over North West Uttar Pradesh.

Precipitation:

IMR: Rainfall upto 20mm was observed over extreme North West Jammu Kashmir, Rainfall upto 10mm was observed over rest J&K extreme North Himachal Pradesh East Bihar North- West Bengal Meghalaya extreme South East Arunachal Pradesh..

HEM: Rainfall up to 7 mm was observed over East Bihar Extreme North- West Bengal Meghalaya West Assam extreme South East Arunachal Pradesh

RADAR and RAPID observation:

Isolated strong convection was observed over Gangetic West Bengal in DWR Composite at 1600hrs IST. Convection was also observed along east coast of India and Mizoram.

Convective clouds were also seen over Gangetic West Bengal in RAPID RGB Satellite imagery of 1600hrs IST.

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:

12UTC Charts on all days from Day 0-4 show feeble trough in MSLP over J & K.

12UTC charts on all days from Day 0-4 show Wind discontinuity at 925 hPa over Maharashtra adjoining MP and Chhattisgarh.

850hPa anticyclonic flow lies over Arabian Sea on all Days; Trough over peninsula extending SW (over Maharashtra-Telangana Karnataka region) to NE (Odisha, Jharkhand and WB)

2. Location of jet and jet core at 500hPa:-500hPa Jet core (>60kt):.

Weak in magnitude on all Days.

Well defined anticyclonic flow centred near Gujarat.

3. Convergence at 850 hPa:.

At 12UTC on all days: Strong low level convergence in land all along the west coast and isolated regions over Odisha.

At 00UTC on all days: Northern part of Karnataka and Maharashtra.

4. Low level Vorticity:-Positive Vorticity (>15 x 10⁻⁵/s):

At 12UTC: On Day 0 and 1 over parts of Odisha and WB. On Day-2 over northern UP and Day-3&4 over WB and Odisha

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

Day 0 & 1: Isolated location over coastal Maharashtra and Goa. Widespread over Bangladesh and adjoining NE India.

Day 2: Widespread over Bangladesh and adjoining NE India with reduced areal extent in Day-3. Over west coast enhanced activity in Day-3.

Day 4 & 5: Most parts of J&K, some parts of NE.

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

Day 0 & 1: Isolated location over coastal Maharashtra and Goa. Widespread over Bangladesh and adjoining NE India.

Day 2: Widespread over Bangladesh and adjoining NE India with reduced areal extent in Day-3. Over west coast enhanced activity in Day-3.

Day 4 & 5: Most parts of J&K, some parts of NE.

7. Spatial distribution of TTI:

TTI >44 [Scattered Numerous Thunderstorms]: Isolated locations over Bangladesh, NE India and parts of J & K on all days.

8. Rainfall and thunder storm activity:

Day 1: (>2cm/day) Bangladesh and adjoining Meghalaya

Day 2: (>2cm/day) Meghalaya, Assam and Arunachal

Day 3-5: (>2cm/day) parts of Meghalaya and Assam

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

1. Weather Systems:

In the analysis, a northeast-southwest trough is noticed over Jharkhand, Bihar, Odisha and adjoining Chhattisgarh.

East-west trough over Bihar region is seen during day 1 and day 2 and the NE-west southwest oriented trough from GWB and passes parallel to east coast. On day 3 the east-west trough over Bihar region is prominent and become a CYCIR, which persist during day 4 and day 5 along with NE-SW oriented trough parallel to the east coast.

Another quasi-stationary CYCIR with north-south trough is seen over interior Karnataka, Marathwada and adjoining areas during next 3/4 days.

2. Location of jet and jet core at 500 hPa:-500 hPa Jet core (>60kt):

The Jet at 500 hPa almost does not exist over India during next 5 days except a small belt over Rajasthan and the region of Bihar, Jharkhand and adjoining northeast India.

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

Mainly along foothill of Himalaya and over east UP, Bihar and Jharkhand and GWB during next 2 days. The regions of eastern coastal states also witnessed vorticity maximum during day 2 to day 5.

The significant vorticity zones associated with the cyclonic circulations are seen over Karnataka, Konkan-Goa and west coast during next 2 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): Significant zone with values exceeding 4 is noticed over north eastern coastal states including GWB, Odisha, Jharkhand and Bihar during next 4/5 days. Some isolated regions of Karnataka coast and isolated region over Gujarat coast also indicated value > 4 during next 3 to 4 days.

Lifted Index (< -2): The areas with index less than -2 lies along east coast regions and NE states for next 5 days with gradually the LI areas with less than -2 mainly concentrated over GWB, Odisha, coastal AP, Bihar and adjoining areas after day 2. Some isolated pockets over Karnataka coast also indicated LI with less than -2.

Sweat Index (> 400): Then significant zones are confined along east coast of India over Andhra coast, GWB, Odisha, Bangladesh and adjoining NE states. Some parts of western Gujarat states and Karnataka coast also indicated the value > 400 K for next 3 days and over J & during next 5 days.

Total Total Index (> 50) : Above threshold value in some parts of central India and adjoining northern parts of India from day 1 up to day 5 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 during day next 5 days. The CAPE values also above threshold over Kerala and parts of coastal Karnataka, Konkan-Goa during day 3-5 and part of western Gujarat on day 2.

CINE (50-150): Maximum CINE values are found in some areas along east coast over GWB, Odisha, coastal AP and Tamil Nadu and also over Bihar and Jharkhand from Day-1 to Day-5. The higher CIN values are also noticed over west coast and costal Guajarat and adjoining west Rajasthan.

5. Rainfall and thunderstorm activity:

10-40 mm rainfall over NE states, Bangladesh during next 2 days and over GWB, Bihar and Jharkhand regions during subsequent 2 days. The rainfall increases over NE states, Bangladesh and Bihar and adjoining Jharkhand region on day 5. J & K rainfall is likely during day 3 to 5 along with isolated rainfall over parts of extreme south Peninsula.

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

1. Model reflectivity (Max. dBZ): (>25 dBZ).

Mainly over extreme NE states after day 1 and continued till day 3. dBZ exceeding the threshold value is also seen over J & K region from 18 UTC of today to day 3 morning

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

Total Total Index (> 50): Above threshold value over most parts of India during next 3 days except parts of extreme south peninsular region and northeastern states and J & K during morning hours.

K-Index (> 35): Less than threshold value over most parts of India during next 3 days but significant values are seen over some parts of NE states.

CAPE (> 1000): Mostly along east coast of India over Andhra Pradesh, Odisha, GWB, Bihar and Jharkhand during next 3 days. Another zone along west coast over Kerala, coastal Karnataka and Konkan & Goa.

CINE (50-150): CINE values are mostly small all over India during all three days of forecasts except some areas along coastal areas of India over Odisha, GWB, Bihar, Jharkhand, coastal AP, coastal Karnataka and Konkan-Goa during next 3 days.

5. Rainfall activity: -

Rainfall activity (~ 10-40 mm) over NE states and south peninsula on day 1, day 2 and day 3. Increase of rainfall over J & K during day 2 and day 3

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day 1 & Day 2:

In association with the upper air cyclonic circulation, now lying over west Assam & Neighbourhood, a wind confluence has developed over the region of south Assam, Meghalaya and adjoining Bangladesh. This is likely to increase the rainfall over Assam, Meghalaya. There will also be an increase in Thunderstorm activity, accompanied by squall and hail over the entire north-east region excluding Arunachal Pradesh.

24 hour Advisory for IOP:

Meghalaya and adjoining Assam
Manipur, Mizoram and Tripura
Gangetic West Bengal

48 hour Advisory for IOP:

Assam, Meghalaya
Manipur, Mizoram and Tripura

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

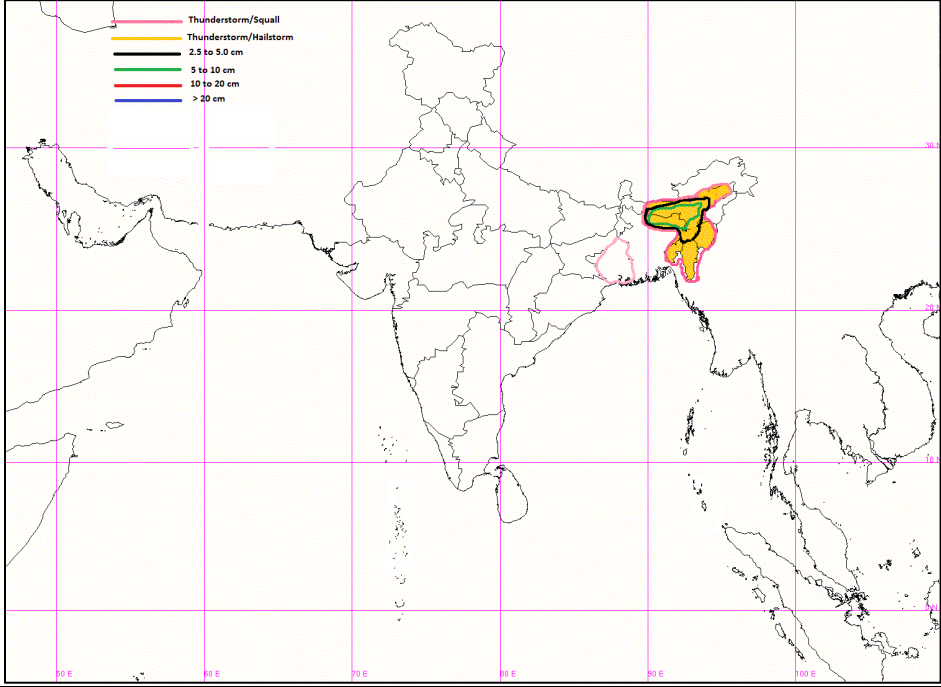
HEM:http://satellite.imd.gov.in/img/3Ddaily_he.jpg

ForRadarimagesofthepast24hoursincludingmosaicofimages:

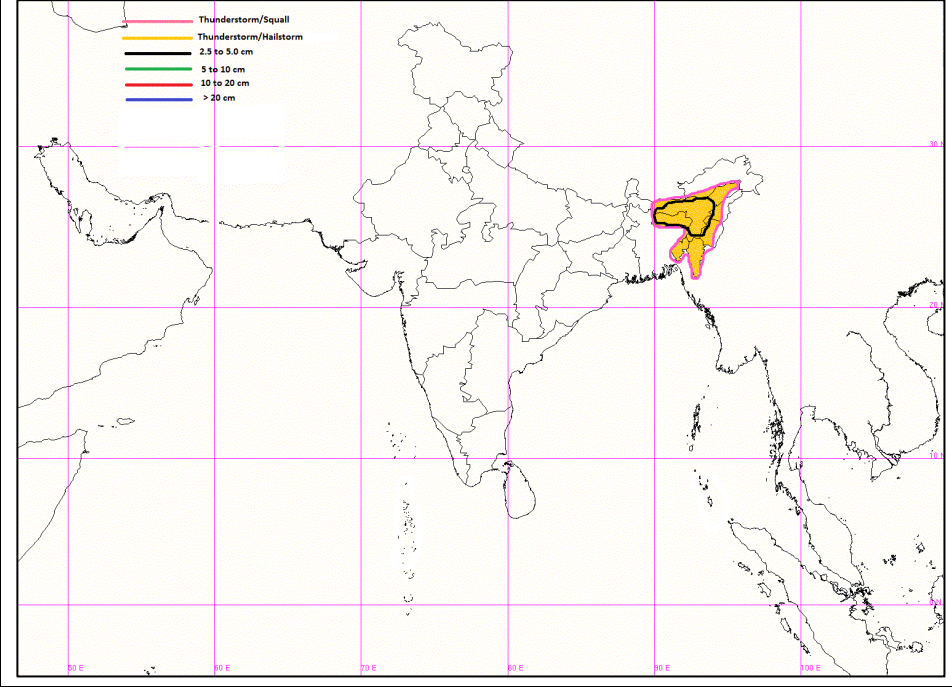
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T-Phi gram

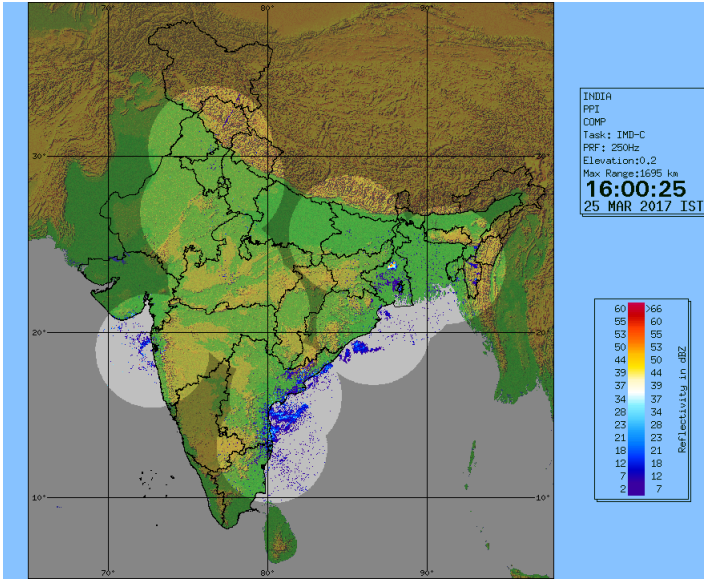
http://satellite.imd.gov.in/map_skm2.html



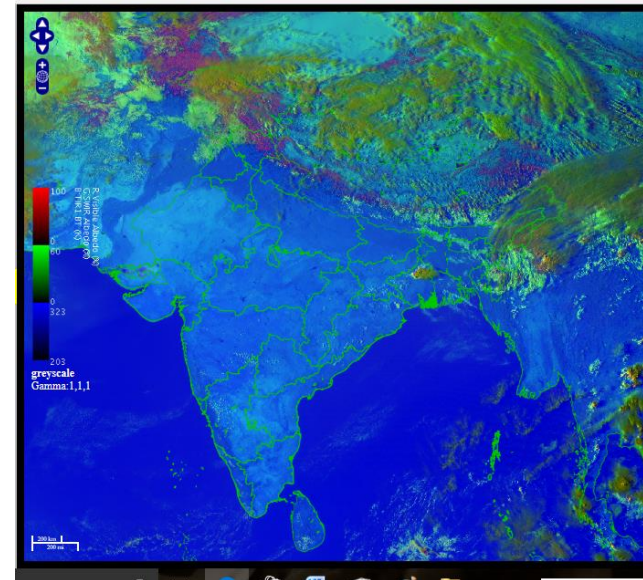
IOP Advisory for 24 hours



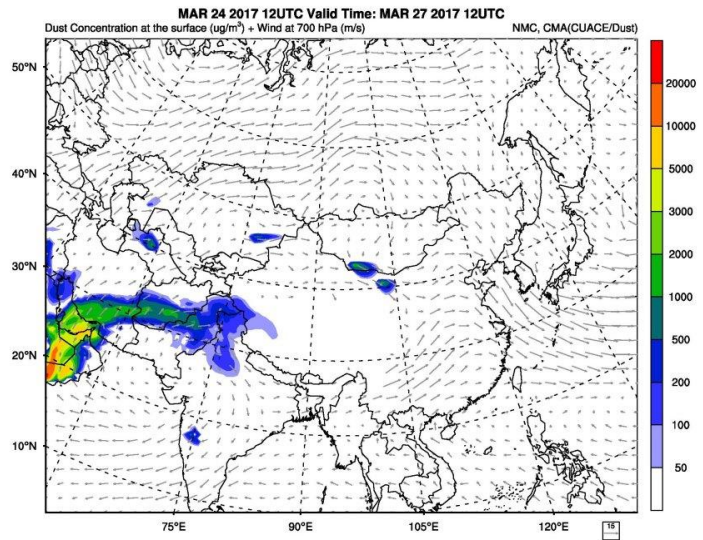
IOP Advisory for 48 hours



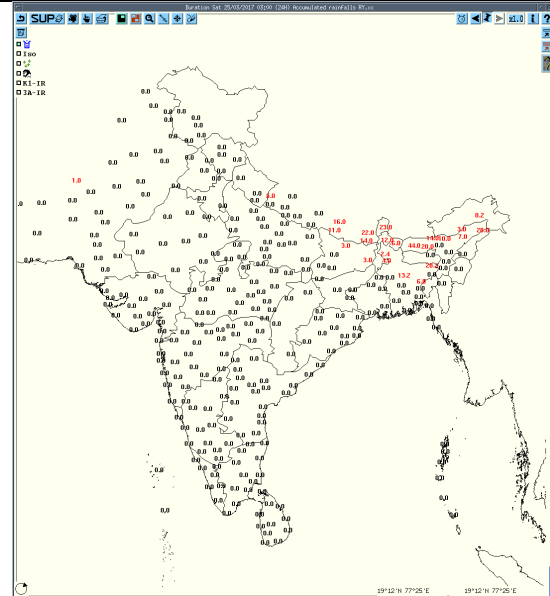
DWR Composite at 1600 hrs IST



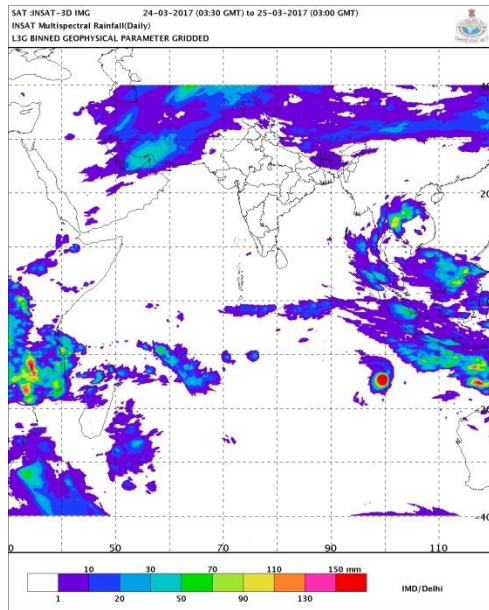
RGB Image of INSAT 3D at 1600 hrs IST



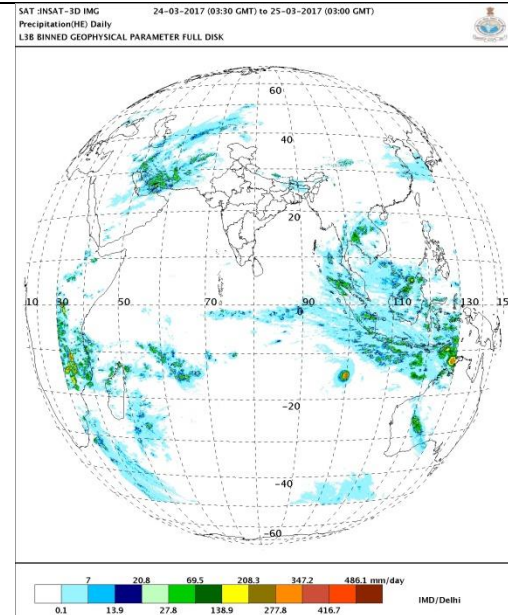
Forecast Dust Concentration at 12 UTC of 27 March



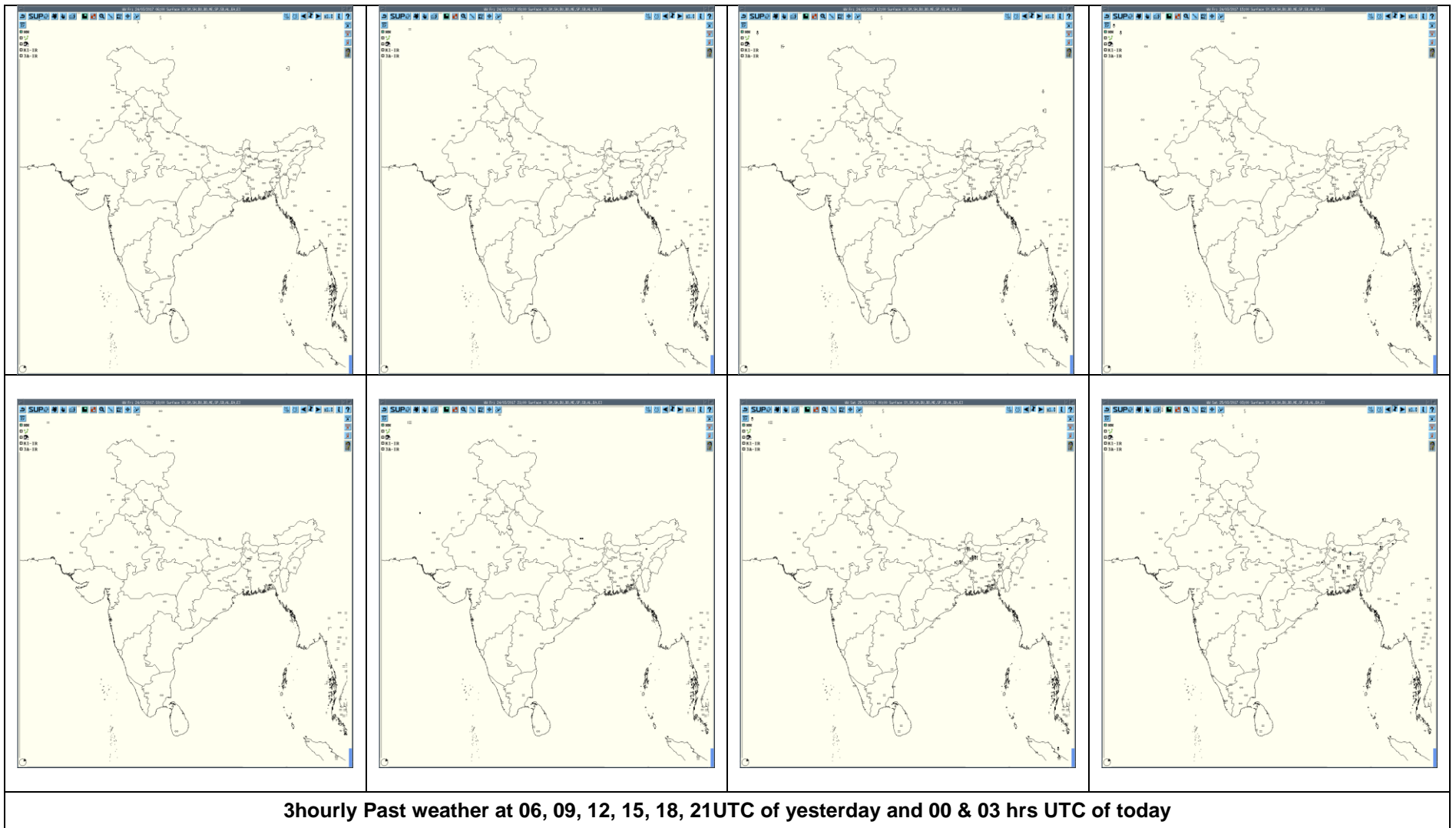
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



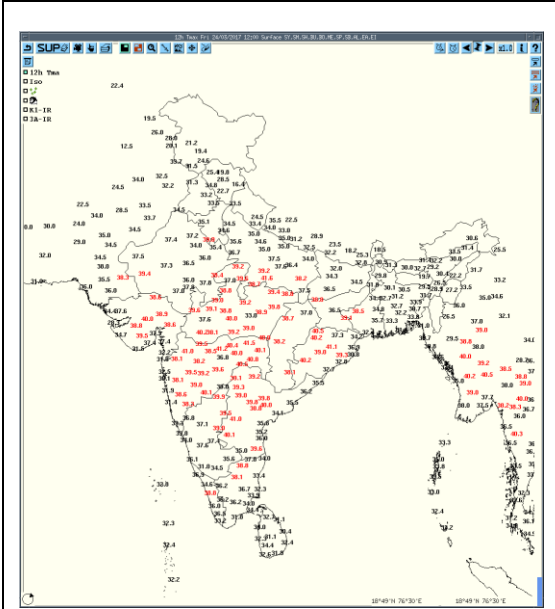
IMR Rainfall



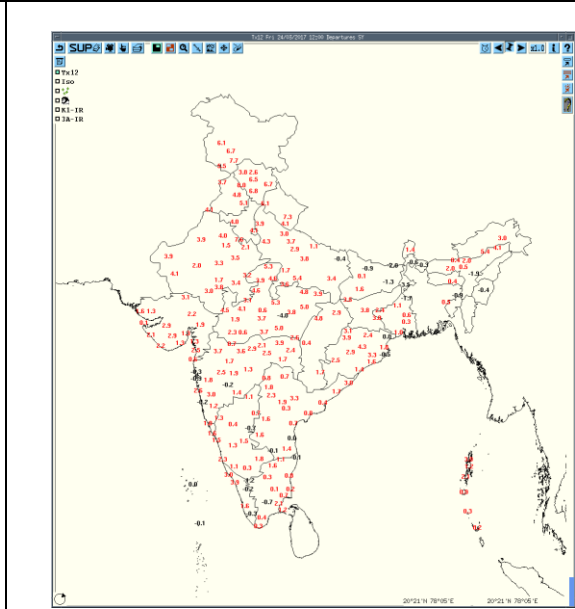
HEM Rainfall



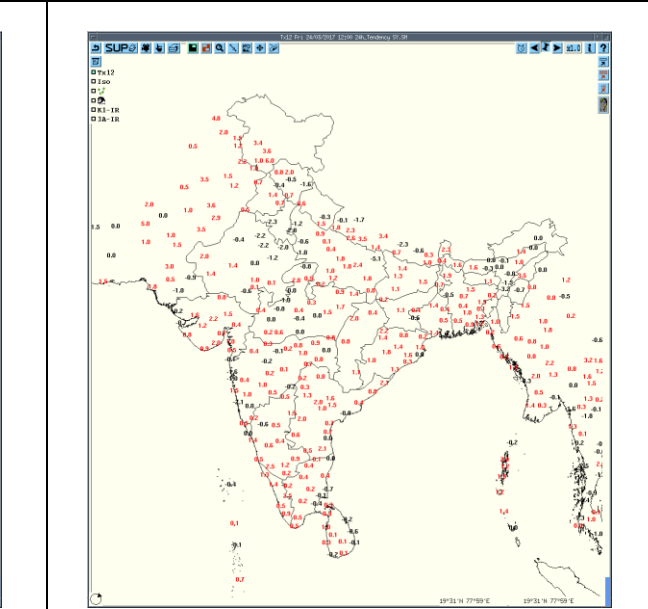
3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today



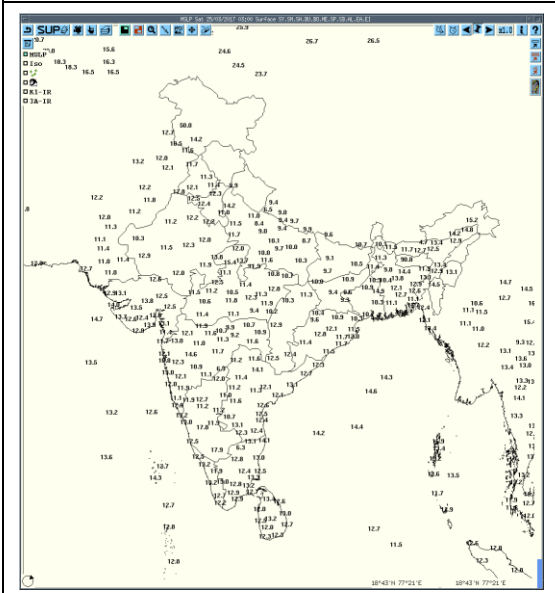
Tmax



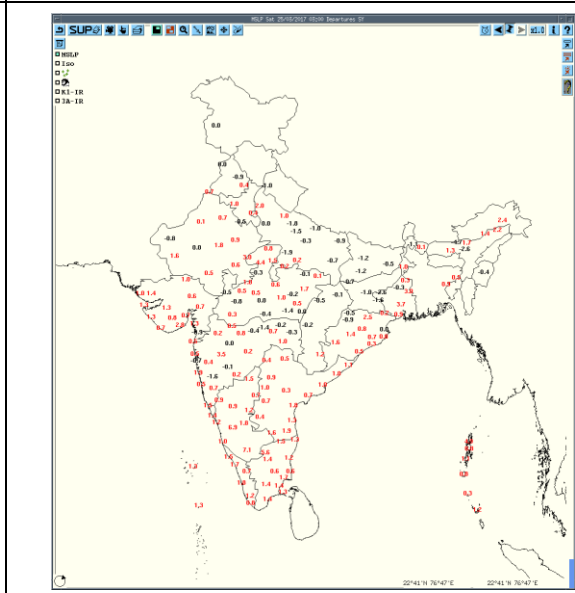
Departure Tmax



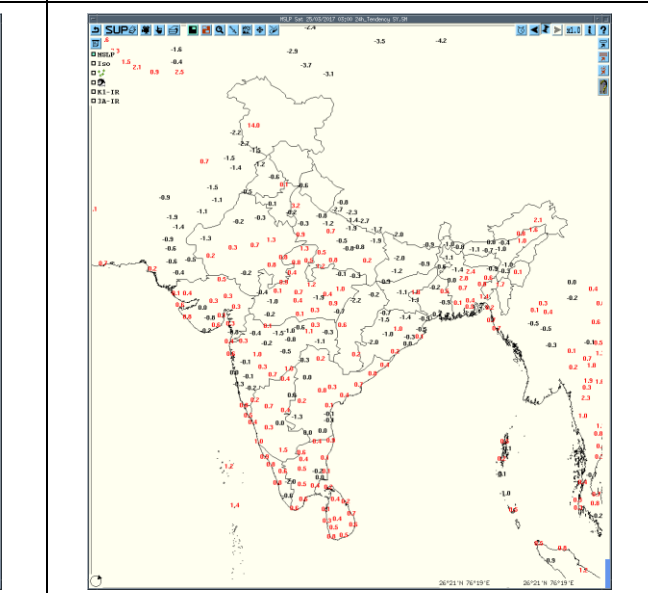
Tendency Tmax



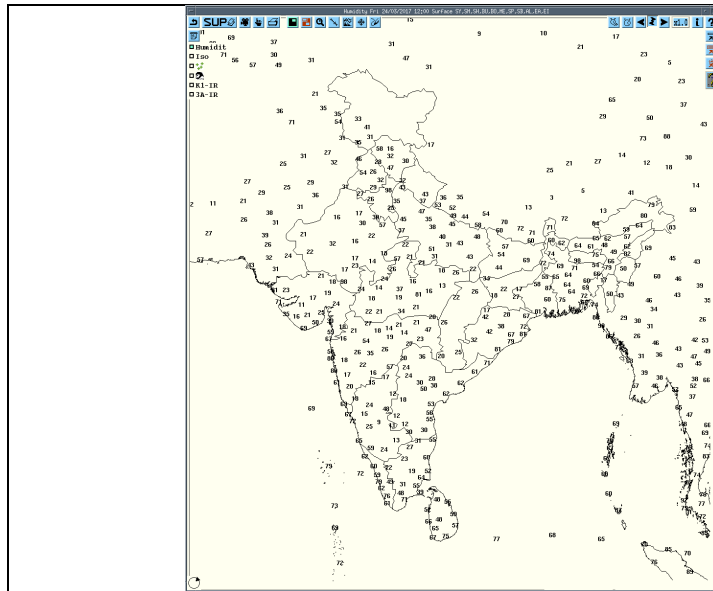
MSLP



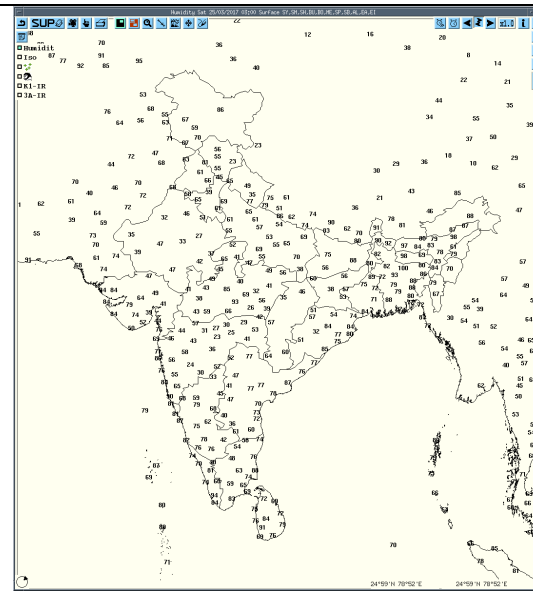
Departure MSLP



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
24-03-2017	0600UTC	Nil	Nil	Nil	Nil
24-03-2017	0900UTC	Nil	Nil	Nil	Nil
24-03-2017	1200UTC	Nil	Nil	Nil	Nil
24-03-2017	1500UTC	Nil	Nil	Nil	Nil
24-03-2017	1800UTC	Nil	Nil	Nil	Nil
24-03-2017	2100UTC	Nil	Nil	Nil	Nil
25-03-2017	0000UTC	Bhagalpur & Purnea	East India	Bihar	Thunderstorm
		Bagdogra	East India	West Bengal	Thunderstorm
		Dibrugarh	Northeast India	Assam	Thunderstorm
25-03-2017	0300UTC	Jorhat	Northeast India	Assam	Thunderstorm
		Lengpui	Northeast India	Mizoram	Thunderstorm

Name of Station Reporting	Region	STATE	Weather Event	Date	Time of Commencement (IST)	Time of end (IST)
Agartala	Northeast India	Tripura	Thunderstorm	25-03-17	0632	0720
Kailasahar	Northeast India	Tripura	Thunderstorm	25-03-17	0650	0730
Coochbehar	East India	West Bengal (SHWB)	Thunderstorm	25-03-17	0545	0640
Jalpaiguri	East India	West Bengal (SHWB)	Thunderstorm	25-03-17	0400	0545
Malda	East India	West Bengal (SHWB)	Thunderstorm	25-03-17	0535	0650
Bhagalpur	East India	Bihar	Thunderstorm	25-03-17	0410	0515
			Lightening	25-03-17	0400	0410
Purnea	East India	Bihar	Thunderstorm	25-03-17	0500	0540

Severe Weather warning based on DWR observation	
Name of issuing Radar station	DWR LUCKNOW
Geo-coordinates of issuing Station(Lat, Long,Alt)	---
Date and time of issue in UTC (yyyyMMddhhmm)	201703250600 UTC
Nature of severe weather expected	Nil
Name of issuing Radar station	DWR PATNA
Geo-coordinates of issuing Station(Lat, Long,Alt)	---
Date and time of issue in UTC (yyyyMMddhhmm)	201703250600 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:25m asl
Date and time of issue in UTC (yyyyMMddhhmm)	---
Nature of severe weather expected	DWR U/S
Name of issuing Radar station	DWR MUMBAI
Geo-coordinates of issuing Station(Lat, Long,Alt)	Lat-18°54'04", Long-72°48'32"/Height AMSL-3.22 meters.
Date and time of issue in UTC (yyyyMMddhhmm)	--
Nature of severe weather expected	---










Name of issuing Radar station	DWR AGARTALA
Geo-coordinates of issuing Station(Lat, Long,Alt)	23.89°N,91.25°E,16m above msl
Date and time of issue in UTC (yyyyMMddhhmm)	2017250710 UTC
Nature of severe weather expected	Thunderstorm with light rain
Districts/ Talukas/ Mandals/ Blocks likely to be impacted.	West Tripura, Sipahijala, Gomati, Dhalai Districts of Tripura
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)	201703251052 UTC
Nature of severe weather expected	Moderate TS with Heavy Rain
Districts/ Talukas/ Mandals/ Blocks likely to be impacted	Birbhum, Murshidabad, Barddhaman, Nadia
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)	201703250601 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	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Nagpur	25/03/17	24/0302 - 250252	Nil	Nil	No Echoes	Nil	Nil
Jaipur	25/03/17	24/0300-25/0300	Nil	Nil	Nil	Nil	Nil
Lucknow	25/03/17	240300 - 250300	NIL	NIL	NIL	NIL	NIL

Agartala	25/3/17	241810 - 242220	Multiple Cells with average height of 9 km and maximum reflectivity 46-50 dBZ	NW (130 KM) moving ESE-wards at around 35 kmph	Cell died at about 2220 UTC over Bangladesh before hitting Indian region	NIL	NIL
		241910 - 250300	Multiple Cells with average height of 10 km and maximum reflectivity 46-50 dBZ	NW (130 KM) moving SE-wards at around 40 kmph	Cell over Mizoram and Reflectivity reduced to less than 20 dBZ at 0300 UTC	Thunderstorm reported at Agartala and Kailasahar Observatories Between 0100 UTC to 0200 UTC	West Tripura , Khowai, Dhalai, Unokoti
		242100 - 250300	Squall Line structure with average height 11 km and maximum reflectivity 54-58 dBZ	NW (450 KM) moving SE-wards at around 70 kmph	Multiple Cells at 2100 UTC later developing into a Squall Line structure at 0100 UTC	NIL	Likely to affect all districts of Tripura and Mizoram and some parts of Meghalaya

∞	haze
☁	smoke
☄	dust or sand storm
☁	fog
☂	drizzle
•	rain
❄	snow
▽	showers
△	hail
⚡	thunderstorm
Weather Symbols	

		
+ thunderstorm	+ heavy thunderstorm	sandstorm or dust storm
		
squall	hail shower	tropical storm
		
+ tornado	+ lightning	+ hurricane

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