



**India Meteorological Department**  
**FDP STORM Bulletin No. 39 (13-04-2017)**

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

**SYNOPTIC FEATURES:**

The upper air cyclonic circulation over south Madhya Maharashtra & adjoining North Interior Karnataka now lies over Madhya Maharashtra & neighbourhood and extends upto 0.9 km above mean sea level. A trough runs from this system to south Tamilnadu and extends upto 0.9 km above mean sea level.

The upper air cyclonic circulation over northern parts of West Bengal and neighbourhood now lies over Jharkhand & neighbourhood and extends upto 1.5 km above mean sea level. The trough from northern parts of West Bengal & neighbourhood to south interior Odisha has become less marked.

The trough of low over southeast Bay of Bengal & adjoining Andaman sea persists and the embedded upper air circulation aloft now extends upto 5.8 km above mean sea level. It is very likely to become a low pressure area over southeast Bay of Bengal & neighbourhood during next 24 hours and likely to concentrate gradually in to a depression during subsequent 48 hours over east central Bay of Bengal & neighbourhood.

The feeble Western Disturbance as an upper air cyclonic circulation over north Pakistan & neighbourhood now lies over north Pakistan & adjoining Jammu & Kashmir and extends upto 3.1 Km above mean sea level.

**SATELLITE OBSERVATIONS during past 24hrs and current observation (based on 0300UTC imagery of INSAT 3D):**

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

Scattered low/medium clouds were seen over rest J & K, Sikkim, north Arunachal Pradesh, Kerala and south Tamilnadu.

**Arabian Sea:**

Broken low/medium clouds with embedded isolated moderate to intense convection were seen over southeast Arabian Sea.

**Bay of Bengal & Andaman Sea:**

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

**Convection:**

Light to moderate convection was observed over South Interior Karnataka and South Kerala adjoining Tamilnadu.

**OLR:-** Up to 230  $\text{wm}^{-2}$  was over J&K, North Himachal Pradesh Extreme North Uttarakhand North Arunachal Pradesh, South Kerala.

**Jet Stream:**

No Jet stream and trough observed over India.

**Dynamic Features:**

Positive shear tendency observed over India except North India.

Low wind shear observed over south and weak to moderate wind shear observed over rest India.

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

Positive Low Level Convergence observed over North Karnataka, Telangana, Odisha and West Bengal and Negative low level convergence observed over rest India.

### **Precipitation:**

**IMR:** Rainfall upto 20mm was observed over South Kerala. Rainfall upto 10mm was observed over North J&K, Extreme East Uttarakhand, Extreme North West Arunachal Pradesh, and Extreme North East North Interior Karnataka.

**HEM:.** Rainfall upto 14mm was observed over South Kerala and Central parts of Arunachal Pradesh.

### **RADAR and RAPID observation:**

Isolated convection appears to be in progress over northeast Jharkhand and Meghalaya in DWR Composite of 1233hrs IST.

RAPID RGB Imagery of 1200 hrs IST indicates convective clouds over Sikkim, Arunachal Pradesh, Meghalaya and Nicobar Islands.

### **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 north-west 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 Day0-1 & Day4 show trough in MSLP over J & K extending NW-SE.

Development of Heat Low over Rajasthan and adjoining Pakistan on Day0 extends over IG plains in subsequent days

12UTC charts on all days from Day0-4 show wind discontinuity at 925 hPa over two regions:(i) SW-NE extending from northern Karnataka-Telangana region to Odisha-WB region. (ii)S-N extending from southern parts of TN to northern parts of Karnataka-Telangana region.

CYCIR over BoB getting intensified as day progresses moving NE wards.

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

Weaker core winds at 12 UTC on all days over India except in Day3 over west UP.

#### **3. Convergence at 850 hPa:**

At 12UTC on Day-0 to Day-1: High values along the Western Ghats in Karnataka, Maharashtra and Kerala

Day 3-4 Over coast of Maharashtra

Day0-4: Parts of Odisha and WB along with adjoining Jharkhand and Chhattisgarh.

#### **4. Low level Vorticity:-Positive Vorticity (>15 x 10<sup>-5</sup>/s):**

At 12UTC : Scattered isolated values in Day-1 to Day-2. In Day-3 and 4 enhanced magnitude over some isolated regions of Bihar, Jharkhand, WB, Kerala and TN. **High Cyclonic vorticity over BoB due to developing system**

#### **5. Showalter Index: -3 to -4[Very unstable]:**

At 12UTC: Day 2: Along west coast, some parts of Bihar, WB

Day-3 and Day-4 High magnitude over UP, Bihar, Jharkhand, WB, Odisha, along west & east coast of India and southern parts of NE states.

**Additionally moderate values of index are prominent over large parts of BoB associated with system.**

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

At 12UTC: Day 0-1 Southern peninsular India Prominent

Day 3: Parts of Odisha, WB and NE states

Day-4: High magnitude over UP, Bihar, Jharkhand, WB, Odisha and peninsular India

**Additionally moderate values of index are prominent over large parts of BoB associated with system.**

**7. Spatial distribution of TTI: TTI >50 [Scattered Thunderstorms few severe]:**

At 12UTC : Day0: WB and coastal Odisha, AP, Kerala, Karnataka, some parts of J&K

Day1 High values over coast of Karnataka, Kerala and parts of Tamilnadu, coastal AP and Odisha, and some parts of J&K and Uttarakhand and Arunachal

Day-3&4: Increased values over coast of Maharashtra and Karnataka, UP, parts of Bihar, WB and NE states

**8. Rainfall and thunder storm activity:**

Day1:Light rainfall activity over Kerala and adjoining Tamilnadu

Day2: 2 cm/day Over Meghalaya

Day3 :Rainfall > 2 cm/day Meghalaya, east Arunachal and adjoining Assam

Day-3 over western part of Assam and some parts of adjoining Meghalaya and Arunachal Pradesh.

Rainfall >4cm/day in Day-3 over Assam Meghalaya and Arunachal.

**Day 3: >16 cm/day Associated with CYCIR over Andaman.**

Day4-5 Heavy rain associated with CYCIR

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

#### **1. Weather Systems:**

00 UTC analysis shows a low level CYCIR along with north-south trough over south of Marathwada and adjoining north Karnataka region and this CYCIR will persist for the next 2 days.

Analysis also shows a north-south oriented low level trough along the east coast of India starting from Gangetic West Bengal (GWB) to coastal Orissa and this trough will persist for the next 3-4 days.

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

No presence of jet core over the Indian region for the next 5 days.

#### **3. Low level Vorticity:-Positive Vorticity 850hPa (>12 x 10<sup>-1</sup>/s):**

Analysis shows low level positive vorticity (>12 x 10<sup>-5</sup>/s) mainly over the foothills of Himalaya, along the west coast of India, SHWB, GWB and isolated pockets of NE states.

Forecast shows vorticity core zones mainly along the foothills of Himalaya, west coast of India, and isolated pockets of GWB and NE states, interior parts of Karnataka and few pockets along the east coast bordering Odisha and SHWB along with few regions of the north eastern states for the next 5 days.

#### **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 threshold values are noticed over GWB, along the east of India, Odisha and few pockets in AP and along the west coast of India. Forecast shows significant threshold values over AP, GWB, and eastern coast for the next 4/5 days.

**Lifted Index (< -2):** The areas with index less than -2 lies along east coast regions, GWB, Odisha, coastal AP, and along the west coast of India and Kerala coast with gradually the LI areas with less than -2 mainly extended towards southern coastal regions.

**Sweat Index (> 400):** 00UTC shows significant values over major parts along with the east coast extending up to coastal AP and also over west coast of India and few isolated pockets in the NE states. The significant zones are confined along east coast of India over GWB, Odisha, Bangladesh and adjoining regions and high value of SI observed over GWB and NE region for next 5 days and also over few pockets in the south west region.

**Total Total Index (> 50):** Analysis shows significant values over few pockets in Gujarat, MP and adjoining areas. Above threshold value in most regions of central and western India and adjoining northern parts of India along with areas bordering north west India for the next 2-3 days.

**CAPE (> 1000):** Mostly along east coast of India over GWB, Odisha and adjoining regions along with parts in south peninsular region and coastal Kerala and Karnataka during the next 5 days.

**CINE (50-150):** Maximum CINE values are found in some areas of GWB and along east coast over Odisha, coastal AP and Tamil Nadu and also along the west coast of India for the next 2-3 days.

**5. Rainfall and thunderstorm activity:**

10-40 mm rainfall is forecasted tomorrow over isolated pockets in the NE states and also some parts of Kerala regions. Isolated light to moderate rainfall activity over pockets of NE states and Kerala will continue for the next 2-3 days.

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

#### **Summary and Conclusions:**

##### **Day 1 & Day 2:**

Presently, the trough of low over southeast Bay of Bengal & adjoining Andaman sea persists and the embedded upper air circulation aloft now extends upto 5.8 km above mean sea level. It is very likely to become a low pressure area over southeast Bay of Bengal & neighbourhood during next 24 hours and likely to concentrate gradually in to a depression during subsequent 48 hours over east central Bay of Bengal & neighbourhood. Due to this system Andaman and Nicobar Islands will experience thunderstorm with gusty winds on Day-1, which will intensify on heavy rainfall over the same area on Day-2.

The upper air cyclonic circulation over south Madhya Maharashtra & adjoining North Interior Karnataka now lies over Madhya Maharashtra & neighbourhood and extends upto 0.9 km above mean sea level. A trough runs from this system to south Tamilnadu and extends upto 0.9 km above mean sea level. Due to that, Kerala and South Coastal Karnataka will experience the thunderstorm with gusty wind activity on Day-1

##### **24 hour Advisory for IOP:**

Andaman and Nicobar Islands  
Kerala, South Coastal Karnataka  
Assam and Meghalaya

##### **48 hour Advisory for IOP:**

Andaman and Nicobar Islands  
Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura

ForNCMRWFNWPproducts:(<http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php>)

ForIMDNWPproducts:([http://nwp.imd.gov.in/diagpro\\_new.php](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](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](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](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)

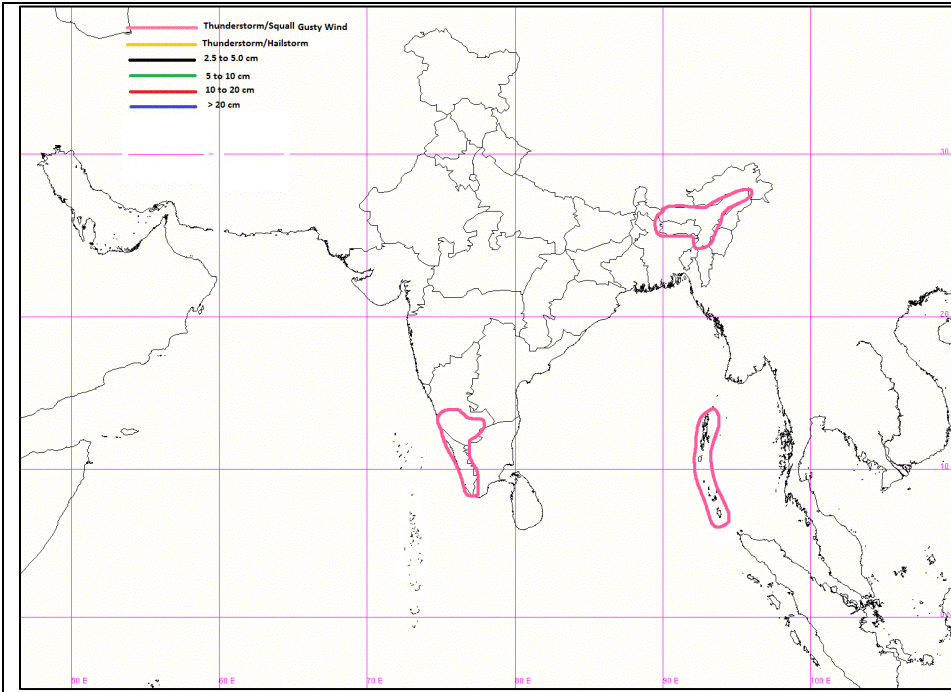
ForRadarimagesofthepast24hoursincludingmosaicofimages:

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

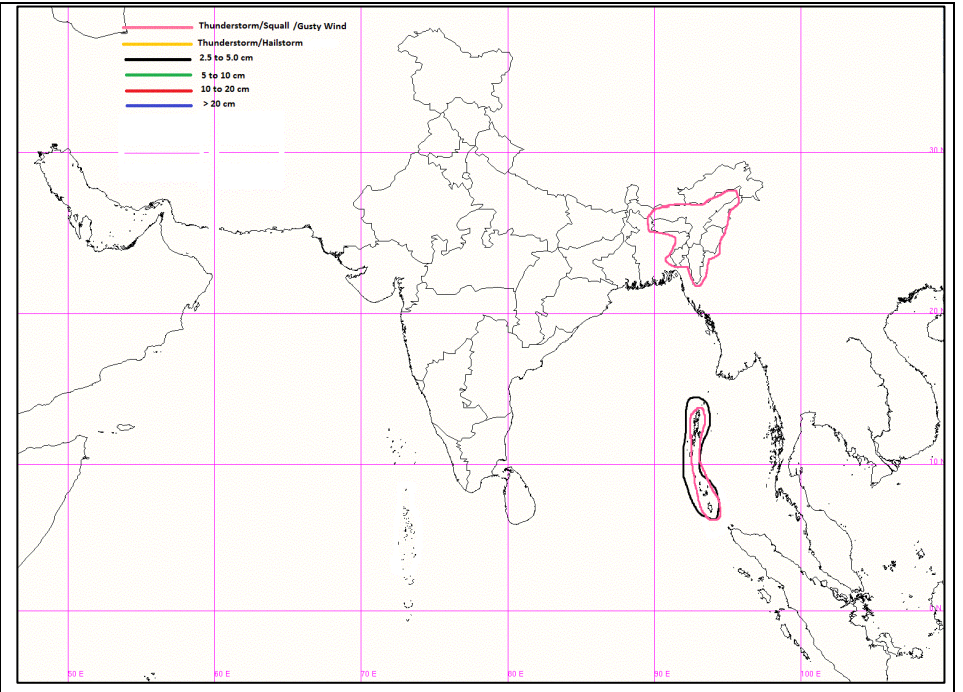
Satellite sounder based T-Phi gram

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

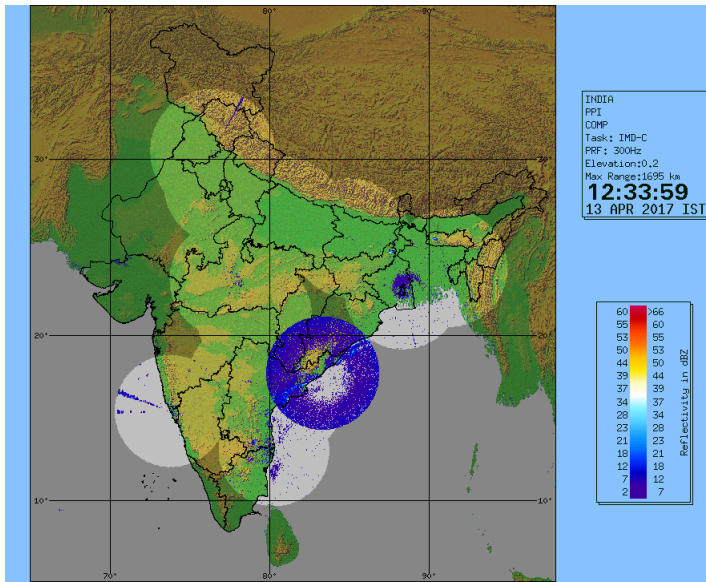




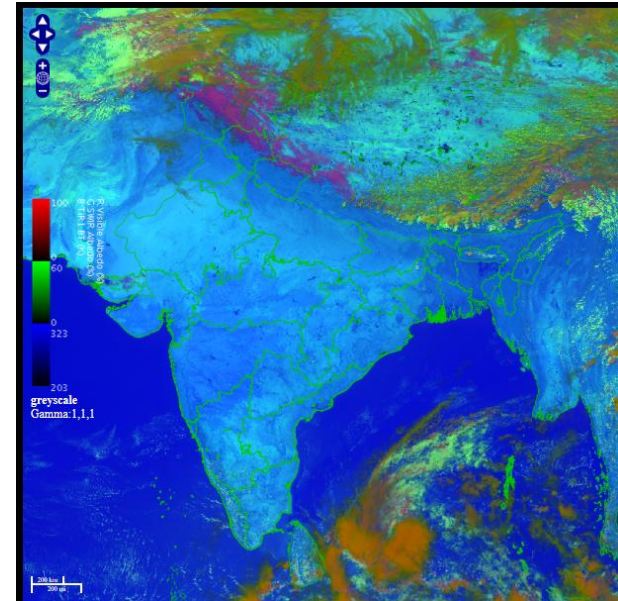
**IOP Advisory for 24 hours**



**IOP Advisory for 48 hours**

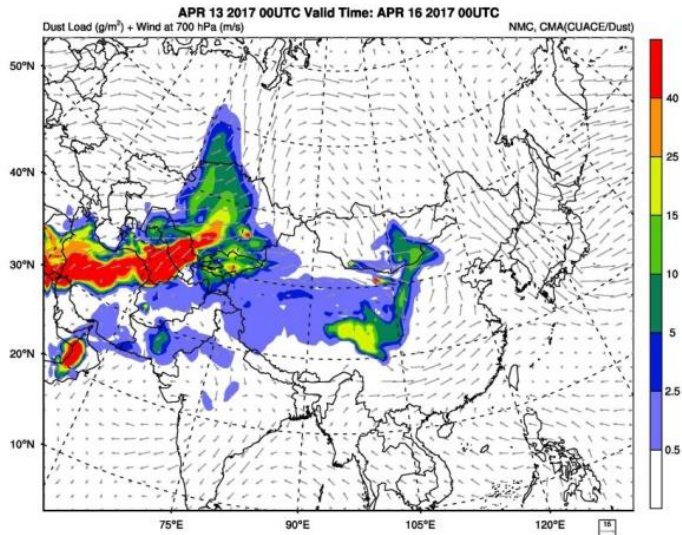


**DWR Composite at 1233 hrs IST of today**

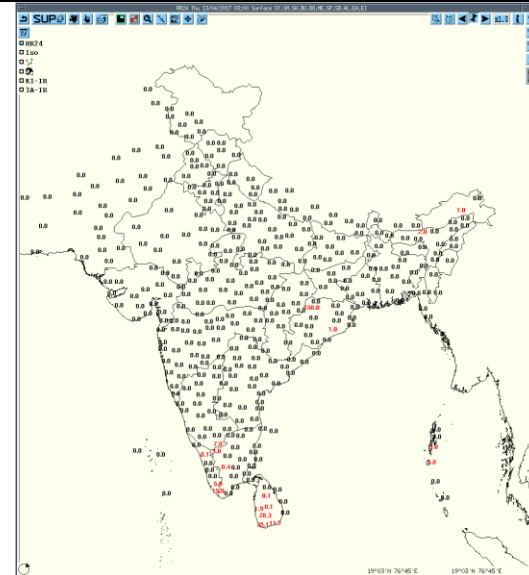


**RAPID RGB Image of INSAT 3D at 1200 hrs IST of today**

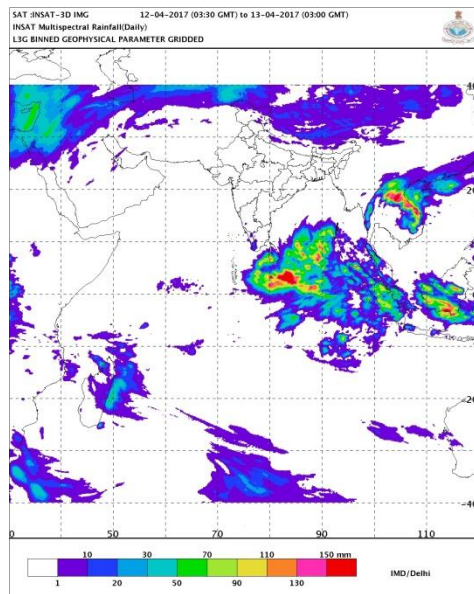




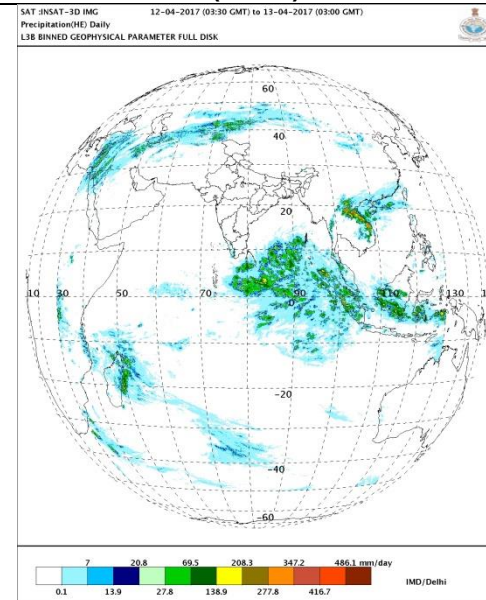
Forecast Dust Concentration for 00UTC of 16<sup>th</sup> April



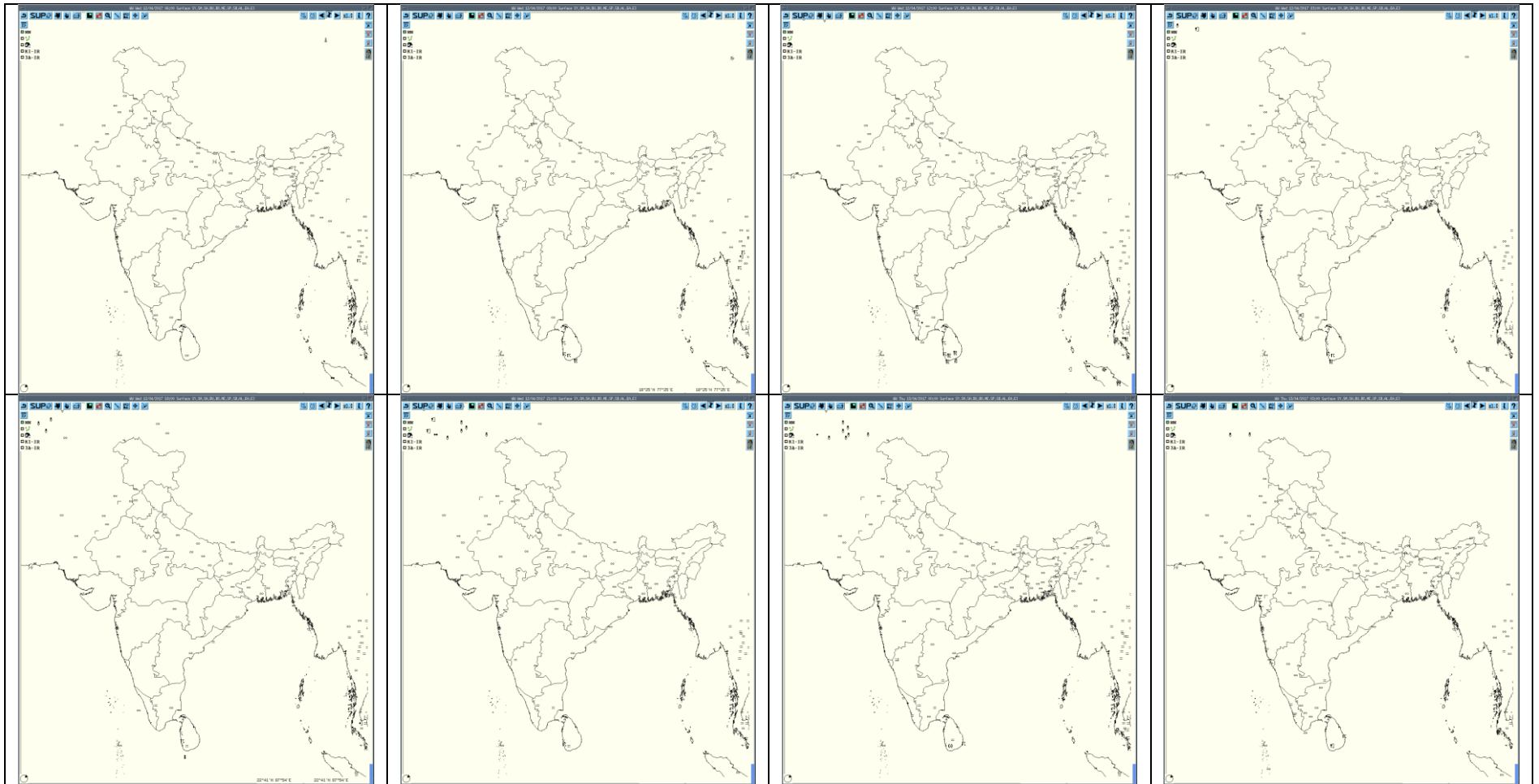
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



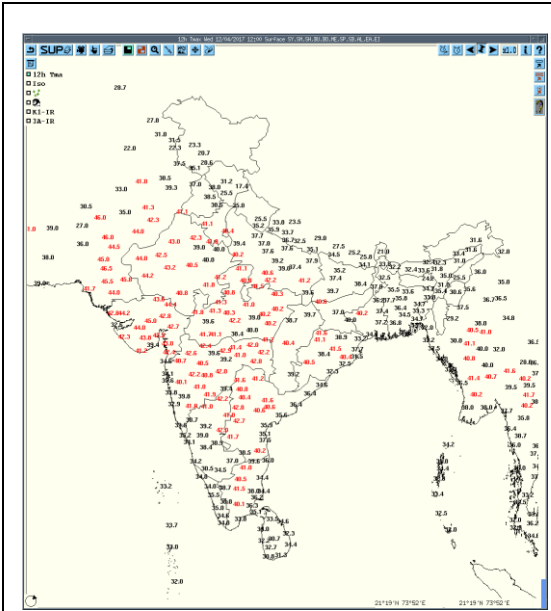
IMR Rainfall



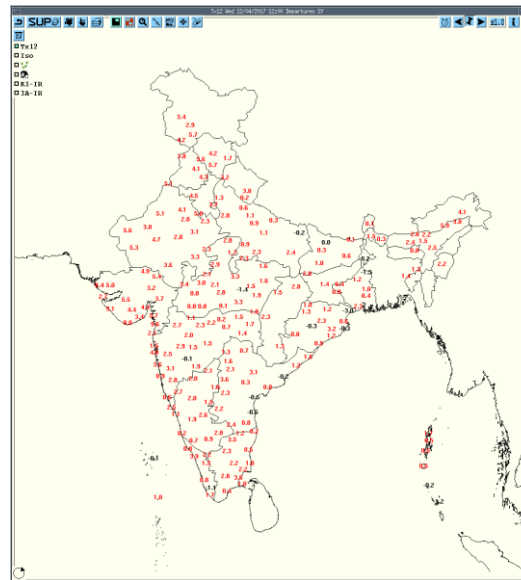
HEM Rainfall



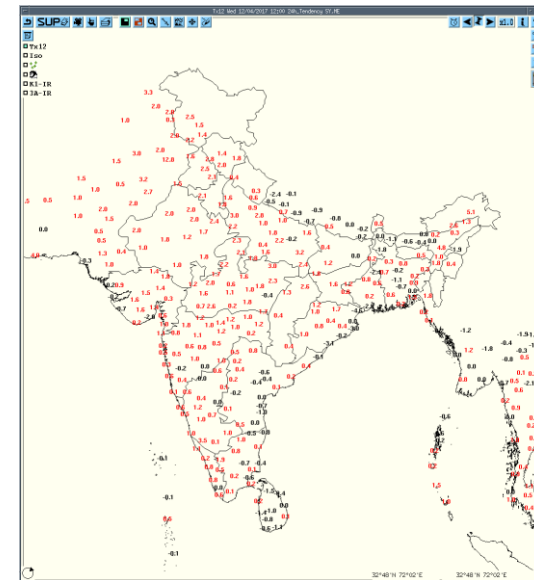
**3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today**



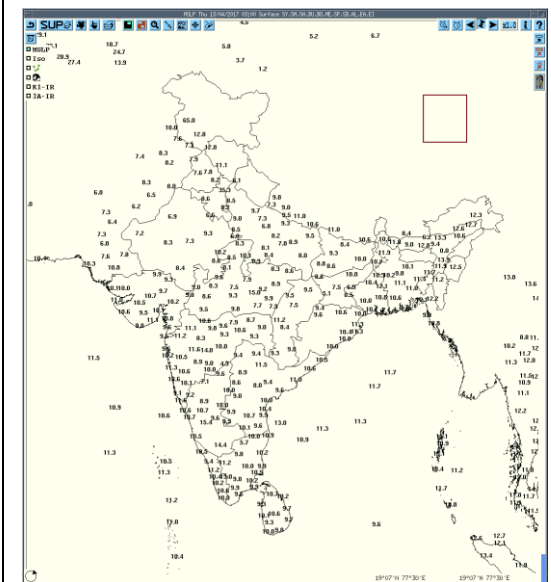
**Tmax**



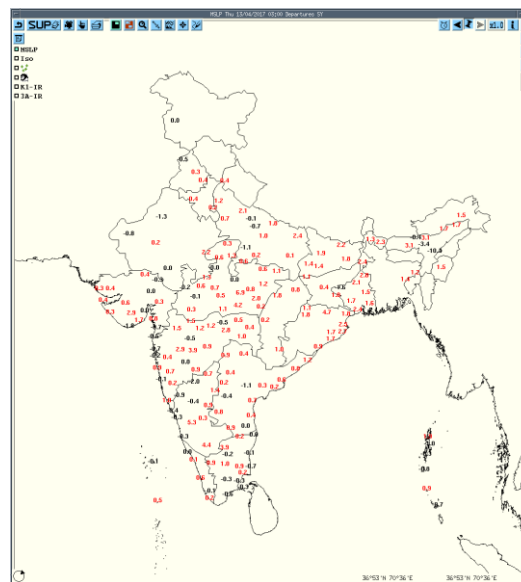
**Departure Tmax**



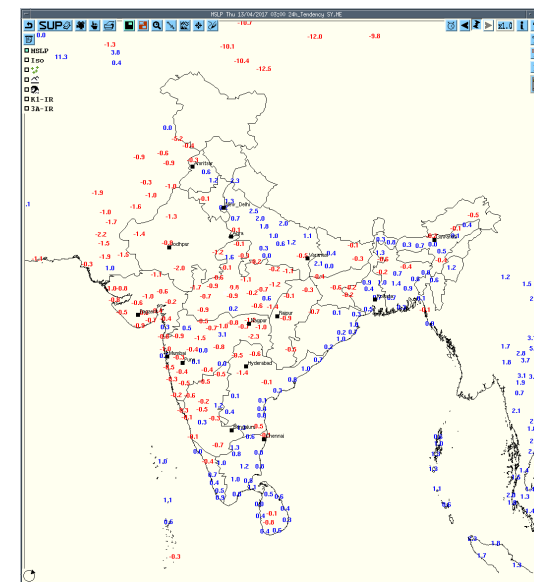
**Tendency Tmax**



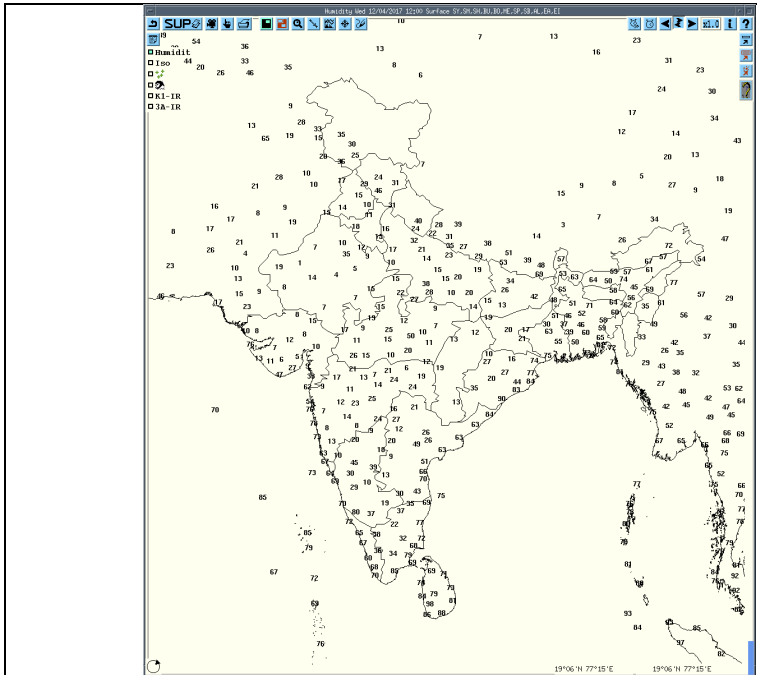
**MSLP**



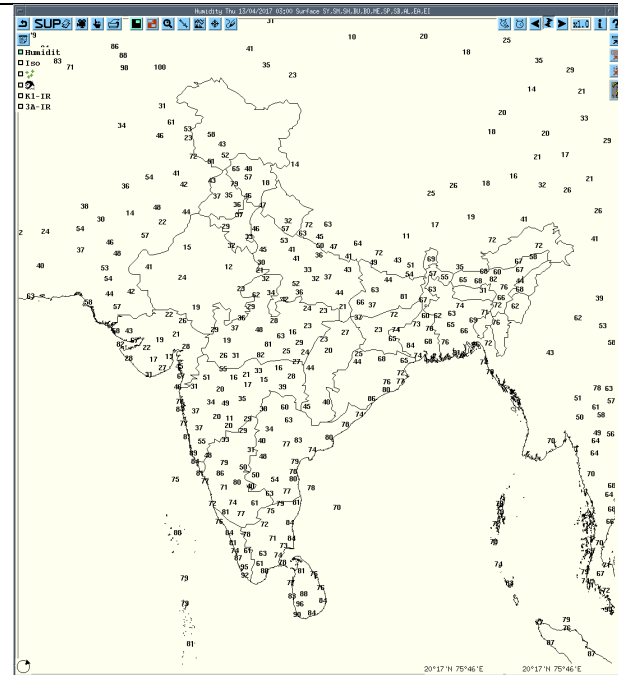
**Departure MSLP**



**Tendency MSLP**



RH at 12UTC yesterday



RH at 03UTC today

**Realized weather past 24 hours (Based on SYNERGIE Products)**

<b>Date</b>	<b>Time of Reporting</b>	<b>Name of Station Reporting</b>	<b>Region</b>	<b>STATE</b>	<b>Weather Event</b>
12-04-17	0600 UTC	Nil	Nil	Nil	Nil
12-04-17	0900 UTC	Nil	Nil	Nil	Nil
12-04-17	1200 UTC	Thiruvananthapuram AP	South India	Kerala	Thunderstorm
		Thiruvananthapuram City	South India	Kerala	Thunderstorm
		Chamarajanagar	South India	Karnataka	Thunderstorm with hail
12-04-17	1500 UTC	Coimbatore	South India	Tamilnadu	Thunderstorm
12-04-17	1800 UTC	Nil	Nil	Nil	Nil
12-04-17	2100 UTC	Nil	Nil	Nil	Nil
13-04-17	0000 UTC	Nil	Nil	Nil	Nil
13-04-17	0300 UTC	Nil	Nil	Nil	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
Machilipatnam	13-04-17	120300-130300					
Vishakhapatnam	13-04-17	120600-120900	Multiple cells in a squall line NEly at a distance of 65 kms to 200kms from the station and SWly multiple cells with average height of 2km, with an average of 40dbz maximum reflectivity	Formation towards NEly and SWly	Cells are forming and dissipating quickly	-	■
		120900-121200	Multiple cells in a squall line NEly at a distance of 65 kms to 200kms from the station and SWly multiple cells with average height of 2km, with an average of 40dbz maximum reflectivity	Formation towards NEly and SWly	Cells are forming and dissipating quickly	-	■
		121200-121500	Cells with max reflectivity 53dbz NE ly 92 kms from radar with average height 3kms.	SW	Cells are convective but not well organized to be effective less than 6kms.	-	■
		121500-121800	Multiple cells with no well organized .NE(11kms)/SW(110kms) with max reflectivity 53 DBZ with average height 4kms.	Moving SE	No abnormal activity	-	■
		121800-130000	Cell WSW with height 5kms and Max reflectivity	-	-	-	■



			38 dbz at 191 kms.				
		130000-130300	Isolated Cells with height 6kms and Max reflectivity 40 dBZ.	NW(190 KM) & NE(200 KM) moving SWly	Cells are forming and not matured well and start dissipating.	-	!
Nagpur	13-04-17	120642-120942	Single	50 km NE, movine SE'ly	< 10 dBZ	0642-0942	Single
		121342-121742	Single	18 km E, covers 18-50 km NE	< 10 dBZ	1342-1742	Single
		121912-122152	Group of small patches	25 km W, covers till 50 km range W'ly	< 10 dBZ	1912-2152	Group of small patches
		130002-130302	Nil	Nil	No Echoes	0002-0302	Nil
Patna	13-04-17	120300-130300	Nil	Nil	Nil	Nil	Nil
Srinagar	13-04-17	120300-130300	Nil	Nil	Nil	Nil	Nil
Jaipur	13-04-17	120300-130300	Nil	Nil	Nil	Nil	Nil
Patiala	13-04-17	130302-130252	Nil	Nil	Nil	Nil	Nil
Lucknow	13-04-17	120300-130300*	Nil	N/A	*121002-121218-DWR U/S		
Agartala	13-04-17	120300-130300	Nil	Nil	Nil	Nil	Nil
Paradeep	13-04-17	120300-130300	--	--	DWR closed for maintenance		
Kolkata	13-04-17	120311-130300	Nil	Nil	Nil	Nil	Nil

∞	haze
☁	smoke
☄	dust or sand storm
☁	fog
☂	drizzle
•	rain
❄	snow
☁	showers
☁	hail
☁	thunderstorm
<b>Weather Symbols</b>	

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