



**India Meteorological Department**  
**FDP STORM Bulletin No.72 (16-05-2017)**

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

The Western Disturbance as an upper air cyclonic circulation over Jammu & Kashmir and neighbourhood now lies over northeast Jammu & Kashmir and neighbourhood at 3.1 Km above mean sea level.

Another Western Disturbance as a trough in mid-tropospheric westerlies roughly along longitude 62.0°E and north of latitude 27.0°N now runs roughly along longitude 64.0°E and north of latitude 27.0°N.

The upper air cyclonic circulation over East Uttar Pradesh & neighbourhood now lies over southeast Uttar Pradesh and neighbourhood and extends upto 0.9 km above mean sea level. The trough from this system to east Arunachal Pradesh now runs upto Northwest Bay of Bengal and extends upto 0.9 km above mean sea level.

The upper air cyclonic circulation over Bangladesh & neighbourhood now lies over Meghalaya & neighbourhood and extends between 1.5 km and 5.8 km above mean sea level.

The upper air cyclonic circulation over north Andaman sea & neighbourhood now lies over Gulf of Martaban & neighbourhood and extends upto 3.6 km above mean sea level.

A trough at mean sea level runs from north Coastal Andhra Pradesh to south coastal Tamilnadu along the east coast.

**SATELLITE OBSERVATIONS during past 24hrs and current observation:**

**Current Observation (based on 0900UTC imagery of INSAT 3D):**

**Convective Activity and cloud description:**

Cell No.	Date/Time (UTC)	Area/Location	CTT (- Deg C)	Movement	Remarks
1	16/0900	SE Jharkhand and adjoining Gangetic West Bengal	85	---	Developing

**Western Disturbance**

Scattered multi-layered clouds were seen over J & K, HP, Punjab and N Haryana in association with WD over the area.

**Westerly Trough**

Trough in westerlies runs roughly along long 66.0°E north of latitude 27.0°N.

Scattered low/medium clouds with embedded intense to very intense convection were seen over SE Jharkhand adjoining Gangetic West Bengal. Scattered low/medium clouds with embedded moderate to intense convection were seen over Bay Islands. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Sikkim, Sub Himalayan West Bengal, NE stated and E Bangladesh, coastal Tamilnadu and S Kerala. Scattered low/medium clouds were seen over Haryana, NE Rajasthan, S Madhya Pradesh, Marathwada and rest parts of east and south India.

### **Arabian Sea:**

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

### **Bay of Bengal & Andaman Sea:**

Scattered low/medium clouds with embedded moderate to intense convection were seen over south Bay of Bengal, Andaman Sea, Gulf of Martaban and Tenasserim coast.

### **Past Weather:**

#### **Convection:-**

Moderate to Intense convection was observed over NW J & K, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, Odisha, West Bengal, Meghalaya, Assam, Manipur, Mizoram, Tripura, Karnataka, Kerala Tamilnadu.

#### **OLR:-**

Upto 200  $\text{wm}^{-2}$  was observed over Extreme West J&K, East Meghalaya, Sikkim, East Assam, Nagaland, Manipur, Tripura. Upto 230  $\text{wm}^{-2}$  was observed over Rest J&K, Himachal Pradesh, North Uttarakhand, West Bengal, Rest Meghalaya, Rest Assam, Arunachal Pradesh, Karnataka, South Kerala and West Tamilnadu. Upto 250  $\text{wm}^{-2}$  was observed over North Punjab, Extreme North Rajasthan, West Haryana, North East Odisha, North Kerala

#### **Westerly Trough & Jet-Stream:.**

No Westerly Trough & Jet Stream

#### **Dynamic Features**

Low to Medium wind shear is observed over India.

Positive shear tendency is observed over India.

A positive Vorticity field is observed over Saurashtra, South Chhattisgarh, North Coastal Andhra Pradesh, Uttar Pradesh Bihar West Bengal.

Negative low level convergence observed over most parts of India,

#### **Precipitation:**

##### **IMR:**

Rainfall Upto 90mm was observed over Extreme North East Odisha adjoining West Bengal. Rainfall Upto 70 mm was observed over West Bengal, North East Jharkhand, Meghalaya. Rainfall upto 50mm was observed over South Konkan, East Bihar, Mizoram, Tripura. Rainfall upto 30mm was observed over Manipur. Rainfall upto 20mm was observed over Extreme West J&K, South Tamilnadu, Assam. Rainfall upto 10mm was observed over Rest J&K, North Uttarakhand, Punjab, West Haryana, North West Rajasthan, Nagaland, Karnataka.

##### **HEM:.**

Rainfall Upto 70 mm was observed over South West J&K, North Uttarakhand, South Konkan, North East Odisha adjoining West Bengal, East Bihar, North East Jharkhand, East Arunachal Pradesh, Meghalaya, Mizoram, Sikkim, South Interior Karnataka.

Rainfall upto 14 mm was observed over adjoining Himachal Pradesh, Nagaland, Manipur, Mizoram.

Rainfall upto 07 mm was observed over Rest J&K, Punjab, Rest Karnataka, Rest West Bengal, Nagaland, Assam, Manipur.

### **RADAR and RAPID Observation:**

DWR composite at 1630hrs IST indicated significant convection over Northeast Odisha.

Latest RAPID RGB satellite imagery not available, however INSAT 3D CTBT satellite imagery at 1630hrs IST indicated convective clouds with CTT less than  $-60^{\circ}\text{C}$  over NE Odisha adjoining Jharkhand & West Bengal and Andaman & Nicobar Islands and with CTT less than  $-40^{\circ}\text{C}$  over J & K, Uttarakhand and NW Rajasthan.

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

Higher Dust concentration was observed over northern Africa and some parts of eastern Asia. Dust concentration is expected to remain high over western and northern India for next five days. High PM10 concentration was observed over north-western and northern India.

## **2. NWP MODEL GUIDANCE:**

### NCMRWF (NCUM Forecasts based on 00 UTC of the day):-

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

12UTC Charts of Day-2-4, also show evolution of heat low extending from over NW India and adjoining Pakistan south-eastwards over the IG plains. The MSLP values lower than 992hPa on Day-4. Weak trough can be seen over on all days from Day-0-4

**12UTC charts on days from Day2-4:** show a zones of wind discontinuity at 925 hPa :(i) SW-NE extending from northern Telangana-Maharashtra region to Chhattisgarh-Jharkhand region.

**Over Bay of Bengal a CYCIR** is seen at 925, 850 and 500 hPa(Day-0-2) over Andaman and Nicobar Islands which is moving towards Myanmar in Day-3&4

At 500hPa Day-2 to Day-4 strong anticyclone is evolving over central peninsula.

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

Weaker core winds at 12 UTC on all days over India..

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

Day0: Assam Meghalaya, Jharkhand, Odisha, Madhya Maharashtra, NI Karnataka,

Day1: Arunachal Pradesh, Jharkhand, East RJ, Odisha, East MP, Coastal AP, SI Karnataka,

Day2: Jharkhand, East RJ, Odisha, East MP, Rayalaseema, TN Puducherry, SI Karnataka,

Day3: Gangetic WB, Jharkhand, East RJ, Odisha, West MP, Chhattisgarh, Coastal AP, TN Puducherry,

Day4: Gangetic WB, Jharkhand, Odisha, Coastal AP.

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

Day0: Arunachal Pradesh, Assam Meghalaya, Bihar, Odisha, TN Puducherry,

Day1: Assam Meghalaya, Jharkhand, Odisha, Coastal AP, TN Puducherry,

Day2: Assam Meghalaya, TN Puducherry,

Day3: Assam Meghalaya, West UP, Uttarakhand, Himachal Pradesh, Odisha, Guj Reg, Coastal AP, TN Puducherry,

Day4: Bihar, East UP, Uttarakhand, Himachal Pradesh, TN Puducherry,

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

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, Saurashtra Kutch, Konkan Goa, Chhattisgarh, Coastal AP, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, Guj Reg, Saurashtra Kutch, Konkan Goa, Coastal AP, Rayalaseema, Coastal Karnataka, NI Karnataka, SI Karnataka.

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

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, West MP, Madhya Maharashtra, Marathawada, Vidarbha, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Marathawada, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, West MP, Madhya Maharashtra, Coastal AP, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka

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

Day0: Arunachal Pradesh, Sub Himalayan WB, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ,

Day1: Arunachal Pradesh, Sub Himalayan WB, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, TN Puducherry,

Day2: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Coastal AP, TN Puducherry,

Day3: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, Saurashtra Kutch, Chhattisgarh, Coastal AP, Rayalaseema,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, Guj Reg, Saurashtra Kutch, Chhattisgarh, Coastal AP

**8. Rainfall and thunder storm activity**

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir, Andaman Nicobar,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jammu Kashmir, Andaman Nicobar, Rayalaseema, TN Puducherry, SI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Andaman Nicobar, TN Puducherry, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Andaman Nicobar,

Day5: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Uttarakhand, Andaman Nicobar

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

**1. Weather Systems:**

00 UTC analyses shows an east-west trough over UP and Bihar along with a low level CYCIR over Bihar region. The analysis charts also indicate a NE-SW oriented trough at low level from Bihar and adjoining UP, Jharkhand, Chhattisgarh, Odisha and north Andhra. The NE-SW oriented trough starting from the CYCIR over Bihar and adjoining UP almost persists during next 4 to 5 days with slight shifting eastward after 2 days.

Another CYCIR over northeast Rajasthan and adjoining Pakistan on day 4 and day 5.

## **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 mainly over the foothills of Himalaya, along with interior Odisha, Chhattisgarh. The high vorticity belts confine over eastern coastal states over GWB, SHWB, Odisha, Chhattisgarh along with the foot hills during next 3 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 East UP, Bihar, Jharkhand, GWB, Odisha, Chhattisgarh and coastal AP. Forecast shows significantly high threshold values over west coast of India particularly over the Gujarat region along with the eastern belts during next 3 days.

**Lifted Index (< -2):** The areas with index less than -2 mainly lies over East UP, Bihar, GWB, Odisha, Chhattisgarh and coastal AP during next 3 days.

**Sweat Index (> 400):** 00UTC shows significant values over major parts along east UP, Jharkhand, GWB, Chhattisgarh, GWB, Coastal AP and also over west coast of India (particularly over the Gujarat region).

**Total Total Index (> 50):** Analysis shows significant values over few pockets MP, Chhattisgarh, Odisha, coastal AP with maximum mainly observed at 12 UTCs during next 2 to 3 days.

**CAPE (> 1000):** Mostly along east coast of India over east UP, Bihar, Jharkhand, GWB, Odisha Chhattisgarh, and adjoining AP regions along with parts in south peninsular region and Gujarat region during the next 3 days.

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

## **5. Rainfall and thunderstorm activity:**

10-40 mm rainfall is forecasted tomorrow over NE states. Rainfall over Odisha, GWB region will increase during days 3 and 4. Rainfall activity over south interior Karnataka, Tamil Nadu and Kerala will increase for the next 2-3 days and decrease thereafter.

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

### **1. Model Reflectivity (Max.dBz): (>25 dBZ )**

15-40 dBZ over parts of SHWB, GWB, Orissa and NE states during today

15-40 dBZ over isolated regions of GWB, Jharkhand, Bihar, GWB during the day 2-3

### **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 the country except extreme south east peninsula and NE states during next 72 hour.

**CAPE (> 1000):** Mostly along east coast of India, over eastern parts of India over east UP, Bihar, Jharkhand, Odisha, SHWB, GWB, coastal AP, parts of coastal Gujarat during next 3 days.

**CIN (50-150):** Higher values over most regions except over central India, NW India, J & K region and NE states particularly during morning hours of next three days..

### **3. Rainfall and thunderstorm activity:**

10-40 mm over North-eastern states for next 1-3 days, 10-130 mm over SHWB, GWB, Jharkhand and Bihar during next 1 day

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

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

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

Presently, the upper air cyclonic circulation over north Andaman Sea & neighbourhood now lies over Gulf of Martaban & neighbourhood and extends upto 3.6 km above mean sea level. This will give rise to isolated heavy rainfall over the Andaman and Nicobar Islands on Day-1.

Another upper air cyclonic circulation over Bangladesh & neighbourhood now lies over Meghalaya & neighbourhood and extends between 1.5 km and 5.8 km above mean sea level. This will give rise to isolated heavy rainfall over the Assam & Meghalaya and NMMT on Day-1.

The Western Disturbance as an upper air cyclonic circulation over Jammu & Kashmir and neighbourhood now lies over northeast Jammu & Kashmir and neighbourhood at 3.1 Km above mean sea level. This will give rise to thunder storm with hail over J & K, Himachal Pradesh and Uttarakhand on Day-1. The Northern parts of the country may experience thunder storm with gusty wind on Day-1 and Day-2.

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

Andaman and Nicobar Islands, Assam, Meghalaya, East Arunachal Pradesh  
Nagaland, Manipur, Mizoram and Tripura  
Kerala, Interior Tamilnadu, South Interior Karnataka, Rayalaseema  
Sub Himalayan West Bengal, GWB, Sikkim, Orissa, Bihar, Jharkhand  
J & K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, West and East UP

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

Assam, Meghalaya, East Arunachal Pradesh  
Nagaland, Meghalaya, Mizoram and Tripura  
Kerala, Interior Tamilnadu, South Interior Karnataka  
Sub Himalayan West Bengal, GWB, Sikkim, Orissa, Bihar, Jharkhand  
Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, West UP

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](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](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](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)

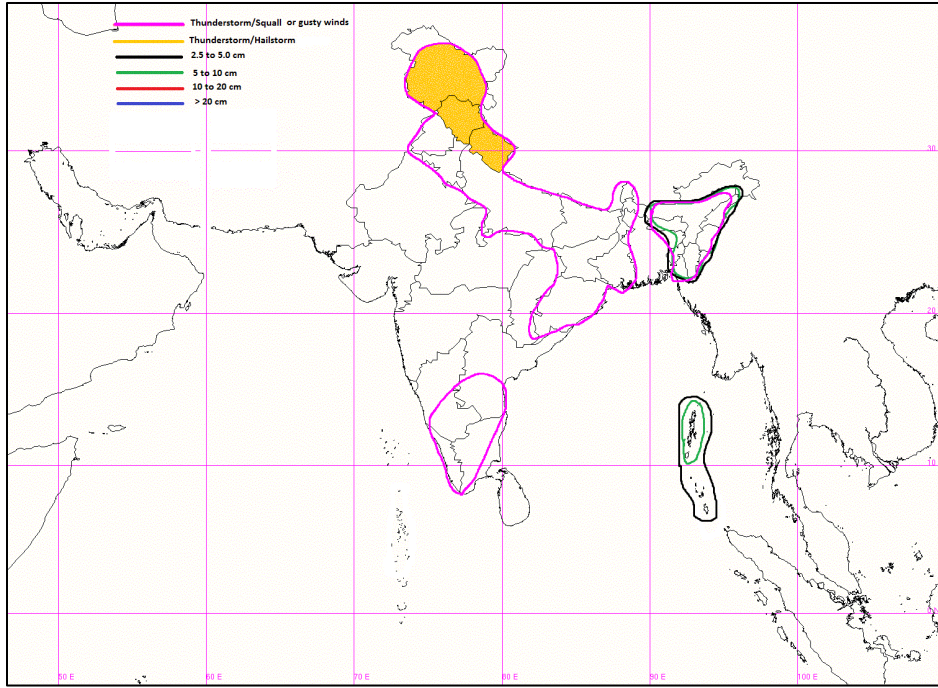
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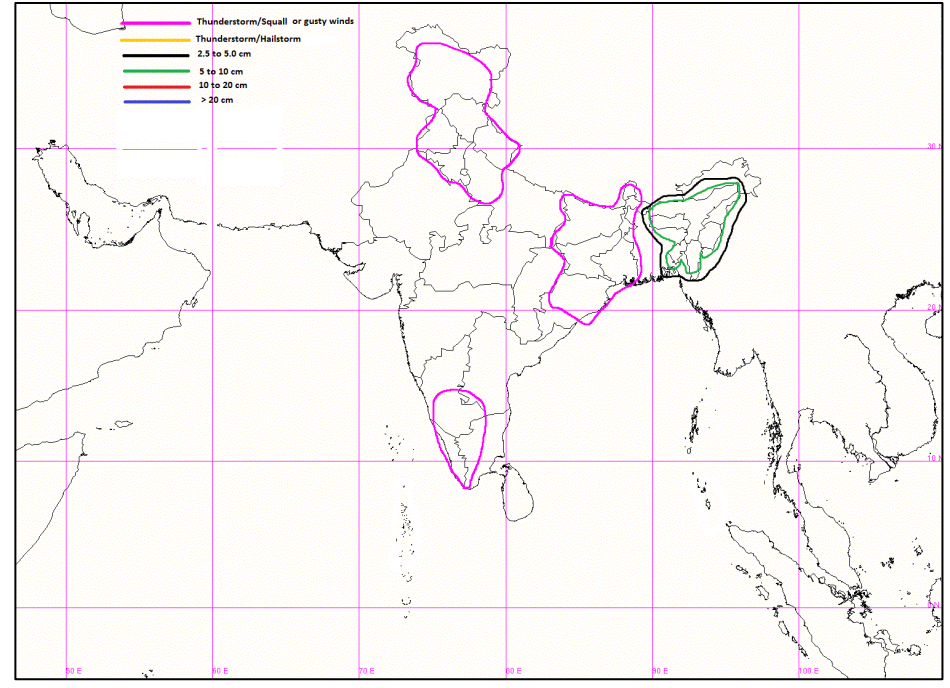
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Satellite sounder based T- Phigram

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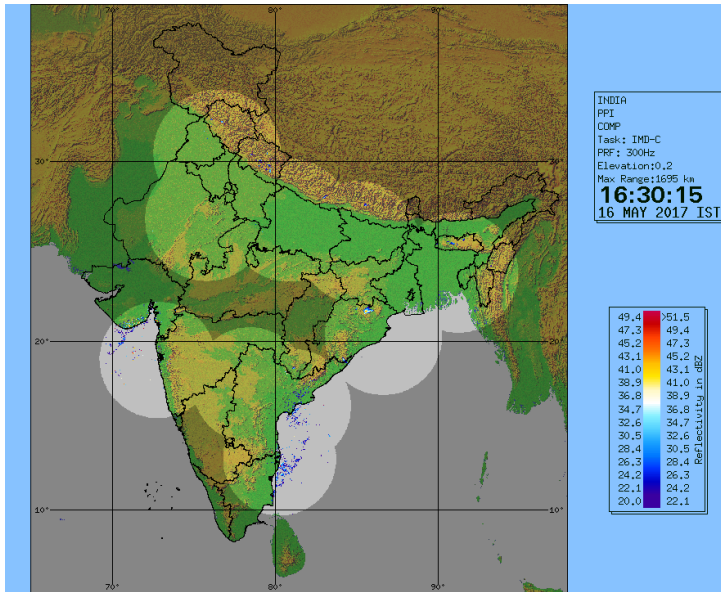


**IOP Advisory for 24 hours**

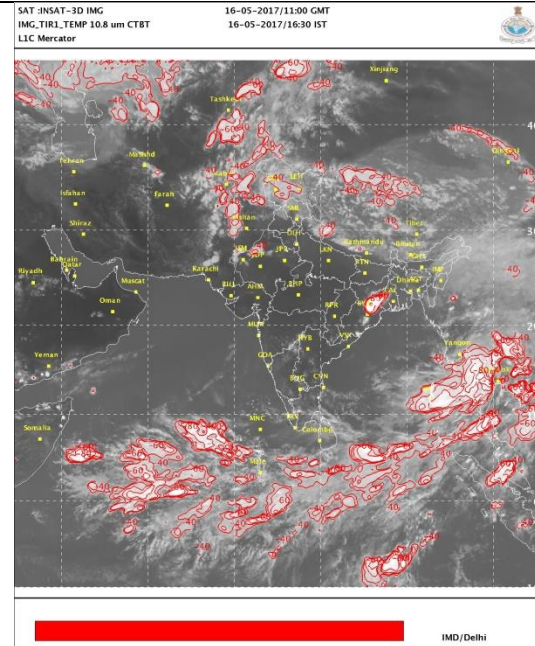


**IOP Advisory for 48 hours**

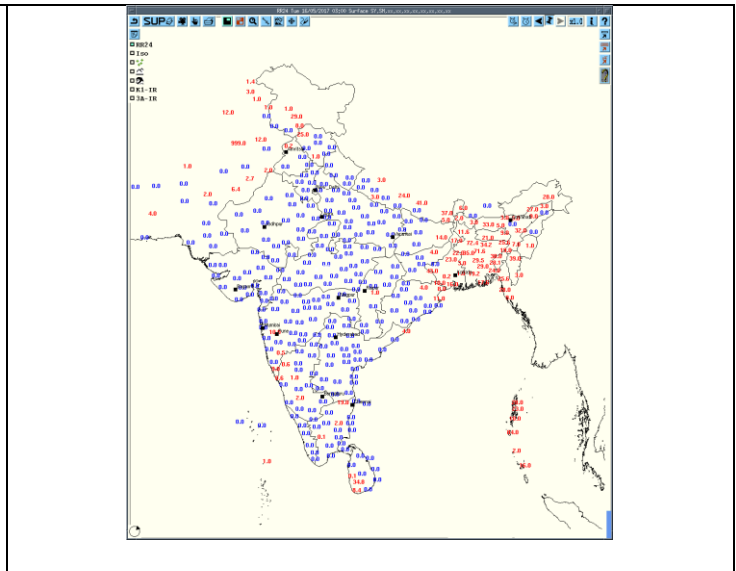
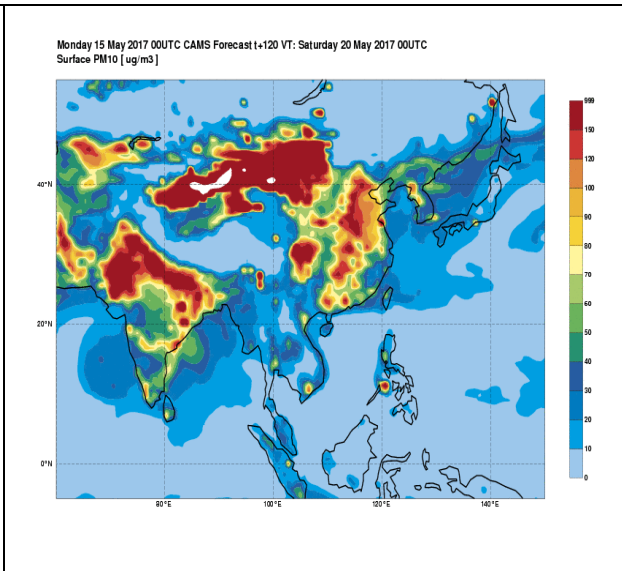
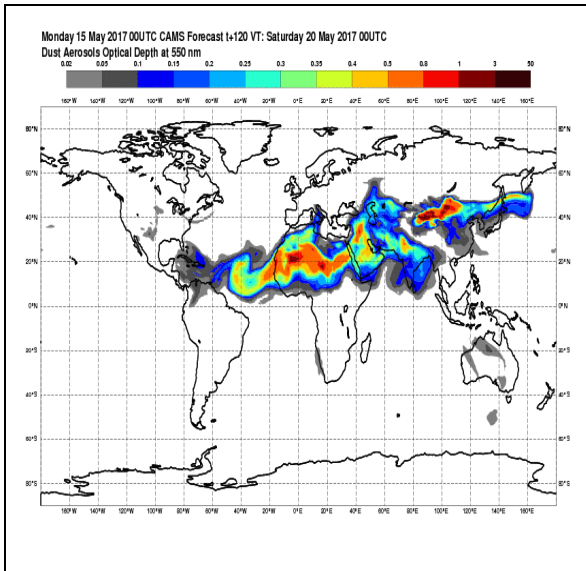




**DWR Composite at 1630 hrs IST of today**



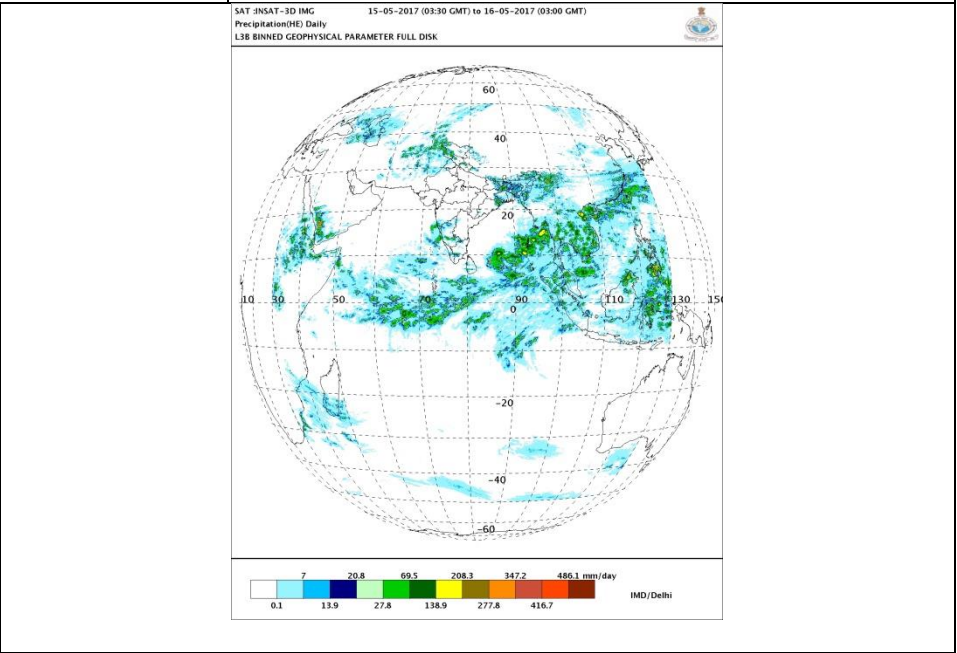
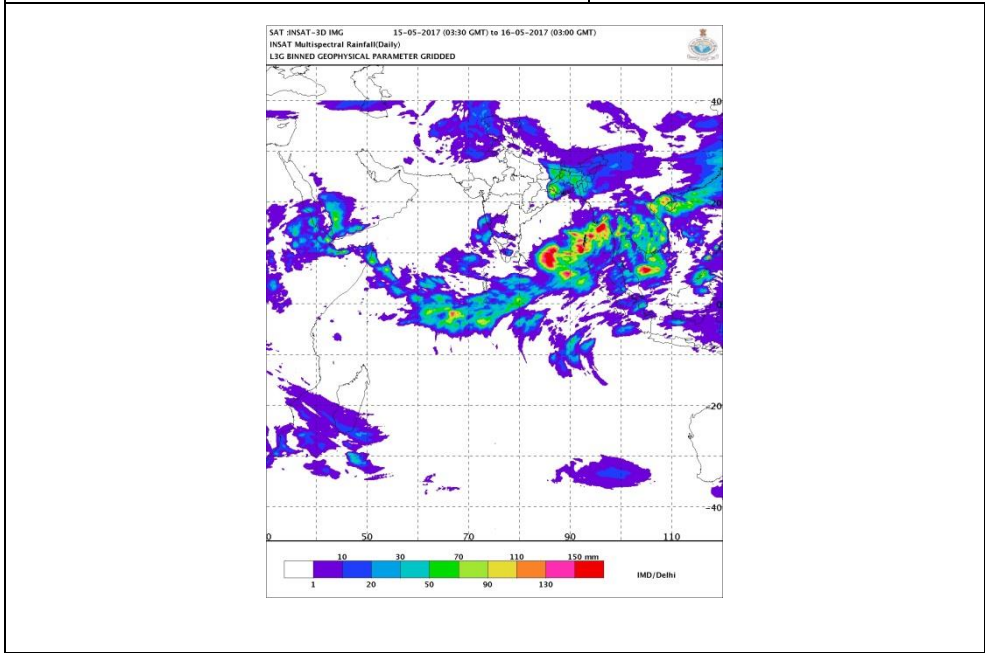
**INSAT 3D CTBT satellite Imagery at 1630 hrs IST of today**



**Forecast Dust Concentration for 00UTC of 20<sup>th</sup> May**

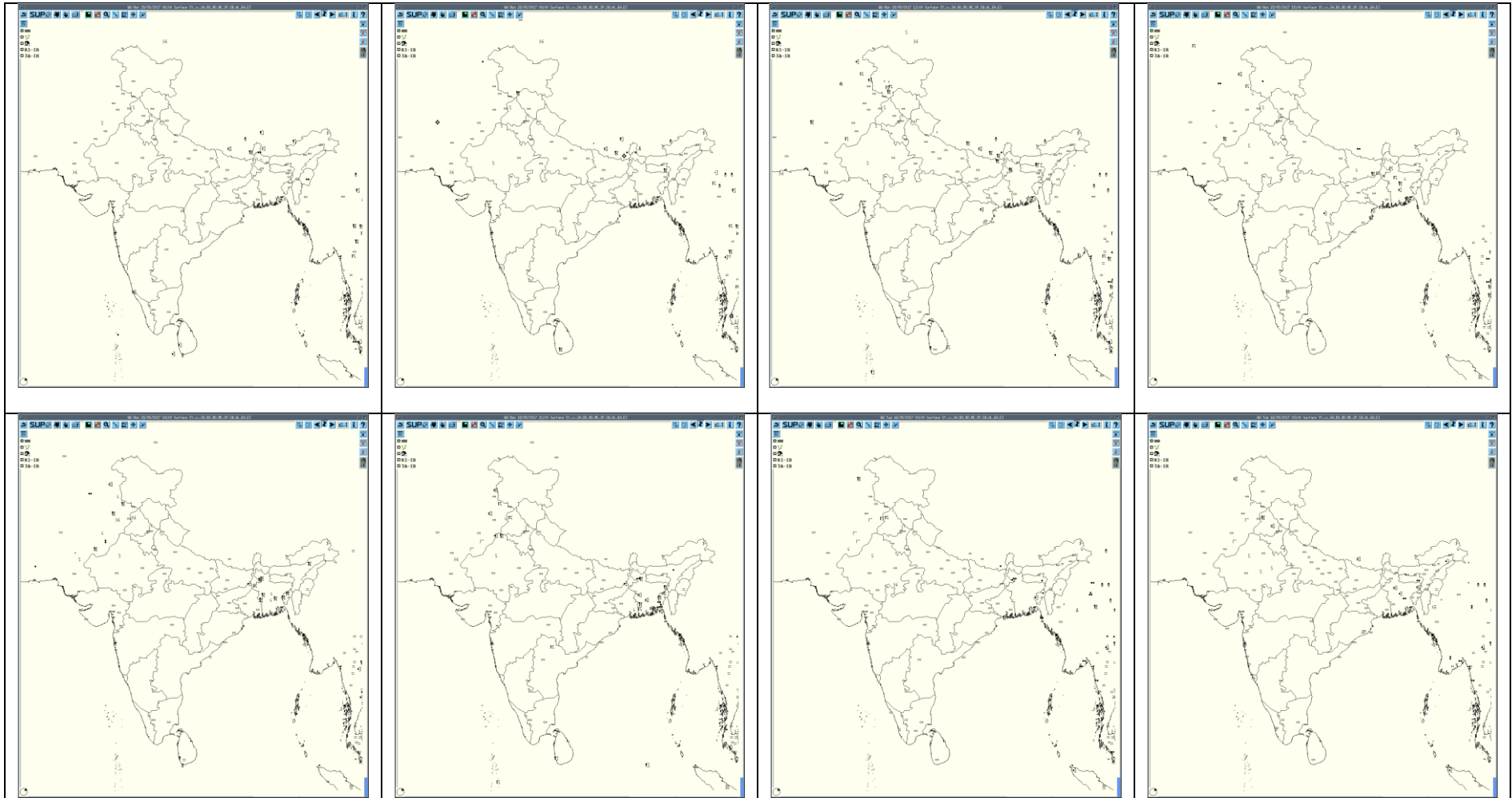
**PM10 Forecast for 00UTC of 20<sup>th</sup> May**

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

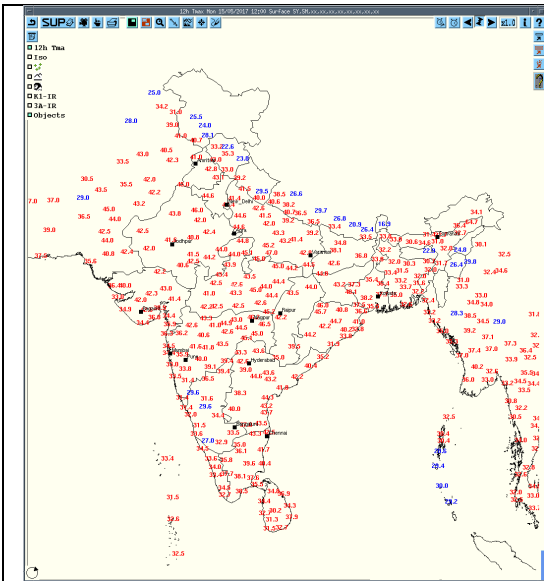


**IMR Rainfall**

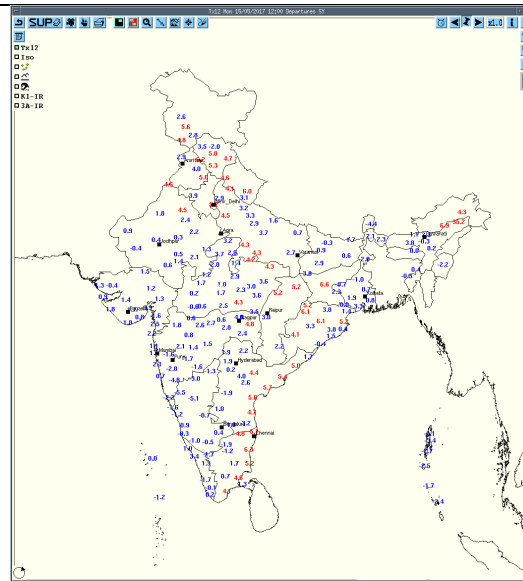
**HEM Rainfall**



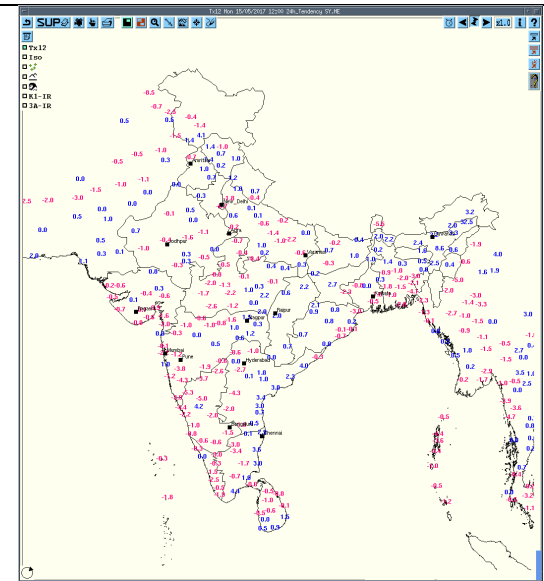
3hourly Past weather at 06,09,12,15,18,21UTC of yesterday and 00 & 03 hrs UTC of today



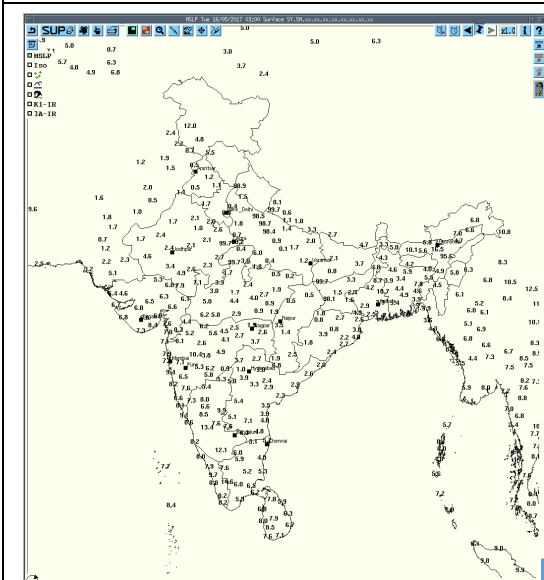
Tmax



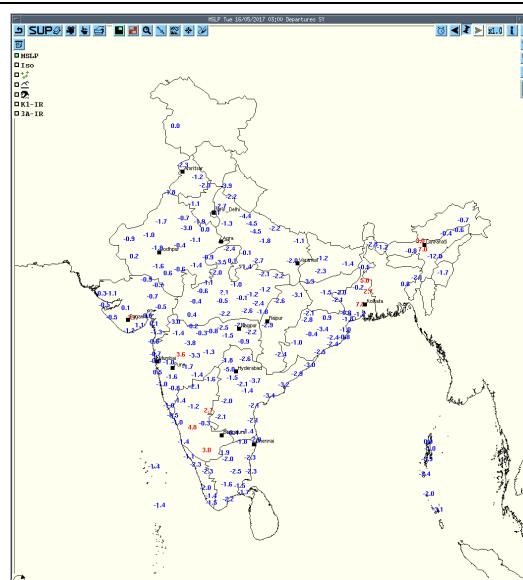
Departure Tmax



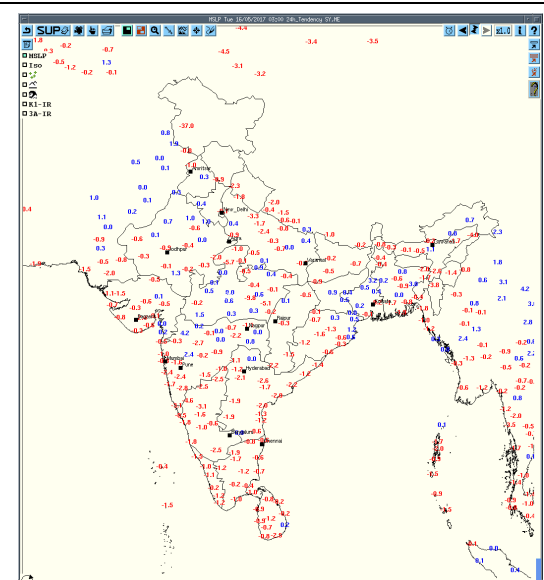
Tendency Tmax



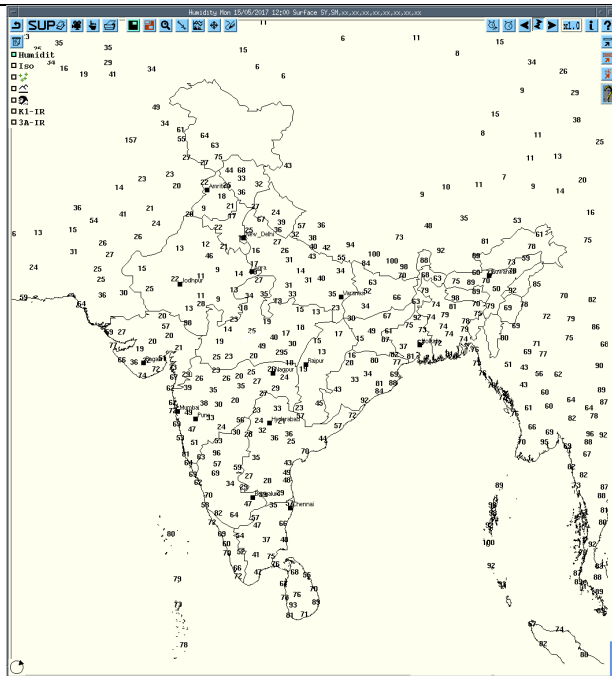
SLP



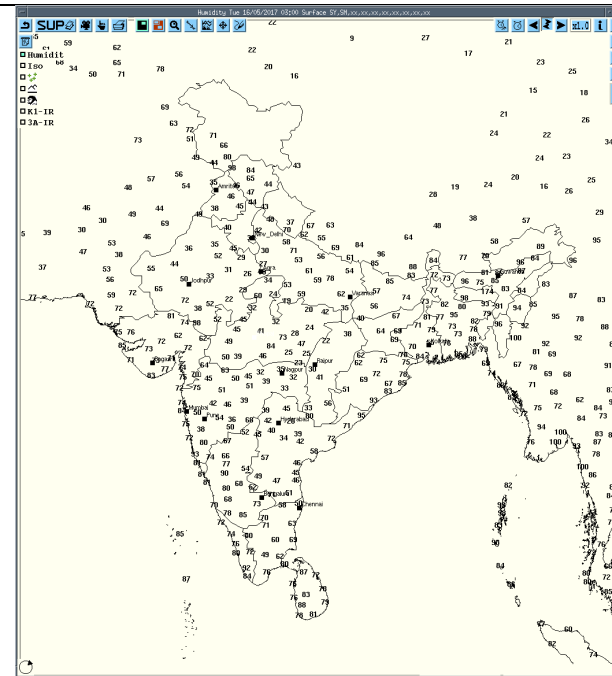
Departure MSLP



Tendency MSLP



**RH at 12UTC yesterday**



**RH at 03UTC today**

Realized weather past 24hours (Based on SYNERGIE Products)					
Date	Time of Reporting	Name of Station Reporting	Region	STATE	Weather Event
14-05-17	0600UTC	Bajpe	S India	Karnataka	Thunderstorm
15-05-17	0900UTC	Bhaderwah	NW India	J & K	Thunderstorm
		Shillong	NE India	Meghalaya	Thunderstorm
15-05-17	1200UTC	Banihal, Kukernag, Batote	NW India	J & K	Thunderstorm
		Keonjhar	E India	Odisha	Thunderstorm
		Guwahati	NE India	Assam	Thunderstorm
15-05-17	1500UTC	Bengaluru	S India	Karnataka	Thunderstorm
		Patna	E India	Bihar	Lightening
		Bhagalpur, Purnea	E India	Bihar	Thunderstorm
		Malda	E India	West Bengal	Lightening
		Digha	E India	West Bengal	Thunderstorm
		Balasore, Chandbali	E India	Odisha	Thunderstorm
		Tezpur, North Lakhimpur	NE India	Assam	Lightening
15-05-17	1800UTC	Malda	E India	West Bengal	Thunderstorm
		Chandbali	E India	Odisha	Lightening
		North Lakhimpur	NE India	Assam	Thunderstorm
		Agartala	NE India	Tripura	Thunderstorm
15-05-17	2100UTC	Amritsar	NW India	Punjab	Thunderstorm
		Ganganagar	NW India	Rajasthan	Thunderstorm
		Ramagundam	S India	Telangana	Thunderstorm
		Agartala	NE India	Tripura	Thunderstorm
16-05-17	0000UTC	Amritsar	NW India	Punjab	Thunderstorm
		Digha	E India	West Bengal	Thunderstorm
16-05-17	0300 UTC	Amritsar, Ludhiana	NW India	Punjab	Thunderstorm

**Realized TS/HS/SQ during past 24 hours ending at 0300UTC of today (received from RMCs/MCs)**

<b>Name of Station Reporting</b>	<b>Region</b>	<b>STATE</b>	<b>Weather Event (TS/Hail/Squall)</b>	<b>Date</b>	<b>Time of Comment (IST)</b>	<b>Time of end (IST)</b>
Agartala	NE India	Tripura	Thunderstorm	15/16-05-17	152228	160420
Kailasahar	NE India	Tripura	Thunderstorm	15-05-17	0830	1000
Ganganagar	NW India	Rajasthan	Thunderstorm	16-05-17	0210	0225
Qazigund	NW India	J & K	Thunderstorm	15-05-17	1740	2010
Pahalgam	NW India	J & K	Thunderstorm	15-05-17	1500	1630
Kukernag	NW India	J & K	Thunderstorm	15-05-17	1600	2030
Banihal	NW India	J & K	Thunderstorm	15-05-17	1720	1750
Bhaderwah	NW India	J & K	Thunderstorm	15-05-17	1230 1825	1445 2100
Amritsar	NW India	Punjab	Thunderstorm	16-05-17	0148	0830
Ludhiana	NW India	Punjab	Thunderstorm	16-05-14	0745	0810
Ramagundam	S India	Telangana	Thunderstorm	16-05-17	0200	0230
Kalingapatnam	S India	Andhra Pradesh (CAP)	Thunderstorm	16-05-17	0600	0700
Kailasahar	NE India	Tripura	Thunderstorm	15-05-17	0830	1000
Lengpui	NE India	Mizoram	Thunderstorm	15-05-17	0831	1020
Shillong	NE India	Meghalaya	Thunderstorm	15-05-17	1400	1505
Guwahati	NE India	Assam	Thunderstorm	15-05-17	1639	1735
Itanagar	NE India	Arunachal Pradesh	Thunderstorm	15-05-17	1740	1755
Dibrugarh	NE India	Assam	Thunderstorm	15-05-17	1830	2200
Dhubri	NE India	Assam	Thunderstorm	15-05-17	1945	2210
N/Lakhimpur	NE India	Assam	Thunderstorm	15-05-17	2100	2330
Agartala	NE India	Tripura	Thunderstorm	15/16-05-17	15/2228	16/0420
Jorhat	NE India	Assam	Thunderstorm	15/16-05-17	15/2315	16/0015
N/Lakhimpur	NE India	Assam	Thunderstorm	15/16-05-17	15/2330	15/2400
Jorhat	NE India	Assam	Thunderstorm	16-05-17	0015	0330

Tezpur	NE India	Assam	Thunderstorm	16-05-17	0105	0245
Dum Dum	E India	West Bengal	Thunderstorm	16-05-17	0020	0230
			Squall from NW direction with max. speed 64kmph	16-05-17	0025	0026
			Lightening	16-05-17	0020	0230
Jamshedpur	E India	Jharkhand	Thunderstorm	15-05-17	1500	1600
Asansol	E India	Jharkhand	Thunderstorm	15-05-17	1620	1710
Keonjhar	E India	Odisha	Thunderstorm	15-05-17	1640	1715
Balasore	E India	Odisha	Thunderstorm	15-05-17	1735	1945
Digha	E India	West Bengal	Thunderstorm	15/16-05-17	151745 160445	152030 160610
			Lightening	15-05-17	1742	2032
			Lightening	16-05-17	0450	0605
Chandbali	E India	Odisha	Thunderstorm	15-05-17	1800	2010
					2100	2140
Haldia	E India	West Bengal	Thunderstorm	15-05-17	1810	1905
Purnia	E India	Bihar	Thunderstorm	15-05-17	1915 2000	1945 2045
			Lightening	15-05-17	1915	1945
			Lightening	15-05-17	2000	2045
Bhagalpur	E India	Bihar	Thunderstorm	15-05-17	2015	2100
			Lightening	15-05-17	2015	2100
Malda	E India	West Bengal	Thunderstorm	15-05-17	2035	2400
			Squall from NW direction with max. speed 55kmph	15-05-17	2054	2055
			Lightening	15-05-17	1930	0100
Alipore	E India	West Bengal	Squall from NE direction with max. speed 57kmph	16-05-17	0030	0031
			Lightening	16-05-17	0025	0135
Paradeep	E India	Odisha	Lightening	15-05-17	1900	1930
Minicoy	S India	Lakshadweep & Minicoy Islands	Thunderstorm	15-05-17	0830	0900



Mangalore AP Bajpe	S India	Karnataka(CK)	Thunderstorm	15-05-17	0830 0955	0925 1105
Bengaluru(HAL)	S India	Karnataka(SIK)	Thunderstorm	15-05-17	2030	2220
Bengaluru City	S India	Karnataka(SIK)	Thunderstorm	15-05-17	1900	2130
Yelahanka IAF	S India	Karnataka(SIK)	Thunderstorm	15-05-17	1900	2230
Kial Bengaluru	S India	Karnataka(SIK)	Thunderstorm	15-05-17	1914	2120

### Past 24 hours DWR Report:

Radars Station name	Date of Reporting	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
Jaipur	16-05-17	151222-151232	Single cell with average height of 5.0 km maximum reflectivity 31.0 dBZ	Cell develop 1222 to 1232 UTC towards north west of Jaipur .No movement was seen.	Cell continuous forming from 1222 UTC NW of Jaipur and maximum reflectivity during 1232 and died down at 1232 UTC.	--	Churu, Bikaner
Patiala	16-05-17	150302-150902	NO ECHO	-----	-----	-----	-----
		150902-151202	Multiple cells Max= 57.0 dBz Ht.=10-14km	Formation in NE and NW sectors, movement NE wards	-----	-----	ZIRA, NAKODAR, ADAMPUR, JALABDHAR, LUDHIANA, TARNTARAN
		151202-151502	Multiple cells Max= 54.5 dBz Ht.=8-12 km	Formation in NE, SW sectors . movement NE-WARDS. .	-----		PATRAN, MOGA, PALAMPUR, MUSSORIE

		151502-151802	Multiple cells Max= 37.0 dBz Ht.=8-9 km	Formation in SW sector,movement E wards	-----		ELANABAD,FATH EBAD,SIRSA
		151802-152102	Multiple cells Max= 46.5 dBz Ht.=9-11 km	Formation in SW,NW sectors ,movement NEwards	-----	-----	TARNTARAN,AMRITSAR,PATTI,MAN SA,DHURI
		152102-160002	Multiple cells Max= 41.0 dBz Ht.=9-10km	Formation in SW,NW sectors ,movement NEwards	-----	-----	DHURI,AMRITSAR ,SANGRUR
		160002-160252	Multiple cells Max= 42.5 dBz Ht.=8-10km	Formation in SW,NW sectors ,movement NE wards	-----	-----	BATHINDA,BARN ALA,HALWARA
Nagpur	16-05-17	151122-151522	Multiple	Distributed in NW ranging from 0 to 150 & in N ranging from 0-100 km, Moving SE'ly	36 dBZ & ht of cloud 2.3-6.5 km & for rest ht. varies from 2 to 7 km in NW... 39 dBZ & ht. of cloud=2-5.8 & for rest 1-7 km in N.. At 1212 in N dir. Max Z=42 & ht. of cloud =1.2-3.6 & for rest 1.2 to 6.5 km.. In NW dir. Max Z=39 & ht. of cloud =2-7 km & for rest 1.8 to 7km		
		151822-151952	Single	220 km S	23 dBZ & ht of cloud=5-7km		
		151952--160212	Multiple	170 km in ESE, moving SE'ly & covering SE region	32 dBZ & ht. of cloud=3-5 km		
		160002-160302	nil				
Machilipatnam	16-05-17	151221-151331	Isolated Multiple cells average height of 8.75 km with maximum reflectivity of 56.0dBZ	WSW(114KM) and moving SW ly direction with average speed of 10 kmph	Cell started forming at 1221UTC, at WSW (122km) from Radar the maximum reflectivity during 1241 to 1311 UTC and died down at 1331UTC	Possibility of Thunder storm with rain and light winds.	Ongole District

Paradeep	16-05-17	150900-151700	Isolated cells formed with reflectivity values ranging between 38-46 dBZ and av. Heights of 8kms. Cells later transform into convective regions with reflectivity values reaching upto 50 dBZ.	Position: Lat:22 degree Lon:86 degree	NIL	TS with rain	Keonjhar Baripada, Bhadrak, Jajpur, and Deogarh
Agartala	16-05-17	150300 - 150720	Multi cell with Maximum Height 14km and maximum reflectivity 41 dBZ (at 0330 UTC over South Tripura)	Formed 210km NW of DWR AGT at 1430 UTC of 14.05.17 and moved ESE wards at around 40 kmph	Cells Dissipated at 0720 UTC over Mizoram & Bangladesh	TS with rain	Mamit District of Mizoram Sipahijala, South, Gomati districts of Tripura
		150510 - 151700	Multi cell with Maximum Height 13km and maximum reflectivity 48 dBZ (at 1020 UTC over Central Assam)	Cells continuously formed one after another 200 km NNW of DWR AGT at 0510 and moved NE-wards at around 20 kmph	Cells Dissipated at 1700 UTC over East Meghalaya & Central Assam	N/A	N/A
		150930 - 152220	Squall line with Maximum Height 14km and maximum reflectivity 47 dBZ (at 1650 UTC over Bangladesh-40km west of DWR AGT)	Formed 450km NW of DWR AGT at 0930 UTC and moved ESE-wards at around 60 kmph	Cells Dissipated at 2220 UTC over Mizoram & Manipur	TS with light/moderate rain	All districts of Tripura
		151240 - 160100	Squall line with Maximum Height 15km and maximum reflectivity 49 dBZ (at 1840 UTC over Bangladesh-120km WSW of DWR AGT)	Formed 500km NW of DWR AGT at 1240 UTC and moved SE-wards at around 70 kmph	Cells Dissipated at 0100 UTC over Mizoram & South Bangladesh	TS with light/moderate rain	All districts of Tripura
		152230 - 160300	Multi cell with Maximum Height 10 km and maximum reflectivity 45 dBZ (at 0050 UTC over Bangladesh-180km WNW of DWR AGT)	Formed 450 km WNW of DWR AGT at 2230 UTC and moved SE-wards at around 80 kmph	Cells Dissipated at 0300 UTC over Sipahijala district of Tripura	N/A	N/A










		150300 - 150720	Multi cell with Maximum Height 14km and maximum reflectivity 41 dBZ (at 0330 UTC over South Tripura)	Formed 210km NW of DWR AGT at 1430 UTC of 14.05.17 and moved ESE wards at around 40 kmph	Cells Dissipated at 0720 UTC over Mizoram & Bangladesh	TS with rain	Mamit District of Mizoram Sipahijala, South, Gomati districts of Tripura
Kolkata	16-05-17	150301- 150751	NIL	NIL	NO SIG ECHO	NIL	Nil
		150801- 150941	1) A cells with maximum reflectivity of 64.0 dBz at 0921 UTC and maximum height of 20.06Km at 0921 UTC	WNW (244.7 km) Moving in SE-ly direction with speed of 36 kmph.	A cells formed at 0801 UTC in WNW at a distance of 244.7 km from radar. Matured, Merged with cell No. 2 at 0942 UTC in SW at a distance of 218.4 km from Radar	Thunderstorm Hail/ Rain	NA
			2) A cells with maximum reflectivity of 59.5 dBz at 0901 UTC and maximum height of 14.22Km at 0901 UTC	WNW (243.4 km) Moving in SE-ly direction with speed of 18 kmph.	A cells formed at 0801 UTC in WNW at a distance of 243.4 km from radar. Matured, Merged with cell No. 1 at 0942 UTC in SW at a distance of 218.4 km from Radar	Thunderstorm Hail/ Rain	NA
		150821 - 151331	3) A cells with maximum reflectivity of 66.0 dBz at 0911 UTC and maximum height of 19.19Km at 0911 UTC	NW (250 km) Moving in SE-ly direction with speed of 52 kmph.	A cells formed at 0821 UTC in NW at a distance of 250 km from radar. Matured, Merged with cell No. 1 & 2 at 1031 UTC in SW at a distance of 195.5 km from Radar and	Thunderstorm Hail/ Rain	NA

				dissipated at 1331 UTC			
		151021 - 151141	3) cells with maximum reflectivity of 63.50 dBz at 1051 UTC and maximum height of 13.26 Km at 1051 UTC	NW (248 km) Moving in SE-ly direction with speed of 68 kmph.	A cell formed at 1021 UTC in NW at a distance of 248 km from radar. Matured, dissipated at 1141 UTC in NW at a distance of 167.1 km from Radar	Thunderstorm Hail/ Rain	NA
		151350 - 152101	3) Isolated cells with position 25.669 deg N / 86.564 deg E, 332.8 deg / 389.4 km with maximum reflectivity of 58.50 dBz at 1622 UTC and maximum height of 17.37 Km at 1622 UTC	NNW (389 km) Moving in SE-ly direction	A cell formed at 1350 UTC in NNW at a distance of 389 km from radar. Matured to Multiple cells and dissipated at 2101 UTC	Thunderstorm Hail/ Rain	NA
		152221 - 160211	3) Isolated cell with position 22.160 deg N / 86.577 deg E, 25.1 deg / 187.5 km with maximum reflectivity of 55.50 dBz at 2321 UTC and maximum height of 11.65 Km at 2321 UTC	SW (187 km) Moving in SE-ly direction	A cell formed at 2221 UTC in SW at a distance of 187 km from radar. Matured to Multiple cells and dissipated at 0211 UTC DATED 16.05.2017	Thunderstorm Hail/ Rain	NA
		160221-160300	NIL	NIL	NO SIG ECHO	NIL	NIL
Patna	16-05-17	150300 - 150710	NIL	NIL	NIL	NIL	NIL
		150710 - 150830	Single Cell. Maximum Reflectivity : 49.5 dBZ Echo Top : 11.6 KM	Range: 135 km North from DWR Patna Movement-South-Easterly	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	NIL	SHEOHAR, SITAMARHI

		150830 - 151030	NIL	NIL	NIL	NIL	NIL
		151030 - 151630	Multiple Cells. Maximum Reflectivity : 47 dBZ Echo Top : 14 KM,  Multiple Cells. Maximum Reflectivity : 56 dBZ Echo Top : 14 KM	Range: 225 km NW from DWR Patna Movement-South- Easterly,  Range: 145 km NE from DWR Patna Movement-South- Easterly  Note: Both cells merged.	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	Thunderstorm with Rain	WEST CHAMPARAN, EAST CHAMPARAN, GOPALGANJ, SHEOHAR, SITAMARHI, MADHEPURA, PURNIA, SAHARSA, BEGUSARAI, MADHUBANI, DHARBHANGA, MUZAFFARPUR,S AMASTIPUR, SUPAUL, KHAGARIA, LAKHISARAI, MUNGER, BHGALPUR, JAMUI, BANKA, VAISHALI, ARARIA, KHAGARIA & KATIHAR
		151630 - 160300	NIL	NIL	NIL	NIL	NIL
Hyderabad	16-05-17	151222- 151452	isolated cells with an average height of 9 Km with a max reflectivity of 53.5 dBZ	SE (222 Kms) moving in SE- ly Direction at a speed of approx 6.0 kmph	Cells started forming at 1222 utc. Matured between 1342 and 1442 with max ref of 51 dBz at 1402 and dissipated by 1452 UTC	Moderate Thunderstorm with or without rain	Nalgonda, Nagar, Karnool Districts.
		151702 - 152322	Scattered cells with an average height of 9 Km with a max reflectivity of 50.5 dBZ	NW (90 Kms) moving in SW- ly Direction at a speed of approx 10.0 kmph	Cells started forming at 1842 utc. Matured between 1952 & 2022 with max ref of 41.5 dBz and dissipated By 2102 UTC	Moderate Thunderstorm with or without rain	Nizamabad, kamareddy & Medak

Lucknow	16-05-17	150300-16030	Nil	Nil	Nil	--	--
Karaikal	16-05-17	150300-160300	--	--	DWR U/S	--	--

∞	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

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