



# India Meteorological Department

## FDP STORM Bulletin No. 96 (10-06-2018)

### 1. CURRENT SYNOPTIC SITUATION:

#### NWFC Inference (0300UTC of the day):

- ◆ The Northern Limit of Monsoon (NLM) continues to pass through Lat. 19°N/ Long 60°E, Lat 19°N/ Long. 70°E, Thane (including Mumbai), Ahmednagar, Parbhani, Yeotmal, Bramhapuri, Rajnandgaon, Bhawanipatna, Puri and Lat 21°N/ Long 90°E, Agartala, Lumding, North Lakhimpur and Lat. 29°N/ Long 95°E. Conditions are becoming favourable for further advance of Southwest Monsoon into some more parts of Vidarbha, Chhattisgarh, and Odisha, some parts of West Bengal & Sikkim, remaining parts of northwest Bay of Bengal and Northeastern States during next 48 hours. Conditions are likely to become favourable for further advance of Southwest Monsoon into some more parts of West Bengal, Odisha and some parts of Jharkhand and Bihar during the subsequent 48 hours.
- ◆ The low pressure area over northeast Bay of Bengal and adjoining Bangladesh coast now seen as a well marked low pressure area over northeast Bay of Bengal and adjoining Bangladesh. Associated cyclonic circulation extends up to 7.6 km above mean sea level. It is likely to concentrate into a depression during the next 24 hours.
- ◆ The East West trough runs from Punjab to centre of the well marked low pressure area over northeast Bay of Bengal and adjoining Bangladesh across Haryana, Uttar Pradesh, Jharkhand & Gangetic West Bengal and extending upto 1.5 km above mean sea level.
- ◆ The cyclonic circulation over Haryana & neighbourhood at 1.5 km above mean sea level persists.
- ◆ The cyclonic circulation lies over central Uttar Pradesh at 1.5 km above mean sea level.
- ◆ The cyclonic circulation at 3.1 km above mean sea level over Himachal Pradesh & neighbourhood persists.
- ◆ The off shore trough at mean sea level running from north Maharashtra coast to Kerala coast persists.
- ◆ The cyclonic circulation at 5.8 km above mean sea level lies over East Madhya Pradesh & neighbourhood.

#### Vortex Over North-East Bay of Bengal:

#### Satellite Observations during past 24 hrs and current observation:

#### Current Observation (based on 0600UTC imagery of INSAT 3D):

Vortex Over Northeast Bay Centered within half degree of Lat 21.4N/90.3E. Intensity T1.0, centre not clear. Broken low/medium clouds with embedded intense to very intense convection seen over North Bay (**Minimum CTT Minus 93 Deg C**).

#### Clouds descriptions within India:

#### NORTH:

Scattered low/medium clouds with embedded moderate to intense convection seen over East Uttarakhand. Scattered low/medium clouds with embedded isolated weak to moderate convection over South Punjab, Haryana, and Uttar Pradesh. Scattered low/medium clouds seen over rest parts of the region.

### **EAST:**

Broken low/medium clouds with embedded intense to very intense convection seen over Northeast Jharkhand, North Coastal Odisha, Extreme South Gangetic West Bengal, South Sub Himalayan West Bengal and Mizoram. Scattered low/medium clouds with embedded moderate to intense convection seen over Chhattisgarh, rest Odisha, rest Jharkhand, rest Gangetic West Bengal, Assam, Meghalaya, Nagaland, Manipur and Tripura. Scattered low/medium clouds seen over rest parts of the region.

### **WEST:**

Scattered low/medium clouds with embedded intense to very intense convection seen over Southeast Rajasthan, Northwest Madhya Pradesh, South Konkan, North Goa off South Maharashtra and South Madhya Maharashtra. Scattered to Broken low/medium clouds with embedded moderate to intense convection seen over North Rajasthan, West Madhya Pradesh, West Vidarbha and North Marathwada and rest Goa. Broken low/medium clouds with embedded weak to moderate convection seen over rest Maharashtra and rest Madhya Pradesh. Scattered low/medium clouds seen over Southeast Gujarat.

### **SOUTH:**

Scattered low/medium clouds with embedded intense to very intense convection seen over Central Kerala. Broken low/medium clouds with embedded moderate to intense convection seen over Telangana, North Andhra Pradesh, Coastal Karnataka and rest Ker Bay Islands. Scattered low/medium clouds with embedded weak to moderate convection seen over rest parts of the region.

### **Arabian Sea:**

Scattered low/medium clouds with embedded intense to very intense convection seen over East-central and Southeast Arabian Sea off Maharashtra.

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

Broken low/medium clouds with embedded intense to very intense convection seen over Bay north of lat 13.5N, Andaman Sea, Arakan Coast Gulf of Martaban and Tenasserim Coast.

### **Past Weather:**

#### **Convection (during last 24 hrs):**

Moderate to Intense convection was observed over S J&K Himachal Pradesh Uttarakhand Punjab north & east Rajasthan Haryana Delhi Madhya Pradesh Uttar Pradesh south Bihar Jharkhand Odisha Chhattisgarh West Bengal north-east states Andhra Pradesh Telangana Rayalseema Maharashtra Konkan Goa Karnataka Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands.

#### **OLR:-**

Up to **230**  $\text{wm}^{-2}$  was observed over J&K Himachal Pradesh Uttarakhand east Rajasthan Punjab Haryana Delhi Madhya Pradesh west Uttar Pradesh south Bihar Jharkhand Odisha Chhattisgarh Gangetic West Bengal Assam Meghalaya Nagaland Manipur Mizoram Tripura Andhra Pradesh Telangana Rayalseema Maharashtra Konkan Goa Karnataka Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands.

#### **Synoptic Features:**

**Westerly Trough & Jet-Stream** - Westerly Trough & Jet Stream are not observed over Indian region.

### **Dynamic Features:**

**Wind Shear, Vorticity & Convergence-** Wind shear up to 30-40 Knots is observed over Jammu & Kashmir, Arunachal Pradesh, Assam, Peninsula India and 5-20 Knots observed over rest India.

Positive Shear tendency is observed over the country.

Vorticity (850 hPa) up to 250 is observed over west Gujarat Telangana adjoining Vidarbha & Andhra Pradesh and extreme South Tamilnadu.

Positive low level convergence (5 Knots) observed over most parts of India.

### **Precipitation:**

#### **IMR:**

Rainfall 90-150 mm was observed over south Punjab east Rajasthan Haryana most parts of Madhya Pradesh Jharkhand Gangetic west Bengal E Assam Tripura Mizoram north Vidarbha.

Rainfall Up to 70 mm was observed over south Himachal Pradesh west Uttarakhand Delhi north-west Uttar Pradesh SE Bihar extreme north & south Odisha Meghalaya east Maharashtra Konkan Goa north Andhra Pradesh central Chhattisgarh Telangana adjoining Rayalseema coastal & north Karnataka north Kerala Andaman islands.

#### **DWR and RAPID Observations:**

Moderate echoes are seen on DWR Agartala, Bhopal, Gopalpur, Hyderabad, Jaipur, Kolkata, Kochi, Lucknow, Machilipatnam, Nagpur, Paradeep and Patiala, Jaipur (dBZ around 45-55, height around 10-14 km) and light echoes seen over DWR Delhi, Goa, Mohanbari, Mumbai and Patna at around 1530 IST.

RAPID RGB Satellite imagery at 1430 IST indicates significant convection over Jammu & Kashmir, Himachal Pradesh, Northwest Uttarakhand, East Uttar Pradesh, East Rajasthan, Southwest and extreme East Madhya Pradesh, North and extreme South Chhattisgarh, Jharkhand, Central Odisha, South Sub Himalayan West Bengal, Gangetic West Bengal, Meghalaya, South Manipur, Mizoram, Tripura, North Coastal Andhra Pradesh adjoining Telangana, South Konkan & Goa, North Interior Karnataka, South of Coastal Karnataka and Central Kerala.

#### **Environmental Condition (dust etc) and its Forecast based on 00UTC of date:**

Higher Dust concentration was observed over northern Africa, Arab countries and western part of India. Dust concentration is expected to increase over IGP and north India.

Particulate matter concentration is expected to remain in moderate to satisfactory category for next 2 days in Delhi.

<b>Delhi – SAFAR analysis &amp; Forecast</b>	10.06.2018	11.06.2018
PM10 (micro-g/m <sup>3</sup> )	144	136
PM2.5 (micro-g/m <sup>3</sup> )	54	51

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

### **NCMRWF (NCUM forecast based on 00UTC the day):**

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

**Low level Cycirs, Troughs: 00&12UTC of Day 1-4:** Two CYCIRS at 12UTC on Day-0, one over eastern UP-Bihar and another over Bangladesh merge over WB-Bihar region and is seen to persist at 00 and 12 UTC upto Day-4.

**Confluence & wind Discontinuity regions: 00& 12 UTC of Day0-2:**N-S over southern UP and MP region

**00& 12 UTC of Day2-4:** Gangetic plains of UP and Bihar

**Synoptic systems:** 00 & 12 UTC of Day0-3: Trough extending from head Bay of Bengal to east coast of India

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

**3. Convergence at 850 hPa:**

**Day/Index: Subdivisions with Lower Level Convergence >  $15 \times 10^{-5}$  /s**

Day0: Arunachal Pradesh, Assam Meghalaya, TN Puducherry,

Day1: Arunachal Pradesh, Assam Meghalaya, TN Puducherry,

Day2: Arunachal Pradesh, TN Puducherry,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, West UP, TN Puducherry,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Uttarakhand, Jammu Kashmir, TN Puducherry,

**4. Low level Vorticity:-Positive Vorticity:**

**Day/Index: Subdivisions with Lower Level Vortex >  $15 \times 10^{-5}$  /s**

Day0: Assam Meghalaya, NE NMMT, Coastal AP, TN Puducherry, Kerala,

Day1: Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, Jammu Kashmir, TN Puducherry, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, West RJ, Chhattisgarh, TN Puducherry, Kerala,

Day3: Assam Meghalaya, NE NMMT, Gangetic WB, Jharkhand, East UP, West UP, Himachal Pradesh, Odisha, TN Puducherry, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, East UP, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

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

**Day/Index: Subdivisions with Showalter Index < -4**

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP,

Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, NI Karnataka,

Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

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

##### **Day/Index: Subdivision with Total Totals Index > 52**

Day0: Arunachal Pradesh, Sub Himalayan WB, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, Gujarat Region, Saurashtra Kutch, Madhya Maharashtra, Marathwada,

Day1: Arunachal Pradesh, Sub Himalayan WB, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, Gujarat Region, Saurashtra Kutch, Chhattisgarh, Telangana,

Day2: Arunachal Pradesh, Sub Himalayan WB, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat Region, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka,

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

##### **Day/Index: Subdivisions with K Index > 40**

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Gujarat Region, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East RJ, West MP, East MP, Gujarat Region, Marathwada, Vidarbha, Chhattisgarh, Telangana, TN Puducherry,

## 8. Rainfall and thunder storm activity:

### Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, East RJ, Odisha, East MP, Gujarat Region, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, East UP, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Konkan Goa, Madhya Maharashtra, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, Coastal Karnataka, SI Karnataka, Kerala,

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

### Summary and Conclusions:

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CAPE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over central and North Indian region, with highest values over Gujarat and adjoining Rajasthan on day 1. On day 2, the probability of convection decreases over Northeast India but increases over south peninsula as well as over Gujarat. SWEAT index, which accounts for the wind shear between 850 and 500 hPa levels in addition to thermodynamic parameters, has high values over the entire Indian region, especially over west and adjoining central Indian region on day 1 and day 2. The 850-200 hPa wind shear is weak over the Indian region excluding the extreme northern parts of Jammu and Kashmir region and south peninsular India region on day1, increasing over peninsular India on day 2. Hourly reflectivity forecast from WRF model indicates that high probability of rainfall activity early in the day over peninsular India and later in the day over east central India and extreme northeast India on day 1.

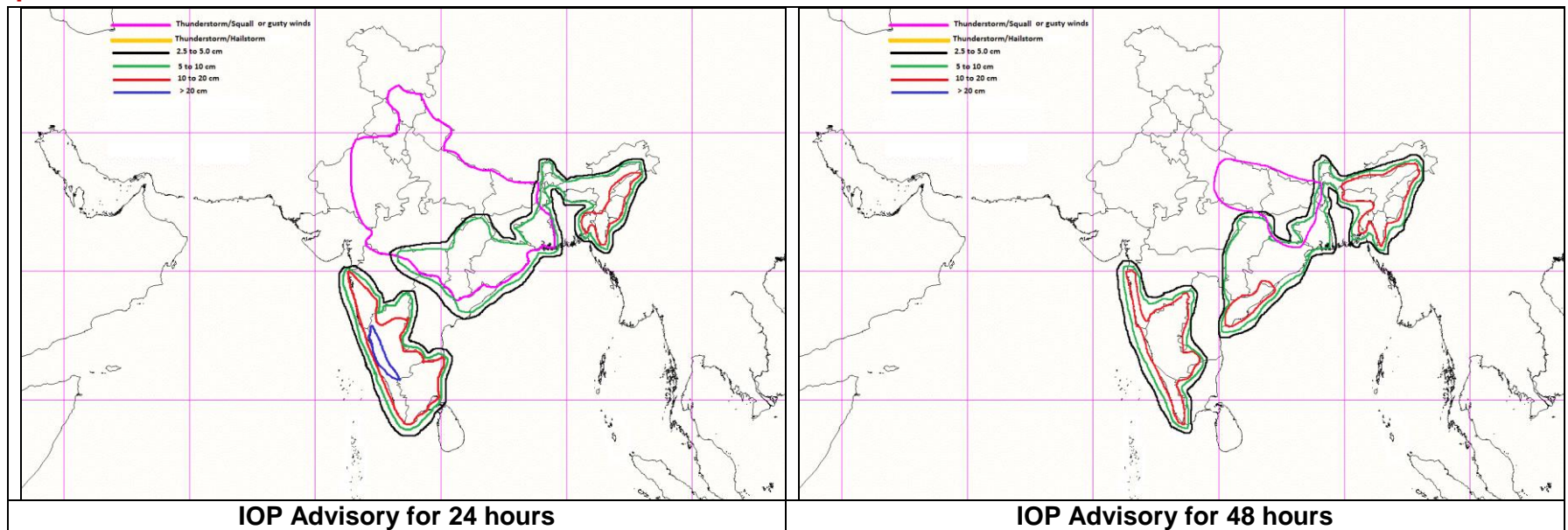
o Synoptic analysis indicates that yesterday's low pressure area over northeast Bay of Bengal and adjoining Bangladesh coast has intensified. The East West trough runs from Punjab to centre of the well marked low pressure area. In this trough are embedded two cyclonic circulations (a) over Haryana & neighbourhood and (b) over central Uttar Pradesh. The intensification of the low pressure area is likely to increase the rainfall activity over east and northeast India on day 1 and 2. The easterlies to the north of the trough, will continue to bring moisture into north India and result in convective activity all over North India, including the Northwest Indian Himalayas on day 1. However, IMDGFS as well as ECMWF deterministic models indicate that the trough is likely to decrease in intensity by day 2, and convective activity over northwest India is likely to cease.

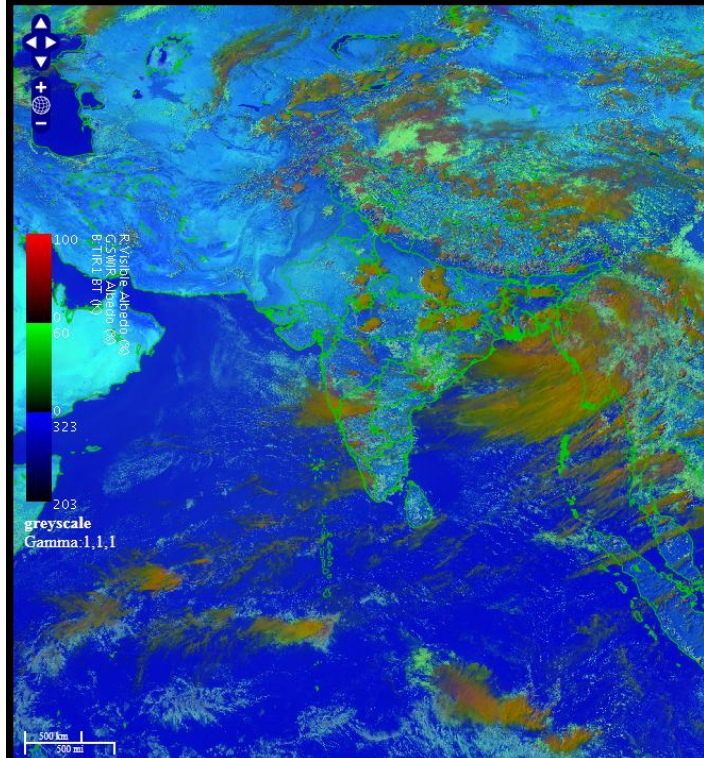
o Synoptic analysis also indicates that the off shore trough at mean sea level running from north Maharashtra coast to Kerala coast persists. Associated widespread rainfall activity will continue along the west peninsular coast on day 1 and day 2 with likelihood of heavy to very heavy showers at some places.

## IOP Area for Day-1 & Day-2:

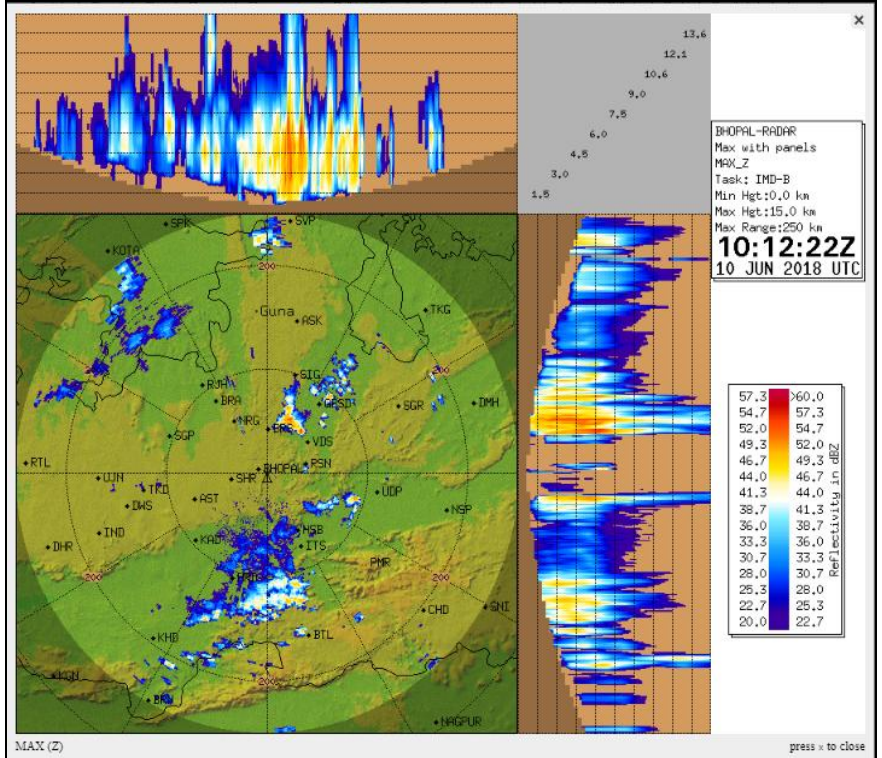
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p><b>Significant Rainfall:</b> Tamilnadu, Pondicherry, Kerala, Karnataka, North Coastal Andhra Pradesh, Konkan and Goa, South Madhya Maharashtra, Madhya Pradesh, Chhattisgarh, Vidarbha, West Bengal &amp; Sikkim, Odisha Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura</p> <p><b>Thunderstorm with squall or gusty winds:</b> Madhya Pradesh, Vidarbha, Chhattisgarh, Himachal Pradesh, Uttarakhand, Haryana, Delhi, Chandigarh, Uttar Pradesh, East Rajasthan Gangetic West Bengal, Jharkhand, Bihar, Odisha</p> <p><b>Thunderstorm with squall and hail</b> Nil</p> <p><b>Duststorm:</b> Nil</p>	<p><b>Significant Rainfall:</b> Kerala, Karnataka, North Coastal Andhra Pradesh, Konkan and Goa, South Madhya Maharashtra, Chhattisgarh, West Bengal &amp; Sikkim, Odisha Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura</p> <p><b>Thunderstorm with squall or gusty winds:</b> East Uttar Pradesh, Jharkhand, Bihar</p> <p><b>Thunderstorm with squall and hail</b> Nil</p> <p><b>Duststorm:</b> Nil</p>

## Graphical Presentation of Potential Areas for Severe Weather:



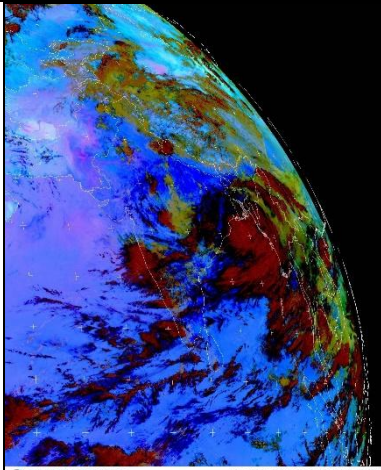


RAPID RGB Imagery at 1430 IST of the Day

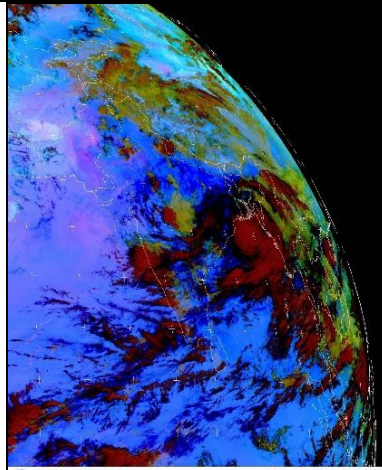


DWR Bhopal reflectivity at 1542 IST

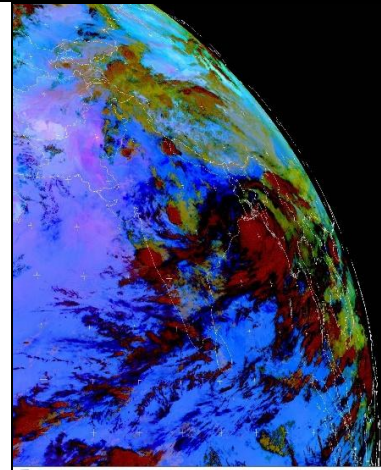




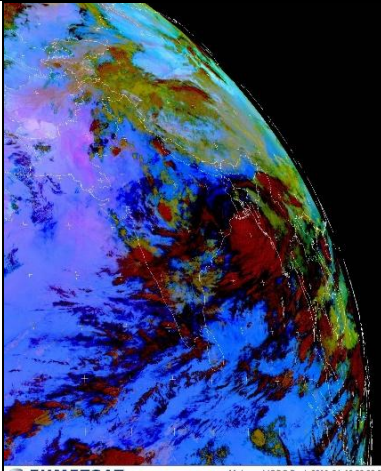
Meteosat IODC Dust, 2018-06-10 05:00:00



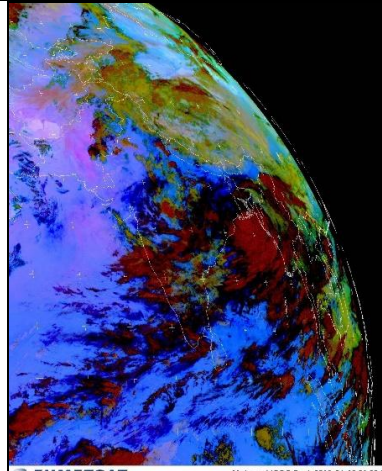
Meteosat IODC Dust, 2018-06-10 04:00:00



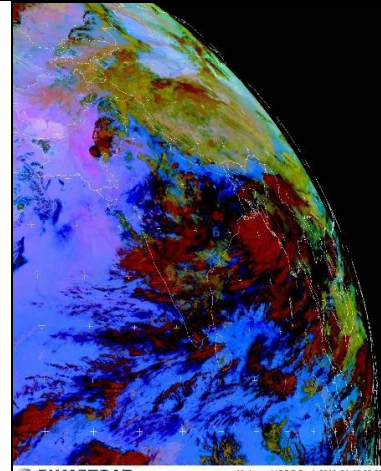
Meteosat IODC Dust, 2018-06-10 03:00:00



Meteosat IODC Dust, 2018-06-10 02:00:00



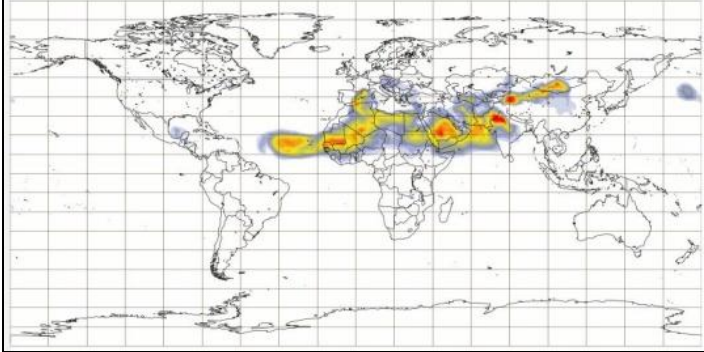
Meteosat IODC Dust, 2018-06-10 01:00:00



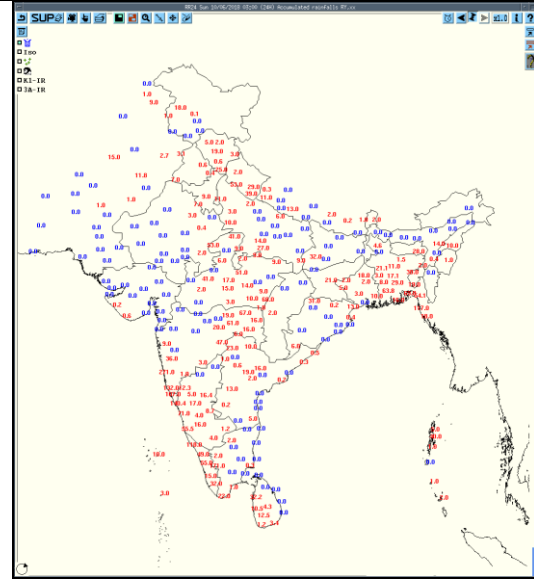
Meteosat IODC Dust, 2018-06-10 00:00:00

Observed Satellite Dust Images of today

Dust aerosol optical depth at 550 nm (provided by CAMS, the Copernicus Atmosphere Monitoring Service)  
 Saturday 9 Jun, 00 UTC T+24 Valid: Sunday 10 Jun, 00 UTC

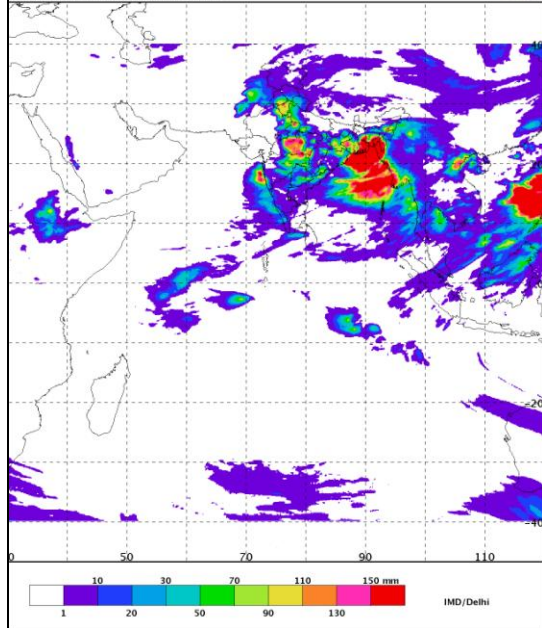


**Dust Forecast**



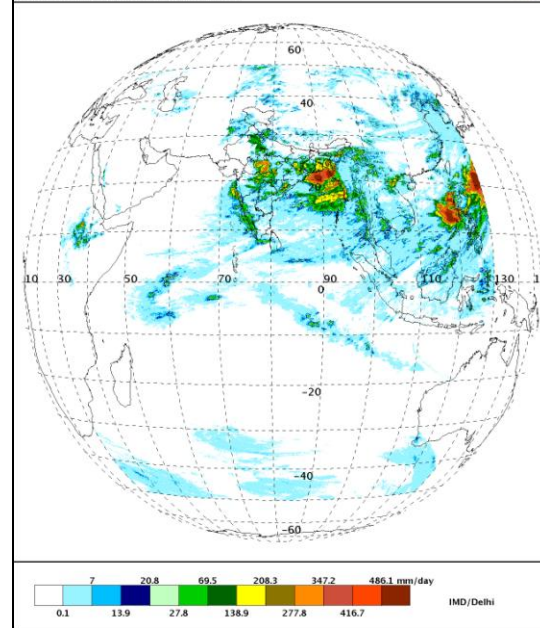
**Accumulated 24 Hour rainfall (in red) recorded at 0300 UTC of today**

SAT :INSAT-3D IMG 09-06-2018 (03:30 GMT) to 10-06-2018 (03:30 GMT)  
 INSAT Multispectral Rainfall(Daily)  
 L3G BINNED GEOPHYSICAL PARAMETER GRIDDED

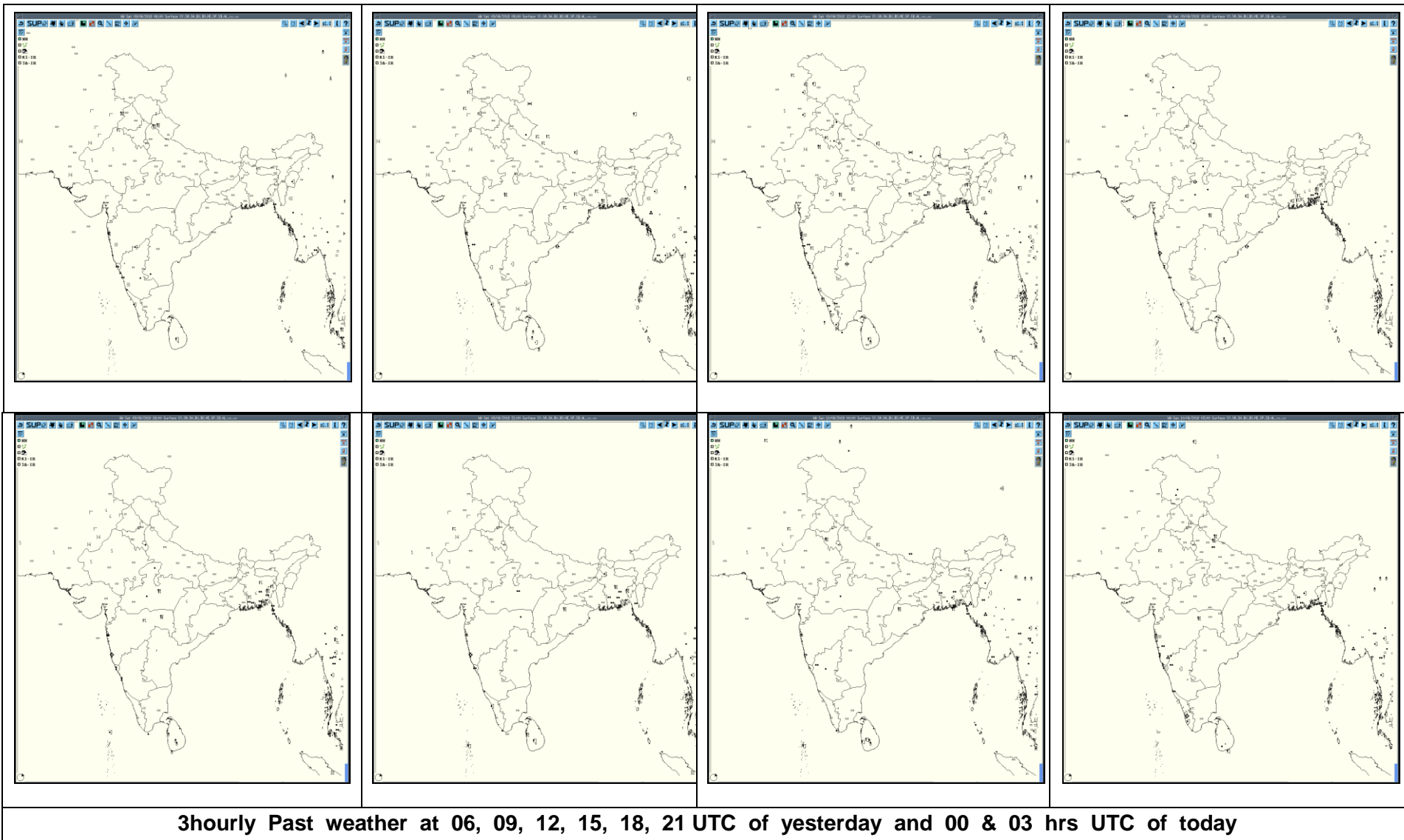


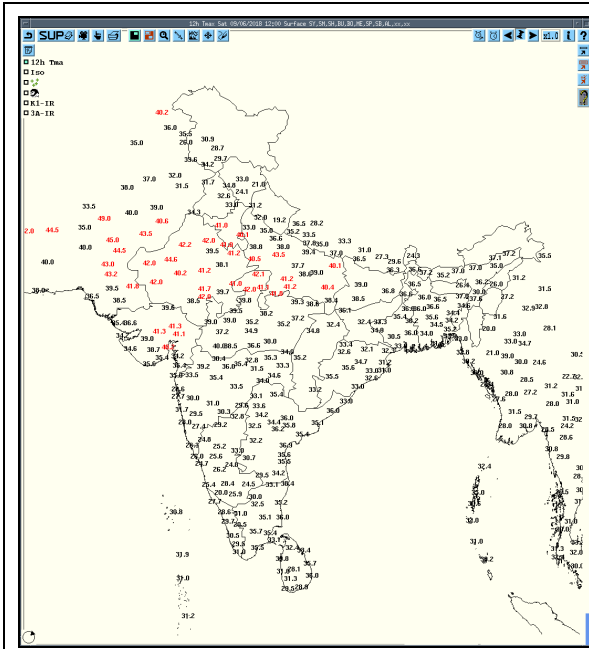
**HEM**

SAT :INSAT-3D IMG 09-06-2018 (03:30 GMT) to 10-06-2018 (03:30 GMT)  
 Precipitation(HE) Daily  
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK

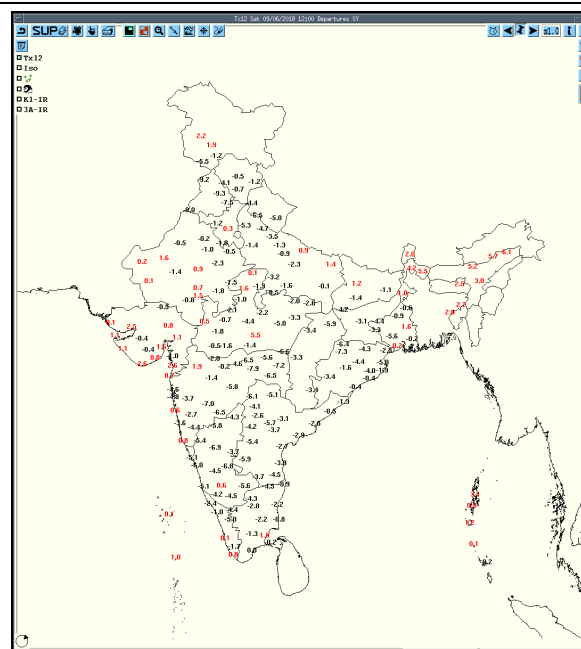


**IMR**

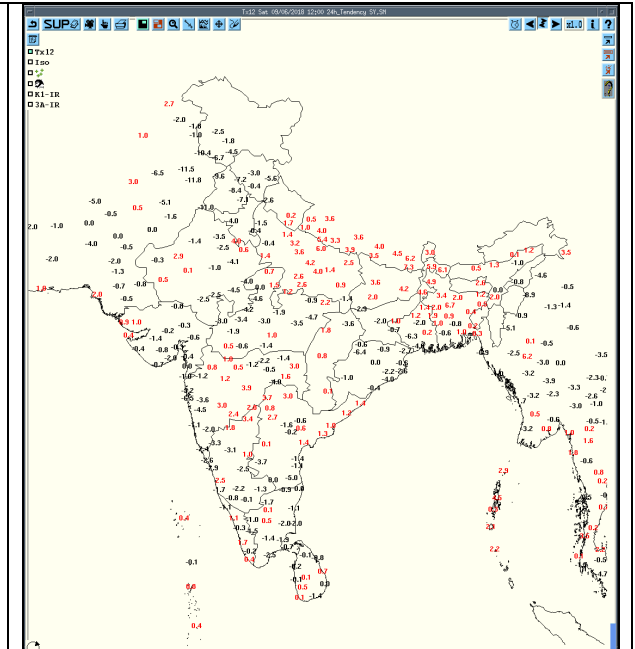




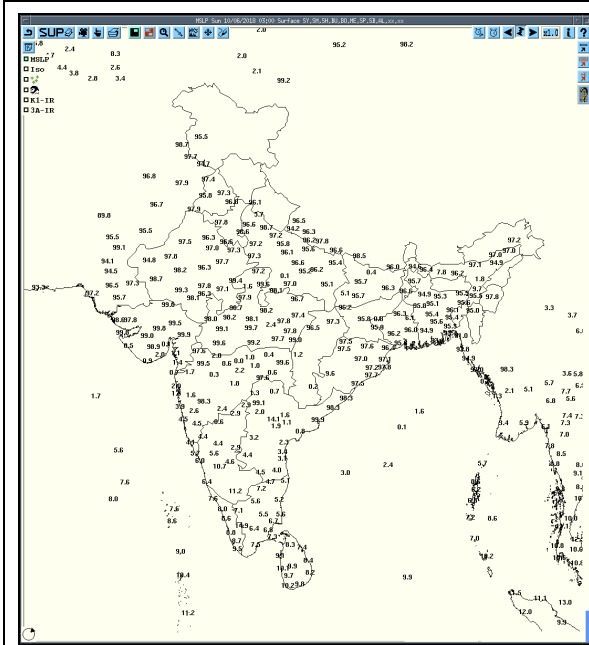
Tmax



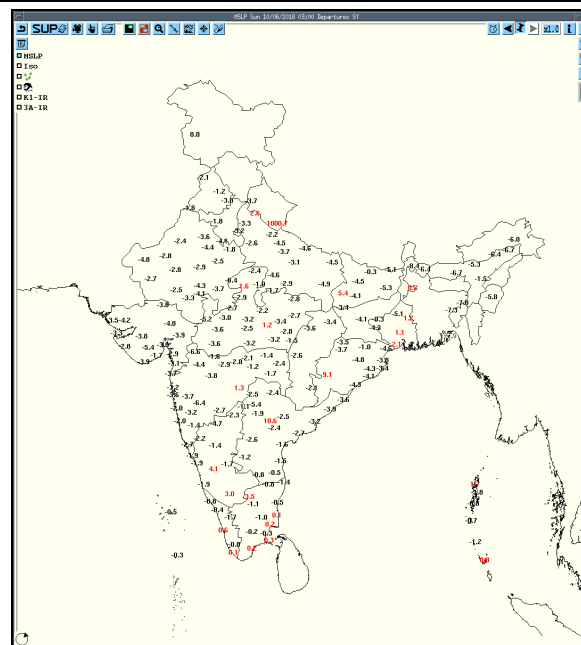
Departure Tmax



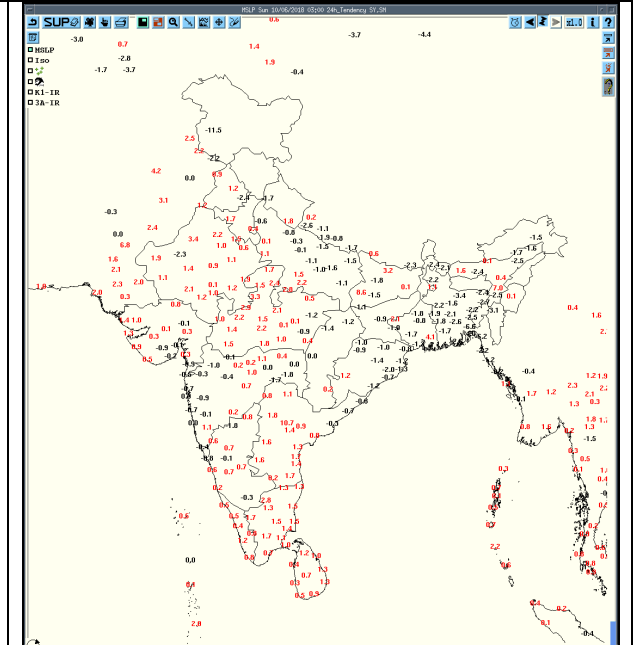
Tendency Tmax



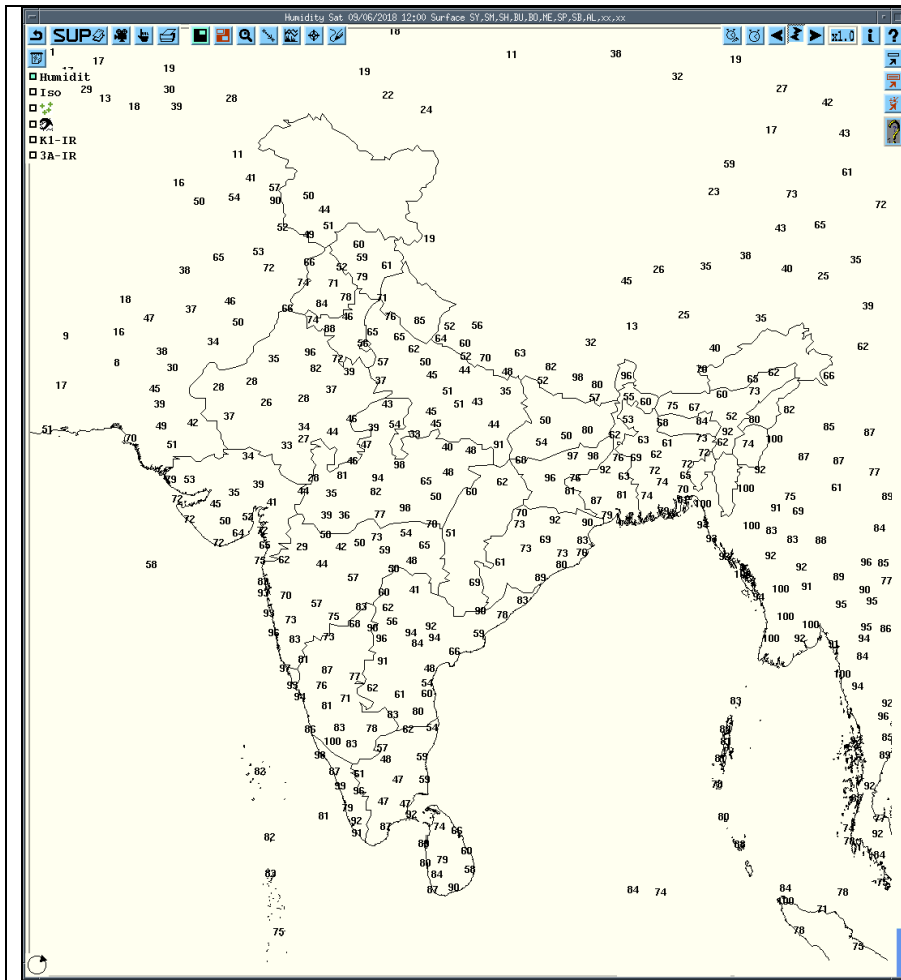
MSLP



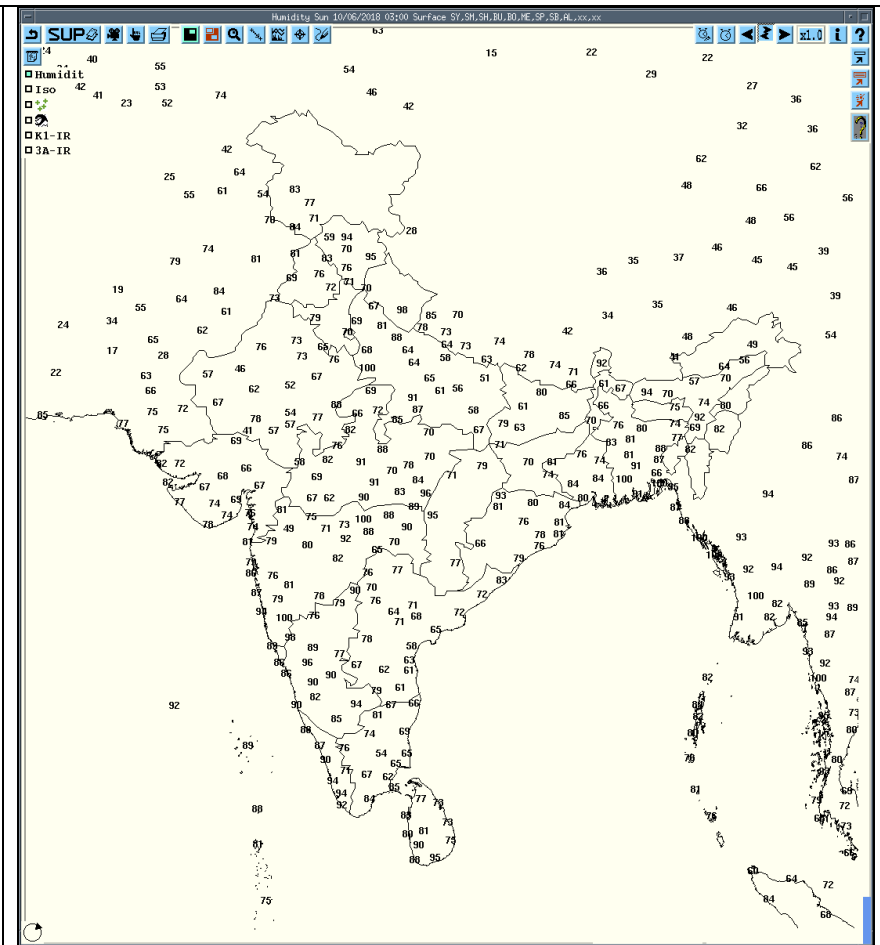
Departure MSLP



Tendency MSLP



RH at 1200UTC yesterday



RH at 0300UTC today

**Past 24 hours DWR Report:**

<b>Radar Station name</b>	<b>Date</b>	<b>Time interval of observation (UTC)</b>	<b>Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity</b>	<b>Formation w.r.t radar station and Direction of movement</b>	<b>Remarks</b>	<b>Associate d severe weather if any</b>	<b>Districts affected</b>
Agartala	10/06/18	090300Z to 100300Z	At 090802Z MULTIPLE CELLS ARE FOUND OVER HILLS OF MEGHALAYA. ABOUT 12 TO 14 KMS, 40 DBZ.	ABOUT 180 TO 200 KMS NORTH, 25KMPH E-LY.	DISIPATED OVER HILLS OF MEGHALAYA AT 091132Z	NOT KNOWN	NOT KNOWN
			At 090842Z MULTIPLE CELLS ARE FOUND OVER HILLS MIZORAM AND ADJOINING AREAS. ABOUT 12 TO 14 KMS, 45 DBZ.	ABOUT 180 TO 200 KMS SE TO SOUTH. 30 KMPH E-LY	AT 091422Z PERSISTS WITH MODERATE INTENSITY OVER AGT, BLN, SBR, UDP AND ADJ. B/DESH.	TSRA	AGT, BLN, SBR, UDP AND ADJ. B/DESH.
Jaipur	10/06/18	0300 UTC of 09/06/18 to 0622 UTC of 09/06/18	Multiple cell with average height of 6km&maximum reflectivity52.0 dBZ	Multiple cell develop from 0300 UTC of 09/06/2018 towards W,SW,N,NW of Jaipur and moved to E,SE,S Wards at speed15-20 km/hr	Multiple cell develop from 0300UTC on 09/06/2018 towards W,SW,N,NW of Jaipur and reaches maximum reflectivity from 0502 UTC to 0532 UTC of 09/06/2018 and Died at 0622 UTC.	Dust storm/Thunderstorm/ Light rain at Isolated places	Ajmer, Jaipur, TONK Districts
	10/06/18	0652 UTC of 09/06/18 to 0300 UTC of 10/06/18	Multiple cell with average height of 10km&maximum reflectivity62.0 dBZ	Multiple cell develop from 0652 UTC of 09/06/2018 towards N,NW,NE,S,SW,E, SE,SW of Jaipur and moved to E,SE,S Wards at speed 15-20 km/hr	Multiple cell develop from 0652 UTC on 09/06/2018 towards N,NW,NE,S,SW,E, SE,SW of Jaipur and reaches maximum reflectivity from 0812 UTC to 0852 UTC of 09/06/2018 and continue at 0300 UTC of 10/06/2018	Dust storm/Thunderstorm/ Light to moderate rain at Isolated places	AJMER, ALWAR, BARAN, KOTA , SAWAIMADOPUR, KARALI, CHURU , JHUNJHUNU, SIKAR, BHARATPUR,, DAUSA, JHALAWAR, BHILWARA, NAGPUR,TONK,BUNDI

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
Patiala	10-06-2018	09/06/2018 0300 - 0600	MULTIPLE CELLS DBZ 57.5 HT. 11- 13 KM	NW, NE, SE SECTORS, MOVEMENT TOWARDS E-DIRECTION		RA/TS	Faridkot,Ferozpur,Fazilka Bathinda , ,Kapurthala ,Jalaandhar Amrotsar Batala Pathankot Ludhiana ,Mansa Sirsa,Solan Shimla,Behat Saharnpur Rishikesh ,Shamli,Rampur And Adj Area . Direction Of Movement Ese Wards .Hail May Occur Faridkot, Fazikla Region And Adj Area
		09/06/2018 0600 -0900	MULTIPLE CELLS DBZ 59.5 HT. 11-13 KM	NW,NE,SE SECTORS, MOVEMENT TOWARDSE-DIRECTION		----- ----	Amritsar, Gurdaspur,Ferozpur,Zira,Mukatsar,Mansa,Bathonda, Kotkapura, Ludhiana Kapurthala ,Rishikesh Utterkashi A And Adj Area . Direction Of Movement Ese Wards .Hail May Occur Faridkot, Fazikla Region And Adj Area.
		09/06/2018 0900- 1200	MULTIPLE CELLS DBZ 61.5 HT. 10-15 KM	SW, NW, NE, SE SECTORS, MOVEMENT TOWARDS E DIRECTION		-----	Churu, Pilani, Jhunjhunu, Narnaul, Mohidargarh, Riwari, Bhiwani, Rohtak, Jhazzar, Jind, Hisar, Fatehabad, Ratia, Tohana, Patran, Sangrur, Kaithal, Phillaur, Hoshiarpur, Ludhiana, Khanna, Samrala, Rajpura, Patiala, Chandigarh, Yamunanagar, Kurukshetra, Ambala And Its Adjoining Areas.
		09/06/2018 1200 - 1500	MULTIPLE CELLS DBZ 63.0 HT. 15-16 KM	NW,NE,SE SECTORS,MOVE MENT TOWARDS SE DIRECTION		---	Pilani, Jhunjhunu, Narnaul, Mohidargarh, Rohtak, Jhazzar, Tohana, Patran, Sangrur, Kaithal, Rajpura, Patiala, Chandigarh, Yamunanagar, Kurukshetra, Ambala, Panipat, Sonapat, Israna, Gaziabad, Faridabad, Nuh And Its Adjoining Areas.
		09/06/2018 1500 -1800	NO SIGNIFICANT ECHO=				
		09/06/2018 1800 - 2100	MULTIPLE CELLS DBZ 55.0 HT. 08-12 KM	SW SECTORS, MOVEMENT TOWARDS SE DIRECTION		RA/TS	Barwala, Safidon And Adj Areas.
		09/06/2018 2100- 0000	MULTIPLE CELLS DBZ 51.5 HT. 06-12 KM	SW, SE SECTORS, MOVEMENT TOWARDS SE DIRECTION		RA/TS	Hanumangarh, Bijnaur And Adj Areas.
		10/06/2018 0000-0252	MULTIPLE CELLS DBZ 50.0 HT. 8-10 KM	SW, SE SECTORS, MOVEMENT TOWARDS SE DIRECTION		----- -----	Hanumangarh, Elenabad, Bijnaur And Adj Areas

**Realised past 24hrs TS/SQ/HS Data:**

<b>Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)</b>						
	<b>Region</b>	<b>State/Sub Division</b>	<b>Weather Event (TS/Hail/Squall)</b>	<b>Date</b>	<b>Time of Commencement (IST)</b>	<b>Time of end (IST)</b>
Srinagar	Northwest India	Jammu & Kashmir	Thunderstorm	09-06-18	1740	1830
Kupwara	Northwest India	Jammu & Kashmir	Thunderstorm	09-06-18	1705	1718
Dehradun	Northwest India	Uttarakhand	Thunderstorm	09-06-18	1000	1200
Pantnagar	Northwest India	Uttarakhand	Thunderstorm	10-06-18	0400	Continue
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	10-06-18	0710	Continue
Tehri	Northwest India	Uttarakhand	Thunderstorm	09-06-18	1105	1350
Hissar	Northwest India	Haryana	Thunderstorm	09/10-06-18	09/1505 10/0400	09/1750 10/0600
Amritsar	Northwest India	Punjab	Thunderstorm	09-06-18	1245	1335
Pilani	Northwest India	East Rajasthan	Thunderstorm	09-06-18	1430	1630
Kota	Northwest India	East Rajasthan	Thunderstorm	09-06-18	2055	2200
Bundi	Northwest India	East Rajasthan	Thunderstorm	09-06-18	2000	2200
Churu	Northwest India	West Rajasthan	Thunderstorm	09-06-18	1505	1815
Sri Ganganagar	Northwest India	West Rajasthan	Thunderstorm	09-06-18	0830	1240
Safdarjung	Northwest India	Delhi	Thunderstorm	09-06-18	1750	1920
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	09-06-18	09/1410	09/1600
Kailasahar	Northeast India	Tripura	Thunderstorm	09-06-18	09/1620	09/2000
Agartala	Northeast India	Tripura	Thunderstorm	09/10-06-18	09/1900	10/0420
Nagpur	Central India	Vidarbha	Thunderstorm	09-06-18	2014	0020
Akola	Central India	Vidarbha	Thunderstorm	09-06-18	2300	0015
Amravati	Central India	Vidarbha	Thunderstorm	09/10-06-18	1900 0700	2400 0830
Yeotmal	Central India	Vidarbha	Thunderstorm	09-06-18	2300	0030
Gwalior	Central India	Madhya Pradesh	Thunderstorm	09-06-18	1745	2245
Sagar	Central India	Madhya Pradesh	Thunderstorm	09-06-18	1545	2400
Ambikapur	Central India	Chhattisgarh	Thunderstorm	09-06-18	1735	1945
Pendra Road	Central India	Chhattisgarh	Thunderstorm	09-06-18	2130	2250
Kannur	South India	Kerala	Thunderstorm	09-06-18	1700	1900
Thiruvananthapuram City	South India	Kerala	Thunderstorm	09-06-18	1625	1730
Ramagundam	South India	Telangana	Thunderstorm	10-06-18	0000	0200
Mahabubnagar	South India	Telangana	Thunderstorm	09-06-18	1732	1815
Kurnool	South India	Rayalaseema	Thunderstorm	09-06-18	1550	1655



**Date: 10.06.2018**

(24 hours' weather from 0830 IST of 09.06.2018 to 0830 IST of 10.06.2018)

Sub-Division	State	Name of Station Reporting	THUNDERSTORM (TS)		LIGHTNING (LT)		Three hourly rainfall reported in SYNOP succeeding the event (mm)	Past 24 hours' rainfall ending at 0830 IST (mm)
			Time of Comm. (IST)	Time of End (IST)	Time of Com m. (IST)	Time of End (IST)		
Sikkim and SHWB	Sikkim	GANGTOK	NIL		NIL		--	002.0
		TADONG	NIL		NIL		--	002.5
	West Bengal	COOCHBEHAR	////-	0715	NIL		--	005.9
GWB	West Bengal	ALIPORE	1345-1435		NIL		-	013.3
		DUMDUM	1325-1445 1900-1945 0645-0700		1325-1445 1840-2000 0645-0700		-	012.6
		ASANSOL	1050-1200		NIL		--	020.6
		BANKURA	1145-1300		NIL		-	002.0
		SRINIKETAN	1410-1540		NIL		--	017.6
Bihar	Bihar	PATNA	NIL		NIL		--	0.0
		GAYA	1710-1800		1710-1800		--	0.0
Jharkhand	Jharkhand	RANCHI	1400-1900		NIL		--	0.0
		JAMSHEDPUR	1315-1500		NIL		--	0.0
Odisha	Odisha	BHUBANESWAR	NIL		NIL		-	trace
		BALASORE	1345-1550		NIL		-	013.4
		JHARSUGUDA	1350-1520 0140-0340 0430-0545		NIL		-	031.0
		KEONJHARGARH	1210-1320 1510-1550		09z-12z		-	000.2
A and N Islands	A and N Islands	PORT BLAIR	0740-0800		NIL		-	001.0

## IMPORTANT LINKS:

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 RANDHRA PRADESHID tool:

[http://rAndhra\\_Pradeshid.imd.gov.in/](http://rAndhra_Pradeshid.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)

HEM: [http://satellite.imd.gov.in/img/3Ddaily\\_he.jpg](http://satellite.imd.gov.in/img/3Ddaily_he.jpg)

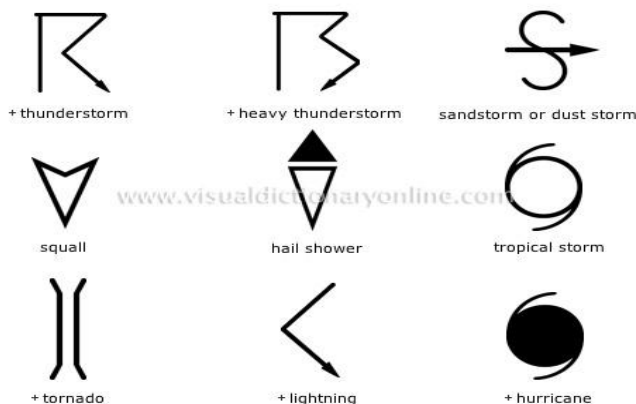
For Radar images of the past 24 hours including mosaic of images:

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

Satellite sounder based T- Phigram

[http://satellite.imd.gov.in/mAndhra\\_Pradesh\\_skm2.html](http://satellite.imd.gov.in/mAndhra_Pradesh_skm2.html)

## WEATHER SYMBOLS:



	haze
	smoke
	dust or sand storm
	fog
	drizzle
	rain
	snow
	showers
	hail
	thunderstorm

**Weather Symbols**