



# India Meteorological Department

## FDP STORM Bulletin No. 66 (11-05-2018)

### 1. CURRENT SYNOPTIC SITUATION:

#### NWFC INFERENCE (0300UTC of the Day):

- ◆ The north south trough at 1.5 km above mean sea level from Uttarakhand to south Uttar Pradesh now runs from northern parts of north East Uttar Pradesh to north Chhattisgarh and extends upto 0.9 km above mean sea level.
- ◆ A cyclonic circulation lies over southeast Rajasthan adjoining West Madhya Pradesh & Gujarat and extends upto 0.9 km above mean sea level.
- ◆ The other north south trough now runs from northwest Rajasthan to north Madhya Maharashtra with the above embedded cyclonic circulation extending upto 0.9 km above mean sea level.
- ◆ The cyclonic circulation over Lakshadweep and adjoining southeast Arabian Sea now lies over southeast Arabian Sea adjoining Lakshadweep extending upto 3.1 km above mean sea level.
- ◆ A fresh Western Disturbance as a trough in mid & upper tropospheric levels with its axis at 5.8 km above mean sea level runs roughly along Long 55°E to the north of Lat 25°N.
- ◆ A fresh East West trough runs from east Bihar to Nagaland and extends upto 0.9 km above mean sea level.
- ◆ A low pressure area is likely to develop over central parts of South Arabian Sea around 15th May 2018 and same is likely to intensify further and move west north-westwards subsequently.

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

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

#### Western Disturbance (WD):

Scattered multi-layered clouds with embedded moderate to intense convection were seen over Iran, Afghanistan and neighbourhood in association with Western Disturbance over the area.

#### Clouds descriptions within India:

Scattered to Broken low/medium clouds with embedded intense to very intense convection seen over Coastal Odisha, East Jharkhand, Mizoram, North Tamilnadu and Andaman Islands. Scattered to Broken low/medium clouds with embedded moderate to intense convection seen over Southeast Jharkhand, Central Chhattisgarh, South Odisha, West Gangetic West Bengal, Manipur, East Tripura, rest Tamilnadu, Kerala, Lakshadweep and Nicobar Islands. Scattered low/medium clouds with embedded weak to moderate convection seen Arunachal Pradesh, Assam, Nagaland, East Meghalaya, Karnataka, North Coastal Andhra Pradesh and extreme North Telangana. Isolated low/medium clouds with embedded weak to moderate convection seen over East Jammu & Kashmir and Northwest Rajasthan. Isolated low/medium clouds seen over Madhya Pradesh, Vidarbha, Marathwada, extreme South Konkan & Goa.

**Arabian Sea:-**

Scattered low/medium clouds with embedded moderate to intense convection seen over Southeast adjoining East Central Arabian Sea, Comorin & Maldives.

**Bay of Bengal & Andaman Sea:**

Scattered low/medium clouds with embedded moderate to intense convective seen over Northwest & Andaman Sea Gulf of Martban Tenasserim Coast.

**Past Weather:****Convection (during last 24 hrs):**

Intense to Very Intense convection was observed over Karnataka adjoining South Madhya Maharashtra Tamilnadu (.)

Moderate to Intense Convection was observed over Rayalaseema Tamilnadu. North East Orissa adjoining South Gangetic West Bengal Sikkim Sub Himalayan West Bengal Meghalaya adjoining Assam Lakshadweep and weak to moderate convection over rest north-east states (.)

**OLR:**

Up-to 150-270  $\text{wm}^{-2}$  observed over Karnataka Kerala Tamilnadu & Lakshadweep Arunachal Pradesh Nagaland Manipur Mizoram Assam Meghalaya

**Synoptic Features:**

**Westerly Trough & Jet Stream:** Westerly Trough & Jet Stream are not observed over Indian Region.

**Dynamic Features:**

**Wind Shear** 30-60 knots is observed over North India, Central India, North-East India and 05-20 knots over south peninsular India.

**Positive shear tendency** is observed over Jammu & Kashmir Himachal Pradesh Punjab Haryana Delhi North Rajasthan. And negative wind shear is observed Central and North east India.

**Negative Vorticity (850 hPa)** more than 50 ( $\times 10^{-5}/\text{s}$ ) is observed over Gujarat South Konkan and Goa Northwest Karnataka Orissa (.)

**Positive Low Level Convergence** is observed over Indian Region except Tripura & Mizoram

**Precipitation:****HEM:-**

Rainfall up to 208.3 mm was observed over Karnataka

Rainfall up to 27.8-139.8 mm was observed over Kerala Nagaland Manipur Arunachal Pradesh.

Rainfall up to 07-20.8mm was observed over Rest North-East states Tamilnadu Rayalaseema.

Rainfall up to 0.1-07mm was observed over South Gangetic West Bengal.

**DWR and RAPID Observations:**

Multiple strong echoes (dBZ >55 and height >15km) are seen on DWR Kolkata and Vishakhapatnam at 1621IST. Multiple moderate echoes (dBZ >50 and height >10km) are seen on DWR Agartala, Chennai, Gopalpur, and Pradeep at around 1530IST. Light to Moderate isolated/multiple echoes are also seen on DWR Hyderabad, Machilipatnam and Thiruvananthapuram domains at around 1530 IST.

RAPID RGB Satellite imagery at 1430 IST indicated significant convection over Arunachal Pradesh, South Assam, Manipur, Mizoram, South Tripura, Gangetic West Bengal, East Jharkhand, Central Odisha, Central Chhattisgarh, extreme North Telangana, North Coastal Andhra Pradesh, Tamilnadu and 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 for next few days over IGP and north India.

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

<b>Delhi – SAFAR analysis &amp; Forecast</b>	11.05.2018	12.05.2018
PM10 (micro-g/m <sup>3</sup> )	244	220
PM2.5 (micro-g/m <sup>3</sup> )	104	94

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

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

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

##### **Low level Cycirs, Troughs:**

**12UTC of Day 2-4:** 925 hPa weak CYCIR Bihar, WB-Bangladesh region

**00UTC of Day 1-3:** 850 hPa weak CYCIR over NW India adjoining Pakistan

**00UTC of Day 1-2:** 850 hPa weak CYCIR over Madhya Pradesh.

**12UTC of Day 2-3:** 850 hPa CYCIR over Tamil Nadu, Kerala and adjoining regions.

**Confluence & Wind Discontinuity Regions: 12 UTC of Day 1-3:** 925 hPa N-S discontinuity over central India to Southern Peninsular India

**Synoptic Systems: 00 UTC of Day 1-4:** WD as a weak trough moving over east UP to north east regions

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

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

##### **Day/Index: Subdivisions with Lower Level Convergence > 15 x 10<sup>-5</sup> /s**

Day0: Jharkhand, Jammu Kashmir, Odisha, Marathwada, Vidarbha,

Day1: Jharkhand, Himachal Pradesh, Madhya Maharashtra, Chhattisgarh,

Day2: West UP, Uttarakhand, Haryana, Chandigarh, Delhi, East RJ, Madhya Maharashtra, Chhattisgarh,

Day3: Uttarakhand, Odisha, East MP, Madhya Maharashtra,

Day4: Odisha, East MP, Madhya Maharashtra, Chhattisgarh, Telangana, NI Karnataka,

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

##### **Day/Index: Subdivisions with Lower Level Vortex > 15 x 10<sup>-5</sup> /s**

Day0: Jharkhand, East UP, Uttarakhand, Himachal Pradesh, Odisha,

Day1: Gangetic WB, Jharkhand, Himachal Pradesh, Odisha, Chhattisgarh,

Day2: West UP, Odisha,

Day3: East UP, West UP, Punjab,

Day4: Arunachal Pradesh, Assam Meghalaya, Gangetic WB, Jharkhand, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, West RJ,

## 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, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Assam Meghalaya, 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, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

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

Day4: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

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

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, NI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, 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, Odisha, East MP, Konkan Goa, Madhya Maharashtra, 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, Odisha, East MP, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

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, Odisha, East MP, Konkan Goa, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

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

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

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, East UP, West UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

### 8. Rainfall and thunder storm activity:

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, Odisha,

Day2: Assam Meghalaya, NE NMMT, Gangetic WB, Jammu Kashmir, Chhattisgarh, Rayalaseema, Kerala,

Day3: Assam Meghalaya, Gangetic WB, West UP, Uttarakhand, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Andaman Nicobar, Telangana, Coastal Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Jammu Kashmir, Odisha, Chhattisgarh, Telangana,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, Himachal Pradesh, Jammu Kashmir, Odisha,

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

#### 1. Synoptic Systems:

The analysis based on 00 UTC indicates a North- South Trough from North west Rajasthan to South Madhya Maharashtra across west Madhya Pradesh. The forecast shows the Trough will move eastward till next 2 days. The analysis shows a cyclonic circulation over GWB and adjoining Bihar. A Trough is also seen in the analysis from East Bihar to Jharkhand and adjoining areas. The forecasts show that the cyclonic circulation will merge with the Trough in the 24 hour with slight eastward shift. A cyclonic circulation is seen in the analysis over Lakshadweep and adjoining south Arabian Sea. The forecast shows it will move westwards in next 24 hours.

**2. Location of Jet and Jet Core (>60kt) at 500hPa:** No Jet Core seen over India Region for next 3 days.

**3. Low Level Vorticity {850hPa Positive Vorticity (>12 x 10<sup>-1</sup>/s)}:** Low level Positive Vorticity is seen mostly along the North- South Trough, around the cyclonic circulations, along Foothills of Himalaya from and NE states during next 3 days; Low level Positive Vorticity is also seen over parts of Punjab, adjoining North West Rajasthan, Haryana and adjoining northern parts of Madhya Pradesh on day 3; over parts of Bihar, GWB, Jharkhand, SHWB, Sikkim and NE states have Positive Vorticity on all 3 days.

#### **4. Spatial distribution of T-storm Initiation Index, Lifted Index, Total Total Index, CAPE, CIN and Sweat Index [High potential for thunderstorm]:**

**T-Storm Initiation Index (> 3):** over parts of Gujarat, Gangetic Plains covering the areas from south west Rajasthan, Punjab, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, Jharkhand, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, coastal Andhra Pradesh, Assam, Meghalaya, Tripura and adjoining areas, along east and west coast of India on day 1; In day 2 and 3 It remains over the same region along east and west coast and also appears over East and West Uttar Pradesh, Northern parts of West Rajasthan and parts of East Rajasthan, Madhya Pradesh and adjoining areas; Significant zone lies over south west Rajasthan, Gujarat, Eastern parts of the country, north-eastern states, coastal areas along the east coast and west coast, GWB, Bihar, Jharkhand, Orissa, coastal Andhra Pradesh, Telangana, South Interior Karnataka, East Uttar Pradesh and adjoining areas.

**Lifted Index (< -2):** Similar to T-storm Index in day 1 it lies over Gujarat, Rajasthan, Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana, Bihar, Jharkhand, East Uttar Pradesh, Orissa, GWB, NE states, Telangana, Vidarbha, Chhattisgarh, Andhra Pradesh, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Madhya Maharashtra and Marathwada. Significant zone with maximum negative value is found over GWB, SHWB, Bihar, Tripura and adjoining areas, Sikkim, Assam, Orissa, Andhra Pradesh, Telangana and Jharkhand.

**Total Total Index (> 50):** Is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Rajasthan, Punjab, East Uttar Pradesh, Bihar, Jharkhand, GWB, Orissa, Chhattisgarh, Vidarbha, Telangana, Karnataka, coastal Andhra Pradesh, Rayalaseema, and adjoining interior Karnataka, Tamil Nadu, NE states and south peninsular India during day 1 and 2; And disappears over Northwest India mainly Gujarat, Rajasthan, Punjab, Haryana, Delhi, Uttar Pradesh and Madhya Pradesh region from day 2 onwards.

**Sweat Index (> 300):** Is seen over the sub-divisions along east and west coast, areas along foothills of Himalayas, NE states, and most parts of the country except central parts of Madhya Pradesh, South Rajasthan, Vidarbha and North Chhattisgarh, North Madhya Maharashtra and Marathwada during day 1 and 2. On day 3 it remains over the most parts of the country except some parts of Madhya Pradesh Vidarbha and Marathwada on day 3.

**CAPE (> 1000):** Mostly seen over west coast and east coast, SHWB, GWB, Orissa, Bihar, Jharkhand, Uttar Pradesh on all 3 days. Over Chhattisgarh Telangana, some parts of Vidarbha Andhra Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan and Goa, coastal Maharashtra, south Madhya Maharashtra, Marathwada, Gujarat, on day 2 & 3.

**CIN (50-150):** The value of the index lies in the above range over parts of Punjab, North Rajasthan, Himachal; Pradesh, Uttarakhand, Haryana Chandigarh, Delhi SHWB, GWB, Jharkhand Bihar, Orissa Chhattisgarh and most parts of Peninsular India on day 1 & 2. Over East Madhya Pradesh Uttar Pradesh, Peninsular India, SHWB & GWB on day3.

#### **5. Rainfall Activity:**

70- 130 mm Rainfall: over some parts of East coastal Orissa on day 3.

40-70 mm Rainfall: over parts of East and South coastal Orissa and GWB on day 1 & 3.

10-40 mm Rainfall: over parts South Interior Karnataka and Coastal Karnataka, Kerala and some parts of Tamil Nadu, East Coastal Andhra Pradesh, Coastal Orissa, East WGB and some parts of North-East on day 1 & 2. Over parts of J&K, Himachal Pradesh, Punjab, West Rajasthan, Chandigarh, Delhi, Uttarakhand, foothills of Himalaya, West & East Uttar Pradesh, Bihar, South and East Costal Orissa and south Jharkhand and NE states on day 3.

Up to 10 mm rainfall : over parts of J & K, Himachal, Uttarakhand, North-East States, Coastal Orissa, Coast Andhra Pradesh and Peninsular India on day 1 & 2. Most parts of India except South-West Rajasthan and Gujarat on day3



## IMD WRF (9km based on 00UTC of the day):

### **1. Model Reflectivity (Max. dBz):**

**>25 dBZ Model Reflectivity:** On day 1, over parts of Karnataka, Sikkim, SHWB, GWB and NE states. On day 2 over parts of J&K, GWB, SHWB, Sikkim, Assam, Arunachal Pradesh and adjoining areas, Kerala, Karnataka, Tamil Nadu on day; On day 3 mostly over parts of J&K, Punjab, North west Rajasthan, Himachal Pradesh, GWB, Orissa, Andhra Pradesh and parts of NE states.

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

**Total Index (> 50):** Above threshold value is observed over most parts of the country except extreme south peninsular India, extreme southern parts of west coast and the east coast, southern parts of Karnataka, coastal Maharashtra, South Madhya Maharashtra, Marathwada, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, Sikkim and NE states during day 1 and 2; on day 3 it is seen over most of the parts of country except extreme south peninsular India; below threshold value is also seen over parts of Orissa and Chhattisgarh on day 1; over parts of Bihar, Jharkhand on day 2; adjoining East Uttar Pradesh on day 2 and 3.

**K-Index (> 35):** Less than threshold value is observed over most of the part of the country during the next 3 days. Prominent values are found over parts of NE states, Interior Karnataka, Telangana, Chhattisgarh, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Jharkhand, GWB and adjoining areas.

**CAPE (> 1500):** Greater than threshold value over parts of Gujarat, coastal areas of west coast, coastal Maharashtra, Konkan & Goa, coastal areas along the east coast, SHWB, GWB, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, coastal Maharashtra, South West Rajasthan extending over Bihar, Jharkhand, Telangana, Rayalaseema during next 3 days; Some parts of East Rajasthan on day 1; over some parts of East Uttar Pradesh from day 2 onwards; Maximum value of the index is seen over the parts of Orissa, GWB, SHWB, Bihar, Jharkhand, Andhra Pradesh, coastal Tamil Nadu, Kerala, Karnataka, Telangana, coastal Maharashtra and coastal Gujarat during next 3 days.

**CIN (50-150):** It covers most of the parts of the country except central parts of the Madhya Pradesh during next 3 days; Inland extension is also nearly similar to CAPE. Only, it has significant larger values over parts of west India including west Rajasthan, Gujarat, Punjab, Haryana and adjoining areas, parts of Vidarbha and Madhya Pradesh, eastern parts of the country, Bihar Jharkhand, Chhattisgarh, Orissa, GWB, Andhra Pradesh and adjoining areas.

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

70-130 mm Rainfall: over parts of Kerala and South Interior Karnataka on day 1.

40- 70 mm Rainfall: over parts of Assam, Meghalaya, Tripura, Mizoram, Arunachal Pradesh and adjoining areas, South Interior Karnataka, south Jharkhand, GWB, Sikkim, Orissa and South Chhattisgarh on day 1; Over parts of GWB, South Interior Karnataka on day 2.

10- 40 mm Rainfall: over parts of Kerala, Tamil Nadu, south Interior Karnataka, Orissa, Chhattisgarh and North Andhra Pradesh during next 3 days; over parts of Sikkim and NE states on day 1 and 2; over parts of Bihar, Jharkhand on day 1; over parts of Telangana on day 3.

Up to 10 mm Rainfall: Over parts of Kerala, Tamil Nadu, Karnataka, Chhattisgarh, Sikkim, Bihar, Jharkhand, Orissa, South Madhya Maharashtra, Marathwada, East Vidarbha and NE states during, J&K, Himachal Pradesh, Uttarakhand during next 3 days; over parts of Punjab, Haryana, Rajasthan, Uttar Pradesh and East Uttar Pradesh on day 3.

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

#### Summary and Conclusions:

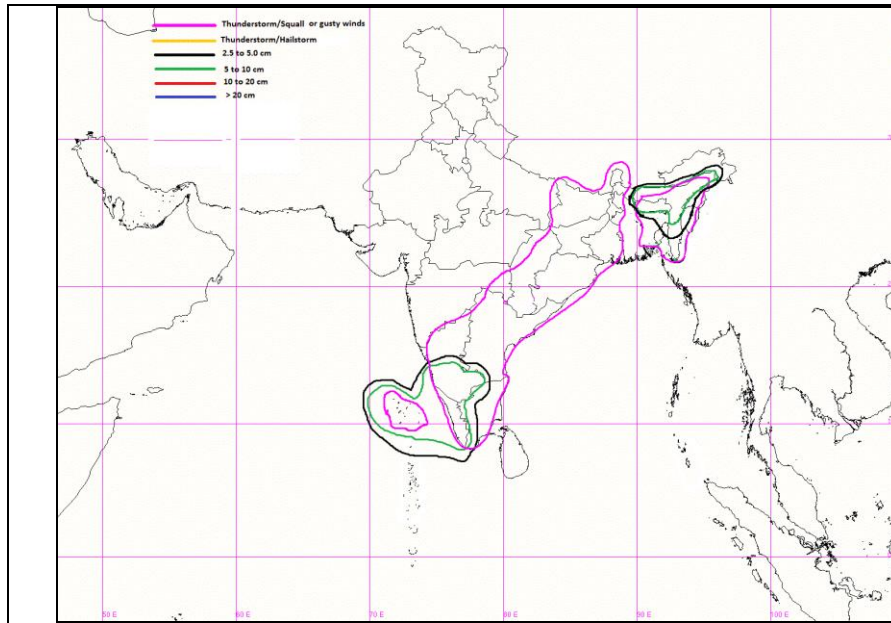
- Synoptic analysis indicates that there is a cyclonic circulation over southeast Arabian Sea adjoining Lakshadweep. This system may give rise to heavy rainfall activity over Lakshadweep, Kerala and south Interior Karnataka on Day-1. The thunderstorm with gusty winds may also likely over Telangana, Rayalaseema and Interior Tamilnadu on Day-1.
- The cyclonic circulation over West Bengal & neighbourhood extending upto 0.9 km above mean sea level. This system will give rise to the thunderstorm with gusty winds over Orissa, GWB, Jharkhand and Bihar, SHWB on Day-1.
- A fresh Western Disturbance as a trough in mid & upper tropospheric levels with its axis at 5.8 km above mean sea level runs roughly along Long 55°E to the north of Lat 25°N.

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

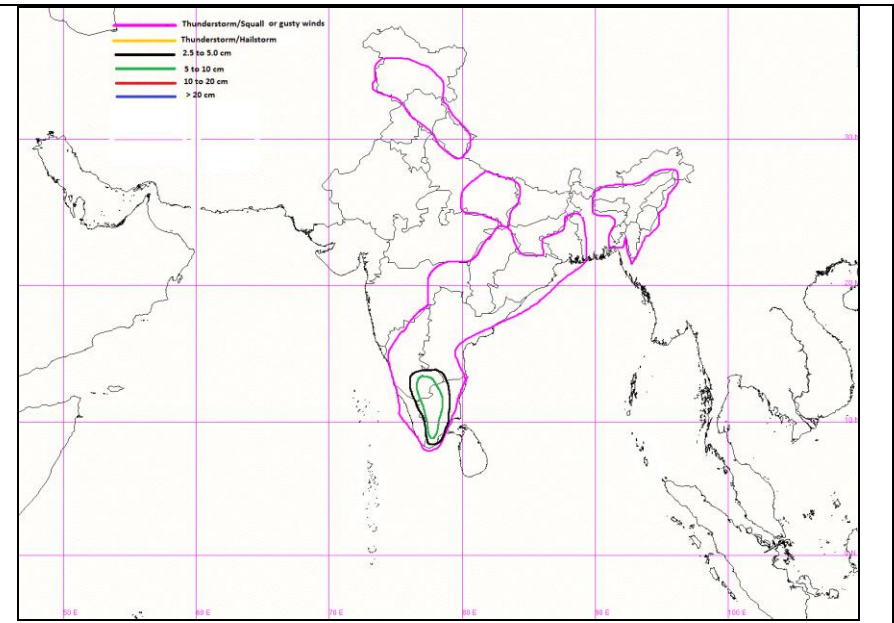
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p><b>Significant Rainfall:</b> Kerala, Interior Tamil Nadu, South Karnataka, Lakshadweep Assam and Meghalaya, Nagaland, Manipur, Mizoram, Tripura,</p> <p><b>Thunderstorm with squall or gusty winds:</b> Chhattisgarh, Vidarbha Tamil Nadu, Kerala, Karnataka, Rayalaseema, Telangana, Coastal Andhra Pradesh, Lakshadweep West Bengal, Sikkim, Jharkhand, Bihar, Odisha, Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura,</p> <p><b>Thunderstorm with squall and hail</b> Nil</p> <p><b>Duststorm:</b> Nil</p>	<p><b>Significant Rainfall:</b> Tamil Nadu, South Interior Karnataka</p> <p><b>Thunderstorm with squall or gusty winds:</b> Jammu &amp; Kashmir, Himachal Pradesh, Uttarakhand, East Uttar Pradesh Chhattisgarh, Vidarbha West Bengal, Sikkim, Odisha Tamil Nadu, Kerala, Karnataka, Rayalaseema, Telangana, Coastal Andhra Pradesh, Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura</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:



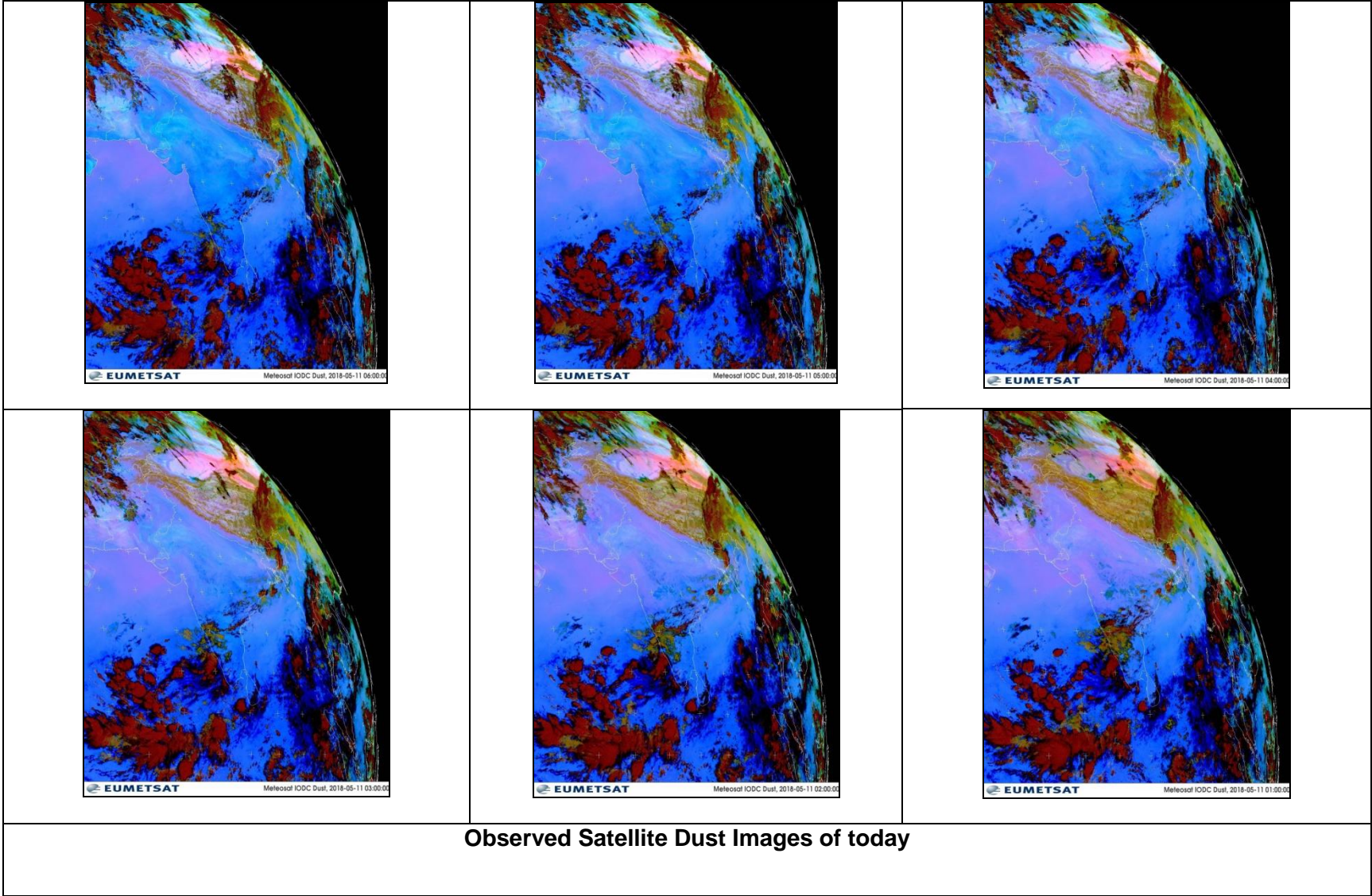
IOP Advisory for 24 hours



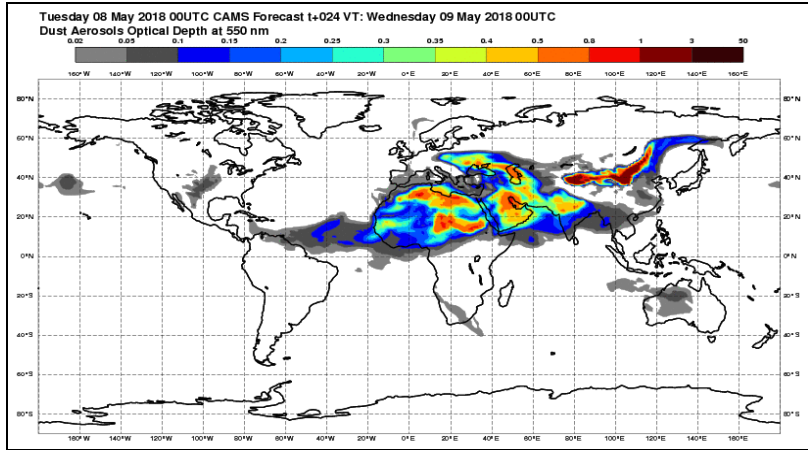
IOP Advisory for 48 hours



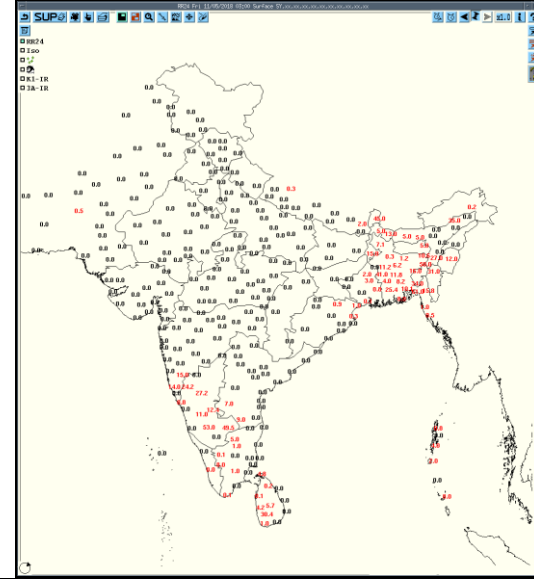




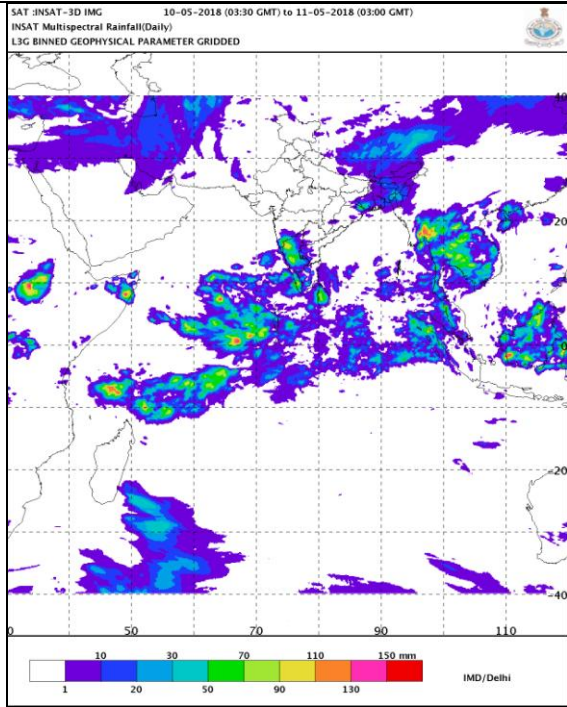
Observed Satellite Dust Images of today



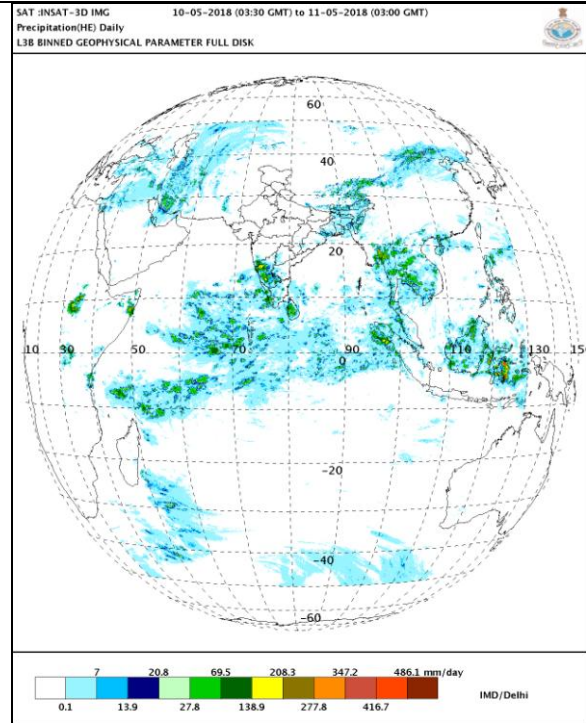
Dust Forecast



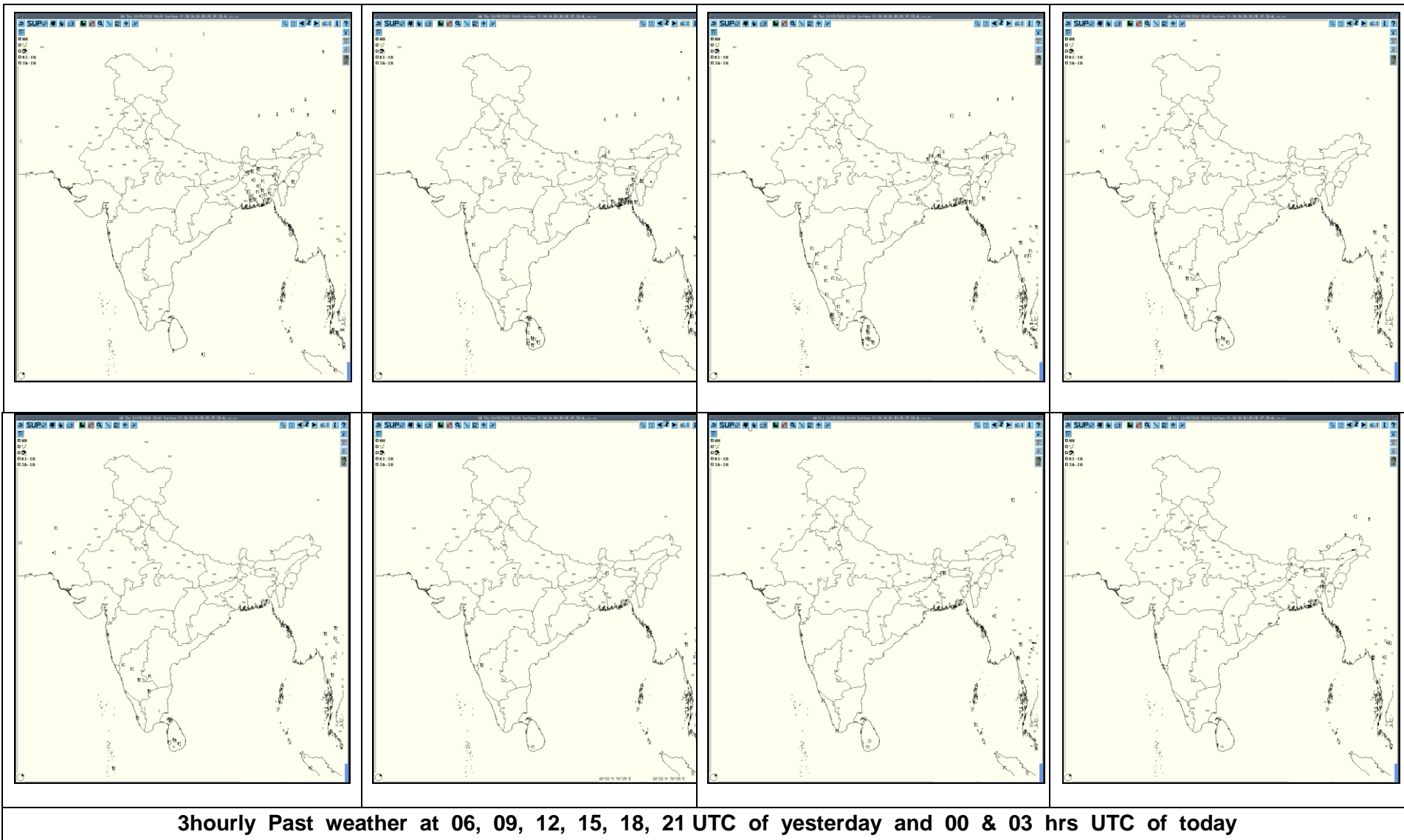
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



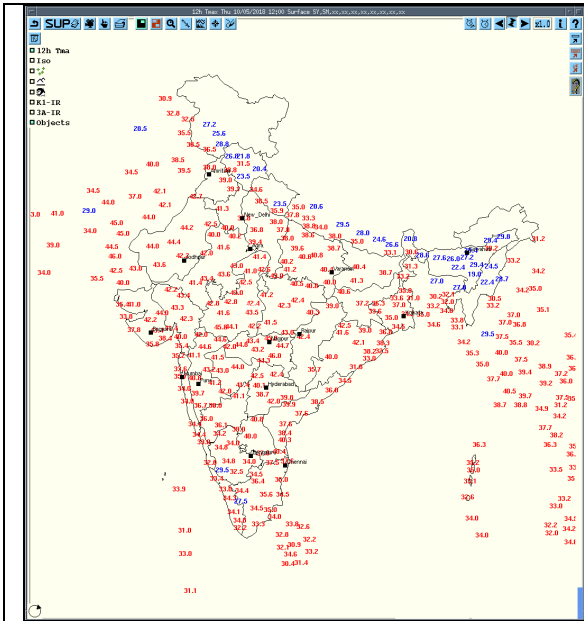
IMR



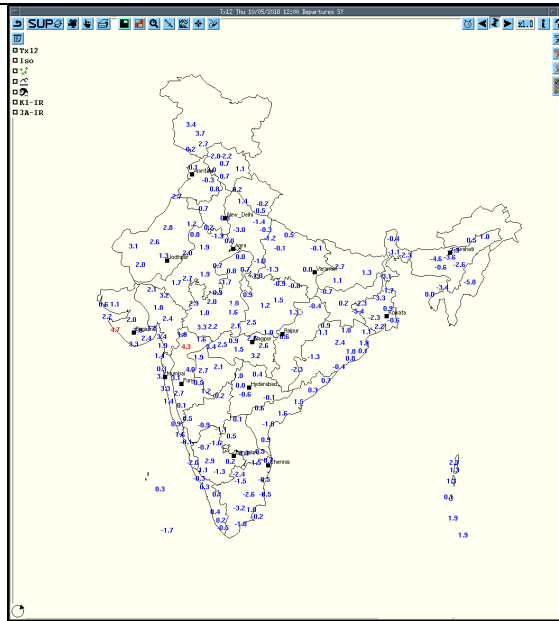
HEM



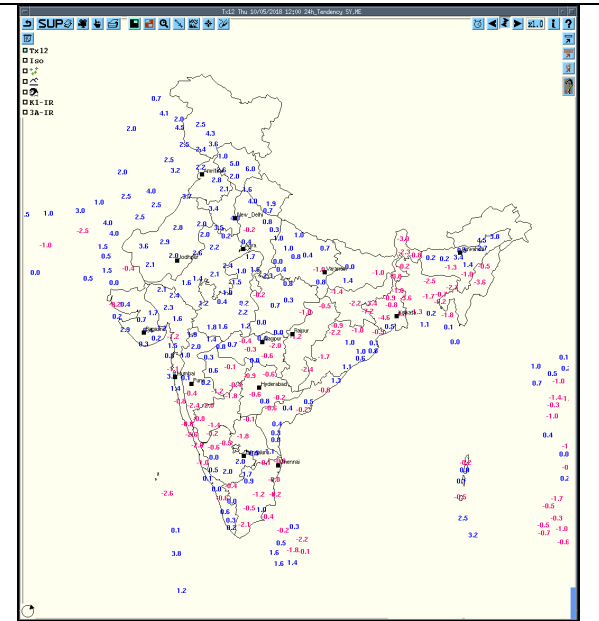
**3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today**



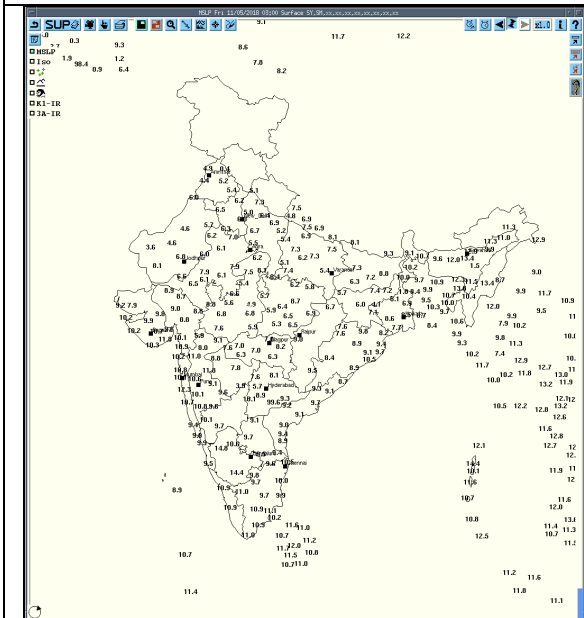
Tmax



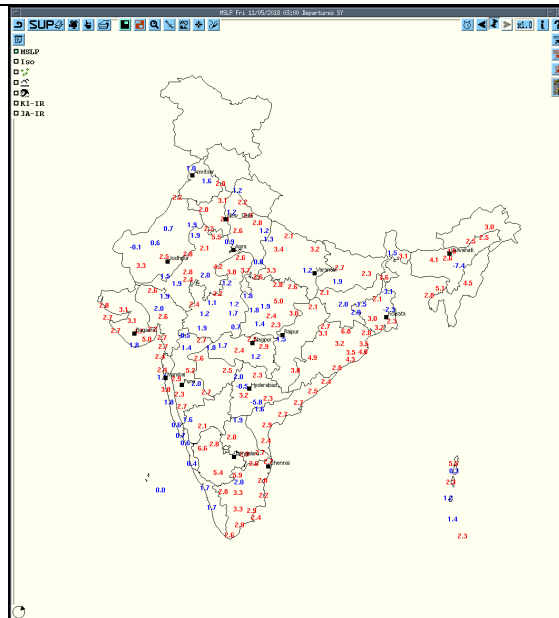
Departure Tmax



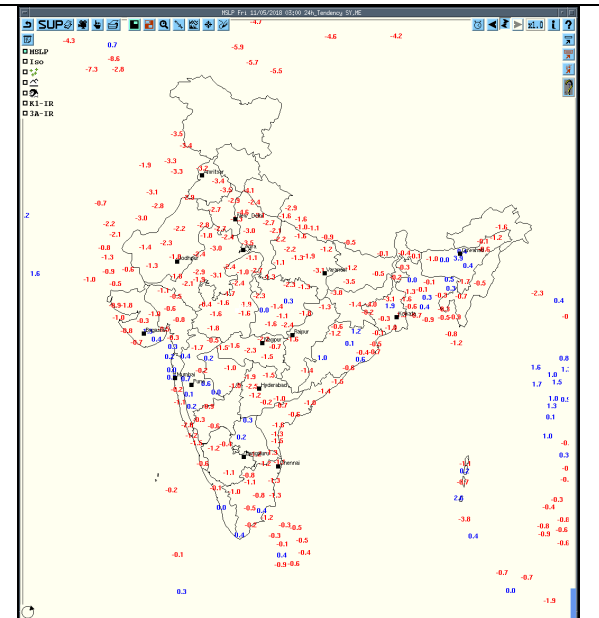
Tendency Tmax



MSLP

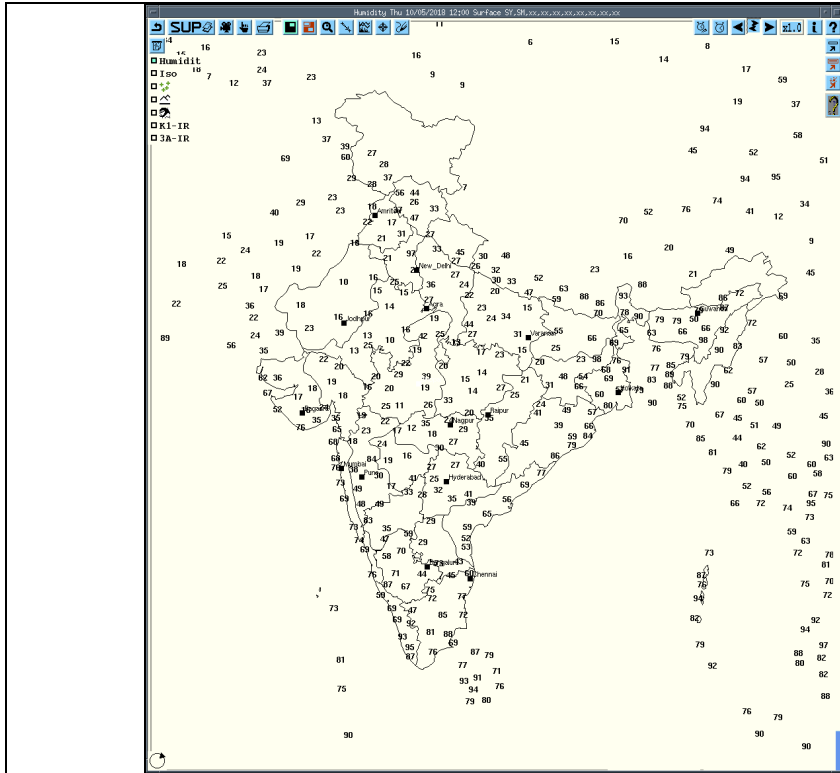


Departure MSLP

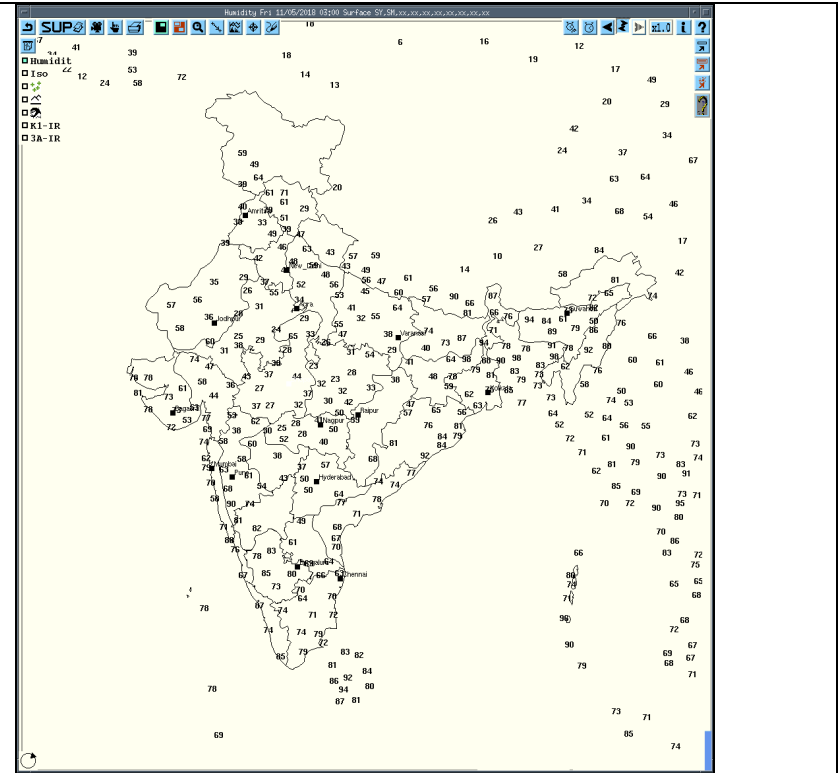


Tendency MSLP





RH at 12UTC yesterday



RH at 03UTC today

**Past 24 hours DWR Report:**

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum	Formation w.r.t radar station and Direction of movement.	Remarks	Associated severe weather if any	Districts affected
Patiala	11-05-18	100300-110252	NO ECHO	--	--	--	--
Jaipur	11-05-18	100300-110300	No Echo	--	--	--	--
Lucknow	11-05-18	100300-110300	No Sig. Echo				
Patna	11-05-18	100300-101130	NIL	N/A	N/A	N/A	N/A
		101130-101430	Isolated Single Cell  Maximum Reflectivity: 41 dBZ Echo Top: 11 KM	Range: 196 KM from DWR Patna in NNW direction Movement: towards East	Warning issued	N/A	West Champaran, East Champaran
		101430-110300	NIL	N/A	N/A	N/A	N/A
Agartala	11-05-18	100300 to 110300 (DWR operational from 0600 to 2000 IST)	SQUALL LINE FORMED OVER ASSAM,MEGHALAYA & B'DESH AT 100500Z,16Kms;58dBZ	100 150 Kms W,NW & SW;30 Kmph;N E/E'ly	Cell Persisted Covering All Dists. Of Tripura At 100622z & Then Poweroff Upto 10/1400z	+TSRA	All dists of TRP
Visakhapatnam	11-05-18	101200	CB CELL NW with max reflectivity 54dbz and height 13kms.	230kms(NW)and moving SE ly.	-	-	-
		101500	cb with max reflectivity 50dbz and height 4kms	87kms(S) and moving Easterly.	-	-	Over the sea.
		101800	A line of cb cells over the bay of Bengal with max reflectivity 54dbz and height 4kms.	78kms(SW TO EAST) and movement is untraceable.	Formed at 16:21 UTC.	-	Bay of Bengal.
		110000	CB region in which cb cells are found with max reflectivity 52dbz and height 4kms.	102kms(SSE) and moving ENE.	Formed at 18:21UTC.	-	OVER BAY OF BENGAL.

Radar Station Name	Date	Time Interval of Observation (UTC)	Organisation of cells (Isolated single cells /multiple cells/ convective regions /squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated Severe Weather if any	Districts affected
Kolkata	11-05-18	102311-101141	1. Multi Isolated single cells developed with maximum reflectivity of 63.0 dBz at 2351 UTC and maximum height more than 13.11Km at 2351 UTC	Coming from WNW. Moving in E-ward direction	Isolated single cell coming from WNW at 2311 UTC and developed into big cell system. Matured and dissipated at ---0721 UTC in E at a distance ---- KM Over Bangladesh.	Thunderstorm /Rain/Hail	N/A
			2. Isolated single cell developed with maximum reflectivity of 61.0 dBz at 0841 UTC and maximum height 16.57 Km at 0841 UTC	Formed SW (w.r.t. Radar) at (21.449 deg N/86.664 deg E) a distance of 214.2km from Radar Moving ESW-ward then E-ward Direction.	Isolated single cell formed at 0741 utc at 214.2 Km SW from Radar matured and dissipated in SSW at a distance of 79.3 km from Radar at 1141 UTC.	Thunderstorm /Rain/Hail	N/A
			3. Isolated Single cell developed with Max Reflectivity 62.5 dBZ at 0841 UTC and Max. height 17.28 km at 0801 UTC	Coming from WSW. Moving in SE-ward	Isolated single cell coming from WSW at 0721 UTC matured and dissipated at 1041 UTC in SW at a distance 211.9 from Radar.	Thunderstorm /Rain/Hail /Squall	N/A
		101141-101521	NIL	NIL	NOSIG ECHO	NIL	NIL
		101531-102031	4. Isolated cells with Max Reflectivity 53.5 dBZ at 1631 UTC and Max. height 11.47 km at 1631 UTC	Coming from WSW. Moving in SE-ward	Multiple Isolated cells coming from WSW at 1531 UTC (243.6 km), matured and dissipated at 2031 UTC in SW at a distance 148.1 from Radar.	Thunderstorm /Rain	N/A
		102041-102341	5. Isolated cells with Max Reflectivity 59.0 dBZ at 2141 UTC and Max. height 10.93 km at 2231 UTC	Coming from WSW. Moving in E-ward	Multiple Isolated cells started forming in WSW at 2041 UTC (237.3 km), matured and entered into Bay of Bengal at 2341 UTC in SW at a distance 227.1 km from Radar.	Thunderstorm /Rain	N/A
		110001-110301	NIL	NIL	NOSIG ECHO	NIL	NIL

**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>Name of Station Reporting</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>
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	10-05-18	1625	1800
Agartala	Northeast India	Tripura	Thunderstorm	10-05-18	1140	1320
			<b>Squall from WNW(300) with max wind 82Kt</b>	<b>10-05-18</b>	<b>1151</b>	<b>1153</b>
Kailasahar	Northeast India	Tripura	Thunderstorm	10/11-05-18	100830 101220 110740	101000 101500 110830
			<b>Squall from NW(320) with max wind 32Kt</b>	11-05-18	0810	0812
Karipur A P	South India	Kerala	Thunderstorm	10/11-05-18	1945 0015	2100 0200
Thiruvananthapuram AP	South India	Kerala	Thunderstorm	10-05-18	1230	1600
Thiruvananthapuram C	South India	Kerala	Thunderstorm	10/11-05-18	2205 0435	2305 0545
Agathi	Lakshadweep	Lakshadweep	Thunderstorm	10-05-18	1330	1800
Kodaikanal	South India	Tamil Nadu	Thunderstorm	10-05-18	1605	1630
Gadag	South India	NIK	Thunderstorm	10-05-18	1725	2200
Belagavi Airport	South India	NIK	Thunderstorm	10/11-05-18	1533 1807 0200	1740 2050 0420
Gulbarga	South India	NIK	Thunderstorm	10-05-18	2000	2115
Chitradurga	South India	SIK	Thunderstorm	10-05-18	1600	2100
Madikeri	South India	SIK	Thunderstorm	10-05-18	1540 1655 2015	1550 1735 2120
Mandya	South India	SIK	Thunderstorm	10-05-18	1830	2000
Bangalore CO	South India	SIK	Thunderstorm	10-05-18	2010	2115
Bangalore HAL AP	South India	SIK	Thunderstorm	10-05-18	2000	2215
Bangalore KIAL	South India	SIK	Thunderstorm	10-05-18	1811	2400
Yelahanka IAF	South India	SIK	Thunderstorm	10-05-18	1800	0100
Shivamogga	South India	SIK	Thunderstorm	10-05-18	1530	2330
Anantapur	South India	Rayalaseema	Thunderstorm	10-05-18	1745	2230

**Date: 11.05.2018** (24 hours' weather from 0830 IST of **10.05.2018** to 0830 IST of **11.05.2018**)

Sub-Division	State	Name of Station Reporting	THUNDERSTORM (TS)		HAILSTORM (HS)		
			Time of Comm. (IST)	Time of End (IST)	Time of Comm. (IST)	Time of End (IST)	Diameter (cm)
Sikkim and SHWB	Sikkim	Gangtok	<b>1335-1410 1540-1730</b>		<b>1545-1548 1600-1603 1640-1642</b>		<b>0.4</b>
		Tadong	<b>1250-1735</b>		NIL		--
		Jalpaiguri	<b>1800-1820</b>		NIL		--
GWB	West Bengal	Alipore	NIL		NIL		--
		DumDum	<b>1005-1015</b>		NIL		--
		Digha	<b>0523-0716</b>		NIL		--
		Bankura	<b>0940-1010</b>		NIL		--
		Sriniketan	<b>...0830-0940</b>		NIL		--
Jharkhand	Jharkhand	Ranchi	NIL		NIL		--
		Jamshedpur	<b>1300-1350 1630-1800</b>		NIL		--
		Daltonganj	NIL		NIL		--
Odisha	Odisha	Bhubaneswar	<b>0815-0830...</b>		NIL		--
		Balasore	<b>0325-0600</b>		NIL		--
A and N Islands	A and N Islands	Port Blair	<b>1150-1235</b>		NIL		--

## 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)

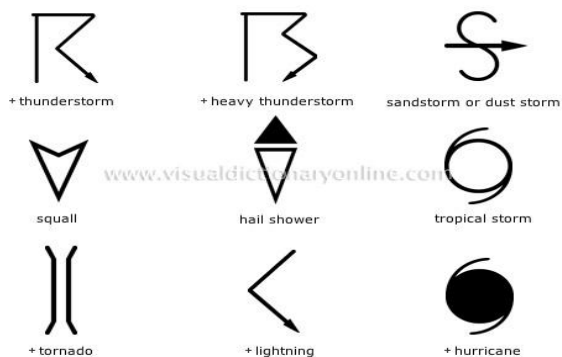
For Radar images of the past 24 hours including mosaic of images:

[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**