



# India Meteorological Department

## FDP STORM Bulletin No. 65 (10-05-2018)

### 1. CURRENT SYNOPTIC SITUATION:

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

- ◆ A north south trough at 1.5 km above mean sea level runs from Uttarakhand to south Uttar Pradesh.
- ◆ A north south trough runs from northwest Rajasthan to south Madhya Maharashtra across West Madhya Pradesh and extends upto 0.9 km above mean sea level.
- ◆ The cyclonic circulation over Sub Himalayan West Bengal & adjoining Bihar now lies over West Bengal & neighbourhood and extends upto 0.9 km above mean sea level. The trough aloft runs from east Bihar to northeast Odisha across Gangetic West Bengal at 1.5 km above mean sea level.
- ◆ The cyclonic circulation over Lakshadweep area and neighbourhood now lies over Lakshadweep and adjoining southeast Arabian Sea and extends upto 3.1 km above mean sea level. A trough runs from this system to North Interior Karnataka at 1.5 km above mean sea level.
- ◆ The cyclonic circulation over Comorin area and neighbourhood persists and now extends upto 0.9km above mean sea level.
- ◆ A fresh Western Disturbance is likely to affect Western Himalayan region from 13th May onwards.

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

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

##### Western Disturbance (WD):

Scattered multi-layered clouds with embedded moderate to intense convection were seen over Tibet adjoining China in association with Western Disturbance over the area.

Scattered multi-layered clouds with embedded moderate to intense convection were seen over Caspian Sea, Persian Gulf and Iran in association with another Western Disturbance over the area.

##### Clouds descriptions within India:

Scattered low/medium clouds with embedded intense to very intense convection seen over Tripura (**Minimum CTT Minus 85 Deg C**). Scattered low/medium clouds with embedded moderate to intense convection seen over Southeast Jharkhand (**Minimum CTT Minus 60 Deg C**), Meghalaya, West Assam (**Minimum CTT Minus 65 Deg C**) and Lakshadweep Islands. Scattered low/medium clouds with embedded weak to moderate convection seen over North Jharkhand, South Bihar, Gangetic West Bengal, Sub Himalayan West Bengal, Sikkim, Arunachal Pradesh, East Assam, Nagaland, Manipur, Goa, Karnataka, Kerala, Tamilnadu, South Telangana, Rayalaseema and South Coastal Andhra Pradesh. Scattered low/medium clouds seen over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Southeast Uttar Pradesh, Southeast Rajasthan, Madhya Pradesh, Vidarbha, Konkan, North Coastal Andhra Pradesh, and Bay Islands .

**Arabian Sea:-**

Scattered low/medium clouds with embedded intense to very intense convection seen over Southeast adjoining East Central Arabian Sea south of lat 15.0N East of Long 62.0E (**Minimum CTT Minus 83 Deg C** and moderate to intense convection seen over Comorin & Maldives.

**Bay of Bengal & Andaman Sea:**

Scattered low/medium clouds with embedded moderate to intense convective seen over Southwest Bay between Lat 10.0N to 13.0N west of Long 87.0E to East Andaman Islands.

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

Intense to Very Intense convection was observed over South Chhattisgarh South Odisha North-East Jharkhand North Gangetic West Bengal North-East States Goa adjoining Maharashtra Karnataka Kerala Tamilnadu.

Moderate to Intense Convection was observed over J&K Himachal Pradesh Uttarakhand North Punjab Haryana Delhi Uttar Pradesh Bihar Telangana Andhra Pradesh and Weak to Moderate convection observed over Rajasthan West Jharkhand.

**OLR: - .**

Up-to 150-230  $\text{wm}^{-2}$  observed over J&K Himachal Pradesh Uttarakhand Sikkim North-East States Odisha Telangana North Coastal Andhra Pradesh Karnataka Kerala Tamilnadu & Lakshadweep.

**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** upto -20 knots is observed over Jammu & Kashmir Himachal Pradesh Punjab Haryana Delhi North Rajasthan.

**Positive Vorticity (850 hPa)** more than 50 ( $\times 10^{-5}/\text{s}$ ) is observed over Uttar Pradesh Bihar Arunachal Pradesh East Madhya Pradesh North Chhattisgarh Gangetic West Bengal Konkan & Madhya Maharashtra.

**Positive Low Level Convergence** is observed over Indian Region.

**Precipitation:****IMR:-**

Rainfall up to 90-130 mm was observed over Goa Coastal Karnataka South Kerala West Tamilnadu.

Rainfall up to 20-50 mm was observed over North-East States North Gangetic West Bengal North-East Jharkhand Odisha South Chhattisgarh North Coastal Andhra Pradesh South Konkan rest West Karnataka rest Tamilnadu

Rainfall up to 01-20 mm was observed over J&K Himachal Pradesh Uttarakhand South-East Haryana Delhi North-West Uttar Pradesh Telangana East Karnataka & Lakshadweep.

**HEM:-**

Rainfall up to 139.8-208.3 mm was observed over West Tamilnadu

Rainfall up to 27.8-139.8 mm was observed over West Karnataka Kerala Central Tamilnadu North Coastal Andhra Pradesh Coastal Odisha Meghalaya Tripura North Mizoram Nagaland East Arunachal Pradesh

Rainfall up to 07-20.8mm was observed over South-West J&K Himachal Pradesh Uttarakhand Manipur North Gangetic West Bengal Telangana rest South Interior Karnataka

Rainfall up to 0.1-07mm was observed over North Punjab South-East Haryana Delhi Uttar Pradesh South-west Bihar North-East Jharkhand rest East Odisha rest North-East States rest Tamilnadu & Lakshadweep.

## DWR and RAPID Observations:

Multiple strong echoes (dBZ >55 and height >15km) are seen on DWR Kolkata 1530IST. Moderate isolated/multiple echoes are also seen on DWR Agartala, Hyderabad, Nagpur, Paradeep and Thiruvananthapuram domains at around 1500 IST.

RAPID RGB Satellite imagery at 1430 IST indicated significant convection over Arunachal Pradesh, Central & East Assam, extreme East Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Gangetic West Bengal, extreme Northeast Odisha, South Interior Karnataka, Rayalaseema, South Tamilnadu, South Kerala and Lakshadweep Islands.

## 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 decrease for next few days over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	10.05.2018	11.05.2018
PM10 (micro-g/m <sup>3</sup> )	185	203
PM2.5 (micro-g/m <sup>3</sup> )	77	85

## **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 2-3:** 925 hPa weak CYCIR over NW India adjoining Pakistan

**00UTC of Day 2-3:** 850 hPa weak CYCIR over Madhya Maharashtra and UP west region in day 3-4.

**12UTC of Day 2-3:** 850 hPa weak CYCIR over Tamil Nadu and Kerala WB-Bangladesh.

##### **Confluence & Wind Discontinuity Regions:**

**12 UTC of Day 2-3:** 925 hPa N-S discontinuity over central India to Southern Peninsular India

##### **Synoptic Systems: 00 UTC of Day 1-5:**

**00 UTC of Day 1-3:** 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: Arunachal Pradesh, Assam Meghalaya, Jharkhand, Odisha, Madhya Maharashtra, Marathwada,

Day1: NE NMMT, Gangetic WB, Jharkhand, Odisha, East MP, Madhya Maharashtra,

Day2: Jharkhand, Himachal Pradesh, East RJ, Odisha, West MP, Madhya Maharashtra, Vidarbha, Chhattisgarh, NI Karnataka,

Day3: Jharkhand, Punjab, Odisha, Madhya Maharashtra, Chhattisgarh,

Day4: Punjab, Odisha, Chhattisgarh, NI Karnataka, SI Karnataka

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

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

Day0: Arunachal Pradesh, Assam Meghalaya, Jharkhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, NI Karnataka,

Day1: Assam Meghalaya, NE NMMT, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh,

Day2: Jharkhand, Himachal Pradesh, Odisha,

Day3: Jharkhand, Punjab, Odisha, TN Puducherry,

Day4: Assam Meghalaya, Gangetic WB, Bihar, East UP, Uttarakhand, Himachal Pradesh, TN Puducherry

#### 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, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: 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, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: 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, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, 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, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, 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, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Gujarat Region, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, SI Karnataka,

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

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

## **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, Uttarakhand, Himachal Pradesh, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka, Kerala,

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

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

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

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

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

Day1: Arunachal Pradesh, Assam Meghalaya, Gangetic WB, Jharkhand, Odisha, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Odisha,

Day3: NE NMMT, Jammu Kashmir, SI Karnataka, Kerala,

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

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, 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 extending from Uttarakhand to South Uttar Pradesh. The forecast shows the Trough will become less marked in next 24 hours. Another North- South Trough is seen in the analysis from North west Rajasthan to South Madhya Maharashtra across west Madhya Pradesh. The forecast shows the Trough will move eastward till day2. The analysis shows a cyclonic circulation over GWB and adjoining Bihar. A Trough is also seen in the analysis from East Bihar to North East Orissa. The forecasts show that the cyclonic circulation will merge with the Trough in next 24 hours. The analysis also indicates another cyclonic circulation over South East Madhya Pradesh and

adjoining East Vidarbha region. The forecast shows it will merge with the North- South Trough on day 2. The north- south Trough from North Madhya Maharashtra to south Interior Karnataka is seen at 925 hPa which persists for next 2 days in forecast with slight eastward shift. A cyclonic circulation is seen in the analysis over South Kerala and Comorin area at (925 hPa). The forecast shows it will become less marked in next 24 hours.

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

Although the presence of strong westerlies is found over Eastern and North Eastern parts of India but no jet core over the Indian region for the 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, southern parts of Uttar Pradesh, 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 central parts of Madhya Pradesh; The significant zone lies over parts of SHWB, GWB, Sikkim, Jharkhand, Bihar, Orissa, coastal Andhra Pradesh and Telangana.

**CAPE (> 1000):** Mostly seen over southern peninsular India, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, East Uttar Pradesh, south west Rajasthan, Andhra Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan and Goa, Vidarbha, Telangana, coastal Maharashtra, south Madhya Maharashtra, Marathwada, Gujarat, NE states, Sikkim, Assam, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of East Uttar Pradesh and adjoining areas from day 1 onwards; over parts of West Uttar Pradesh from day 2 onwards; maximum value of the index is seen over parts of Bihar, Jharkhand, GWB, SHWB, Orissa, Assam Tripura and adjoining areas, Andhra Pradesh, Tamil Nadu,



coastal areas along East and West Coast, coastal Gujarat and northern parts of coastal Maharashtra during next 3 days; also seen over parts of East Uttar Pradesh on day 2 and 3.

**CIN (50-150):** Over sub-divisions along east and west coast of India, extreme south over Kerala and south Tamilnadu. The zone of significance extends over Bihar and Jharkhand along foothills of Himalayas in the north. The value of the index lies in the above range over most of the parts of the country except South Madhya Maharashtra and Marathwada, southern parts of East Madhya Pradesh and adjoining south Chhattisgarh, south Madhya Maharashtra and Marathwada and central parts of Madhya Pradesh during next 3 days; the maximum value of the index is seen over Gujarat, South West Rajasthan, Orissa, GWB, SHWB, Assam, Arunachal Pradesh, Tripura and adjoining areas, south Chhattisgarh and North Andhra Pradesh.

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

70- 130 mm Rainfall: over parts of GWB on day 2; over parts of South Chhattisgarh on day 2.

40-70 mm Rainfall: over parts of Tripura and adjoining areas on day 1; over parts of GWB on day 2; over parts of South Orissa, adjoining South Chhattisgarh and Andhra Pradesh on day 3.

10-40 mm Rainfall: over parts of Kerala, Karnataka, Tamil Nadu, Orissa, Andhra Pradesh, GWB, SHWB, Sikkim, Foothills of Himalaya, and NE states during next 3 days; over parts of J&K, Himachal Pradesh, South Chhattisgarh and Telangana on day 3.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, SHWB & Sikkim and NE states, Bihar, Jharkhand, GWB, Orissa, Chhattisgarh, Kerala, Interior Karnataka, Konkan & Goa, Tamil Nadu, Telangana, Rayalaseema, South Madhya Maharashtra, Marathwada, Vidarbha and Andhra Pradesh during next 3 days; over parts of Punjab, Haryana, North West Rajasthan and south coastal Maharashtra on day 1; over parts of Punjab, Haryana, Delhi, Uttar Pradesh, Rajasthan, Madhya Pradesh, Madhya Maharashtra and Marathwada, Vidarbha and adjoining areas on day 3.

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

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

**>25 dBZ Model Reflectivity:** On day 1, over parts of Sikkim, SHWB, GWB, Kerala, Karnataka, Tamil Nadu, Telangana, Andhra Pradesh, Bihar, Jharkhand, East Uttar Pradesh adjoining East Madhya Pradesh, Chhattisgarh, Orissa and NE states. On day 2 over parts of J&K, GWB, SHWB, Orissa, 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, Uttarakhand, GWB, Orissa, Andhra Pradesh, Telangana, Chhattisgarh, Karnataka, Kerala, Tamil Nadu Sikkim and 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 GWB, Orissa 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, 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, Andhra Pradesh, Telangana, 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:**

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CINE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over Northeast, East and peninsular India on day 1, increasing on day 2 over east peninsular India. CAPE shows an identical pattern except decreasing on day 2. SWEAT index, which also accounts for the wind shear between 850 and 500 hPa levels, indicates highest probability of thunderstorm occurrence over east India on day 1 and increasing over the same region on day 2. The 850-200 hPa wind shear is very high over east and central India, on day 1, and decreasing over central India on day 2.

o Synoptic analysis indicates that a north-south trough runs in the low levels from Uttarakhand to south Uttar Pradesh. There is not much moisture in the region, and only isolated dust storms are expected over the northwest Indian region.

o There is also a cyclonic circulation over West Bengal & neighbourhood in the lower levels with a trough aloft from east Bihar to northeast Odisha. East and Northeast India is likely to be active as a result of the trough with heavy rainfall expected in some regions of northeast India on day 1 and 2. IMD GFS deterministic model indicates that a northeast southwest oriented trough, parallel to the Indian east coastline, will develop in the lower levels during the afternoon and this is likely to result in widespread thunderstorm activity over eastern India and peninsular India on day 1 and 2, with more severe thunderstorm activity over East and North east India.

o A north south trough runs from northwest Rajasthan to south Madhya Maharashtra across West Madhya Pradesh in the lower levels. There is also a cyclonic circulation over Lakshadweep and adjoining southeast Arabian Sea and a trough runs from this system to North Interior Karnataka in the lower levels. Peninsular India is likely to get heavy to very heavy rainfall, associated with the troughs on day 1 as well as day 2.

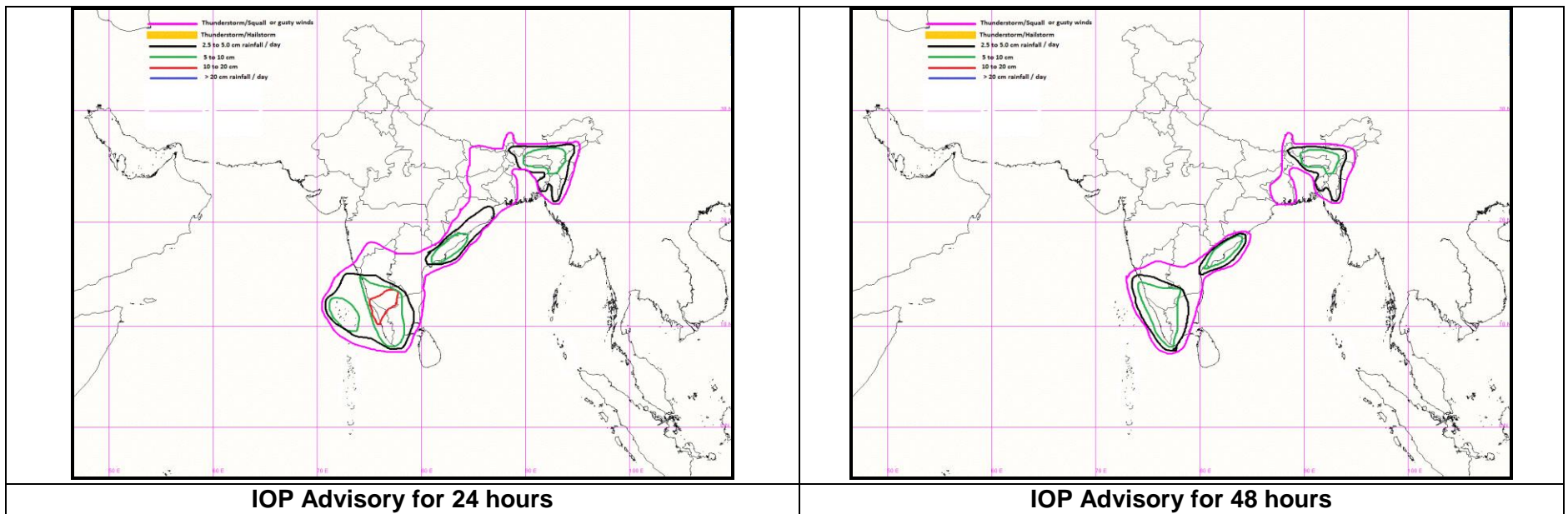
o Since the high values of thermodynamic parameters over West India are mostly due to high temperatures in the low levels, the region is unlikely to get any weather on account of the unavailability of moisture or a synoptic system to trigger the rainfall occurrence.

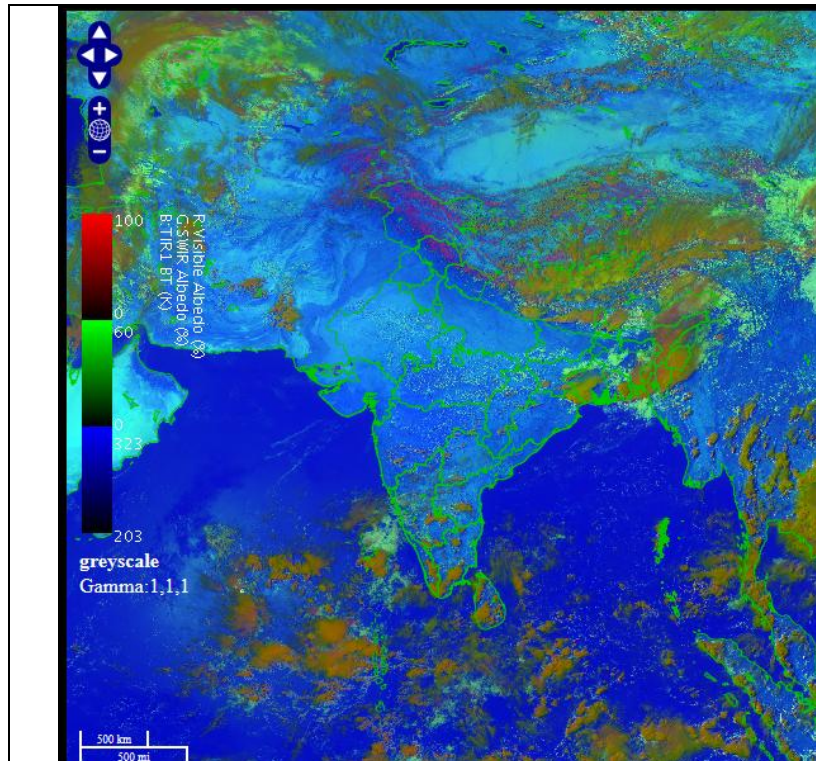


**Day-1 & Day-2:**

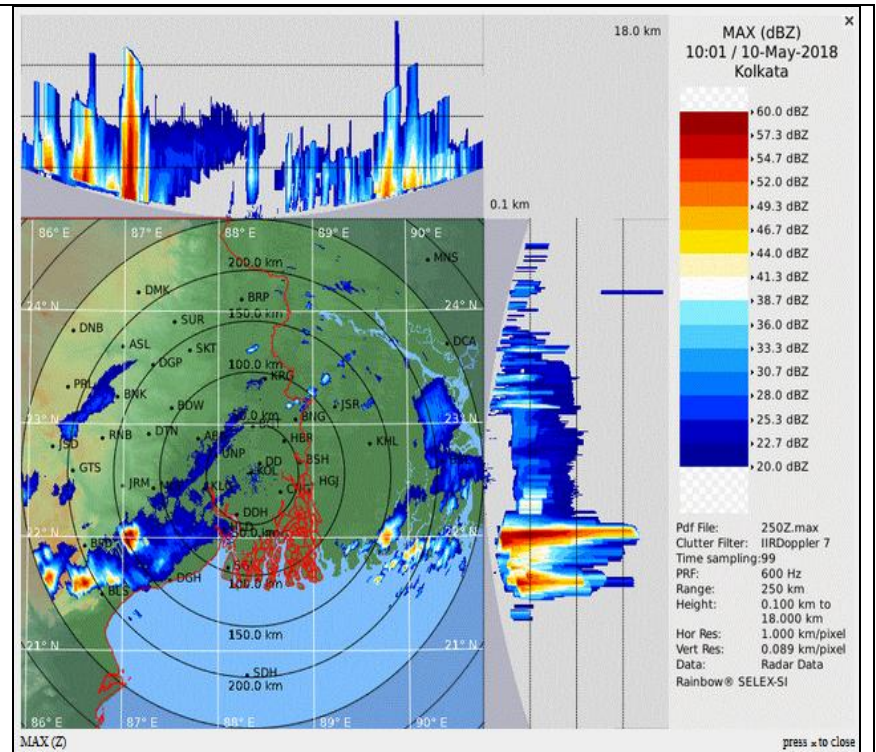
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p><b>Significant Rainfall:</b> Tamil Nadu, Coastal Karnataka, South Interior Karnataka, Lakshadweep, Kerala Coastal Andhra Pradesh, Rayalaseema Assam and Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Sub Himalayan West Bengal, Coastal Odisha</p> <p><b>Thunderstorm with squall or gusty winds:</b> Tamil Nadu, Kerala, Lakshadweep, Karnataka, Rayalaseema, Coastal Andhra Pradesh, South Madhya Maharashtra, Goa West Bengal and Sikkim, Jharkhand, Bihar, Odisha, Nagaland, Manipur, Mizoram, Tripura, Assam and Meghalaya</p> <p><b>Thunderstorm with squall and hail</b> Nil</p> <p><b>Dust storm:</b> West Madhya Pradesh, Rajasthan</p>	<p><b>Significant Rainfall:</b> Assam and Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Tamil Nadu, South Interior Karnataka, Coastal Karnataka, Coastal Andhra Pradesh, Kerala</p> <p><b>Thunderstorm with squall or gusty winds:</b> Tamil Nadu, Kerala, Karnataka, Rayalaseema, Coastal Andhra Pradesh, West Bengal, Sikkim, Nagaland, Manipur, Mizoram, Tripura, Assam and Meghalaya</p> <p><b>Thunderstorm with squall and hail</b> Nil</p> <p><b>Dust storm:</b> Nil</p>

**Graphical Presentation of Potential Areas for Severe Weather:**



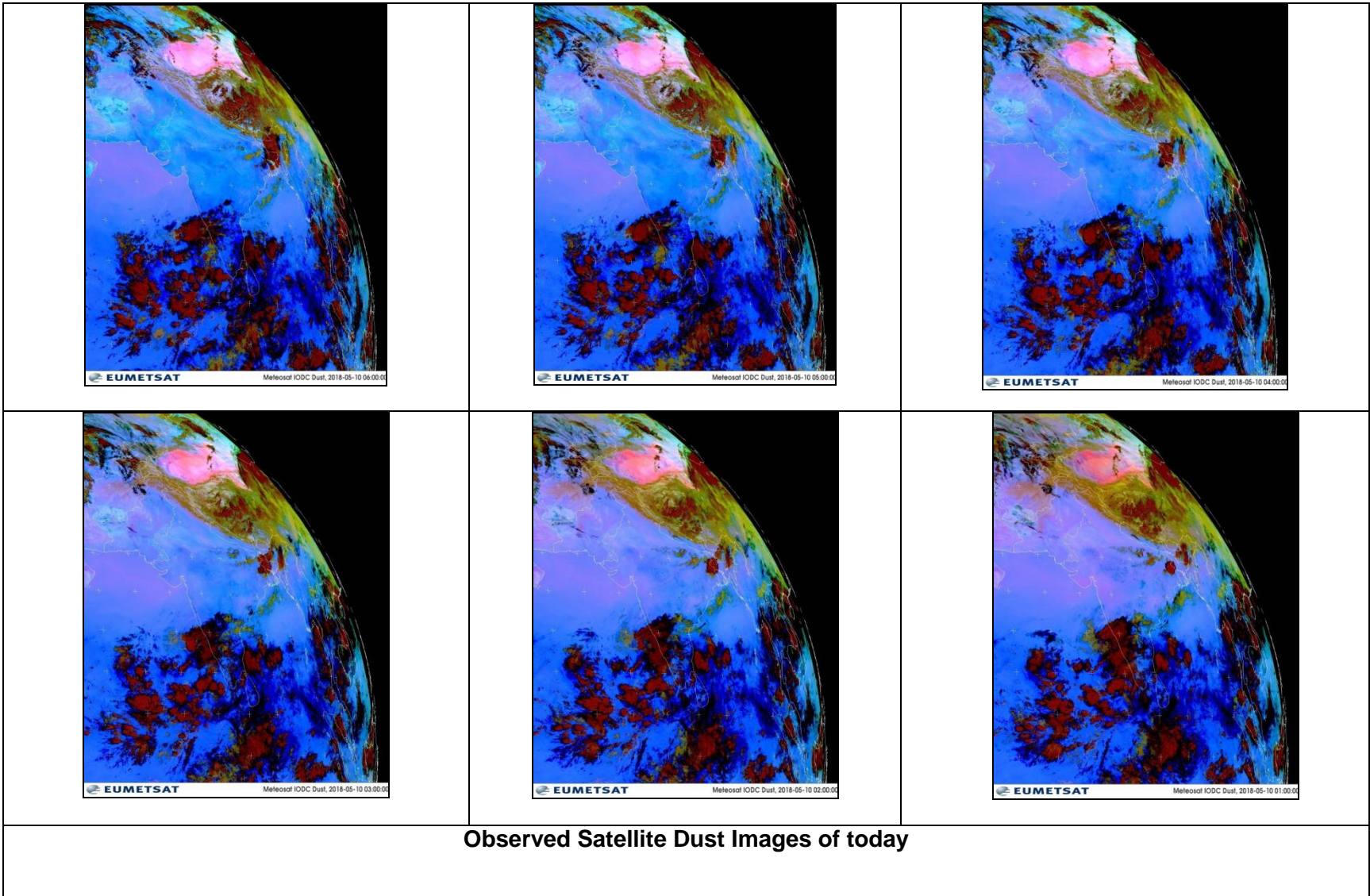


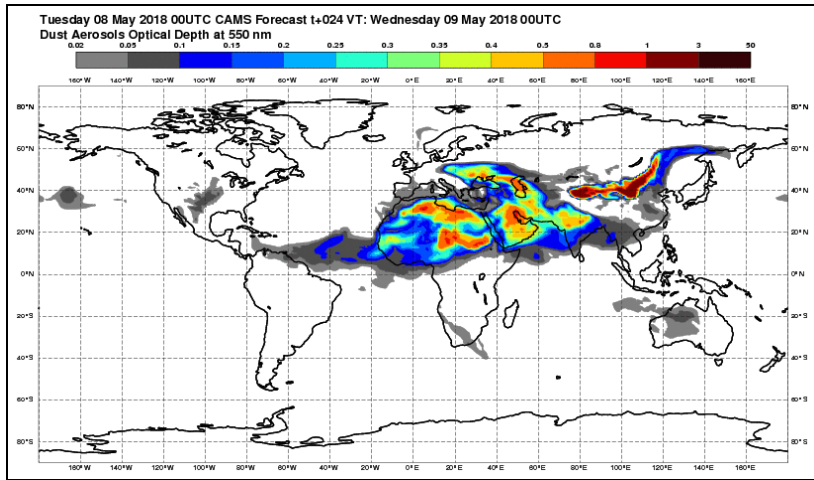
RAPID RGB Imagery at 1430 IST of the Day



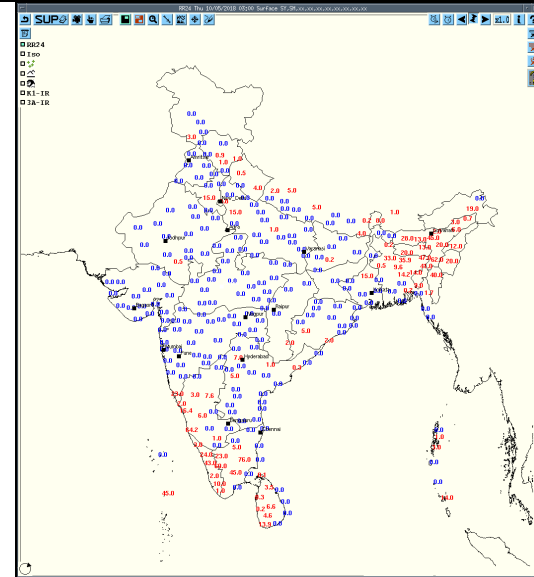
DWR Kolkata at 1531 IST of the Day



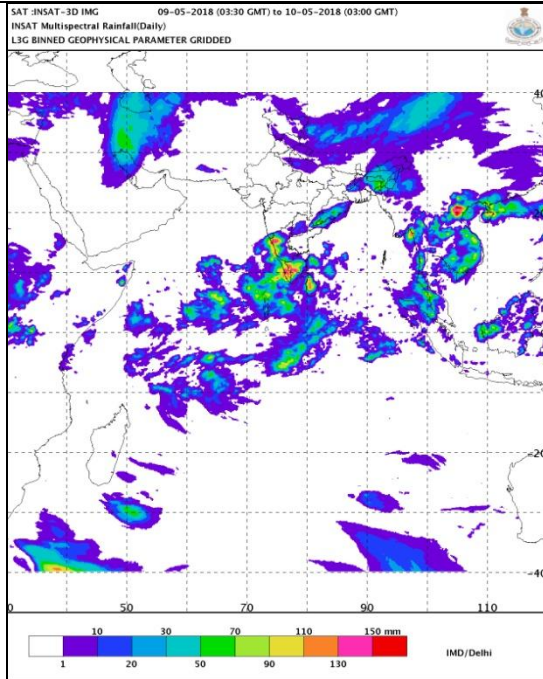




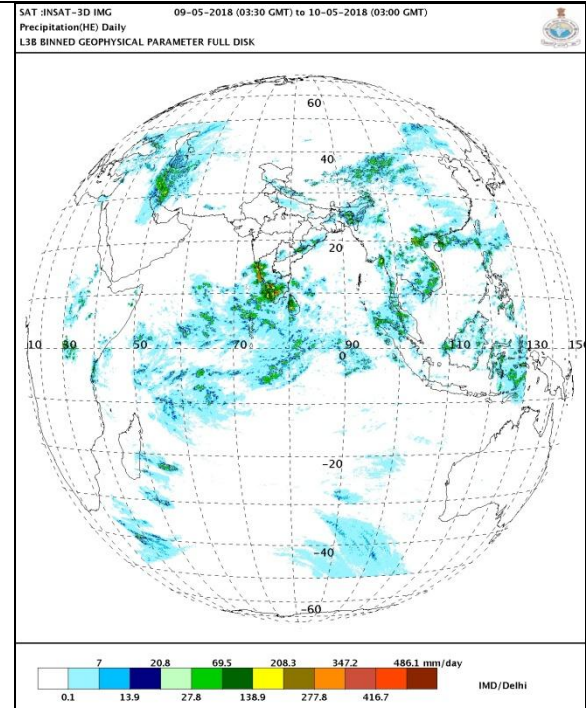
**Dust Forecast**



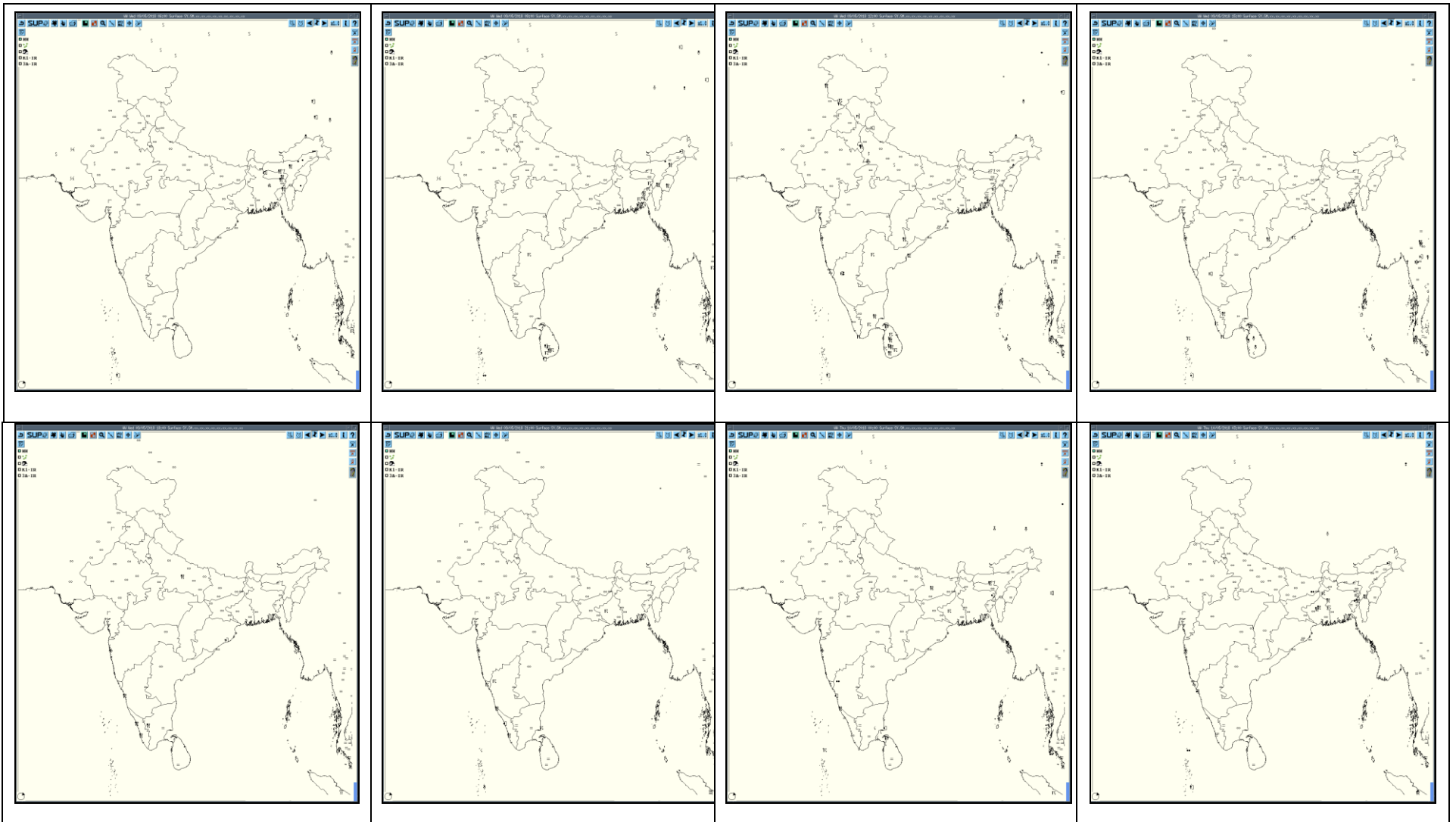
**Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today**



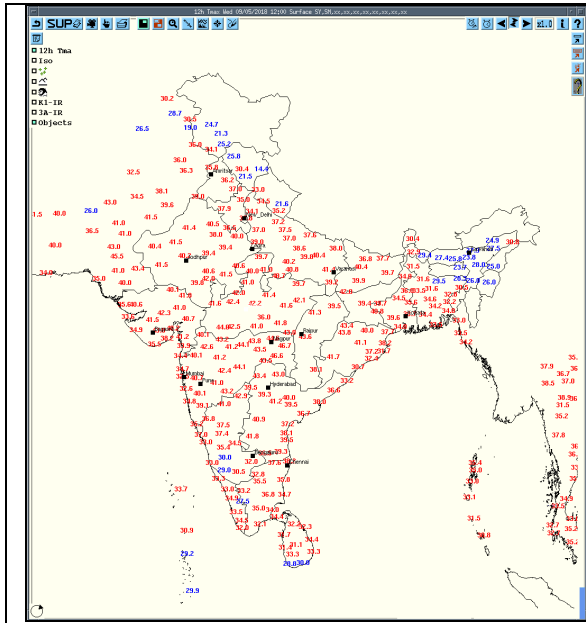
**IMR**



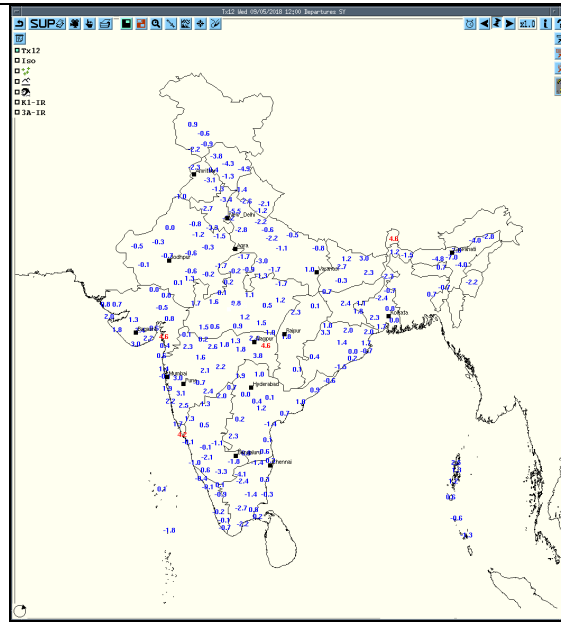
**HEM**



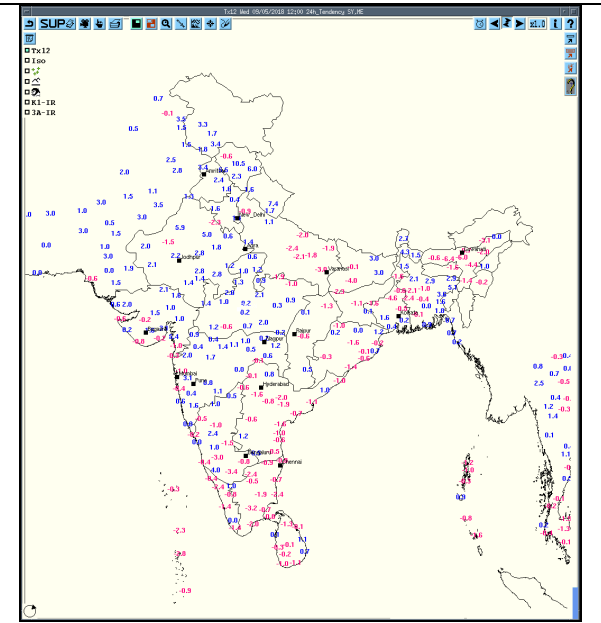
**3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today**



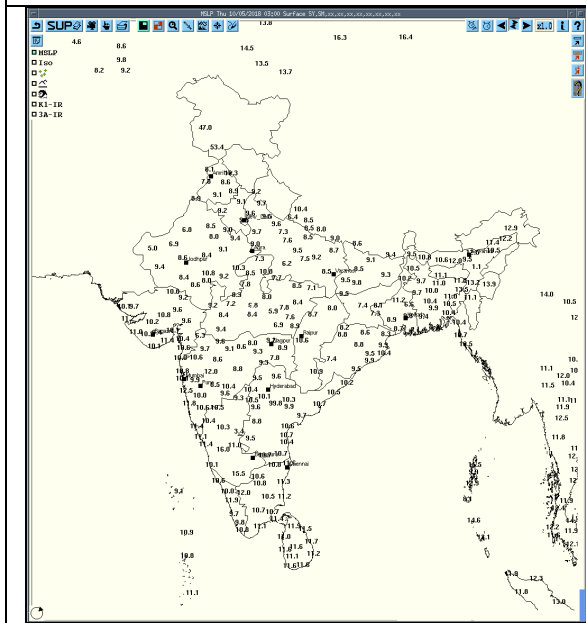
**Tmax**



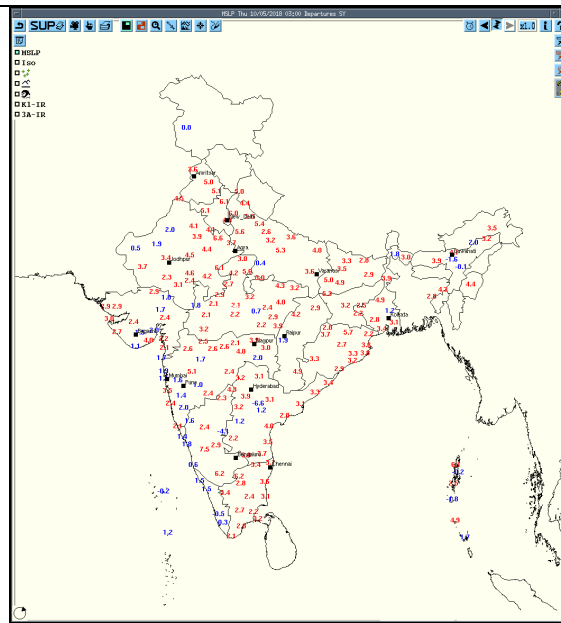
**Departure Tmax**



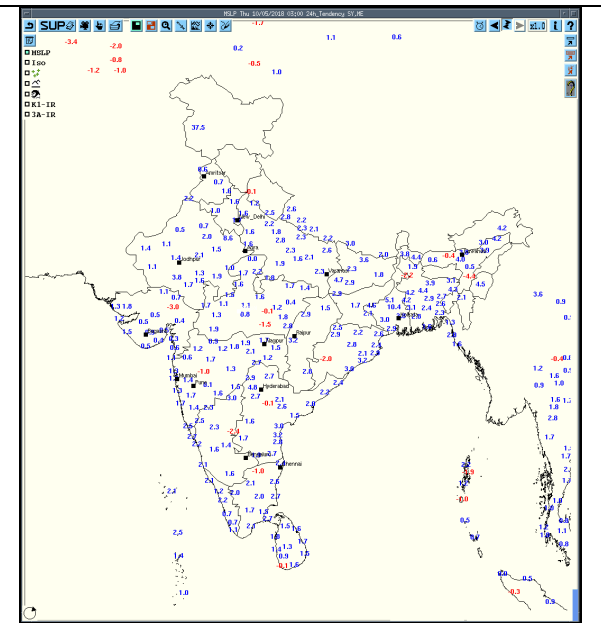
**Tendency Tmax**



**MSLP**



**Departure MSLP**



**Tendency MSLP**





**Past 24 hours DWR Report:**

<b>Radar Station Name</b>	<b>Date</b>	<b>Time Interval Of Observation (UTC)</b>	<b>Organisation 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>Associated severe weather if any</b>	<b>Districts affected</b>
Jaipur	10-05-18	090622-091152	Multiple cell with average height of 4.5 km & maximum reflectivity 53:50 dBZ	Multiple cell develop from 06:22 UTC of 09/05/2018 towards SW,W of Jaipur and moved to E, NE Wards at speed 25--30 km/hr	Multiple cell develop from 0622 UTC on 09/05/2018 towards SW,W of Jaipur and reaches maximum reflectivity during 06:42 to 06:52 UTC of 09/05/2018 and died 11:52 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Bhilwara, Ajmer Districts.
		090857-091702	Multiple cell with average height of 8.0 km & maximum reflectivity 61:50 dBZ	Multiple cell develop from 08:57 UTC of 09/05/2018 towards NW,N of Jaipur and moved to E,SE Wards at speed 30-35 km/hr	Multiple cell develop from 08:57 UTC on 09/05/2018 towards NW, N of Jaipur and reaches maximum reflectivity during 10:22 to 10:32 UTC of 09/05/2018 and died 17:02 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Alwar, Bharatpur, Dholpur Districts.
		091822-100142	Multiple cell with average height of 1.5 km & maximum reflectivity 44:00 dBZ	Multiple cell develop from 18:22 UTC of 09/05/2018 towards W,SW, of Jaipur and moved to E, NE Wards at speed 15-20 km/hr	Multiple cell develop from 18:22 UTC on 09/05/2018 towards W,NW of Jaipur and reaches maximum reflectivity during 2052-2102 UTC of 9/05/2018 and died 0142 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Alwar, Bharatpur, Dholpur, Karoli District.

Radar Station Name	Date	Time Interval Of Observation (UTC)	Organisation 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
Patna	10-05-18	090300-092115	NIL	N/A	N/A	N/A	N/A
		092115-092315	<b>Isolated Multiple Cell</b> Maximum Reflectivity: 40 dBZ Echo Top: 10 KM	Range: 156 KM from DWR Patna in WNW direction Movement: towards EASTERLY	Warning issued	N/A	Buxar, Bhabhua, Rohtas, Bhojpur.
		092315-092350	<b>NIL</b>	N/A	N/A	N/A	N/A
		092350-100300	<b>Isolated Multiple Cell</b> Maximum Reflectivity: 43.50 dBZ Echo Top: 08 KM	Range: 52 KM from DWR Patna in SSE direction Movement: towards EASTERLY	Warning issued	N/A	Aurangabad, Arwal, Gaya, Jehanabad, Patna, Nalanda, Nawada.
Agartala	10-05-18	090300 to 100300 (DWR operational from 0600 to 2000 IST)	SQUALL LINE FORMATION OVER ADJ B'DESH AT 090457Z,16Kms;60dbz	180 Kms NW;30 Kmph;E/NE'ly	Disspated Fully @091400z	+TSRA	All Dists Of TRP
			SQUALL LINE FORMATION OVER ASSAM AND ADJOINING MEGHLAYA HILLS AT 100052Z;15Kms;57dbz	150 Kms ;30 Kmph;NNE'ly:	Cell Persisted Over DHALAI,KHOWAI,UNOKOTI & NORTH DISTS Of TRP>	Not Known	

<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>Associated severe weather if any</b>	<b>Districts affected</b>
Visakhapatnam	10-05-18	090600	Isolated Single cb cells with maximum reflectivity of 54 dBz with height of 14 kms	NW (100 kms) moving SE ly	Isolated CB cells formed at 0511utc and developing.		Koraput Dist. (Orissa)
		090900	Multiple cb cells with maximum reflectivity of 64 dBz with height of 18 kms	NW (85 to 145 kms) moving S ly	Multiple CB cells are forming developing and matured well. Max. reflectivity of 64 dBz observed at 0721UTC	TS with heavy rain may take place.	Visakhapatnam. Vizianagaram dist(AP)Rayagada , Koraput, Kalahand Dist. (Orissa)
		091200	Multiple cb cells with maximum reflectivity of 63 dBz with height of 18 kms	NW (118 to 250 kms), W(58 to 165 kms) moving SE ly	Since last observation CB cells are forming developing well and dissipating. Max. reflectivity of 63 dBz observed at 0931UTC	TS with heavy rain may take place.	Visakhapatnam, East Godavari, Vizianagaram dist(AP) Rayagada,Koraput, Kalahand, Ganjam, Malkangiri Dist. (Orissa)
		091500	Multiple cb cells with maximum reflectivity of 63 dBz with height of 18 kms	NW (200 to 250 kms), NNE(187 to 250 kms) moving SE ly	Since last observation CB cells are developing well and dissipating. Max. reflectivity of 63 dBz observed at 1231UTC and dissipating from 1321utc	TS with heavy rain may take place.	Visakhapatnam, East Godavari, dist(AP) Ganjam, Gajapati Dist. (Orissa) Bastar (Chhattisgarh)
		091800	Convective region and multiple cells with maximum reflectivity of 54 dBz with height of 13	NW (50 to 100 kms), NE(135 to 190 &220 to 250 kms)	Since last observation CB cells are dissipating.	.	Ganjam, Dist. (Orissa)  Bay of bengal

			kms	moving S ly			
--	--	--	-----	-------------	--	--	--

DWR Station	Date	Time interval of observation	Organization of the cells ( isolated single cell/multiple cells convective regions/squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station & direction of movement	Remarks	Associated severe weather, if any	Districts affected
Lucknow	10-05-18	091132-091832	Multiple cells with average Height of 12 KM with Max Reflectivity of 61dBZ.	WNW(250KM) Moving in ESE'ly direction at speed of 72 Km/hr.	Multiple cells entered into DWR-LKN 250km range at WNW(250KM) and moved ahead in SE'ly to ESE'ly direction.one cell got its Max. Ref. of 61dBZ at 1352 UTC at W(150KM)and another cell got its Max. Reflectivity of 61dBZ at 1502 UTC at WSW(75KM). These cells weakened at 1832 UTC with reflectivity of 40dBZ at E(100KM).	TS, HAIL, SQUALL, RAIN	FIROZABAD, ETAH, MAINPURI, ETAWAH, FARRUKHABAD, BUDAUN, SHAHJAHANPUR, HARDOI, KASGANJ, KANNAUJ, AURAIYA, KANPUR, LUCKNOW, UNNAO, FAIZABAD, RAEBARELI.
		091832-092042	Multiple cells with average Height of 8 KM with Max Reflectivity of 46dBZ.	E(20KM-70KM) Moving in ESE'ly direction at speed of 65km/hr.	Multiple cells at E(20km-70km)moved in ESE'ly direction and weakened at 2042UTC at ESE(185km).	TS /RA	Lucknow, Raibareily, Sultanpur Faizabad, Barabanki, Amethi
		091902-092002	Multiple cells with average Height of 8 KM with Max Reflectivity of 56.5dBZ.	WSW(100KM-150KM) Moving in ESE'ly direction at speed of 60km/hr.	Multiple cells at WSW(100km-150km)moved in ESE'ly direction and weakened at 2002UTC at S(60km).	TS /RA	Kanpur, Unnao
		092052-100302	Multiple cells Located at W(100KM-150KM), S(50KM-100KM),and ESE(50KM-150KM) with average height of 8.0KM and	All foresaid location multiple cells moved in ESE'ly Direction at speed of 60km/hr.	Multiple cells moved in ESE'ly direction and weakened at 0222UTC at SE(130km-250km).	TS /RA	Kanpur, Unnao, Raebareli, Fatehpur, Pratapgarh, Jaunpur, Amethi.

			Maximum Reflectivity of 52.5dBZ.				
--	--	--	----------------------------------	--	--	--	--

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	Associate d severe weather if any	Districts affected
Patiala	10-05-18	090300 - 090600	NO ECHO				
		090600 - 090900	NO ECHO				
		090900- 091200	MULTIPLE CELLS DBZ 63.5 HT. 11-13 KM	NW, SW, S SECTORS. MOVMENT SE- WARDS.		HAIL/RA/T S	BHIWANI, ROHTAK, JIND, JHAJAR, MAHAM, UNA, SHIMLA, SOLAN AND ITS ADJ. AREAS.
		091200 - 091500	MULTIPLE CELLS DBZ 52.0 HT. 09-11 KM	E SECTORS. MOVMENT ESE WARDS .		TS/RA	DEHRADOON, MUSSORIE, RISHIKESH AND ITS ADJ. AREAS.
		091500 - 100252	NO ECHO				

**Media / Other Reports of Occurrence / Damage Reports (Received from RMC Kolkata):**

Date of Occurrence	Event	Report
09.05.2018	<b>Thundersquall and Hailstorm</b>	<p>Severe Thunderstorms with squally winds hit Burdwan, Murshidabad and Nadia districts on 09.05.2018 morning caused extensive damages of crops. Trees uprooted, kutcha houses damaged, wall collapsed, killed 3 persons and 15 others injured. Hailstorm also reported occurred in Birbhum district, causing damage in boro paddy crops.</p> <p>Severe Thunderstorms with squally winds also reported occurred in parts of Coochbehar and Alipurduar districts on 09.05.2018. Many trees uprooted, traffic disrupted, about 2000 kutcha houses damaged, crops damaged. 4 person killed by thunder / lightning strikes.</p> <p><i>(Sources: (i) The Telegraph, (ii) Uttarbanga Sangbad, (iii) Ganashakti dated 10.05.2018, (iv) Zee 24 Ghanta News, attached)</i></p>



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

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)						
Name of Station Reporting	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Jammu	Northwest India	Jammu & Kashmir	Thunderstorm	09-05-18	1710 1800	1740 1950
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	09-05-18	1625	1800
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	09-05-18	1830	2005
Tehri	Northwest India	Uttarakhand	Thunderstorm	09-05-18	1350 1540	1430 1620
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	09-05-18	1412 1600	1437 1645
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	09-05-18	1445	1538
Safdarjung AP	Northwest India	Delhi	Thunderstorm	09-05-18	1555	1750
Palam AP	Northwest India	Delhi	Thunderstorm	09-05-18	1545	1730
Bharatpur	Northwest India	East Rajasthan	<b>Duststorm with max wind speed 40-50kmph</b>	<b>09-05-18</b>	<b>1625</b>	<b>1720</b>
Panjim	West India	Goa	Thunderstorm	10-05-18	0220 0615	0330 0700
Jagdalpur	Central India	Chhattisgarh	Thunderstorm	09-05-18	1425. 1640	1535 2115
Gangtok	East India	Sikkim	Thunderstorm	09-05-18	1820	1920
Malda	East India	West Bengal (SHWB)	Thunderstorm	10-05-18	0810	0830
Asansol	East India	West Bengal (GWB)	Thunderstorm	10-05-18	0500	0830
Bankura	East India	West Bengal (GWB)	Thunderstorm	10-05-18	0510	0735
Sriniketan	East India	West Bengal (GWB)	Thunderstorm	10-05-18	0635	0830
Patna	East India	Bihar	Thunderstorm	10-05-18	0430	0715
Gaya	East India	Bihar	Thunderstorm	10-05-18	0725	0800
Bhubaneswar	East India	Odisha	Thunderstorm	09-05-18	2110	2230
Gopalpur	East India	Odisha	Thunderstorm	09-05-18	1825	2130
Agartala	Northeast India	Tripura	Thunderstorm	09-05-18	1250	1555
			<b>Squall from WNW(300°) with max wind 45Kt</b>	<b>09-05-18</b>	<b>1452</b>	<b>1454</b>
Kailashahar	Northeast India	Tripura	Thunderstorm	09/10-05-18	091120 100810	091640 100830
Guwahati	Northeast India	Assam	Thunderstorm	09/10-05-18	1055, 10/0520	1355, 10/0645

Tezpur	Northeast India	Assam	Thunderstorm	09-05-18	1100	1145
Silchar	Northeast India	Assam	Thunderstorm	09/10-05-18	090830, 091210, 10/0600	090900, 091630, 10/0830
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	09-10-05-18	090830, 10/0550	091510, 10/0740
Barapani	Northeast India	Meghalaya	Thunderstorm	10-05-18	0545	0700
Imphal	Northeast India	Manipur	Thunderstorm	09-05-18	1310	1640
Lengpui	Northeast India	Mizoram	Thunderstorm	09-05-18	1225	1750
Hyderabad	South India	Telangana	Thunderstorm	09-05-18	1420	1830
Tuni	South India	Coastal Andhra Pradesh	Thunderstorm	09-05-18	1728	1800
Kakinada	South India	Coastal Andhra Pradesh	Thunderstorm	09-05-18	1800	1900
Kodaikanal	South India	South interior Tamil Nadu	Thunderstorm	09-05-18	1800	2230
Karaikal	South India	North coastal Tamil Nadu	Thunderstorm	09-05-18	1300	1500,
Karaikal	South India	North coastal Tamil Nadu	Thunderstorm	10-05-18	0400	0500
Salem	South India	North interior Tamil Nadu	Thunderstorm	09-05-18	1815	1910
Coimbatore	South India	North interior Tamil Nadu	Thunderstorm	09/10-05-18	1810	0100
Honavar	South India	C Karnataka	Thunderstorm	09/10-05-18	2115	0100
Panambur	South India	C Karnataka	Thunderstorm	10-05-18	0147	0350
AMS Bajpe	South India	C Karnataka	Thunderstorm	09/10-05-18	2359	0550
Gadag	South India	NI Karnataka	Thunderstorm	09-05-18	1900	1945
Belagavi Airport	South India	NI Karnataka	Thunderstorm	10-05-18	0100	0540
Chamarajanagar	South India	SI Karnataka	Thunderstorm	09-05-18	1720	1900

## 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)

Past24hourHEMandIMRainfall(upto03UTCoftoday)

IMR: [http://satellite.imd.gov.in/img/3Ddaily\\_imr.jpg](http://satellite.imd.gov.in/img/3Ddaily_imr.jpg)

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

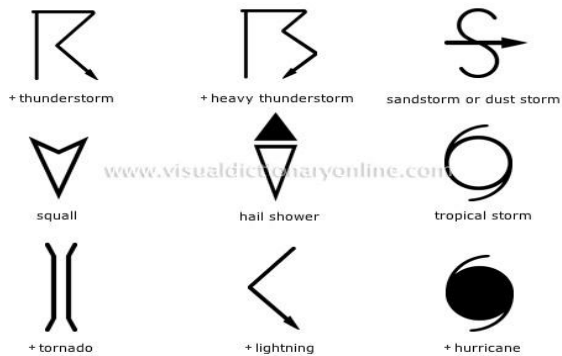
ForRadarimagesofthepast24hoursincludingmosaicofimages:

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

Satellite sounder based T- 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**