



# India Meteorological Department

## FDP STORM Bulletin No. 47 (22-04-2018)

### 1. CURRENT SYNOPTIC SITUATION:

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

- ◆ The Western Disturbance as an upper air cyclonic circulation over Jammu & Kashmir and neighbourhood now seen as a trough runs roughly along longitude 80°E to the north of latitude 25°N at 3.1 km above mean sea level.
- ◆ A fresh Western Disturbance is very likely to affect Western Himalayan region from 25th April.
- ◆ The cyclonic circulation extending upto 1.5 km above mean sea level over West Uttar Pradesh and adjoining Haryana has become less marked.
- ◆ The cyclonic circulation over Sub Himalayan West Bengal & neighbourhood extending upto 0.9 km above mean level persists.
- ◆ The north south trough from East Uttar Pradesh to eastern parts of Vidarbha across East Madhya Pradesh now runs from the cyclonic circulation over Sub Himalayan West Bengal & neighbourhood to south Chhattisgarh across Gangetic West Bengal and Odisha at 0.9 km above mean sea level.
- ◆ The north south wind discontinuity from North Interior Karnataka to south Tamilnadu now seen as a trough from North Interior Karnataka to Lakshadweep upto 0.9 km above mean sea level.

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

##### Current Observation (based on 0300UTC imagery of INSAT 3D):

##### Western Disturbance (WD):

Scattered multi-layered clouds seen over Caspian Sea, North Iran and neighbourhood in association with Western Disturbance over the area.

##### Convective Activity:-

Convective Cells developed over off Kerala adjoining Southeast Arabian Sea (**Minimum CTT Minus 80 Deg C**) moving in west wards direction.

##### Precipitation Nowcast Based On WMO Scope Product:

Based on 0300 UTC satellite data indicate precipitation is likely to take place during next three (03 hrs) over Lakshadweep.

##### Clouds descriptions within India:

Scattered low/medium clouds with embedded intense to very intense convection seen over Lakshadweep (**Minimum CTT Minus 75 Deg C**).

Scattered low/medium clouds with embedded isolated weak convection seen over North Kerala, and Nicobar Islands. Scattered low/medium clouds seen over Jammu & Kashmir, North Himachal Pradesh, North Uttarakhand and isolated over North Odisha, Northeast Jharkhand, Southeast Bihar, Gangetic West Bengal, Sikkim, Northeast states and rest Karnataka

## **Arabian Sea:-**

Scattered low/medium clouds with embedded intense to very intense convection seen over Southeast Arabian Sea, off Kerala Coast (**Minimum CTT Minus 88 Deg C**)

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

Scattered low/medium clouds with embedded isolated weak convection seen over South Bay, South of Lat 8.0N and South Andaman Sea.

## **Past Weather:**

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

Moderate to Intense convection was observed over north-east Jharkhand GWB Sikkim Arunachal Pradesh south-east Assam Tripura adjoining BD Nagaland north Manipur Mizoram North Coastal Andhra adjoining Odisha north Tamilnadu Kerala adjoining coastal & South Interior Karnataka OFF Kerala & Lakshadweep.

### **OLR:-**

Up-to  $230\text{wm}^{-2}$  observed over Jammu & Kashmir Himachal Pradesh North Uttarakhand Sikkim Arunachal Pradesh east Assam Nagaland north Manipur Tripura Mizoram coastal & South Interior Karnataka Kerala north-west Tamilnadu.

### **Synoptic Features:**

**Westerly Trough:** Trough in Westerlies roughly along Longitude 80.0E & north of Latitude 28.0N

### **Dynamic Features:**

Up to 30- 80 knots **wind shear** is observed over North & Central India and 10-15 knots over south peninsula India.

**Negative Shear tendency** observed over J&K North-east States and Positive Shear tendency over rest parts of India

**Positive Vorticity** field at 850 hPa is observed over J&K Himachal Pradesh Uttarakhand north Uttar Pradesh north Bihar south Gangetic West Bengal adjoining Odisha south-east Gujarat North Interior Karnataka.

### **Precipitation:**

#### **IMR:**

Rainfall upto 20-50 mm observed over some parts of GWB south Meghalaya south-east Assam Tripura north Mizoram Kerala south coastal Karnataka.

Rainfall upto 01-20 mm observed over some parts of Jammu and Kashmir North Himachal Pradesh North Uttarakhand GWB SHWB Assam Meghalaya south Nagaland Manipur Mizoram north Andhra Pradesh & north Tamilnadu

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

Isolated/multiple significant echoes were seen on DWR Agartala, Paradeep, Hyderabad, Machilipatnam and Vishakhapatnam (max. dBZ between 45-55, height >10km) and Isolated/multiple light echoes was seen in domain of DWR Kolkata at around 1230 IST.

RAPID RGB Satellite imagery at 1130 IST indicates significant convection over Lakshadweep..

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

Higher Dust concentration was observed over northern Africa, Arab countries. Dust concentration over North India may increase.

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

<b>Delhi – SAFAR analysis &amp; Forecast</b>	22.04.2018	23.04.2018
PM10 (micro-g/m <sup>3</sup> )	284	255
PM2.5 (micro-g/m <sup>3</sup> )	108	97

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

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

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

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

**00UTC of Day 1-2:** 850 hPa trough over Sub Himalayan WB and Bangladesh region

**00UTC of Day 1-4:** In Day 1 925 & 850 hPa NE-SW trough from Odisha to southern Peninsular India, in Day 2 CYCIR over MP and Maharashtra.

Day 3-4 trough from MP to southern peninsula

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

**12 UTC of Day 0-2:** 925& 850 hPa N-S discontinuity over Southern Peninsular India and in

Day 0-3 SW-NE discontinuity over MP Chhattisgarh & Odisha

##### **Synoptic Systems: 12 UTC of Day 0-2:**

**12 UTC of Day 0:** WD as a trough over J &K. A fresh WD approaching J & K in Day 4.

#### **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, NE NMMT, Jharkhand, Odisha, Madhya Maharashtra, Tamilnadu, Puducherry, NI Karnataka, SI Karnataka,

Day1: Jharkhand, Odisha, West MP, East MP, Telangana, Tamilnadu, Puducherry, NI Karnataka, Kerala,

Day2: Arunachal Pradesh, Odisha, West MP, Madhya Maharashtra, Marathwada, Vidarbha, NI Karnataka,

Day3: NE NMMT, Bihar, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, NI Karnataka,

Day4: Gangetic WB, Jharkhand, Uttarakhand, Punjab, Jammu Kashmir, East Rajasthan, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Chhattisgarh, NI Karnataka,

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

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

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Himachal Pradesh,

Day1: Arunachal Pradesh, Assam Meghalaya, Himachal Pradesh, Odisha,

Day2: Arunachal Pradesh, Assam Meghalaya, Himachal Pradesh,

Day3: Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Odisha,

Day4: Assam Meghalaya, Gangetic WB, Bihar, East UP, Punjab, Chhattisgarh,

#### 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, Himachal Pradesh, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Uttarakhand, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Tamilnadu, Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP, Tamilnadu, Puducherry, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP, Tamilnadu, Puducherry, Coastal 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, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Chhattisgarh, Coastal AP,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP,

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

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

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Himachal Pradesh, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Sub Himalayan WB, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Uttarakhand, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

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

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

Day1: Arunachal Pradesh, Rayalseema, Coastal Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, Odisha,

Day3: Arunachal Pradesh, Assam Meghalaya, Vidarbha,

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

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jammu Kashmir,

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

### **1. Synoptic Systems:**

The analysis based on 00 UTC indicates a cyclonic circulation in lower troposphere (925 hPa) over west Uttar Pradesh and adjoining Haryana. The forecast shows it will become less marked in next 24 hours. The analysis indicates a North- South Trough extending from East Uttar Pradesh to East Vidarbha across East Madhya Pradesh in lower troposphere. The forecast shows the south eastward shift of the trough till day3. Another cyclonic circulation is seen in the analysis over SHWB and adjoining areas. The forecast shows it will persist for next 72 hours. An East-west trough is seen in the analysis extending from Jharkhand to east Assam across the above cyclonic circulation. The forecast shows it will persist for next 72 hours with slight eastward shift. The analysis shows a North-South Trough extending from North Interior Karnataka to south Tamil Nadu across south Interior Karnataka and Kerala. It will persist for next 3 days in the forecast. A feeble cyclonic circulation is seen over parts of south west Rajasthan and adjoining areas. 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 northern parts of India, east and northeast India but no jet core over the Indian region for the next 3 days..

### 3. Low Level Vorticity {850hPa Positive Vorticity ( $>12 \times 10^{-1}/s$ ):

Low level Positive Vorticity is seen mostly along the foothills of Himalaya from J&K, Himachal Pradesh and Uttarakhand to NE states and along the north-south trough for next 3 days. Low level Positive Vorticity is also seen over. It is inferred that East and North east India has Positive Vorticity from day 1 onwards and southern parts of central India has Positive Vorticity on day 2 and 3.

### 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):** The threshold value of the index > 3 is seen over coastal areas of Gangetic West Bengal and Kolkata, parts of Orissa, Bihar, Jharkhand, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Karnataka, Tamil Nadu, parts of Gujarat, coastal Maharashtra including Mumbai, Konkan & Goa, Vidarbha adjoining Chhattisgarh, coastal areas along the east coast and west coast, Sikkim, Assam, Meghalaya, Tripura and adjoining area, SHWB on all 3 days; over parts of Uttar Pradesh and adjoining north east Madhya Pradesh on day 1; Maximum value of the index is seen over parts of GWB, Orissa, Andhra Pradesh, coastal Maharashtra, Karnataka, Konkan and Goa, Bihar, Jharkhand, Chhattisgarh, coastal Tamil Nadu, Telangana during next 3 days.

**Lifted Index (< -2):** The threshold value of the index is below -2 over parts of Gujarat, coastal Andhra Pradesh, Karnataka, Telangana, Rayalaseema, Konkan and Goa, Kerala, Tamil Nadu, southern part of west coast, coastal areas along the east coast, Chhattisgarh, Bihar, Jharkhand, Vidarbha, Orissa, GWB, SHWB, Sikkim, Assam, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Tripura and adjoining areas on all 3 days; over parts of Uttar Pradesh, adjoining north east Madhya Pradesh and west Madhya Pradesh on day 1; maximum negative value of the index less than -10 is seen over parts of Bihar, Jharkhand and adjoining GWB on day 1 and 3; over some parts of Orissa and SHWB on day 3.

**Total Total Index (> 50):** The threshold value of the index is > 50 is seen over most of the parts of country except J&K, Extreme south peninsular India and NE states during next 3 days; maximum value of the index >60 is seen over parts of Uttarakhand, Gujarat, Rajasthan, Haryana, Madhya Pradesh, Chhattisgarh, Vidarbha, Uttar Pradesh, Telangana, Madhya Maharashtra, Marathwada, Karnataka and Andhra Pradesh during next 3 days; over parts of Punjab, Himachal Pradesh, GWB, SHWB, Bihar, Jharkhand, Orissa and coastal Maharashtra on day 2 and 3.

**Sweat Index (> 300):** Although the threshold value of the Index >300 is seen in most parts of the country except central parts of Madhya Pradesh and west Rajasthan on day 1, over most of the parts of country except Rajasthan, Punjab, Haryana, Delhi, Uttar Pradesh, central parts of Madhya Pradesh, northern parts of Chhattisgarh, Madhya Pradesh, Marathwada and west Vidarbha on day 2; and 3; maximum value of the index greater than 800 is seen over parts of SHWB, GWB and Orissa on day 1; over parts of Orissa, adjoining GWB and coastal Andhra Pradesh on day 3.

**CAPE (> 1000):** Mostly in areas of southern peninsular India, along west coast and east coast, parts of Orissa, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Tamil Nadu, Karnataka, coastal Maharashtra including Mumbai, Konkan and Goa, Gujarat, Bihar, Jharkhand, Chattisgarh, GWB, SHWB, Sikkim, Assam, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of East Uttar Pradesh and East Vidarbha on day 1; Maximum value of the index greater than 2500 is seen mostly over parts of SHWB, GWB, coastal Orissa, Jharkhand, Andhra Pradesh, Coastal Tamil Nadu, coastal Kerala and Telangana during next 3 days; over parts of Coastal Karnataka, Kerala, south coastal Maharashtra, Karnataka, Konkan & Goa on day 1; over parts of Bihar, coastal Karnataka and Kerala on day 2; over parts of Assam, Tripura and adjoining areas coastal Kerala and south coastal Karnataka on day 3.

**CIN (50-150):** Although the threshold value of the Index lies in the range of (50–150) over most part of the country except J&K, Punjab, Rajasthan, south east Madhya Pradesh, west Vidarbha, Madhya Maharashtra, Marathwada on day 1; over most of the parts of the country except J&K, Punjab, Himachal Pradesh, Uttarakhand, Haryana, Delhi, Rajasthan, Uttar Pradesh, Madhya Pradesh, north Chhattisgarh, Vidarbha, Madhya Maharashtra, Marathwada on day 2 and 3; maximum value of the index is seen over north coastal Maharashtra including Mumbai and adjoining areas on day 3.

## **5. Rainfall Activity:**

40-70 mm Rainfall: over some parts of Gangetic West Bengal on day 1.

10- 40 mm Rainfall: over parts of West Bengal, Karnataka, Kerala, Tamil Nadu, Sikkim and NE states during next 3 days; over parts of Telangana on day 1, over parts of Orissa on day 2 and 3.

Up to 10 mm rainfall: Over parts of J&K, Foothills of Himalaya, Himachal Pradesh, Uttarakhand, Sikkim, NE states, Orissa, Bihar, Jharkhand, West Bengal, SHWB, Chhattisgarh, Andhra Pradesh, Kerala, Karnataka, Tamil Nadu, Telangana, Rayalaseema, Konkan and Goa on all 3 days; over parts of East Vidarbha on day 1 and 2; over parts of south Madhya Maharashtra and Marathwada on day 2.

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

**1. Model Reflectivity (Max. dBZ): > 25 dBZ Model Reflectivity:** Over parts of West Bengal, Kerala, Tamil Nadu, Sikkim and NE states on day 1; over parts of Sikkim, NE states, West Bengal adjoining Jharkhand and Orissa on day 1 over parts of Orissa, Assam, Arunachal Pradesh, Meghalaya, Tripura, Mizoram, Nagaland and adjoining areas on day 1 and maximum value of the Model reflectivity is seen over parts of West Bengal, Assam, Meghalaya, Tripura and adjoining areas on day 1; over some parts of Orissa and adjoining West Bengal on day 2.

## **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 Andhra Pradesh, south interior Karnataka, Konkan and Goa, south coastal Maharashtra, Sikkim, West Bengal and NE states during the next 2 days; below threshold value is seen over some parts of Bihar, Jharkhand, Chhattisgarh, Orissa, Telangana and North Interior Karnataka on day 1; over parts of Telangana, Bihar, Jharkhand and North Interior Karnataka on day 1; on day 2 over some parts of Orissa and south coastal Maharashtra; maximum value of the index is seen over parts of Madhya Pradesh, Madhya Maharashtra, Marathwada, Vidarbha, Jharkhand, Telangana, Orissa, Chhattisgarh, Andhra Pradesh and Karnataka during next 3 days; over parts of Bihar, East Uttar Pradesh and West Bengal on day 1; over parts of Southeast Rajasthan on day 1 and over parts of East Rajasthan, Gujarat and West Bengal on day 2.

**K-Index (> 35):** Less than threshold value is observed over most of the part of the country during the next 3 days.

**CAPE (> 1500):** Greater than threshold value over parts of Gujarat, coastal areas of west coast, coastal Maharashtra, Konkan and Goa, coastal areas along the east coast, southern parts of Madhya Maharashtra, Vidarbha, Bihar, Jharkhand, Chhattisgarh, Orissa, West Bengal and Kolkata, SHWB, parts of Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Rayalaseema, Extreme south peninsular India and NE states on all 3 days; over some parts of East Uttar Pradesh on day 1; Maximum value of the index greater than 3500 is seen over the parts of Karnataka, coastal Kerala, coastal Orissa, coastal Andhra Pradesh, coastal Maharashtra, Konkan and Goa, West Bengal, SHWB, coastal Tamil Nadu, Telangana, south Chhattisgarh and Jharkhand on day 1; over parts of West Bengal, coastal Orissa, coastal Andhra Pradesh, coastal Tamil Nadu, SHWB, Assam and adjoining areas, Karnataka, Konkan and Goa, Kerala, Telangana and Jharkhand on day 2; over parts of West Bengal, coastal Orissa, coastal Andhra Pradesh, SHWB, Assam and adjoining areas, Karnataka, Konkan and Goa, Kerala and coastal Maharashtra on day 3.

**CIN (50-150):** Although the threshold value of the Index lies in the range of (50–150) over most part of the country except J&K, Punjab, Himachal Pradesh, Uttarakhand, Haryana, Delhi, and Madhya Pradesh, north Chhattisgarh, west Vidarbha, North Madhya Maharashtra and Marathwada during next 3 days; the maximum value of the index > 400 is seen over East Uttar Pradesh, Bihar, Jharkhand, West Bengal, Orissa, Chhattisgarh, Southern parts of Coastal Maharashtra on day 1; over parts of coastal Gujarat, coastal Maharashtra and Orissa on day 2; over parts of coastal Maharashtra including Mumbai, Vidarbha, Chhattisgarh, Telangana, Andhra Pradesh, Orissa and south Madhya Maharashtra on day 3.

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

70- 130 mm Rainfall: over parts of Assam, Meghalaya, Tripura and adjoining areas on day 1

40-70 mm Rainfall: over parts of Assam, Meghalaya, Tripura, Mizoram, Nagaland and adjoining areas during next 3 days; over parts of Kerala, Tamil Nadu, GWB and Sikkim on day 1; over some parts of Arunachal Pradesh on day 3.

10- 40 mm Rainfall: over parts of Sikkim, SHWB, GWB, Kerala, Karnataka, Tamil Nadu and NE states during next the 2 days; over parts of J&K and Andhra Pradesh and parts of Orissa on day 1.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Orissa, Bihar, Jharkhand, GWB, Andhra Pradesh, Telangana, Rayalaseema, Sikkim, SHWB and NE states during next 2 days.

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

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

- Synoptic analysis indicates that the cyclonic circulation over Sub Himalayan West Bengal & neighbourhood exists and a trough runs from the cyclonic circulation over Sub Himalayan West Bengal & neighbourhood to south Chhattisgarh across Gangetic West Bengal. This will give rise to the thunderstorm with gusty winds activity mainly GWB and Bihar on Day-1. The Sub Himalayan West Bengal and Sikkim may receive the hailstorm and heavy rainfall activity on Day-1 with this system. This activity may continue to Day-2 over the same region.
- Assam, Meghalaya, Nagaland, Manipur, Mizoram & Tripura may get some thunderstorm with gusty winds activity on Day-1. Heavy rainfall possibility is likely over Tripura and NMMT in one or two places on Day-1.
- The north south wind discontinuity seen as a trough from North Interior Karnataka to Lakshadweep, this will be triggering the thunderstorm with gusty winds activity over Kerala, North and South Interior Karnataka and Telangana on Day-1.
- A fresh Western Disturbance is very likely to affect Western Himalayan region from 25th April.



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

**24hour Advisory for IOP:**

**Significant Rainfall:**  
Sub Himalayan West Bengal & Sikkim  
South Assam, Manipur, Mizoram and Tripura

**Thunderstorm with squall or gusty winds:**  
Assam and Meghalaya, Nagaland, Manipur, Mizoram and Tripura  
Sub Himalayan West Bengal & Sikkim  
Gangetic West Bengal, Bihar, Odisha  
Chhattisgarh,  
North Interior Karnataka, South Interior Karnataka, Telangana,  
Kerala and Lakshadweep Islands

**Thunderstorm with squall and hail**  
Nil

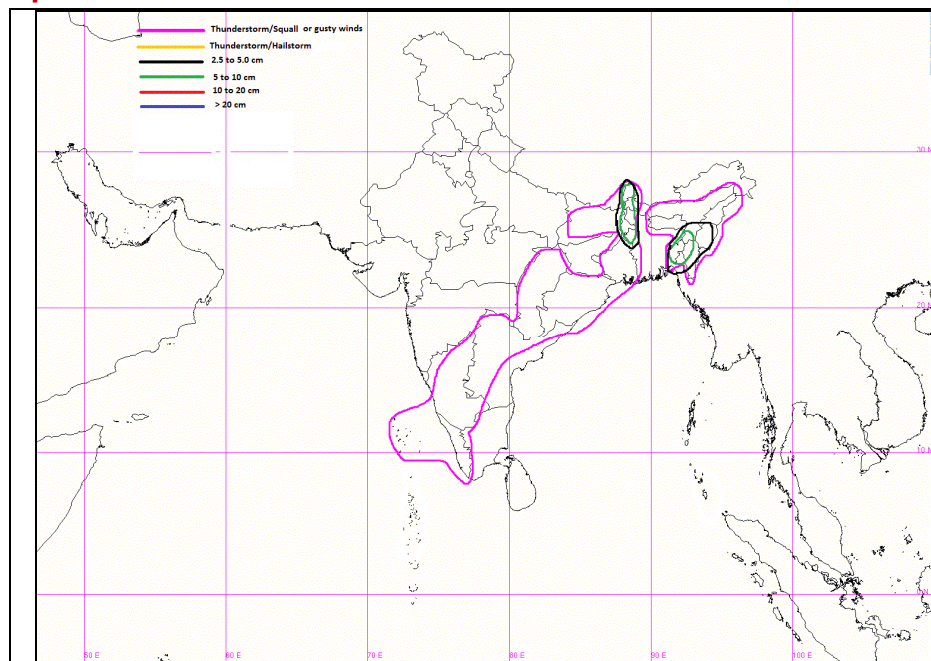
**48hour Advisory for IOP:**

**Significant Rainfall:**  
Nil

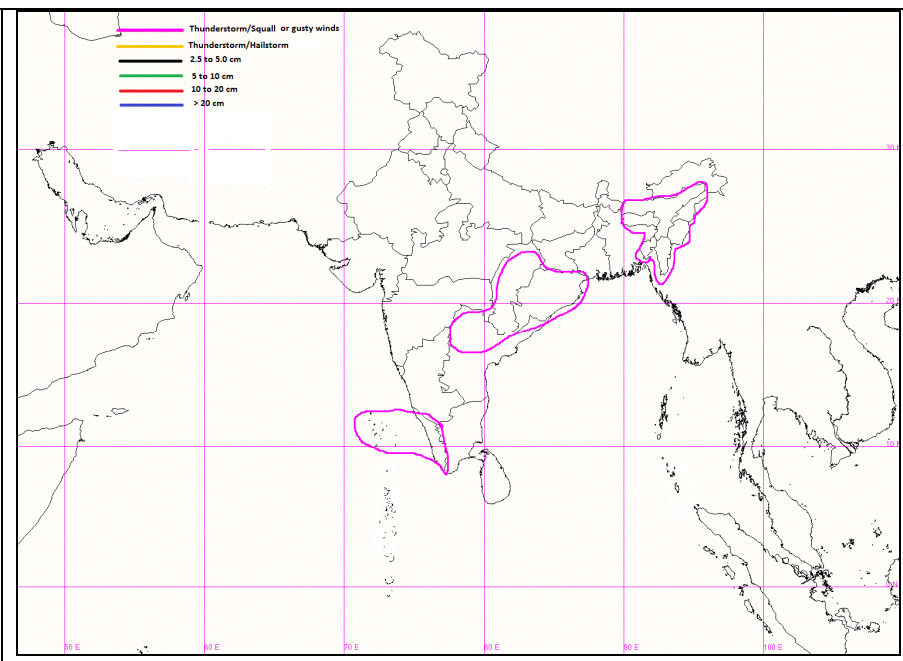
**Thunderstorm with squall or gusty winds:**  
Assam and Meghalaya, Nagaland, Manipur, Mizoram and Tripura  
Chhattisgarh, Odisha,  
Telangana, Kerala and Lakshadweep Islands

**Thunderstorm with squall and hail**  
Nil

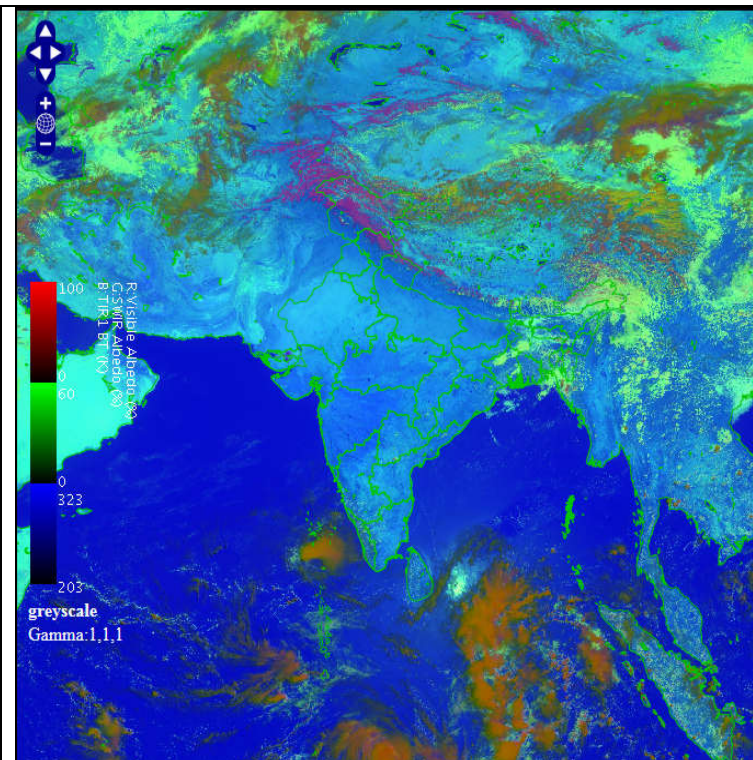
**Graphical Presentation of Potential Areas for Severe Weather:**



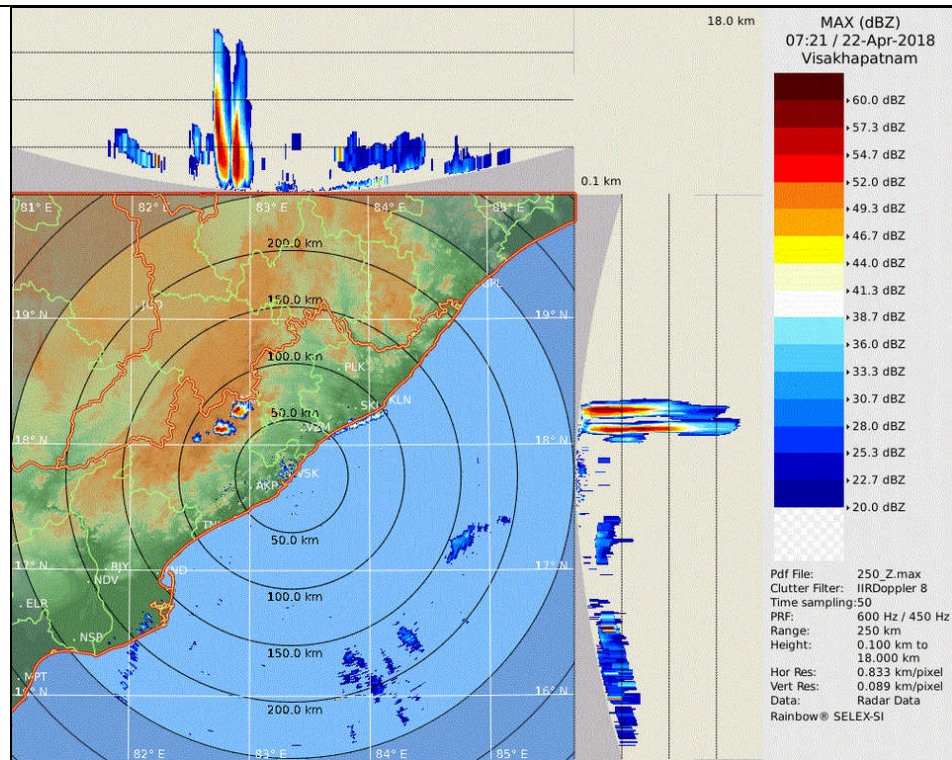
**IOP Advisory for 24 hours**



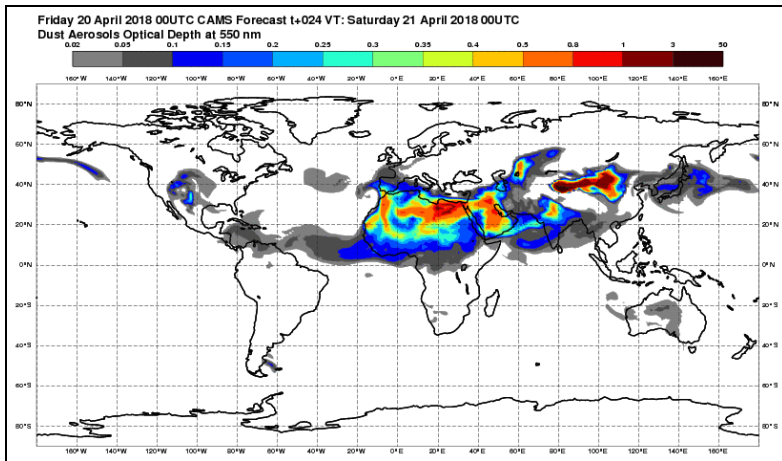
**IOP Advisory for 48 hours**



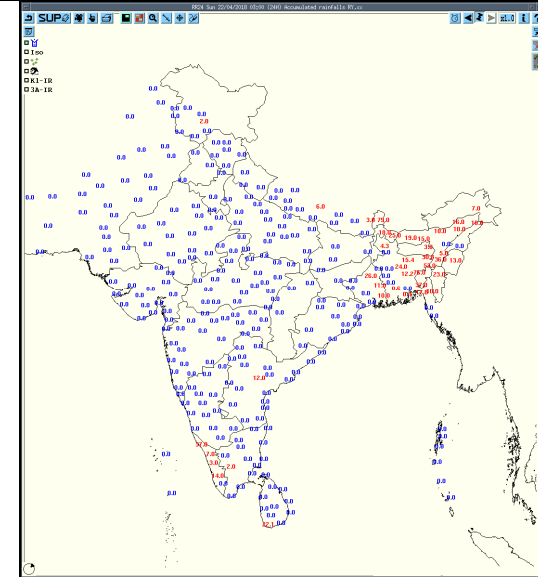
**RAPID RGB Imagery at 1130 IST of the Day**



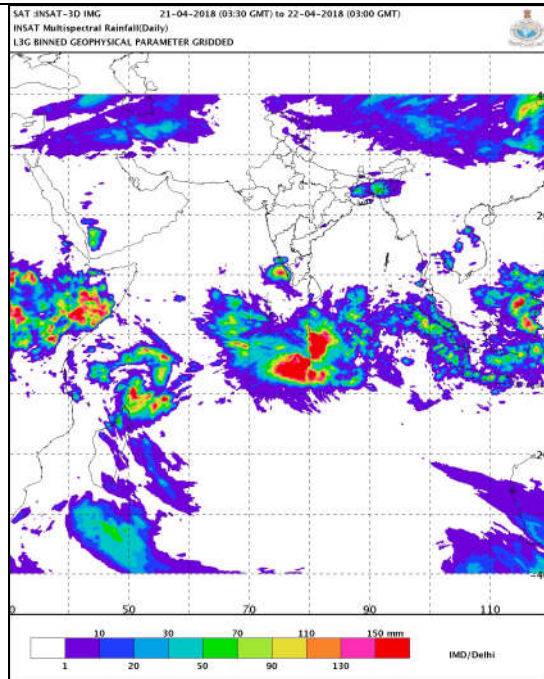
**DWR Vishakhapatnam at 1251 IST of the Day**



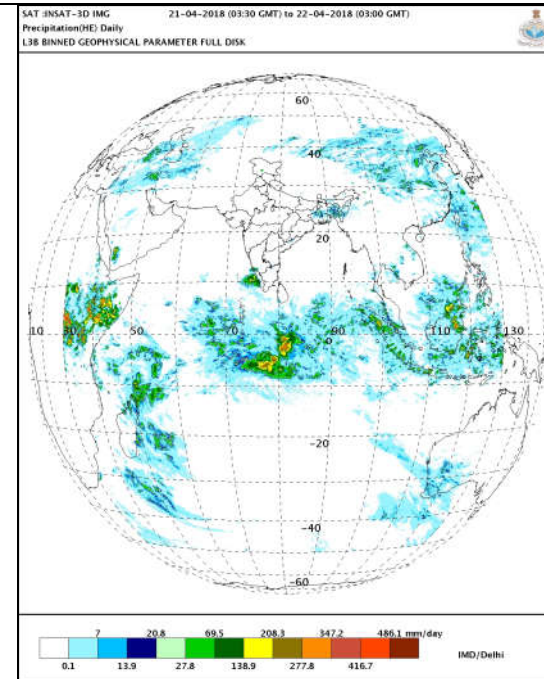
**Dust Forecast**



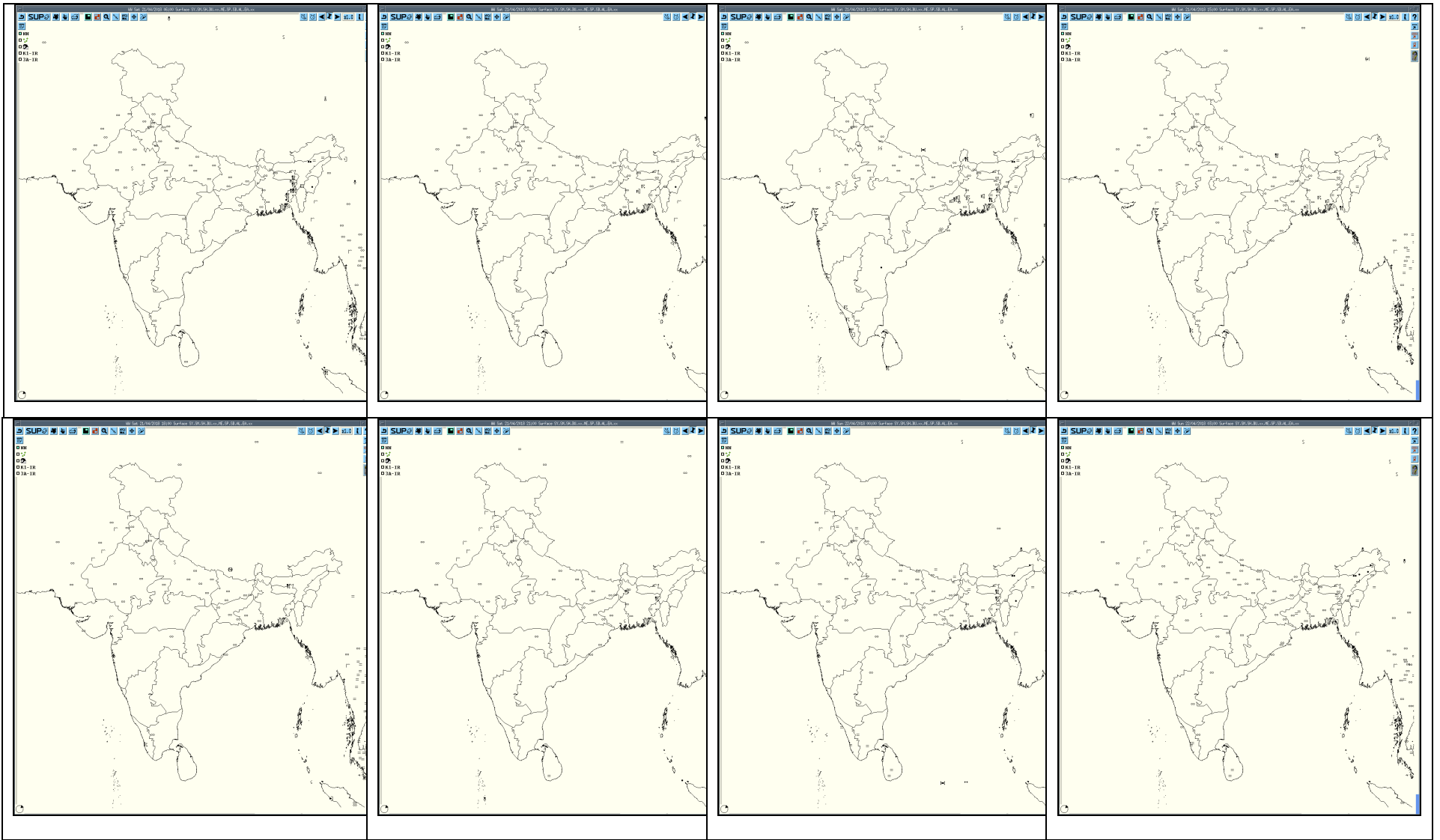
**Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today**



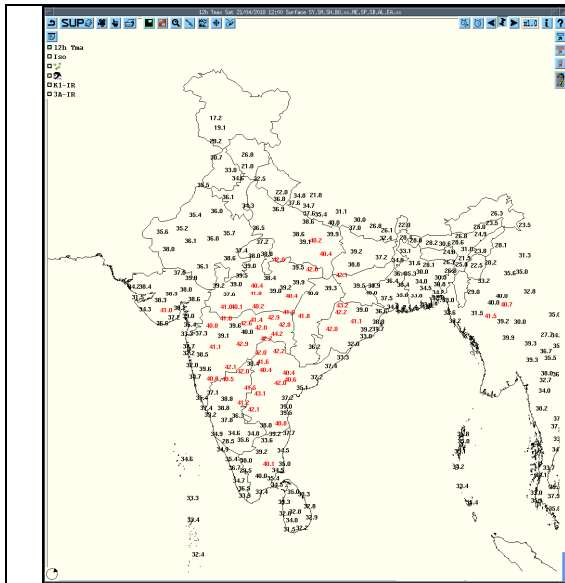
**IMR**



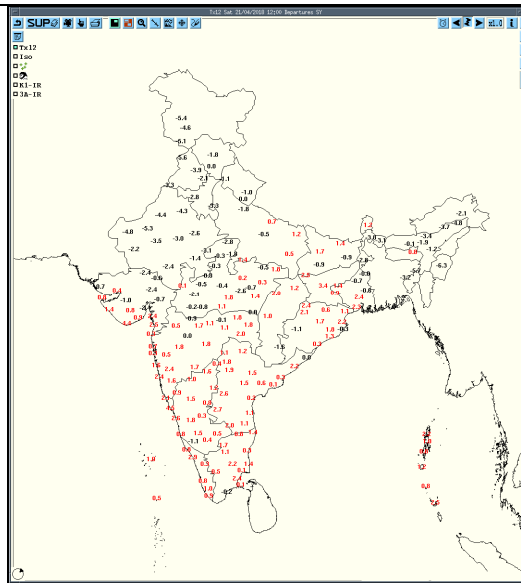
**HEM**



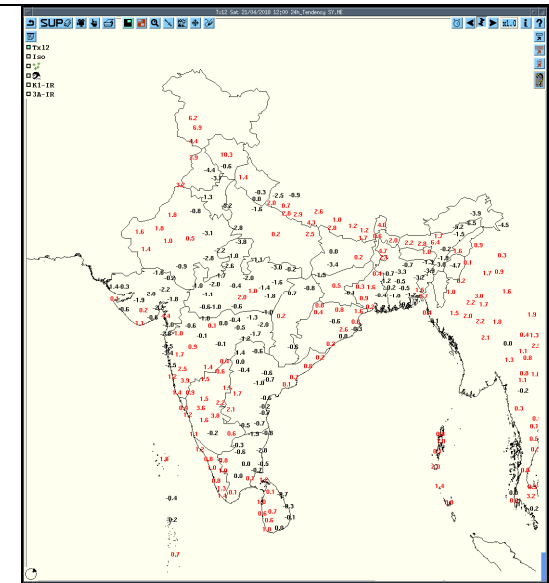
**3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today**



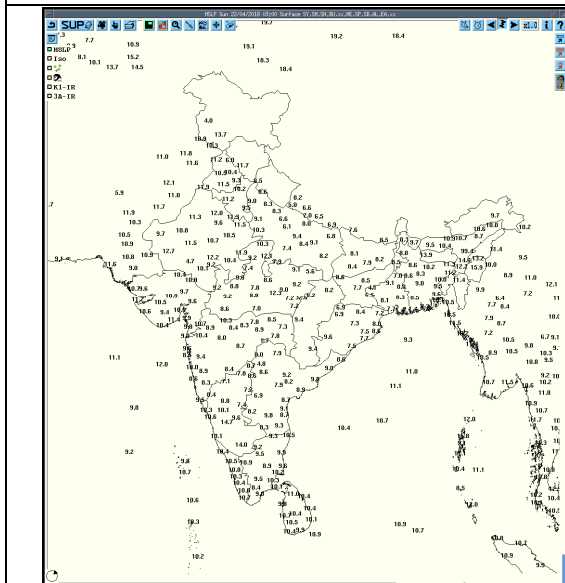
**Tmax**



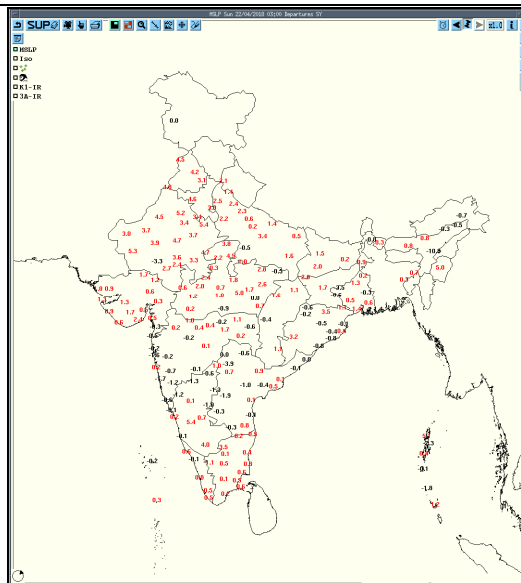
**Departure Tmax**



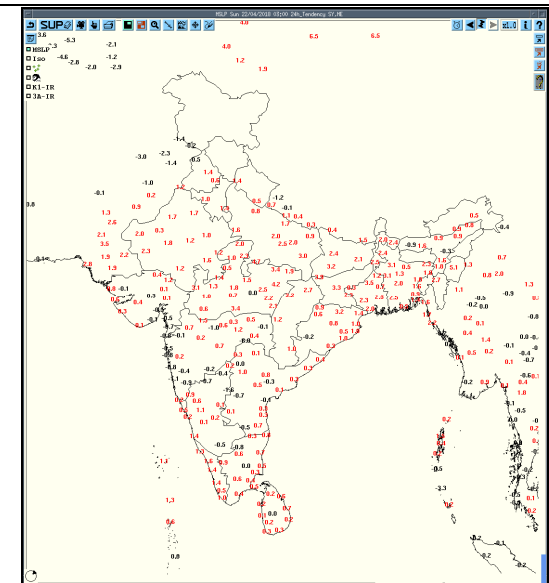
**Tendency Tmax**



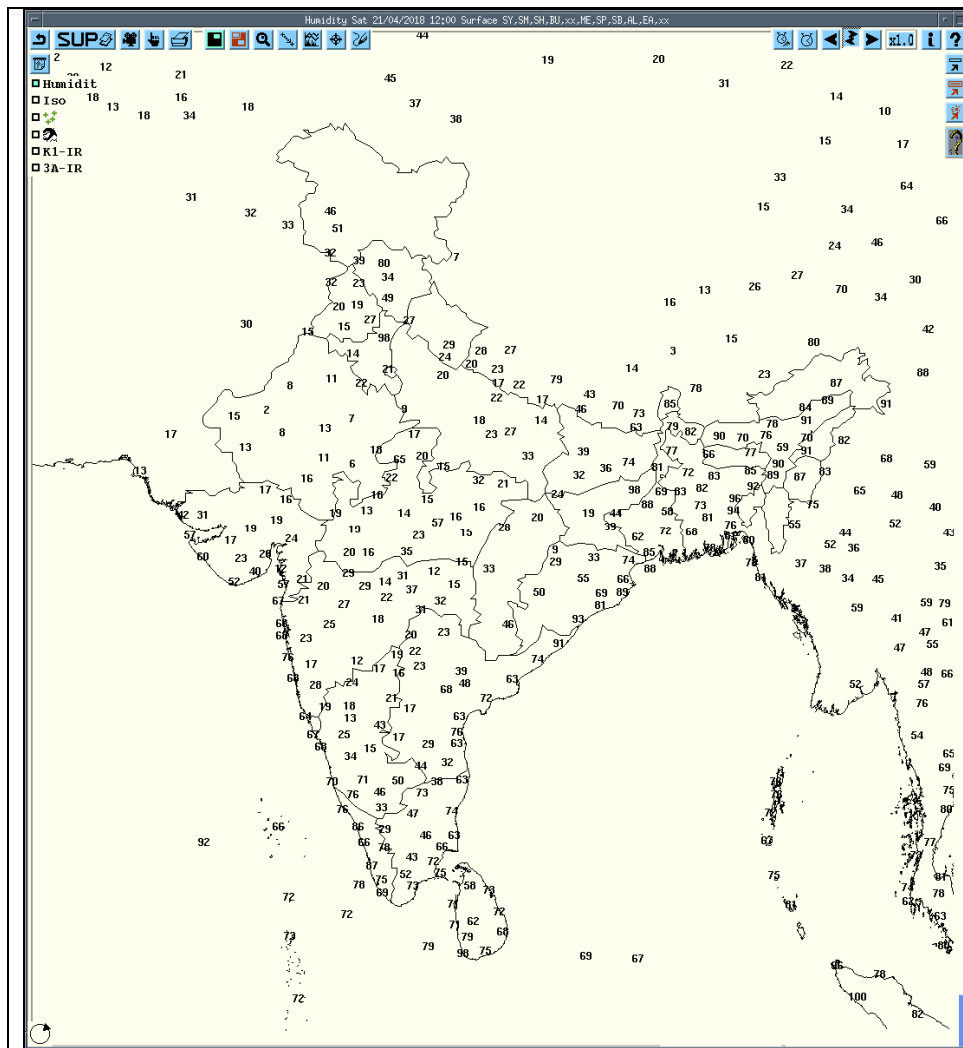
**MSLP**



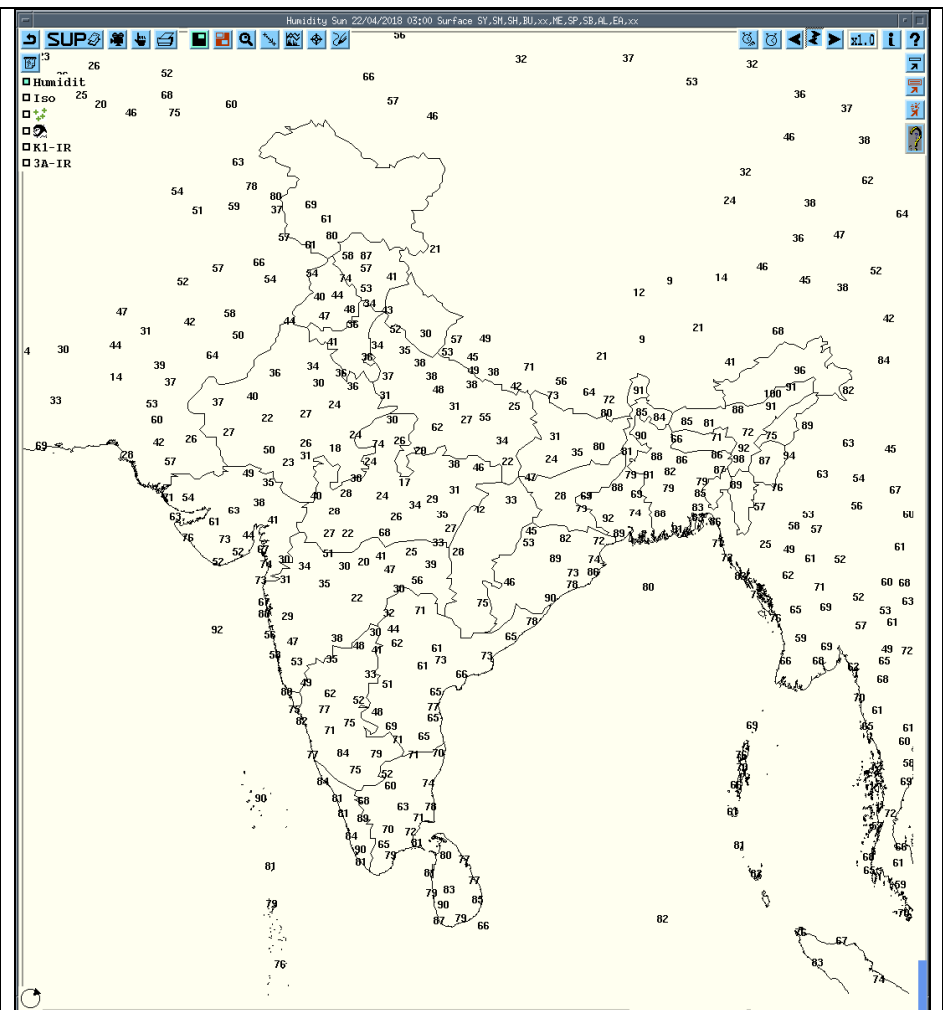
**Departure MSLP**



**Tendency MSLP**



RH at 12UTC yesterday



RH at 03UTC today

## Past 24 hours DWR Report:

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	21-04-2018	0302 –0802	NIL	NIL	NOSIG ECHO	NIL	NIL
		0802 – 1701	Multi Isolated cell developed at a position 24.110 N/ 86.996 E/ 321.3 Degree/ 220.3 km away from radar transformed into big cell from 22.857 N/ 86.959 E/ 283.0 Degree/ 146.5 km to 23.881 N/ 88.121 E/ 350.7 Degree/ 147.7 km with maximum reflectivity of 57.5 dBz at 1032 UTC and maximum height of 15.5 Km at 0951 UTC	NW (220.3 km) Moving in SE-ward direction.	Multi Cells started forming at 0802 UTC at NW (220.3 Km) from radar. Matured and formed squall line big cells moving into Bay of Bengal completely at 1701 UTC in SW at a distance of 216.4 Km from Radar.	Thunderstorm /Rain	N/A
		1236-2400	Single cell developed at a position 22.629 N/ 86.601 E/ 272.5 Degree/ 180.0 km away from radar transformed into big cell with maximum reflectivity of 57.0 dBz at 1332 UTC and maximum height of 9.20 Km at 1332 UTC	W (180.0 km) Moving in East-ward direction	Isolated Single Cell coming from W at 1236 UTC at a distance of 180.0 km from Radar, Matured and dissipated at 1821 UTC in W at a distance 59.6 km from Radar	Thunderstorm/Rain	N/A
	22-04-2018	0000 –0301	NIL	NIL	NOSIG ECHO	NIL	NIL
Jaipur	22-04-18	210300-2200300	NIL	NIL	NIL	NIL	NIL
Lucknow	22-04-18	210300-2200300	NIL	NIL	NIL	NIL	NIL
Patiala	22-04-18	210300-2200300	NIL	NIL	NIL	NIL	NIL
Vishakhapatnam		210900	Isolated CB cells with maximum reflectivity of 55dBz with height of 12KM	W(78 KM) and moving SEly	CB cells are formed at 0731UTC and developing	-	Visakhapatnam Dist. (AP)
		211200	Isolated CB cells with maximum reflectivity of 60dBz with height of 15KM	W(76 KM), N(66) and moving SEly	CB cells are formed since last observation and dissipating started from 1051 UTC	-	Visakhapatnam Dist. (AP) and Malkangiri Dist. Of Odisha
		211500	Cb cell of reflectivity 51dbz and height 4kms.	162kms(W) and moving SEly	Cb cell at 12:01 UTC.	-	-

## 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)

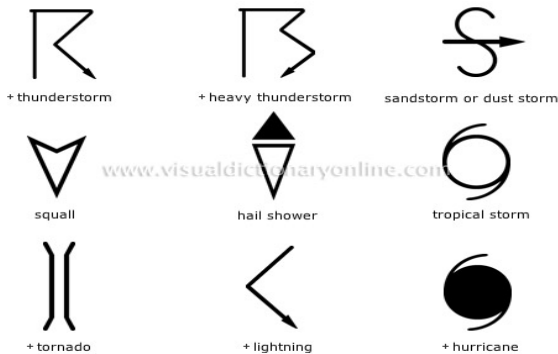
ForRadarimagesofthepast24hoursincludingmosaicofimages:

[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
<b>Weather Symbols</b>	