



## India Meteorological Department

### FDP STORM Bulletin No. 18 (24-03-2018)

#### 1. CURRENT SYNOPTIC SITUATION:

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

- ♦ The feeble Western disturbance as a trough in mid tropospheric westerlies has strengthened and now seen as a NE-SW oriented trough in mid & upper tropospheric westerlies running from Lat.36°N/Long.74°E to Lat.26°N/Long.64 °E at 5.8 km above mean sea level.
- ♦ The cyclonic circulation between 1.5 km and 3.1 km above mean sea level over Haryana and adjoining areas of West Uttar Pradesh & north Rajasthan has become less marked.
- ♦ The core of sub-tropical westerly Jet stream passes between Lat. 20°N and 25°N at 9.5 km above mean sea level over the Indian region.
- ♦ The cyclonic circulation over Sub-Himalayan West Bengal and neighbourhood extending upto 0.9km above mean sea level persists.
- ♦ The trough extending upto 0.9 km above mean sea level from the above system now runs upto north Coastal Andhra Pradesh across Gangetic West Bengal and Odisha.
- ♦ A cyclonic circulation extending between 0.9 km & 1.5 km above mean sea level lies over north Konkan and adjoining eastcentral Arabian Sea.
- ♦ A trough in easterlies at 1.5 km above mean sea level runs from south Kerala coast to Rayalaseema.
- ♦ The cyclonic circulation over southwest Bay of Bengal off Sri Lanka Coast is now seen upto 0.9 km above mean sea level over Comorin area and neighbourhood.

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

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

##### Western Disturbance (WD):

Broken multi-layered clouds with embedded moderate to intense convection seen over Caspian Sea & neighbourhood, Afghanistan, North Pakistan, Jammu & Kashmir, North Himachal Pradesh and over the area between lat 37.0°N to 50.0°N, long 60.0°E to 92.0°E in association with WD over the area.

##### Clouds description within India:

Scattered low/medium clouds with embedded isolated weak to moderate convection seen over Bay Islands. Scattered low/medium clouds were seen over rest Himachal Pradesh and North Uttarakhand. Isolated low/medium clouds were seen over Sikkim, Arunachal Pradesh, East Assam, Meghalaya, north Manipur, and north Nagaland.

**Arabian Sea:**

Isolated low/medium clouds were seen over Westcentral adjoining Southwest Arabian Sea.

**Bay of Bengal & Andaman Sea:**

Scattered low/medium clouds with isolated moderate to intense convection were seen over Southeast Bay and Andaman Sea.

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

Weak to moderate convection was observed over J&K North Himachal Pradesh NE Rayalaseema NE Orissa ADJ South GWB Central TN Assam Kerala (.)

**OLR:-**

Upto  $230 \text{ w m}^{-2}$  was observed over J&K & upto  $280 \text{ w m}^2$  in Arunachal Pradesh Assam Nagaland.

**Dynamic Features:**

Medium to high wind shear is observed over North & Central India and low wind shear over South Peninsula region.

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

Rainfall upto 10-110 mm observed over north East J & K. & 10-20mm North Himachal Pradesh

**HEM:**

Rainfall upto 14mm observed over J & K.

**RADAR and RAPID RGB Observation:**

Isolated moderate/strong echoes (dBZ around 55 and height 12km) are seen on DWR Kolkata domain at around 1600 IST. Isolated/multiple light/moderate echoes are also seen on DWR Srinagar, Agartala, Cherrapunjee, Paradeep, Visakhapatnam, Machilipatnam, Thiruvananthapuram and Patiala DWR domains at around 1600 IST.

RAPID RGB Satellite imagery at 1530IST indicates significant convective clouds over Jammu & Kashmir, North Himachal Pradesh, North Uttarakhand and Andaman & Nicobar Islands. It also indicates isolated convection over South Interior Karnataka, North Kerala, North Coastal Andhra Pradesh, Coastal Odisha, Coastal Gangetic West Bengal, Meghalaya and South Assam.

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

Higher Dust concentration was observed over Arab countries and northern part of Africa. Dust concentration is expected to increase over north-western part of India for next five days. PM10 concentration is expected to increase over IGP in next five days.

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

Delhi – SAFAR analysis & Forecast	24.03.2018	25.03.2018
PM10 (micro-g/m <sup>3</sup> )	157	172
PM2.5 (micro-g/m <sup>3</sup> )	70	76

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

### NCMRWF (NCUM forecast based on 000UTC of the day):

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

**Low level CYCIRS, Troughs:**

**12 UTC of Day 0-4:** 850 hPa trough over WB and adjoining parts of Bihar and Bangladesh

**00 UTC of Day 1-3:** 850 hPa NE-SW feeble trough from Bihar to AP

**Confluence & Wind Discontinuity Regions:**

**12 UTC of Day 1-3:** at 850 hPa SW-NE wind discontinuity over east coast of India

**Synoptic Systems:**

**12 UTC of Day 1-2:** At 500 hPa WD and associated cyclonic circulation over Punjab and adjoin areas of J & K, HP

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

**12 UTC of Day 0-4** Weaker core in all the days except in Day 3 Bangladesh when jet core is strong (>60kt)

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

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

Day0: Odisha, Madhya\_Maharashtra, Coastal\_AP, Coastal\_Karnataka, SI\_Karnataka,

Day1: NE\_NMMT, Odisha, Madhya\_Maharashtra, Coastal\_AP, Coastal\_Karnataka, NI\_Karnataka, SI\_Karnataka, Kerala,

Day2: Assam\_Meghalaya, Odisha, East\_MP, Chhattisgarh, Coastal\_Karnataka, NI\_Karnataka, SI\_Karnataka, Kerala,

Day3: Assam\_Meghalaya, Odisha, Madhya\_Maharashtra, Coastal\_AP, TN\_Puducherry, NI\_Karnataka, SI\_Karnataka, Kerala,

Day4: Odisha, Madhya\_Maharashtra, Chhattisgarh, Coastal\_AP, TN\_Puducherry, NI\_Karnataka, SI\_Karnataka, Kerala

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

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

Day0: Assam\_Meghalaya, NE\_NMMT, Sub\_Himalayan\_WB, Himachal\_Pradesh,

Day1: Assam\_Meghalaya, NE\_NMMT, Gangetic\_WB,

Day2: Arunachal\_Pradesh, Assam\_Meghalaya, NE\_NMMT, Gangetic\_WB, Uttarakhand, Himachal\_Pradesh, Odisha, SI\_Karnataka, Kerala,

Day3: Assam\_Meghalaya, NE\_NMMT, Gangetic\_WB, Himachal\_Pradesh, Odisha, Coastal\_AP, SI\_Karnataka,

Day4: Assam\_Meghalaya, Uttarakhand, Himachal\_Pradesh, Odisha, Coastal\_AP

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

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

Day0: Arunachal\_Pradesh, Sub\_Himalayan\_WB, Gangetic\_WB, Uttarakhand, Himachal\_Pradesh, Kerala,

Day1: Arunachal\_Pradesh, Sub\_Himalayan\_WB, Hry\_Chhd\_Delhi, Himachal\_Pradesh, Jammu\_Kashmir,

Day2: Arunachal\_Pradesh, Sub\_Himalayan\_WB, Konkan\_Goa, Madhya\_Maharashtra, Coastal\_Karnataka, SI\_Karnataka, Kerala,

Day3: Arunachal\_Pradesh, Assam\_Meghalaya, NE\_NMMT, Sub\_Himalayan\_WB, Konkan\_Goa, Madhya\_Maharashtra, Coastal\_Karnataka, NI\_Karnataka, SI\_Karnataka, Kerala,

Day4: Arunachal\_Pradesh, Assam\_Meghalaya, NE\_NMMT, Sub\_Himalayan\_WB, Uttarakhand, Konkan\_Goa, Madhya\_Maharashtra, TN\_Puducherry, Coastal\_Karnataka, NI\_Karnataka

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

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

Day0: Arunachal\_Pradesh, Sub\_Himalayan\_WB, Coastal\_AP, Rayalseema, TN\_Puducherry, SI\_Karnataka, Kerala,

Day1: Arunachal\_Pradesh, Konkan\_Goa, Coastal\_AP, Coastal\_Karnataka,

Day2: Arunachal\_Pradesh, Sub\_Himalayan\_WB, Konkan\_Goa, Madhya\_Maharashtra, Coastal\_AP,

Day3: Arunachal\_Pradesh, Assam\_Meghalaya, Madhya\_Maharashtra, TN\_Puducherry, NI\_Karnataka,

Day4: Arunachal\_Pradesh, NE\_NMMT, Sub\_Himalayan\_WB, Uttarakhand, TN\_Puducherry, NI\_Karnataka, SI\_Karnataka, Kerala

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

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

Day0: Arunachal\_Pradesh, Sub\_Himalayan\_WB, West\_UP, Uttarakhand, Hry\_Chhd\_Delhi, Punjab, Himachal\_Pradesh, Jammu\_Kashmir, West\_RJ,

Day1: Arunachal\_Pradesh, Sub\_Himalayan\_WB, West\_UP, Uttarakhand, Hry\_Chhd\_Delhi, Punjab, Himachal\_Pradesh, Jammu\_Kashmir,  
 Day2: Arunachal\_Pradesh, Sub\_Himalayan\_WB, West\_UP, Uttarakhand, Punjab, Himachal\_Pradesh, Jammu\_Kashmir, Konkan\_Goa, Madhya\_Maharashtra,  
 Day3: Arunachal\_Pradesh, Assam\_Meghalaya, NE\_NMMT, Sub\_Himalayan\_WB, Uttarakhand, Himachal\_Pradesh, Jammu\_Kashmir, Konkan\_Goa, Madhya\_Maharashtra, Coastal\_Karnataka, NI\_Karnataka,  
 Day4: Arunachal\_Pradesh, Assam\_Meghalaya, NE\_NMMT, Sub\_Himalayan\_WB, Bihar, Uttarakhand, Himachal\_Pradesh, Jammu\_Kashmir

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

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

Day1: Arunachal\_Pradesh, Assam\_Meghalaya, NE\_NMMT,  
 Day2: Arunachal\_Pradesh, Jammu\_Kashmir,  
 Day3: Assam\_Meghalaya,  
 Day4: --  
 Day5: --

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

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

The analysis based on 00 UTC shows a cyclonic circulation in lower troposphere up to 850 hPa over SHWB and adjoining area. Another cyclonic circulation over Rayalaseema and adjoining north Interior Karnataka. The trough running over GWB, Orissa and adjoining areas in between the two cyclonic circulations mentioned above. In the forecasts, this trough persists for next two days although southwestern end shifts westward over coastal Karnataka and adjoining areas. Analysis also shows another cyclonic circulation over east-central Arabian Sea off Konkan coast. A north-south trough in easterlies found running from south Interior Karnataka up to Comorin area which gradually shift westward towards west coast of Kerala and Karnataka.

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

Although the presence of strong westerlies is found over 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 x 10<sup>-1</sup>/s)}:**

Mostly along the foothills of Himalayas from Himachal up to north eastern states on all 3 days. Also found in the vicinity of cyclonic circulation and along the trough which is more pronounced over south peninsular India 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):** Higher than a value 3 over parts of Gujarat coastal areas of Gangetic West Bengal, Orissa, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Karnataka, Tamil Nadu, coastal Maharashtra, Konkan & Goa, coastal areas along the east coast and west coast extreme south peninsular India, Tripura and adjoining area on all 3 days. Some parts of Jharkhand and Vidarbha on day 1 and 2; Over parts of

Assam, Arunachal Pradesh, Nagaland and adjoining area on day 3; Maximum value of index is seen over parts of Orissa and its coastal area, coastal Andhra Pradesh, coastal Karnataka, Konkan and Goa, and coastal Maharashtra during all 3 days.

**Lifted Index (< -2):** The threshold value of the is below -2 over parts coastal Andhra Pradesh, coastal Karnataka, Kerala and Tamil Nadu, southern part of west coast, coastal areas along the east coast, coastal Orissa, GWB, Konkan and Goa on all 3 days; over some parts of Jharkhand, Chattisgarh, Telangana on day 1; maximum negative value of the index can be seen over coastal area along east coast and southern part of west coast, GWB, Orissa, Kerala, Andhra Pradesh, Kerala and Tamil Nadu on day 1; on day 2 and 3 over coastal Kerala, Karnataka, Konkan and Goa; on day 3 over some parts of GWB, Tripura and adjoining area.

**Total Total Index (> 50):** Above threshold value over parts Himachal Pradesh, Uttarakhand, foothills of Himalaya, Gujarat, south Rajasthan, Chhattisgarh, Madhya Pradesh adjoining East Uttar Pradesh, Madhya Maharashtra, Marathwada, Vidarbha and coastal Maharashtra, Orissa, Jharkhand, Telangana and Karnataka region on day 1; over parts of J&K, Haryana, Punjab, Rajasthan, Gujarat, Himachal Pradesh, Uttarakhand, foothills of Himalaya, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Orissa, Andhra Pradesh, Karnataka, Telangana, coastal Maharashtra, Madhya Maharashtra and Marathwada and Vidarbha, GWB. On day 2 and 3; Maximum value of the index can be seen on day 3 over most places over India except NE states and extreme south peninsular India.

**Sweat Index (> 300):** Over Parts of, GWB, Peninsular India, Konkan & Goa, Bihar, Jharkhand, Orissa, and Himachal Pradesh, Uttarakhand coastal areas of south and east coast during all 3 days. Over parts of Tripura and adjoining area on day 1; Maximum value of the index can be seen over GWB adjoining Tripura and adjoining area on day 3.

**CAPE (> 1000):** Mostly along coastal areas of southern peninsular India along west coast and over east coast and coastal areas of GWB and adjoining Bihar, Jharkhand and Orissa and Andhra Pradesh and some parts of Gujarat during all 3 days. Maximum value can be seen on day 1 over coastal Orissa, coastal Andhra Pradesh, Tamil Nadu and Kerala.

**CIN (50-150):** Mostly over parts of Gujarat, along east coast along west coast from Saurashtra & Kutch to coastal Karnataka, Konkan and Goa, coastal Orissa, Telangana, Rayalaseema, Andhra Pradesh and GWB and NE states, Bihar, Jharkhand and adjoining area during all 3 days. Over parts of J&K, Punjab, Haryana, North west Rajasthan on day 1. over some parts of Delhi and adjoining Haryana on day 2; Maximum value of the index is seen over parts of Orissa and Telangana region from day 2 onwards.

## **5. Rainfall Activity:**

10- 40 mm rainfall: over parts of Arunachal Pradesh and adjoining area on day 3.

Up to 10 mm rainfall: Over Parts of Uttarakhand, Orissa, Telangana, Andhra Pradesh, region on day 1; on day 2 over some parts of coastal Karnataka and adjoining south Maharashtra region; Over J&K, parts of Himachal Pradesh, NE states, Kerala, Tamil Nadu, Karnataka, on all three days.

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

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

**> 25 dBZ Model Reflectivity:** On day 1 over parts of J & K, GWB and adjoining area; over parts of Assam, Meghalaya, Tripura, Mizoram, Arunachal Pradesh and adjoining area on day 3..

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

**Total Total Index (> 50):** Above threshold value is observed over most parts of the country except south peninsular India, along east coast and southern part of west coast, north-eastern states, coastal Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Orissa, GWB, some parts of Telangana and Chattisgarh during all 3 days; below threshold value is observed on day 1 over some parts of Uttar Pradesh.

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

**CAPE (> 1000):** Greater than threshold value over coastal areas of southern part of west coast, coastal areas along the east coast, coastal Orissa, GWB, Assam, Tripura and adjoining areas, parts of Tamil Nadu, Kerala, Andhra Pradesh and Extreme south peninsular India during all 3 days; over parts of south interior Karnataka and adjoining Andhra Pradesh on day 1; over parts of Arunachal Pradesh and adjoining areas on day 3; Maximum value greater than 3000 is seen over the parts of Orissa and its coastal areas, GWB, coastal Tamil Nadu and Kerala, coastal Andhra Pradesh on day 1; on day 2 and 3 over coastal areas of southern part of west Konkan and Goa.

**CIN (50-150):** Over parts of north west Rajasthan, J&K, Punjab, Haryana, Delhi and adjoining areas on day 1 and 2; over coastal areas of east coast and west coast, GWB, Parts of Orissa, Jharkhand and adjoining Bihar region, Andhra Pradesh, Tamil Nadu, Kerala, Coastal Maharashtra, Konkan and Goa, Telangana, Rayalaseema, and NE states on all 3 days; Maximum value of the index is seen over coastal Gujarat, Northern parts of coastal Maharashtra on day 1; over J&K, adjoining Punjab on day 2; over coastal Maharashtra, Bombay region, coastal Andhra Pradesh and GWB on day 3..

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

**10- 40 mm rainfall:** Over parts of Kerala, Tamil Nadu on day 2 and 3; over parts of Arunachal Pradesh during all 3 days; over parts of GWB and Kolkata on day 1; over NE states on day 3.

**Up to 10 mm rainfall:** Over NE states, Kerala, Tamil Nadu, GWB on all 3 days; Over parts of J&K, Himachal Pradesh, Uttarakhand on day 2 and 3; over parts of Orissa on day 1 and 2 NE states, places along Foothills of Himalaya, parts of Orissa, Jharkhand, GWB, Andhra Pradesh, Kerala and Tamil Nadu on all 3 days; some parts of Punjab and Haryana on day 1; some parts of Madhya Maharashtra, Marathwada and adjoining Vidarbha on day 3; some parts of Telangana on day 2.

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

#### Summary and Conclusions:

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

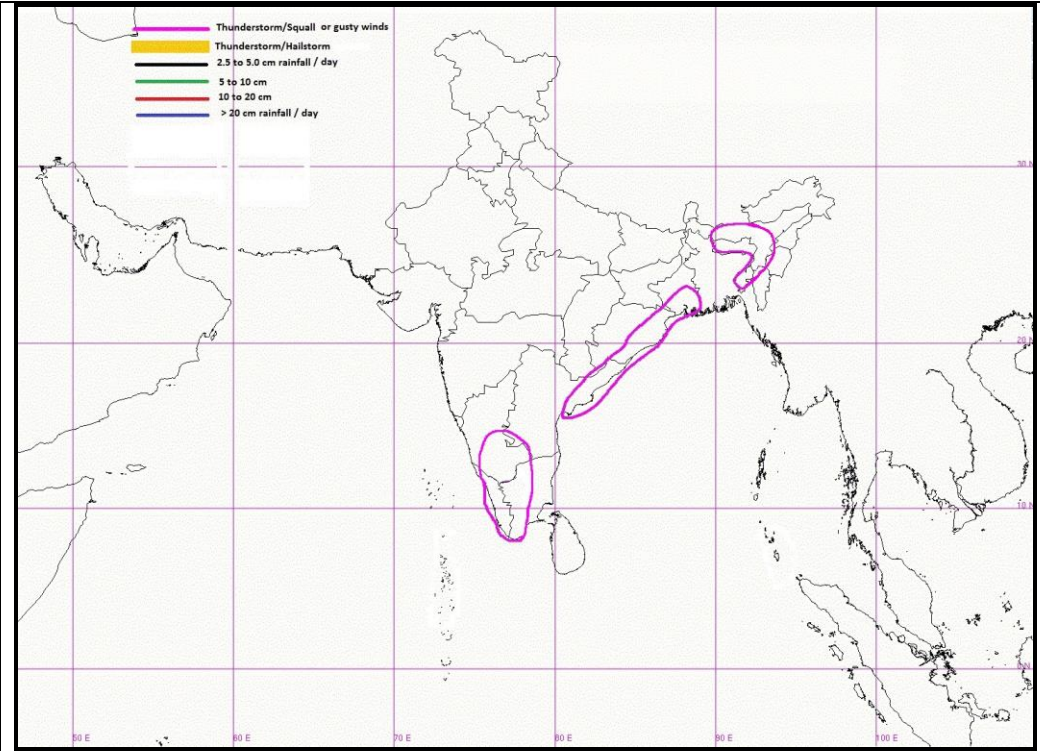
o Yesterday's trough in the low level westerlies, extending from Sub Himalayan West Bengal to South Tamil Nadu, has withdrawn northwards and extends today from Sub Himalayan West Bengal upto north Coastal Andhra Pradesh. The Bay of Bengal anticyclone is over central Bay of Bengal and this is pumping moisture into the northeast-southwest oriented trough over eastern India. This is likely to give rise to thunderstorms with gusty winds over the coastal regions of Andhra Pradesh, Odisha and Gangetic West Bengal and Northeast India on day 1. ECMWF and IMD GFS deterministic models indicate that on day 2, the trough is likely to weaken and be seen as a cyclonic circulation off Odisha coast. Hence, some isolated rainfall, with decreased intensity is likely to persist over Odisha and Gangetic West Bengal on day 2.

o Over the south peninsula, a fresh trough in the easterlies extends from south Kerala coast to Rayalaseema has replaced the previous extension westerly trough. Yesterday's cyclonic circulation over southwest Bay of Bengal off Sri Lanka Coast has moved eastwards and is now seen over Comorin area and neighbourhood in the lower levels. The cyclonic circulation is likely to pump in some moisture in the lower levels into the trough over Interior Tamil Nadu and Kerala, giving rise to thunderstorms over this region on day 1. On day 2, the trough as well as the cyclonic circulation are likely to move westwards, and rainfall with decreasing intensity is likely to be confined to Kerala on day 2.

<b>24 hour Advisory for IOP:</b> <b>Rainfall:</b> Nil <b>Thunderstorm with associated phenomenon:</b> Kerala, Interior Tamilnadu, South Interior Karnataka North Coastal Andhra Pradesh, Coastal Odisha and Coastal Gangetic West Bengal West and South Assam, Meghalaya, Tripura	<b>48 hour Advisory for IOP:</b> <b>Rainfall:</b> Nil <b>Thunderstorm with associated phenomenon:</b> Nil
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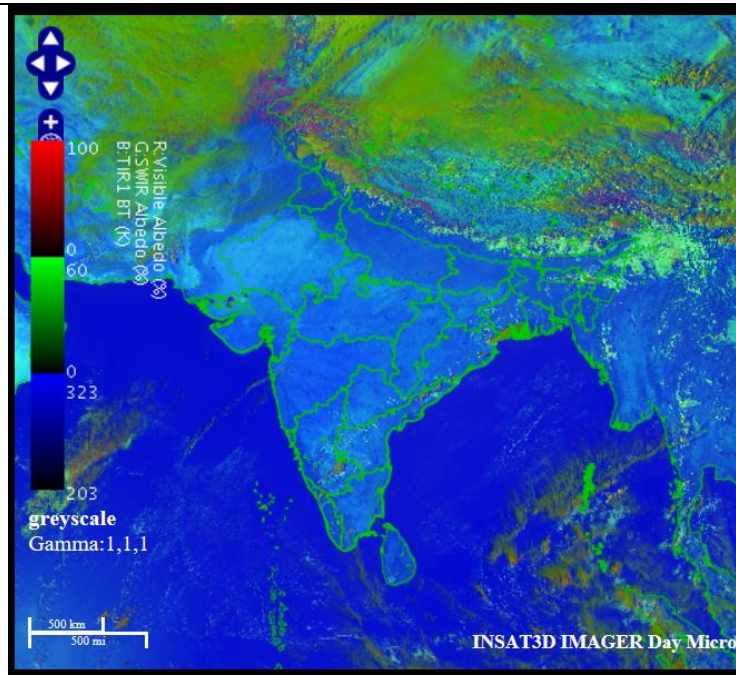
Graphical Presentation of Potential Areas for Severe Weather:



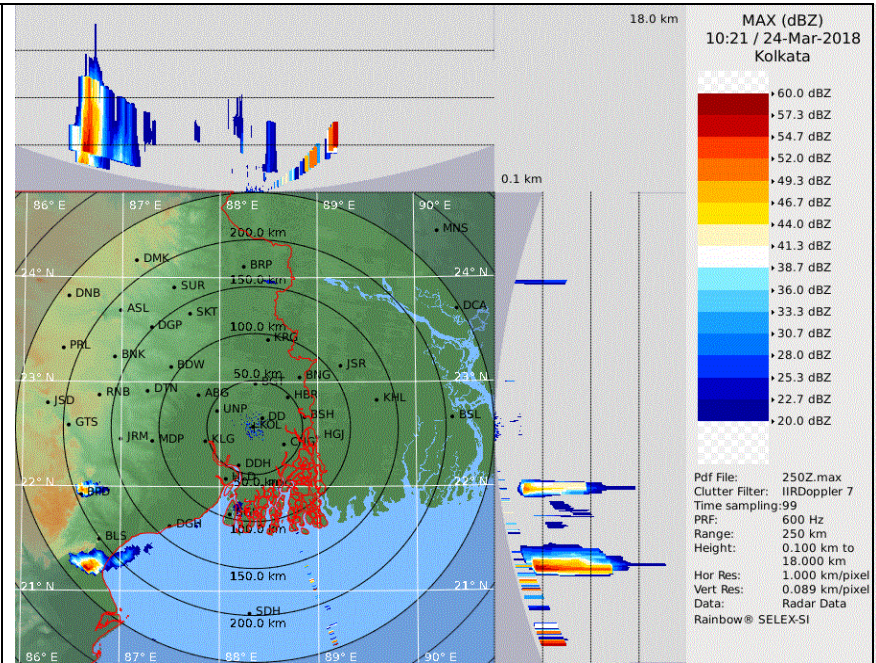
NO WARNING FOR SEVERE WEATHER

IOP Advisory for 24 hours

IOP Advisory for 48 hours

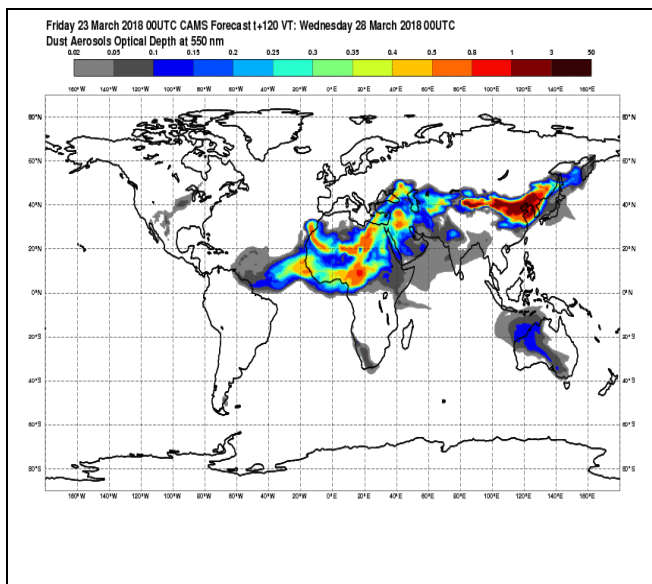


**RAPID RGB Imagery at 1530 IST of the Day**

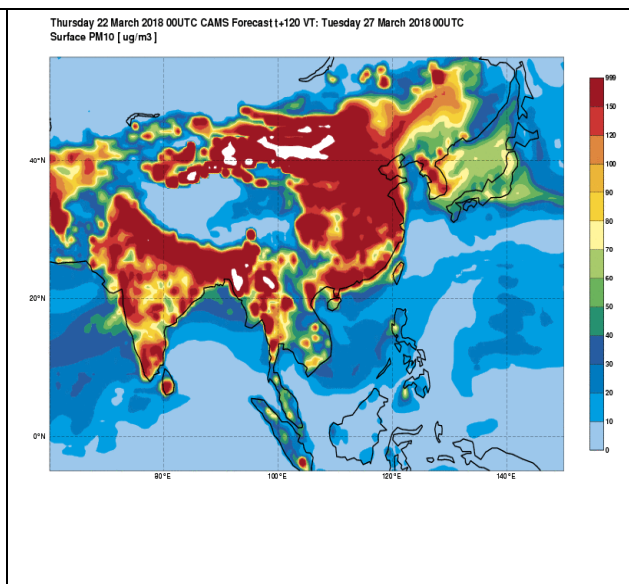


**DWR Kolkata at 1551 IST of the Day**

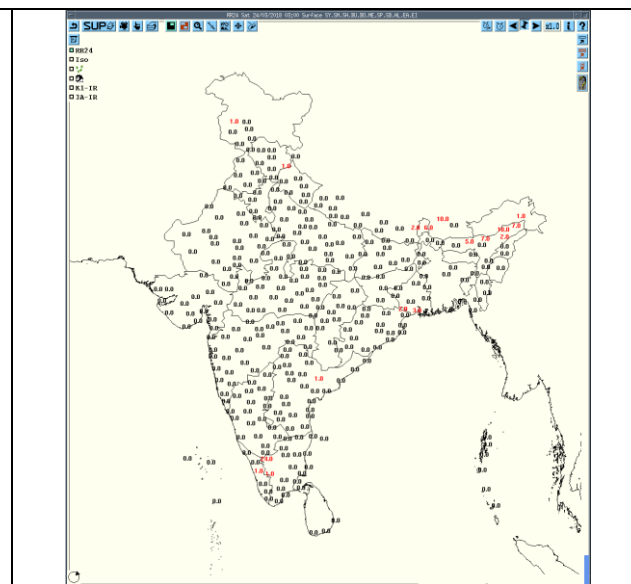




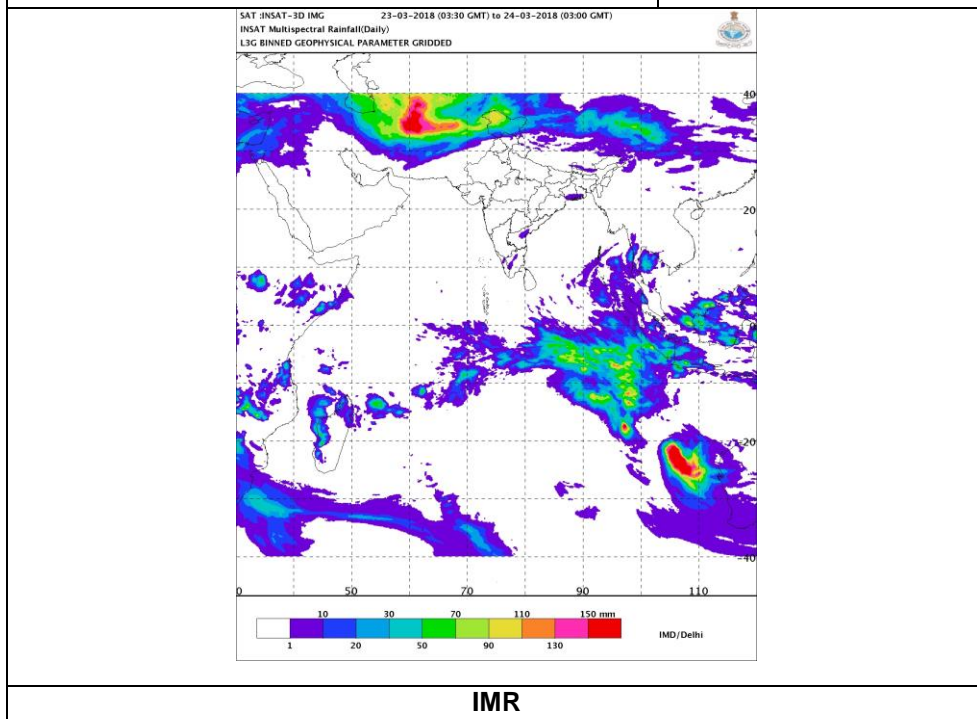
Forecast Dust Concentration



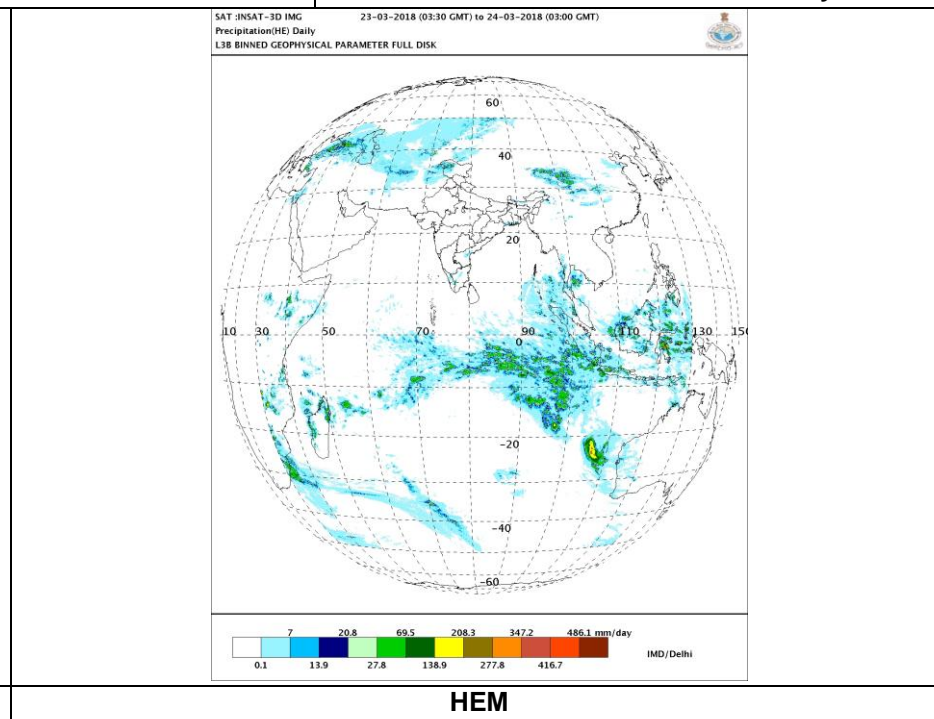
PM10 Forecast



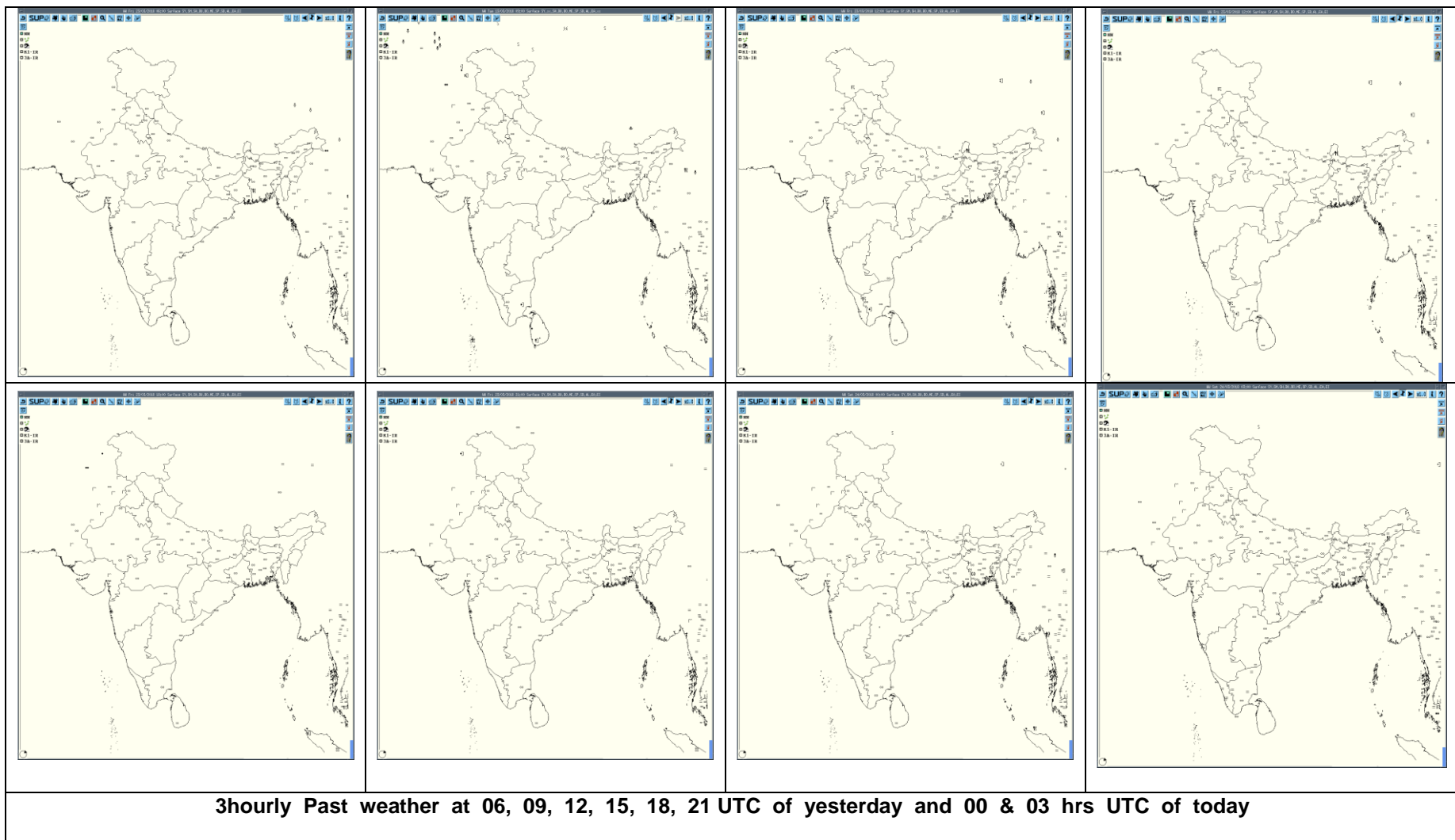
Accumulated 24 Hour rainfall (in red)  
recorded at 0300UTC of today

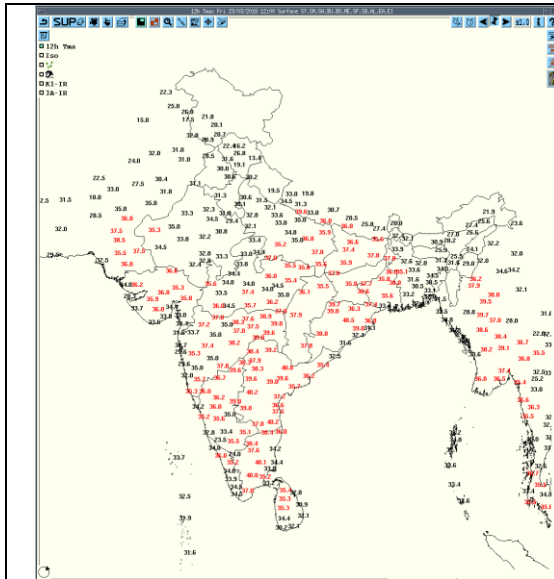


IMR

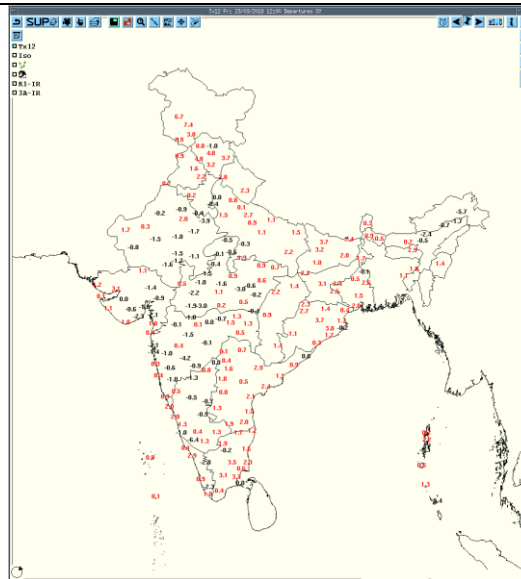


HEM

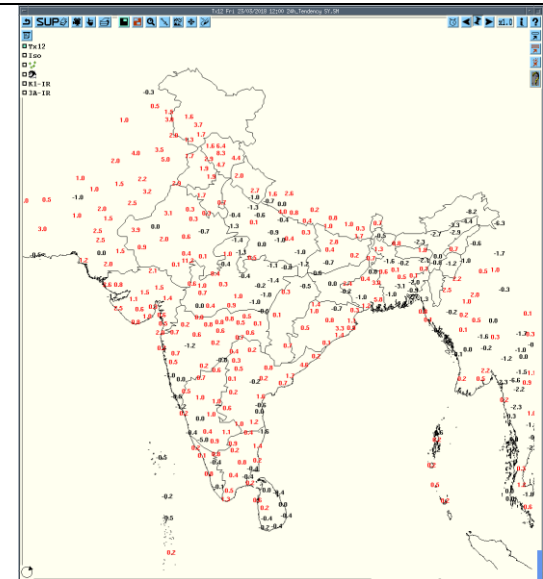




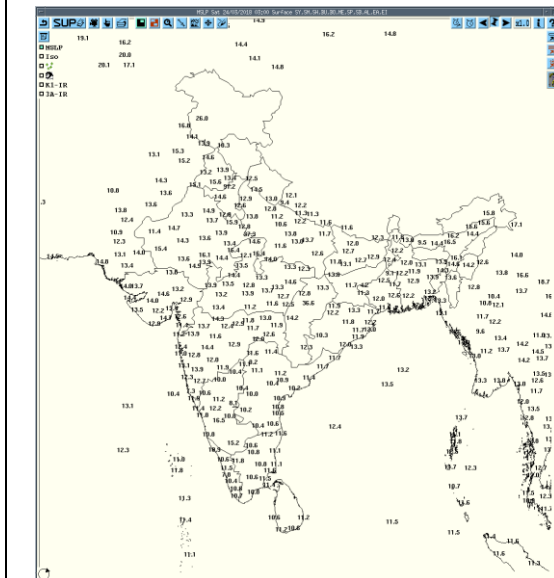
Tmax



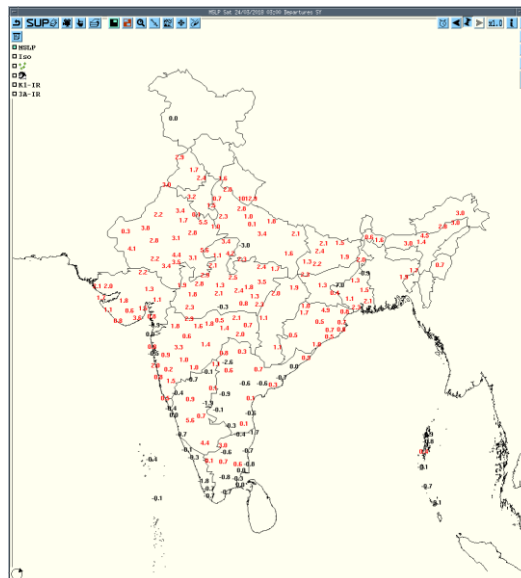
Departure Tmax



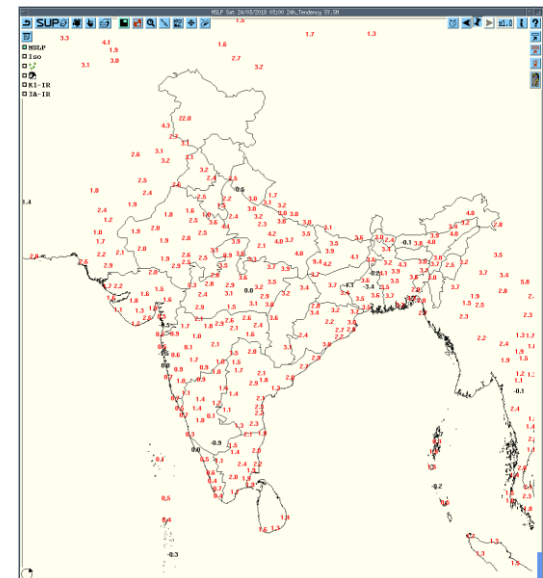
Tendency Tmax



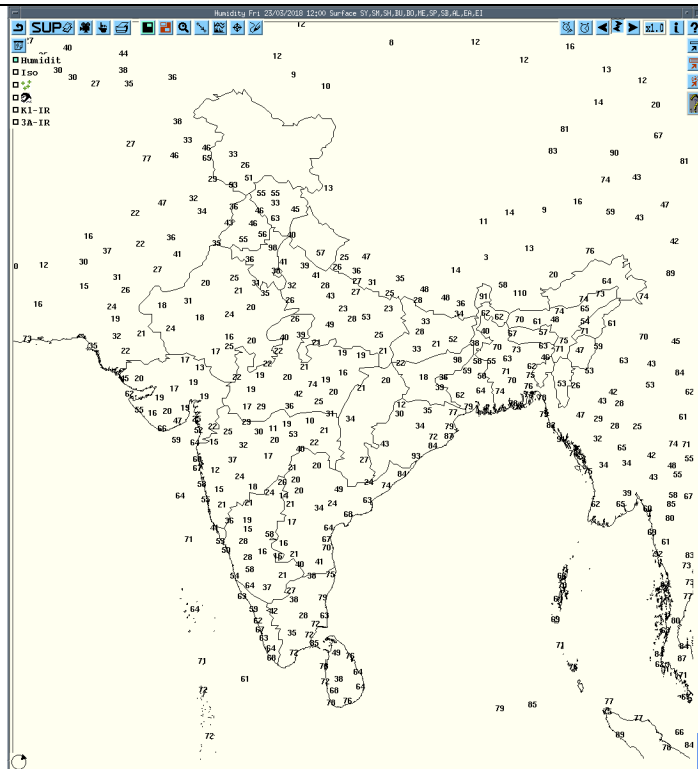
MSLP



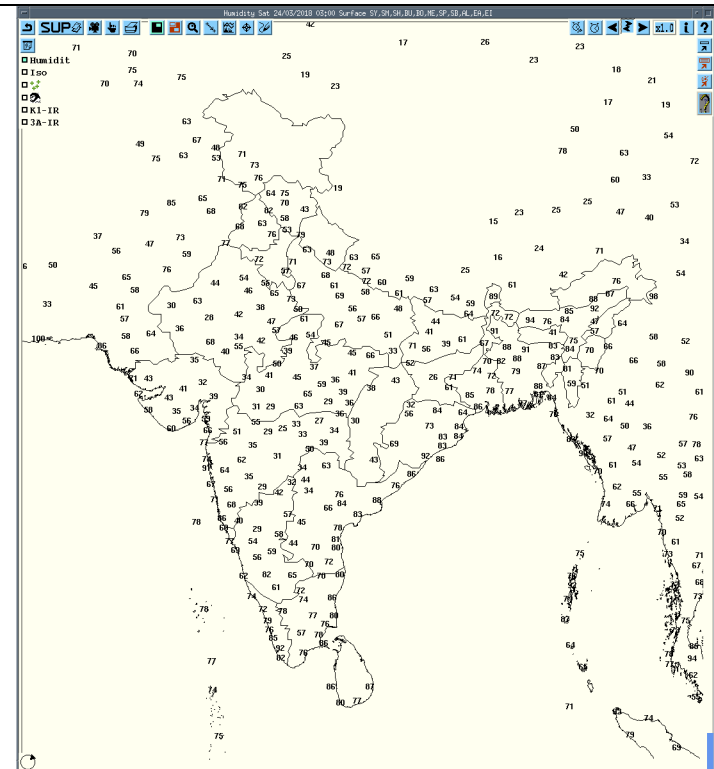
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

## Past 24 hours DWR Report:

DWR Station Name	Date of Report	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	Associate d Severe Weather if any	Districts affected
Jaipur	24-03-18	230300-240300	Nil	Nil	Nil	Nil	Nil
Patiala	24-03-18	230300-240252	No Echo	Nil	Nil	Nil	Nil
Lucknow	24-03-18	230300-240300	Nil	Nil	Nil	Nil	Nil
Agartala	24-03-18	230300-240300	ISLTD SINGLE CELL,50 dBZ,11 Kms formed @230842z	200 NNE over MEGHALAYA HILLS,E'ly.30 Kmph	Dissipated over the hills @231000z.	Not Known	
Visakhapatnam	24-03-18	230300-230600	A line of convection region SW ly with 41dbz and height 3kms	--	Being dissipated	--	--
		230900-231200	Isolated single cell of maximum reflectivity of 54dBz and average height of 10km	NE at a distance of 181 km and moving SEly	Convective cell formed at 1001UTC and matured to max. reflectivity of 54dBz at 1021 UTC. It start dissipating from 1041UTC	--	Ganjam and Gajapati Dist. (Orissa)
		231200-231500	Isolated single cell of maximum reflectivity of 55dBz and average height of 4km	NE at a distance of 136 km and moving SEly	Convective cell formed at 1401UTC and matured to max. reflectivity of 55dBz at 1421 UTC. It start dissipating from 1441UTC	--	Ganjam and Gajapati Dist. (Orissa)
		2631500-231800	Convective region of maximum reflectivity of 39dBz and average height of 3.5km	SSE at a distance of 147 km and moving Ely	Convective cell formed at 1701UTC and matured to max. reflectivity of 39dBz at 1711 UTC. It start dissipating from 1741UTC	--	--
		231800-240000	Isolated multiple cells of maximum reflectivity of 30dBz	SE at a distance of 141 km and moving Ely	Isolated multiple cell formed at 2031UTC and matured to max. reflectivity of 30dBz at 2051 UTC. It start dissipating from 21011UTC	--	--

DWR Station Name	Date of Report	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	Associate d Severe Weather if any	Districts affected
Kolkata	24-03-18	230301-230401	Isolated single cell developed 0142 UTC AT 23.161N / 88.495 E / 12.0 Degree / 67.2 k.m. and maximum reflectivity of 55.5 dBz at 0241 UTC and maximum height 4.93 at 0241 UTC	NORTH (62.5 km) to moving in Easterly direction.	Isolated Single cell formed in North direction at a distance 62.5 km and dissipated at 0401 UTC at a distance 117.5 K.M. from Radar.	Thunders torm / Rain	N/A
		230411-230951	Nil	Nil	NOSIG ECHO	Nil	Nil
		231002-231401	1.Isolated single cell with maximum reflectivity of 57.5 dBz at 1041 UTC and maximum height of 15.9 km at 1041 UTC	1.WSW/206.8 km moving in Easterly direction	1.Isolated Single cell formed at 1002 UTC in WSW direction at a distance 206.8 k.m. and merged with cell no. 2 to form cell no. 3 at 1051 UTC.	Thunders torm / Rain	N/A
			2.Isolated single cell with maximum reflectivity of 58.5 dBz at 1041 UTC and maximum height of 12.7 km at 1041 UTC  3.Single cell with	2.WSW/169.6 km moving in Easterly direction	2.Isolated Single cell formed at 1002 UTC in WSW direction at a distance 169.6 k.m. and merged with cell no. 1 to form cell no. 3 at 1051 UTC.	Thunders torm / Rain	N/A



			maximum reflectivity of 66.0 dBz at 1121 UTC and maximum height more than 18 km at 1111 UTC	3.WSW/180.2 km moving in Easterly direction	3.Single cell formed at 1051 UTC by merging cell no. 1 and 2 in WSW direction at a distance 180.2 k.m. matured and dissipated at S at a distance 137.3 km from radar at 1401 UTC.	Thunders torm / Rain/Hail	N/A
		231002-231401	4.Single cell with maximum reflectivity of 62.0 dBz at 1131 UTC and maximum height 13.8 km at 1101 UTC	4.WSW/131.5 km moving in Easterly direction	4. Isolated Single cell formed in WSW direction at 1032 UTC at a distance 131.5 k.m. Matured and dissipated at SW at a distance of 107.3 km from radar at 1231UTC.	Thunders torm / Rain/Hail	N/A
			5.Single cell with maximum reflectivity of 52.5 dBz at 1222 UTC and maximum height 09.9 km at 1211 UTC	5.WSW/132.4 km moving in Easterly direction	5. Isolated Single cell formed at 1202 UTC in WSW direction at a distance 132.4 k.m. Matured and dissipated at WSW at a distance of 122.2 km from radar at 1301 UTC.	Thunders torm / Rain	N/A
		231411-232351	Nil	Nil	NOSIG ECHO	Nil	Nil
		240002-240301	Nil	Nil	NOSIG ECHO	Nil	Nil
Patna	24-03-18	230300-240300	Nil	Nil	Nil	Nil	Nil

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

Realised TS/HS/SQ during past 24 hours 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)
Jorhat	Northeast India	Assam	Thunderstorm	24-03-18	0730	0830
N/Lakhimpur	Northeast India	Assam	Thunderstorm	23/24-03-18	232200	240200
Tezpur	Northeast India	Assam	Thunderstorm	24-03-18	0030	0130
Gangtok	East India	Sikkim	Thunderstorm	23-03-18	1445 1600	1515 1740
Tadong	East India	Sikkim	Thunderstorm	23-03-18	1510	1845
Haldia	East India	West Bengal (GWB)	Thunderstorm	23-03-18	1740	1755
Digha	East India	West Bengal (GWB)	Thunderstorm	23-03-18	1722	1925

## 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(upto03UTCof today)

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)

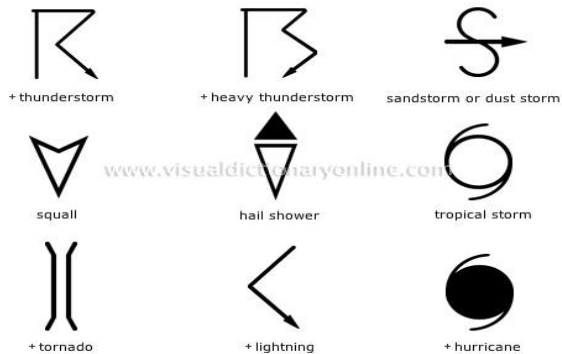
For Radar images of the past 24 hours including mosaic of images:

[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
<b>Weather Symbols</b>	