



India Meteorological Department

FDP STORM Bulletin No. 41 (16-04-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ The Western Disturbance as an upper air cyclonic circulation lies over north Pakistan and neighbourhood and extends upto 3.1 km above mean sea level.
- ◆ The other Western Disturbance as a trough in mid and upper tropospheric westerlies now runs with its axis at 5.8 km above mean sea level roughly along Long 65°E to the north of Lat 28°N.
- ◆ Another fresh Western Disturbance is likely to affect Western Himalayan region and adjoining plains from 19th onwards.
- ◆ The cyclonic circulation over West Rajasthan and neighbourhood now lies over northeast Rajasthan and adjoining Haryana and extends upto 0.9 km above mean sea level.
- ◆ A cyclonic circulation lies over West Madhya Pradesh and adjoining southeast Rajasthan and extends upto 1.5 km above mean sea level.
- ◆ The trough from north Bihar to Manipur now seen as a cyclonic circulation over Sub Himalayan West Bengal and neighbourhood and extends upto 1.5 km above mean sea level.
- ◆ The trough of low at mean sea level over Maldives Lakshadweep area now lies over equatorial Indian Ocean and adjoining southeast Arabian Sea with the cyclonic circulation aloft extending upto 1.5 km above mean sea level.
- ◆ The other trough of low at mean sea level over Equatorial Indian Ocean and adjoining southeast Bay of Bengal & neighbourhood now lies over Equatorial Indian Ocean and adjoining central parts of south Bay of Bengal with the embedded cyclonic circulation extending upto 3.1 km above mean sea level.
- ◆ A cyclonic circulation at 1.5 km above mean sea level lies over Interior Karnataka and adjoining Rayalaseema.
- ◆ A north south wind discontinuity runs from north Madhya Maharashtra to interior Tamilnadu across interior Karnataka at 0.9 km above mean sea level.

SATELLITE OBSERVATIONS during past 24 hrs 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 over North Pakistan, adjoining Afghanistan, Jammu & Kashmir, Himachal Pradesh, Uttarakhand and over the area between lat 37.0N to 48.0N, long 70.0E to 94.0E and weak to moderate convection over Haryana, Delhi, West and adjoining Central Uttar Pradesh in association with another WD over the area.

Westerly Trough & Jet Stream:

Trough in westerlies runs roughly along long 65.0E & north of lat 28.0N. Jet Stream observed over Rajasthan & Uttar Pradesh.

Convective Activity: Convective Clouds developing over extreme North Central Andhra Pradesh adjoining Odisha, South Interior Karnataka, Northeast Tamilnadu, North Kerala, Central Gangetic West Bengal, Meghalaya, Arunachal Pradesh, Central Uttar Pradesh, J & K, Himachal Pradesh and Uttarakhand.

Precipitation Nowcast Based on WMO Scope Product:

Based on 0900 UTC satellite data indicate that precipitation is likely to take place during next three (03 hrs) over West Jammu & Kashmir, Himachal Pradesh, Uttarakhand, North Central Andhra Pradesh adjoining Odisha, Interior Karnataka and Northeast Tamilnadu.

Clouds descriptions within India:

Broken low/medium clouds with embedded moderate to intense convection seen over Sub-Himalayan West Bengal, Sikkim, Arunachal Pradesh, Nagaland, Meghalaya adjoining Assam, Central Gangetic West Bengal, North Central Andhra Pradesh and adjoining Odisha. Scattered low/medium clouds with embedded moderate to intense convection seen over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Nicobar Islands, Kerala, Tamilnadu and South interior Karnataka. Scattered low/medium clouds with embedded weak to moderate convection seen over Northwest Madhya Pradesh. Scattered low/medium clouds with embedded isolated weak convection seen over West and adjoining Central Uttar Pradesh and rest Odisha. Scattered low/medium clouds seen over Haryana, Delhi, rest Uttar Pradesh, Chhattisgarh, Jharkhand, South Rajasthan, East Madhya Pradesh and Northwest Gujarat.

Arabian Sea:-

Scattered low/medium clouds with embedded intense to very intense convection seen over Central parts of South Arabian Sea (minimum CTT minus 93° C).

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded intense to very intense convection seen over South Bay south of lat 8.5N east of long 82.0E (minimum CTT minus 93°C) and South Andaman Sea (minimum CTT minus 80°C).

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over J&K East Madhya Pradesh Chhattisgarh Vidarbha Marathwada Telangana Rayalseema Karnataka Kerala Tamilnadu and Weak to Moderate convection observed over Himachal Pradesh Uttarakhand Punjab Gujarat Rajasthan Haryana Delhi West Uttar Pradesh Jharkhand Odisha Sikkim North-East States rest Maharashtra.

OLR:

Up-to 230 wm^{-2} observed over Jammu & Kashmir North Himachal Pradesh North Uttarakhand Sikkim Arunachal Pradesh West Telangana Karnataka Kerala Tamilnadu and Up-to 250 wm^{-2} observed over North Gujarat East Meghalaya Assam Nagaland North Manipur.

Synoptic Features (Westerly Trough & Jet Stream): Trough in Westerly's roughly along Longitude 61.0E & north of Latitude 30.0N

Dynamic Features:-

Up to 30- 60 Knots wind shear is observed over North & Central India and 5-15 over south peninsula India.

Negative Shear tendency is observed over J & K, Rajasthan.

A positive Vorticity field at 850 hPa is observed over J & K, Himachal Pradesh, Uttarakhand, West Uttar Pradesh, East Madhya Pradesh, East Jharkhand.

Negative Low Level Convergence is observed over J & K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, West Uttar Pradesh, East Rajasthan, Coastal Andhra Pradesh and North-East States

Precipitation:

IMR:

Rainfall upto 130-150 mm observed over some parts of North Karnataka and

Upto 70-90 mm observed over West J&K North Interior Karnataka adjoining Marathwada West parts of South Interior Karnataka Kerala and

Upto 10-30 mm observed over some parts of North Tamilnadu West Telangana and
Upto 01-10 mm observed over East J&K South Himachal Pradesh North Uttarakhand West Punjab Haryana adjoining North-West Uttar Pradesh
Central Rajasthan South-East Madhya Pradesh North Chhattisgarh Vidarbha Sikkim Arunachal Pradesh rest Tamilnadu.

HEM:

Rainfall upto 139-208 mm observed over some parts of North Karnataka and
Upto 70-139 mm observed over West J&K West parts of South Interior Karnataka Central Kerala
Upto 7-20 mm observed over Arunachal Pradesh North Tamilnadu
Upto 0.1-7 mm observed over North Gujarat Rajasthan Haryana adjoining North-West Uttar Pradesh East Madhya Pradesh Vidarbha Chhattisgarh
adjoining Odisha Sub Himalayan West Bengal Meghalaya Assam South Nagaland North Manipur rest Kerala rest Tamilnadu

RADAR and RAPID RGB Observation:

Isolated/multiple moderate echoes (dBZ 45-55 and height 10-12km) are seen in DWR Agartala, Mohanbari, Hyderabad, Machilipatnam and Vishakhapatnam at 1700IST. Light to moderate echoes are also seen in DWR Srinagar, Delhi, Jaipur, Patiala, Patna and Nagpur at around 1700IST.

RAPID RGB Satellite imagery at 1600IST indicates significant convection over Jammu & Kashmir, North Himachal Pradesh, North Uttarakhand, Central Uttar Pradesh, Central Assam, Meghalaya, Nagaland, West Arunachal Pradesh, Nagaland South Chhattisgarh, North Coastal Andhra Pradesh, South Interior Karnataka, Kerala, South Tamilnadu and isolated places over Vidarbha, Marathawada and Madhya Maharashtra.

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

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

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

Delhi – SAFAR analysis & Forecast	16.04.2018	17.04.2018
PM10 (micro-g/m ³)	236	244
PM2.5 (micro-g/m ³)	102	100

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level CYCIRS, Troughs: 00 UTC of Day 2-5: A deep trough and associated strong winds over Bangladesh and adjoining NE region

12 UTC of Day 0: A weak CYCIR at 925 hPa over west Rajasthan and adjoining Pakistan

Confluence & wind Discontinuity regions: 12 UTC of Day 0-2: 925hPa N-S discontinuity over Southern Peninsular India and in Day 1-2 SW-NE discontinuity over MP Chhattisgarh & Odisha

Synoptic Systems: 00 UTC of Day 1-3: WD as a weak trough at 500 hPa over J & K and adjoining Pakistan, a fresh WD and associated cyclonic circulation approaching J & K in Day 4.

00UTC of Day 2-5: 925 hPa anticyclone over Bay of Bengal In Day 3-5 associated south-easterly winds are stronger along the east coast and over Bangladesh

2. Location of jet and jet core (>60kt) at 500hPa): 12UTC of Day 0-3: Nil Day 4: Over Gujarat & Rajasthan associated with approaching WD

12 UTC Day 1-2: Strong westerlies over East U.P, Bihar, Bangladesh & NE states

3. Convergence at 850 hPa:

Day/Index: Subdivisions with Lower Level Convergence > 15×10^{-5} /s

Day0: NE NMMT, Madhya Maharashtra, Tamilnadu, Puducherry, NI Karnataka,

Day1: East Rajasthan, Odisha, Tamilnadu, Puducherry, SI Karnataka, Kerala,

Day2: NE NMMT, Gangetic WB, Jharkhand, Madhya Maharashtra, Tamilnadu, Puducherry, NI Karnataka, SI Karnataka, Kerala,

Day3: Assam Meghalaya, NE NMMT, East MP, Madhya Maharashtra, Tamilnadu, Puducherry, NI Karnataka, SI Karnataka,

Day4: Assam Meghalaya, Gangetic WB, Jharkhand, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Gujarat Region, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, Tamilnadu, Puducherry, SI Karnataka,

4. Low level Vorticity:-Positive Vorticity:

Day/Index: Subdivisions with Lower Level Vortex > 15×10^{-5} /s

Day0: Bihar, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Madhya Maharashtra,

Day1: Jharkhand, Bihar, Jammu Kashmir,

Day2: Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Himachal Pradesh,

Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Tamilnadu, Puducherry,

Day4: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Jharkhand, Bihar, Jammu Kashmir, Tamilnadu, 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, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Tamilnadu, 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, Konkan Goa, Madhya Maharashtra, Coastal AP, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, 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, Assam Meghalaya, NE NMMT, Sub Himalayan WB, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh,

Day2: 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, Coastal Karnataka, NI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Tamilnadu, Puducherry

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Marathwada, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, 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, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Sub Himalayan WB, 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: Punjab, Himachal Pradesh, Jammu Kashmir, Tamilnadu, Puducherry, Kerala,

Day2: Assam Meghalaya, NE NMMT, Sub Himalayan WB, Himachal Pradesh, Jammu Kashmir,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jammu Kashmir,

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

*****Rainfall > 4cm over J & K in 00 UTC of Day 5 and > 8cm over Meghalaya in Day 3**

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 parts of Punjab and adjoining north west Rajasthan. Another cyclonic circulation is seen in the analysis over north east Rajasthan and adjoining Haryana. The forecast shows it will move eastward till day3. The analysis shows a cyclonic circulation over west Madhya Pradesh and adjoining south east Rajasthan in lower troposphere. The forecast shows it will become less marked in next 24 hours. The analysis shows a cyclonic circulation over Sub Himalayan West Bengal and adjoining areas in lower troposphere. The forecast shows it will persist till day3. Another cyclonic circulation is seen in the analysis over north interior Karnataka and adjoining areas. It will persist in next 24 hour forecast become less marked thereafter. The analysis shows a north- south Trough runs from north Madhya Maharashtra to interior Tamil Nadu across interior Karnataka. The forecast shows it will persist till day3.

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 10⁻¹/s):

Low level Positive Vorticity is seen mostly along the foothills of Himalaya, J & K, Himachal Pradesh, Uttarakhand and NE states also seen along the cyclonic circulation over southwest Madhya Pradesh and along the north-south trough for next 3 days. It is inferred that some parts of north west Rajasthan and adjoining areas has Positive Vorticity on day 1.

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 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, Rajasthan, coastal Maharashtra including Mumbai, Konkan & Goa, Madhya Maharashtra, Marathwada, Vidarbha adjoining Chhattisgarh, coastal areas along the east coast and west coast, extreme south peninsular India, Assam, Meghalaya, Tripura and adjoining area, SHWB on all 3 days; over parts of southwest Uttar Pradesh and adjoining Madhya Pradesh on day 1; over some parts of East Uttar Pradesh on day 2 and 3; Maximum value of the index is seen over parts of Gujarat, GWB, Orissa, Andhra Pradesh, coastal Maharashtra, Karnataka and Telangana on day 1; over parts of coastal Maharashtra, including Mumbai, Konkan and Goa, Karnataka, GWB, Orissa, Chhattisgarh, Telangana, Andhra Pradesh, Bihar, Jharkhand on day 2 and 3; over some parts of Tamil Nadu on day 3.

Lifted Index (< -2): The threshold value of the index is below -2 over parts of Gujarat, coastal Andhra Pradesh, coastal Karnataka, Telangana, Rayalaseema, Konkan and Goa, Kerala, Tamil Nadu, southern part of west coast, coastal areas along the east coast, Chhattisgarh, Orissa, GWB, SHWB, Sikkim and NE states on all 3 days; over parts of Rajasthan, Punjab, Haryana, Himachal Pradesh, west Uttar Pradesh and adjoining Madhya Pradesh on day1; over parts of J&K, east Uttar Pradesh, Bihar, Jharkhand, Vidarbha and Punjab on day 2 ; over parts of East Uttar Pradesh and Vidarbha on day 3; maximum negative value of the index less than -10 is seen over parts of GWB, coastal Orissa, coastal Andhra Pradesh, Tripura and adjoining areas from day 2 onwards.

Total Total Index (> 50): The threshold value of the index is > 50 over some parts of Rajasthan, Gujarat, Punjab, Haryana, Delhi, Uttar Pradesh, Madhya Pradesh, Jharkhand, Vidarbha on day 1; over parts of Gujarat, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Foothills of Himalaya, Uttar Pradesh, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Madhya Maharashtra, Marathwada, GWB on day 2 and 3 ; over parts Orissa, Telangana, Karnataka on day 3; maximum value of the index >60 is seen over parts of Rajasthan and west Madhya Pradesh on day 1; over parts of Punjab, Haryana, Rajasthan, Madhya Pradesh, Vidarbha and Marathwada on day2; on day 3 over parts of Haryana, Gujarat, Rajasthan, Uttar Pradesh, Madhya Pradesh, Bihar, Jharkhand, GWB, Vidarbha and Telangana.

Sweat Index (> 300): Although the threshold value of the Index >300 is seen in most parts of the country during next 3 days but the maximum value of the index greater than 800 is seen over parts of GWB, Tripura and adjoining areas, SHWB, coastal Orissa and Jharkhand on day 2 and 3; over parts of Assam and adjoining areas on day 3.

CAPE (> 1000): Mostly in areas of southern peninsular India, along west coast and east coast and parts of GWB, Orissa, Andhra Pradesh, Telangana, Kerala, Tamil Nadu, coastal Karnataka, Gujarat, coastal Maharashtra, Konkan and Goa, Jharkhand, GWB, SHWB, Tripura and adjoining areas during all 3 days; over parts of Assam and adjoining areas on day 2 and 3; over parts of Bihar and Jharkhand and adjoining areas on day 3; Maximum value of the index greater than 2500 is seen mostly over parts of GWB, coastal Orissa and Coastal Andhra Pradesh and

Coastal Tamil Nadu on all 3 days; over parts of coastal Maharashtra on day 2; over parts of coastal Maharashtra, coastal Karnataka, coastal Kerala and parts of Tripura and adjoining areas on day3.

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 extreme Northern parts of Rajasthan during day 2 and 3, the maximum value of the index > 400 is seen over parts of SHWB, Bihar and Jharkhand during next 3 days; over parts of Assam, East Uttar Pradesh, Sikkim, Tripura and adjoining area on day2.

5. Rainfall Activity:

40-70 mm Rainfall: over parts of Jammu and Kashmir on day 1.

10-40 mm Rainfall: over parts Kerala, Tamil Nadu, Karnataka, Jammu and Kashmir, Sikkim and NE states during next 3 days; over parts of Himachal Pradesh and Uttarakhand on day1.

Up to 10 mm rainfall: Over parts of J&K, Foothills of Himalaya, Punjab, Himachal Pradesh, Uttarakhand, Sikkim, NE states, Orissa, Bihar, Jharkhand, GWB, SHWB, Chhattisgarh, Andhra Pradesh, Rajasthan, Marathwada, Madhya Maharashtra, Kerala, Karnataka, Tamil Nadu, Telangana, Rayalaseema coastal Maharashtra, Konkan and Goa, NE states on all 3 days; over parts of Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Gujarat on day 1 and 2; over parts of northwest Rajasthan on day3

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

1. Model Reflectivity (Max. dBZ):

> 25 dBZ Model Reflectivity: Over parts of J&K, Punjab, Haryana, Himachal Pradesh, Uttar Pradesh, Uttarakhand, Rajasthan, Vidarbha, east Madhya Pradesh, Kerala, Tamil Nadu Sikkim and adjoining areas on day 1; over parts of J&K, Himachal Pradesh, Uttar Pradesh, Uttarakhand, Sikkim, NE states, Madhya Pradesh, Chhattisgarh, Kerala and Tamil Nadu on day 2; over parts of J&K, Karnataka, Chhattisgarh adjoining Vidarbha and east Madhya Pradesh on day 1; over parts of J&K, Himachal Pradesh, Uttarakhand, Sikkim, NE states, GWB, SHWB, adjoining Jharkhand and Bihar, Orissa and adjoining areas on day 3; maximum value of the Model reflectivity is seen over parts of Jammu and Kashmir and adjoining Himachal Pradesh and Uttarakhand during next 3 days; over parts of Sikkim and NE states on day 2 and 3; over parts of Orissa and adjoining GWB on day3.

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 south peninsular India, southern parts of west coast and the east coast, southern parts of Andhra Pradesh, south interior Karnataka, Konkan and Goa, Telangana and NE states during all 3 days; below threshold value is seen over some parts of Bihar, Jharkhand Sikkim and SHWB on day 3; maximum value of the index is seen over parts of J&K, Punjab, Haryana, Delhi, Rajasthan, Gujarat, Madhya Pradesh, Chhattisgarh, Jharkhand, Vidarbha, east and west Uttar Pradesh, GWB, Madhya Maharashtra, Marathwada and Orissa during all 3 days; over parts of Telangana and adjoining areas on day 2 and 3; Over parts of north interior Karnataka on day3.

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, Jharkhand, Chhattisgarh, Orissa, GWB and Kolkata, SHWB, parts of Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Extreme south peninsular India, Assam, Tripura and adjoining areas on all 3 days; over parts of Bihar on day 2 and 3; Maximum value of the index greater than 3500 is seen over the parts of coastal Karnataka, south interior Karnataka, coastal Kerala, coastal Orissa, coastal Andhra Pradesh, coastal Maharashtra, Konkan and Goa, GWB for next 3 days; over parts of coastal Tamil Nadu on day 1 and 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 during next 3 days; the maximum value of the index > 400 is seen over Punjab, Haryana, Gujarat, Rajasthan, northern parts of Madhya Maharashtra, Uttar Pradesh, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh on day 1; over parts of Bihar, Jharkhand, Uttar Pradesh, Chhattisgarh, Orissa, GWB, Gujarat, Madhya Maharashtra, Marathwada, East Madhya Pradesh, Vidharbha, Telangana and Andhra Pradesh on day2 and 3.

3. Rainfall and thunderstorm activity:

70- 130 mm Rainfall: over parts of J&K on day 1.

40-70 mm Rainfall: over parts of J&K on all 3 days; over parts of Orissa, Tripura and adjoining areas on day 3.

10- 40 mm Rainfall: over parts of J&K, Sikkim, NE states, Kerala, Karnataka, Tamil Nadu and adjoining areas during all 3 days, over parts of Himachal Pradesh and Uttarakhand on day 1; over parts of Orissa and adjoining GWB on day 3.

Up to10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, Rayalaseema, Orissa, Bihar, Jharkhand, GWB, Sikkim and NE states during next 3 days; over parts of Punjab, Haryana, Uttar Pradesh, Vidarbha, Madhya Maharashtra, Marathwada, Konkan and Goa, Madhya Pradesh, Chhattisgarh on day 1; over parts of Madhya Maharashtra, Marathwada, Konkan and Goa on day 2; on day 3 over southern parts of Madhya Maharashtra, Marathwada and Chhattisgarh.

3. IOP ADVISORY FOR 24 and 48Hrs:

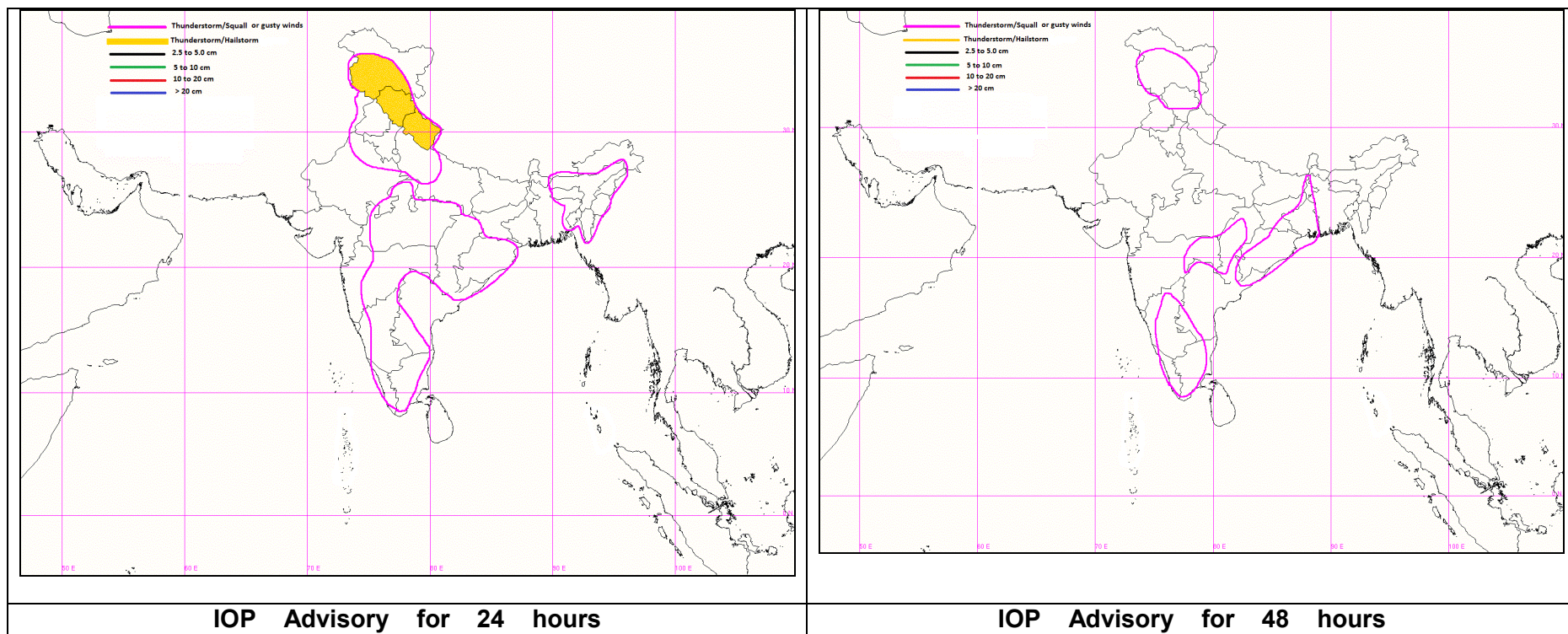
Summary and Conclusions:

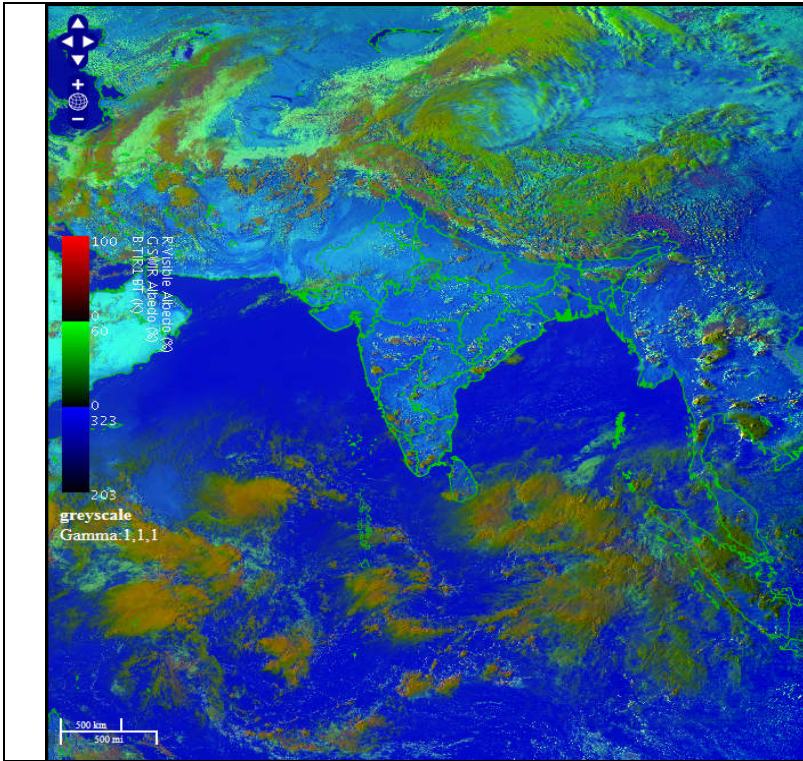
- Synoptic analysis indicates that a fresh Western Disturbance as an upper air cyclonic circulation lies over north Pakistan and neighborhood will bring thunder squall with hail activity over Jammu and Kashmir, Himachal Pradesh on Day-1. The thunderstorm with gusty winds may likely over Punjab, Haryana, west UP and North Rajasthan on Day-1.
- A cyclonic circulation lies over West Madhya Pradesh and adjoining southeast Rajasthan, this will trigger the thunderstorm with gusty winds activity over Madhya Pradesh, Chhattisgarh and Vidarbha on Day-1.
- Another cyclonic circulation over Interior Karnataka and adjoining Rayalaseema will bring thunderstorm with gusty winds activity mainly over North and South Interior Karnataka, Rayalaseema and Kerala on Day-1.

Day-1 & Day-2:

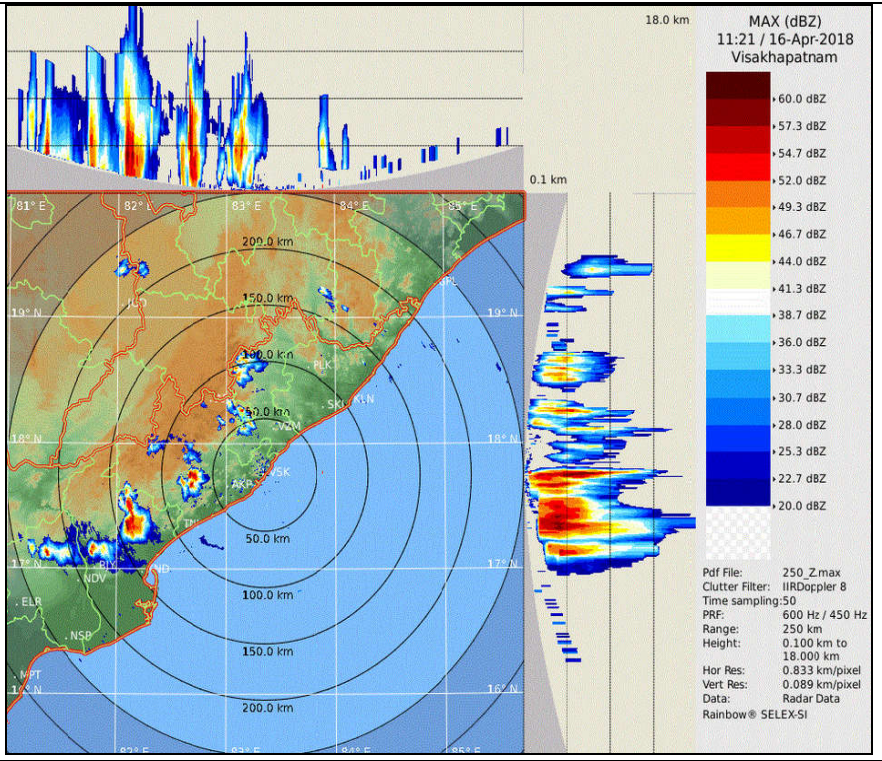
<p>Significant Rainfall: Nil</p> <p>Thunderstorm with Squall/Gusty winds: Punjab, Haryana, Delhi, Uttar Pradesh, North Rajasthan Assam, Meghalaya, Nagaland, Manipur, Mizoram & Tripura Madhya Pradesh, Chhattisgarh, Vidarbha Odisha, North Coastal Andhra Pradesh, Rayalaseema, Interior Karnataka, Kerala, Tamilnadu Marathawada, Madhya Maharashtra</p> <p>Thunderstorm with squall &Hailstorm: Jammu & Kashmir, Himachal Pradesh, Uttarakhand</p>	<p>Significant Rainfall: Nil</p> <p>Thunderstorm with Squall/Gusty winds: Jammu & Kashmir, Himachal Pradesh Chhattisgarh, Vidarbha Odisha, Genetic and Sub-Himalayan West Bengal North Coastal Andhra Pradesh, Interior Karnataka, Kerala, Tamilnadu</p> <p>Thunderstorm with Hailstorm: Nil</p>
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Graphical Presentation of Potential Areas for Severe Weather:

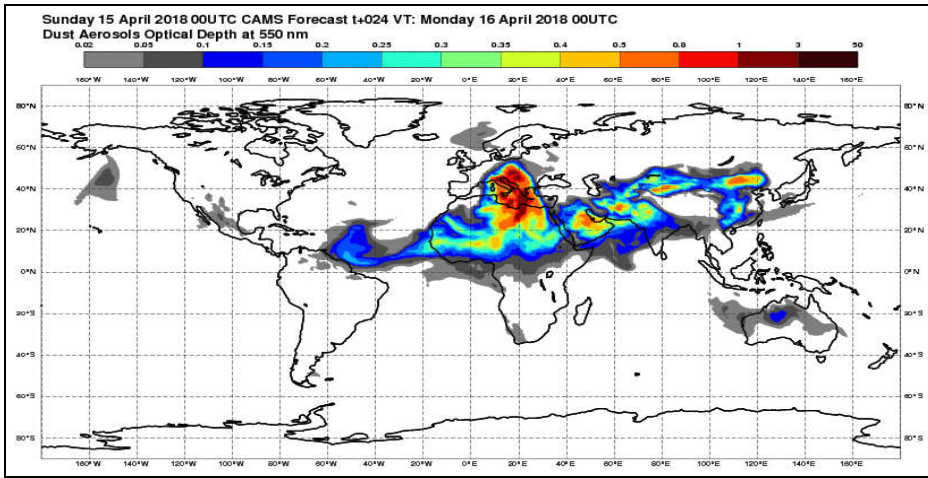




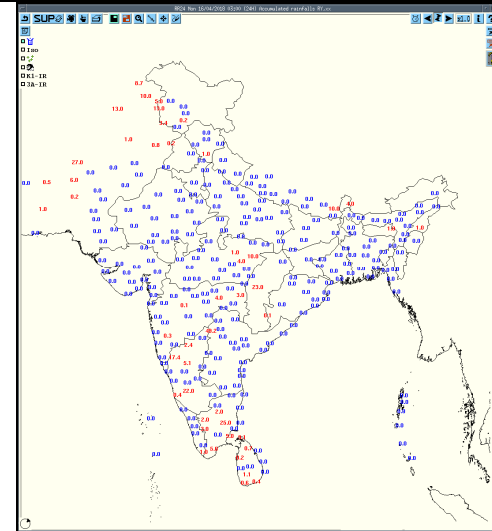
RAPID RGB Imagery at 1600 IST of the Day



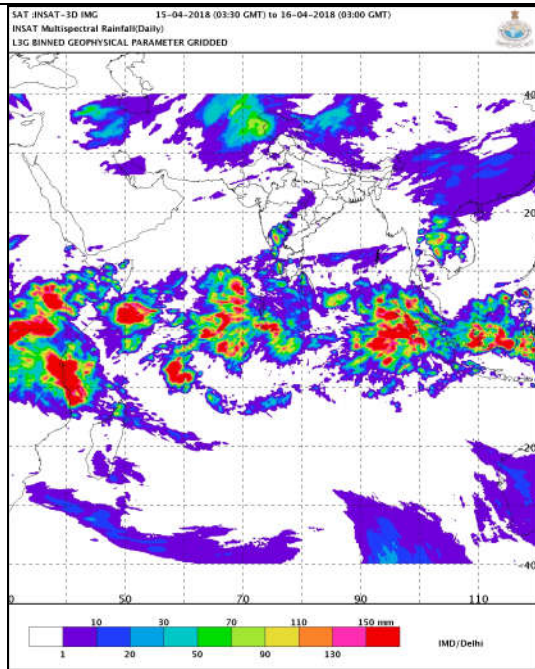
DWR Vishakhapatnam at 1651 IST of the Day



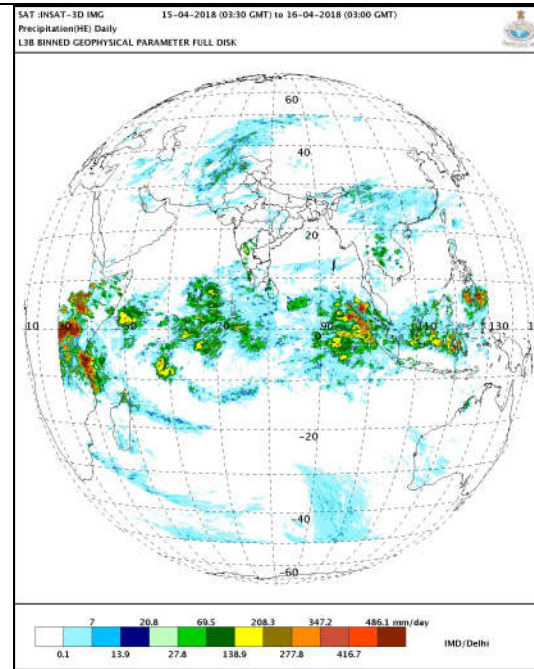
Dust Forecast



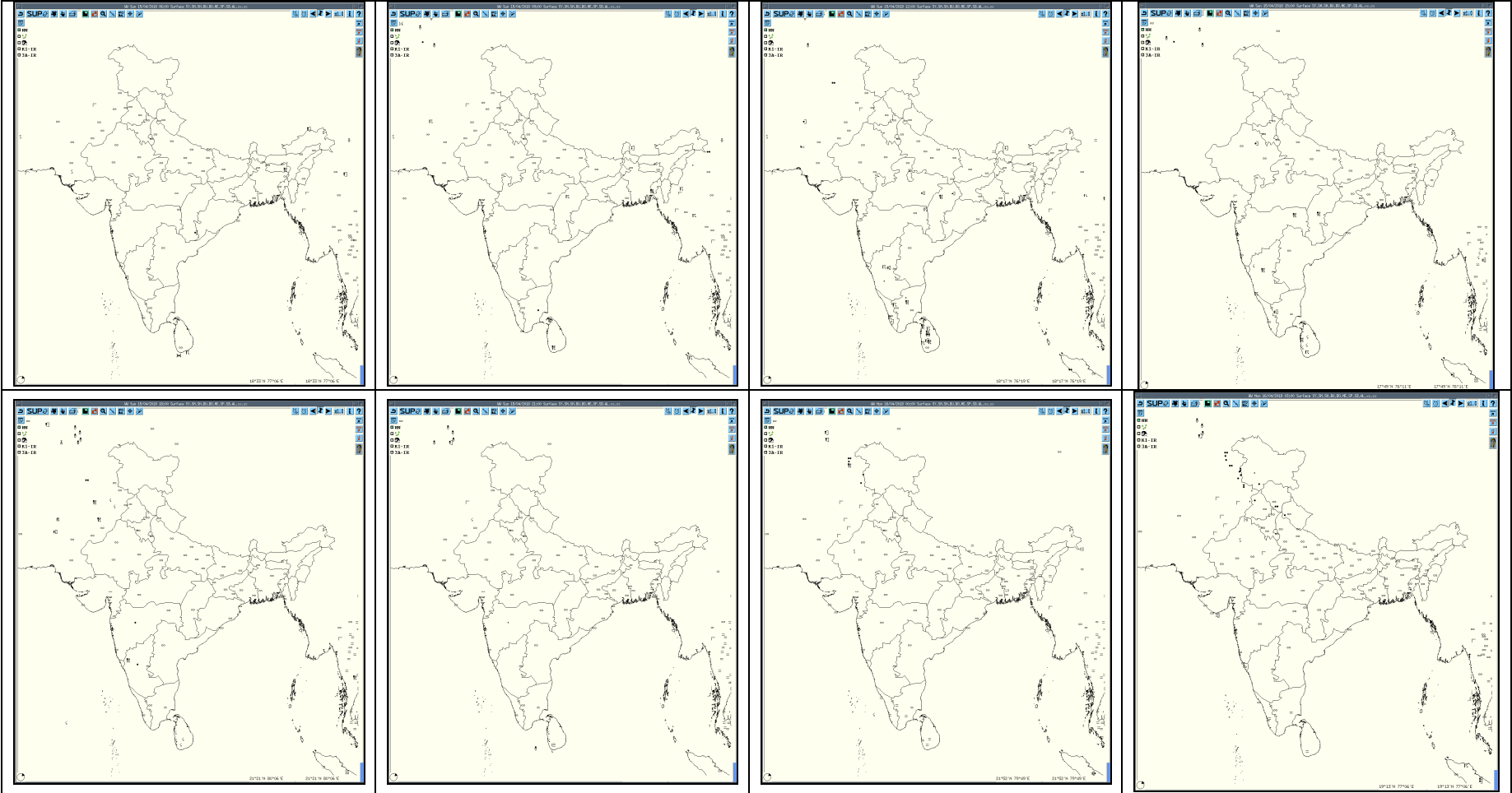
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



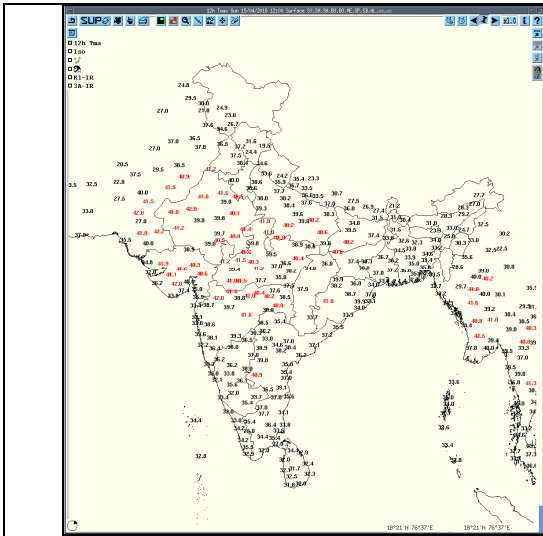
IMR



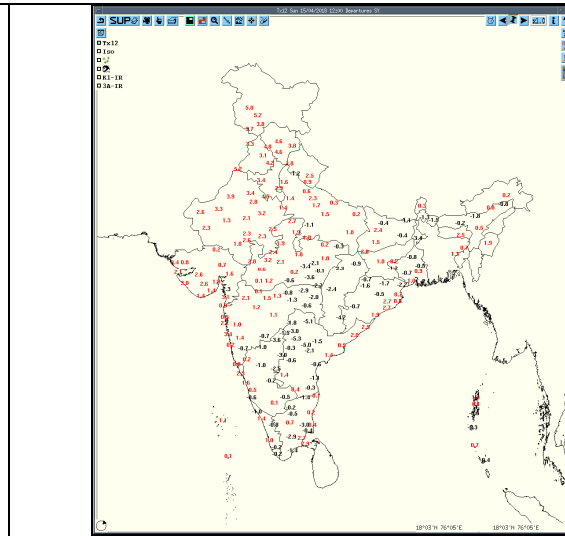
HEM



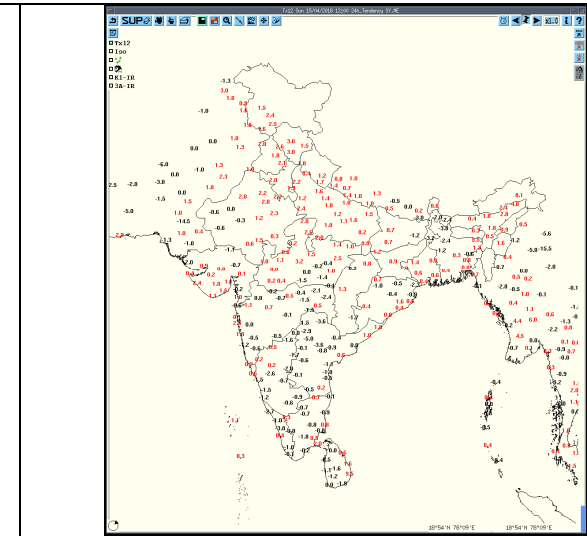
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



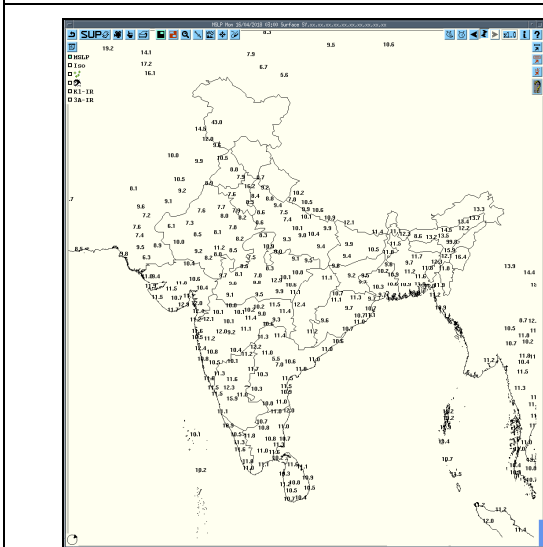
Tmax



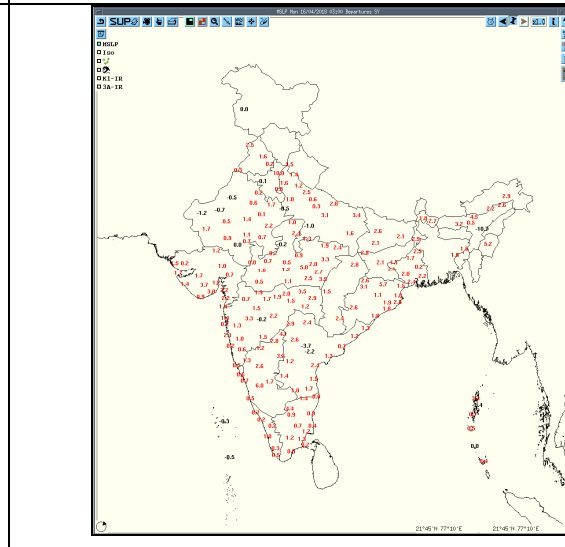
Departure Tmax



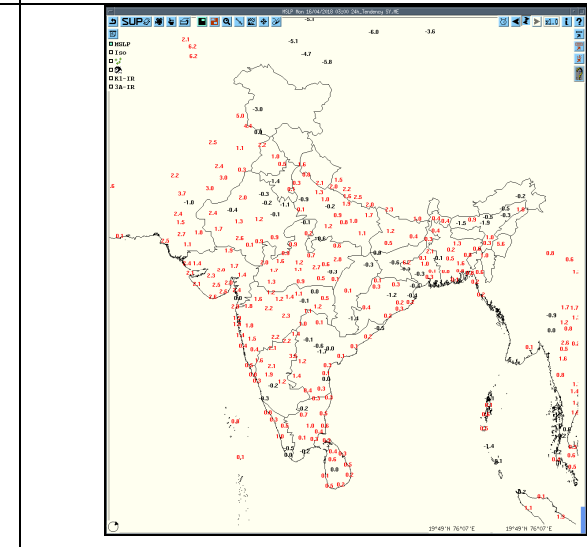
Tendency Tmax



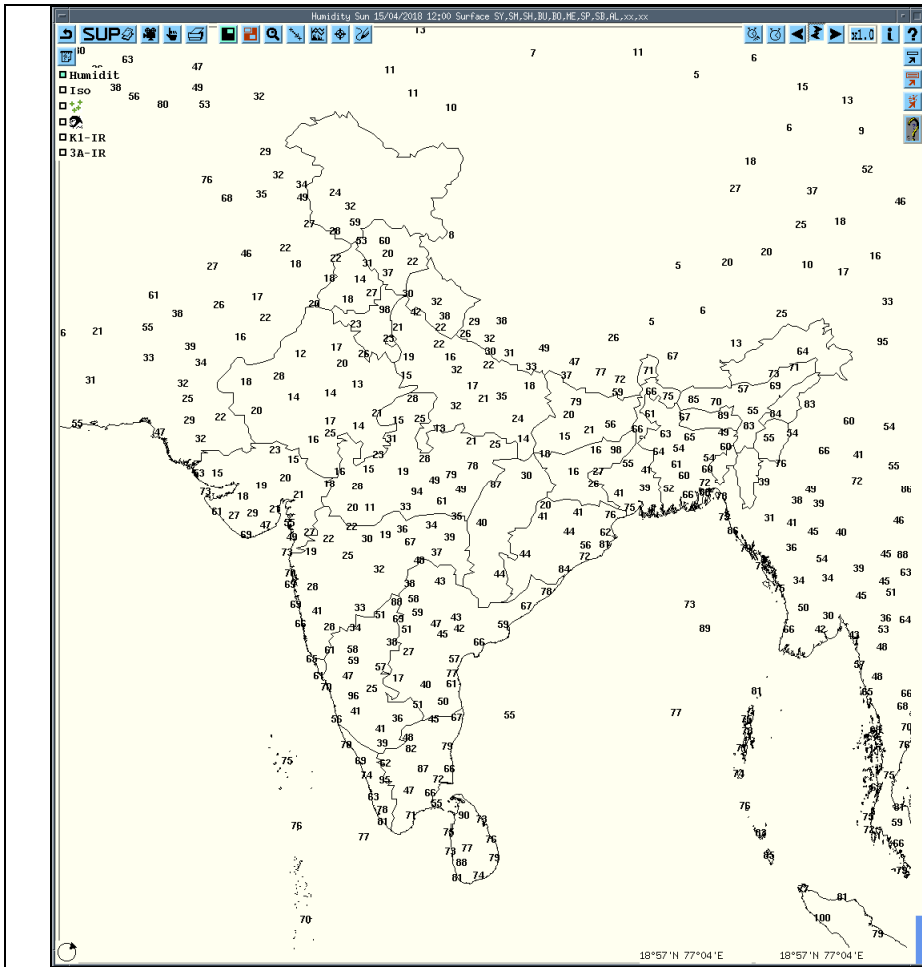
MSLP



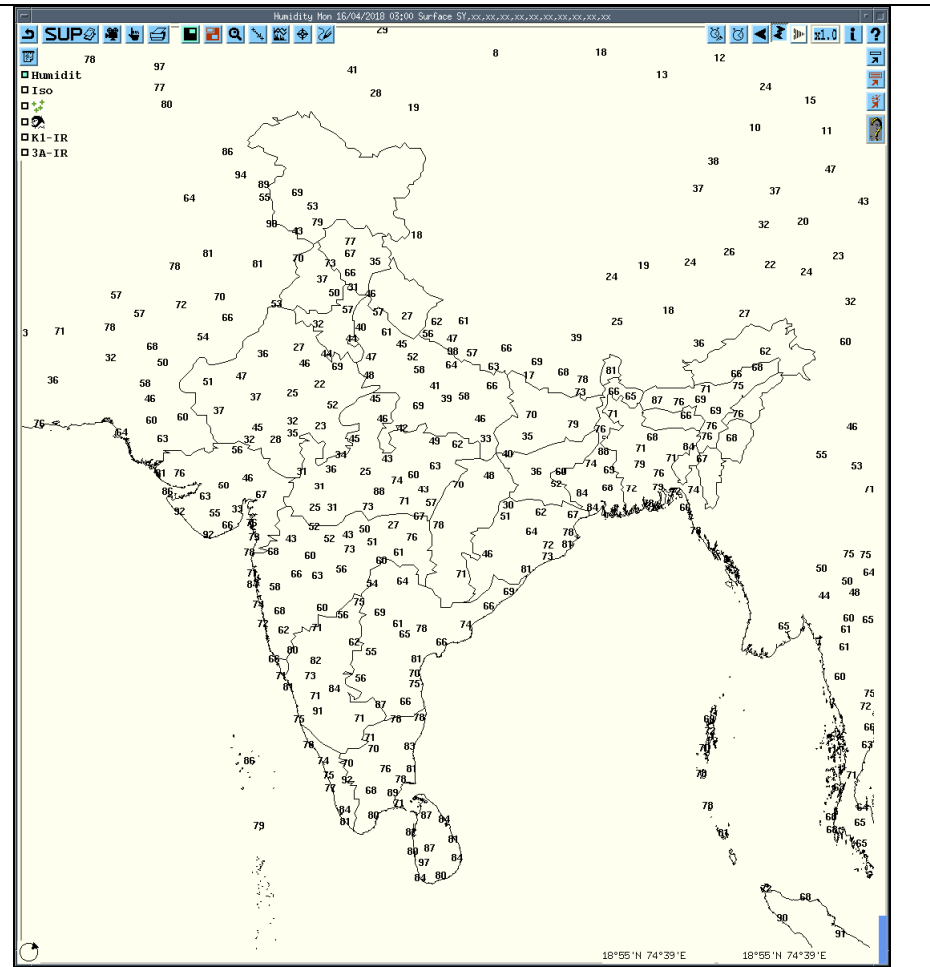
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

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
Patiala	16-04-18	150300-151200	NO ECHO	--	--	--	--
		151200-151500	Multiple echoes Reflectivity: 33.5 dbz Ht. 9-10 km	SW sector Dir. NE ly	_____	TS/RA	Hissar, Bhiwani, Ellanabad
		151500-160000	NO ECHO	--	--	--	--
		160000-160252	Multiple echoes Reflectivity: 33.5 dbz Ht. 9-10 km	NE,NW Sectors Dir. NE ly	_____	RA/DZ	Ropar, Nawanshar, Nangal
Patna	16-04-18	150300-160300	Nil	Nil	Nil	Nil	Nil
Lucknow	16-04-18	150300-160300	Nil	Nil	Nil	Nil	Nil
Kolkata	16-04-18	150300-160300	Nil	Nil	Nil	Nil	Nil
Visakhapatnam	16-04-18	150900	Isolated single cells with maximum reflectivity of 54dBz and maximum height of 10kms	W & NW (70 KMS) moving SEly	Single CB cells formed at 0811UTC and developing . Max. reflectivity of 54dBz observed at 0851UTC	-	Visakhapatnam Dist. Of A.P
		151200	Multiple cells with maximum reflectivity of 62dBz and maximum height of 14kms	W (75 kms) & NW (62 KMS) moving SEly	CB cells developing since last observation and matured well (62dBz, 14 kms) at 1021 UTC. Dissipating start from 1151UTC.	-	Visakhapatnam Dist. Of A.P

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)
Ramgundam	South India	Telangana	Thunderstorm	15-04-18	1215	1235
Nagpur	Central India	Vidarbha	Thunderstorm	15-04-18	1430	1545
Bramhapuri	Central India	Vidarbha	Thunderstorm	15-04-18	2105	2140
Wardha	Central India	Vidarbha	Thunderstorm	15-04-18	1800	1845
Yeotmal	Central India	Vidarbha	Thunderstorm	15-04-18	1400 1800	1600 2000
Gondia	Central India	Vidarbha	Thunderstorm	15-04-18	1740	2200
Jabalpur	Central India	Chhattisgarh	Thunderstorm	15-04-18	1630	1800
Raipur	Central India	Chhattisgarh	Thunderstorm	15-04-18	1905	2050
Ambikapur	Central India	Chhattisgarh	Thunderstorm	15-04-18	1540	1615
Pendra Rd	Central India	Chhattisgarh	Thunderstorm	15-04-18	1330	1800
Chandigarh	Northwest India	Chandigarh	Thunderstorm	16-04-18	0630	0710
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	16-04-18	0730	0800
Barapani	Northeast India	Meghalaya	Thunderstorm	15-04-18	1600	1630
Shillong	Northeast India	Meghalaya	Thunderstorm	15-04-18	1020	1140
Tadong	East India	SHWB	Thunderstorm	15-04-18	1450	1510
Thiruvananthapuram City	South India	Kerala	Thunderstorm	15-04-18	1405	1415
Panambur	South India	Karnataka (CK)	Thunderstorm	15-04-18	0830	0850
Koppal	South India	Karnataka (NIK)	Thunderstorm	15-04-18	1720	1740
Belgaum AP	South India	Karnataka (NIK)	Thunderstorm	15/16-04-18	152115	160120
Gulbarga	South India	Karnataka(NIK)	Thunderstorm	15-04-18	1900	2145
Gadag	South India	Karnataka(NIK)	Thunderstorm	15-04-18	1530 1850	1735 2315
Salem	South India	Interior Tamil Nadu	Thunderstorm	15-04-18	1630	1740
Coimbatore	South India	Interior Tamil Nadu	Thunderstorm	15-04-18	1535 2000	1620 2040

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)

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/

Low Level Winds

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

Past24hourHEMandIMRrainfall(upto03UTCoftoday)

IMR: http://satellite.imd.gov.in/img/3Ddaily_imr.jpg

HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg

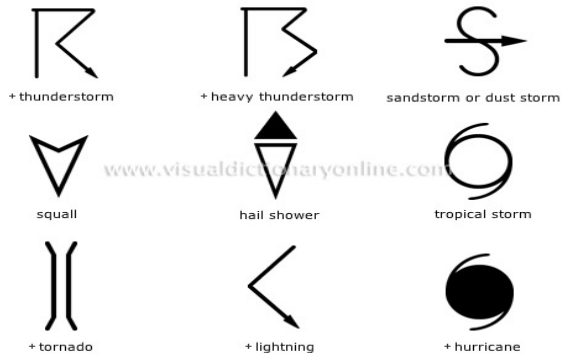
For Radar images of the past 24 hours including mosaic of images:

http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T- Phigram

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