



India Meteorological Department

FDP STORM Bulletin No. 52 (27-04-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ A fresh Western Disturbance as a cyclonic circulation lies over north Pakistan & neighbourhood at 3.1 km above mean sea level with a trough aloft and its axis at 5.8 Km above mean sea level runs along Long 72°E and Lat 32°N.
- ◆ A trough in mid & upper tropospheric westerlies with its axis at 7.6 Km above mean sea level runs roughly along Long 86°E and north of Lat 22°N.
- ◆ The cyclonic circulation over West Uttar Pradesh & neighbourhood extending upto 1.5 km above mean sea level persists and the trough now runs from north Haryana to north coastal Karnataka across West Uttar Pradesh, Madhya Pradesh, west Vidarbha and south Madhya Maharashtra and extends upto 0.9 km above mean sea level.
- ◆ The cyclonic circulation over West Bengal & adjoining Bihar between 1.5 km and 3.1 km above mean level persists. A trough extends from the above cyclonic circulation to Manipur across Bangladesh and Meghalaya at 1.5 Km above mean sea level.
- ◆ The cyclonic circulation over Meghalaya & adjoining east Assam extending upto 1.5 km above mean sea level has merged with the above system.
- ◆ The northsouth wind discontinuity from Telangana to Lakshadweep area across Coastal Karnataka now runs from North Interior Karnataka to Lakshadweep area across South Interior Karnataka and north Kerala at 1.5 km above mean sea level.
- ◆ A trough runs from Comorin area to Rayalaseema across Interior Tamilnadu and extends upto 0.9 km above mean sea level.
- ◆ The cyclonic circulation over south Andaman sea and neighbourhood now seen between 1.5 and 3.1 km above mean sea level.
- ◆ A fresh Western Disturbance likely to affect Western Himalayan region from 01st May onwards.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

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

Intense Precipitation Advisory for next 3 hrs:

Heavy rainfall spell (>15mm/hr) is likely over South Kerala. Moderate rainfall spell (>5 mm/hr) is likely over Kerala (for details kindly refer to <http://sigma.cptec.inpe.br/scope/>).

Thunderstorm Advisory for Next 3 Hrs:

Thunderstorm cells: Nil (for details kindly refer to <http://www.rapid.imd.gov.in/>).

Western Disturbance (WD):

Scattered multi-layered clouds seen over Northeast Saudi Arabia, Iraq, Persian Gulf & neighbourhood and South Iran in association with Western Disturbance over the area.

Clouds descriptions within India:

Broken low/medium clouds with embedded weak to moderate convection seen over Northeastern States. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over Kerala, Southern parts of South Interior Karnataka, Tamilnadu and Andaman & Nicobar Islands. Scattered low/medium clouds seen over Jammu & Kashmir, North Himachal Pradesh, West Punjab, Bihar, Jharkhand, Odisha, Chhattisgarh, Sub-Himalayan and Gangetic West Bengal, Northeast Madhya Pradesh, North Rajasthan, Lakshadweep and rest Tamilnadu.

Arabian Sea:-

Scattered low/medium clouds with embedded moderate to intense convection seen over extreme Southeast Arabian Sea, South Comorin & neighbourhood. . Scattered low/medium clouds with embedded moderate to intense convection over South Comorin & neighbourhood.

Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded intense to very intense convection seen over Andaman Islands and moderate to intense convection seen over Andaman Sea and south Bay south of lat 10.0deg N.

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over east Bihar north-east Jharkhand north GWB SHWB south Karnataka Kerala North West Tamilnadu & Nicobar islands.

OLR:-

Upto 370wm^{-2} observed over Vidarbha.

Up-to 230wm^{-2} observed over Jammu & Kashmir north Himachal Pradesh Uttarakhand Bihar Gangetic West Bengal Sub-Himalayan West Bengal Sikkim north-east states Kerala Tamilnadu Andaman & Nicobar island

Synoptic Features:

Trough in Westerlies runs roughly along Longitude **72.0°E** & north of Latitude **35.0°N**.

Dynamic Features:

Up to 30- 60 kts **wind shear** is observed over North India, Central India & North East India and 05-20 kts over south peninsula India.

Negative wind Shear tendency observed over Gangetic West Bengal Arunachala Pradesh north east Assam and adjoining area positive wind shear tendency observed over Jammu & Kashmir Punjab and adjoining area.

low level convergence was observed over north east states and adjoining area and Tamilnadu and Andhra Pradesh.

Positive Vorticity observed over north west Jammu & Kashmir, Uttar Pradesh Bihar adjoining area and Maharashtra.

Precipitation:**IMR:**

Rainfall up-to 50-70 mm observed over Kerala South Karnataka central Kerala Tamilnadu and Nicobar Islands.

Rainfall up-to 10-20 mm observed over Jharkhand

Rainfall up-to 01-10 mm observed over Jammu and Kashmir North Uttarakhand north GWB SHWB Assam Meghalaya Mizoram adjoining West Bengal south interior Karnataka rest Kerala and Tamilnadu.

HEM :

Rainfall up-to 140 mm observed over South Karnataka & Central Kerala west Tamilnadu and Nicobar.

Rainfall up-to 15 mm observed over South Sub-Himalayan West Bengal east Meghalaya east Assam and Nicobar Islands.

RADAR and RAPID RGB Observation:

Isolated/multiple significant echoes are seen ion DWR Patiala (dBZ 50-55, height 13-14km) and Thiruvananthapuram (dBZ around 45 and height 15km) and Kolkata (dBZ 50-55, height around 12km) domains at around 1600 IST. Isolated/multiple light to moderate echoes are also seen on DWR Agartala, Machilipatnam, Visakhapatnam, Lucknow, Srinagar, Gopalpur and Patna domains at around 1600IST.

RAPID RGB Satellite imagery at 1400 IST indicates significant convection over Uttarakhand, Jharkhand, Meghalaya, Nagaland, extreme South Tamilnadu, North Coastal Andhra Pradesh and Andaman & Nicobar Islands.

2. NWP MODEL GUIDANCE:**NCMRWF (NCUM forecast based on 00UTC the day):****1. Weather Systems:****Low level Cycirs, Troughs:**

12UTC of Day 2-3: Heat low over Pakistan and adjoining west Rajasthan and trough in MSLP over Indo Gangetic plains

00UTC of Day 1-4: 850 hPa N-S trough from central to southern peninsular India

Confluence & Wind Discontinuity Regions

00UTC of Day 1-3: 850 hPa west - east trough over NW India

00UTC of Day 1: 850 and 925 hPa CYCIR over Punjab, Haryana & NCR

Synoptic Systems:

12 UTC of Day 0-2: 925 hPa N-S discontinuity over Southern Peninsular India

00 UTC of Day 1: WD as a weak trough over J &K.

00UTC of Day 2-5: Strong southwesterlies from BoB leading moisture incursion over Bangladesh and east northeast India.

2. Location of jet and jet core (>60kt) at 500hPa: NIL (strong westerlies in Day 2-4)

3. Convergence at 850 hPa:

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

Day0: Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Madhya Maharashtra, TN Puducherry, NI Karnataka, SI Karnataka, Kerala,

Day1: Odisha, West MP, East MP, Madhya Maharashtra, Chhattisgarh, TN Puducherry, NI Karnataka, SI Karnataka, Kerala,

Day2: Gangetic WB, Jharkhand, Odisha, West MP, East MP, Madhya Maharashtra, Chhattisgarh, NI Karnataka,

Day3: Assam Meghalaya, Jharkhand, Bihar, East RJ, Odisha, West MP, East MP, Marathwada, Vidarbha, Chhattisgarh, Telangana, NI Karnataka, SI Karnataka,

Day4: Assam Meghalaya, Gangetic WB, Jharkhand, East RJ, Odisha, Madhya Maharashtra, Marathwada, Chhattisgarh, NI Karnataka, SI Karnataka

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Assam Meghalaya, Bihar, Odisha, East MP, NI Karnataka,

Day1: Gangetic WB, Jharkhand, Bihar, Odisha, Madhya Maharashtra, Coastal AP,

Day2: Arunachal Pradesh, Assam Meghalaya, Gangetic WB, Jharkhand, Bihar, Himachal Pradesh, Jammu Kashmir, TN Puducherry,

Day3: Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Bihar, East UP, Odisha, East MP, Chhattisgarh, TN Puducherry,

Day4: Assam Meghalaya, Gangetic WB, Jharkhand, Bihar, Himachal Pradesh, Odisha, Madhya Maharashtra

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP, TN Puducherry, Kerala,

- Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,
- Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Konkan Goa, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
- Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, SI Karnataka, Kerala

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

Day/Index: Subdivision with Total Totals Index > 52

- Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, East MP, Chhattisgarh, Coastal AP,
- Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Vidarbha, Chhattisgarh,
- Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, Chhattisgarh, Coastal AP,
- Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, East MP, Vidarbha, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, SI Karnataka,
- Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, 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, Jharkhand, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,
- Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Chhattisgarh, Coastal AP, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
- Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Odisha, Coastal AP, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, West UP, Uttarakhand, Hry Chd Delhi, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema , TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema , TN Puducherry, SI Karnataka, Kerala

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Bihar, Uttarakhand, Andaman Nicobar, Kerala,

Day2: Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Odisha, Andaman Nicobar,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Andaman Nicobar,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand,

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

***** Rainfall (>8cm) in day 2 over eastern India and day 2-5 north Bangladesh and adjoining Meghalaya region**

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a cyclonic circulation in lower troposphere over west Uttar Pradesh and adjoining areas. A North- South Trough extends from North Haryana to North Coastal Karnataka across west Uttar Pradesh, Madhya Pradesh, West Vidarbha and south Madhya Maharashtra. The forecast shows the trough persist till day 3 with slight south-eastward shift. The analysis shows another cyclonic circulation over North Pakistan and adjoining North west Rajasthan. The forecast shows it will merge with the trough in next 24 hours. A cyclonic circulation is seen in the analysis over Meghalaya and adjoining Assam. The forecast shows it will become less marked in next 48 hours. The analysis shows another Trough extends from North Interior Karnataka to North Kerala. The forecast shows it will become less marked in next 24 hours. A trough is seen in the analysis extending from Comorin area to Rayalaseema across interior Tamil Nadu in lower Troposphere. The forecast shows it will persist for next 72 hours.

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

Although the presence of strong westerlies is found over Eastern parts of India but no jet core over the Indian region for the next 3 days.

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

Low level Positive Vorticity is seen mostly along the North- South Trough, the cyclonic circulation, over parts of Punjab, Haryana, Delhi, adjoining West Uttar Pradesh and Madhya Pradesh during Next 3 days; It is Inferred that some parts of West Rajasthan has Positive Vorticity on day 1; GWB, Orissa, Bihar, Jharkhand and adjoining areas has Positive Vorticity on day 1 onwards.

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 parts of Gujarat, coastal areas of Gangetic West Bengal and Kolkata, SHWB parts of Orissa, Bihar, Jharkhand, Uttarakhand, Uttar Pradesh, Rajasthan, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Karnataka, Tamil Nadu, coastal Maharashtra including Mumbai, Konkan & Goa, Vidarbha, Madhya Maharashtra, Madhya Pradesh Chhattisgarh, coastal areas along the east coast and west coast, Sikkim, Assam, Meghalaya, Tripura and adjoining area during next 3 days; over parts Punjab, Haryana and Delhi on day 3; Maximum value of the index is seen over parts of GWB, SHWB, Orissa, Bihar, Jharkhand, East Uttar Pradesh, Chhattisgarh, Telangana, Gujarat, South West Rajasthan, Andhra Pradesh, coastal Maharashtra, coastal Karnataka, Kerala and coastal Tamil Nadu on all 3 days; over parts of West Uttar Pradesh on day 1; over parts of Haryana, Delhi and adjoining areas on day 3; over parts of South Inferior Karnataka, Konkan and Goa on day 2 and 3; over parts of North Madhya Maharashtra on day 3.

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

Total Total Index (> 50): The threshold value of the index is > 50 is seen over most of the parts of the country except Gujarat and extreme south peninsular India during next 3 days; the maximum value of the index >60 is seen over parts of East Madhya Pradesh, Chhattisgarh, Orissa, GWB, Bihar and Jharkhand on day 1; over parts of East Uttar Pradesh on day 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 during next 3 days; maximum value of the index greater than 800 is seen over parts of Bihar, GWB, SHWB, Orissa, Jharkhand, Chhattisgarh and Andhra Pradesh on day 1; over parts of GWB, Orissa, Tripura and adjoining areas on day 2; over parts of Bihar, GWB, SHWB, Orissa, Jharkhand and East Uttar 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, Gujarat, Konkan and Goa, East Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, GWB, SHWB, Sikkim, Assam, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of west Uttar Pradesh on day 1; over parts of south west Rajasthan on day 2 and 3; over parts of Karnataka, Telangana, Rayalaseema, Punjab, Haryana, East Rajasthan on day 3; Maximum value of the index greater than 2500 is seen mostly over parts of GWB, coastal Orissa, Bihar, Jharkhand, coastal Andhra Pradesh, Coastal Tamil Nadu, coastal Kerala and some parts of East Uttar Pradesh on day 1; over parts of GWB, Coastal Orissa and coastal Andhra Pradesh on day 2; over parts of Bihar, Jharkhand, GWB, East Uttar Pradesh, coastal Andhra Pradesh and coastal Tamil Nadu 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 and central parts of Madhya Pradesh on day 1 and 2; over most of the part of country except J&K, south east Madhya Pradesh and West Vidarbha on day 3; maximum value of the index greater than 400 is seen over parts of Gujarat, South West Rajasthan, GWB, Bihar, Jharkhand, Orissa, Uttar Pradesh and Chhattisgarh on day 1 and 2; over parts of coastal Maharashtra, Konkan and Goa on day 1; over parts of Andhra Pradesh, Telangana and adjoining south Chhattisgarh on day 2; over parts of GWB, south west Rajasthan, West Uttar Pradesh, adjoining Haryana and Uttarakhand on day 3.

5. Rainfall Activity:

40- 70 mm Rainfall: over parts of Orissa on day 1; over parts of Assam and GWB on day 2; over parts of Assam, Meghalaya, Arunachal Pradesh and adjoining areas on day 3.

10- 40 mm Rainfall: over parts of Himachal Pradesh, Uttarakhand, Sikkim, NE states, Foothills of Himalaya, Bihar, Jharkhand, GWB, SHWB and Orissa during next 3 days; over parts of J&K, Andhra Pradesh, Kerala and Tamil Nadu on day 1.

Up to 10 mm rainfall: Over parts of J&K, Foothills of Himalaya, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Sikkim, NE states, GWB, SHWB, Orissa, Madhya Pradesh, Andhra Pradesh, Kerala, Karnataka, Tamil Nadu, Bihar, Jharkhand, Chhattisgarh and Telangana during next 3 days; over parts of Punjab, Haryana, Delhi, Rajasthan on day 1; over parts of Punjab, Haryana and East Rajasthan on day 3; over parts of North Madhya Maharashtra on day 2.

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

1. Model Reflectivity (Max. dBZ):

> 25 dBZ Model Reflectivity: Over parts of J&K, GWB, Sikkim, Assam, Orissa, Chhattisgarh, northern parts of East Uttar Pradesh, Tripura and adjoining areas, GWB, Andhra Pradesh, Bihar and Jharkhand on day 1; over parts of J&K, Orissa, Andhra Pradesh, adjoining Chhattisgarh, GWB, Bihar, Jharkhand, SHWB and NE states on day 2; over parts of J&K, Himachal Pradesh, Uttarakhand, Rajasthan, Punjab, Haryana, Delhi, Uttar Pradesh, East Madhya Pradesh and adjoining areas, GWB, Orissa, Bihar, Jharkhand, Sikkim, SHWB, NE states on day 3; maximum value of the Model reflectivity is seen over parts of GWB, SHWB and adjoining Orissa, Bihar, Jharkhand and NE states during next 3 days; over parts of Rajasthan, Punjab Haryana, Delhi, West Uttar Pradesh on day 3.

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

Total Index (> 50): Above threshold value is observed over most parts of the country except extreme south peninsular India, extreme southern parts of west coast and the east coast, southern parts of Karnataka, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, Bihar, Jharkhand, GWB, NE states and North East Uttar Pradesh during the next 3 days; the maximum value of the index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, GWB, Orissa, Madhya Maharashtra, Marathawada, Vidarbha, Jharkhand, Telangana, Chhattisgarh, Karnataka and Gujarat during next 3 days..

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 & Goa, coastal areas along the east coast, southern parts of Madhya Maharashtra, parts of Bihar, Jharkhand, Uttar Pradesh, Chhattisgarh, Vidarbha, Orissa, GWB and

Kolkata, SHWB, parts of Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Rayalaseema, Extreme south peninsular India, Assam, Meghalaya, Tripura and adjoining areas on all 3 days; over some parts of Haryana and North west Madhya Pradesh on day 1; over some parts of Punjab, Haryana and adjoining areas on day 2; over parts of Punjab, Haryana, Delhi, Himachal Pradesh and Uttarakhand on day 3; Maximum value of the index greater than 3500 is seen over the parts of Kerala, Orissa, coastal Andhra Pradesh, GWB, Jharkhand and Telangana on day 1 and 3; over parts of GWB, Jharkhand, Kerala, Karnataka and Orissa on day 2; over parts of coastal Maharashtra, Konkan and Goa, Karnataka and Kerala 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 central parts of Madhya Pradesh, west Vidarbha and north Madhya Maharashtra and Marathawada during next 3 days; the maximum value of the index > 400 is seen over parts of Gujarat, south west Rajasthan, Bihar, Jharkhand, GWB, Orissa, Chhattisgarh, Coastal Maharashtra, Vidarbha, Uttar Pradesh, Telangana Madhya Pradesh, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Rajasthan, West Madhya Pradesh, Andhra Pradesh and North Karnataka, Konkan and Goa during next 3 days.

3. Rainfall and thunderstorm activity:

Above 130 mm Rainfall: over some parts of SHWB and adjoining areas on day 2.

70- 130 mm Rainfall: over parts of GWB and SHWB on day 2; over parts of Tripura Meghalaya and adjoining Assam on day 3.

40- 70 mm Rainfall: over some parts of GWB and SHWB on day 1 and 2; over some parts of Bihar and Jharkhand on day 2; over some parts of Assam Arunachal Pradesh, Meghalaya, Tripura and adjoining areas on day 3.

10- 40 mm Rainfall: over parts of J&K, Himachal Pradesh, Uttarakhand, Sikkim, Foothills of Himalaya, NE states, Kerala and Tamil Nadu during next 3 days, over parts of GWB, Bihar, Jharkhand, Orissa, SHWB on day 1 and 2; over parts of GWB and East Uttar Pradesh on day 3.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Kerala, Tamil Nadu, Orissa, Bihar, Jharkhand, East Uttar Pradesh, foothills of Himalaya, GWB, SHWB, Sikkim and NE states during next 3 days; over some parts of south west Rajasthan and Telangana on day 1; over some parts of Punjab and East Rajasthan on day 2; over parts of Punjab, Haryana, Delhi, West Uttar Pradesh and East Madhya Pradesh on day 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

- o Most thermodynamic indices (T-STORM Initiation Index, TTI Index, K-Index, Lifted Index, CAPE, CINE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over East India, Gujarat Region and southeast peninsular coast of India on day 1 and 2 with a maximum probability of occurrence over Jharkhand, Chhattisgarh, Odisha and West Bengal. SWEAT index, which also accounts for the wind shear between 850 and 500 hPa levels, also indicates a similar region on day 1, increasing on day 2 over the East India. Reflectivity values from IMD WRF model indicate high probability of convection over Gangetic West Bengal, on day 1 and day 2. The 850-200 hPa wind shear maxima are confined to northwest and northeast India on day 1 and increasing across North India on day 2.

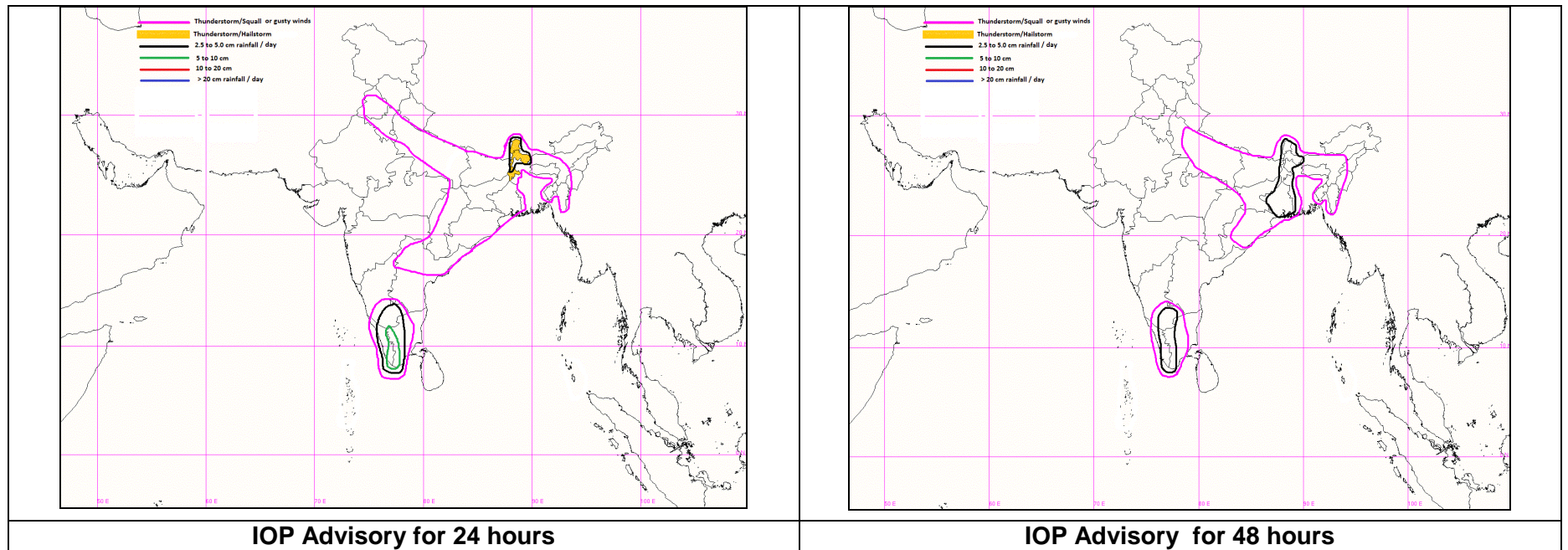
- o Synoptic analysis and NWP models indicate the cyclonic circulation over West Uttar Pradesh in the lower levels persists and a trough runs from north Haryana to north coastal Karnataka. There is also a cyclonic circulation over West Bengal between 1.5 km and 3.1 km above mean level. Easterlies are flowing into North India along the periphery of the two cycirs. However, the moisture amount is less and only duststorms or dry thunderstorms with light rainfall are expected over Northwest India on day 1. On the other hand, East and Northeast India, which has a strong moisture supply is likely to be more convectively active on day 1. The most severe thunderstorms are expected to be accompanied with squall winds over Gangetic West Bengal, Jharkhand, Arunachal Pradesh, Assam and Meghalaya and accompanied by hail over SubHimalayan West Bengal and Sikkim. On day 2, the ECMWF and IMD GFS deterministic model indicate that the cyclonic circulation over West Uttar Pradesh is likely to weaken and weather will be confined to east and Northeast India.

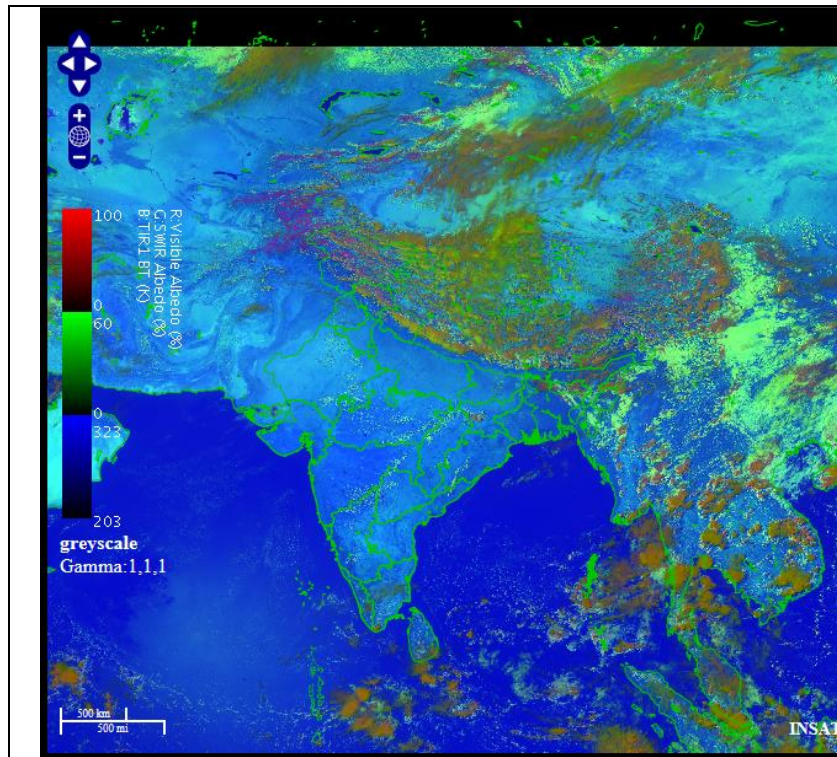
- o In association with the trough mentioned above, as well as (a) a northsouth wind discontinuity from Telangana to Lakshadweep and (b) a trough in the easterlies from Comorin area to Rayalaseema, South peninsular India is likely to be convectively active on day 1 as well as day 2.

Day-1 & Day-2:

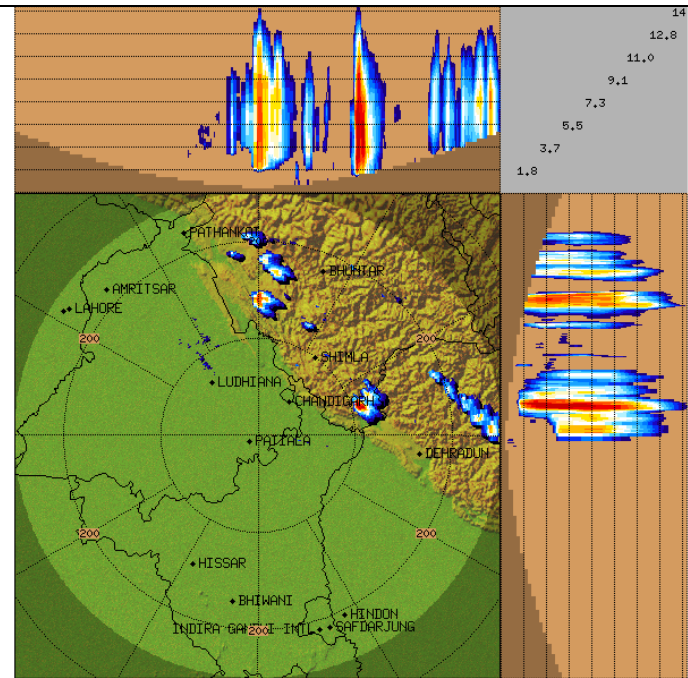
24hour Advisory for IOP:	48hour Advisory for IOP:
<p>Significant Rainfall: Interior Tamil Nadu, Kerala, South Interior Karnataka, Sub Himalayan West Bengal and Sikkim</p> <p>Thunderstorm with squall or gusty winds: Interior Tamil Nadu, Kerala, South Interior Karnataka, Telengana, Coastal Andhra Pradesh, Chhattisgarh, East Uttar Pradesh Gangetic West Bengal, Jharkhand, Bihar, Odisha Mizoram, Tripura, Assam and Meghalaya</p> <p>Thunderstorm with squall and hail Sub Himalayan West Bengal, Sikkim</p> <p>Thunderstorm or Duststorm: Punjab, Haryana, West Uttar Pradesh</p>	<p>Significant Rainfall: Interior Tamil Nadu, Kerala, South Interior Karnataka, West Bengal and Sikkim</p> <p>Thunderstorm with squall or gusty winds: Interior Tamil Nadu, Kerala, South Interior Karnataka, Uttar Pradesh, West Bengal, Sikkim, Jharkhand, Bihar, Odisha Assam and Meghalaya, Mizoram and Tripura</p> <p>Thunderstorm with squall and hail Nil</p> <p>Thunderstorm/Duststorm Nil</p>

Graphical Presentation of Potential Areas for Severe Weather:

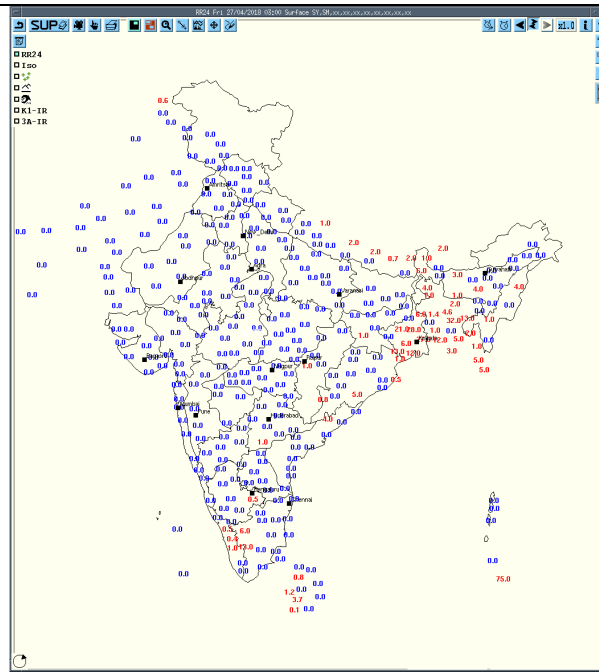




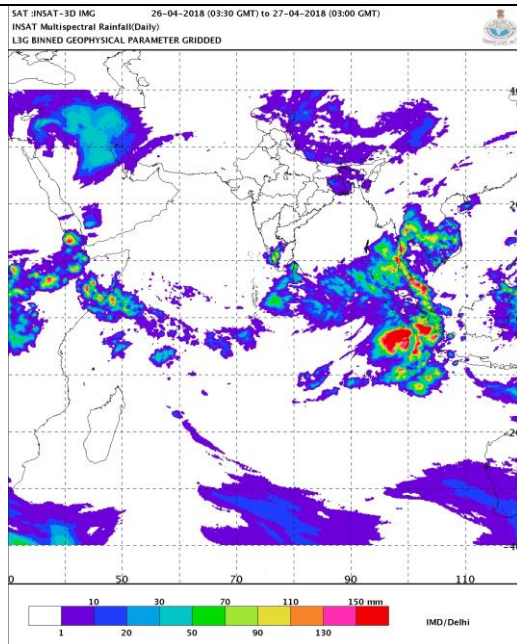
RAPID RGB Imagery at 1400 IST of the Day



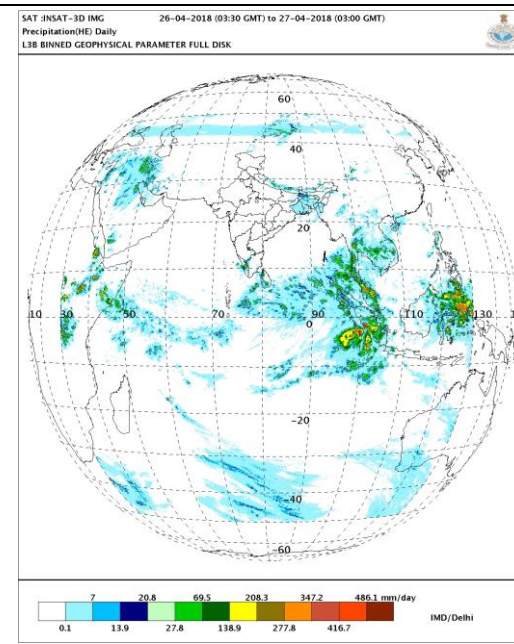
DWR Patiala at 1550 IST of the Day



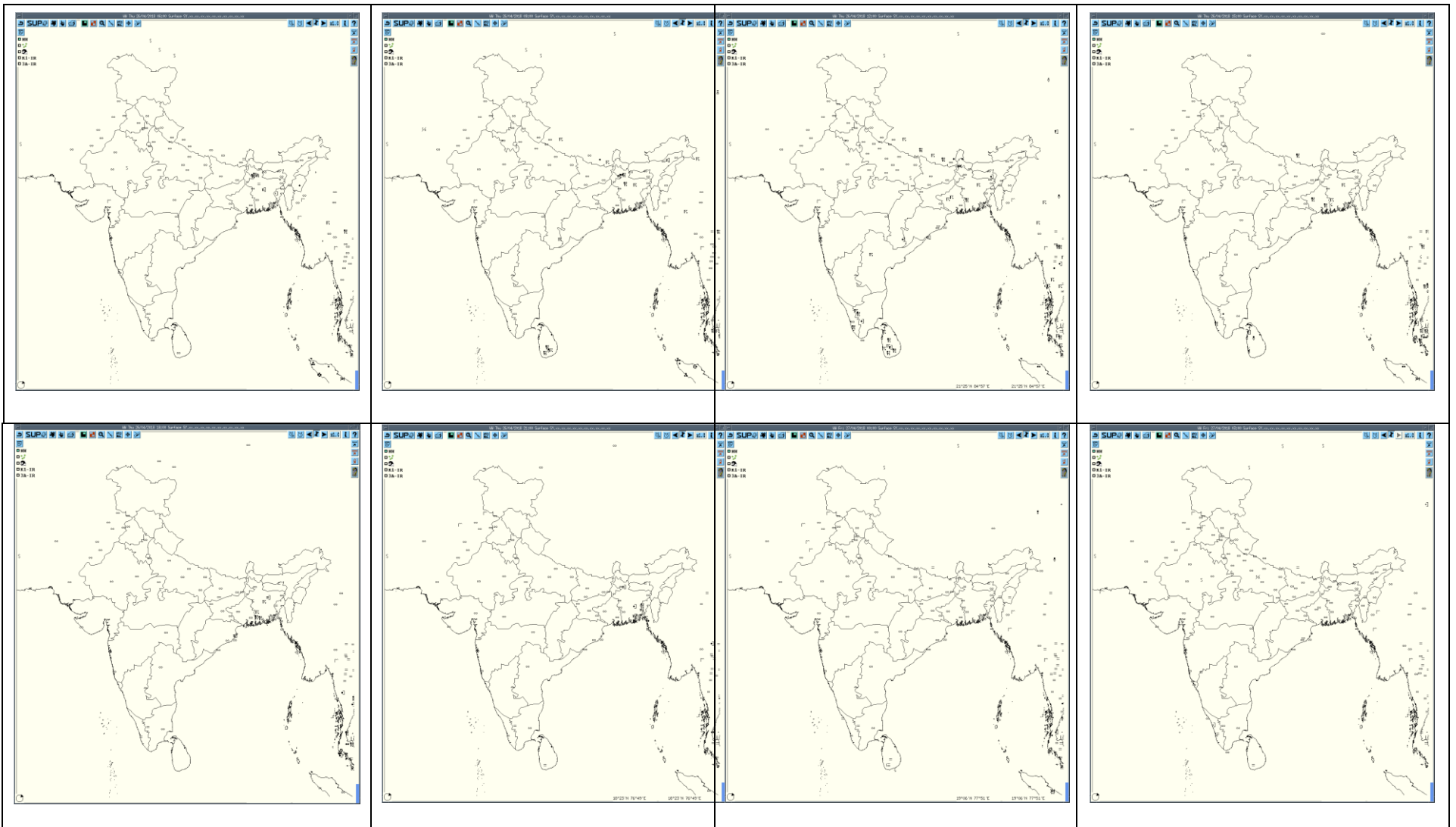
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



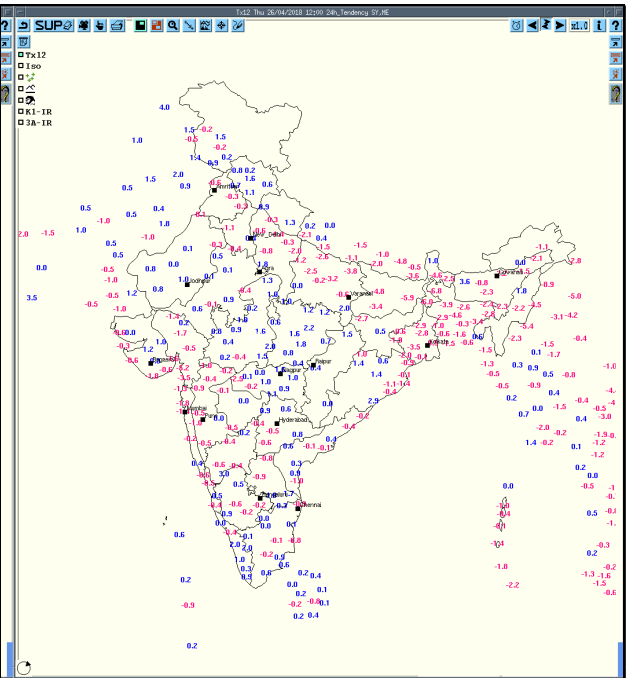
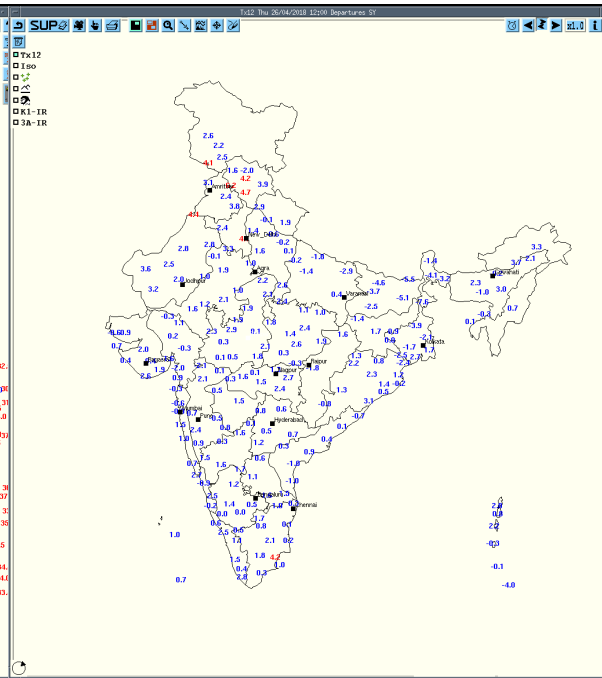
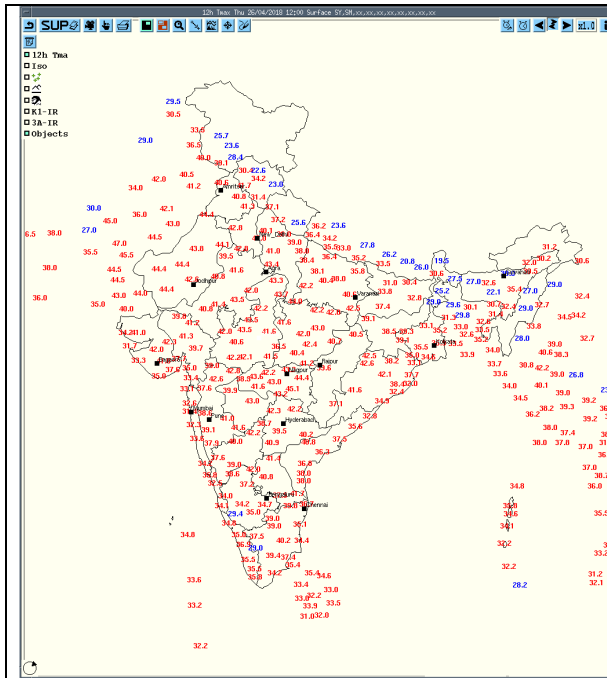
HEM rainfall



IMR Rainfall



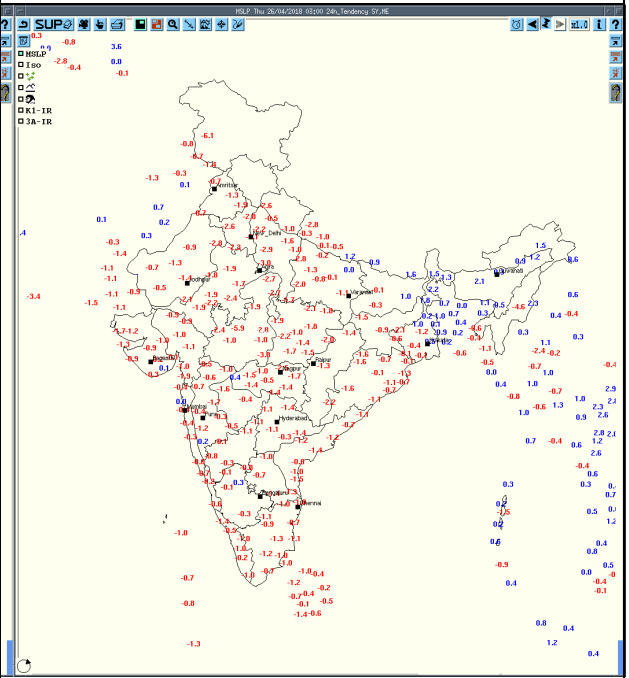
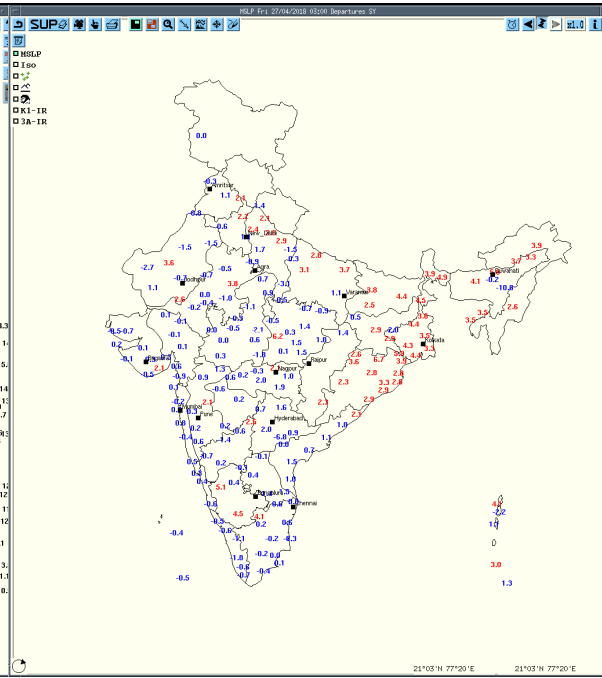
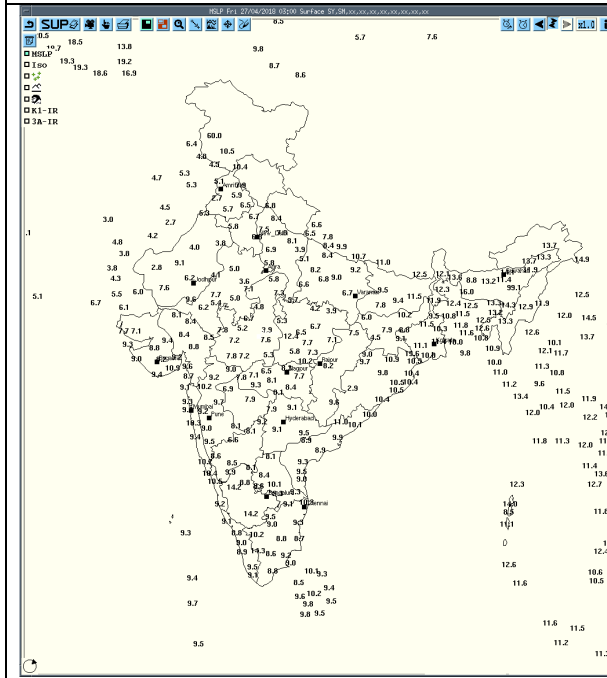
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



Tmax

Departure Tmax

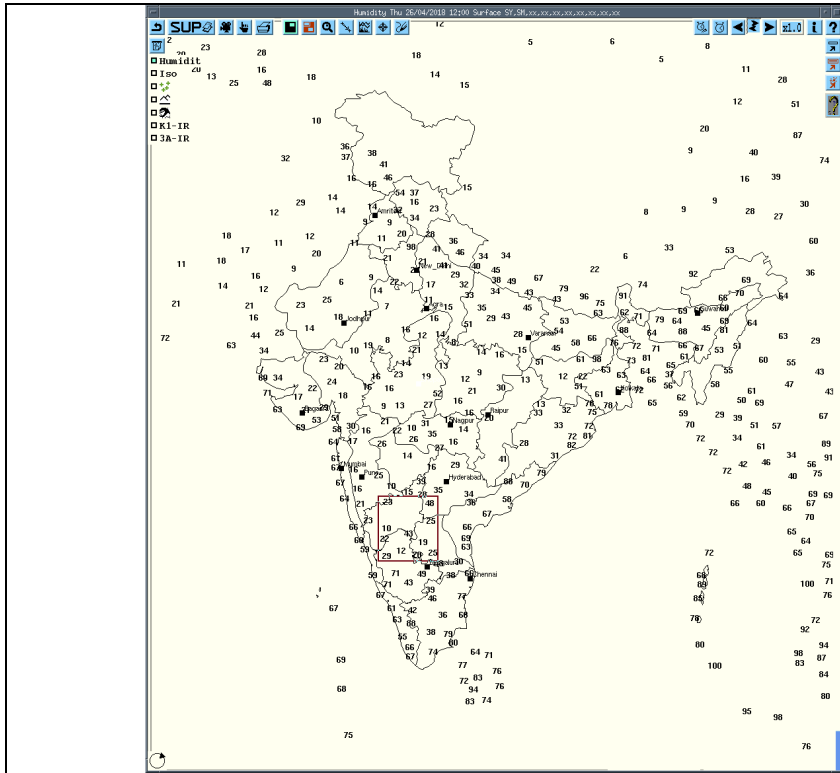
Tendency Tmax



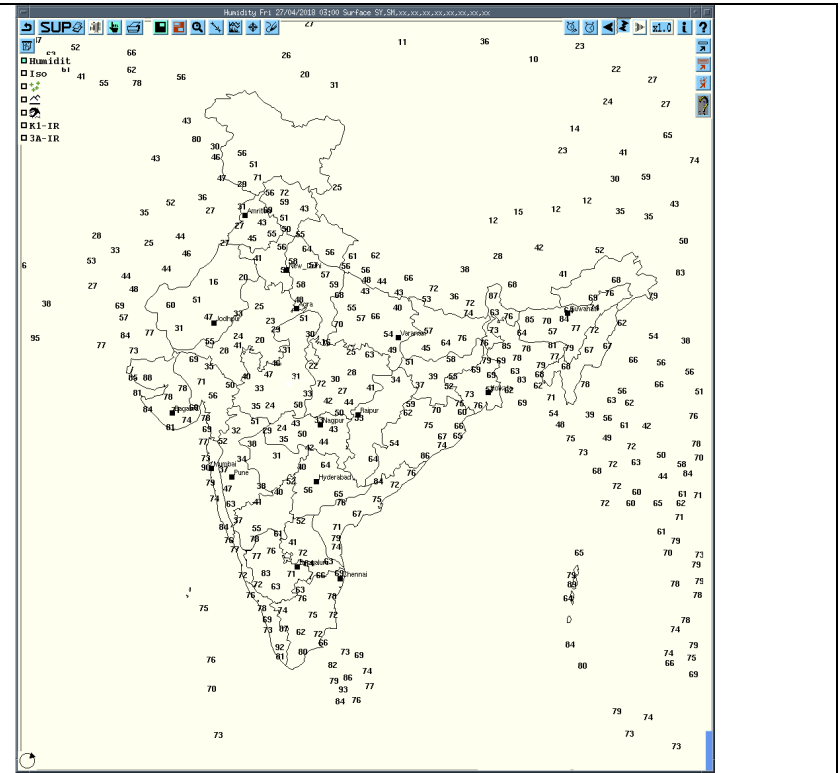
MSLP

Departure MSLP

Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Patiala	27-04-18	DWR under Annual Maintenance					
Lucknow	27-04-18	260942-271022	Single cell formed over 130 Km SW, became strong at around 1002 UTC. Maximum Reflectivity was 42 dBZ and height reached 8 Km on 20 dBZ on echo top scale.	System moved with eastwards with avg. velocity 35 Km/h.	System Weakened and dissipated at around 1022 UTC over 120 Km SW.	TS	Hamirpur Kanpur City Unnao
Patna	27-04-18	261430-270220	Nil	Nil	Nil	Nil	Nil
Jaipur	27-04-18	260300-270300	Nil	Nil	Nil	Nil	Nil
Agartala	27-04-18	260300-270300	MLTPL CELLS FORMED OVER ADJ B'DESH AT 260700Z, 10 KMS,42dBZ	200 kms NW; 30Kmph,NE-ly	The cell dissipated Over B'desh at 26/1100Z	Nil	Nil

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	27-04-18	260301-261001	NIL	NIL	NOSIG ECHO	NIL	NIL
		261011-261731	1)Multi cell system with maximum reflectivity of 64.0 dBz at 1101 UTC and maximum height of 16.84 Km at 1201 UTC	NW (245.8 km) Moving in E-ward direction and later in SE ward direction	Single cell coming from NW at 1011 UTC at a distance 245.8 Km) from radar. Matured, later transformed into a big cell system and after that squall line formed in WNW at 1141 UTC and again merged with cell no. 3 at 1432 UTC, then moving completely into Bangladesh at 1731 UTC in E at a distance of 58.6 km from radar.	Thunderstorm /Rain/Hail/Squall line	N/A
		261042-261221	2)Multiple cells with maximum reflectivity of 56.5 dBz at 1101 UTC and maximum height of 9.68 Km at 1121 UTC	WSW (228.8 km) Moving in SE-ward direction	Multiple isolated cells developed at WSW at 1042 UTC at a distance 228.8 km from radar. Matured and dissipated at 1221 UTC in SW at a distance of 183.7 km from radar.	Thunderstorm /Rain	N/A
		261042-261731	3)Single cell with maximum reflectivity of 62.0 dBz at 1141 UTC and maximum height of 18.0 Km at 1141 UTC	NNE (83.9 km) Moving in S-ward direction.	Single cell developed in NNE at 1042 UTC at a distance 83.9 Km from radar. Matured, transformed into a big cell system, merged with squall line of cell no. 1 at 1432 UTC, then moving completely into Bangladesh at 1731 UTC in E at a distance of 58.6 km from radar.	Thunderstorm /Rain/Hail/Squall line	N/A
		261502-261801	4)Multiple cells with maximum reflectivity of 63.0 dBz at 1541 UTC and maximum height of 12.27 Km at 1541 UTC	N (187.3 km) Moving in ESE-ward direction	Multiple isolated cells developed at N at 1502 UTC at a distance 187.3 km from radar. Matured and moving completely into Bangladesh at 1801 UTC in NNE at a distance of 158.3 km from radar.	Thunderstorm /Rain /Hail	N/A
		261811-270302	NIL	NIL	NOSIG ECHO	NIL	NIL

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Visakhapatnam	27-04-18	260900	Cb cell with maximum reflectivity of 60 dbz with mheight of 8 kms	NE (236 kms) moving SE ly	Cb cells started forming from 0751 UTC and developing	NIL	Nayagarh of Orissa
		261200	Multiple Cb cells out of which with maximum reflectivity of 62 dbz with height of 12 kms	NW (215 kms) moving Sly	Since last observation multiple cb cells formed and started dissipating from 1141 UTC	NIL	Srikakulam Raipur Bilaspur districts of Chhattisgarh
		261500	Multiple CB cells with maximum reflectivity of 56 dBz and max. height of 13 kms	WSW(82,175 KMS) NW (89 KMS) moving SEly	Since last observation multiple CB cells are developing and dissipating. Max. reflectivity of 56dBz at 1251UTC and dissipated at 1411 UTC	-	Srikakulam, Visakhapatnam, East Godavari dist (Andhra Pradesh) Koraput dist (Orissa)
		261800	Multiple CB cells with maximum reflectivity of 55 dBz and max. height of 12 kms	NE (236 KMS) moving SEly	Multiple CB cells are formed at 1511UTC, developing and matured well at 1631UTC and start dissipating from 1701UTC	-	Ganjam and Gajapati dist (Orissa)
		270000	Multiple CB cells with maximum reflectivity of 47 dBz and max. height of 9 kms	NE (160 KMS) moving SEly	Since last observation CB cells are dissipating and dissipated completely at 1921UTC	-	Srikakulam Dist(AP) Ganjam dist (Orissa)
		270300	Cb cell with maximum reflectivity of 49 dbz with height of 6 kms	E (247 kms) moving SE ly	Cb cell started forming at 0251 UTC	NIL	NIL

Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)						
Name of Station Reporting	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement(IST)	Time of end (IST)
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	26-04-18	1515	1520
Gangtok	East India	Sikkim	Thunderstorm	26-04-18	1550	1700
Tadong	East India	Sikkim	Thunderstorm	26-04-18	1545	1650
Alipore	East India	West Bengal(GWB)	Thunderstorm	26-04-18	1950	2210
			Squall from NW with max wind 49kmph	26-04-18	1950	1952
			Squall from NW with max wind 80kmph	26-04-18	2005	2006
Dum Dum	East India	West Bengal(GWB)	Thunderstorm	26-04-18	1933	2225
MO Kolkata	East India	West Bengal(GWB)	Squall from W with max wind 64kmph	26-04-18	2144	2145
Haldia	East India	West Bengal(GWB)	Thunderstorm	26-04-18	1955	2245
Haldia	East India	West Bengal(GWB)	Squall from NW with max wind 46kmph	26-04-18	2007	2009
Asansol	East India	West Bengal(GWB)	Thunderstorm	26-04-18	1635	2030
Bankura	East India	West Bengal(GWB)	Thunderstorm	26-04-18	1720	2040
Chandbali	East India	Odisha	Thunderstorm	26-04-18	2255	2310
Paradeep	East India	Odisha	Thunderstorm	27-04-18	0000	0130
Gopalpur	East India	Odisha	Thunderstorm	26-04-18	1545	1650
Jagdapur	Central India	Chhattisgarh	Thunderstorm	26-04-18	1415	1615
N/Lakhimpur	Northeast India	Assam	Thunderstorm	26-04-18	1235	1335
Barapani	Northeast India	Meghalaya	Thunderstorm	26-04-18	1650	1715
Lengpui	Northeast India	Mizoram	Thunderstorm	27-04-18	0500	0610
Kailasahar	Northeast India	Tripura	Thunderstorm	27-04-18	0330	0420
Hyderabad	South India	Telangana	Thunderstorm	26-04-18	1615	1800
Alappuzha	South India	Kerala	Thunderstorm	26-04-18	2017	2200
Coimbatore	South India	Tamil Nadu	Thunderstorm	26-04-18	1730	2000
Kodaikanal	South India	Tamil Nadu	Thunderstorm	26-04-18	1350	1505
Udhagamandalam	South India	Tamil Nadu	Thunderstorm	26-04-18	1600, 2100	1630 2200

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

Date of Reporting	Event	Report
27.04.2018	Thundersquall	Thundersquall hit Kolkata and adjoining districts on 26.04.2018 evening caused minor damages. Isolated incidents of uprooting of trees, suburban railway service disrupted, 7 flights delayed / diverted, No casualty reported. (Sources: (i) The Telegraph, (ii) Ei Samay, (iii) Anandabazar Patrika, dated 27.04.2018, attached)

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

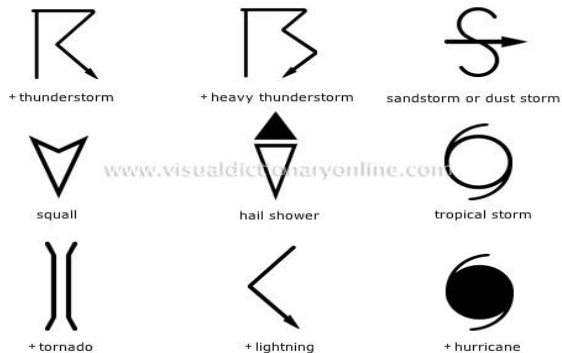
For Radar images of the past 24 hours including mosaic of images:

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	