

India Meteorological Department FDP STORM Bulletin No. 64 (09-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

• The Western Disturbance as a trough in mid tropospheric levels with its axis at 5.8 km above mean sea level now runs roughly along Long 85°E to the north of Lat 28°N.

• The cyclonic circulation over Sub Himalayan West Bengal & adjoining Bihar extending upto 0.9 km above mean sea level persists with a trough aloft from east Bihar to interior Odisha across east Jharkhand at 1.5 km above mean sea level.

- The north south trough at 1.5 km above mean sea level roughly along Long. 88°E to the north of Lat. 24°N has merged with the above trough.
- The cyclonic circulation over east Assam & neighbourhood extending upto 0.9 km above mean sea level persists.
- A wind discontinuity runs from North Interior Karnataka to South Interior Tamilnadu across South Interior Karnataka and extends upto 0.9 km above mean sea level.
- ♦ A cyclonic circulation lies over Lakshadweep area and neighbourhood between 3.1 & 5.8 km above mean sea level.
- The cyclonic circulation over south Tamilnadu & neighbourhood now lies over north Kerala & neighbourhood at 1.5 km above mean sea level.
- ♦ A cyclonic circulation lies over Comorin area and neighbourhood between 1.5 & 2.1 km above mean sea level.
- ◆ A fresh Western Disturbance is likely to affect Western Himalayan region from 13th May onwards.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

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

Western Disturbance (WD):

Scattered multi-layered clouds with embedded weak to moderate convection was seen over Jammu & Kashmir, North Uttarakhand, East Punjab, North Haryana, West Uttar Pradesh, in association with Western Disturbance over the area.

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

Clouds descriptions within India:

Broken low/medium clouds with embedded intense to very intense convection seen over Meghalaya, Tripura, Nagaland, Manipur, Mizoram, Assam, Arunachal Pradesh, Odisha, South Kerala and East Tamilnadu. Scattered low/medium clouds with embedded moderate to intense convection seen over Jammu & Kashmir, Himachal Pradesh, Haryana, Delhi and isolated over extreme Northwest Uttar Pradesh, extreme North Madhya Pradesh, and Central Gujarat. Scattered low/medium clouds with embedded weak to moderate convection seen over rest of the country.

Arabian Sea:-

Broken low/medium clouds with embedded moderate to intense convection seen over South Arabian Sea south of lat 12.5N off south Karnataka Coast and North of Lakshadweep Islands.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded moderate to intense convective seen over Bay between Lat 05.0N to 12.0N Long 82.0E TO 85.0E Comorin & Nicobar Islands and Weak convection seen over Andaman Islands.

Past Weather:

Convection (during last 24 hrs):

Intense to intense convection was observed over J & K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Rajasthan, Delhi, W Uttar Pradesh, West Bengal, Sikkim, Assam, Meghalaya Tripura, Mizoram, Manipur, Nagaland, Karnataka, Kerala and Tamilnadu. Weak to Moderate convection observed over Marathawada, Vidarbha, South Chhattisgarh, Jharkhand, Orissa, Telangana and Andhra Pradesh.

OLR: - .

Up-to 200 wm⁻²observed over East J & K, North-East Himachal Pradesh, North Uttarakhand, West Assam, Manipur, South interior Karnataka, West Tamilnadu and Kerala

Up-to 230 wm⁻² West J & K West Himachal, North Punjab, North Haryana, rest North-East states, Andhra Pradesh, Central Karnataka and east Tamilnadu.

Synoptic Features:

Westerly Trough & Jet Stream: Trough in Westerly's roughly along Longitude 80.0E & North of Latitude 30.0N.

Jet observed over south Rajasthan (65kts).

Dynamic Features:

Wind Shear 60 knots is observed over Jharkhand Bihar Sub Himalaya West Bengal Sikkim, up to 40 knots is observed over North India, Central India & North-East India and 05-20 knots over south peninsular India.

Positive shear tendency of 20 knots is observed over N Rajasthan Punjab W Jammu & Kashmir and Karnataka, Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh, Chhattisgarh, Jharkhand, Orissa and Bihar.

Positive Vorticity (850 hPa) more than 50 (x10⁻⁵/s) is observed over Gangetic plains Gangetic West Bengal Bihar sub Himalayan West Bengal Assam South Andhra Pradesh extreme SE Tamilnadu

Positive Low Level Convergence is observed over Bihar Jharkhand Gangetic West Bengal Karnataka north Kerala.

Precipitation:

IMR:

Rainfall more than 150 mm was observed over southern Karnataka NE coastal Kerala

Rainfall up to 130 mm was observed over Western parts of Tamilnadu

Rainfall up to 110mm was observed over Gangetic West Bengal

Rainfall up to 90mm was observed over South East Assam and central Meghalaya.

Rainfall up to 70 mm observed over Mizoram

Rainfall up to 50 mm observed over Manipur SE and W Assam Sub Himalayan West Bengal (.)

Rainfall up to 20 mm observed over Himachal Pradesh, Uttarakhand, west UP Orissa.

Rainfall up to 10 mm was observed over Punjab Haryana Andaman & Nicobar Islands.

HEM:

Rainfall up to 400mm was observed over southern Karnataka NE coastal Kerala Rainfall up to 200mm was observed at isolated places over Tamilnadu Uttarakhand SE Mizoram

DWR and RAPID Observations:

Multiple strong echoes (dBZ >55 and height >15km) are seen on DWR Delhi, Machilipatnam and Vishakhapatnam domain at around 1515IST. Moderate isolated/multiple echoes are also seen on DWR Agartala, Chennai, Hyderabad, Jaipur, Patiala, Srinagar and Thiruvanathapuram domains at around 1500 IST.

RAPID RGB Satellite imagery at 1430 IST indicated significant convection over Jammu & Kashmir, Himachal Pradesh, North Uttarakhand, Haryana, Delhi, Arunachal Pradesh, East Meghalaya, Nagaland, Manipur, Mizoram, Tripura, South Odisha, North Coastal Andhra Pradesh, Telangana, Central Tamilnadu, Kerala and Lakshadweep Islands.

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

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

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

Delhi – SAFAR analysis & Forecast	09.05.2018	10.05.2018
PM10 (micro-g/m ³)	137	123
PM2.5 (micro-g/m ³)	62	56

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:
12UTC of Day 2-4: 925 hPa weak CYCIR WB-Bangladesh region
00UTC of Day 0-1: 925 hPa weak CYCIR over NW India-adjoining Pakistan
00UTC of Day 2: 850 hPa weak CYCIR over MP and Maharashtra region
12UTC of Day 0-1: 850 hPa weak CYCIR over Kerala and Karnataka and moving towards west.

Confluence & Wind Discontinuity Regions: 12 UTC of Day 1-3: 925 hPa N-S discontinuity over central India to Southern Peninsular India

Synoptic Systems: 00 UTC of Day 1-5: WD as a weak trough moving over west UP to WB

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

3. Convergence at 850 hPa:

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

Day0: Assam Meghalaya, Madhya Maharashtra, Telangana, NI Karnataka, Day1: Arunachal Pradesh, Jharkhand, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Day2: Jharkhand, Odisha, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, NI Karnataka, Day3: NE NMMT, Odisha, Madhya Maharashtra, NI Karnataka, Day4: Jharkhand, West UP, Haryana, Chandigarh, Delhi, Punjab, East RJ, Odisha, Madhya Maharashtra, Chhattisgarh,

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Himachal Pradesh, East RJ, Day1: Arunachal Pradesh, Assam Meghalaya, Jharkhand, Himachal Pradesh, Jammu Kashmir, Day2: Assam Meghalaya, Gangetic WB, Jharkhand, West UP, Uttarakhand, Himachal Pradesh, Coastal AP, Day3: Uttarakhand, Himachal Pradesh, Odisha, Day4: Uttarakhand, Punjab, Himachal Pradesh, Odisha,

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, Haryana, Chandigarh, Delhi, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

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

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

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

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

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka, SI Karnataka, Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka, SI Karnataka,

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

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

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, West RJ, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala, Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, NI Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, NI Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka,

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

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, TN Puducherry, Coastal Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Coastal Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Odisha, Chhattisgarh, Coastal AP, Day4: Assam Meghalaya, NE NMMT, Jammu Kashmir, Kerala, Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, Bihar, Odisha, Chhattisgarh,

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a cyclonic circulation over SHWB and adjoining Bihar. A Trough is also seen in the analysis from East Bihar to Interior Orissa across east Jharkhand. The forecasts show that the cyclonic circulation will merge with the above Trough in next 24 hours. The analysis also indicates another cyclonic circulation over East Assam and adjoining areas. The forecast shows it will persist till day2. The north- south Trough from North Interior Karnataka to south Interior Tamil Nadu across south Interior Karnataka is seen at 925 hPa which persists for next 2 days in forecast. A cyclonic circulation is seen in the analysis over South Kerala and Comorin area at (850 hPa). The forecast shows it will persist for next 24 hours.

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

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

3. Low Level Vorticity {850hPa Positive Vorticity (>12 x 10⁻¹/s)}:

Low level Positive Vorticity is seen mostly along the North- South Trough, around the cyclonic circulations, along Foothills of Himalaya from J&K to NE states during next 3 days; Low level Positive Vorticity is also seen over parts of Punjab, adjoining North West Rajasthan, Haryana, Delhi and adjoining northern parts of Madhya Pradesh on day 3; over parts of Bihar, GWB, Jharkhand, SHWB, Sikkim and NE states have Positive Vorticity on day 1 and 2.

4. Spatial distribution of T-storm Initiation Index, Lifted Index, Total Total Index, CAPE, CIN and Sweat Index [High potential for thunderstorm]:

T-Storm Initiation Index (> 3): over parts of J&K, Gangetic Plains covering the areas from Rajasthan, Punjab, Haryana, Himachal Pradesh, Uttarakhand, East Uttar Pradesh, extending up to Bihar, Gangetic West Bengal, SHWB, Orissa, Jharkhand, Gujarat, Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, coastal Andhra Pradesh, Assam, Meghalaya, Tripura and adjoining areas, along east and west coast of India on day 1; In day 2 and 3 It remains over the same region along east and west coast but disappears over Himachal Pradesh, Uttarakhand, Punjab and Haryana adjoining areas. During all three days, significant zone lies over south west Rajasthan, Gujarat, Eastern parts of the country, north-eastern states, coastal areas along the east coast and west coast, GWB, Bihar, Jharkhand, Orissa, coastal Andhra Pradesh, East Uttar Pradesh and adjoining areas.

Lifted Index (< -2): Similar to T-storm Index in day 1 it lies over northwest India, J&K, Punjab, Haryana, Rajasthan, Uttar Pradesh, Himachal Pradesh, Uttarakhand and Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana, Bihar, Jharkhand, East Uttar Pradesh, Orissa GWB, NE states, Gujarat, Telangana, Vidharbha, Chhattisgarh, Andhra Pradesh, Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Madhya Maharashtra and Marathwada but in day 2 and 3 it disappears over northwest India. Significant zone with maximum negative value is found over GWB, SHWB, Bihar, Tripura and adjoining areas, Orissa, Andhra Pradesh, Telangana and Jharkhand.

Total Total Index (> 50): Is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Rajasthan, Punjab, Haryana, Delhi, Uttar Pradesh, Bihar, Jharkhand, GWB, Orissa, Chhattisgarh, Vidarbha, Telangana, Karnataka, Andhra Pradesh, Tamil Nadu, NE states and along foothills of Himalaya during day 1; which moves over south peninsular India, coastal Andhra Pradesh, Rayalaseema, and adjoining interior Karnataka, Bihar, Jharkhand, GWB, SHWB, Madhya Pradesh, Vidarbha, Chhattisgarh, Madhya Maharashtra and west Rajasthan in day 2 and 3; And disappears over Northwest India on day 2 and 3.

Sweat Index (> 300): Is seen over the sub-divisions along east and west coast, areas along foothills of Himalayas, NE states, and most parts of the country except central parts of country during next 3 days. On day 2 and 3 it remains over the most parts of the country except Northwest India and central parts of India on day 2 and 3; The significant zone lies over parts of SHWB, GWB, Sikkim, Jharkhand, Bihar, Orissa, Assam and adjoining areas.

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

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

5. Rainfall Activity:

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

40-70 mm Rainfall: over parts of Arunachal Pradesh, Kerala and Tamil Nadu on day 1; over parts of SHWB, GWB, Assam, Tripura, Mizoram and adjoining areas on day 2; over parts of Costal Andhra Pradesh and North Interior Karnataka on day 3.

10-40 mm Rainfall: over parts of Kerala, Karnataka, Tamil Nadu, Orissa, Andhra Pradesh, GWB, SHWB, Sikkim and NE states during next 3 days; over parts of J&K, Himachal Pradesh and Uttarakhand on day 1; over parts of Bihar, Jharkhand, SHWB, GWB, North Interior Karnataka, Konkan & Goa on day 2; over parts of GWB and North Interior Karnataka on day 3.

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

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

1. Model Reflectivity (Max. dBz):

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

Orissa, Andhra Pradesh, Sikkim and NE States; On day 3 mostly over parts of Jharkhand, GWB, Orissa, Karnataka, adjoining Andhra Pradesh, Tamil Nadu Sikkim and NE states.

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

Total Index (> 50): Above threshold value is observed over most parts of the country except extreme south peninsular India, extreme southern parts of west coast and the east coast, southern parts of Karnataka, coastal Maharashtra, South Madhya Maharashtra, Marathwada, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, Sikkim and NE states during next 3 days; below threshold value is also seen over parts of Orissa on day 2; over parts of Telangana on day 2 and 3; over some parts of Bihar on day 3.

K-Index (> 35): Less than threshold value is observed over most of the part of the country during the next 3 days. Prominent values are found over parts of NE states, Interior Karnataka, Telangana, Chhattisgarh, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Bihar, Jharkhand, GWB and adjoining areas.

CAPE (> 1500): Greater than threshold value over parts of Gujarat, coastal areas of west coast, coastal Maharashtra, Konkan & Goa, coastal areas along the east coast, SHWB, GWB, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Konkan & Goa, coastal Maharashtra, South West Rajasthan extending over Bihar, Jharkhand, Telangana, Rayalaseema and Interior Karnataka during next 3 days; Some parts of Punjab on day 1; over some parts of East Uttar Pradesh on day 3; Maximum value of the index is seen over the parts of Orissa, GWB, SHWB, Bihar, Jharkhand, Andhra Pradesh, coastal Tamil Nadu, Kerala, Karnataka, Telangana, coastal Maharashtra and coastal Gujarat during next 3 days.

CIN (50-150): It covers most of the parts of the country except central parts of the country, central Madhya Pradesh, Madhya Maharashtra, Marathwada, South Chhattisgarh, West Vidarbha on day 1 and 2; on day 3 it remains over same region except north western parts of Country and central India. Inland extension is also nearly similar to CAPE. Only, it has significant larger values over parts of west India including west Rajasthan, Gujarat, and Punjab and adjoining areas; some parts of Vidarbha and Madhya Pradesh, eastern parts Of the country, Bihar Jharkhand , Orissa, GWB, Andhra Pradesh and adjoining areas.

3. Rainfall and thunderstorm activity:

70-130 mm Rainfall: over parts of Kerala, Assam, Arunachal Pradesh and adjoining areas on day 1; over parts of South Interior Karnataka on day 3.

40- 70 mm Rainfall: over parts of Assam, Meghalaya, Tripura, Mizoram, Arunachal Pradesh and adjoining areas, Kerala and Tamil Nadu on day 1; Over parts of Assam, Meghalaya, Tripura, Mizoram, Arunachal Pradesh and adjoining areas GWB and Orissa on day 2; over some parts of Arunachal Pradesh, Orissa and South Interior Karnataka on day 3.

10- 40 mm Rainfall: over parts of Sikkim, SHWB, GWB, Kerala, Tamil Nadu, Interior Karnataka and NE states during next 3 days; over some parts of Himachal Pradesh on day 1; over parts of Bihar and Jharkhand on day 2; over parts of Orissa and Andhra Pradesh on day 2 and 3; over some parts of North Interior Karnataka, Konkan and Goa on day 3.

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

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

- Synoptic analysis indicates that a wind discontinuity runs from North Interior Karnataka to South Interior Tamilnadu across South Interior Karnataka, the cyclonic circulation over over north Kerala & neighbourhood and a cyclonic circulation lies over Lakshadweep area and neighbourhood. With these systems, the southern parts of county specifically Kerala, Tamilnadu, south Interior Karnataka and Lakshadweep may likely to get heavy rainfall with thunderstorm activities on Day-1. Telangana and Rayalseema may also get the thunderstorm with gusty winds activity on Day-1.
- Due to the cyclonic circulation over east Assam & neighbourhood, the Assam, Meghalaya and NMMT may likely to get the heavy rainfall and hailstorm on Day-1.
- The cyclonic circulation over Sub Himalayan West Bengal & adjoining Bihar persists with a trough aloft from east Bihar to interior Odisha across east Jharkhand. This will be resulting to thunderstorm with hail over SHWB and GWB and gusty winds over Orissa, Jharkhand and Bihar on Day-1.
- o A fresh Western Disturbance is likely to affect Western Himalayan region from 13th May onwards

Day-1 & Day-2:

24 hour Advisory for IOP:	48 hour Advisory for IOP:
Significant Rainfall: Tamil Nadu, Kerala, South Karnataka, Lakshadweep Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura	Significant Rainfall: Tamil Nadu, Kerala, South Karnataka
 Thunderstorm with squall or gusty winds: Uttarakhand, Himachal Pradesh, Punjab, Haryana, Chandigarh, Delhi, West Uttar Pradesh Jharkhand, Bihar, Odisha Tamil Nadu, Kerala, South Karnataka, Coastal Andhra Pradesh, Telangana, Rayalaseema, Lakshadweep Thunderstorm with squall and hail West Bengal, Sikkim, Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura Thunderstorm/Duststorm: West Rajasthan 	 Thunderstorm with squall or gusty winds: Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Bihar, Jharkhand, Odisha Tamil Nadu, Kerala Thunderstorm with squall and hail West Bengal, Sikkim



Graphical Presentation of Potential Areas for Severe Weather:













Past 24 hours DWR Report:

Radar Station name	Date	Time interval of observat ion (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.	Remark s	Associa ted severe weather if any	Districts affected
Patiala	09-05-18	080300 - 080600	NO ECHO	-	-	-	
		080600 - 080900	MULTIPLE CELLS DBZ 36.5 HT. 08-10 KM	NE SECTORS. MOVMENT TOWARDS E- WARDS.			DEHRADOON, MUSSOORIE, HARIDWAR, AMRITSAR, GURDASPUR, PALAMPUR AND ITS ADJ AREA
		080900- 081200	MULTIPLE CELLS DBZ 58.0 HT. 08-14 KM	NW, NE SECTORS. MOVMENT NE- WARDS.		HAIL/R A/TS	SIRHIND, MANDI, CHANDIGARH, SOLAN, SHIMAL, NAHAN AND ITS ADJ AREA
		081200 - 081500	MULTIPLE CELLS DBZ 61.5 HT. 09-15 KM	SW, SR AND NE SECTORS. MOVMENT TOWARDS ESE- WARDS .		HAIL/TS /RA	SAFIDON, FATEHABAD, NARWANA, TOHANA, KARNAL, KURUKSHETRA, AMBALA, PATIALA, PANIPAT, BEHAT, MUSSOORIE, SAHARNPUR, BEHAT AND ITS ADJ AREA
		08/1500 - 081800	MULTIPLE CELLS DBZ 52.0 HT. 09-10 KM	SE- SECTORS. MOVMENT E- WARDS.		TS/RA	SHAMLI, SONEPAT, BAGHPATMERUT, MUZAFRNAGAR, MODINAGAR, GHAZIABAD AND ITS ADJ AREA
		081800 - 090252	NIL				
		081132- 081212	Single cell formed at 1132 UTC over 170 Km later transformed into multiple cell at around 1142 UTC. Max. reflectivity was 50 dBZ and height reached 13 Km on 20 dBZ echo top.	System moved with avg. Velocity 40 Km/h NE wards w.r.t. the station.	Moved in to Nepal at around 1212 UTC.	TS	Bahraich
		081332- 081602	Multiple-cell formed at 1332 UTC over 140 NNE. Max. reflectivity was observed 48.5 dBZ and height reached 11 Km.	Multiple cells system moved NE wards from radar station with average speed 35 Km/h.	Moved to Nepal at around 1602 UTC.	TS	Lakhimpur Kheri Bahraich Sitapur

Radar Station Name	Date	Time Interval Of Observation (UTC)	Organisation Of The Cells(Isolated Single Cells/ Multiple Cells/ Convective Regions/ Squall Lines) With Height Of 20 dbZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
		080722- 081052	Multiple cell with average height of 3.0 km & maximum reflectivity 39:50 dBZ	Multiple cell develop from 07:22 UTC of 08/05/2018 towards NW, N of Jaipur and moved to E, NE Wards at speed 2530 km/hr	Multiple cell develop from 1432 UTC on 07/05/2018 towards NW, of Jaipur and reaches maximum reflectivity during 08:42 to 09:02 UTC of 08/05/2018 and died 09:02 UTC.	Dust storm/Thundersto rm with Light rain at Isolated places	Bikaner, Churu, Jhunjhunu, Pilani, Sikar, Nagaur Districts.
Jaipur	09-05-18	080952- 081442	Multiple cell with average height of 4.5 km & maximum reflectivity 50:00 dBZ	Multiple cell develop from 09:52 UTC of 08/05/2018 towards SW,S, SE of Jaipur and moved to E Wards at speed 35-40 km/hr	Multiple cell develop from 09:52 UTC on 08/05/2018 towards SW,S, SE of Jaipur and reaches maximum reflectivity during 11:52 to 12:12 UTC of 08/05/2018 and died 14:42 UTC.	Dust storm/Thundersto rm with Light rain at Isolated places	Ajmer, Tonk, Bundi, Sawai Madhopur Districts.
		080952- 081442	Multiple cell with average height of 4.5 km & maximum reflectivity 50:00 dBZ	Multiple cell develop from 09:52 UTC of 08/05/2018 towards SW,S, SE of Jaipur and moved to E Wards at speed 35-40 km/hr	Multiple cell develop from 09:52 UTC on 08/05/2018 towards SW,S, SE of Jaipur and reaches maximum reflectivity during 11:52 to 12:12 UTC of 08/05/2018 and died 14:42 UTC.	Dust storm/Thundersto rm with Light rain at Isolated places	Ajmer, Tonk, Bundi, Sawai Madhopur Districts.

Radar Station name	Date	Time	Organization of the	Formation w.r.t	Remarks	Associated	Districts
		interval of	cells (Isolated single	radar station and		severe	affected
		observation	cells/multiple cells/	Direction of		weather if	
		(UTC)	convective regions/	movement		any	
			squall lines) with height				
			of 20 dBZ echo top and				
			maximum reflectivity				
Visakhapatnam	09-05-18	080600	Convictive region over	215kms(ENE)and	Observation at 03:51	NIL	NIL
			the bay of Bengal with	movement is	UTC.		
			reflectivity 37dbz,	untraceable.			
		080900	Isolated cb cells with a	NNE(241 kms)	Observation at 08:51	NIL	NIL
			mximum reflectivity of	moving E ly	UTC.		
			55 dbz with height of 13				
			kms				
		081200	Multiple cb cells from W	NNE(236 kms)	Since last	Thunderstorm	Vizianagaram
			to NE out of which with	moving E ly	observation cb cells	lighting	district,
			maximum reflectivity of		are developing		Nayagarh
			61 dbz with height of 14		matured at 0941 UTC		district of
			kms				Orissa
		081500	isolated cb cells out of	NNE(234 kms)	Maximum reflectivity	NIL	NIL
			which with maximum	moving E ly	at 1201 UTC cells		
			reflectivity of 57 dbz		dissipated 1431 UTC		
			with height of 13 kms				
		090000	Single cb cell with	NNE (201 kms)	Observation at 2231	NIL	Gajapati Dist
			maximum reflectivity of	moving E ly	UTC		(Orissa)
			54 dbz with height of 12				
			kms				
		090300	Isolated Single cb cells	NE (160 to 225	Since last		Gajapati Dist.
			with maximum	kms) moving SE	observation CB cells		(Orissa)
			reflectivity of 40 dBz	ly	are dissipating and		
			with height of 10 kms		dissipated		
					completely at		
					0251UTC.		

	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	Formation w.r.t. radar station and Direction of movement	Remarks	Associated Severe Weather if any	Districts affected
Kolkata	09-05-18	080301- 080711	maximum reflectivity NIL	NIL	NOSIG ECHO	NIL	NIL
		080711- 081241	1.Isolated single cell with maximum reflectivity of 65.5 dBz at 1111 UTC and maximum height of 16.33 Km at 1051 UTC	NW (247.5 km) moving in SE – wards direction.	Isolated multi cells formed at 0711 UTC in NW at a distance of 247.5 km from radar and developed into strong big cell system. Matured and dissipated at 1241 UTC in NNE at a distance of 84.9 Km from Badar	Thunderstorm / Rain/ Hail	N/A
		081051- 081141	2.Isolated single cell with maximum reflectivity of 64.0 dBz at 1111 UTC and maximum height of 7.30 Km at 1121 UTC	NW (175.9 km) moving in SE – wards direction.	Isolated multi cells formed at 1051 UTC in NW at a distance of 175.9 km from radar. Matured and dissipated at 1141 UTC in NW at a distance of 154.5 Km from Radar.	Thunderstorm / Rain /Hail	N/A
		081151- 081831	3.Isolated multi cells with maximum reflectivity of 63.5 dBz at 1151 UTC and maximum height of 17.37 Km at 1311 UTC	NNW(158.4km) moving in ESE –wards direction	Isolated multi cells formed at 1151 UTC in NNW at a distance of 158.4 km from radar. Matured and dissipated at 1831 UTC in N at a distance of 159 Km from Radar.	Thunderstorm / Rain /Hail	N/A
		081841- 090301	NIL	NIL	NOSIG ECHO	NIL	NIL

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		080300 - 081830	NIL	N/A	N/A	N/A	N/A
Patna	09-05-18	081832	Isolated Multiple Cell Maximum Reflectivity: 51.5 dBZ Echo Top: 13.6 KM	Range: 230 KM from DWR Patna in NNW direction Movement: towards EASTERLY	Warning issued	GUSTY WIND, MODERATE RAIN	SIWAN, GOPALGANJ, WEST CHAMPARAN, EAST CHAMPARAN, SHEOHAR, SITAMARHI, MUZAFFARPUR, MADHUBANI, DARBHANGA, SUPAUL, SAHARSA, MADHEPURA, ARARIA, KISHANGANJ, PURNEA, KATIHAR
		090132 - 090300	NIL	N/A	N/A	N/A	N/A

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	Region	State/Sub	Weather Event (TS/Hail/Squall)	Date	Time of	Time of end	
Reporting		Division	_		Commencement (IST)	(IST)	
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	08-05-18	1515	1525	
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	08-05-18	1700	1800	
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	08-05-18	1600	1800	
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	08-05-18	0915 1845	1015 2030	
Gulmarg	Northwest India	Jammu & Kashmir	Thunderstorm	08-05-18	1600	1800	
Shimla		Himachal	Thunderstorm	08-05-18	1215	1845	
		Pradesh	Hailstorm (1.0/0.2gm)	08-05-18	1325	1338	
Jodhpur	Northwest India	West Rajasthan	Thunderstorm	08-05-18	2125	2140	
Dehradun	Northwest India	Uttarakhand	Thunderstorm	08-05-18	1825	1935	
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	08-05-18	1110	13:0	
Tehri	Northwest India	Uttarakhand	Thunderstorm	08-05-18	1825	1950	
Chandigarh	Northwest India	Chandigarh	Thunderstorm	08-05-18	1450	1540	
Karnal	Northwest India	Haryana	Thunderstorm	09-05-18	0700	XXXX	
Kheri	Northwest India	East Uttar Pradesh	Thunderstorm	08-05-18	1940	2030	
Muzaffarnagar	Northwest India	West Uttar Pradesh	Thunderstorm	08-05-18	2000	2100	
Najibabad	Northwest India	West Uttar Pradesh	Duststorm with wind speed 15-20kmph	08-05-18	1920	2015	
Agartala	Northeast India	Tripura	Thunderstorm	08/09-05-18	080830 090520	081020 090600	
			Squall from NNE(020) with Speed 35Kts	08-05-18	0832	0834	
Kailashahar	NMMT	Tripura	Thunderstorm	08-05-18	0830 1240	1210 1400	
Adiramapatnam	South India	Tamil Nadu	Thunderstorm	09-05-18	0100	0300	
Salem	South India	Tamil Nadu	Thunderstorm	08-05-18	1710	1720	
Thoothukudi	South India	Tamil Nadu	Thunderstorm	08-05-18	1700	1730	
Coimbatore	South India	Tamil Nadu	Thunderstorm	08-05-18	1615	2100	
Mangaluru AP	South India	CI Karnataka	Thunderstorm	08-05-18	2235	2400	
RS/RW Panambur	South India	CI Karnataka	Thunderstorm	08/09-05-18	2120	0140	
Gadag	South India	NI Karnataka	Thunderstorm	08-05-18	1850	1930	
Bengaluru HAL AP	South India	SI Karnataka	Thunderstorm	08-05-18	1800	1920	
Chitradurga	South India	SI Karnataka	Thunderstorm	08-05-18	1905	2210	

Madikeri	South India	SI Karnataka	Thunderstorm	08-05-18	1520	1745
Kannur	South India	Kerala	Thunderstorm	08-05-18	1800	1900
Karipur AP	South India	Kerala	Thunderstorm	08/09-05-18	2047	0250
Kozhikode	South India	Kerala	Thunderstorm	08-05-18	2055	2355
Thiruvanathapuram C	South India	Kerala	Thunderstorm	09-05-18	0512	0517
Thiruvanathapuram AP	South India	Kerala	Thunderstorm	08-05-18	1900	2150
Agathi	South India	Lakshadweep Islands	Thunderstorm	09-05-18	0300	0500
Amini	South India	Lakshadweep Islands	Thunderstorm	09-05-18	0245	0330
Minicoy	South India	Lakshadweep Islands	Thunderstorm	09-05-18	0715	0755

IMPORTANT LINKS:

For NCMRWF NWP products:(<u>http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php</u>)
For IMD NWP products:(<u>http://nwp.imd.gov.in/diagpro_new.php</u>)
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
ForRadarimagesofthepast24hoursincludingmosaicofimages:
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				
8	dust or sand storm				
≡	fog				
,	drizzle				
•	rain				
*	SNOW				
	showers				
	hail				
ਸ	thunderstorm				
We	Weather Symbols				