



India Meteorological Department

FDP STORM Bulletin No. 74 (19-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ♦ The cyclonic storm "SAGAR" over Gulf of Aden moved further west-south westwards and lay centered at 0830 hrs IST of 19th May 2018 over Gulf of Aden near latitude 10.9°N and longitude 44.4°E ; about 80 km north northeast of Berbera (Somalia) and 210 km south southwest of Aden (Yemen). It is very likely to continue to move west south-westwards and weaken gradually and cross Somalia coast near Long 44°E during the afternoon of today, the 19th May 2018 as a cyclonic storm with wind speed 65-75 kmph gusting to 85 kmph.
- ♦ Conditions are becoming favourable for advance of southwest monsoon over south Andaman Sea & neighbourhood by around 23 May 2018.
- ♦ The Western Disturbance as a trough in mid tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long 59°E to the north of lat. 30°N is now seen as a cyclonic circulation over West Afghanistan & neighbourhood at 3.1 km above mean sea level with a trough aloft with its axis 5.8 km above mean sea level roughly along Long 62°E to the north of lat 25°N .
- ♦ The other Western Disturbance as a trough in mid tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 72°E to the north of lat. 32°N has moved away northeastwards.
- ♦ The cyclonic circulation over central parts of South Uttar Pradesh & adjoining Madhya Pradesh extending upto 0.9 a.s.l along with the east west trough extending from that to Manipur has become less marked.
- ♦ A cyclonic circulation lies over northwest Madhya Pradesh & neighbourhood and extends upto 1.5 km a.s.l.
- ♦ A trough runs from southwest Rajasthan to east Vidarbha across southeast Rajasthan & Madhya Pradesh with the above mentioned cyclonic circulation over northwest Madhya Pradesh & neighbourhood embedded in that and extends upto 1.5 km a.s.l.
- ♦ The cyclonic circulation over East Rajasthan & neighbourhood has merged with the above trough.
- ♦ An east west trough extends from the cyclonic circulation over northwest Madhya Pradesh & neighbourhood to east Assam across Jharkhand & central parts of West Bengal at 0.9 km a.s.l.
- ♦ A cyclonic circulation lies over north Gujarat and adjoining Saurashtra & Kutch between 1.5 & 2.1 km a.s.l.
- ♦ A cyclonic circulation lies over west Bihar & neighbourhood between 1.5 & 2.1 km a.s.l.
- ♦ A cyclonic circulation lies over south Assam & neighbourhood at 3.1 km above mean sea level.
- ♦ Another cyclonic circulation lies over south Srilanka & neighbourhood between 3.1 & 5.8 km a.s.l.
- ♦ The cyclonic circulation over Lakshadweep & neighbourhood persists and now extends upto 3.6 km a.s.l. Under its influence, a low pressure area is likely to develop over Central parts of south Arabian Sea around 21st May 2018.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

Current Observation (based on 0600UTC imagery of INSAT 3D):

Western Disturbance (WD):

Scattered multi-layered clouds with embedded weak convection were seen over North Afghanistan, North Pakistan, Jammu & Kashmir and over area between Lat 37.0N To 43.0N Long 64.0E to 89.05E in association with WD over the area.

Clouds descriptions within India:

Broken low/medium clouds with embedded moderate to intense convection seen over North Coastal Andhra Pradesh, Tamilnadu, Kerala, South Interior Karnataka, Andaman and Nicobar Islands. Broken low/medium clouds with embedded weak to moderate convection seen over rest Karnataka and Lakshadweep Islands. Scattered low/medium clouds with embedded moderate to intense convection seen over Tripura. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over Jammu & Kashmir, Odisha, Sikkim, Sub Himalayan West Bengal and Northeast states. Isolated low/medium clouds seen over extreme West Punjab, Himachal Pradesh, North Uttarakhand, South Haryana, Delhi and Uttar Pradesh. Scattered low/medium clouds seen over North Rajasthan, North Madhya Pradesh, extreme South Madhya Maharashtra.

Arabian Sea:-

Broken low/medium clouds with embedded moderate to intense convection seen over South Arabian Sea & Comorin.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded moderate to intense convective seen over North & South Bay of Lat 13.0N and South Andaman sea, Arakan Coast Tenasserim Coast

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over north Chhattisgarh Jharkhand Odisha Gangetic West Bengal Tripura north Andhra Pradesh Kerala Tamilnadu Goa Lakshadweep Andaman & Nicobar Islands and weak to moderate convection observed over J & K Himachal Pradesh Uttarakhand Punjab Haryana Delhi north-west Madhya Pradesh north east states north west Uttar Pradesh Telangana south Maharashtra Goa Karnataka.

OLR: - .

Upto 230 wm^{-2} observed over J&K Himachal Pradesh North Uttarakhand south Jharkhand north Orissa south north Chhattisgarh Gangetic West Bengal Sikkim north-east States south Maharashtra south Konkan & Goa south Andhra Pradesh Rayalaseema Karnataka Kerala Tamilnadu Lakshadweep Andaman & Nicobar islands.

Westerly Trough & Jet Stream: Westerly Trough roughly along Long 72°E north of Lat 32°N.

Dynamic Features:

Wind Shear 30-60 knots is observed over North India, 5-20 knots over Central India, North-East India and 05-10 knots over south peninsula India.

Positive shear tendency is observed over India

Positive Vorticity (850 hPa) more than 50 ($\times 10^{-5}/\text{s}$) is observed over south Gujarat Madhya Pradesh Jharkhand Odisha Gangetic West Bengal North Rayalaseema (.)

Negative Low Level Convergence is observed over J&K Uttar Pradesh Madhya Pradesh Odisha Gangetic West Bengal.

Precipitation:

HEM:-

Rainfall up to 27.8-138.9 mm was observed over west J&K north Orissa, Tamilnadu, North Chhattisgarh, South Gangetic West Bengal and Nicobar Island, East Arunachal Pradesh Konkan adjoining Goa north interior & costal Karnataka.

Rainfall up to 0.1-13.9 mm was observed over Tripura, Manipur, Mizoram, East Assam, Karnataka, South Maharashtra, Kerala, Lakshadweep and Andaman.

DWR and RAPID Observations:

Isolated/multiple moderate echoes (dBZ >50 and height >10km) was observed on DWR Machilipatnam and Chennai and Light to moderate echoes at DWR Agartala, Patiala, Delhi, Jaipur, Lucknow, Srinagar, Patna, Hyderabad, Kochi, and Thiruvananthapuram at around 1630IST.

RAPID RGB Satellite imagery at 1400 IST indicated significant convection over Jammu & Kashmir, Himachal Pradesh, North Uttarakhand, and Delhi adjoining Uttar Pradesh, North Madhya Pradesh, Central Jharkhand, South Mizoram, North Interior Karnataka, North Tamilnadu and Nicobar 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 over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	19.05.2018	20.05.2018
PM10 (micro-g/m ³)	328	215
PM2.5 (micro-g/m ³)	88	80

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs: 12UTC of Day 1-4: 850/925 hPa Deep Depression over southwest Arabian Sea moving west towards gulf of Aden likely to become Cyclonic Storm subsequently in Day2-Day5

00UTC of Day 1-5: A weak CYCIR at 850 hpa over BOB moving towards west with intensification.

00UTC of Day 1-5: 850 hPa trough from east U.P. to west Bengal through N Karnataka across M.P., Maharashtra.

12UTC of Day 1-3: 850 hPa trough over east UP to Bihar and adjoining of Bangladesh.

Confluence & Wind Discontinuity Regions: 12 UTC of Day 0, 1-3: 925 hPa N-S discontinuity over Southern Peninsular India across east Karnataka and west Andhra Pradesh

Synoptic Systems: 00 UTC of Day 1-4: Western disturbance as CYCIR over Pakistan regions and adjoining J&K

2. Location of jet and jet core (>60kt) at 500hPa: Strong westerly over south of Afghanistan in Day 0-3 following the WD.

3. Convergence at 850 hPa:

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

Day0: Jharkhand, Uttarakhand, Odisha, West MP, East MP, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, SI Karnataka,

Day1: Assam Meghalaya, Jharkhand, East Rajasthan, West MP, East MP, Madhya Maharashtra, Marathwada, Chhattisgarh,

Day2: Assam Meghalaya, NE NMMT, Gangetic WB, Jharkhand, Odisha, West MP, East MP, Madhya Maharashtra, Chhattisgarh, Telangana, Tamilnadu,, Puducherry,

Day3: Jharkhand, Uttarakhand, Jammu Kashmir, Odisha, Chhattisgarh, Tamilnadu,, Puducherry,

Day4: Jharkhand, East MP, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, Tamilnadu,, Puducherry, NI Karnataka,

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Assam Meghalaya, Jharkhand, Uttarakhand, Himachal Pradesh,

Day1: Assam Meghalaya, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Tamilnadu,, Puducherry,

Day2: Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Telangana, Tamilnadu,, Puducherry,

Day3: Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Odisha, Chhattisgarh, Tamilnadu,, Puducherry, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jharkhand, Bihar, Uttarakhand, Chhattisgarh, Tamilnadu,, Puducherry, Kerala,

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, 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, Sub Himalayan WB, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, SI Karnataka,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, SI Karnataka,

Day3: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry,
Day4: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, SI Karnataka,

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, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East Rajasthan, Odisha, West MP, East MP, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, NI Karnataka, SI Karnataka,
Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, NI Karnataka, SI Karnataka,
Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, NI Karnataka, SI Karnataka,
Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, NI Karnataka, SI Karnataka, Kerala,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu,, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Assam Meghalaya, NE NMMT,
Day2: Assam Meghalaya, NE NMMT,
Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Odisha, Andaman Nicobar, Tamilnadu,, Puducherry, Kerala,
Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Odisha, Andaman Nicobar, Tamilnadu, Puducherry, SI Karnataka, Kerala,

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

1. Synoptic Systems: The analysis based on 00 UTC indicates a cyclonic circulation over North West Madhya Pradesh and adjoining area. The forecast shows it will persist till day3. The analysis shows a North- South Oriented Trough extends from South west Rajasthan to East Vidarbha across south east Rajasthan and Madhya Pradesh. The forecast shows it will persist till day2 with slight North Eastward shift. The analysis shows an East- West Trough extends from cyclonic circulation over North West Madhya Pradesh to East Assam across Bihar across Jharkhand and Central parts of West Bengal. The forecast shows it will persist till day3 with slight Northward shift. Analysis shows another cyclonic circulation over North Gujarat and adjoining Saurashtra and Kutch region in lower Troposphere (850hPa). The forecast shows the circulation will become less marked in next 72 hours. A cyclonic circulation is seen over West Bihar and adjoining areas in lower Troposphere (850hPa). The forecast shows it will merge with the Trough in next 48 hours.

2. Location of Jet and Jet Core (>60kt) at 500hPa: Although the presence of strong westerlies is found over Eastern parts of the India and over north western 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 from J&K up to Foothills of Himalaya, North- South and East- West Trough, around the cyclonic circulations, eastern parts of India during next 3 days; Low level Positive Vorticity is also seen over parts of Punjab, North West Rajasthan, J&K on day 3; parts of Bihar, GWB, Jharkhand, Orissa have Positive Vorticity from day 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 Gujarat, East Uttar Pradesh, Gangetic Plains, Uttarakhand, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Madhya Pradesh, Andhra Pradesh, along east and west coast of India, Tripura and adjoining areas during next 3 days; over parts of South East Rajasthan on day 1; Significant zone lies over Gujarat, coastal areas along the east coast and west coast, GWB, Bihar, Jharkhand, Orissa, coastal Andhra Pradesh, coastal Tamil Nadu, Telangana, East Uttar Pradesh, coastal Maharashtra, Chhattisgarh, Interior Karnataka, South Madhya Maharashtra and Marathwada.

Lifted Index (< -2): Similar to T-storm Index in day it lies over Gujarat, Rajasthan, Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana, Bihar, Jharkhand, East Uttar Pradesh, Uttarakhand, Orissa, GWB, Assam, Arunachal Pradesh, Meghalaya, Tripura and adjoining areas, Telangana, Vidarbha, Chhattisgarh, Andhra Pradesh, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Madhya Maharashtra and Marathwada, it also appears over Northwest Rajasthan adjoining Punjab and west Uttar Pradesh on day 1; Significant zone with maximum negative value is found over Orissa, Andhra Pradesh, GWB, Telangana adjoining Chhattisgarh and North Interior Karnataka.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over most of the parts of the country except Gujarat, West Madhya Pradesh, Assam, Tripura, Meghalaya, Mizoram and adjoining areas, Extreme south Peninsular India, South West Rajasthan on day 1 on day 2 and 3 it is seen over same region but disappear over central parts of India, North west India and Assam, Tripura, Meghalaya, Mizoram and adjoining areas; Significant zone with Maximum value of the index lies over Telangana, J&K, Orissa, Andhra Pradesh, GWB, , Chhattisgarh, Andhra Pradesh and Vidarbha.

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 west Rajasthan, Punjab and Haryana on day 1; on day 2 and 3 it remain over most of the parts of the country except central parts of Madhya Pradesh and North west India, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi and adjoining areas; The significant zone lies over parts of Orissa, Andhra Pradesh, South Chhattisgarh , Telangana and North Interior Karnataka.

CAPE (> 1000): Mostly seen over southern peninsular India, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, Andhra Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan and Goa, Telangana, coastal Maharashtra, south Madhya Maharashtra, Marathwada, Gujarat and West Madhya Pradesh during next 3 days; over parts of East Uttar Pradesh on day 2 and 3; maximum value of the index is seen over parts of GWB, Orissa, coastal Andhra Pradesh, coastal Tamil Nadu, coastal areas along East Coast, coastal Maharashtra, Including Mumbai, coastal and Interior Karnataka.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala and Tamil Nadu and the value of the index lies in the above range over most of the parts of the country except central parts of Madhya Pradesh, J&K, West Rajasthan, Himachal Pradesh, Uttarakhand and Punjab on day 1; on day 2 and 3 it is seen over most of the parts of the country except Central Parts of Madhya Pradesh, West Vidarbha, J&K, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Rajasthan; significant zone with highest value of the index lies over parts of GWB, Orissa adjoining Chhattisgarh, Gujarat adjoining west Madhya Pradesh and South East Rajasthan.

5. Rainfall Activity:

40-70 mm Rainfall: over parts of Orissa on day 2; over parts of Arunachal Pradesh, and South Interior Karnataka on day 3.

10-40 mm Rainfall: over parts of Kerala, Karnataka, Tamil Nadu, Foothills of Himalayas, Orissa, Sikkim and NE states during next 3 days; over parts of South Chhattisgarh and North Andhra Pradesh on day 1.

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

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, Punjab, Haryana, Delhi, North West and North East Rajasthan, Northern parts of Madhya Pradesh, West Uttar Pradesh, Kerala, Karnataka, Tamil Nadu, GWB, NE states, Telangana and Andhra Pradesh; On day 2 over parts of J&K, Karnataka adjoining Andhra Pradesh, Tamil Nadu, Assam, Meghalaya, Mizoram, Tripura and adjoining areas; On day 3 mostly over parts of J&K, parts of Assam, Meghalaya, Tripura and adjoining areas, Karnataka, Andhra Pradesh, Tamil Nadu, Chhattisgarh, Orissa and adjoining Jharkhand.

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, southern parts of west coast and the east coast, parts of Karnataka, coastal Maharashtra, South Madhya Maharashtra, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, Bihar, Jharkhand, East Uttar Pradesh, Sikkim and NE states during next 3 days; below threshold value of the index is also seen over parts of Gujarat and Telangana on day 1; over parts of Orissa on day 2.

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

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, Bihar, Jharkhand, Telangana, Rayalaseema, Madhya Maharashtra, coastal Maharashtra, south Chhattisgarh and Vidarbha during next 3 days; over parts of East Uttar Pradesh from day 1 onwards; Maximum value of the index is seen over the parts of Orissa, GWB, coastal and Interior Andhra Pradesh, coastal Tamil Nadu, Kerala, Interior and coastal Karnataka, coastal Maharashtra, coastal Gujarat, Konkan and Goa, South Madhya Maharashtra, south Chhattisgarh and Jharkhand

CIN (50-150): It covers most of the parts of the country except central parts of the Madhya Pradesh West Vidarbha, J&K and North west India on day 1; it remains over most of the parts of country on day 2 and 3 except over central parts of the India, North west India, Madhya Maharashtra and Marathwada, J&K, Punjab, Haryana, Himachal Pradesh and Uttarakhand, Only it has significant larger values over parts of west India and Eastern parts of the country including south west Rajasthan, Gujarat, East Uttar Pradesh, parts of Vidarbha and East Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh, Orissa, GWB, Andhra Pradesh, Vidarbha, Telangana and adjoining areas during next 3 days.

3. Rainfall and thunderstorm activity:

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

70- 130 mm Rainfall: over parts of Tripura on day 1 and 2; over parts of South Interior Karnataka on day 1.

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

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

Up to 10 mm Rainfall: Over parts of J&K, Foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Chhattisgarh, Sikkim, Jharkhand, Orissa, Andhra Pradesh, south coastal Maharashtra, Telangana and NE states during next 3 days; over parts of Bihar, Uttarakhand, South Madhya Maharashtra, Konkan and Goa on day 1; over parts of Himachal Pradesh on day 1 and 2.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CAPE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over east and peninsular Indian region with highest probability over Odisha and coastal Andhra Pradesh. On day 2, probability of convection decreases further over northwest and central India and increases over Odisha and Gangetic West Bengal and east peninsular coast. SWEAT index, which accounts for the wind shear between 850 and 500 hPa levels in addition to thermodynamic parameters, indicates highest values over east India and east peninsular India on day 1 and increasing over east peninsular coast and Bengal on day 2. The 850-200 hPa wind shear is very high over Northwest India on day 1 and day 2.

o Synoptic analysis indicates that a western disturbance is approaching the Indian region. Under its influence, thunderstorm activity is expected over Northwest India on day 1.

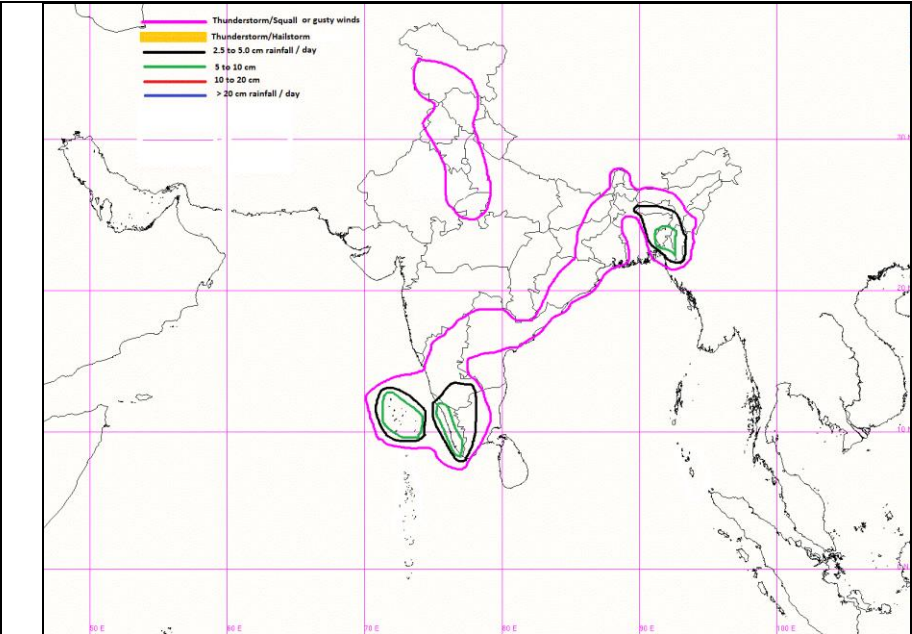
o An east west trough runs in the lower levels from southwest Rajasthan to east Assam and two cyclonic circulation (a) over northwest Madhya Pradesh & neighbourhood (b) over west Bihar & neighbourhood are embedded in the above trough. There is also a cyclonic circulation over south Assam & neighbourhood in the middle levels. Towards evening the eastern part of the trough is likely to strengthen and heavy rainfall is expected over Tripura on day 1 and 2.

o Over South India, in association with the cyclonic circulation over Lakshadweep which is likely to intensify further, weather is expected over the southwest peninsular coast and Lakshadweep on day 1 and day 2.

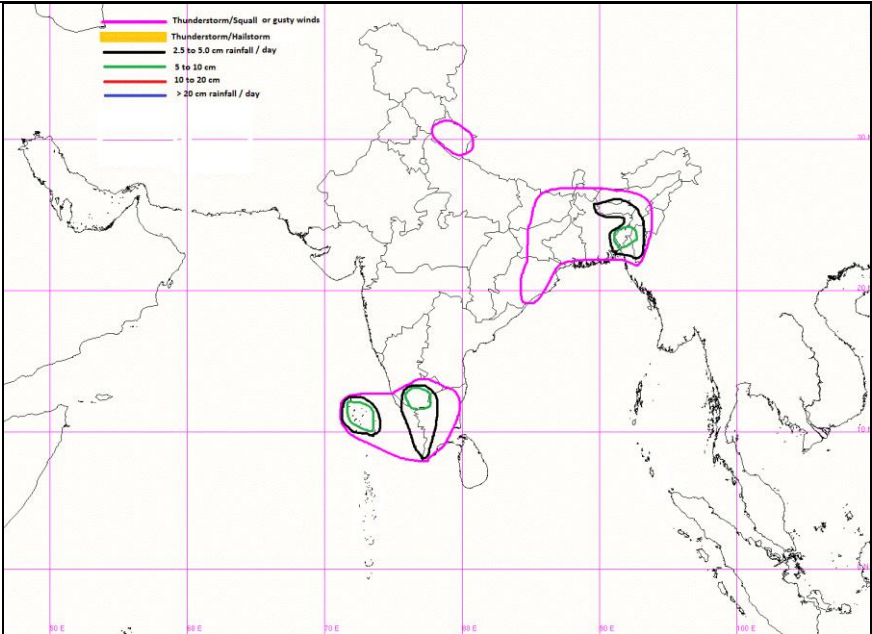
IOP Area for Day-1 & Day-2:

24 hour Advisory for IOP:	48 hour Advisory for IOP:
Significant Rainfall: Interior Tamil Nadu, South Interior Karnataka, Kerala, Lakshadweep Mizoram, Tripura, South Assam and Meghalaya	Significant Rainfall: Interior Tamil Nadu, South Interior Karnataka, Kerala, Lakshadweep Mizoram, Tripura, South Assam and Meghalaya,
Thunderstorm with squall or gusty winds: Tamil Nadu, Kerala, Lakshadweep, Karnataka, Coastal Andhra Pradesh, Haryana, Chandigarh, Delhi, West Uttar Pradesh, Jammu and Kashmir, Himachal Pradesh, East Rajasthan, North Madhya Pradesh, West Bengal and Sikkim, Odisha, Bihar, Jharkhand Manipur, Mizoram, Tripura, Assam and Meghalaya	Thunderstorm with squall or gusty winds: Tamil Nadu, Kerala, Lakshadweep, South Interior Karnataka, Uttarakhand West Bengal and Sikkim, Odisha, Bihar, Jharkhand Manipur, Mizoram, Tripura, Assam and Meghalaya
Thunderstorm with squall and hail Nil	Thunderstorm with squall and hail Nil
Thunderstorm with Duststorm: Rajasthan	Thunderstorm with Duststorm: Rajasthan

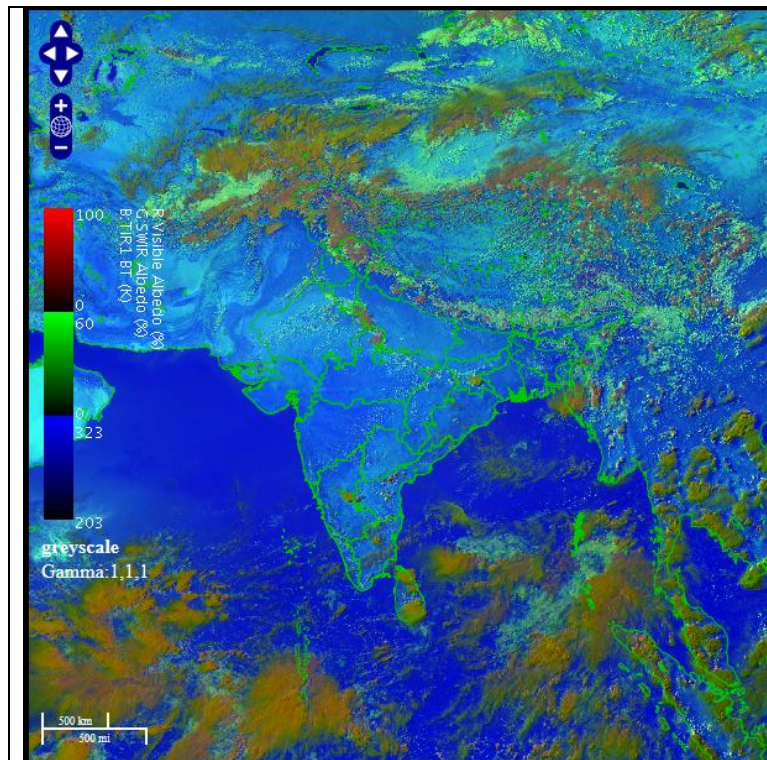
Graphical Presentation of Potential Areas for Severe Weather:



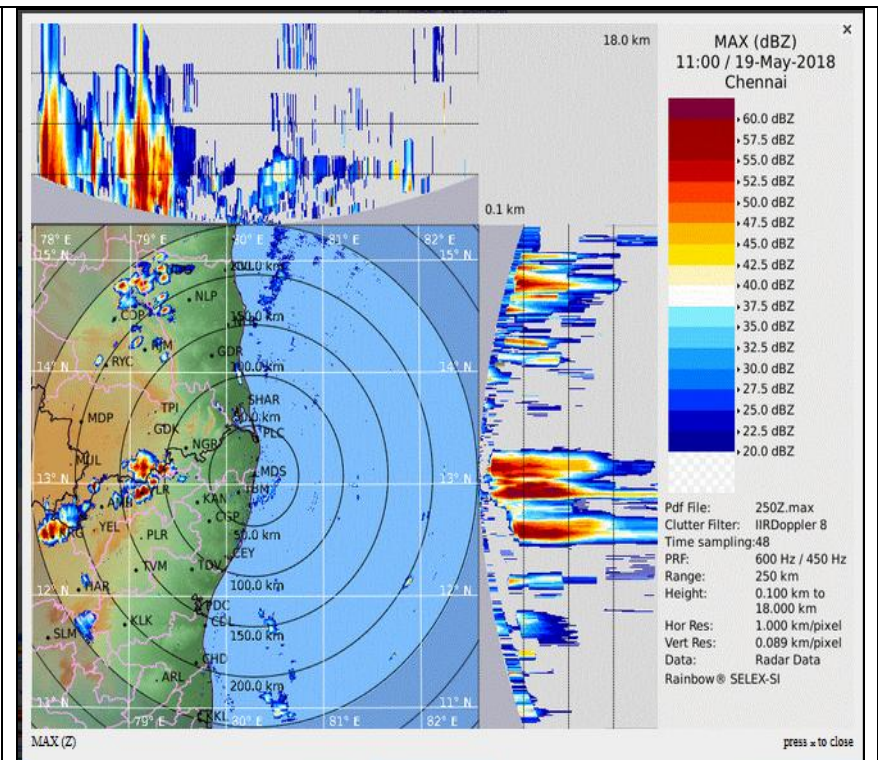
IOP Advisory for 24 hours



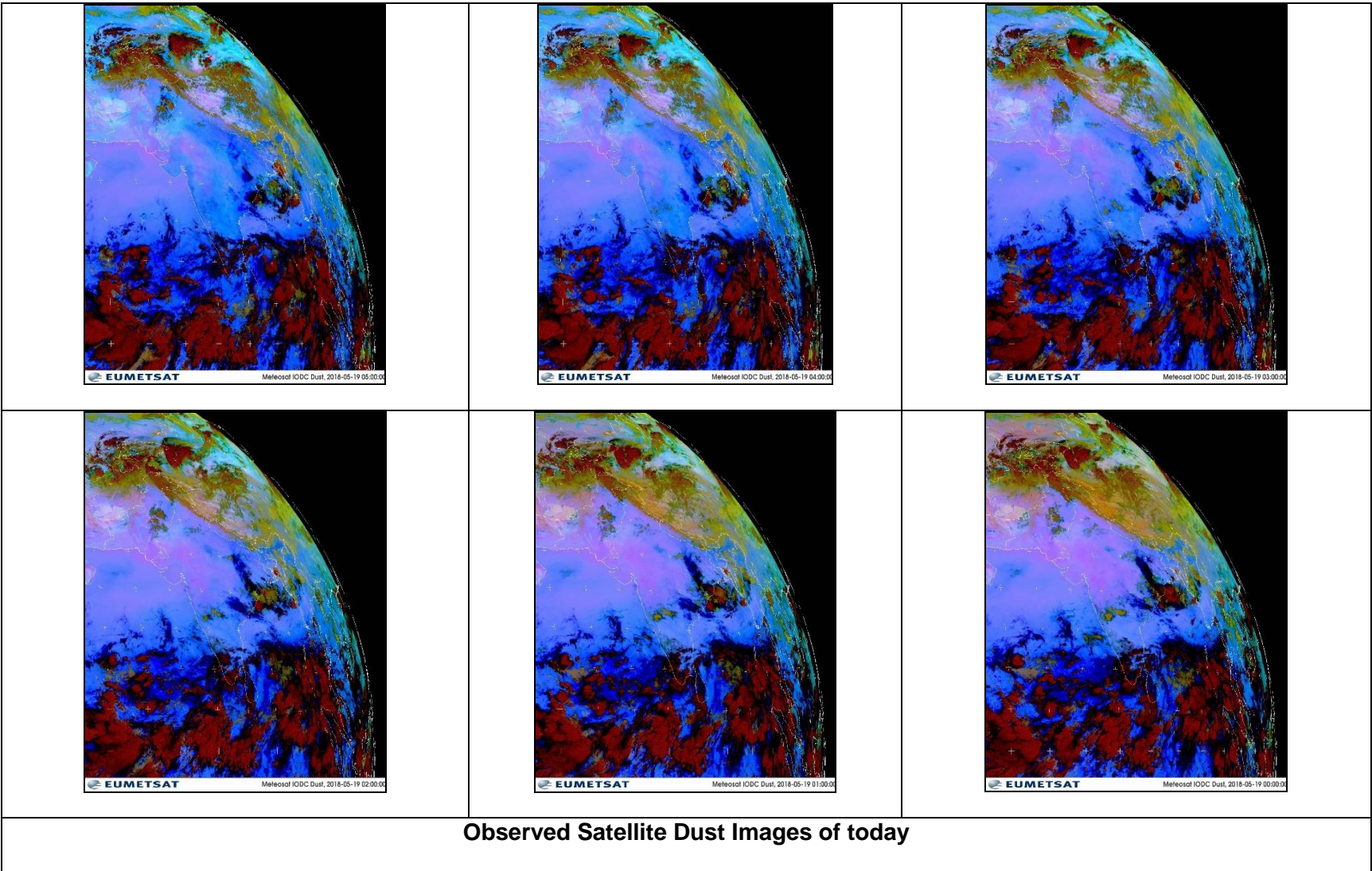
IOP Advisory for 48 hours

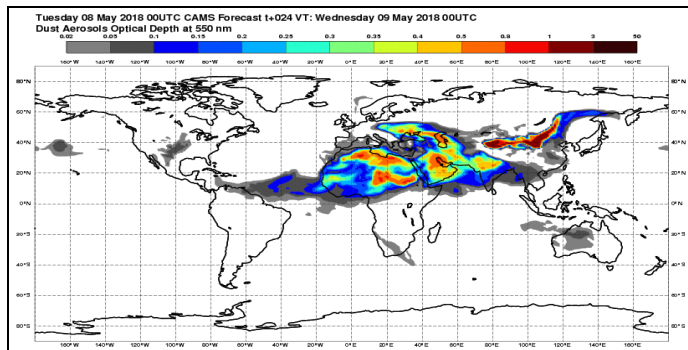


RAPID RGB Imagery at 1530 IST of the Day

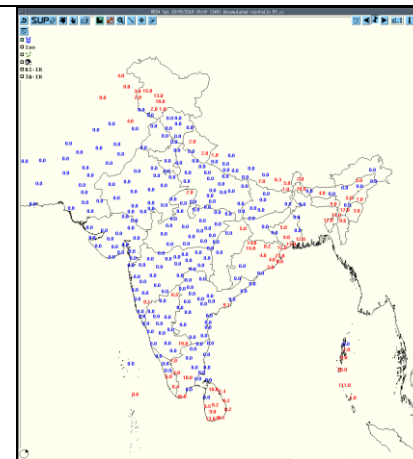


DWR Chennai Reflectivity Image at 1630 IST

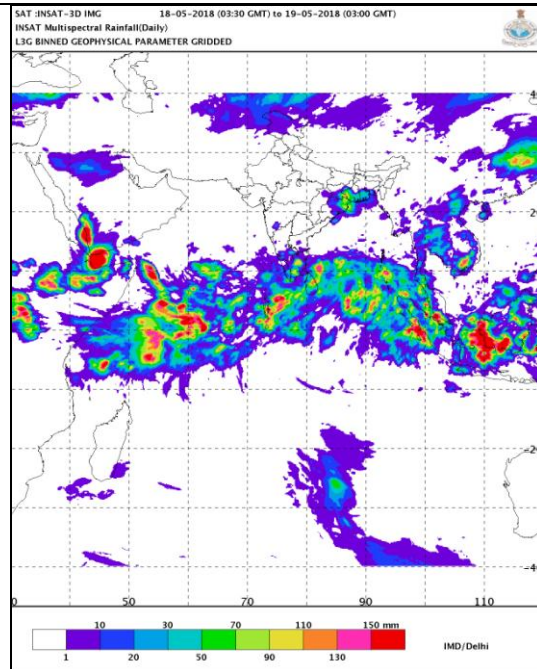




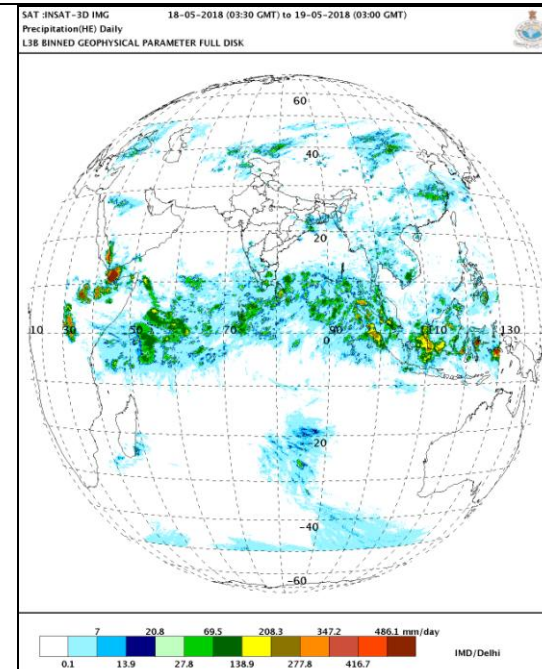
Dust Forecast



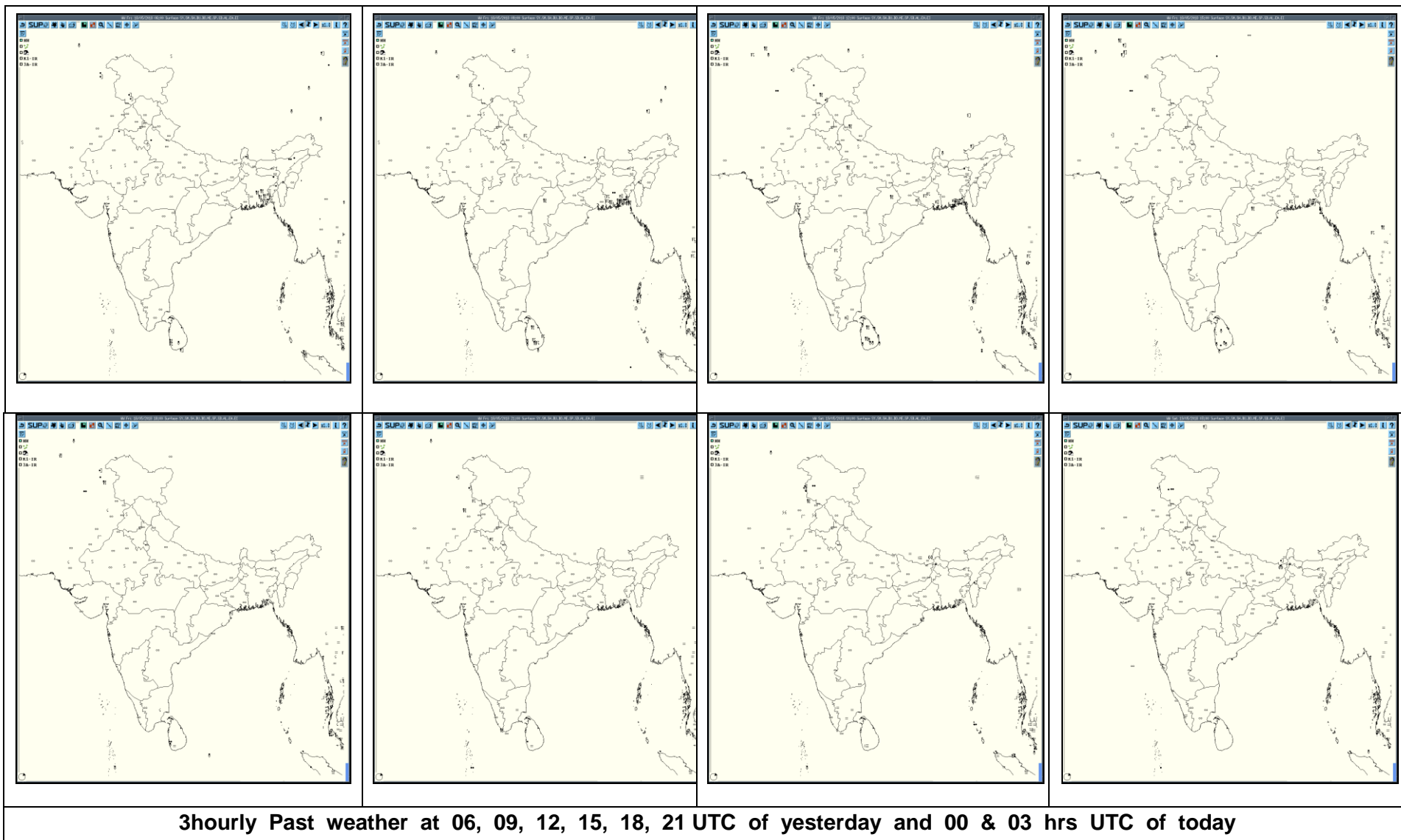
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



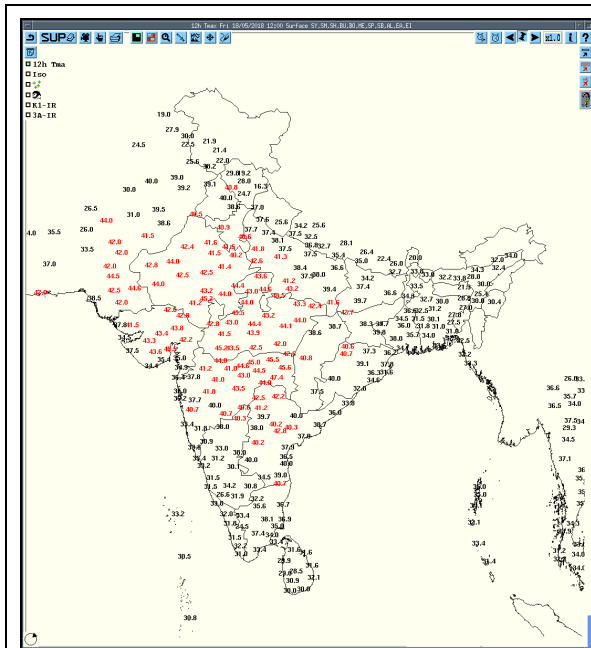
IMR



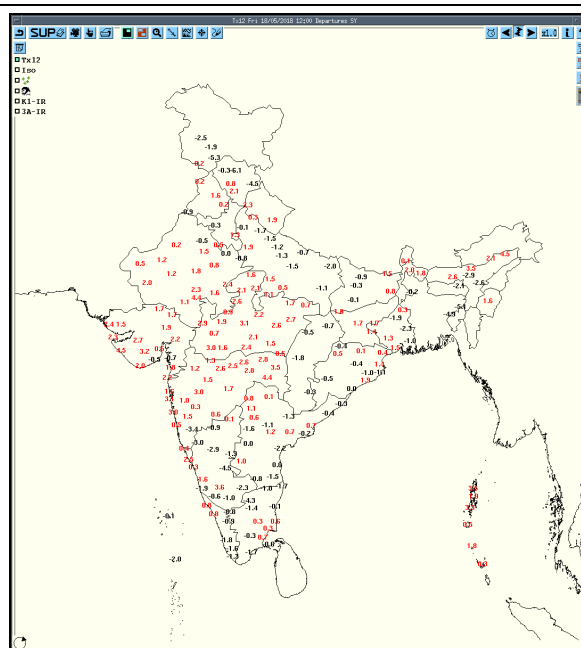
HEM



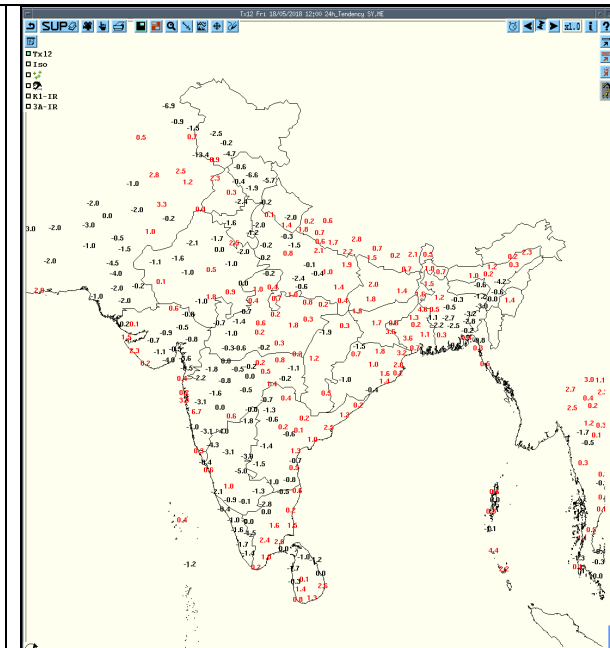
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



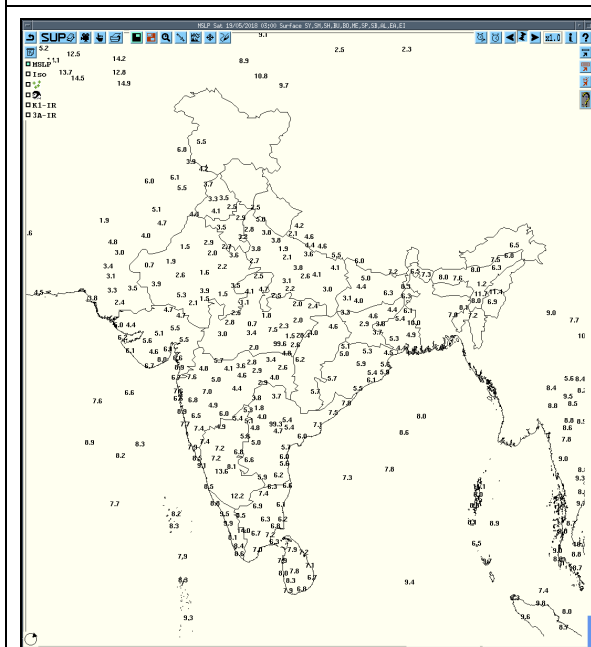
Tmax



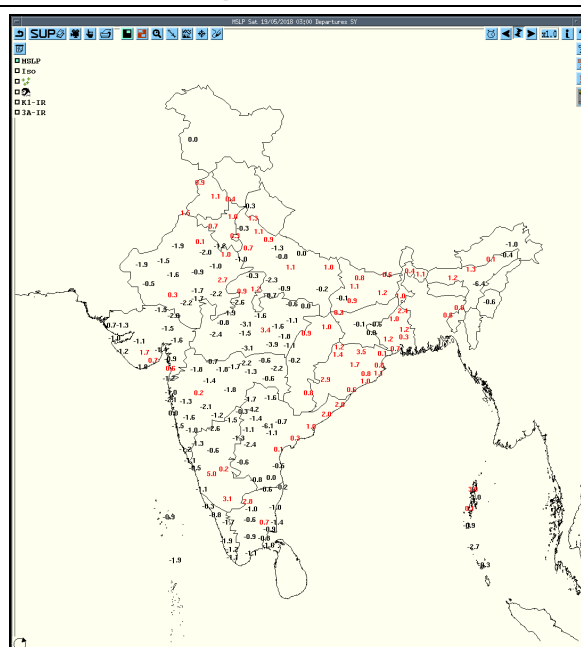
Departure Tmax



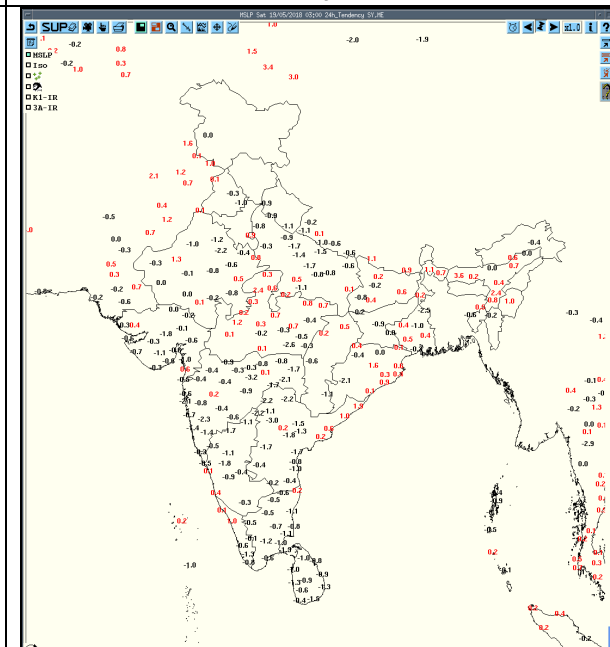
Tendency Tmax



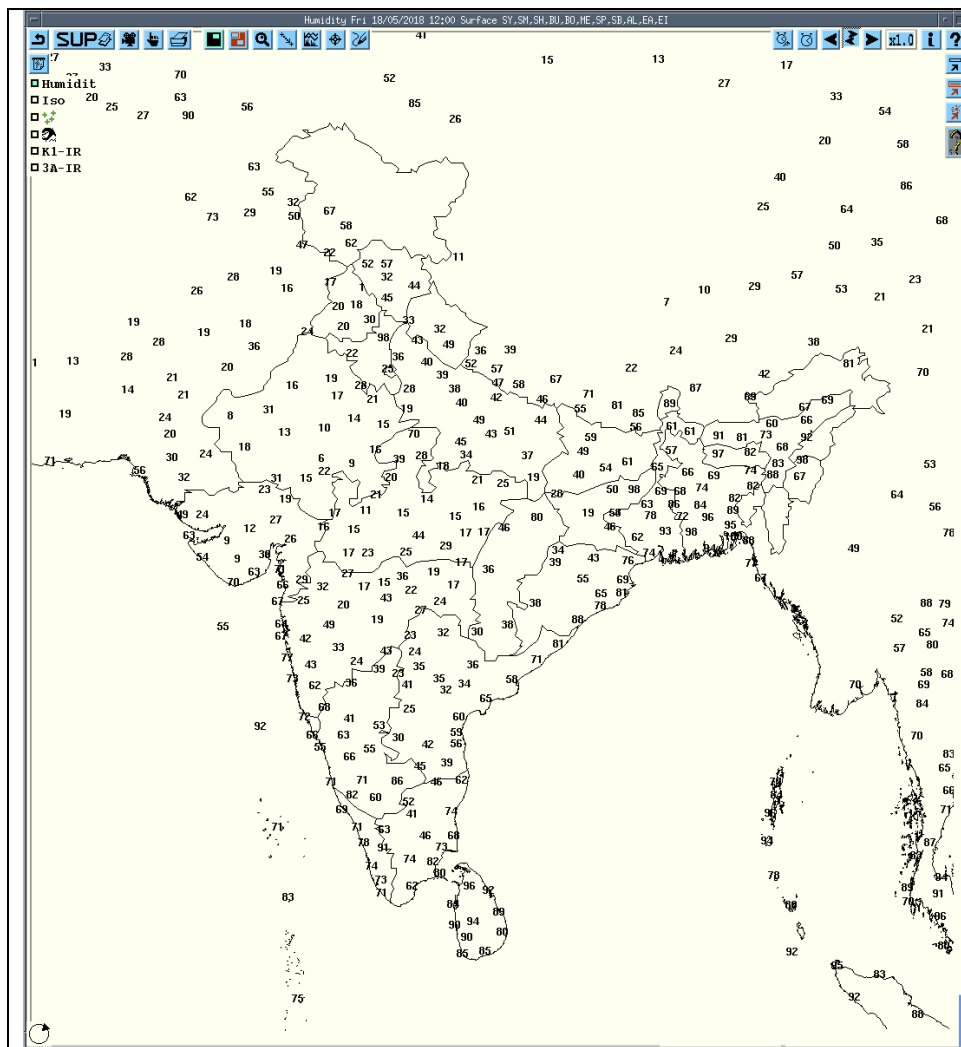
MSLP



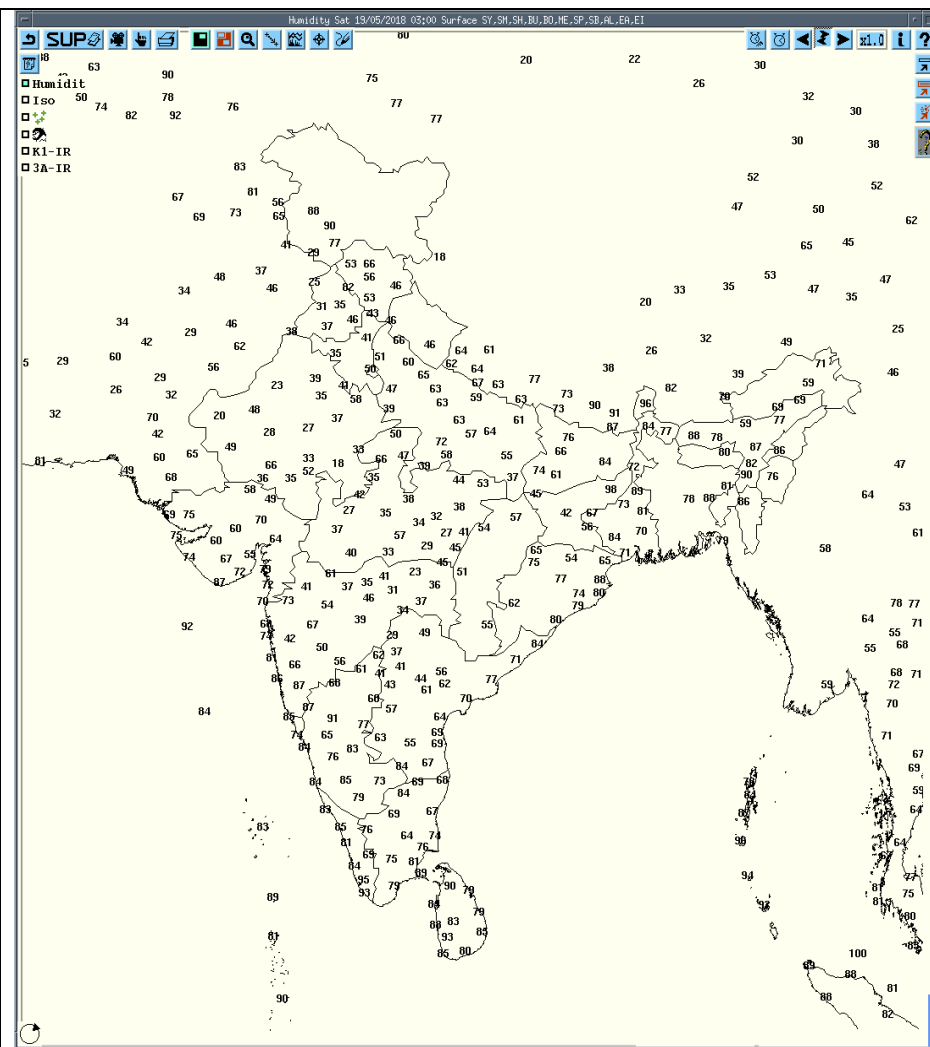
Departure MSLP



Tendency MSLP



RH at 1200UTC yesterday



RH at 0300UTC 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	Associate d severe weather if any	Districts affected
Visakhapatnam	18/05/18	1500UTC	CB cell with reflectivity 40 dBZ and height 3kms.	102kms(SSE) and movement is untraceable.	-	-	Bay of Bengal.
		1800UTC	Region of cb cells with max reflectivity 48dbz and height 4kms.	107kms(SOUTHERLY) Movement is untraceable.	Dissipating.	-	Bay of Bengal.
Visakhapatnam	19/05/18	0000UTC	Cb cell in the Bay of Bengal with reflectivity 57dbz and height 14kms.	204kms(ENE) at 23:41UTC And moving SW ly.	Forming multiple Cb cells along the reported Cb cell.	-	Bay of Bengal.
		0300UTC	CB CELL with reflectivity 56 dBZ and height 14kms.	162kms(ENE) at 00:31 UTC and moving SW ly	Likely to be intensified and started dissipated from 02:41UTC in the bay of Bengal.	-	Bay of Bengal.
Agartala	19/05/18	180300Z to 190300Z	Squall line formed at 180300Z; 12kms,42dBZ	50 to 150kms; 25kmph; E'LY/NE'LY	Dissipated over hills of Mizoram at 18/0850Z	+TSRA	All districts. of Tripura.
Kolkata	18/05/18	Continue 2201-1201 UTC	Multi cell system with maximum reflectivity of 61.5 dBz at 0721 UTC and maximum height of 17.55 Km at 0721 UTC	NNW (232.2km) Moving first in SE-ward and then Eastward direction.	Multi Single cell coming from NNW at 2201 UTC at a distance 232.2 Km from radar. Matured, later transformed into a multi cell system and dissipate at 1201 UTC in E at a Distance of 245 km from Radar.	Thunderstorm /Rain	N/A
		082 –1911	Isolated single cells turned to single cell with maximum reflectivity of 64.0 dBz at 0941 UTC and maximum height more than 18 Km at 1001 UTC	N (42.6 km) Moving first in ESE-ward and then S-ward direction.	1. Isolated single cells developed in N at 0821 UTC at a distance 42.6 Km from radar. Merged to a single cell Matured, and dissipate at 1351 UTC in SE at a Distance of 180 km from Radar.	Thunderstorm /Rain/Hail	N/A
		0821 – 1911 UTC	Isolated single cells turned to single cell with maximum reflectivity of 65.5 dBz at 1241 UTC and maximum height more than 18 km from 1101 to 1311 UTC	W to NW Moving ESE thereafter SE wards direction.	2. A number of isolated cells developed between W to NW from 1001 merged to a single cell developed line squall at 1221 UTC dissipate at 1911 UTC in S at a Distance of 162 km from Radar.	Thunderstorm /Rain/Hail	N/A
	19/05/18	1921-2351	NIL	NIL	NOSIG ECHO	NIL	NIL
		0001-0301	NIL	NIL	NOSIG ECHO	NIL	NIL

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
Patna	19/05/18	180300-182240	NIL	N/A	N/A	N/A	N/A
		182240-190200	Multiple Cells Lat-27.107N Long-84.856E, Maximum Reflectivity: 45.0dBZ Echo Top: 11.5 KM	Range: 171 KM from DWR Patna in N direction Movement: towards ESE	Warning issued	Thunder Storm, Rain	Champaran, Sheohar, Sitamarhi
		190200-190300	NIL	N/A	N/A	N/A	N/A
Jaipur	19/05/18	1112 - 1512 UTC of 18/05/18	Multiple cell with average height of 4.5 km & maximum reflectivity 48.0 dBZ	Multiple cell develop from 11:12 UTC of 18/05/2018 towards NW,NE,N of Jaipur and moved to NE,E Wards at speed 05-08 km/hr	Multiple cell develop from 11:12 UTC on 18/05/2018 towards NW,NE,N of Jaipur and reaches maximum reflectivity during 11:42 to 13:22 UTC and die 15:12 UTC of 18/05/2018	Dust storm/ Thunderstorm/ Light rain at Isolated places	Alwar, Sikar and Jaipur Districts.
Lucknow	18/05/2018	0300- 1202	NIL	NIL	NIL	NIL	NIL
		181202-1512	A single cell formed over 300km West of Southwest from station with height 7km of 38dbz echo top and maximum reflectivity 50.5 dBZ.	Single cell moving w.r.t. radar station and direction of movement East with speed 45km/h	Cell dissipated at 1512 UTC from station 150KM distance (SW direction)	TS/RA/DS	Jalaun, Hamirpur Kanpur(D)
	19/05/2018	181512-190300	NIL	NIL	NIL	NIL	NIL
Patiala	19/05/18	18/05/2018 0300 - 0600	Multiple Cells dBZ = 44.0 Ht. 08 TO 09 kms	SW,SE Sectors. MOVEMENT... ESE -wards.	_____	RA/DZ	Sirsa ,Patran, Sangrur, Sonipat, Rohtak
		18/05/2018 0600 -0900	Multiple Cells dBZ = 40.0 Ht. 09 TO 10 kms	SW Sectors. MOVEMENT--E -wards.	_____	RA/DZ	Bathinda, Mansa, Sangrur, TalwandiSabho, Patran, Kaithal And Its Adjoining Areas.
		18/05/2018 0900- 1200	Multiple Cells 59.0 dBZ Ht. 10 kms	SE Sectors. MOVEMENT... E-wards.	_____	TS/RA	Musoorie, DDN And Its Adjoining Areas.
		18/05/2018 1200 - 1500	Multiple Cells 50.5 dBZ Ht. 08 kms	SE Sectors. MOVEMENT... E-wards.	_____	TS/RA	DDN, Rishikesh And Its Adjoining Areas.
		18/1500-19/0252	NO SIGNIFICANT ECHO	-----	_____		----- -----

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)
Srinagar	Northwest India	Jammu & Kashmir	Thunderstorm	18-05-18	0745 1440	0750 1500
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	18-05-18	1545	1830
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	18-05-18	1545 1745	1645 1800
Kukernag	Northwest India	Jammu & Kashmir	Thunderstorm	18-05-18	1745	1945
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	18-05-18	1650 1820	1735 2210
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	18/19-05-18	1825 1955	1915 0300
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	19-05-18	0100	0200
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	18-05-18	1930	2030
Gulmarg	Northwest India	Jammu & Kashmir	Thunderstorm	18-05-18	1330	1630
Gulmarg	Northwest India	Jammu & Kashmir	Hailstorm(Diameter-xx)	18-05-18	1310 1520	1320 1530
Tehri	Northwest India	Uttarakhand	Thunderstorm	18-05-18	1500	1830
Mukteshwar	Northwest India		Thunderstorm	18-05-18	1350 1840	1430 1910
Gwalior	Central India	Madhya Pradesh	Thunderstorm	18-05-18	1735	1750
Ambikapur	Central India	Chhattisgarh	Thunderstorm	18-05-18	1540	1610
Pendra Road	Central India	Chhattisgarh	Thunderstorm	18-05-18	1355	1500
Itanagar	Northeast India	Arunachal Pradesh	Thunderstorm	18-05-18	18/1132	18/1145
Agartala	Northeast India	Tripura	Thunderstorm	18-05-18	18/0330	18/0520
Alipore	East India	Gangetic west Bengal	Thunderstorm	18-05-18	1525	1702
Alipore	East India	Gangetic west Bengal	Squall (Dir-E, Max. Speed-56kmph)	18-05-18	1530	1531
Alipore	East India	Gangetic west Bengal	Squall (Dir-N, Max. Speed-92kmph)	18-05-18	1600	1601
DumDum	East India	Gangetic west Bengal	Thunderstorm	18-05-18	1500 1935	1700 2025
Diamond Harbour	East India	Gangetic west Bengal	Thunderstorm	18-05-18	1845	2215
Haldia	East India	Gangetic west Bengal	Thunderstorm	18-05-18	1850	2245
Digha	East India	Gangetic west Bengal	Thunderstorm	18-05-18	1955	2300
Bankura	East India	Gangetic west Bengal	Thunderstorm	18-05-18	1718	1810
Jamshedpur	East India	Jharkhand	Thunderstorm	18-05-18	1640	1700
Balasore	East India	Odisha	Thunderstorm	18-05-18	2130	2300
Jharsuguda	East India	Odisha	Thunderstorm	18-05-18	1815	2100
Chandbali	East India	Odisha	Thunderstorm	19-05-18	0240	0400
Paradeep	East India	Odisha	Thunderstorm	19-05-18	0045	0500
Port Blair	A and N Islands	A and N Islands	Thunderstorm	18-05-18	0900 1437	1245 1540

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)
Kalaburgi	South India	North Interior Karnataka	Thunderstorm	18-05-18	1640 2030	1830 2200
Bengaluru City	South India	Coastal Karnataka	Thunderstorm	18-05-18	1650	1715
Bengaluru KIAL AP	South India	Coastal Karnataka	Thunderstorm	18-05-18	1700	2000
AMS HAL Bengaluru	South India	Coastal Karnataka	Thunderstorm	18-05-18	1645	1800
Yelahanka IAF	South India	Coastal Karnataka	Thunderstorm	18-05-18	1615	2030
Kanyakumari	South India	South interior Tamil Nadu	Thunderstorm	18-05-18	0030	0115
Thiruvananthapuram AP	South India	Kerala	Thunderstorm	18-05-18	0140 0430	0400 0530
Thiruvananthapuram C	South India	Kerala	Thunderstorm	18-05-18	0225	0245

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

Past24hourHEMandIMRainfall(upto03UTCof today)

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

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

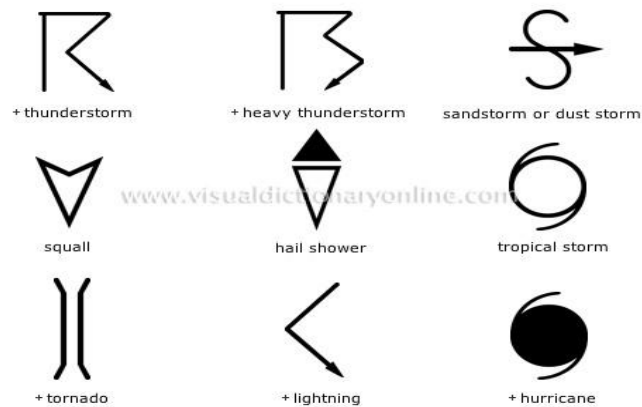
ForRadarimagesofthepast24hoursincludingmosaicofimages:

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
⌘	dust or sand storm
≡	fog
⋈	drizzle
•	rain
✱	snow
▽	showers
△	hail
⌘	thunderstorm
Weather Symbols	