India Meteorological Department

FDP STORM Bulletin No. 63 (08-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

♦ The Western Disturbance as an upper air cyclonic circulation at 3.1 km above mean sea level over Jammu & Kashmir & neighbourhood persists and the trough aloft with its axis at 5.8 km above mean sea level now runs roughly along Long 74°E to the north of Lat 30°N.

♦ The cyclonic circulation over Haryana & neighbourhood extending upto 0.9 km above mean sea level persists.

♦ The trough at 1.5 km above mean level from Punjab to Madhya Maharashtra across West Uttar Pradesh & Madhya Pradesh, now seen at 0.9km above mean level from East Uttar Pradesh to Vidarbha across East Madhya Pradesh.

♦ A cyclonic circulation lies over south Rajasthan & adjoining north Gujarat extending upto 1.5 km above mean sea level.

♦ The cyclonic circulation over Sub-Himalayan West Bengal & Sikkim and neighbourhood, now lies over SubHimalayan West Bengal & adjoining Bihar extending upto 0.9 km above mean sea level.

♦ The cyclonic circulation over east Assam & neighbourhood extending upto 0.9 km above mean sea level persists.

♦ The north-south trough at 1.5 km above mean sea level roughly along Long. 88°E to the north of Lat.24°N persists.

♦ The north-south trough from North Interior Karnataka to south interior Tamilnadu across South Interior Karnataka extending upto 0.9 km above mean sea level persists.

♦ The cyclonic circulation over southeast Arabian Sea, now lies over central parts of south Arabian sea extending upto 3.1 km above mean sea level.

♦ A cyclonic circulation lies over south Tamilnadu & neighbourhood between 4.5 & 5.8 km above mean sea level.

♦ A cyclonic circulation lies off Tamilnadu coast between 2.1 & 3.1 km above mean sea level.

♦ A cyclonic circulation lies over Lakshadweep area at 1.5 km above mean sea level.

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 moderate to intense convection seen over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, North Rajasthan and West Tibet in association with Western Disturbance over the area.

Scattered multi-layered clouds with embedded intense to very intense convection seen over Meghalaya, Nagaland, Manipur, Mizoram and Tripura in association with another Western Disturbance over the area.

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

Clouds descriptions within India:

Scattered low/medium clouds with embedded intense to very intense convection seen over Meghalaya, adjoining Bangladesh, Manipur, Mizoram, (minimum CTT minus 78 deg C), Tamilnadu (minimum CTT minus 62deg C), off Kerala coast (minimum CTT minus 82 deg C). Scattered low/medium clouds with embedded moderate to intense convection seen over North Himachal Pradesh, East Jammu & Kashmir, Uttarakhand and Punjab. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over rest Jammu & Kashmir, North Rajasthan, West Uttar Pradesh and Haryana. Isolated low/medium clouds with embedded weak to moderate convection seen over Northeast Bihar, Sub-Himalayan west Bengal, Sikkim, south Gangetic West Bengal, Assam, Arunachal Pradesh, Nagaland, Tripura, Odisha, Chhattisgarh, Jharkhand, North Kerala, Karnataka, Andhra Pradesh, and rest Tamilnadu. Isolated low/medium clouds with embedded weak convection seen over Rajasthan (minimum CTT minus 21deg C). Isolated low/medium clouds seen over Madhya Pradesh, Vidarbha, South Konkan & Goa.

Arabian Sea:-

Scattered low/medium clouds with embedded moderate to intense convection seen over South Arabian Sea south of lat 11.0N off south Karnataka Coast, North Kerala Coast, North of Lakshadweep Islands.

Bay of Bengal & Andaman Sea:
Scattered low/medium clouds with embedded intense to very intense convective seen over Southwest Bay, 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 Extreme N Orissa Karnataka Kerala Tamilnadu. Weak to Moderate convection observed over Marathawada Vidarbha South Chhattisgarh Orissa Telangana Andhra Pradesh.

OLR: - .
Up-to 200 wm-2 observed over J&K Himachal Pradesh North Uttarakhand Manipur Mizoram S Kerala
Up-to 230 wm-2 observed over Punjab Tripura Nagaland Coastal Karnataka.

Synoptic Features:
Westerly Trough & Jet Stream: Trough in Westerly's roughly along Longitude 72.0E & North of Latitude 28.0N.
Jet observed over south Rajasthan (65kts).

Dynamic Features:
Up to 40-60 knots **Wind Shear** is observed over North India, Central India & North-East India and 05-15 knots over south peninsular India.
No tendency in the shear was observed.
Positive Vorticity (850 hPa) is observed over Punjab and adjoining region. NW Gujarat N Madhya Pradesh Gangetic West Bengal Bihar sub Himalayan West Bengal Assam Nagaland Telangana Chhattisgarh coastal Andhra Pradesh extreme S Tamilnadu

Positive Low Level Convergence is observed over Bihar Sub Himalayan west Bengal Sikkim Karnataka Telangana N Tamilnadu

Precipitation:

IMR:-

Rainfall up to 90mm was observed over South East Assam and central Meghalaya.
Rainfall up to 70 mm observed over Manipur Mizoram Meghalaya Kerala Tamilnadu coastal Karnataka NW Parts of North Interior Karnataka and
Rainfall up to 50 mm observed over Jammu and Kashmir Himachal Pradesh Gangetic West Bengal (.)
Rainfall up to 20 mm observed over Rajasthan Haryana Uttarakhand S Nagaland.
Rainfall up to 10 mm was observed over west UP.

HEM:-

Rainfall up to 200mm was observed at isolated places over Jammu and Kashmir Himachal Pradesh Uttarakhand Meghalaya Tripura and Mizoram
Rainfall up to 130mm was observed at isolated places over Tamilnadu Kerala and Karnataka Gangetic west Bengal and Andaman islands.
Rainfall up to 14mm was observed at isolated places over Rajasthan Punjab Haryana Sikkim Arunachal Pradesh.

DWR and RAPID Observations:

Multiple strong echoes (dBZ >55 and height >15km) are seen on DWR Kolkata domain at around 1540IST. Moderate isolated/multiple echoes are also seen on DWR Chennai, Agartala, Patiala, Srinagar, Visakhapatnam and Thiruvananthapuram DWR domains at around 1540 IST.

RAPID RGB Satellite imagery at 1430 IST indicated significant convection over Jammu & Kashmir, Himachal Pradesh, North Uttarakhand, Manipur, Mizoram, North Gangetic West Bengal adjoining extreme East Jharkhand, Western parts of Odisha, Tamilnadu, Kerala, South Interior Karnataka 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 poor category for next 2 days in Delhi.

Delhi – SAFAR analysis & Forecast	08.05.2018	09.05.2018
PM10 (micro-g/m^3)	282	240
PM2.5 (micro-g/m^3)	89	76

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:

12UTC of Day 3-4: 925 hPa weak CYCIR WB-Odisha region
00UTC of Day 2-3: 925 hPa weak CYCIR over NW India-adjoining Pakistan
00UTC of Day 0-1: 850 hPa weak CYCIR over coastal AP moving inland in Day1-2.
12UTC of Day 3-4: 850 hPa weak CYCIR over coastal AP.

Confluence & Wind Discontinuity Regions:

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

Synoptic Systems:

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

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, NE NMMT, Gangetic WB, Jharkhand, East RJ, Odisha, Madhya Maharashtra, SI Karnataka,
Day1: Assam Meghalaya, Bihar, Odisha, East MP, Madhya Maharashtra, Chhattisgarh, Coastal Karnataka, NI Karnataka,
Day2: Gangetic WB, Odisha, East MP, Madhya Maharashtra, NI Karnataka,
Day3: Gangetic WB, Jharkhand, Madhya Maharashtra, Marathwada, Chhattisgarh, Telangana,
Day4: Jharkhand, East RJ, Odisha, East MP, Madhya Maharashtra, Chhattisgarh, Telangana, NI Karnataka

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Assam Meghalaya, Sub Himalayan WB, East UP, West UP, Uttarakhand,
Day1: Arunachal Pradesh, Assam Meghalaya, Bihar, Uttarakhand, Himachal Pradesh, Madhya Maharashtra,
Day2: Arunachal Pradesh, Assam Meghalaya, Gangetic WB, Uttarakhand,
Day3: Gangetic WB, Jharkhand, Himachal Pradesh, Odisha, Coastal AP, TN Puducherry,
Day4: Assam Meghalaya, Jharkhand, Himachal Pradesh, Odisha, TN Puducherry,

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Coastal AP, Rayalaseema, , TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, West UP, Uttarakhand, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, Rayalaseema, , TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,
Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Rayalaseema, , 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, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, , 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, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, Chhattisgarh,

Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, Gujarat Region, Saurashtra Kutch, Konkan Goa, Coastal AP, Telangana,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, , NI Karnataka, 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, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, West RJ, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Odisha, Konkan Goa, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, , TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

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

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

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar,

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

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Odisha, Rayalaseema, , SI Karnataka,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Odisha, Andaman Nicobar, SI Karnataka.

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a cyclonic circulation over Haryana and adjoining areas in lower troposphere at 850 hPa level. The forecast shows this circulation will become less marked in next 48 hours.. The analysis indicates a Trough from East Uttar Pradesh to Vidarbha across East Madhya Pradesh. The forecast shows the trough will persist till day2 with slight south-eastward shift. A cyclonic circulation is seen in the analysis over SHWB and adjoining Bihar. The forecasts show that the cyclonic circulation will persist till day2 with slight eastward movement. 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 Tamil Nadu across south Interior Karnataka is seen at 925 hPa which persists for next 2 days. A cyclonic circulation is seen in the analysis over North Pakistan adjoining northwest Rajasthan and Punjab region. The forecast shows it will become less marked on day2.

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 Trough, around the cyclonic circulations, along the 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 and West Uttar Pradesh on day 1; parts of Bihar, GWB, Jharkhand, SHWB, Sikkim and adjoining areas 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): In day 1 is seen over Gangetic Plains covering the areas from Rajasthan, Punjab, Haryana, Delhi, Uttarakhand, Uttar Pradesh, extending up to Bihar, Gangetic West Bengal, SHWB, Orissa, Jharkhand; coastal areas of Gujarat, Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Telangana, coastal Andhra Pradesh, Assam, Tripura and adjoining areas, along east and west coast of India over coastal; In day 2, It remains over the same region along east and west coast but disappears over Himachal Pradesh, Uttarakhand and adjoining west Uttar Pradesh. On day 2 and 3. It again appears over Punjab and Haryana and adjoining areas on day 2. 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 and adjoining areas.

Lifted Index (< -2): Similar to T-storm Index in day 1 and 2 it lies over northwest India, J&K, Punjab, Haryana, Delhi, Rajasthan, West Uttar Pradesh, Himachal Pradesh, Uttarakhand and Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana but in day 3 it disappears over northwest India and coverage over coastal belts also decreases. Significant zone with maximum negative value is found over GWB, Bihar, SHWB, Sikkim 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, NE states and along foothills of Himalaya. During day 1 and 2; It is also seen over some parts of Karnataka, Andhra Pradesh, Tamil Nadu and adjoining areas on day 1 and 2; 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 3. And disappears over Northwest India on day 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. The maximum value of the index is seen over parts of SHWB, GWB, Jharkhand, Bihar and adjoining areas on all 3 days

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 and 2; over parts of East Uttar Pradesh and adjoining areas from day 2 onwards.

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 Marathawada, East Madhya Pradesh and adjoining North Chhattisgarh during next 3 days; the maximum value of the index is seen over Gujarat and South West Rajasthan..

5. Rainfall Activity:

40-70 mm Rainfall: over parts of Uttarakhand, Arunachal Pradesh and adjoining areas on day 1; Sikkim and adjoining areas on day 1; over Parts of Bihar on day 2; over parts of Arunachal Pradesh and adjoining areas on day 3.

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

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, SHWB & Sikkim and NE states, Bihar, Jharkhand, GWB, Orissa, Chhattisgarh, parts of Kerala, Interior Karnataka, Konkan & Goa, south Tamil Nadu, Telangana, Rayalaseema, and Andhra Pradesh during next 3 days; over most of the parts of Rajasthan, Haryana, Uttar Pradesh, Punjab on day 1 and 2; over parts of North West Madhya Pradesh and Gujarat on day 1; over parts of South Madhya Maharashtra and Marathawada on day 2 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, Punjab, Haryana, Delhi, North West Rajasthan, West Uttar Pradesh, Bihar, Jharkhand, SHWB, Orissa, Kerala, Karnataka, Tamil Nadu, Sikkim and NE states. On day 2 over parts of Himachal Pradesh, Uttarakhand, Bihar, Jharkhand, GWB, SHWB, Orissa, Sikkim and NE States; on day 3 mostly over parts of Jharkhand, GWB, Sikkim and NE states.

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, coastal Maharashtra, Madhya Maharashtra, Marathwada, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB and NE states during next 3 days; over most parts of the country except of Bihar, Jharkhand, Punjab, J&K, North Haryana, Himachal Pradesh, Vidharbha, East Rajasthan and Gujarat on day 1.

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 and Interior Karnataka, Telangana, Tamil Nadu, Andhra, South Orissa and Kerala.

CAPE (> 1500): Greater than threshold value over parts of Gujarat, East Uttar Pradesh, 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 J&K, Punjab; Maximum value of the index is seen over the parts of Orissa, GWB, SHWB, Bihar, Jharkhand, Andhra Pradesh, coastal Tamil Nadu, Kerala, Karnataka and coastal Gujarat during next 3 days.

CIN (50-150): It covers nearly areas over the sub-divisions along east and west coasts similar to CAPE. Inland extension is also nearly similar to CAPE. Only, it has significant larger values over parts of Northwest India including west Rajasthan, Punjab and adjoining areas, Gujarat; some parts along foothills of Himalayas over Uttarakhand, Haryana and Uttar Pradesh. .

3. Rainfall and thunderstorm activity:

70-130 mm Rainfall: over parts of Assam, Meghalaya, Tripura and adjoining areas on day 1; over parts of Assam, Arunachal Pradesh and adjoining areas on day 3.

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

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

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

Summary and Conclusions:

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CAPE, CINE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over the entire Indian region excluding central India including Rajasthan, Madhya Pradesh and Maharashtra on day 1, with the probability increasing over North and East India on day 2. SWEAT index, which also accounts for the wind shear between 850 and 500 hPa levels, indicates highest probability of thunderstorm occurrence over east India on day 1 and 2. The 850-200 hPa wind shear is uniformly high over North and central India, on day 1, and decreasing over west India on day 2.

o Synoptic analysis indicates that the cyclonic circulation over Haryana & neighbourhood in the lower levels persists. There is also a trough at low levels from East Uttar Pradesh to Vidarbha across East Madhya Pradesh. There is also a cyclonic circulation lies over south Rajasthan & adjoining north Gujarat in the lower levels. IMD GFS deterministic model additionally indicates that there is moisture feeding into the cyclonic circulations over Rajasthan and Haryana from the Arabian sea, on the periphery of the anticyclone. Radiosonde data additionally indicates that there is high shear in the lower levels over North India. Associated thunderstorm activity is expected over northwest India on day 1. On day 2, the thunderstorm activity is expected to decrease over this region.

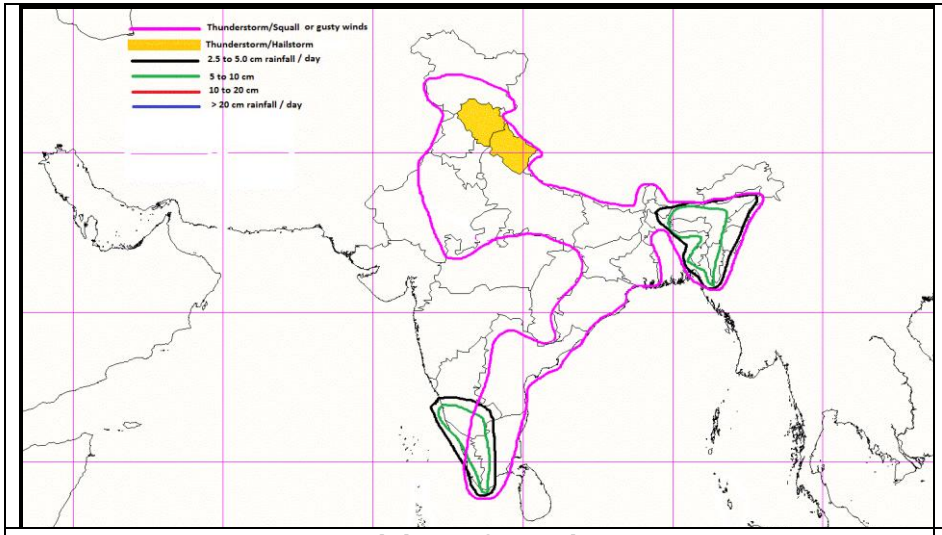
o Synoptic analysis also indicates that there is also a cyclonic circulation over Sub Himalayan West Bengal & adjoining Bihar in the lower levels. There is also a cyclonic circulation over east Assam & neighbourhood and a north south trough over Bengal region. The associated moisture convergence inland is likely to result in thunderstorm activity over the region on day 1 and 2.

o There are also three low to mid level cyclonic circulations over and around peninsular India (a) cyclonic circulation over south Arabian sea (b) cyclonic circulation lies off Tamilnadu coast (c) cyclonic circulation lies over south Tamilnadu & neighbourhood between 4.5 & 5.8 km above mean sea level. In association with these three circulations, rainfall and thunderstorm activity is likely to increase over south peninsular India on day 1 and 2.

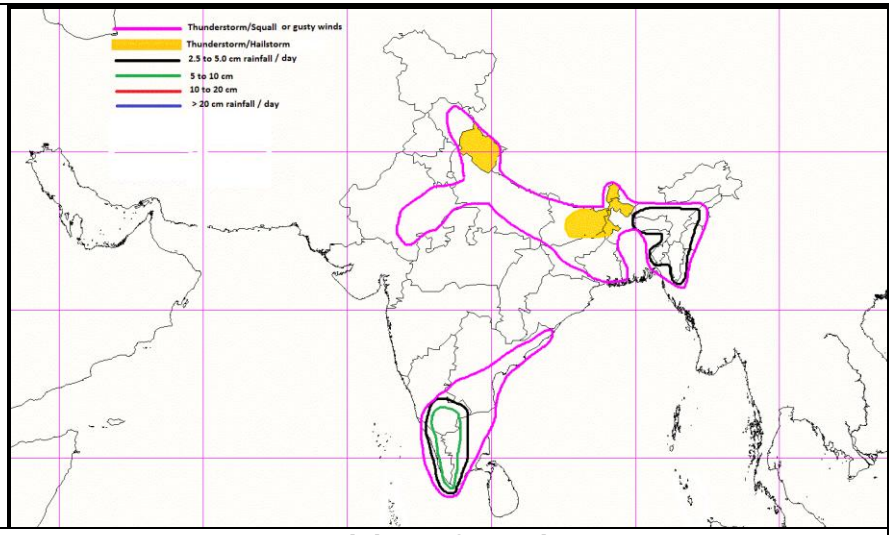
Day-1 & Day-2:

24 hour Advisory for IOP:	48 hour Advisory for IOP:
Significant Rainfall: Assam and Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Sub Himalayan West Bengal, Interior Tamil Nadu, Coastal Karnataka, South Interior Karnataka, Kerala **Thunderstorm with squall or gusty winds:** Tamil Nadu, Kerala, South Interior Karnataka, Rayalaseema, Telengana, Coastal Andhra Pradesh, Jammu and Kashmir, Punjab, Haryana, Uttar Pradesh West Bengal and Sikkim, Jharkhand, Bihar, Odisha Nagaland, Manipur, Mizoram, Tripura, Assam and Meghalaya **Thunderstorm with squall and hail** Himachal Pradesh, Uttarakhand **Thunderstorm and/or Duststorm with squall:** Rajasthan	**Significant Rainfall:** Assam and Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Interior Tamil Nadu, South Interior Karnataka, Kerala **Thunderstorm with squall or gusty winds**: Tamil Nadu, Kerala, South Interior Karnataka, Rayalaseema, Coastal Andhra Pradesh, Uttar Pradesh, Himachal Pradesh, East Rajasthan Gangetic West Bengal, Jharkhand, Bihar Nagaland, Manipur, Mizoram, Tripura, Assam and Meghalaya **Thunderstorm with squall and hail** Sub Himalayan West Bengal and Sikkim, Uttarakhand **Duststorm:** West Rajasthan

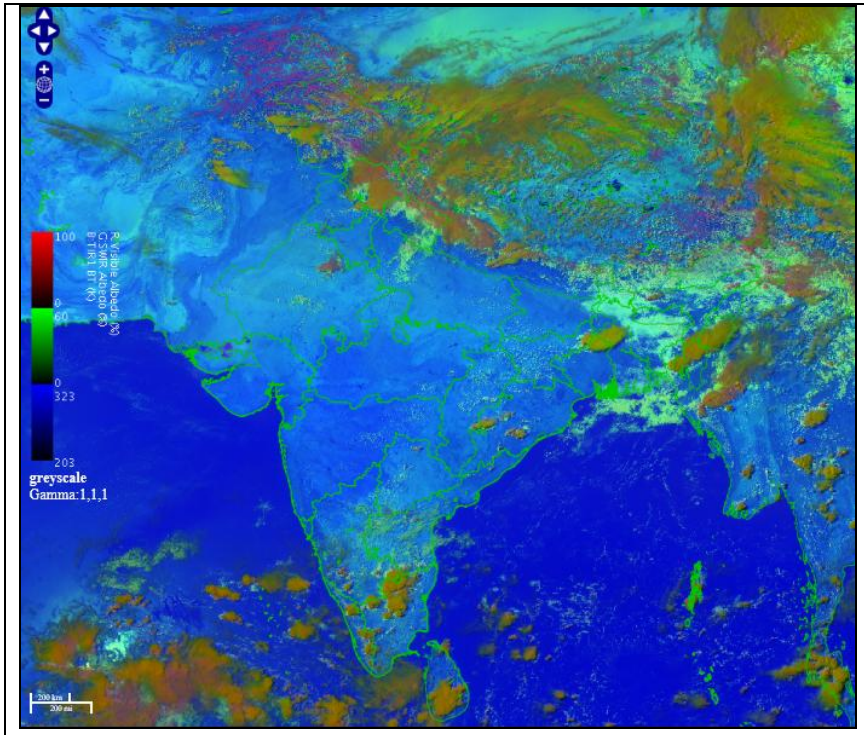
Graphical Presentation of Potential Areas for Severe Weather:



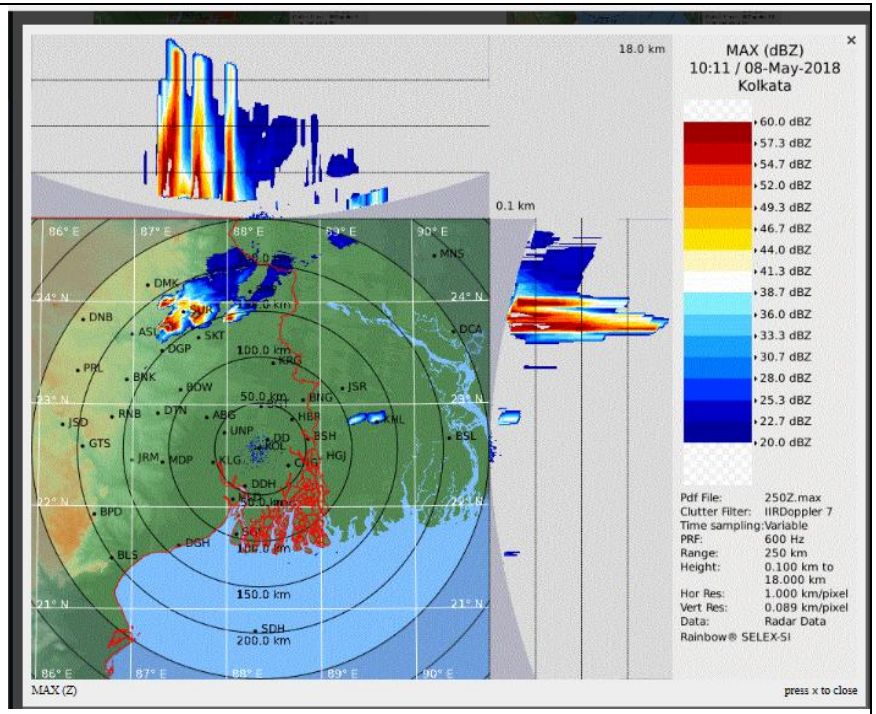
IOP Advisory for 24 hours



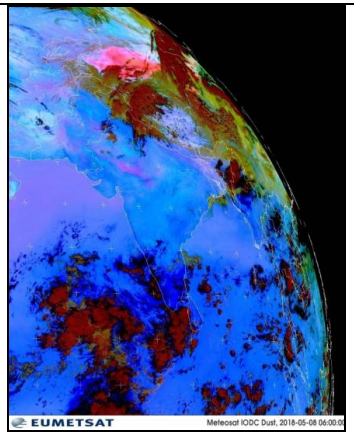
IOP Advisory for 48 hours

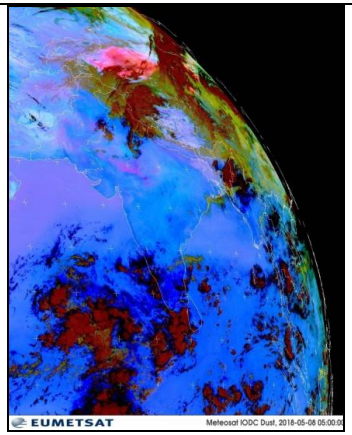


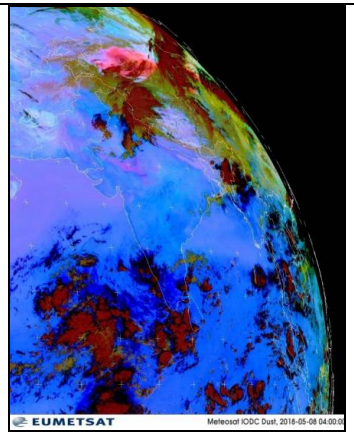
RAPID RGB Imagery at 1430 IST of the Day

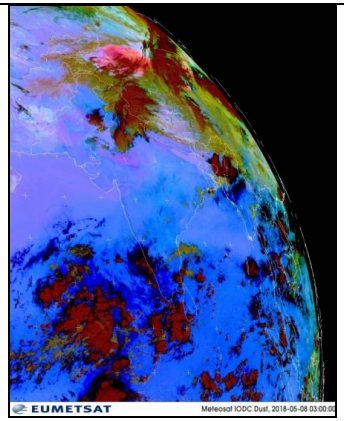


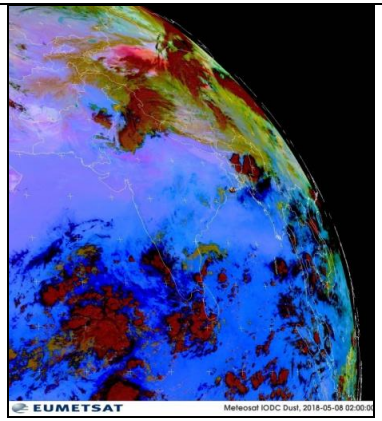
DWR Kolkata at 1541 IST of the Day

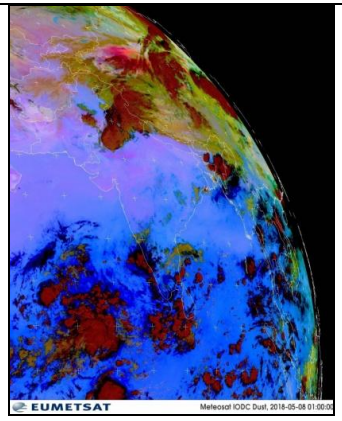




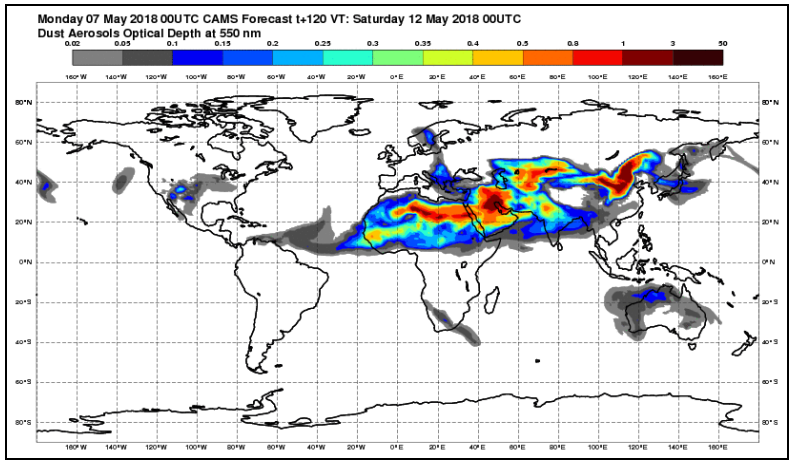




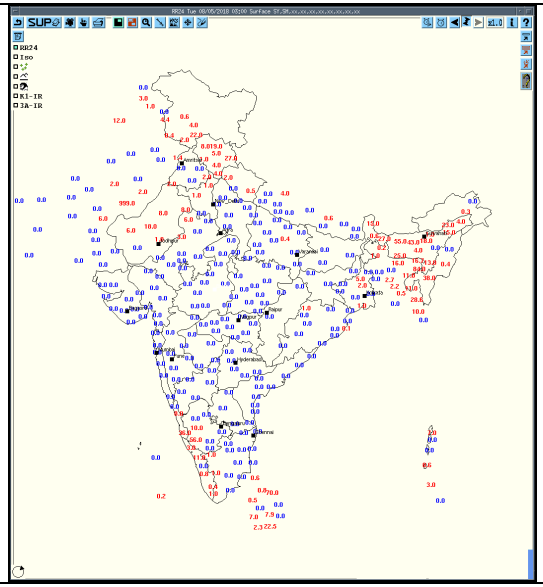




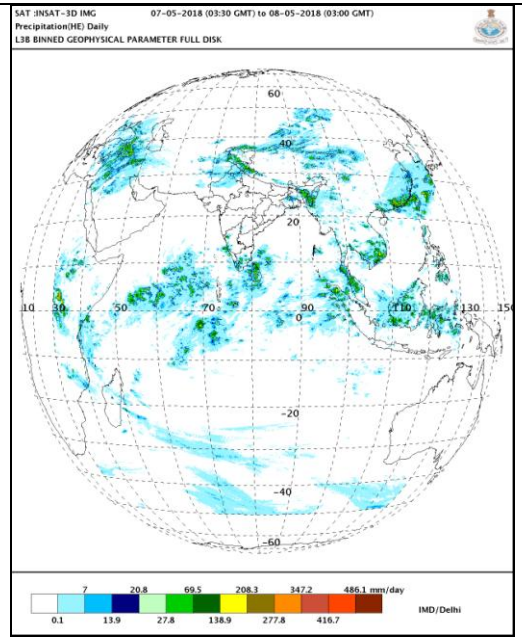
Observed Satellite Dust Images of today



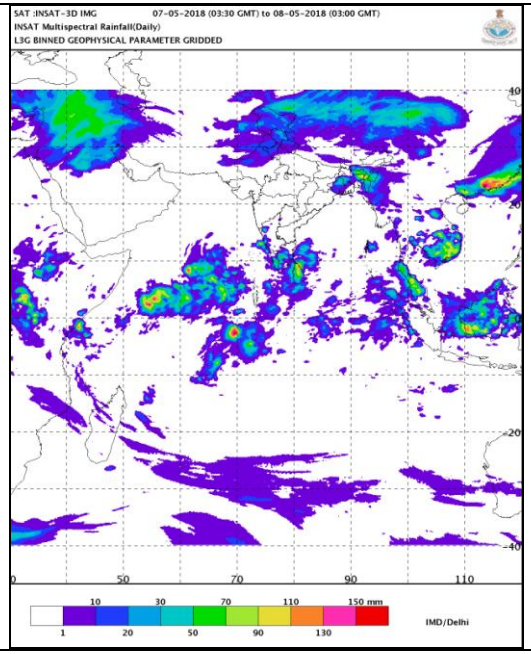
Dust Forecast



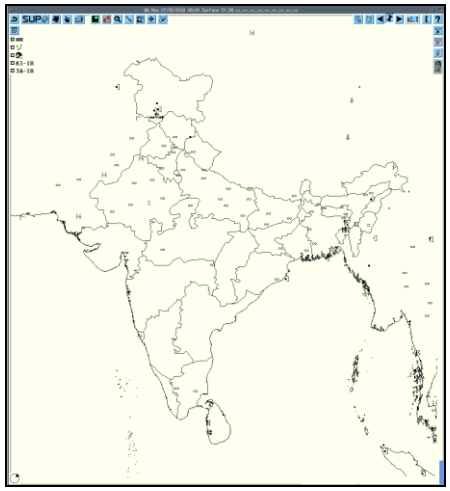
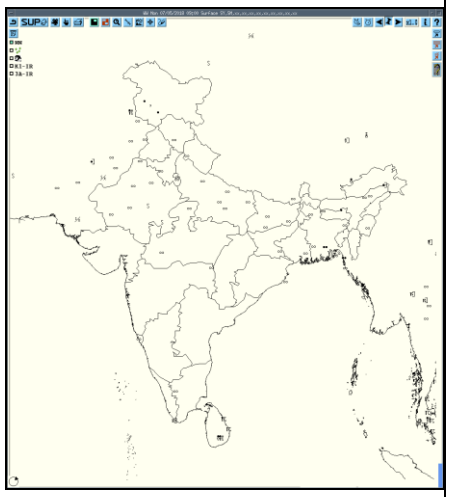
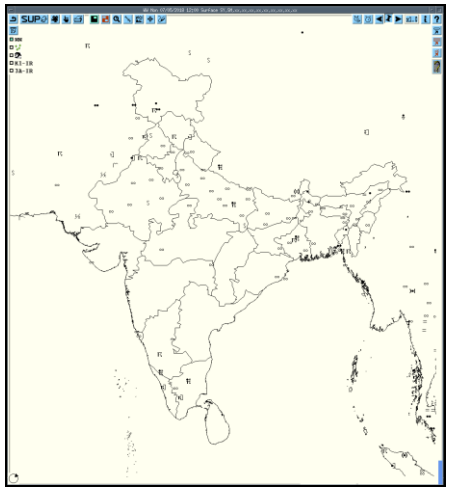
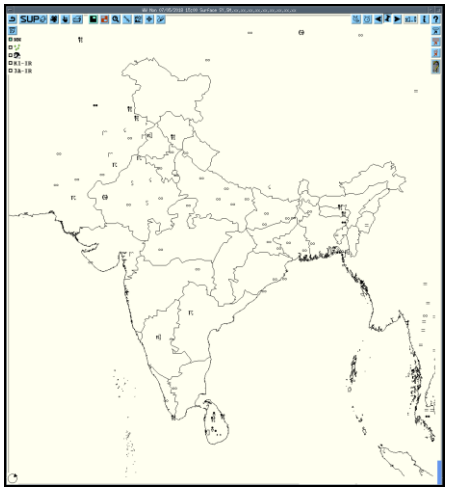
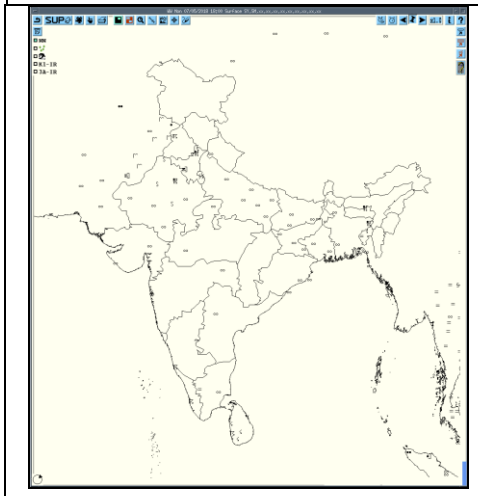
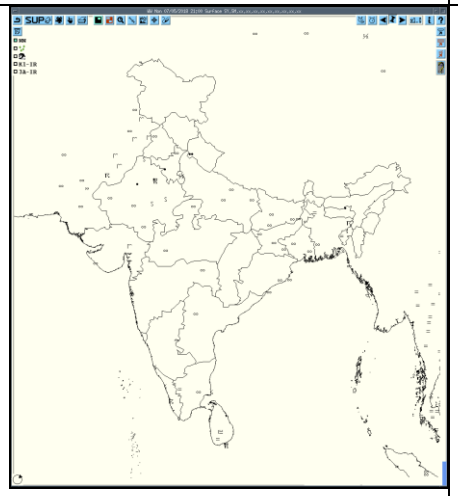
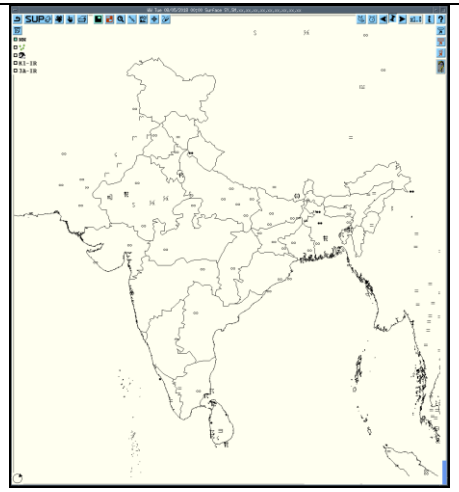
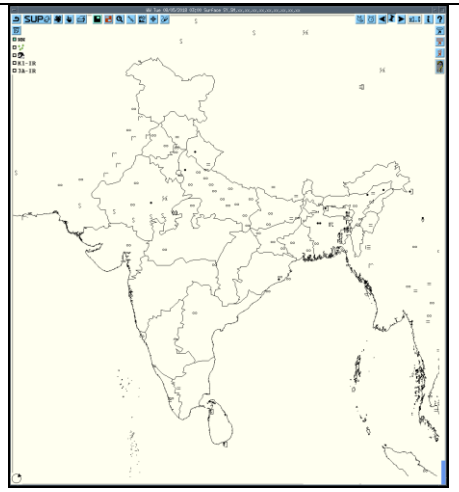
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



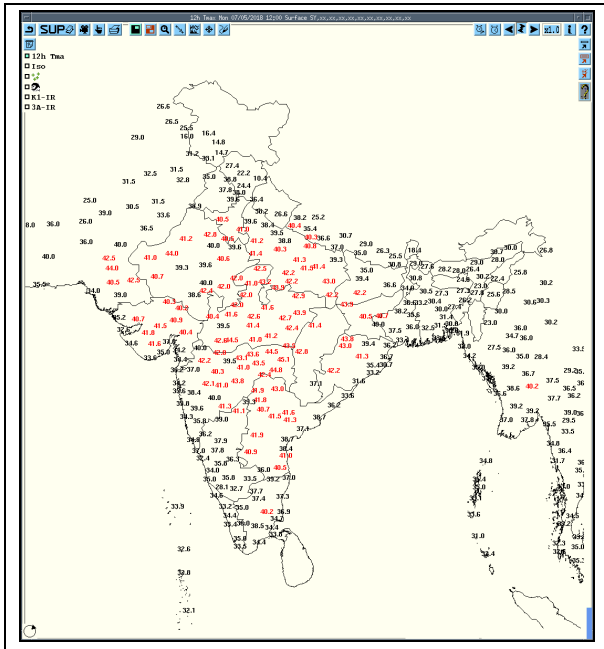
IMR



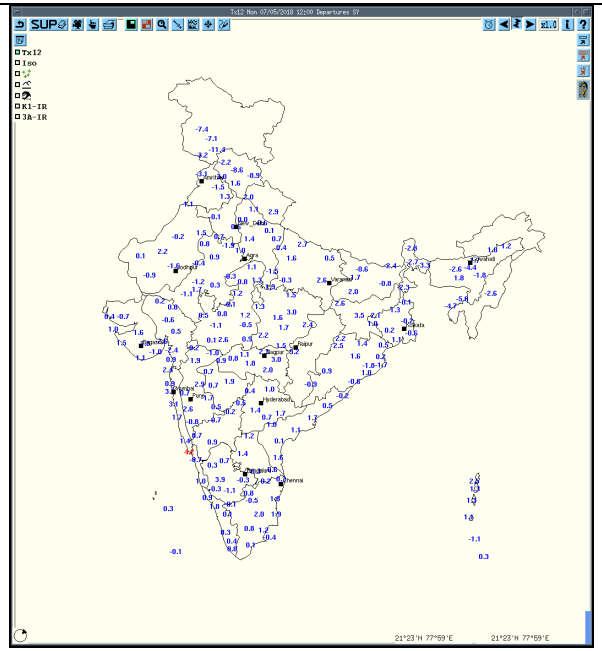
HEM

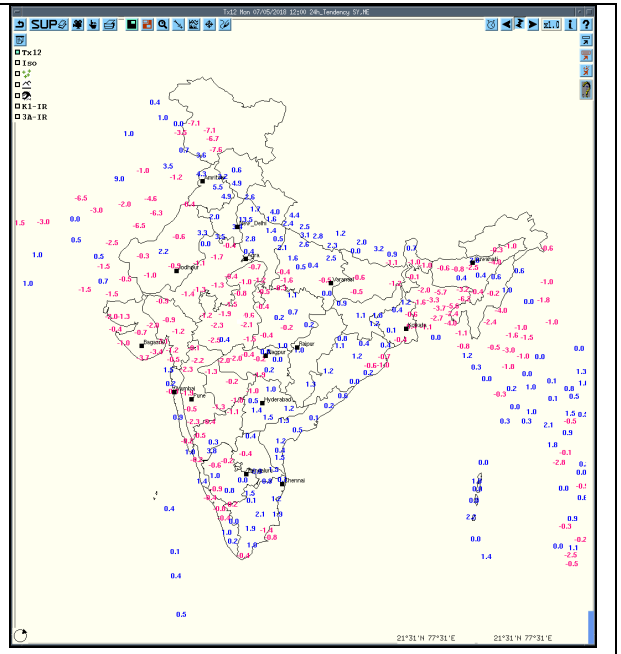
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



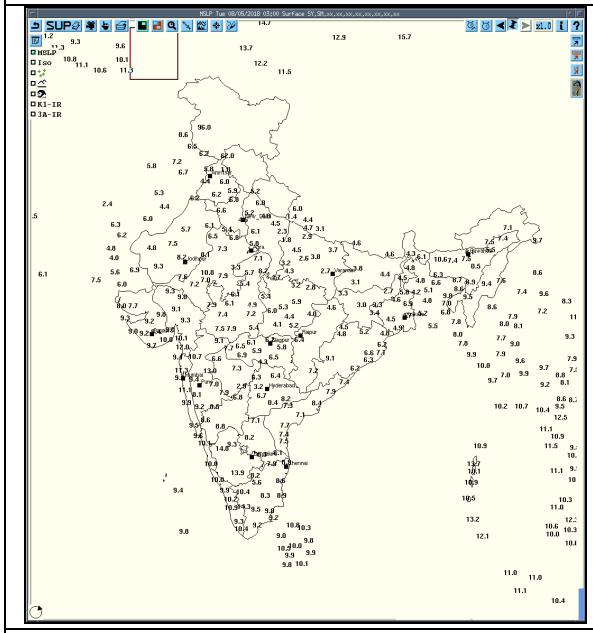
Tmax



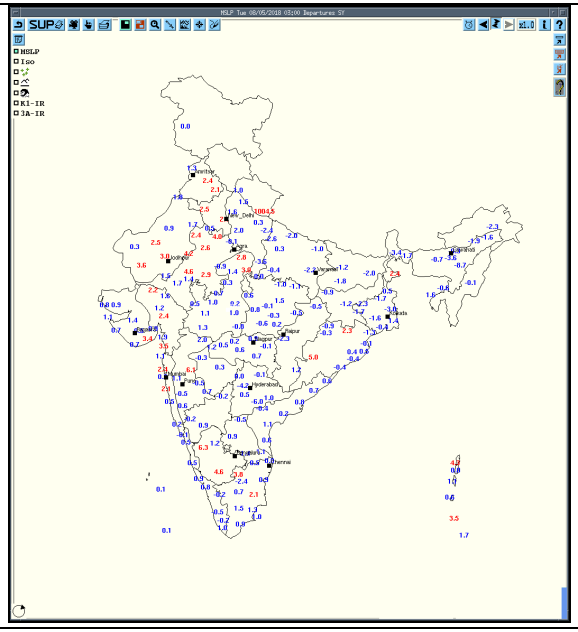
Departure Tmax



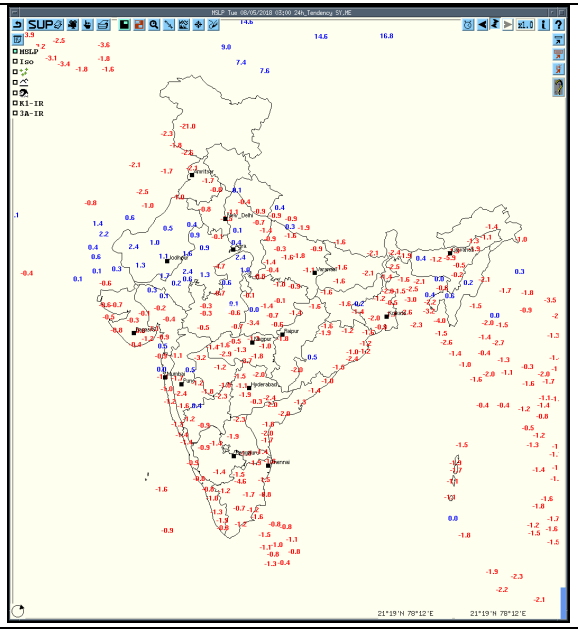
Tendency Tmax



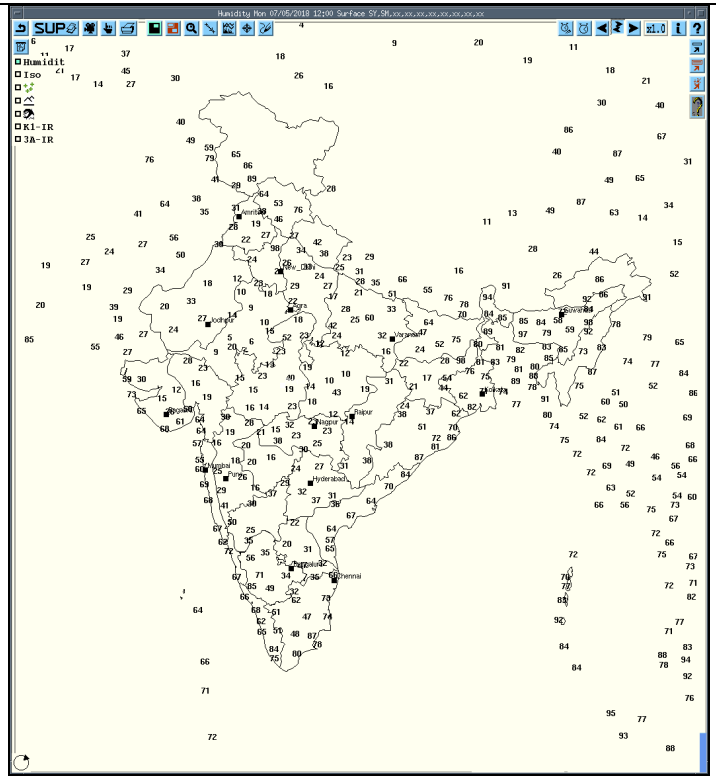
MSLP



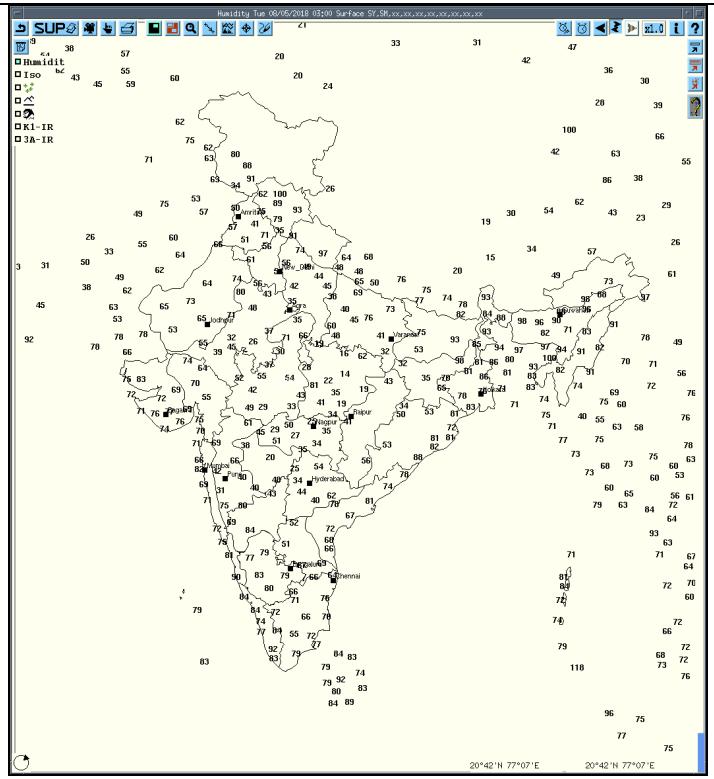
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

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	08-05-18	070300 - 070600	NO ECHO	-	-	-	----
		070600 - 070900	MULTIPLE CELLS DBZ 49.0 HT. 08-10 KM	NE SECTORS. MOVMENT TOWARDS E-WARDS.		---	UTTERKASHI, GANGOTRI, AND ITS ADJ AREA
		070900- 071200	MULTIPLE CELLS DBZ 48.0 HT. 09-12 KM	NW, NE, SW SECTORS. MOVMENT TOWARDS E-WARDS.		---	BHUNTHER, MANDI, AMRITSR, FAZILKA , FEROZPUR, ADAMPUR, FARIDKOT, RAMPUR
		071200 - 071500	MULTIPLE CELLS DBZ 46.5 HT. 09-10 KM	NW, NE, SW SECTORS. MOVMENT TOWARDS E-WARDS.		----	SUNDERNAGAR, HALWARA, KAPURTHALA, JALANDHAR, HALWARA, MUSSORIE
		071500 - 071800	MULTIPLE CELLS DBZ 50.0 HT. 09-11 KM	NW, NE, WSECTORS. MOVMENT TOWARDS E-WARDS.		----	BHIAWNI HISSAR, TOHANA, KAITHAL, PATIALA, AMBALA CHANDIGARH, BATHINDA, JIND, SHIMLA, SOLAN, ROOPNAGAR, NABHA, FATHEBAD
		071800 - 072100	MULTIPLE CELLS DBZ 49.5 HT. 09-11 KM	SW, NE SECTORS. MOVMENT TOWARDS NE- WARDS.		----	ELANABAD, TOHANA, BHIWANI PANIPAT, PATIALA, AMBALA, PEHOWA, NAHAN, CHANDIGARH, KALSI, MUSSORIE
		072100- 080000	MULTIPLE CELLS DBZ 48.5 HT. 9-10 KM	SW, E, SE SECTORS. MOVMENT TOWARDS NE WARDS.		---	BHIAWANI, HISSAR, ROHTAK, SONEPAT, PANIPAT, AMBALA, JIND, MUZFERNAGAR, MUSSORIE, DEHRADUN
		080000- 080252	MULTIPLE CELLS DBZ 34.5 HT. 7-8 KM	SE, E, SECTORS. MOVMENT TOWARDS E-WARDS.		---	PANIPAT, SHAMLI, SONEPAT, MUSSORIE, DEHRADUN, TISHKESH AND ADJ. AREAS.

DWR Station	Date	Time interval of	Organization of the cells (isolated single	Formation w.r.t. radar station &	Remarks	Associated severe	Districts affected

		observation	cell/multiple cells convective regions/squall lines) with height of 20 dBZ echo top and maximum reflectivity	direction of movement		weather, if any	
Lucknow	08-05-18	070300-070852	NIL	NIL	NIL	NIL	NIL
		070852-071152	A Single cell formed at 0852UTC with height 4Km (30dbz echo top) , A single cell converted in Multiple cells at 0952UTC with maximum reflectivity 56dbz, about 100Km from E of SE station	Multiple cells system moved towards East of SE from radar station with average speed 50Km/h.	Multiple cells start weakened at 1102UTC and dissipated around at 1152UTC over 150 Km from East of South east station.	TS/SQ/RA	Raibareily, Sultanpur Faizabad,Akbarpur Azamgarh, Jaunpur
		071152-080300	NIL	NIL	NIL	NIL	NIL
VISAKHAPATNAM	08-05-18	071200	Isolated CB cell with max. reflectivity of 41dBz and height of 10 kms	NE(223 KMS) moving SEly	CB cell formed at 1001utc and developed to 41dbz and dissipated at 1101utc.		Kandhamal (Orissa)
		071500	Convective region of Max reflectivity of 47 dBz with 3 kms height.	S(100 kms)	Convective region formed in Bay of Bengal with Max. reflectivity of 47dbz at 1341utc.		In Bay of Bengal
Patna	08-05-18	070300-080300	Nil	Nil	Nil	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
Jaipur	08-05-18	071432-071642	Multiple cell with average height of 4.5 km & maximum reflectivity 48:00 dBZ	Multiple cell develop from 1432 UTC of 07/05/2018 towards NW, N of Jaipur and moved to E, NE Wards at speed 25--30 km/hr	Multiple cell develop from 1432 UTC on 07/05/2018 towards NW,N of Jaipur and reaches maximum reflectivity during 15:22 to 15:42 UTC of 07/05/2018 and died 1642 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Bikaner, Churu, Jhunjhunu, Pilani, Sikar Districts.
		071642-072312	Multiple cell with average height of 4.5 km & maximum reflectivity 47:50 dBZ	Multiple cell develop from 1642 UTC of 07/05/2018 towards NW, NWN,N of Jaipur and moved to E, NE Wards at speed 15-20 km/hr	Multiple cell develop from 1642 UTC on 07/05/2018 towards NW, NWN,N of Jaipur and reaches maximum reflectivity during 17:22 to 17:42 UTC of 07/05/2018 and died 1642 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Churu, Jhunjhunu, Pilani, Sikar, Nagaur Districts.
		072252-072312	Multiple cell with average height of 4.5 km & maximum reflectivity 49:00 dBZ	Multiple cell develop from 22:52 UTC of 07/05/2018 towards W,NW, N,SW of Jaipur and moved to E, SE Wards at speed 60-70 km/hr	Multiple cell develop from 22:52 UTC on 08/05/2018 towards W,NW, SW of Jaipur and reaches maximum reflectivity during 01:12-02:22 UTC of 8/05/2018 continuous.	Dust storm/Thunderstorm with Light rain at Isolated places	Dausa, Jaipur, Alwar, Ajmer, Tonk, Nagaur, Sikar District.
*** Radar Antenna Hang during 1745, 1842, 2143, 0241 and 0334 UTC on dated 07/05/2018 and 08/05/2018.**							

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	08-05-18	070301-070701	NIL	NIL	NOSIG ECHO	NIL	NIL
		070831 – 071231	1.Isolated single cell with maximum reflectivity of 61.0 dBz at 0951 UTC and maximum height of 13.83 Km at 0951 UTC 2 . Isolated single cell with maximum reflectivity of 61.5 dBz at 1001 UTC and maximum height of 14.45 Km at 1001 UTC	W (195.7 km) moving in EAST-wards direction. W (215.5 km) moving in EAST-wards direction. .	Isolated single cell formed at 0821 UTC in WEST at a distance of 197.0 km from radar. Matured and dissipated at 1041 UTC in WEST at a distance of 112.8 Km from Radar. Isolated single cell formed at 0821 UTC in WEST at a distance of 219.6 km from radar. Matured and dissipated at 1131 UTC in WSW at a distance of 112.8 Km from Radar.	Thunderstorm / Rain Thunderstorm /Hail / Rain	N/A N/A
		070301-070701	NIL	NIL	NOSIG ECHO	NIL	NIL
		070831 – 071231	1.Isolated single cell with maximum reflectivity of 61.0 dBz at 0951 UTC and maximum height of 13.83 Km at 0951 UTC 2 . Isolated single cell with maximum reflectivity of 61.5 dBz at 1001 UTC and maximum height of 14.45 Km at 1001 UTC	W (195.7 km) moving in EAST-wards direction. W (215.5 km) moving in EAST-wards direction. .	Isolated single cell formed at 0821 UTC in WEST at a distance of 197.0 km from radar. Matured and dissipated at 1041 UTC in WEST at a distance of 112.8 Km from Radar. Isolated single cell formed at 0821 UTC in WEST at a distance of 219.6 km from radar. Matured and dissipated at 1131 UTC in WSW at a distance of 112.8 Km from Radar.	Thunderstorm / Rain Thunderstorm /Hail / Rain	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 Reporting	**Region**	**State/Sub Division**	**Weather Event (TS/Hail/Squall)**	**Date**	**Time of Commencement (IST)**	**Time of end (IST)**
Jammu	Northwest India	Jammu & Kashmir	Thunderstorm	07-05-18	0905 1950	0930 2050
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	07-05-18	1300 1440 1550 1700	1310 1500 1620 1810
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	07/08-05-18	2100 0200	2400 0500
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	07-05-18	0905 2030	0920 2220
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	07-05-18	1930	2030
Dehradun	Northwest India	Uttarakhand	Thunderstorm	08-05-18	0025 0100	0100 0350
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	08-05-18	0710	0725
Tehri	Northwest India	Uttarakhand	Thunderstorm	07/08-05-18	071320 080040	071340 080150
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	07-05-18	1712	2033
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	07-05-18	2130	2215
Safdarjung AP	Northwest India	Delhi	Thunderstorm	08-05-18	0600	0610
			Squall From West With Max Speed 28Kt	**07-05-18**	**2303**	**2306**
Palam AP	Northwest India	Delhi	Thunderstorm	08-05-18	0530	0600
Ambala	Northwest India	Haryana	Thunderstorm	07/08-05-18	072100	080045
Patiala	Northwest India	Punjab	Thunderstorm	07/08-05-18	072250 080020	072310 080050
Hissar	Northwest India	Haryana	Thunderstorm	07-05-18	2100	2300
Amritsar	Northwest India	Punjab	Thunderstorm	07/08-05-18	071930 072215	072000 080130
Chandigarh	Northwest India	Chandigarh	Thunderstorm	07/08-05-18	072040 080000	072200 080200
Ajmer	Northwest India	East Rajasthan	Thunderstorm	08-05-18	0725	0740
Pilani	Northwest India	East Rajasthan	Thunderstorm	07/08-05-18	072230	080130
Sikar	Northwest India	East Rajasthan	Thunderstorm	07-05-18	2230	072400
Jaisalmer	Northwest India	West Rajasthan	Thunderstorm	07/08-05-18	072040 080317	072210 080350
Phalodi	Northwest India	West Rajasthan	Thunderstorm	07-05-18	2045	2215
Churu	Northwest India	West Rajasthan	Thunderstorm	07/08-05-18	072050 072210	072130 080400
Bikaner	Northwest India	West Rajasthan	Thunderstorm	07/08-05-18	071855 080050	072000 080130

Ganganagar	Northwest India	West Rajasthan	Thunderstorm	07-05-18	1715	2135
Jodhpur	Northwest India	West Rajasthan	Thunderstorm	08-05-18	0605	0630
Sultanpur	Northwest India	East Uttar Pradesh	Thunderstorm	07-05-18	1635	1645
Moradabad	Northwest India	West Uttar Pradesh	Duststorm (max. wind 30Kt)	08-05-18	0200	0315
Aligarh	Northwest India	West Uttar Pradesh	Duststorm (max. wind 25Kt)	08-05-18	0100	0200
Jorhat	Northeast India	Assam	Thunderstorm	07-05-18	2000	2300
Guwahati	Northeast India	Assam	Thunderstorm	07/08-05-18	071750	08/0240
Dhubri	Northeast India	Assam	Thunderstorm	08-05-18	0500	0540
Dibrugarh	Northeast India	Assam	Thunderstorm	07-05-18	1650	1725
Silchar	Northeast India	Assam	Thunderstorm	07/08-05-18	071010, 072200	071210, 080400
Shillong	Northeast India	Meghalaya	Thunderstorm	07/08-05-18	072030, 080100	072130, 080300
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	08-05-18	0823	0830
Barapani	Northeast India	Meghalaya	Thunderstorm	08-05-18	0750	0830
Lengpui	Northeast India	Mizoram	Thunderstorm	07/08-05-18	071223, 080230	071420, 080650
Agartala	Northeast India	Tripura	Thunderstorm	07/08-05-18	071200, 080520	071220, 080830
Digha	East India	Gangetic West Bengal	Thunderstorm	08-05-18	0510	0550
Asansol	East India	Gangetic West Bengal	Thunderstorm	07-05-18	1459	1600
Bankura	East India	Gangetic West Bengal	Thunderstorm	07-05-18	1500	1535
			Hailstorm with hail diameter 1.0cm	**07-05-18**	**1524**	**1530**
Sriniketan	East India	Gangetic West Bengal	**Thunderstorm**	**07-05-18**	**1635**	**1750**
			Hailstorm with hail diameter 1.2cm	07-05-18	1739	1741
Paradeep	East India	Odisha	Thunderstorm	07-05-18	0955	1030
Keonjhargarh	East India	Odisha	Thunderstorm	08-05-18	0350	0450
Port Blair	East India	Andaman & Nicobar	Thunderstorm	07-05-18	1410	1520
Hyderabad	South India	Telangana	Thunderstorm	07-05-18	2020	2100
Panambur	South India	Karnataka (CK)	Thunderstorm	07/08-05-18	071740 072148 080020	071840 072305 080050
AMS Bajpe	South India	Karnataka (CK)	Thunderstorm	07/08-05-18	072147	080120
Kalaburgi	South India	Karnataka (NIK)	Thunderstorm	07-05-18	1610	1630
Gadag	South India	Karnataka (NIK)	Thunderstorm	07-05-18	1915	1950
Madikeri	South India	Karnataka (SIK)	Thunderstorm	07-05-18	1710 1935	1800 1955
Kodaikanal	South India	interior Tamil Nadu	Thunderstorm	07-05-18	1955	2015
Salem	South India	interior Tamil Nadu	Thunderstorm	07-05-18	1710	1720
Thoothukudi	South India	South Tamil Nadu	Thunderstorm	07-05-18	1500	1530
Karaikal	South India	Coastal Tamil Nadu	Thunderstorm	08-05-18	0535	0730
Coimbatore	South India	interior Tamil Nadu	Thunderstorm	08-05-18	0030	0120

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
ForRadarimagesofthepast24hoursincludingmosaicofimages:
http://ddgmui.imd.gov.in/dwr_img/
Satellite sounder based T- Phigram
http://satellite.imd.gov.in/mAndhra_Pradesh_skm2.html

WEATHER SYMBOLS: