India Meteorological Department

FDP STORM Bulletin No. 68 (13-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

♦ The Western Disturbance as a trough now seen as a cyclonic circulation over Jammu & Kashmir and neighbourhood at 3.1 km above mean sea level with trough aloft along Long 74°E to the north of Lat 34°N.

♦ A cyclonic circulation lies over south Haryana and neighbourhood and extends upto 0.9 km above mean sea level.

♦ The East West trough now runs from the above cyclonic circulation to Nagaland across north Madhya Pradesh, South Bihar, North Gangetic West Bengal and Meghalaya extends upto 1.5 km above mean sea level.

♦ The northsouth trough now runs from the above cyclonic circulation over south Haryana and neighbourhood to Madhya Maharashtra across East Rajasthan and west Madhya Pradesh and extends upto 0.9 km above mean sea level.

♦ Another northsouth trough runs along Long. 88°E to the north of 22°N at 3.1 km above mean sea level.

♦ A northsouth wind discontinuity runs from Rayalaseema to south Tamilnadu and extends to 0.9 km above mean sea level.

♦ A fresh western disturbance as a trough in midtropospheric westerlies with its axis at 5.8 km above mean sea level runs along Long 60°E to the north of Lat. 30°N.

♦ A low pressure area is likely to develop over Southwest Arabian Sea around 15th May 2018 and likely to intensify further and move west north westwards subsequently.

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 moderate to intense convection were seen over Iran, Afghanistan, North Pakistan, West Jammu & Kashmir, Himachal Pradesh **(Minimum CTT Minus 41 Deg C)** and over the area between 37.0deg N to 47.0deg N, long 60.0deg E to 80.0deg E in association with Western Disturbance over the area.

Clouds descriptions within India:

Scattered low/medium clouds with embedded moderate to intense convection seen over Jammu & Kashmir, Himachal Pradesh, South Interior Karnataka, South Andhra Pradesh, extreme North Coastal Andhra Pradesh, and Andaman Islands

Scattered low/medium clouds with embedded weak to moderate convection seen over North Uttarakhand, Tripura, Mizoram, extreme South Coastal Odisha, East Central Jharkhand, West Meghalaya, Central Assam, North Manipur, South Nagaland, rest Nagaland, South Odisha, East Gangetic West Bengal, Arunachal Pradesh, Northeast Assam, East Madhya Pradesh, Telangana, Kerala, and Tamilnadu.

Arabian Sea:-
Scattered low/medium clouds with embedded intense to very intense convection seen over South Arabian and Comorin Gulf of Mannar.

Bay of Bengal & Andaman Sea:
Scattered low/medium clouds with embedded moderate to intense convective seen over Northwest Bay, Off North Coastal Andhra Pradesh, South Bay adjoining Indian Ocean 4.0N TO 8.0N Long 80.0E tO 93.0E & S Andaman Sea.

Past Weather:

Convection (during last 24 hrs):
Intense to Very Intense convection was observed over Karnataka Kerala Tamilnadu.
Moderate to Intense convection was observed over J&K Himachal Pradesh Punjab Haryana Uttarakhand South-East Madhya Pradesh Chhattisgarh Odisha Gangetic West Bengal Sikkim North-East States North Andhra Pradesh Telangana Vidarbha Lakshadweep Andaman & Nicobar Islands and weak to moderate convection over North Rajasthan Delhi North-West Uttar Pradesh North Madhya Pradesh Marathwada & Goa.
OLR: - .
Upto 230 wm^{-2} observed over J&K Himachal Pradesh Punjab North Uttarakhand Sikkim Arunachal Pradesh Assam Meghalaya Nagaland Manipur Rayalseema Karnataka Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands
Westerly Trough & Jet Stream: roughly along Longitude 65.0N & North of Latitude 27.0N.

Dynamic Features:
Wind Shear 25**-**30 knots is observed over North-West India, North-East India and 10-20 knots over Central India, south peninsular India.
Negative Positive shear tendency is observed over East Uttar Pradesh Bihar Jharkhand Chhattisgarh Odisha Gangetic West Bengal and Positive shear tendency observed over Rajasthan.
Positive Vorticity (850 hPa) more than 50 ($x10^{-5}$/s) is observed over North Rajasthan South Haryana Delhi South-West Uttar Pradesh East Madhya Pradesh Chhattisgarh East Vidarbha Telangana Odisha.
Positive Low Level Convergence is observed over Coastal Karnataka & North-East Indian.

Precipitation:
IMR:-
Rainfall up to 110-150 mm was observed over south Kerala .
Rainfall up to 90-110 mm was observed over Central Karnataka West Tamilnadu.
Rainfall up to 20-50 mm was observed over West J&K North Himachal Pradesh North-East Orissa South-East parts of South interior Karnataka .
Rainfall up to 01-20 mm was observed over East J&K South Himachal Pradesh North Uttarakhand North Punjab North-East Haryana Sikkim Arunachal Pradesh Assam Meghalaya Nagaland North Manipur West Odisha Chhattisgarh East Vidarbha South East Madhya Pradesh Telangana Andhra Pradesh Rest Karnataka East Tamilnadu Lakshadweep Andaman & Nicobar Islands .
HEM:-
Rainfall up to 27.8-139.8 mm was observed over Extreme West J & K East Meghalaya.
Rainfall up to13.9-27.8 mm was observed over Nagaland Manipur North Interior Karnataka & Lakshadweep.

DWR and RAPID Observations:

Isolated/multiple Strong echoes observed on DWR Kolkata, Machilipatnam, Vishakhapatnam, Chennai and Delhi (dBZ > 50 and height >12km), Isolated/multiple moderate echoes on DWR Srinagar, Patiala, Lucknow and Agartala (dBZ around 50 and height 10-12km), and Light to moderate over Hyderabad and Thiruvanathapuram at around 1545IST.

RAPID RGB Satellite imagery at 1430 IST indicated significant convection over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, East Madhya Pradesh, Jharkhand, East Gangetic West Bengal, Meghalaya, Nagaland, Mizoram, Tripura, South Interior Karnataka, Rayalaseema and North Tamilnadu.

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	13.05.2018	14.05.2018
PM10 (micro-g/m^3)	274	247
PM2.5 (micro-g/m^3)	105	95

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:
00 &12 UTC of Day 1-4: 925 hPa weak CYCIR western Arabian Sea tracking westwards.
00UTC of Day 2-5: 850 hPa trough over central India SW to NE over N Karnataka, Maharashtra, MP and UP.
12UTC of Day 2-4: 850 hPa trough over Bihar-WB region and weak CYCIR at 700 hPa over southern tip of peninsula moving westwards.

Confluence & Wind Discontinuity Regions: 12 UTC of Day 2-4:850 hPa N-S discontinuity over Southern Peninsular India

Synoptic Systems: 12 UTC of Day 3-4: anticyclone off Gujarat coast at 500 hPa.

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: West UP, Uttarakhand, Punjab, East RJ, Odisha, West MP, Madhya Maharashtra, Chhattisgarh,
Day1: Jharkhand, Odisha, Madhya Maharashtra, Telangana,
Day2: Assam Meghalaya, NE NMMT, Jharkhand, Odisha, East MP, Madhya Maharashtra, Marathwada, Rayalseema, SI Karnataka,
Day3: Assam Meghalaya, Odisha, Madhya Maharashtra, NI Karnataka,
Day4: Assam Meghalaya, NE NMMT, West UP, Odisha, East MP, Madhya Maharashtra, Chhattisgarh, NI Karnataka,

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Jharkhand, Uttarakhand, Punjab, Himachal Pradesh, West RJ, Odisha, Coastal AP,
Day1: Assam Meghalaya, Gangetic WB, Jharkhand, Himachal Pradesh,
Day2: Assam Meghalaya, Gangetic WB, Uttarakhand, Himachal Pradesh, Coastal AP,
Day3: Assam Meghalaya, Sub Himalayan WB, Bihar, Coastal AP,
Day4: Assam Meghalaya, Sub Himalayan WB, Bihar, West UP, Haryana, Chandigarh, Delhi,

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

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

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

Day/Index: Subdivisions with K Index > 40

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, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka, Kerala,
Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day3: 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, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day4: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

8. Rainfall and thunder storm activity:

Day1: Assam Meghalaya, NE NMMT, Bihar, East UP, West UP, Uttarakhand, Andaman Nicobar, TN Puducherry, SI Karnataka, Kerala,
Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, Bihar, East UP, Uttarakhand, Jammu Kashmir, Odisha,
Day3: Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Jammu Kashmir, Odisha, Rayalseema, SI Karnataka,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, Jammu Kashmir, Odisha, SI Karnataka,
Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jammu Kashmir, Odisha

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a East- West Trough extending from West Uttar Pradesh to Nagaland across East Uttar Pradesh, Bihar, Sub Himalayan West Bengal. The forecast shows the Trough will persist for next 24 hours. Another North- South Trough is seen in the analysis from Haryana to North west Rajasthan East Rajasthan. The forecast shows the Trough will persist till day2 with slight eastward movement. The forecast shows a cyclonic circulation over north west Rajasthan and adjoining areas in next 24 hours. The above cyclonic circulation will merge with the North- South Trough from day2 onwards. A Trough is seen in the analysis extending from North Telangana and adjoining south east Vidarbha to North of Tamil Nadu at (925hPA). The forecast shows it will persist till 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 on day 1 and 2; over north western parts of the India on day 3 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, North West Rajasthan, Haryana, Delhi, west Uttar Pradesh, Northern parts of Madhya Pradesh from day 1; parts of Bihar, GWB, Jharkhand, SHWB, Sikkim and NE states and South Peninsular India have Positive Vorticity on all 3 days.

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 covering the areas from west Rajasthan, Punjab, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, Jharkhand, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, coastal Andhra Pradesh, Assam, Arunachal Pradesh, 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 and also appears over West Uttar Pradesh, Northern parts of West Rajasthan and parts of East Rajasthan, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Madhya Pradesh and adjoining areas; 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, Telangana, Interior Karnataka, East and West Uttar Pradesh and adjoining areas.

Lifted Index (< -2): Similar to T-storm Index in day 1 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, Orissa, GWB, NE states, Telangana, Vidarbha, Chhattisgarh, Andhra Pradesh, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Madhya Maharashtra and Marathwada. In day 2 and 3 it cover most of the parts of Northwest India including Punjab, Haryana, Delhi, West Uttar Pradesh, J&K, Himachal Pradesh and Uttarakhand; Significant zone with maximum negative value is found over GWB, coastal Orissa and coastal Andhra Pradesh.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over most of the parts of the country except Extreme south Peninsular India during next 3 days; Significant zone with Maximum value of the index lies over J&K, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Uttar Pradesh, East Madhya Pradesh, Chhattisgarh, Orissa, GWB, Andhra Pradesh, Telangana, East Vidarbha, Bihar and Jharkhand.

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 Madhya Pradesh during next 3 days; The significant zone lies over parts of GWB, Jharkhand, Bihar, Orissa, Chhattisgarh and East Uttar Pradesh.

CAPE (> 1000): Mostly seen over southern peninsular India, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, East Uttar Pradesh, south west Rajasthan, Andhra Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan and Goa, Vidarbha, Telangana, coastal Maharashtra, south Madhya Maharashtra, Marathwada, Gujarat, NE states, Sikkim, Assam, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of West Uttar Pradesh, Punjab, North West Rajasthan, Haryana, Delhi, Himachal Pradesh and Uttarakhand on day 2 and 3; 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, northern parts of coastal Maharashtra, coastal Karnataka and coastal Kerala.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala and south Tamilnadu 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 during next 3 days; the maximum value of the index is seen over Gujarat, South West Rajasthan, GWB, SHWB, Bihar, Jharkhand, East Uttar Pradesh, Assam, Arunachal Pradesh, Tripura and adjoining areas, J&K and Punjab.

5. Rainfall Activity:

70- 130 mm Rainfall: over some parts of Tamilnadu, SHWB and coastal Orissa and adjoining GWB on day 2 and day 3.
40-70 mm Rainfall over some parts of Orissa and adjoining Jharkhand, GWB on day 2 and 3; over Foothills of Himalaya on day 3.
10-40 mm Rainfall: over parts of J&K, Himachal Pradesh, Uttarakhand, Kerala, Karnataka, Tamil Nadu, Orissa, Andhra Pradesh, Rayalaseema, GWB, SHWB, Sikkim, Foothills of Himalaya, and NE states during next 3 days; over parts of Konkan and Goa on day 1 and 3; over parts of Uttar Pradesh, Bihar and Jharkhand on day 2 and 3.

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

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

1. Model Reflectivity (Max. dBz):

>25 dBZ Model Reflectivity: On day 1, over parts of Punjab, Himachal Pradesh, Uttarakhand, Sikkim, GWB, Kerala, Karnataka, Tamil Nadu, Telangana, Andhra Pradesh, coastal Maharashtra, south Madhya Maharashtra, some parts of Vidarbha, Chhattisgarh, Orissa and NE states. On day 2 over parts of J&K, Punjab, Himachal Pradesh, Uttarakhand, Haryana, Rajasthan, West Uttar Pradesh, East Uttar Pradesh, Vidarbha, Chhattisgarh, GWB, Orissa, Sikkim, Assam, Arunachal Pradesh and adjoining areas, Kerala, Tamil Nadu; On day 3 mostly over parts of J&K, Punjab, Himachal Pradesh, Uttarakhand, Haryana, Uttar Pradesh, Bihar, GWB, Orissa, Andhra Pradesh, Telangana, Chhattisgarh, 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, South Madhya Maharashtra, Marathwada, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, Bihar, Jharkhand, Orissa, Andhra Pradesh, Sikkim and NE states and East Uttar Pradesh during next 3 days..
K-Index (> 35): Less than threshold value is observed over most of the part of the country during the next 3 days. Prominent values are found over parts of NE states, Interior Karnataka, Telangana, Chhattisgarh, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Bihar, East Uttar Pradesh, 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, coastal Maharashtra, South West Rajasthan extending over East Uttar Pradesh, Bihar, Jharkhand, Telangana, Rayalaseema during next 3 days; Some parts of West Uttar Pradesh, Punjab, Himachal Pradesh on day 1; over parts of Punjab, North West Rajasthan, Haryana, Delhi, West Uttar Pradesh, Himachal Pradesh, Uttarakhand, Northern parts of Madhya Pradesh on day 2 and 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, coastal Gujarat, Chhattisgarh, Tripura and adjoining areas.

CIN (50-150): It covers most of the parts of the country except central parts of the Madhya Pradesh during next 3 days; Inland extension is also nearly similar to CAPE. Only, it has significant larger values over parts of west India including west Rajasthan, Gujarat, Punjab, Haryana, Delhi and adjoining areas, parts of Vidarbha and Madhya Pradesh, eastern parts of the country, Bihar Jharkhand, Chhattisgarh, Orissa, GWB, Andhra Pradesh and adjoining areas, Telangana, South Madhya Maharashtra, Marathwada and adjoining areas.

3. Rainfall and thunderstorm activity:

70-130 mm Rainfall: over parts of Tamil Nadu, GWB on day 1, day 2 and day 3; over parts of Tripura and adjoining areas on day 3.

40- 70 mm Rainfall: over parts of Gangetic West Bengal during next 3 days; over parts of Tamil Nadu and Arunachal Pradesh on day 1; along Foothills of Himalaya adjoining North Bihar on day 2 and 3; over parts of Tripura and adjoining areas on day 3.

10- 40 mm Rainfall: over parts of J&K, Himachal Pradesh, Kerala, Tamil Nadu, coastal Maharashtra, Interior Karnataka, Orissa, Chhattisgarh, Andhra Pradesh, Telangana, Sikkim, GWB, SHWB and NE states during next 3 days; over parts of Uttar Pradesh, Bihar and Jharkhand on day 2 and 3; over some parts of Punjab and East Madhya Pradesh 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, NE states, J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi and adjoining areas, west Uttar Pradesh and East Uttar Pradesh during next 3 days; over parts of North West Rajasthan and East Madhya Pradesh on day 2 and 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

- Synoptic analysis indicates that a northsouth wind discontinuity runs from Rayalaseema to south Tamilnadu. This system may give rise to heavy rainfall activity over Kerala and Tamilnadu on Day-1. The thunderstorm with gusty winds may also likely over Telangana, Rayalseema, North coastal Andhra Pradesh and Interior Tamilnadu on Day-1.

- A cyclonic circulation lies over south Haryana and neighbourhood and the Western Disturbance as a trough now seen as a cyclonic circulation over Jammu & Kashmir and neighbourhood. This will bring the thunderstorm with gusty winds over J&K, Himachal Pradesh, Uttrakhand, Punjab and Haryana on Day-1.

- The East West trough now runs from the above cyclonic circulation to Nagaland across north Madhya Pradesh, South Bihar, North Gangetic West Bengal and Meghalaya. Due to this system, North Madhya Pradesh, North Chhattisgarh and GWB may get the thunderstorm with gusty winds on Day-1.

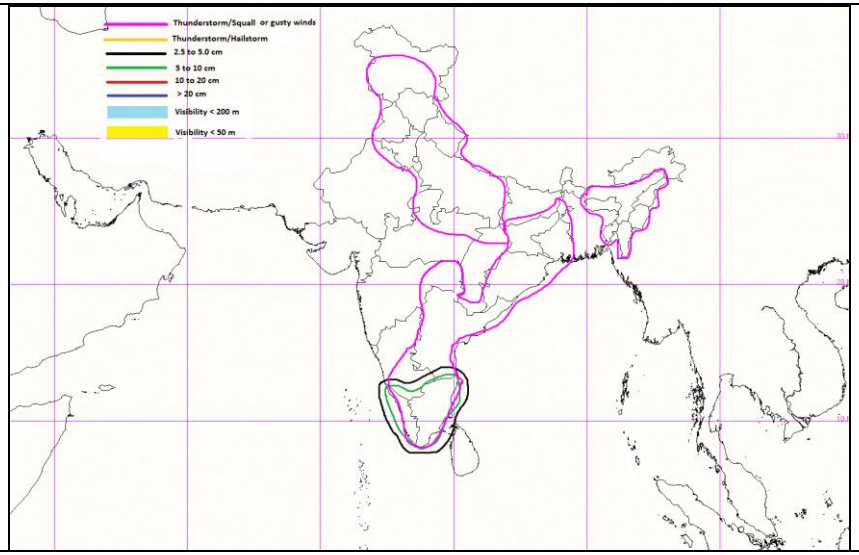
- The Duststorm is seen from the satellite imageries over West Rajasthan and likely to be persists for Day-1.

- Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over Northeast, East and peninsular India and Kerala on Day 1. The 850-200 hPa wind shear is very high over Northern parts of India and Eastern India on Day-1.

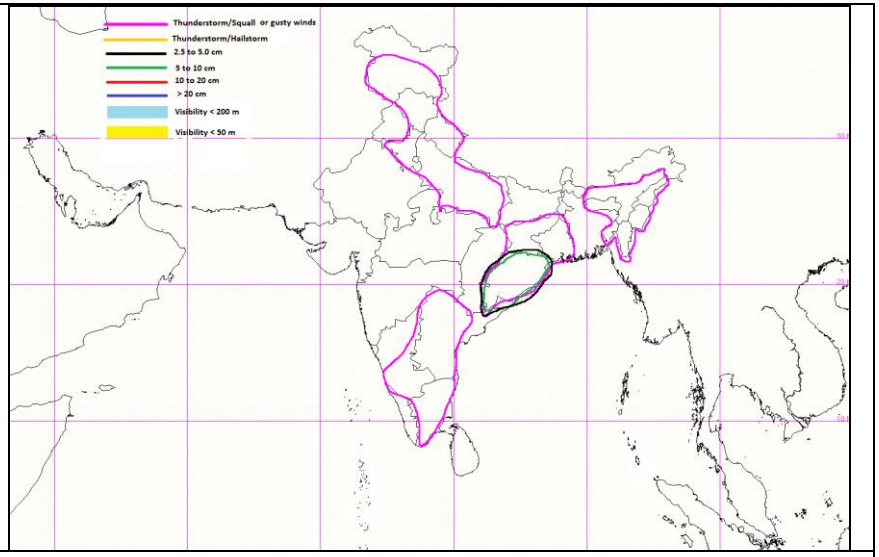
IOP Area for Day-1 & Day-2:

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

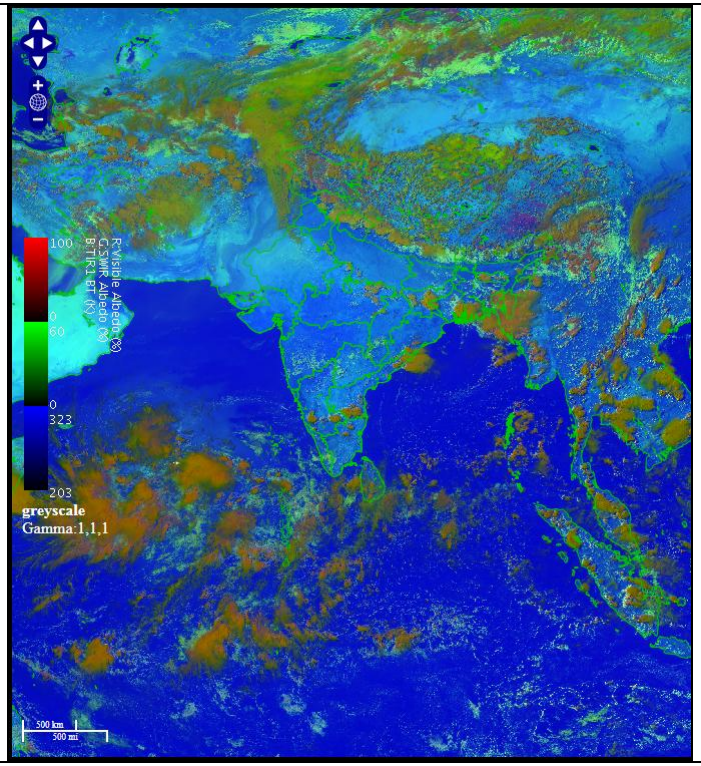
Graphical Presentation of Potential Areas for Severe Weather:



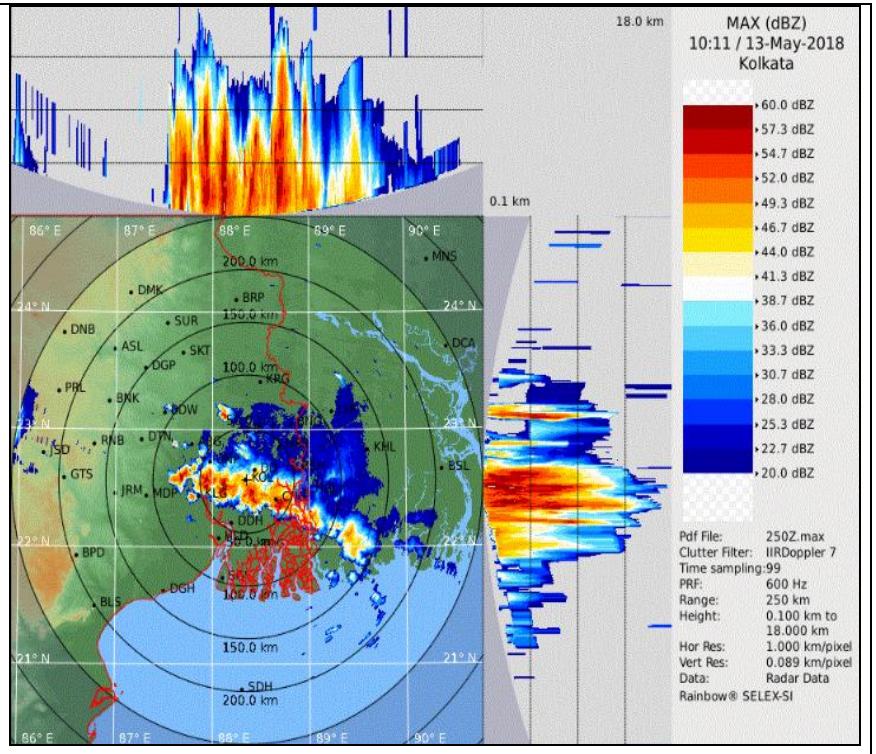
IOP Advisory for 24 hours



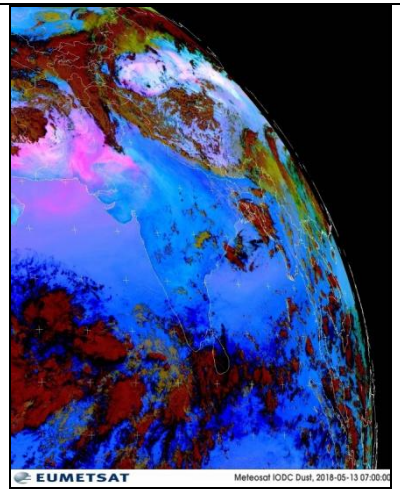
IOP Advisory for 48 hours

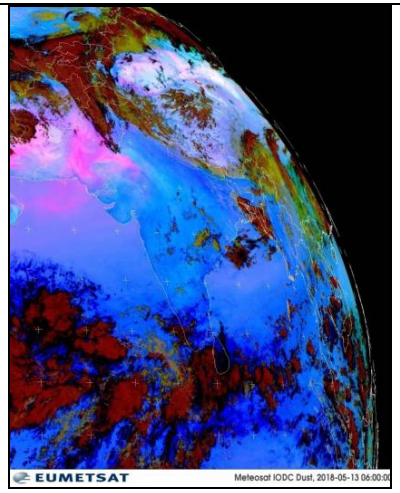


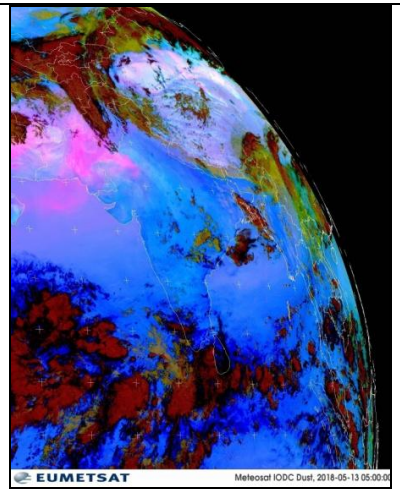
RAPID RGB Imagery at 1430 IST of the Day

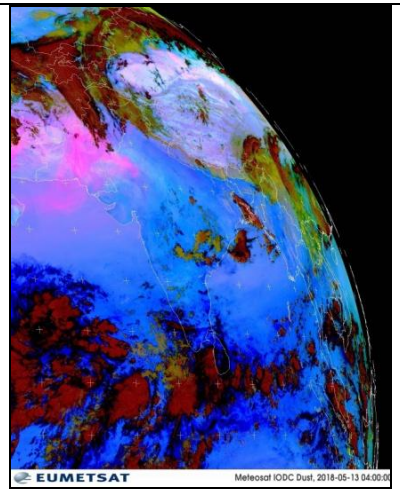


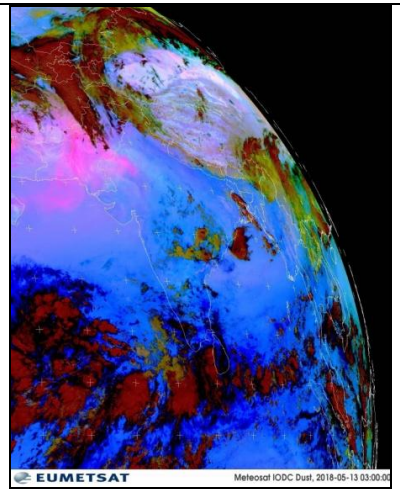
DWR Kolkata Reflectivity Image at 1541 IST

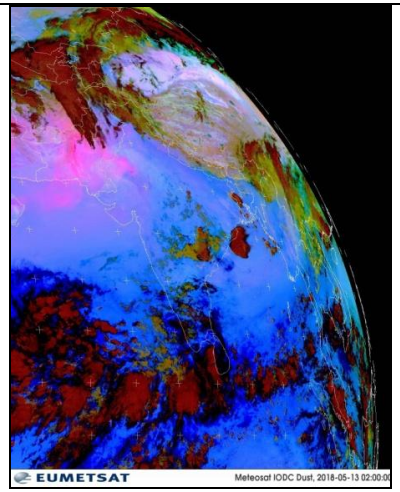




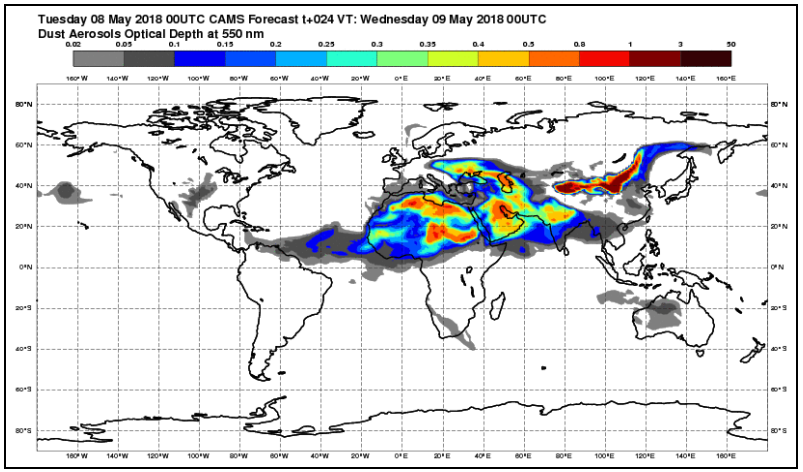




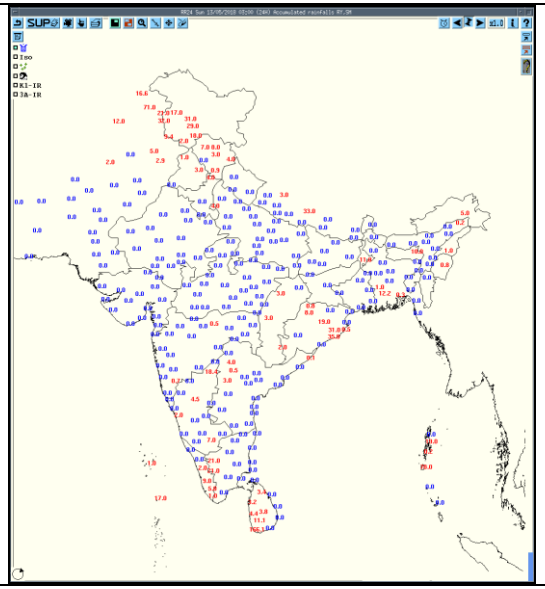




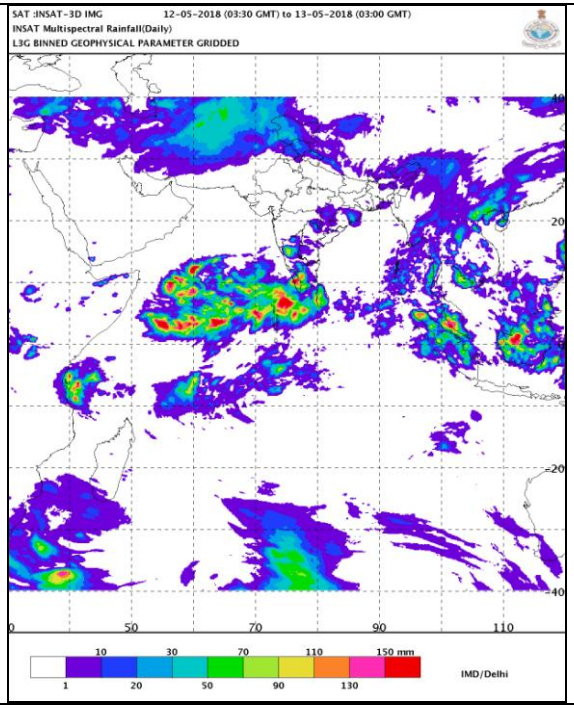
Observed Satellite Dust Images of today



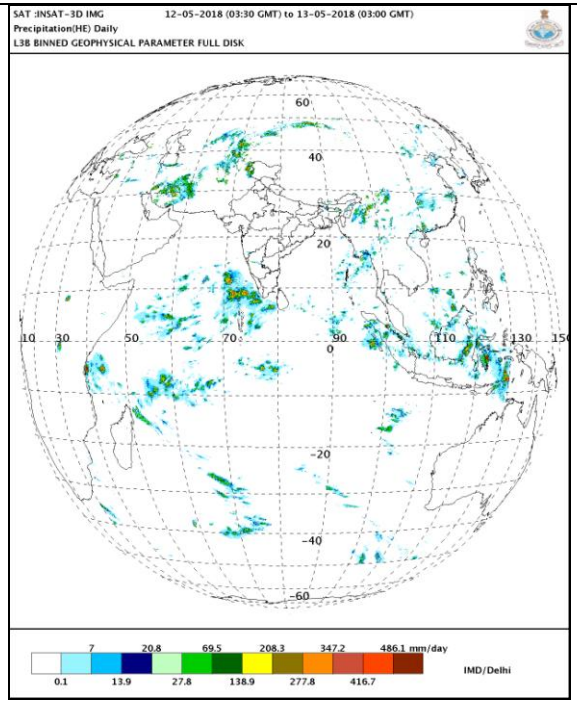
Dust Forecast



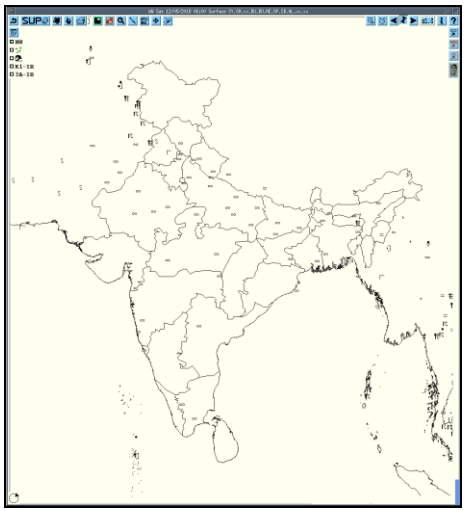
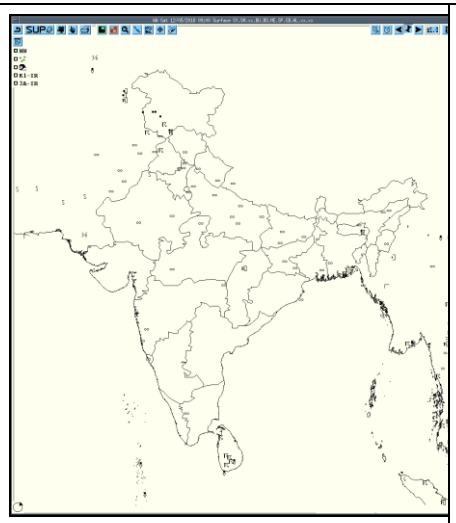
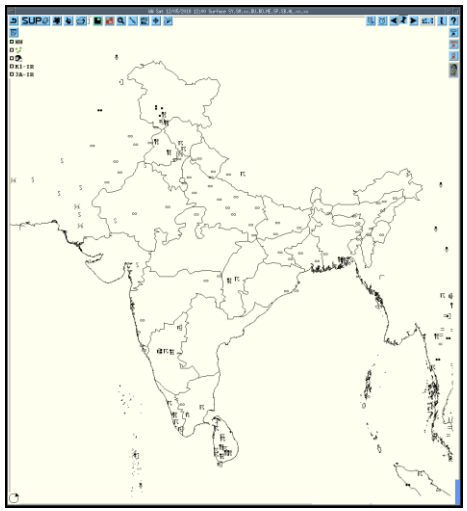
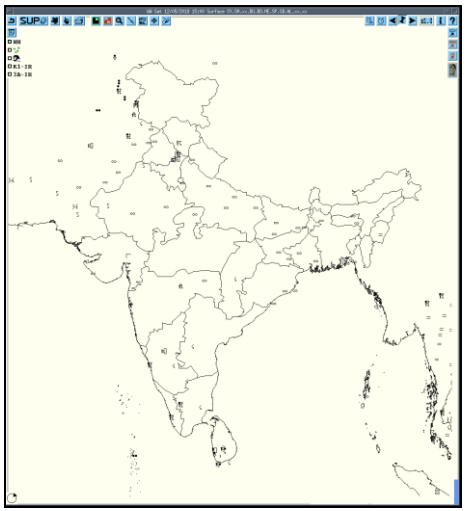
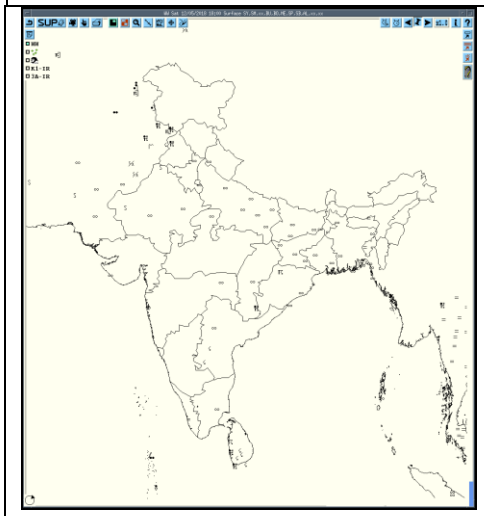
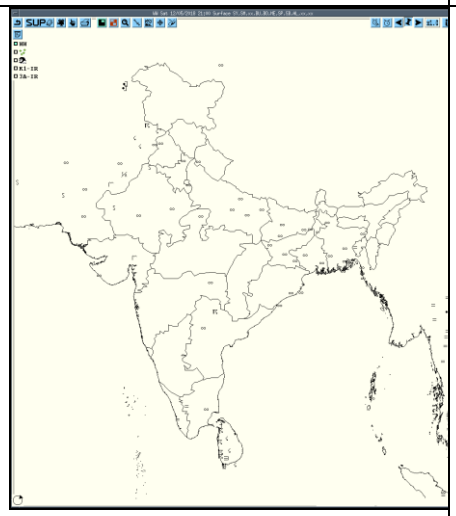
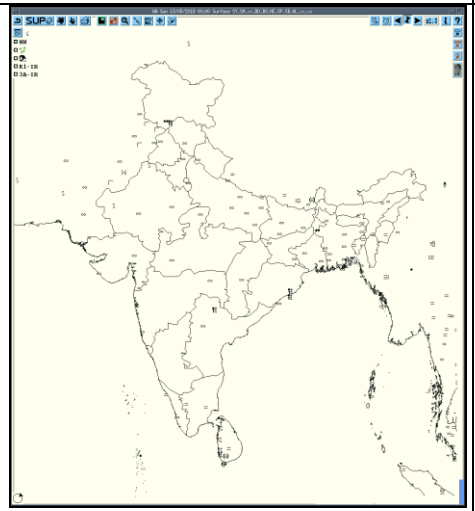
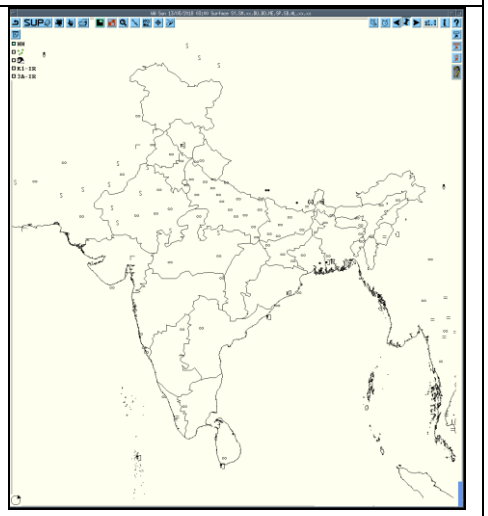
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



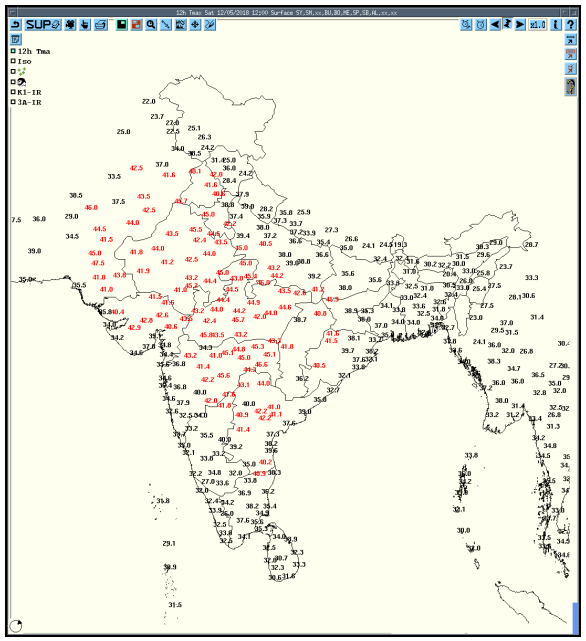
IMR



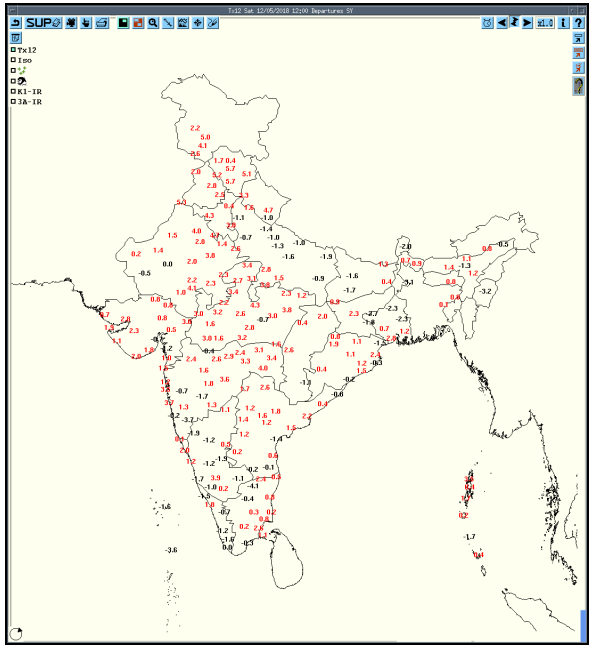
HEM

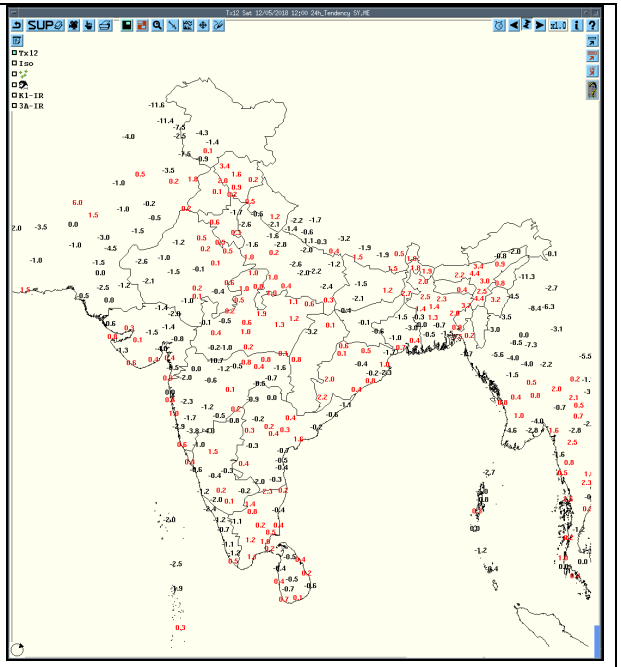
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



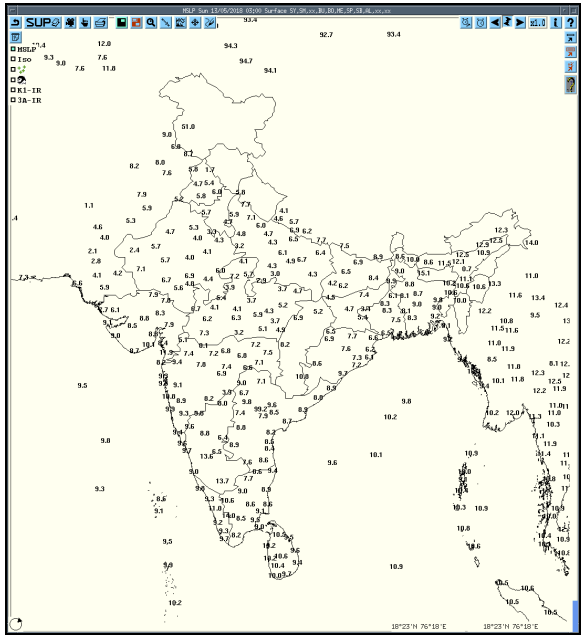
Tmax



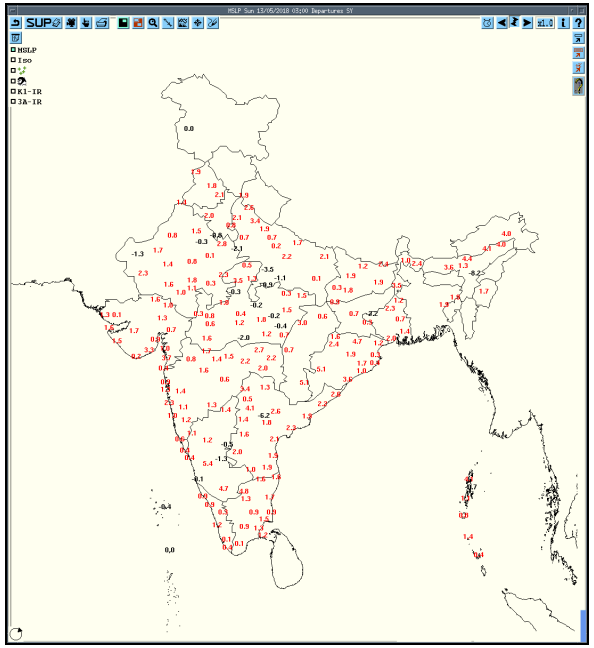
Departure Tmax



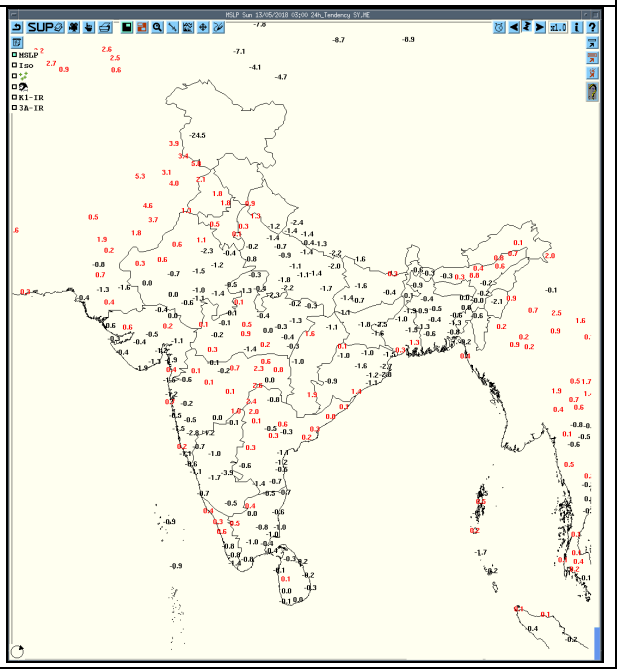
Tendency Tmax



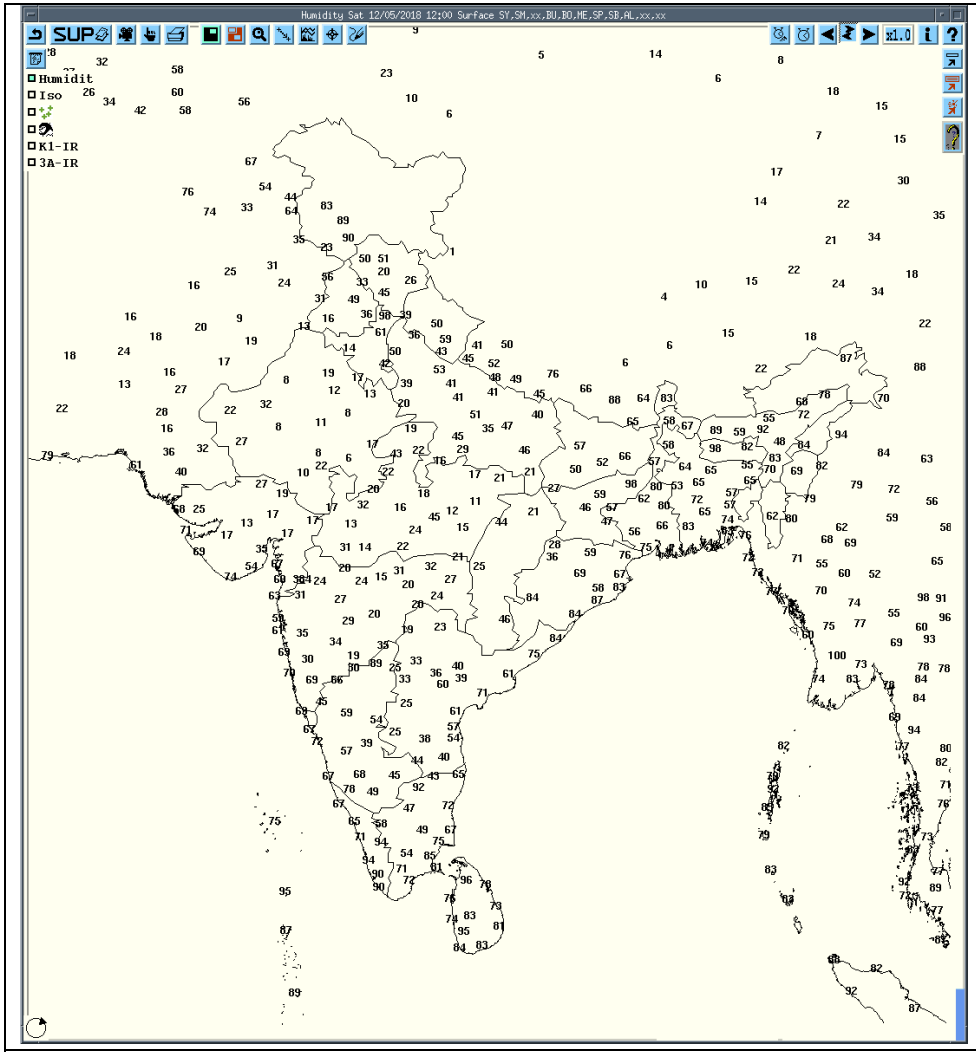
MSLP



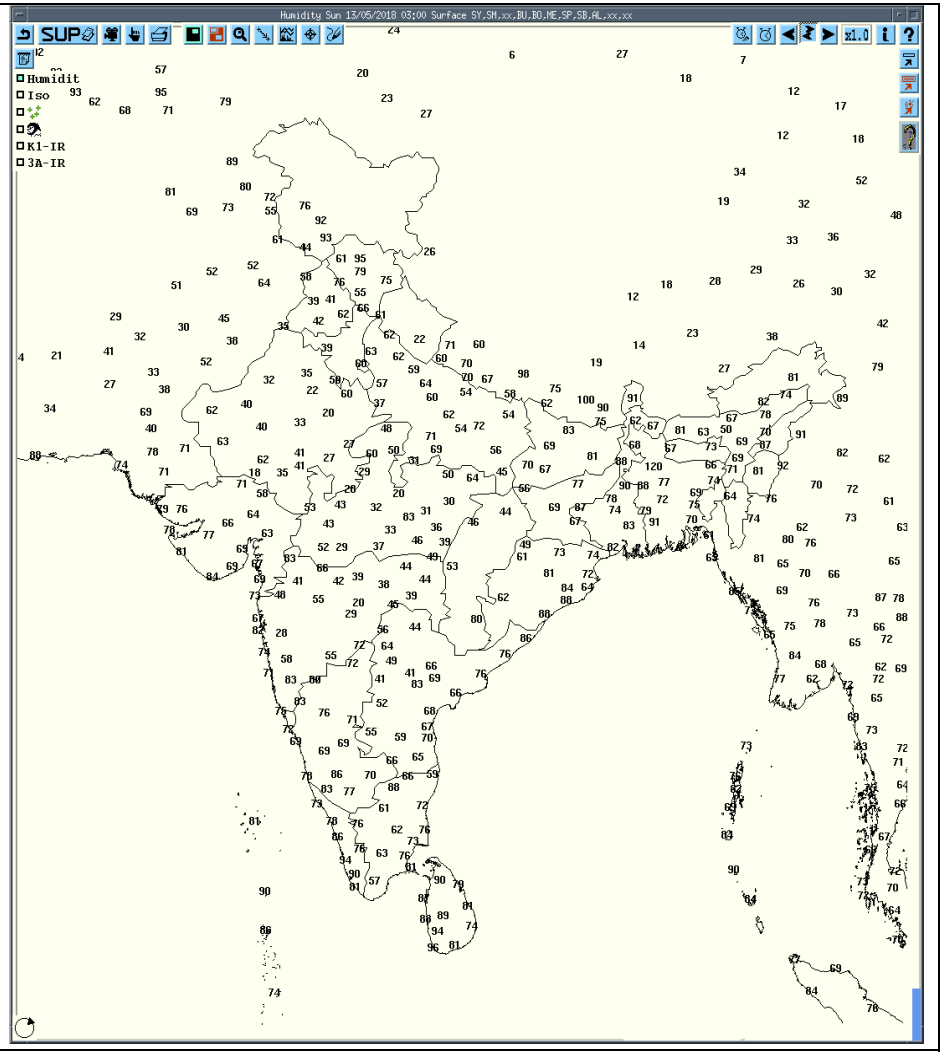
Departure MSLP



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	12-05-18	120300-12600	NO ECHO	_____	____	_____	_____
		120600-20900	ISOLATED DBZ 37.0 HT 11-13 KM	NW, SE- SECTIORS. MOVEMENT TOWARDS NE- DIRECTION	____	RAIN	Faridkot, Ferozpur, Amritsar, Bathinda, Patran, Barnala And Its Adjoining Areas.
		120900-121200	MULTIPLE CELLS DBZ 60.0 HT 10 TO 13 KM	SW,NW SECTIOR MOVEMENT TOWARDS NE- DIRECTION	____	HAIL/RA/TS	Sangrur, Moga, Taran-Taran, Patiala, Karnal, Kaithal, Panipat, Chandigarh, Solaan, Ludhiana, Phillaur, Jalandhar And Its Adjoining Areas.
		121200-131500	MULTIPLE CELLS DBZ 62.0 HT 10 TO 13 KM	SW,NE, N SECTIORS MOVEMENT TOWARDS NE- DIRECTION	____	HAIL/DS/RA/TS	Patiala, Dhuri, Nabha, Sirhind, Ambala, Chandigarh, Yamunanagr, Mansa, Faridkot And Its Adjoining Areas.
		121500-121800	MULTIPLE CELLS DBZ 54.0 HT 10 TO 11 KM	NW, NE SECTIORS. MOVEMENT TOWARDS NE- DIRECTION	____	RA/TS	Zira, Moga, Jagraon, Ludhiana, Nakodar, Solan, Shimla And Its Adjoining Areas.
		121800-122100	MULTIPLE CELLS DBZ 48.0 HT 8 TO 09 KM	SW SECTIORS MOVEMENT TOWARDS NE- DIRECTION	____	RA/TS	Garhshannkar, Bhatinda, Nadaun, B- Dam, Mansa, Una And Its Adjoining Areas.
		122100-120000	MULTIPLE CELLS DBZ 48.0 HT 09 KM	SW SECTIORS. MOVEMENT TOWARDS SE- DIRECTION	____	RA/TS	NARWANA, KAITHAL AND ITS ADJOINING AREAS.
	13-05-18	13000-130252	NO SIGNIFICANT ECHO.	N/A	N/A	N/A	N/A
Agartala	13/05/18	120300-130300	A.)CELL FORMED OVER HILLS OF MEGHALAYA AT 0420Z;10KMS,45dbz B. CELL FORMED OVER SW OF TRIPURA AT 12/0800Z;14KMS,49dbz	A.)200KmsNorth East;25kmph;N'LY B.)250Kms SW;30Kmph,NE'LY	A.)Cell dissipated over hills of Meghalaya at 12/0730Z B.)Cell dissipated Over Tripura at 12/1200Z	A.)----- B.)-----	A.)Not known= B.)Not known=
Lucknow	13-05-18	120300-130300	NIL	N/A	N/A	N/A	N/A
Patna	13-05-18	120300-130300	NIL	N/A	N/A	N/A	N/A

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	12-05-18	0301-0651	NIL	NIL	NOSIG ECHO	NIL	NIL
		0651-1151	Multi cell system with maximum reflectivity of 59.0 dBz at 0831 UTC and maximum height of 12.24 Km at 0911 UTC	E (143.1 km) Moving in ENE-ward direction.	Multi Single cell coming from E at 0651 UTC at a distance 143.1 Km) from radar. Matured, later transformed into a big cell system and dissipate at 1151 UTC in ENE at a Distance of 217.4 km from Radar.	Thunderstorm /Rain	N/A
		1051-1241	Isolated cell system with maximum reflectivity of 58.0 dBz at 1211 UTC and maximum height of 11.11 Km at 1211 UTC	NE (63.1 km) Moving in SSE-ward direction.	Isolated cell forming in NE at 1051 UTC at a distance 63.1 Km from radar. Matured, dissipated at 1241 UTC in ENE at a distance of 65.7 km from Radar.	Thunderstorm /Rain	N/A
		1251-1331	NIL	NIL	NOSIG ECHO	NIL	NIL
		1341-1501	Multi cell system with maximum reflectivity of 59.5 dBz at 1411 UTC and maximum height of 14.24 Km at 1401 UTC	NW (107.1 km) Moving in SE-ward direction.	Multi isolated cells forming in NW at 1341 UTC at a distance 107.1 Km from radar. Matured, Dissipated at 1501 UTC in NW at a distance of 82.3 km from Radar.	Thunderstorm /Rain	N/A
		1511-2400	NIL	NIL	NOSIG ECHO	NIL	NIL
	13-05-18	0001-0051	NIL	NIL	NOSIG ECHO	NIL	NIL
		0101-0300 UTC Contd.	Single cell with maximum reflectivity of 63.0 dBz at 0151 UTC and maximum height of 17.45 Km at 0151 UTC	N (247.5 km) Moving in SSE-ward direction.	Single cell coming from N at 0101 UTC at a distance 247.5 Km) from radar. Matured, later transformed into a multi cell system and dissipated at 1151 UTC in ENE at a Distance of 217.4 km from Radar.	Thunderstorm /Rain/Hail	N/A
		0111-0300 Contd.	Isolated cells system with maximum reflectivity of 59.5 dBz at 0231 UTC and maximum height of 15.85 Km at 0231 UTC	N (147.0 km) Moving in NE-ward direction.	Multi Isolated cells forming in N at 0111 UTC at a distance 147.0 Km from radar. Matured, dissipated at 1241 UTC in ENE at a distance of 65.7 km from Radar.	Thunderstorm /Rain	N/A
		0121-0300 UTC Contd.	Isolated cells system with maximum reflectivity of 56.5 dBz at 0251 UTC and maximum height of 12.96 Km at 0251 UTC	N (30.6 km) Moving in E-ward direction.	Multi Isolated cells forming in N at 0121 UTC at a distance 30.6 Km from radar. Matured, dissipated at 1241 UTC in ENE at a distance of 65.7 km from Radar.	Thunderstorm /Rain	N/A

Radar station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolatedsinglecells/multiple cells/convectiveregions/squalllines) with height of 20dBZ echo top and maximum reflectivity.	Formation w.r.t. Radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Jaipur	13/05/18	03:02 UTC TO 11:32 UTC 12/05/18	Multiple cell with average height of 4.5 km & maximum reflectivity49:50 dBZ	Multiple cell develop from 03:02 UTC of 12/05/2018 towards NE,N,NW of Jaipur and moved to E,SE,NE Wards at speed10--15 km/hr	Multiple cell develop from 0302 UTC on 12/05/2018 towards NE,N,NW, of Jaipur and reaches maximumrefelectivityduring10:12 to 10:22 UTC of 12/05/2018 and died 11:32 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Bharatpur, Dholpur, Alwar, karauli Districts.
		18:12 UTC To 23:22 UTC 12/05/18	Multiple cell with average height of 1.5 km & maximum reflectivity50:00 dBZ	Multiple cell develop from 18:12 UTC of 12/05/2018 towards SE of Jaipur and moved to E Wards at speed15-20 km/hr	Multiple cell develop from 1812 UTC on 12/05/2018 towards SE of Jaipur and reaches maximum reflectivity during19:02 to 19:12 UTC of 12/05/2018 and died 2322 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Bharatpur, Dholpur, Districts.
Visakhapatnam	12/05/18	1200UTC	multiple cb cells with max reflectivity 61dbz and height 16kms.	93kms(NW) AT 10:01UTC and moving SW ly.	-	-	Koraput(odissa), Rayagada(odisa)
		1500UTC	A line of squally line having max reflectivity 52 dBZ and height 4kms.	97 kms(SOUTH) and squally line prolonged from 12:11 UTC towards NORTH.	Observation at 12:41 UTC. Squally line continued upto 14:51UTC and dissipated over the sea.	-	Over Bay Of Bengal.
		1800UTC	Multiple cells with max reflectivity 56dbz and height 12kms.	196kms(NW) And moving Southerly.	Squally line formed over the bay of Bengal with reflectivity with average reflectivity 42dbz.	-	Narayanpur Dist
	13/05/18	0000UTC	Cb cell over the bay of Bengal with reflectivity 44dbz and height 4kms.	161kms(SE) and moving NE ly.	-	-	Over the bay of Bengal.
		0300UTC	Multiple Cb cells towards NNE and over the Bay of Bengal with maximum reflectivity 55dbz and height 12kms.	202 kms(E) and moving S ly.	Cells developed and dissipating.	-	Gajapati Dist (Odissa) and Bay of Bengal.

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	12-05-18	1250	1320
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	1410	1540
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	1220 1300 1435	1235 1320 1445
Kupwara	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	1300 2000	1325 2130
Jammu	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	2300	2400
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	1450 1540 2200	1530 1620 2300
Banihal	**Northwest India**	**Jammu & Kashmir**	**Hailstorm(Diameter-xx)**	**12-05-18**	**1530**	**1540**
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	1440	1700
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	2223 2325	2245 2350
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	12/13-05-18	1245 0500	1830 0630
Gulmarg	Northwest India	Jammu & Kashmir	Thunderstorm	12-05-18	2030	2130
Chandigarh	Northwest India	Haryana	Thunderstorm	12-05-18	1830	2050
Ambala	Northwest India	Haryana	Thunderstorm	12-05-18	1855	2005
Amritsar	Northwest India	Punjab	Thunderstorm	12-05-18	1320 1607 2230	1406 1900 0100
Patiala	Northwest India	Punjab	Thunderstorm	12-05-18	1750	1950
Ludhiana	Northwest India	Punjab	Thunderstorm	12-05-18	1305	1900
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	13-05-18	0723	0738
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	12-05-18	1610	1740
Akola	Central India	Vidarbha	Thunderstorm	12-05-18	2005	2130
Gondia	Central India	Vidarbha	Thunderstorm	12-05-18	1620	2030
Jabalpur	Central India	Madhya Pradesh	Thunderstorm	12-05-18	2200	2345
Raipur	Central India	Chhattisgarh	Thunderstorm	12-05-18	1640	2135
Pendra Road	Central India	Chhattisgarh	Thunderstorm	12-05-18	1420	1615
Malda	East India	SHWB	Thunderstorm	13-05-18	0610	0645
Bhubaneswar	East India	Odisha	Thunderstorm	13-05-18	0258	0755
Jharsuguda	East India	Odisha	Thunderstorm	13-05-18	2207	2345
Paradeep	East India	Odisha	Thunderstorm	13-05-18	0255 0635	0332 0730
Puri	East India	Odisha	Thunderstorm	13-05-18	0435	0615
Port Blair	A and N Islands	A and N Islands	Thunderstorm	13-05-18	1000	1215

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)**
Barapani	Northeast India	Meghalaya	Thunderstorm	12-05-18	12/1125	12/1505
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	12-05-18	12/1108 12/1425	12/1120 12/1435
Ramgundam	South India	Telangana	Thunderstorm	12-05-18	0335	0615
Hanmakonda	South India	Telangana	Thunderstorm	12-05-18	0830	0935
Hyderabad	South India	Telangana	Thunderstorm	12-05-18	0830	0935
Kurnool	South India	Rayalaseema	Thunderstorm	12-05-18	2045	2230
Coimbatore Airport	South India	North interior Tamil Nadu	Thunderstorm	12-05-18	1826	2300
Kodaikanal	South India	South interior Tamil Nadu	Thunderstorm	12-05-18	1220 1800	1330 1800
Coimbatore Airport	South India	North interior Tamil Nadu	Thunderstorm	12-05-18	1826	2300

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: