India Meteorological Department

FDP STORM Bulletin No. 69 (14-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

♦ The Western Disturbance as a trough in mid tropospheric westerlies with its axis at 5.8 km above mean level roughly along Long 65°E to the north of lat. 30°N persists.

♦ A cyclonic circulation lies over central Pakistan & adjoining Punjab and northwest Rajasthan and extends upto 0.9 km above mean sea level.

♦ The north south trough from northwest Rajasthan to Madhya Maharashtra now runs from above cyclonic circulation to north Madhya Maharashtra across southeast Rajasthan and West Madhya Pradesh and extends upto 0.9 km above mean sea level.

♦ The other north south trough now runs roughly along Long 88°E to the north of 24°N between 3.1 km & 3.6 km above mean sea level.

♦ A cyclonic circulation at 1.5 km above mean sea level lies over Uttarakhand & neighbourhood.

♦ A cyclonic circulation at 3.1 km above mean sea level lies over southeast Rajasthan & neighbourhood.

♦ The cyclonic circulation over northern parts of West Bengal & neighbourhood extending upto 1.5 km above mean sea level persists.

♦ The north south wind discontinuity from Rayalaseema to south Tamilnadu now runs from Telangana to south Tamilnadu and extends upto 0.9 km above mean sea level.

♦ A low pressure area has formed over southwest Arabian Sea & neighbourhood and associated cyclonic circulation extends upto 4.5 km above mean sea level. It is likely to move west northwest towards Gulf of Adan & adjoining areas and likely to concentrate into a depression during next 48hours.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

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

LOW LEVEL CIRCULATION (LLC) over Southwest Arabian Sea:
Scattered low/medium clouds with embedded intense to very intense convection seen over Southwest Arabian Sea between Lat 06.0deg N to 11.0deg N, long 53.0deg E to 61.0deg E in association with **Low Level Circulation (LLC)** over the area **(Minimum CTT Minus 85 Deg C)**

Western Disturbance (WD):
Broken multi-layered clouds with embedded moderate to intense convection were seen over East Afghanistan, North Pakistan, West Jammu & Kashmir, Himachal Pradesh, Punjab and over area between Lat 37.0N To 44.0N Long 66.0E To 90.0E in association with WD over the area.

Clouds descriptions within India:
Scattered low/medium clouds with embedded moderate to intense convection seen over West Jammu & Kashmir **(Minimum CTT minus 54 Deg C),** North Odisha, Sikkim, North Sub Himalayan West Bengal and Lakshadweep. Scattered low/medium clouds with embedded weak to moderate convection seen over East Jammu & Kashmir, Himachal Pradesh, Punjab **(Minimum CTT minus 40 Deg C),** Chhattisgarh, Jharkhand, East Bihar, Northeast states, Southwest Rajasthan, East Vidarbha, Karnataka, Kerala, Tamilnadu and Andaman Islands. Scattered low/medium clouds seen over north Uttarakhand, Konkan & Goa,

Arabian Sea:-
Scattered low/medium clouds with embedded intense to very intense convection seen over Southeast Arabian Sea.

Bay of Bengal & Andaman Sea:
Scattered low/medium clouds with embedded moderate to intense convective seen over Northeast Bay and isolated weak to moderate South Bay and South Andaman Sea

Past Weather:

Convection (during last 24 hrs):
Moderate to Intense convection was observed over J&K Himachal Pradesh Uttarakhand Punjab Haryana Delhi Extreme North Rajasthan Uttar Pradesh North Madhya Pradesh Chhattisgarh Odisha Bihar Jharkhand West Bengal Sikkim North-East States Andhra Pradesh East Telangana Goa Karnataka Kerala Tamilnadu Lakshadweep and weak to moderate convection observed over South-East Madhya Pradesh Vidarbha Madhya Maharashtra Andaman & Nicobar Islands.

OLR: - .
Upto 230 wm^{-2} observed over J&K Himachal Pradesh Uttarakhand East Jharkhand Gangetic West Bengal Sikkim Arunachal Pradesh Manipur Mizoram Tripura Coastal Andhra Pradesh South Interior Karnataka Kerala West Tamilnadu & Lakshadweep.

Westerly Trough & Jet Stream: roughly along Longitude 65.0N & North of Latitude 30.0N.

Dynamic Features:-
Wind Shear 25-40 knots is observed over North-West India, North-East India and 15-20 knots over Central India and 5-15 knots over south peninsular India.
Negative Positive shear tendency is observed over East Uttar Pradesh Bihar Jharkhand Chhattisgarh Odisha West Bengal Sikkim and Positive shear tendency observed over rest India.
Positive Vorticity (850 hPa) more than 50 ($x10^{-5}$/s) is observed over East Madhya Pradesh adjoining Chhattisgarh East Vidarbha adjoining Telangana & East parts of Gangetic West Bengal.
Positive Low Level Convergence is observed over East Vidarbha South Chhattisgarh adjoining Odisha Telangana & Jharkhand.

Precipitation:

IMR:-

Rainfall up to 70-90 mm was observed over Kerala.

Rainfall up to 50-70 mm was observed over South East Jharkhand South Gangetic West Bengal North-East Odisha South-West Tamilnadu.

Rainfall up to 20-30 mm was observed over North-West J&K East Uttar Pradesh Extreme South Coastal Andhra Pradesh Lakshadweep

Rainfall up to 01-20 mm was observed over Rest J&K Himachal Pradesh Uttarakhand Punjab Haryana Delhi West Uttar Pradesh North-East Madhya Pradesh North Chhattisgarh rest Odisha rest Jharkhand Bihar Rest West Bengal Sikkim North-East States Telangana Rayalseema East Karnataka rest Tamilnadu & Andaman Islands .

DWR and RAPID Observations:

Isolated/multiple moderate echoes on Chennai, Hyderabad, Machilipatnam and Nagpur (dBZ > 50 and height >10km), and Light to moderate over Agartala, Gopalpur, Jaipur, kochi, Paradeep, and Thiruvananthapuram at around 1500IST.

RAPID RGB Satellite imagery at 1530 IST indicated significant convection over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, East Rajasthan, East Madhya Pradesh, , North Coastal Andhra Pradesh, Telangana, Rayalaseema, Karnataka and 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 for next few days over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	14.05.2018	15.05.2018
PM10 (micro-g/m^3)	159	175
PM2.5 (micro-g/m^3)	63	69

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs:

00 UTC of Day 1-4: 850/925 hPa weak CYCIR southwest Arabian Sea tracking westwards likely to intensify subsequently.

00UTC of Day1-5: 850 hPa NE-SW trough from U.P. to N Karnataka across M.P., Maharashtra.

00UTC of Day2-4: 850 hPa trough over WB-Bangladesh region, a weak CYCIR at 700 hPa over southern tip of peninsula moving westwards.

Confluence & Wind Discontinuity Regions: 12 UTC of Day 0-2: 925 hPa N-S discontinuity over Southern Peninsular India

Synoptic Systems: 12 UTC of Day 3-4:

00 UTC of Day 1-4: 850 hPa A CYCIR over southwest Arabian Sea moving westwards

00 UTC of Day 1-4: Western disturbance as a trough over J&K

12 UTC of Day 3-4: An 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: Odisha, Madhya Maharashtra, Chhattisgarh,
Day1: Jharkhand, East MP, Madhya Maharashtra, Chhattisgarh,
Day2: Assam Meghalaya, NE NMMT, Saurashtra Kutch, Madhya Maharashtra,
Day3: Assam Meghalaya, NE NMMT, Jharkhand, East RJ, Odisha, Madhya Maharashtra,
Day4: Assam Meghalaya, Gangetic WB, Jharkhand, East MP, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, SI Karnataka,

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Assam Meghalaya, Gangetic WB, Uttarakhand, Himachal Pradesh,
Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Bihar, East UP, West UP,
Day2: Assam Meghalaya, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh,
Day3: Assam Meghalaya, Gangetic WB, East UP, Uttarakhand,
Day4:-

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, 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,
Day2: Arunachal Pradesh, 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,
Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Delhi, Delhi, 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,
Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Delhi, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Coastal Karnataka, NI Karnataka,
Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Delhi, 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, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, 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, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Gujarat Region, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Haryana, Delhi, Delhi, 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, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

8. Rainfall and thunder storm activity:

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Odisha, Chhattisgarh, SI Karnataka,
Day2: Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jammu Kashmir, Kerala,
Day3: Assam Meghalaya, NE NMMT, Gangetic WB, Jammu Kashmir, Kerala,
Day4: Assam Meghalaya, NE NMMT, Odisha, Kerala,
Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Kerala,

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a cyclonic circulation over North Pakistan adjoining Punjab and North West Rajasthan in lower Troposphere (925hPa). The forecast shows the circulation will persist till day 3 with Eastward movement. The analysis also shows a North- South Trough extends from this cyclonic circulation up to North Madhya Maharashtra across South East Rajasthan and West Madhya Pradesh. The forecast shows the trough will persist till day3 with slight eastward shift. The analysis indicates another cyclonic circulation over North West Madhya Pradesh adjoining West Uttar Pradesh. The forecast show it will merge with the North- South Trough in next 24 hours. Another cyclonic circulation is seen over South East Rajasthan and adjoining areas. A cyclonic circulation is seen in the analysis over northern parts of West Bengal and adjoining areas in lower Troposphere (925hPa). The forecast shows it will persist for next 24 Hours. A Trough is seen in the analysis extending from Telangana and adjoining south 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 western parts of the 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 Foothills of Himalaya, North-South Trough, around the cyclonic circulations, along Foothills of Himalaya, eastern parts of India, NE states during next 3 days; Low level Positive Vorticity is also seen over parts of Punjab, North West Rajasthan, Haryana, 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, Uttar Pradesh, Gangetic Plains covering the areas from Rajasthan, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Madhya Maharashtra, Marathawada, Vidarbha, Chhattisgarh, Andhra Pradesh, along east and west coast of India on day 1; In day 2 It remains over the same region along east and west coast but disappears over Northern parts of West Rajasthan, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand and Northern Parts of Madhya Pradesh and also appears over Tripura and adjoining areas; on day 3 the value of the index is greater than the threshold over parts of Gujarat, coastal Maharashtra, coastal Karnataka, Konkan and Goa, Tamil Nadu, Kerala, Andhra Pradesh, Orissa, GWB, Bihar, Jharkhand, Chhattisgarh, Vidarbha, Telangana and Uttar Pradesh. Significant zone lies over south west Rajasthan, Gujarat, Eastern parts of the country, coastal areas along the east coast and west coast, GWB, Bihar, Jharkhand, Orissa, coastal Andhra Pradesh, Telangana, East Uttar Pradesh, coastal Kerala and Tamil Nadu.

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, 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, Punjab, Haryana, Delhi, Himachal Pradesh and Uttarakhand. In day 2 and 3 it remains on the same region but disappears over Northwest India including Punjab, Delhi, West Uttar Pradesh, J&K, Himachal Pradesh and Uttarakhand except over North Haryana on day 2 and 3; Significant zone with maximum negative value is found over 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 2 days; on day 3 it is seen over most of the parts of the country except west Rajasthan, Gujarat, Kerala, Assam, Tripura, Mizoram, Meghalaya, Nagaland and adjoining areas; Significant zone with Maximum value of the index lies over J&K, Himachal Pradesh, Uttar Pradesh, East Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Orissa, Vidarbha, South West Rajasthan, GWB, Andhra Pradesh, Telangana and North Karnataka.

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 and Chhattisgarh..

CAPE (> 1000): Mostly seen over southern peninsular India, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, 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 East Madhya Pradesh and adjoining areas on day 2; maximum value of the index is seen over parts of GWB, Orissa, Andhra Pradesh, Tamil Nadu, coastal areas along East and West Coast, coastal Gujarat, 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 Tamil Nadu and the value of the index lies in the above range over most of the parts of the country except central parts of J&K on day 1; on day 2 and 3 it is seen over most of the parts of the country except Central Parts of Madhya Pradesh, J&K, Punjab, Haryana, Himachal Pradesh, Uttarakhand and Rajasthan; the maximum value of the index is seen over parts of Gujarat, East Uttar Pradesh, North Andhra Pradesh and adjoining Chhattisgarh, East Madhya Pradesh and East Uttar Pradesh.

5. Rainfall Activity:

70- 130 mm Rainfall: over some parts of Assam and adjoining Sikkim on day 2.

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

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

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 2 days; on day 3 over same region except Haryana, Delhi, Rajasthan, West Uttar Pradesh and Gujarat.

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, Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Sikkim, GWB, Bihar, Jharkhand, SHWB, Chhattisgarh, Orissa and NE states, Himachal Pradesh, Uttarakhand, Telangana, coastal Maharashtra, south Madhya Maharashtra, some parts of Vidarbha, East Uttar Pradesh, ad adjoining West Uttar Pradesh, Foothills of Himalaya and some parts of North Punjab. On day 2 over parts of J&K, Himachal Pradesh, Bihar adjoining East Uttar Pradesh, Chhattisgarh, GWB, SHWB, Orissa, Andhra Pradesh, Sikkim, Assam, Arunachal

Pradesh, Tripura and adjoining areas; On day 3 mostly over parts of J&K, Himachal Pradesh, GWB, Orissa, Andhra Pradesh, some parts of South Madhya Maharashtra, 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, Konkan and Goa, Kerala, Andhra Pradesh, Tamil Nadu, GWB, SHWB, Bihar, Jharkhand, Orissa, Sikkim and NE states during next 3 days; below threshold value of the index is also seen over parts of South Madhya Maharashtra, Telangana, Uttarakhand and Chhattisgarh on day 1; over parts of Chhattisgarh on day 2.

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

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, Vidarbha, East Uttar Pradesh, Bihar, Jharkhand, Telangana, Rayalaseema during next 3 days; Some parts of West Uttar Pradesh, Punjab, Uttarakhand, southwest Rajasthan and East Madhya Pradesh on day 1; over some parts of West Uttar Pradesh day 3; Maximum value of the index is seen over the parts of Orissa, GWB, coastal Andhra Pradesh, coastal Tamil Nadu, Kerala, Karnataka, Telangana, coastal Maharashtra, coastal Gujarat, Konkan and Goa.

CIN (50-150): It covers most of the parts of the country except central parts of the Madhya Pradesh and extreme south peninsular India on day 1; over most of the parts of country except central parts of the Madhya Pradesh, extreme south peninsular India, Rajasthan and NE eastern States on day 2 and 3; 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, Vidarbha and adjoining areas.

3. Rainfall and thunderstorm activity:

Above 130 mm Rainfall: over some parts of Assam on day 2 and 3.

70-130 mm Rainfall: over parts of Bihar on day 1 and 2; over parts of Sikkim, SHWB, Assam and adjoining areas on day 2; over parts of Assam, Tripura and adjoining areas on day 3.

40- 70 mm Rainfall: over parts of Bihar and Orissa on day 1 and 2; over parts of North Interior Karnataka, Tripura and adjoining areas on day 1; over parts of J&K, Jharkhand, SHWB, Gangetic West Bengal, Assam, Sikkim, Meghalaya and south Kerala on day 2; over parts of J&K, GWB, Assam, Meghalaya, Tripura and adjoining areas on day 3.

10- 40 mm Rainfall: over parts of J&K, Himachal Pradesh, Foothills of Himalaya, Kerala, Tamil Nadu, Sikkim, GWB, Orissa and NE states during all 3 days; over parts of Uttarakhand, Bihar, Jharkhand, Chhattisgarh, Andhra Pradesh, Telangana, Karnataka, East Uttar Pradesh and coastal Maharashtra on day 1; over some parts of Bihar, Jharkhand and South Chhattisgarh on day 2.

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

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over almost entire Indian region excepting Rajasthan, Northwest Madhya Pradesh on day 1. The probability of occurrence decreases over Northwest India but increases over East India on day 2. SWEAT index, which also accounts for the wind shear between 850 and 500 hPa levels, indicates high probability of thunderstorm occurrence over entire Indian region, with highest probability over East India and least over Rajasthan, West Madhya Pradesh and south peninsular India on day 1, with the probabilities decreasing on day 2. The 850-200 hPa wind shear is very high over Northwest India on day 1, and increases over extreme North India on day 2.

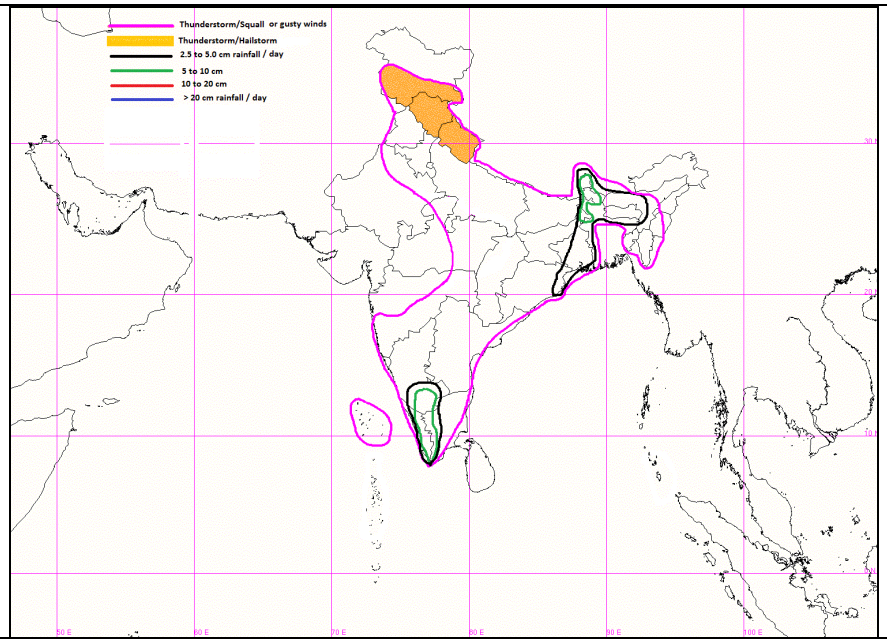
o Synoptic analysis indicates that there are four cyclonic circulations over North India in the lower levels (a) over central Pakistan & adjoining Punjab and northwest Rajasthan (b) over Uttarakhand & neighbourhood (c) northern parts of West Bengal & neighbourhood (d) over southeast Rajasthan & neighbourhood. There is also a north south trough from the cyclonic circulation over Punjab to north Madhya Maharashtra. ECMWF and IMD GFS deterministic models indicate that the east-west trough is likely to become prominent in the afternoon while the circulation over West Bengal & neighbourhood is likely to shift slightly southwards to over Odisha. However, the east-west trough is likely to be weaker than yesterday and associated weather over Northwest India is likely to be less compared to yesterday due to decreasing strength of easterlies over the region. However, severe convection is expected over East India on day 1. On day 2, the circulation over West Bengal & neighbourhood is likely to shift slightly northwards, and severity of weather is likely to increase over Sub Himalayan West Bengal and Northeastern states.

o A low pressure area has formed over southwest Arabian Sea & neighbourhood and associated cyclonic circulation extends upto 4.5 km above mean sea level. There is also a north south wind discontinuity from Telangana to south Tamilnadu in the lower levels. Associated with the above systems, widespread thunderstorm activity is expected over peninsular India on day 1. On day 2, as the low pressure area intensifies, weather is likely to be confined to east peninsular India.

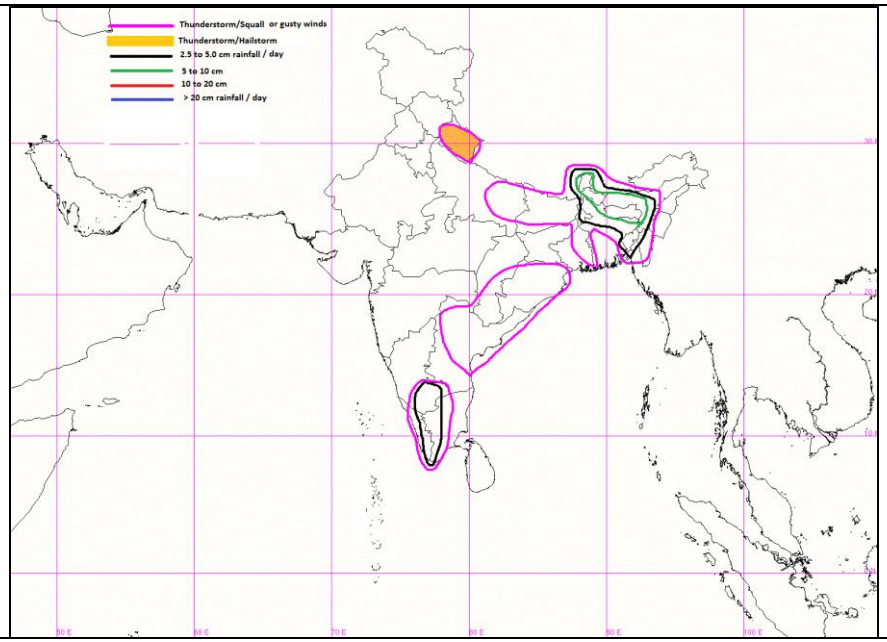
IOP Area for Day-1 & Day-2:

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

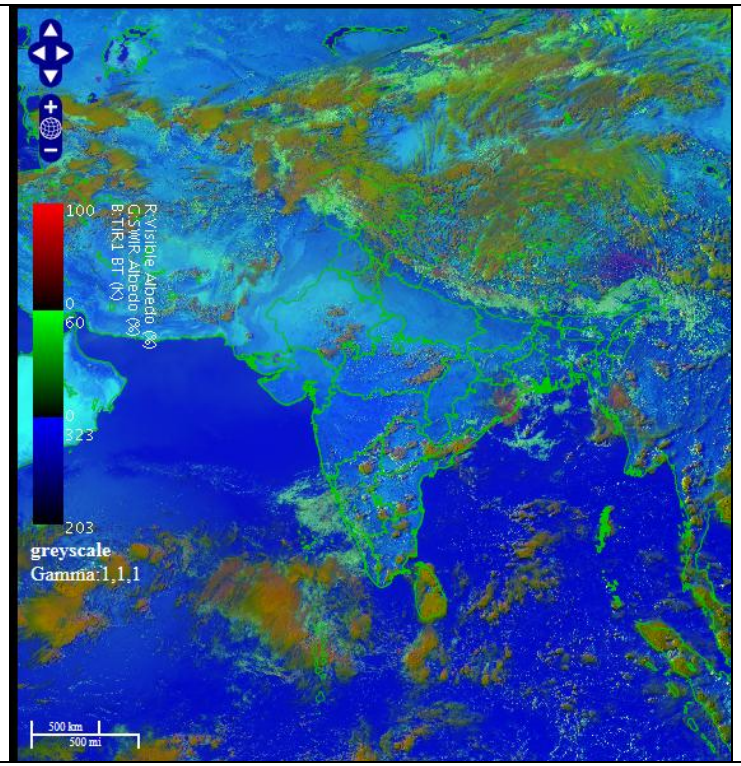
Graphical Presentation of Potential Areas for Severe Weather:



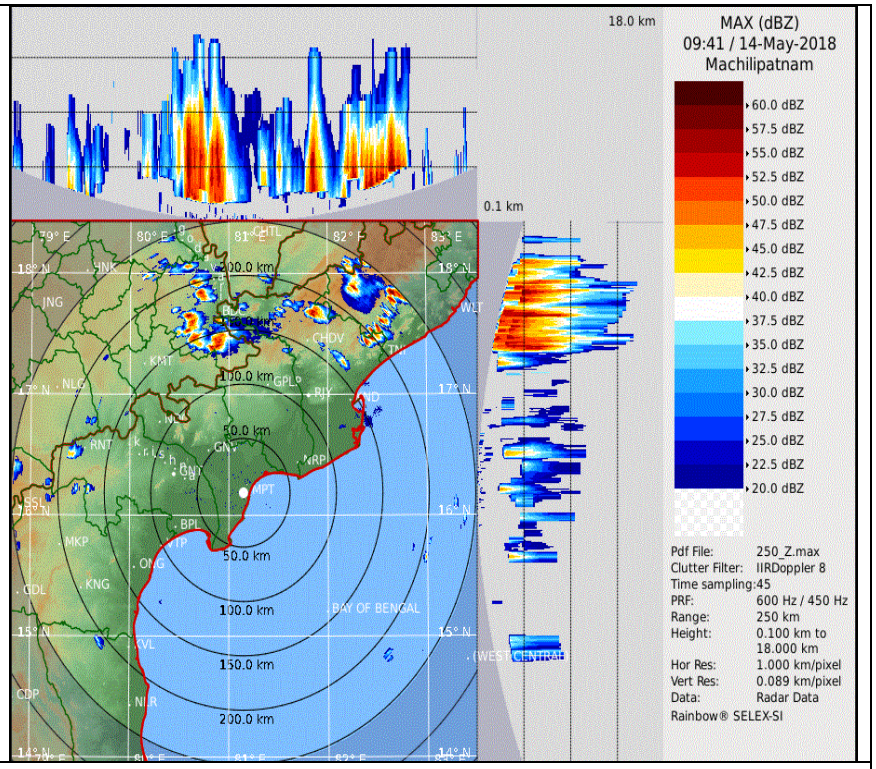
IOP Advisory for 24 hours



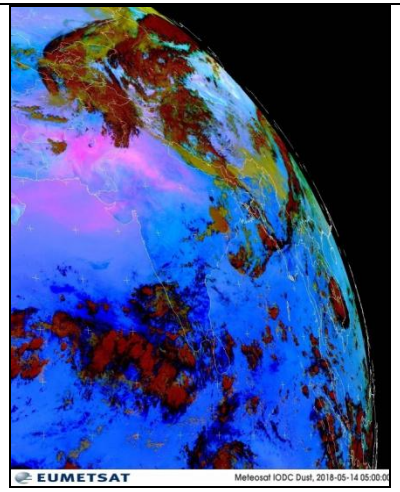
IOP Advisory for 48 hours

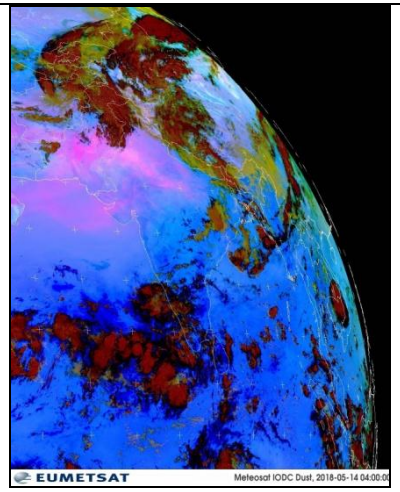


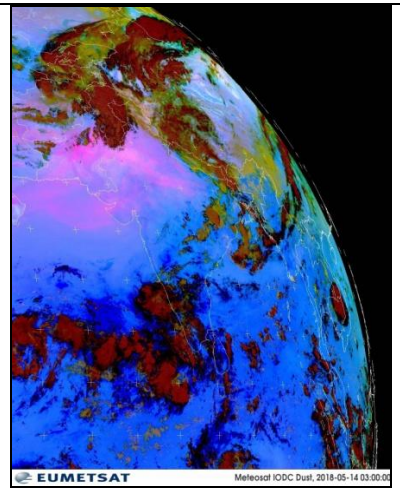
RAPID RGB Imagery at 1530 IST of the Day

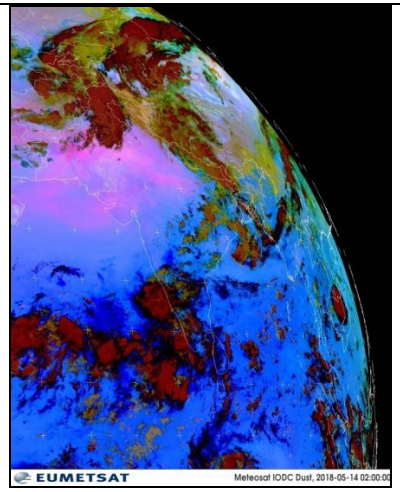


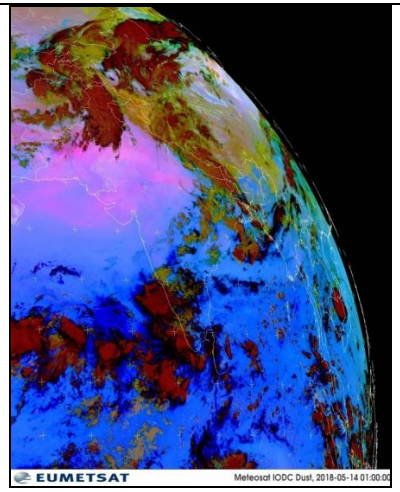
DWR Machilipatnam Reflectivity Image at 1511 IST

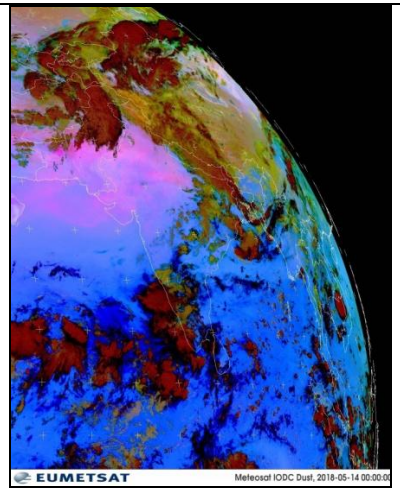




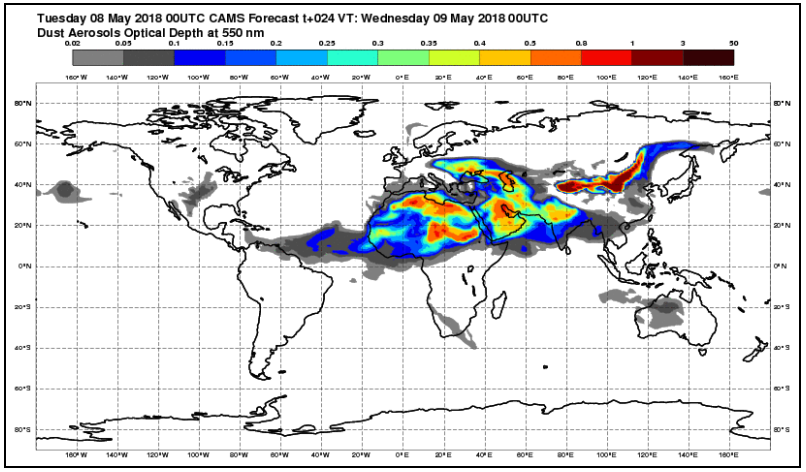




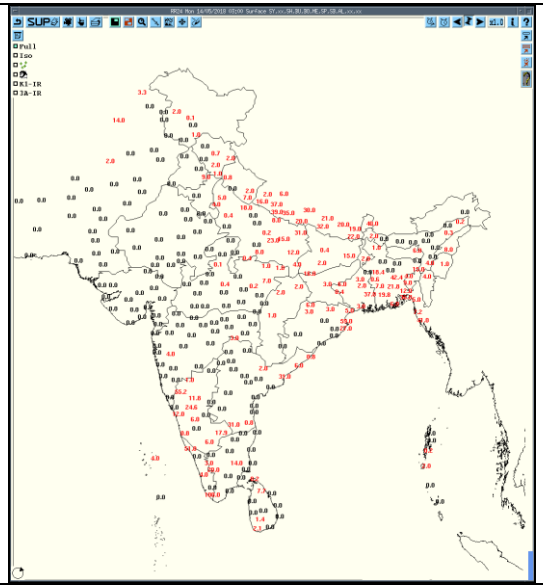




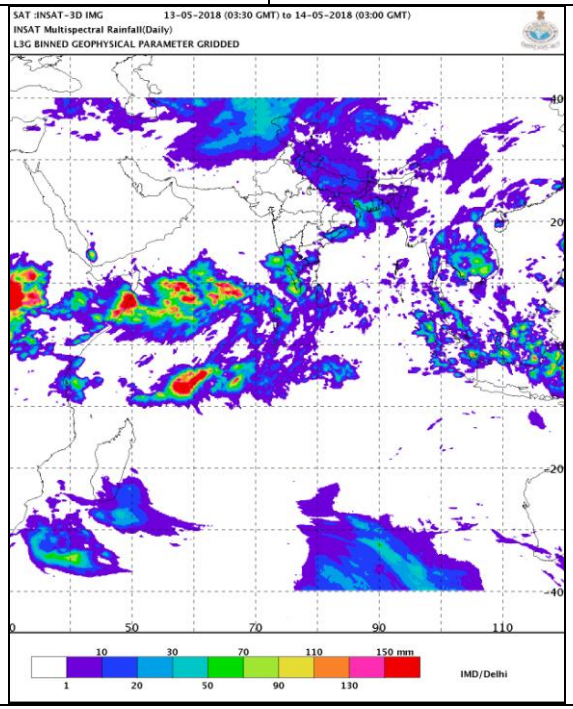
Observed Satellite Dust Images of today



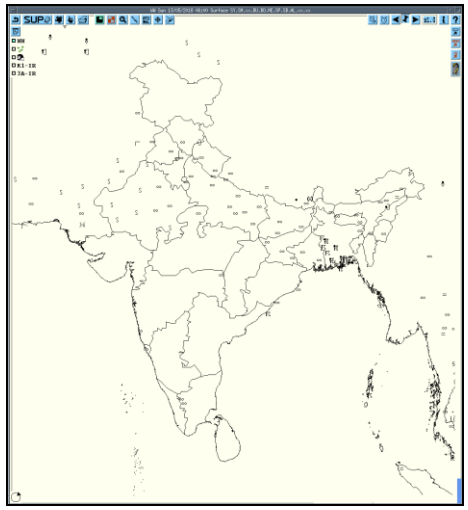
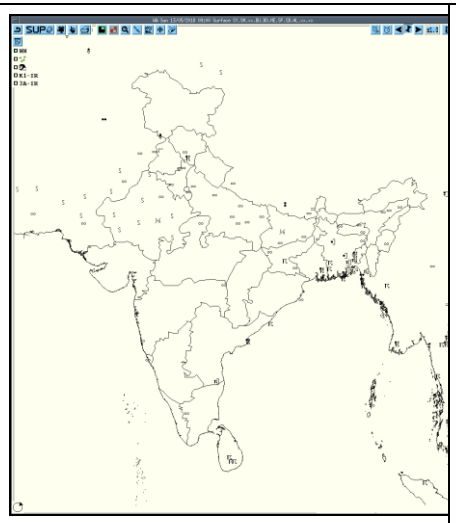
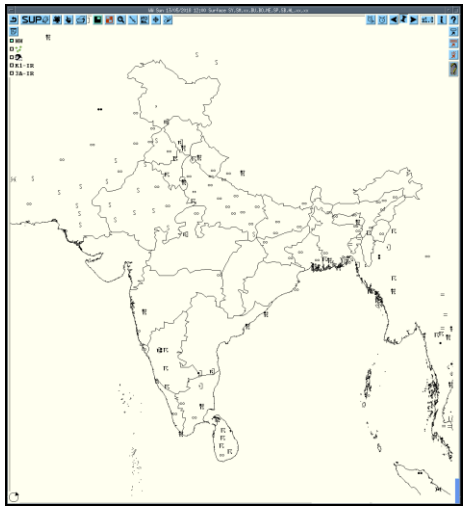
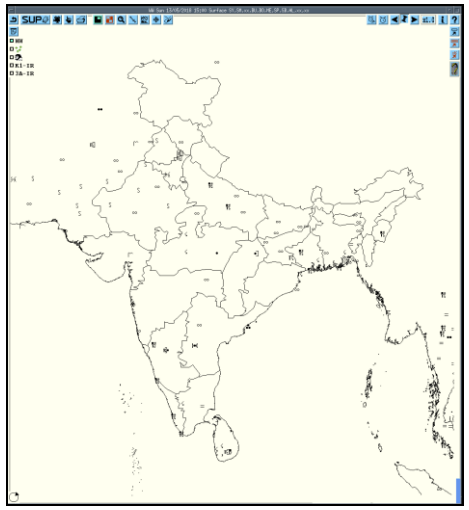
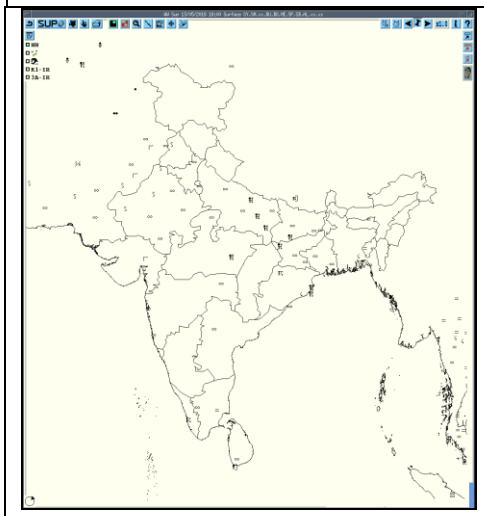
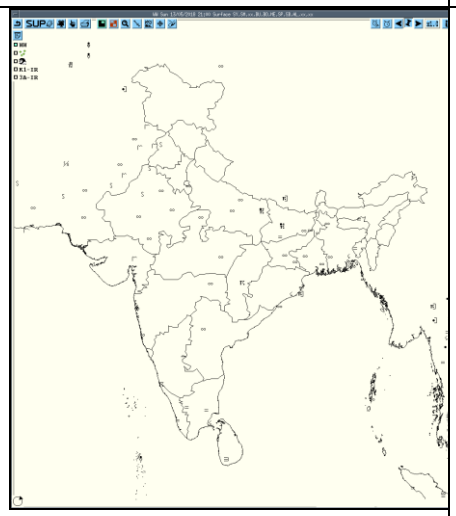
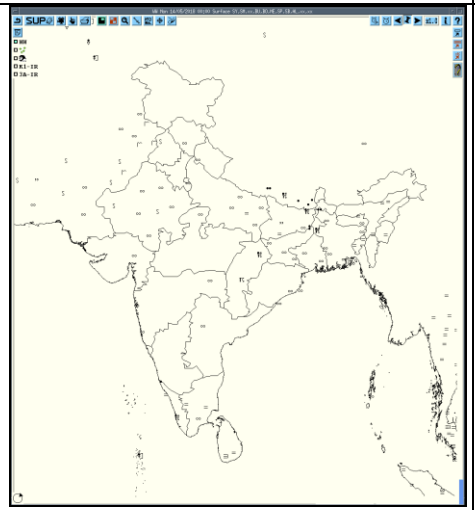
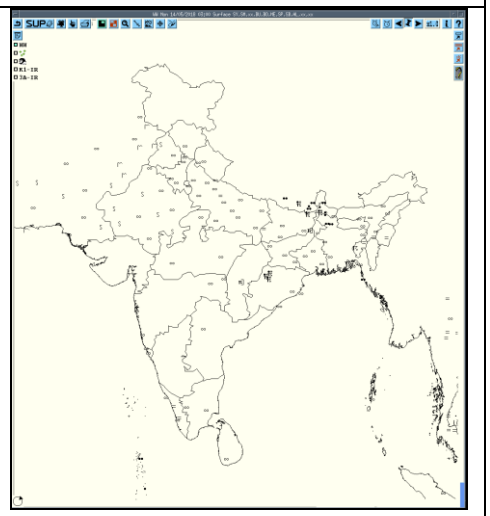
Dust Forecast



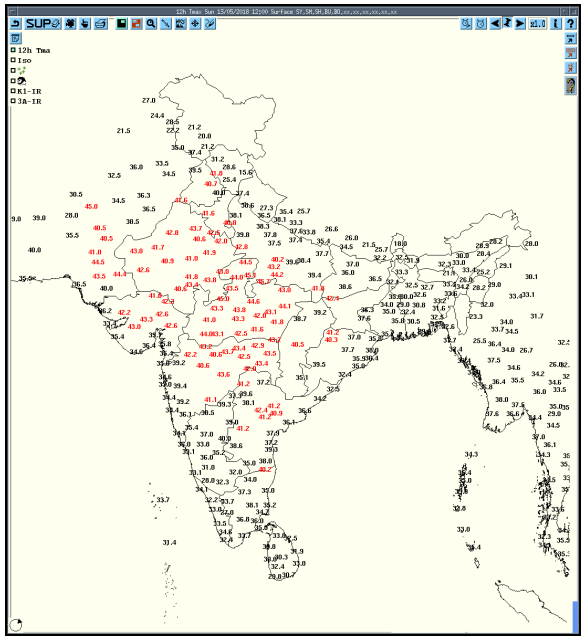
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



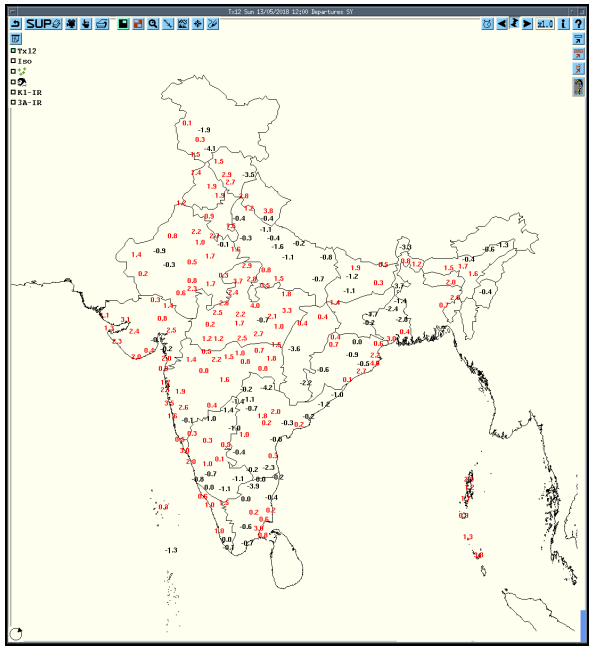
IMR

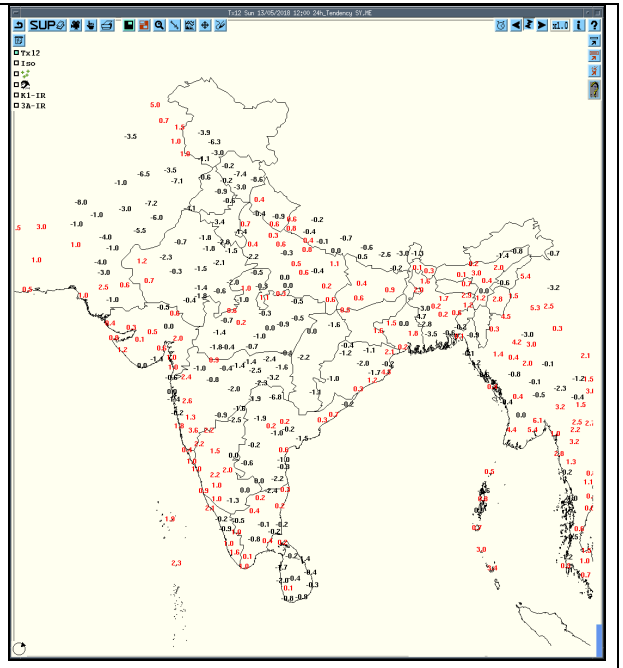
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



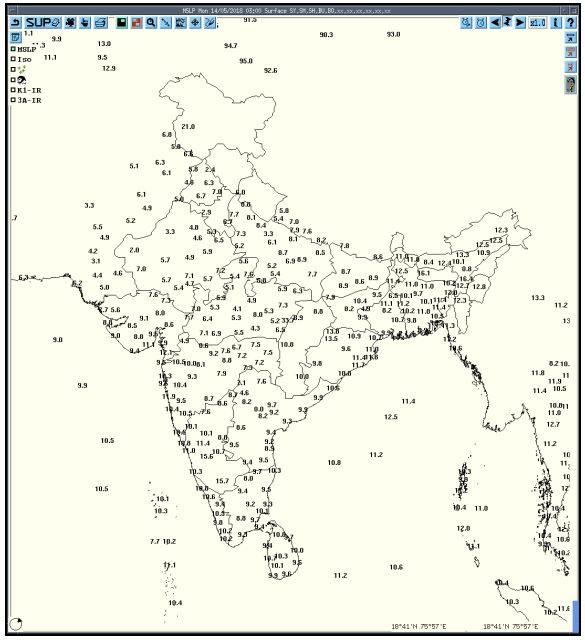
Tmax



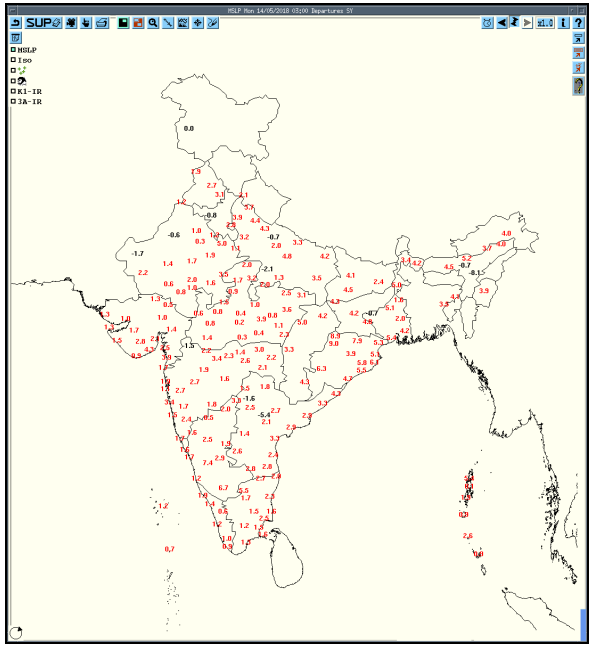
Departure Tmax



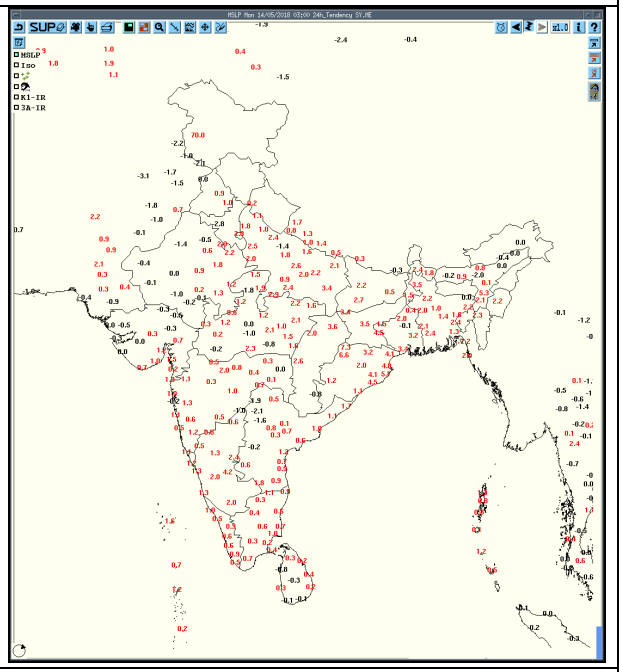
Tendency Tmax



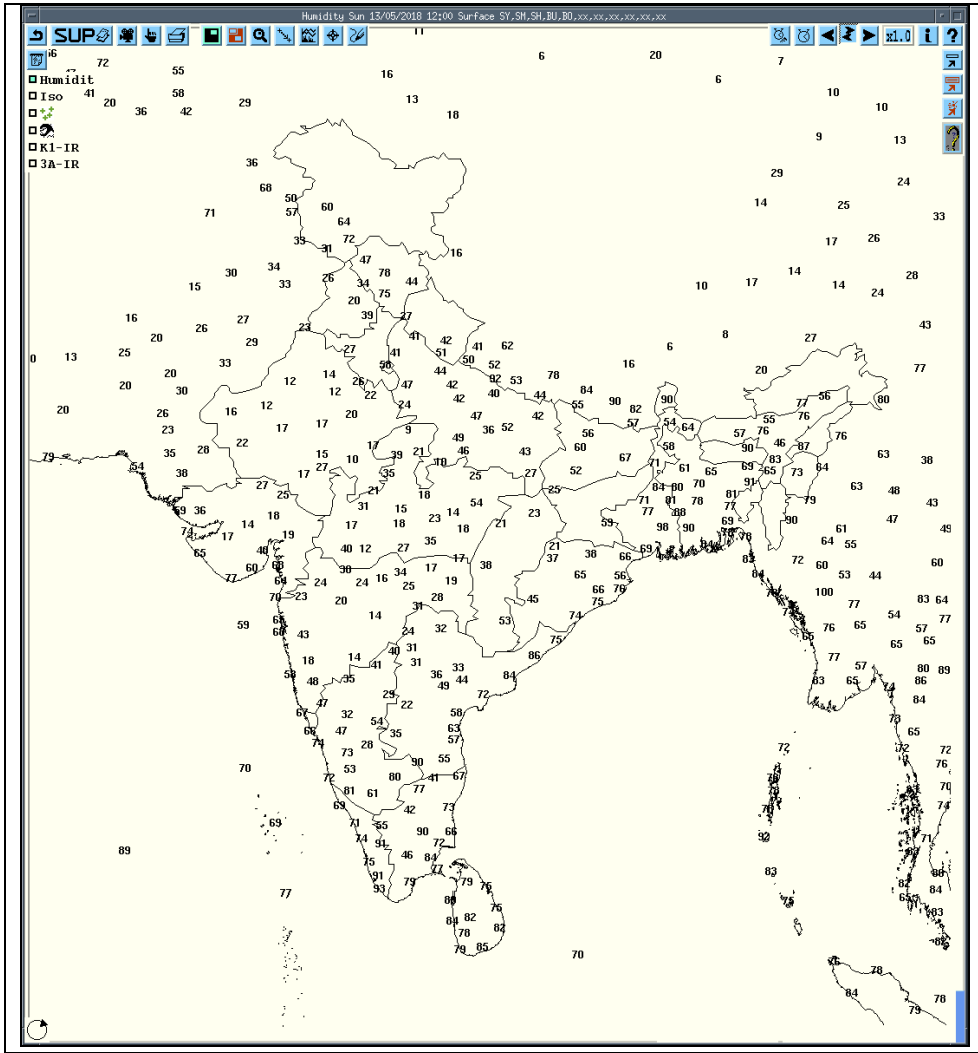
MSLP



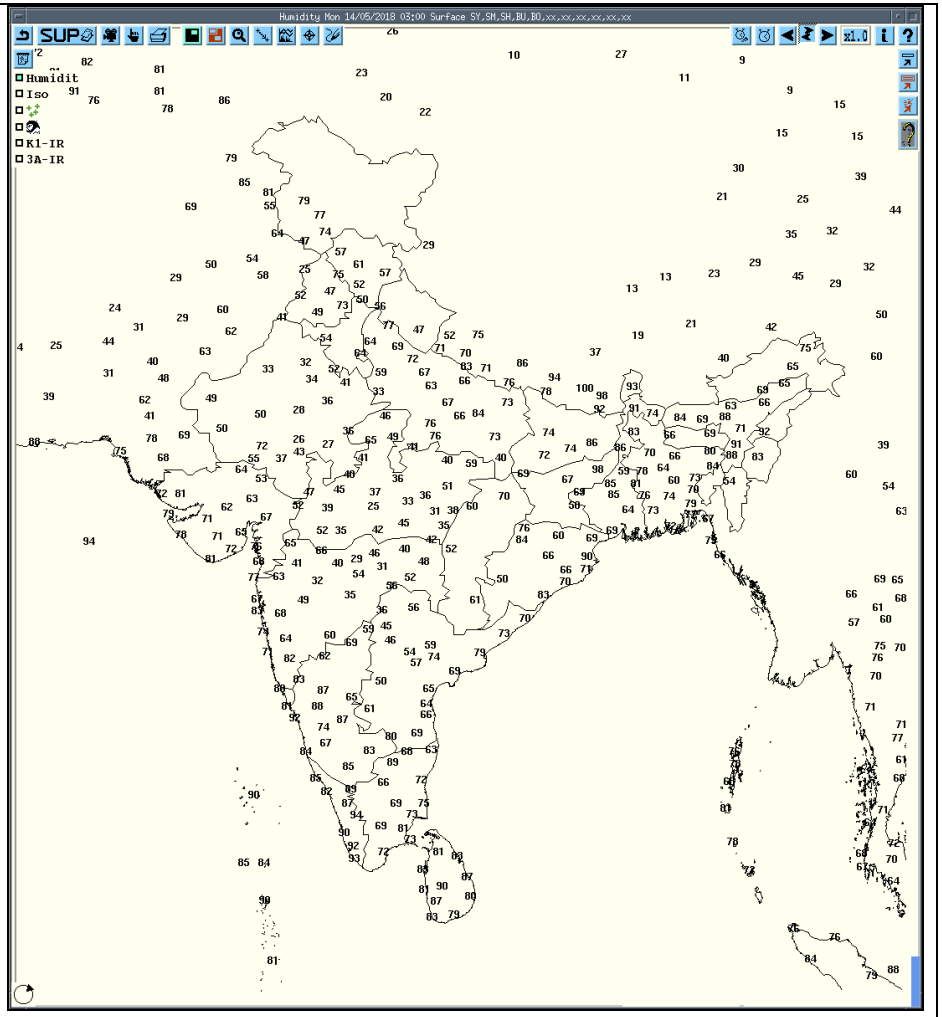
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

Radar Station Name	Date	Time Interval of Observation (UTC)	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	13-05-18	Contd. From 0101-0401	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 0401 UTC in N at a Distance of 228.0 km from Radar.	Thunderstorm /Rain/Hail	N/A
		Contd. From 0111-0621	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, later transformed into big multi celled system, dissipated at 0621 UTC in NNE at a distance of 148.0 km from Radar.	Thunderstorm /Rain	N/A
		Contd. From 0121-0411	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 0411 UTC in NNE at a distance of 83.8 km from Radar.	Thunderstorm /Rain	N/A
		0621-1411	1.Isolated cells system with maximum reflectivity of 65.5 dBz at 0911 UTC and maximum height of more than 18 Km at 0811 UTC	NNE (93.5 km) Moving in SE-ward direction.	Multi Isolated cells forming in NNE at 0621 UTC at a distance 93.5 Km from radar. Matured, breaks into two parts at a distance of 63.8km SW from Radar. One part(A) moved WSW-wards and another(B) S-wards. The part B is merged with cell -2 at 1211 utc at a distance of 142.6 km west from Radar. dissipate at 1411 UTC in South at a distance of 113.7 km from Radar.	Thunderstorm /Rain/Hail	N/A
		1021-1721	2.Isolated Single cell with maximum with maximum reflectivity of 67.5 dBz at 1151 UTC and maximum height of more than 18 Km at 1141 UTC	Coming from West moving East-ward	Single cell coming from West at 1021 UTC at a distance 244.1 Km) from radar. Matured, later transformed into a big cell system and dissipate at 1721 UTC in SSW at a Distance of 170.1 km from Radar.	Thunderstorm /Rain/Hail	N/A
		1721-2400	NIL	NIL	NOSIG ECHO	NIL	NIL
	14-05-18	0000-0300	NIL	NIL	NOSIG ECHO	NIL	NIL

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity.	Formation w.r.t radar station and Direction of movement.	Remarks	Associated severe weather if any	Districts affected
Patiala	14-05-2018	13/05/2018 0300 - 0600	Multiple Cells Dbz 39.0 Ht. 08 To 12 Km	Ne Sectior Movement Towards Se- Direction	____	Ra/Ts	Mandi, Rampur, Shimla, Nahan And Its Adjoining Areas.
		13/05/2018 0600 -0900	Multiple Cells Dbz 44.0 Ht. 09 -12 Km	Ne- Sectiors. Movement Towards Se- Direction	____	Ts/Rain	Dalhousie, Rampur, Mandi,Nahan And Its Adjoining Areas.
		13/05/2018 0900- 1200	Multiple Cells Dbz 57.5 Ht. 11 To 13 Km	Sw,Ne,S Sectior Movement Towards Se- Direction	____	Hail/Ra/Ds/ Ts	Sangrur,Patiala, Pehowa, Jhajar,Rotak, Una,B.Dam. Solan.Shimla, Nahan, Mussorie, Uttarkashi, And Its Adjoining Areas.
		13/05/2018 1200 - 1500	Multiple Cells Dbz 60.5 Ht. 12 To 14 Km	Sw,E, Nw Sectiors Movement Towards Se- Direction	____	Hail/Ds/Ra/Ts	Patiala, Khanna, Nabha, Sirhind, Ambala, Chandigarh, Kathial, Karnal, Panipat, Sonepat, Sangrur, Pehowa, And Its Adjoining Areas.
		13/05/2018 1500 -1800	Multiple Cells Dbz 47.0 Ht 07 To 09 Km	Se Sectiors. Movement Towards Se- Direction	____	Ra/Ts	Hardiwar, Rourkee, Shimla, Meerut, Behat, Reshikesh, And Its Adjoining Areas.
		13/05/2018 1800 - 2100	No Significant Echo.				
		13/05/2018 2100- 0000	No Significant Echo.				
		14/05/20180 000-0252	No Significant Echo.				
Lucknow	14/05/2018	131002 UTC TO 132042 UTC	Squall Line convective system with average height of 13 KM with Maximum Reflectivity of 61.5 dBZ	W(200KM) moving in E'ly Direction at speed of 65 km/hr to 72 km/hr.	Multiple cells started forming at 0912 UTC at W(220KM) to WSW(230KM) from DWR LKN.Organised into Squall Line MCS at 1412 UTC . The system did not disorganized and moved in E'ly Direction and dissipated at 2042 UTC at NE(250KM) to SE(250KM).	TS/SQUALL/HAIL/RAIN	TS/SQ/RA (Almost all districts of U.P. State) HAIL(Etawah,Auraiya, Jalaun,Firozabad,Mainpuri, Banda,Mahoba,Hamirpur, Kanpur,Unnao,Chitrakoot, Hardoi,Raebarely,Lucknow, Sitapur,Fatehpur,Budaun, Shahjahanpur,Barabanki, Amethi,Allahabad,Pratapgarh, Faizabad,Baharaich,Sant Ravidas Nagar,Jaunpur, Shravasti,Balrampur) Note: Report is based DWR LKN.

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Visakhapatnam	13/05/18	0600UTC	Multiple Cb cells towards NE and over the Bay of Bengal with maximum reflectivity 57 dbz and height 18kms.	161 kms(NE), 112 km (E) and moving SE ly.	Cells developed	Thunderstorm with rain	Srikakulam Dist (AP) and Bay of Bengal.
	13/05/18	0900UTC	Multiple Cb cells with maximum reflectivity 60 dBz and height 18kms.	NE(100 kms) & E(70kms) in Bay of Bengal and moving SE ly.	Since last observation CB cells are forming, developing and matured well at 0651 UTC.	Thunderstorm with rain	Srikakulam, Visakhapatnam, East Godavari Dist (AP) Rayagada and Gajapati Dist(Orissa).
	13/05/18	1200UTC	Multiple Cb cells with maximum reflectivity 62 dBz and height 18kms.	20kms to the radar in W,N, E directions and moving SE ly.	Since last observation CB cells are developing and matured well to 62 dBz at 1021 UTC and start dissipating.	Thunderstorm with rain	Srikakulam, Vizianagaram,Visakhapatnam, East Godavari Dist (AP) Rayagada, Koraput Dist(Orissa).
	13/05/18	1500UTC	Multiple Cb cells with maximum reflectivity 57 dBz and height 18kms.	SW(90 KMS) NW(140 KMS) and moving SE ly.	Since last observation CB cells are dissipating.		Visakhapatnam, East Godavari and West Godavari Dist (AP)
	13/05/18	1800UTC	Convective region with maximum reflectivity 38 dBz and height 8kms.	SW(71 KMS) and moving SE ly.	Convective region formed and dissipated at 1741UTC		East Godavari Dist (AP)
Visakhapatnam	14/05/18	0000UTC	Multiple cells formed in Bay of Bengal with maximum reflectivity 51 dBz and height 14kms.	NE(240 KMS) and moving SW ly.	CB cells are formed in Bay of Bengal and developing.		BAY OF BENGAL
	14/05/18	0300UTC	Multiple cells over the bay of Bengal with max reflectivity 55dbz and height 15kms.	190kms(ESE) formed at 02:51UTC. and moving SW ly.	Continued to To be intensified ..	-	Over the Bay of Bengal.

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
Agartala	14/05/18	130300 to 140300	Squall Line Formation At 130300z Over S-B'DESH;15KMS;47dbz	200 Kms SW;30Kmph;NE'ly	Cell persisted till 031300z over Nagaland-Manipur-Mizoram	+TSRA	ALL dists in TRP
Jaipur	14/05/18	08:52 UTC TO 23:02 UTC 13/05/18	Multiple cell with average height of 5.5 km &maximum reflectivity56:00 dBZ	Multiple cell develop from 08:52 UTC of 13/05/2018 towards NW,NE,SE,SW of Jaipur and moved to E,S,NE,SE Wards at speed05--10 km/hr	Multiple cell develop from 0852 UTC on 13/05/2018 towards NW,NE,SE,SW, of Jaipur and reaches maximumrefelectivityduring12:32 to 12:42 UTC of 13/05/2018 and died 23:02 UTC.	Dust storm/Thunderstorm with Light rain at Isolated places	Alwar, Bharatpur, Dholpur, Dausa, Karauli,Tonk, Sawai madhopur, Bundi, Jaipur, Sikar, Nagor Districts.
Patna	14/05/18	130300 - 131512	N/A	N/A	N/A	N/A	N/A

Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)						
Name of Station Reporting	**Region**	**State/Sub Division**	**Weather Event (TS/Hail/Squall)**	**Date**	**Time of Commencement (IST)**	**Time of end (IST)**
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	13-05-18	1745	1815
Kupwara	Northwest India	Jammu & Kashmir	Thunderstorm	13-05-18	1520	1600
Ambala	Northwest India	Haryana	Thunderstorm	13-05-18	1715	1955
Hissar	Northwest India	Haryana	Thunderstorm	13-05-18	1630	1810
Chandigarh	Northwest India	Haryana	Thunderstorm	13-05-18	1630	1810
Patiala	Northwest India	Punjab	Thunderstorm	13-05-18	1655	1855
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	13-05-18	1450 1704	1525 1706
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	13-05-18	1400 1500	1430 1900
Pilani	Northwest India	East Rajasthan	Duststorm	13-05-18	2100	2125
Alwar	Northwest India	East Rajasthan	Duststorm	13-05-18	1800	1820
Bharatpur	Northwest India	East Rajasthan	Duststorm	13-05-18	1800	1830
Safdarjung	Northwest India	Delhi	Thunderstorm	13-05-18	1655	1940
Palam	Northwest India	Delhi	Thunderstorm	13-05-18	1603	1803
Kanpur IAF	Northwest India	East Uttar Pradesh	Thunderstorm	13/14-05-18	1830	0100
Sultanpur	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	2140	2400
Gorakhpur	Northwest India	East Uttar Pradesh	Thunderstorm	13/14-05-18	2335	0255
Ballia	Northwest India	East Uttar Pradesh	Thunderstorm	14-05-18	0015	0115
Bahraich	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	2200	2400
L. Kheri	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	2115	2200
Barabanki	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	2030	2200
Hardoi	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	1845	1915
Lucknow AP	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	1930	2220
Kanpur C	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	1630	2015
Allahabad	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	1930	2200
Banda	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	1930	2000
Varanasi A.P	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	1700	1905
Churk	Northwest India	East Uttar Pradesh	Thunderstorm	13-05-18	1955	2150
Ghazipur	Northwest India	East Uttar Pradesh	Thunderstorm	13/14-05-18	2315	0036
Aligarh	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	1725	1900
Bareilly	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	1920	2300
Shahjahanpur	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	1900	2030
Moradabad	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	1930	2100
Nazibabad	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	1915	2015
Muzaffarnagar	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	2000	2200
Hamirpur	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	1800	2100
Orai	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	2100	2300
Itawa	Northwest India	West Uttar Pradesh	Thunderstorm	13-05-18	1600	2100

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)**
Gangtok	East India	SHWB	Thunderstorm	14-05-18	0555	0600
Malda	East India	SHWB	Thunderstorm	14-05-18	0450	0700
Alipore	East India	GWB	Thunderstorm	13-05-18	1315	2330
Alipore	**East India**	**GWB**	**Squall(Dir-NE, Max. Speed 52kmph)**	**13-05-18**	**1525**	**1526**
DumDum	East India	GWB	Thunderstorm	13-05-18	0840- 1315	0925 1900
Haldia	East India	GWB	Thunderstorm	13-05-18	1635	2120
Bankura	East India	GWB	Thunderstorm	13-05-18	1735	2100
Patna	East India	Bihar	Thunderstorm	14-05-18	0055	0430
Patna	**East India**	**Bihar**	**Squall(Dir-W, Max. Speed 50kmph)**	**14-05-18**	0110	0112
Gaya	East India	Bihar	Thunderstorm	13-05-18	2230	0120
Bhagalpur	East India	Bihar	Thunderstorm	14-05-18	0245	0440
Purnia	East India	Bihar	Thunderstorm	14-05-18	0740	0810
Ranchi	East India	Jharkhand	Thunderstorm	13-05-18	1345	1750
Jamshedpur	East India	Jharkhand	Thunderstorm	13-05-18	1810	2100
Daltonganj	East India	Jharkhand	Thunderstorm	13-05-18	1435	0300
Balasore	East India	Odisha	Thunderstorm	13-05-18	1950 0340	2300 0610
Jharsuguda	East India	Odisha	Thunderstorm	13-05-18	2335 0710	0045 0830…
Chandbali	East India	Odisha	Thunderstorm	13-05-18	2045	2320
Paradeep	East India	Odisha	Thunderstorm	13-05-18	2231	0145
Sambalpur	East India	Odisha	Thunderstorm	13-05-18	0750	0830…
Hirakud	East India	Odisha	Thunderstorm	13-05-18	0815	0830…
Keonjhargarh	East India	Odisha	Thunderstorm	13-05-18	2020 0255	2300 0255
Port Blair	A and N Islands	A and N Islands	Thunderstorm	13-05-18	1115	1220
Silchar	Northeast India	Assam	Thunderstorm	13-05-18	13/1750	13/1920
Barapani	Northeast India	Meghalaya	Thunderstorm	13-05-18	13/1545	13/1630
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	13-05-18	13/1725	13/1745
Shillong	Northeast India	Meghalaya	Thunderstorm	13-05-18	13/1645	13/1800
Imphal	Northeast India	Manipur	Thunderstorm	13-05-18	13/1555 13/1800	13/1620 13/2045
Lengpui	Northeast India	Mizoram	Thunderstorm	13-05-18	13/1526	13/1635
Kailasahar	Northeast India	Tripura	Thunderstorm	13-05-18	13/1420	13/1530
Agartala	Northeast India	Tripura	Thunderstorm	13-05-18	13/1250	13/1450
Tehri	Northwest India	Uttarakhand	Thunderstorm	13-05-18	1530	1705
Dehradun	Northwest India	Uttarakhand	Thunderstorm	13-05-18	1540 1810	1545, 1905
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	13-05-18	1855	2130
Pantnagar	Northwest India	Uttarakhand	Thunderstorm	13-05-18	1930	2000

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)**
Kalingapatnam	South India	Coastal Andhra Pradesh	Thunderstorm	13-05-18	1000	1745
Tuni	South India	Coastal Andhra Pradesh	Thunderstorm	13-05-18	1700	1900
Visakhapatnam	South India	Coastal Andhra Pradesh	Thunderstorm	13-05-18	1300 1525	1305 1710
Kakinada	South India	Coastal Andhra Pradesh	Thunderstorm	13-05-18	1355	1600
Shirali	South India	Coastal Karnataka		13-05-18	2300	0130
Panambur	South India	Coastal Karnataka		13-05-18	1640 1910	1755, 2115
Honnavar	South India	Coastal Karnataka		13-05-18	2155	2230
AMS Bajpe	South India	Coastal Karnataka		13/14-05-18	1655 1935 0128	1755 2210 0335
Kalaburgi	South India	North Interior Karnataka		13-05-18	1550	1630
Belagavi AP	South India	North Interior Karnataka		13-05-18	1735 2010	1755, 2115
Gadag	South India	North Interior Karnataka		13-05-18	1655 1735	1725 1935
Hassan	South India	South interior Karnataka		13-05-18	1535	1815
Madikeri	South India	South interior Karnataka		13-05-18	1425 1740	1655 1840
Chamarajanagar	South India	South interior Karnataka		13-05-18	1530 2200	1740 2300
Bengaluru HAL AP	South India	South interior Karnataka		13-05-18	1410 1720	1615 1840
Bengaluru City	South India	South interior Karnataka		13-05-18	1500	1525
Yelahanka IAF	South India	South interior Karnataka		13-05-18	1430	1600
Bengaluru KIAL AP	South India	South interior Karnataka		13-05-18	1410 1735	1440 1847
Amravati	Central India	Vidarbha	Thunderstorm	13-05-18	0400	0430
Guna	Central India	Madhya Pradesh	Thunderstorm	13-05-18	1615	1720
Raipur	Central India	Chhattisgarh	Thunderstorm	14-05-18	0545	0810
Ambikapur	Central India	Chhattisgarh	Thunderstorm	14-05-18	0355	0535
Pendra Road	Central India	Chhattisgarh	Thunderstorm	13/14-05-18	1820 0245	1927 0430
Bilaspur	Central India	Chhattisgarh	Thunderstorm	14-05-18	0400	0620
Mana	Central India	Chhattisgarh	Thunderstorm	13-05-18	2050	0740

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: