



India Meteorological Department

FDP STORM Bulletin No. 100 (14-06-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC Inference (0300UTC of the day):

- ◆ The Northern Limit of Monsoon (NLM) continues to pass through Lat 19°N/ Long 60°E, Lat 19°N/ Long 70°E, Thane (including Mumbai), Ahmednagar, Buldhana, Amravati, Gondia, Titlagarh, Cuttack, Midnapore, Lat. 24°N/ Long 89°E, Goalpara, Bagdogra and Lat 27°N/ Long 87°E. No further advance likely during next one week due to weakening of monsoon circulation pattern.
- ◆ The cyclonic circulation over south Assam & Meghalaya & neighbourhood now lies over central parts of Assam & neighbourhood and extends upto 0.9 km above mean sea level.
- ◆ The trough in westerlies from south Odisha to north Coastal Karnataka runs from north Interior Odisha to West Central Bay of Bengal off Andhra Pradesh coast between 3.1 km & 5.8 km above mean sea level.
- ◆ A trough at 0.9 km above mean sea level runs from East Madhya Pradesh to Telangana across East Vidarbha.
- ◆ Another trough at 0.9 km above mean sea level runs from South Interior Karnataka to Comorin area across Interior Tamilnadu.
- ◆ A Western disturbance as an upper air cyclonic circulation at 3.1 km above mean sea level lies over Eastern parts of Jammu & Kashmir & neighbourhood.
- ◆ Strong north-westerly/westerly winds are prevailing in the lower levels over Northern Plains.

Satellite Observations during past 24 hrs and current observation:

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

Low Level Circulation (LLC):

Broken low/medium clouds with embedded intense to very intense convection seen over South Assam, Meghalaya & neighbourhood In association with LLC over the area.

Clouds descriptions within India:

NORTH: Scattered low/medium clouds over Jammu & Kashmir, Himachal Pradesh and Northeast Uttarakhand.

EAST: Broken low/medium clouds with embedded intense to very intense convection seen over Central Assam, Meghalaya, Tripura and moderate to intense convection seen over rest Northeast states. Scattered low/medium clouds with embedded isolated weak convection seen over South Chhattisgarh, Odisha, Jharkhand, North Bihar, Sub Himalayan West Bengal and Sikkim. Scattered low/medium clouds over rest parts of the region.

WEST: Scattered low/medium clouds with embedded isolated weak convection seen over Konkan, South Madhya Maharashtra, Marathwada and Goa. Isolated to Scattered low/medium clouds over Gujarat, Madhya Pradesh and rest Maharashtra.

SOUTH: Scattered low/medium clouds with embedded moderate to intense convection seen over South Interior Karnataka, Kerala, Northwest Kerala, Lakshadweep and isolated weak to moderate convection seen over Telangana, South Rayalaseema, North Interior Karnataka rest Tamilnadu and Andaman Island. Scattered low/medium clouds over rest parts of the region.

Arabian Sea:

Scattered low/medium clouds with embedded moderate to intense convection seen over Southeast Arabian Sea, Comorin & Maldives.

Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded moderate to intense convection seen over East Central Bay adjoining North Bay, Arakan Coast and Gulf of Martaban.

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over Uttarakhand East Uttar Pradesh East Madhya Pradesh Chhattisgarh Bihar Jharkhand Odisha West Bengal Sikkim North-East States Karnataka Andhra Pradesh Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands. Weak to Moderate convection was observed over J&K Himachal Pradesh West Madhya Pradesh Maharashtra Goa Telangana.

OLR:-

Up to **150** wm^{-2} was observed over East Meghalaya South Assam & Kerala.

Up to **230** wm^{-2} was observed over North Chhattisgarh Jharkhand Odisha Sub-Himalayan West Bengal Sikkim rest North-East States Coastal Andhra Pradesh South Interior Karnataka Tamilnadu Lakshadweep Andaman & Nicobar Islands.

Dynamic Features: Wind Shear, Vorticity & Convergence-

Wind shear up to 30-40 Knots is observed over North India, Central India & Peninsula India and 10-15 Knots observed over East India.

Positive Shear tendency is observed over most parts of India.

Vorticity (850 hPa) up to 250 is observed over West Rajasthan Punjab Haryana Uttar Pradesh Bihar Jharkhand West Bengal North-East States.

Negative Positive low level convergence (-10 Knots) is observed over Rajasthan West Madhya Pradesh Maharashtra Karnataka Kerala West Tamilnadu and Positive low level convergence (5-10 Knots) observed over rest parts of India.

Precipitation:

IMR:

IMR:

Rainfall >150 mm was observed over Meghalaya Central Assam.

Rainfall up-to 130 mm observed over North parts of Sub Himalayan West Bengal.

Rainfall up-to 70-110 mm observed over North Chhattisgarh Kerala.

Rainfall up-to 30-70 mm observed over East Uttar Pradesh East Madhya Pradesh North-West Jharkhand rest Assam Nagaland South Interior Karnataka Lakshadweep & Andaman Islands.

Rainfall up-to 20-30 mm observed over Sikkim Arunachal Pradesh Manipur Mizoram Extreme South Andhra Pradesh North Tamilnadu.

Rainfall up-to 10-20 mm observed over North-East J&K East Uttarakhand North Bihar rest Jharkhand rest North-East States Coastal Odisha rest Coastal Andhra Pradesh South Tamilnadu & Nicobar Islands.

DWR and RAPID Observations:

Light to moderate echoes observed over DWR Agartala, Goa, Patiala, Srinagar and Thiruvananthapuram at around 1600 IST. RAPID RGB Satellite imagery at 1500 IST indicates significant convection over Assam, East Meghalaya, Tripura, South Mizoram, Northeast Coastal Karnataka, Kerala and Lakshadweep.

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 remain high for next few days over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	14.06.2018	15.06.2018
PM10 (micro-g/m ³)	1297	908
PM2.5 (micro-g/m ³)	262	184

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycir, Troughs: 00&12UTC of Day 2-5: CYCIR Punjab & adjoining Pakistan and moving towards west in day 2-5

Confluence & wind Discontinuity regions: 00 & 12 UTC: NIL

Synoptic systems: 00 & 12 UTC of Day0-4: Lower level trough extending from central Arabian Sea to WB.

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

3. Convergence at 850 hPa:

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

Day0: Assam Meghalaya,

Day1: Assam Meghalaya, Punjab,

Day2: Arunachal Pradesh, Assam Meghalaya,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT,

Day4: Punjab, TN Puducherry,

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Assam Meghalaya, Sub Himalayan WB, Bihar, East UP, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, TN Puducherry, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, East UP, Uttarakhand, TN Puducherry, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, East UP, Uttarakhand, TN Puducherry, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, Bihar, TN Puducherry, Kerala,

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, West RJ, Odisha, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, Coastal AP,

Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, Saurashtra Kutch, TN Puducherry,

Day4: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, Gujarat Region, Saurashtra Kutch, Chhattisgarh, Coastal AP,

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, East UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day1: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP,

Day2: Arunachal Pradesh, Sub Himalayan WB, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha,

Day3: Arunachal Pradesh, Sub Himalayan WB, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ,

Day4: Arunachal Pradesh, Sub Himalayan WB, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, Gujarat Region, Saurashtra Kutch,

7. Spatial distribution of 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, East RJ, Odisha, West MP, East MP, Gujarat Region, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka,

Day1: 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, West MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Madhya Maharashtra, Vidarbha, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka,

Day3: 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, East RJ, Odisha, West MP, East MP, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, NI Karnataka,

Day4: 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, East RJ, Odisha, West MP, East MP, Gujarat Region, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, NI Karnataka,

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Coastal Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Uttarakhand, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day5: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Haryana, Chandigarh, Delhi, Himachal Pradesh, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

1. Synoptic Systems: The analysis based on 00 UTC indicates a cyclonic circulation over Assam and adjoining areas. The forecast show it will persist till day2. The analysis shows a North- South oriented Trough extends from East Madhya Pradesh to Telangana across East Vidarbha. The forecast shows it will become less marked on day 2. Another trough is seen in the analysis extend from South Interior Karnataka to comorin areas across Interior Tamil Nadu. The forecast shows it will persist till day3.

2. Location of Jet and Jet Core (>60kt) at 500hPa: Although the presence of strong westerlies is found over South Peninsular but no jet core over the Indian region for the next 3 days.

3. Low Level Vorticity {850hPa Positive Vorticity ($>12 \times 10^{-1}/s$)}: Low level Positive Vorticity is seen mostly around the cyclonic circulations, J&K, Foothills of Himalaya to Bihar, Jharkhand, GWB, SHWB, over South Peninsular India including Kerala, Tamil Nadu and NE states during next 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 Punjab, Haryana, Gujarat, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, North Interior Karnataka, Telangana, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, East and west Madhya Pradesh, along Northern parts of east and west coast of India, coastal Andhra Pradesh, coastal Tamil Nadu, Sikkim, Assam, Tripura, Mizoram and adjoining areas on day 1; over parts of Uttar Pradesh, Northwest India including Rajasthan, Punjab, Haryana, Madhya Pradesh, Gujarat, Bihar, GWB, Orissa, Jharkhand, Telangana, Chhattisgarh, Andhra Pradesh, NE states and along the east coast on day 2 and 3.

Lifted Index (< -2): Similar to T-storm Index lies over parts of Punjab, Haryana, Gujarat, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Konkan & Goa, coastal and North Interior Karnataka, coastal Tamil Nadu, Telangana, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, East and west Madhya Pradesh, coastal Andhra Pradesh, along east and west coast of India, Sikkim, NE states and extreme south coastal parts of the country on day 1; on day 2 and 3 it is seen over Northwest India including Rajasthan, Punjab, Haryana, Delhi, Madhya Pradesh, Gujarat, Bihar, GWB, NE states, along the east coast mainly over the same region but also appears over J&K, Himachal Pradesh and Uttarakhand; significant zone with highest value of the index lies over parts of Bihar, GWB, coastal Orissa, coastal Andhra Pradesh, GWB, SHWB and East Madhya 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, Assam, Meghalaya, Mizoram, Tripura, Manipur, Nagaland, Gujarat and extreme south peninsular India on day 1 and 2; Higher than Threshold value of the Index is seen over parts of Rajasthan, Madhya Pradesh, Uttar Pradesh, J&K, Punjab, Himachal Pradesh, Haryana, Delhi, Bihar, Orissa, Jharkhand, GWB, SHWB, Chhattisgarh, Telangana, Andhra Pradesh, Sikkim and Arunachal Pradesh on day 3; significant zone with highest value of the index lies over parts of Madhya Pradesh, Vidarbha, Chhattisgarh, Vidarbha, Orissa, J&K and Punjab.

Sweat Index (> 300): Is seen over the sub-divisions along east and west coast, areas along foothills of Himalayas, Central India, South Peninsular India, NE states and most parts of the country during next 3 days; significant zone lies over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Sikkim, Arunachal Pradesh, Assam, East Uttar Pradesh, Bihar, Jharkhand, GWB, SHWB, coastal Orissa, Madhya Pradesh, coastal Andhra Pradesh and adjoining areas.

CAPE (> 1000): Mostly seen over parts of coastal Gujarat, along west coast and east coast, GWB, SHWB, coastal Orissa, Bihar, Jharkhand, coastal Andhra Pradesh, North coastal Maharashtra including Mumbai, North Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, coastal and Interior Karnataka, Konkan and Goa, East Madhya Pradesh, Uttar Pradesh, Sikkim and NE states on day 1; on day 2 and 3 it remains over same region but disappear over central India including Madhya Pradesh, Vidarbha, Chhattisgarh, Telangana and Interior Karnataka and appears over parts of Rajasthan on day 2 and 3 and over parts of Punjab, Haryana and adjoining areas on day 3; significant zone with highest value of the index lies over parts of GWB, SHWB, Bihar, coastal Orissa, coastal Andhra Pradesh, Assam, Tripura and adjoining areas.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala, Tamil Nadu and south Peninsular India, central, North and Northwest India mainly the value of index lies in above range over most of the parts of the country except J&K on day 1 and over most parts of the country except West Jharkhand on day 2 and 3; significant zone with highest value of the index lies over parts of West Rajasthan and Haryana.

5. Rainfall Activity:

70-130 mm Rainfall: over parts of Assam and Arunachal Pradesh on day 1 and 2.

40-70 mm Rainfall: over parts of Sikkim and NE states on day 1 and 2; over parts of south coastal Maharashtra, and coastal Kerala on day 1; over parts of Sikkim on day 3.

10-40 mm Rainfall: over parts of Uttarakhand, Foothills of Himalaya, East Bihar, Sikkim, NE, coastal Karnataka, coastal Kerala, coastal Tamil Nadu, coastal Maharashtra including Mumbai, Konkan and Goa during next 3 days; over parts of J&K on day 2 and 3; over parts of Orissa on day 1; over parts of Andhra Pradesh on day 1 and 2; over parts of Telangana on day 2; over some parts of Punjab, Bihar and Jharkhand on day 3.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, East Uttar Pradesh, Foothills of Himalaya, GWB, SHWB, Sikkim, NE states, Bihar, Jharkhand, Orissa, Chhattisgarh, Kerala, Interior Karnataka, Konkan & Goa, coastal Maharashtra including Mumbai, Madhya Maharashtra, Marathwada, Gujarat, Tamil Nadu, Telangana, Rayalaseema and Andhra Pradesh during next 3 days; over parts of Punjab, Haryana, West Uttar Pradesh, West Madhya Pradesh and Vidarbha on day 2 and 3; over parts of Haryana, Delhi and adjoining area on day 3.

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

1. Model Reflectivity (Max. dBz): >25 dBZ Model Reflectivity:

On day 1, over parts of J&K, Kerala, Tamil Nadu, Sikkim, NE states, Orissa, Jharkhand, GWB, SHWB and Andhra Pradesh,; On day 2 over parts of Kerala, Tamil Nadu, Andhra Pradesh, Telangana, Sikkim, GWB, SHWB, East Bihar, J&K, Himachal Pradesh and NE states; On day 3 over parts of Kerala, coastal Karnataka, Konkan and Goa, coastal Maharashtra including Mumbai, South Gujarat, Sikkim, East Bihar, J&K, Himachal Pradesh and NE states

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

Total Index (> 50): Below threshold value is observed over parts of Gujarat, Punjab, Haryana, Rajasthan, East and West Uttar Pradesh, Uttarakhand, coastal areas of west coast, coastal Maharashtra, Konkan & Goa, coastal areas along the east coast, SHWB, GWB, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Bihar, Jharkhand, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Chhattisgarh, Telangana, Madhya Pradesh, Vidarbha and NE states during next 3 days; below threshold value is also seen over parts of J&K and Himachal Pradesh from day 2 onwards.

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 J&K, Himachal Pradesh, Uttarakhand, Punjab, some parts of North Haryana, Madhya Pradesh, Vidarbha, coastal Maharashtra including Mumbai, Telangana, Chhattisgarh, Andhra Pradesh, Orissa, Bihar, Jharkhand, Uttar Pradesh, GWB, SHWB, Foothills of Himalaya, Sikkim and NE states.

CAPE (> 1500): Greater than threshold value over parts of Gujarat, East Uttar Pradesh, coastal areas of west coast, coastal Maharashtra including Mumbai, Madhya Maharashtra, Marathwada, Konkan & Goa, coastal areas along the east coast, SHWB, GWB, Orissa, Andhra Pradesh, coastal Tamil Nadu, Kerala, Karnataka and Andhra Pradesh, Bihar, Jharkhand, Telangana, Chhattisgarh, Madhya Pradesh, Vidarbha and NE states on day 1; it remains over same region but disappear over central parts of India including Madhya Pradesh, Chhattisgarh, Vidarbha, Madhya Maharashtra, Marathwada, Karnataka and adjoining areas and appears over parts of Punjab on day 2 and J&K, Himachal Pradesh, Punjab and Haryana on day 3; Maximum value of the index is seen over the parts of Bihar, Jharkhand, GWB, SHWB, Orissa, coastal Andhra Pradesh, Assam, Tripura, Mizoram, Meghalaya, Manipur, Sikkim and adjoining area.

CIN (50-150): The value of the index lies in above range over most of the parts of the country except northern parts of J&K, Himachal Pradesh and Uttarakhand on day 1; over most of the parts of the country except South Peninsular India, west Jharkhand, J&K, North Himachal Pradesh

and Uttarakhand on day 2; over most of the parts of the country except South Peninsular India, coastal areas along west coast, J&K, Himachal Pradesh and Uttarakhand on day 3; Maximum value of the index is seen over the parts of Punjab, Haryana, Delhi, Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, GWB, SHWB, Orissa and Chhattisgarh.

3. Rainfall and thunderstorm activity:

Above 130 mm Rainfall: over parts of Assam and Meghalaya on day 1 and 2; over parts of Arunachal Pradesh on day 1; over parts of Assam on day 3.

70-130 mm Rainfall: over parts of Kerala, coastal Karnataka, Konkan and Goa, Sikkim, Assam, Meghalaya, Arunachal Pradesh and Manipur on day 1; over parts of Assam, Meghalaya, Arunachal Pradesh and Manipur adjoining area on day 2; over parts of Sikkim, Assam, Konkan and Goa on day 3.

40-70 mm Rainfall: over parts of Kerala, coastal and interior Karnataka, coastal Maharashtra, Konkan & Goa, Sikkim and NE states during next 3 days; over parts of Tamil Nadu on day 1; over parts of J&K, Foothills of Himalaya, coastal Maharashtra including Mumbai on day 2 and 3; over parts of Gujarat on day 3.

10-40 mm Rainfall: Over parts of Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, coastal Maharashtra including Mumbai, Andhra Pradesh, Telangana, Orissa, Foothills of Himalaya, Sikkim, East Bihar, SHWB, GWB, South Gujarat and NE states during next 3 days; over parts of J&K, Himachal Pradesh and Uttarakhand on day 2; over parts of J&K and East Uttar Pradesh day 3.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, Sikkim, GWB, SHWB, East Uttar Pradesh, Bihar, Jharkhand, Orissa, Telangana, Madhya Maharashtra, Marathwada, coastal Maharashtra, Madhya Pradesh, Andhra Pradesh, Gujarat and NE states during next 3 days; over parts of Punjab, Haryana and Vidarbha on day 2.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CAPE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over the Indian region, excluding the extreme north and south India. On day 2, the probability of convection decreases over North and central India, but increases over east India over West Bengal and west India over Rajasthan. SWEAT index, which accounts for the wind shear between 850 and 500 hPa levels in addition to thermodynamic parameters, has a pattern similar to other thermodynamic indices, with values increasing over Rajasthan and Bengal on day 2. The 850-200 hPa wind shear is highest over northern parts of Jammu and Kashmir region and west peninsular coast of India region on day1 and day 2.

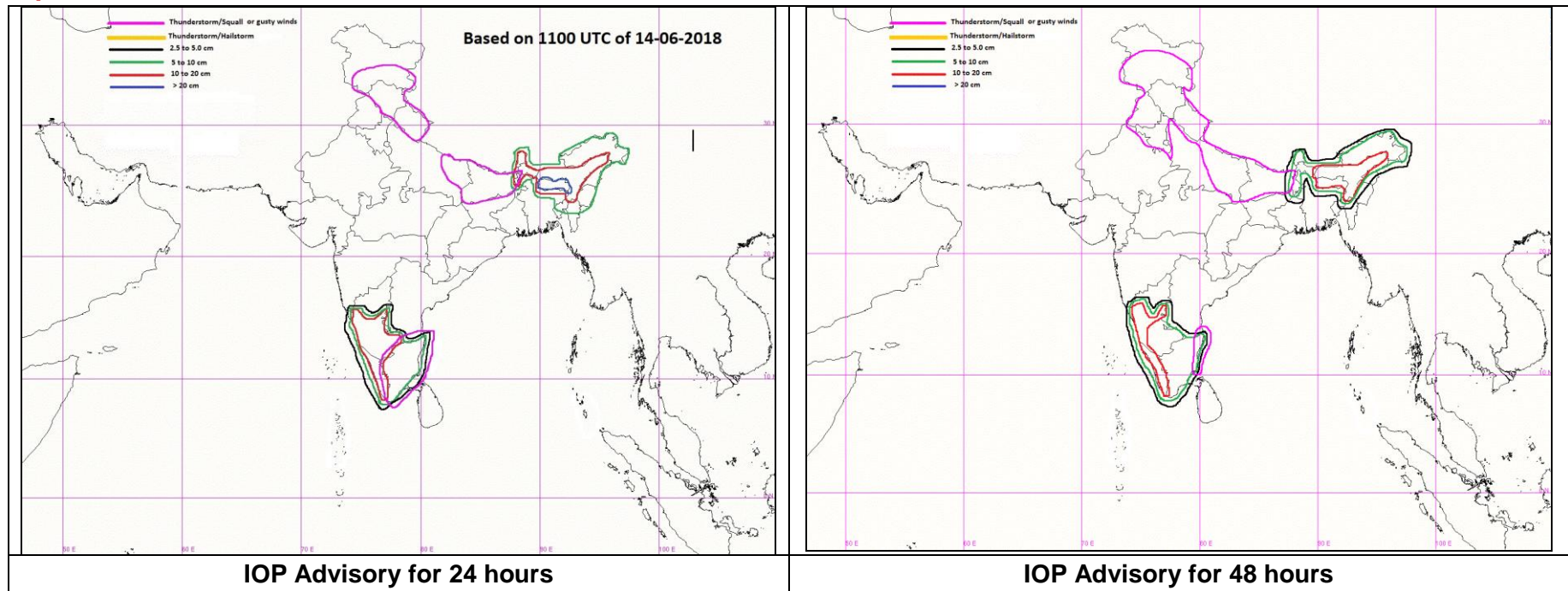
o Synoptic analysis indicates that a cyclonic circulation over central parts of Assam & neighbourhood. IMDGFS as well as ECMWF deterministic models, on the other hand, indicate that there is a north-south oriented trough over east India. Associated with the trough, southerly flow from the Bay of Bengal is likely to result in extremely heavy rainfall over northeast India on day 1 and day 2.

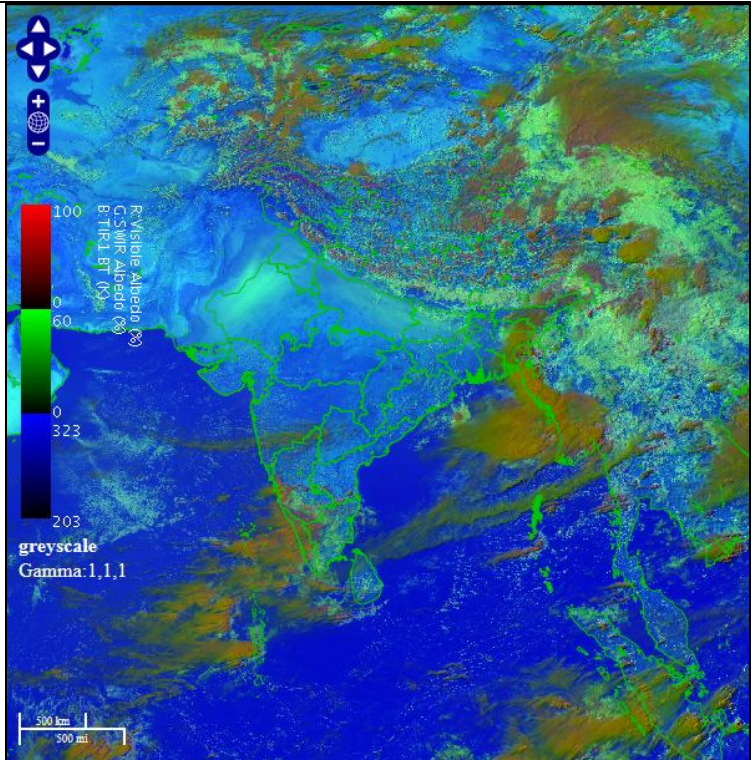
o Synoptic analysis also indicates that there is a trough at low levels from South Interior Karnataka to Comorin area across Interior Tamilnadu. The westerly flow off the southwest peninsular coast is strong. Associated heavy to very heavy spells of rainfall are expected over the southwest peninsular coast of India on day 1 and 2.

IOP Area for Day-1 & Day-2:

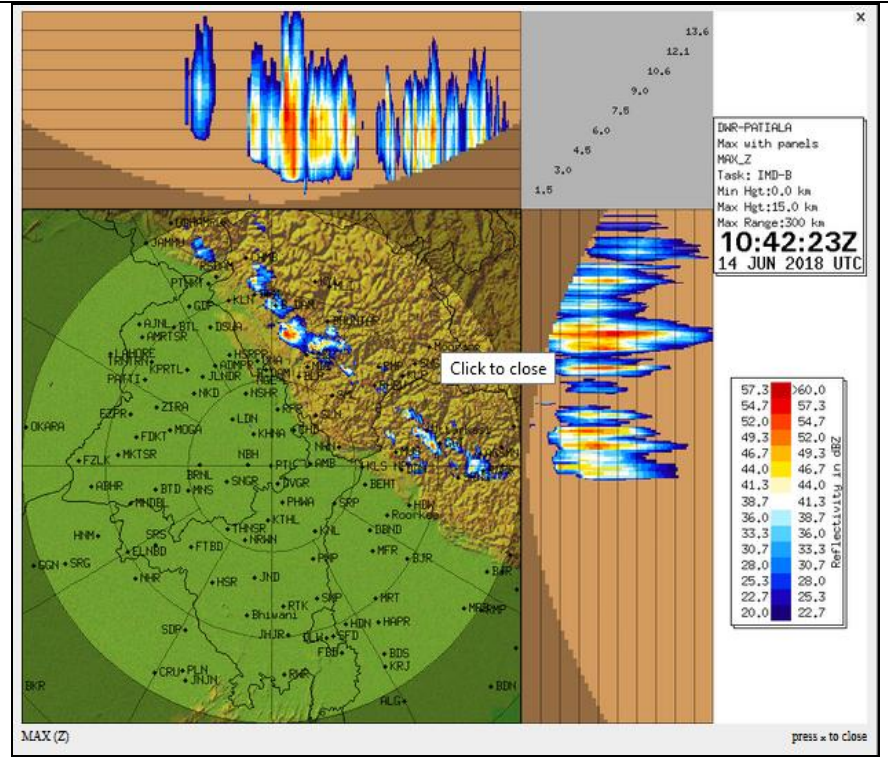
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p>Significant Rainfall: Tamilnadu & Pondicherry, Kerala, Coastal & South Interior Karnataka Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya Nagaland, Manipur, Mizoram, Tripura</p> <p>Thunderstorm with squall or gusty winds: Tamilnadu Jammu & Kashmir, Himachal Pradesh, Uttarakhand Northeast Uttar Pradesh, Bihar</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Nil</p>	<p>Significant Rainfall: Tamilnadu & Pondicherry, Kerala, Coastal & South Interior Karnataka Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya,</p> <p>Thunderstorm with squall or gusty winds: North Coastal Tamilnadu Jammu & Kashmir, Himachal Pradesh, Uttarakhand Punjab, Haryana, Chandigarh, Delhi East Uttar Pradesh, Bihar</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Nil</p>

Graphical Presentation of Potential Areas for Severe Weather:

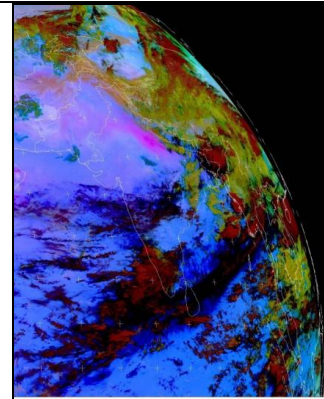
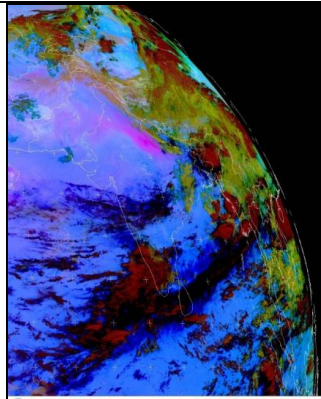
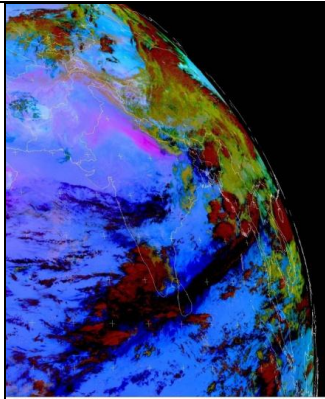
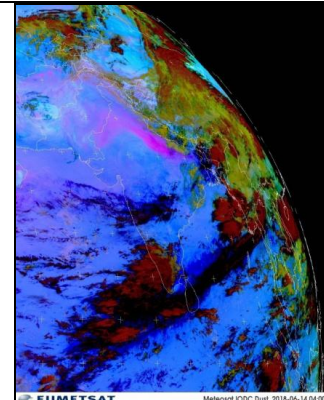
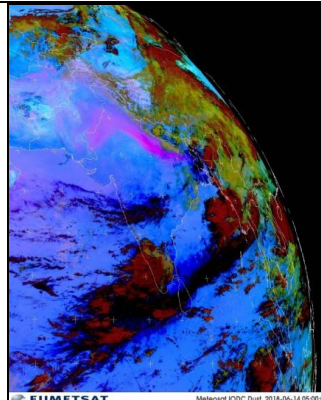
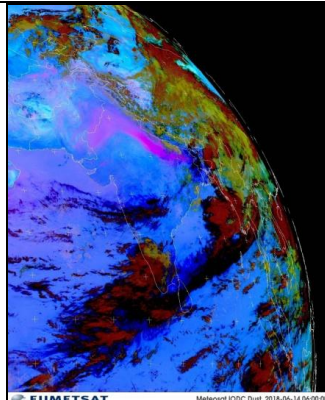




RAPID RGB Imagery at 1500 IST of the Day

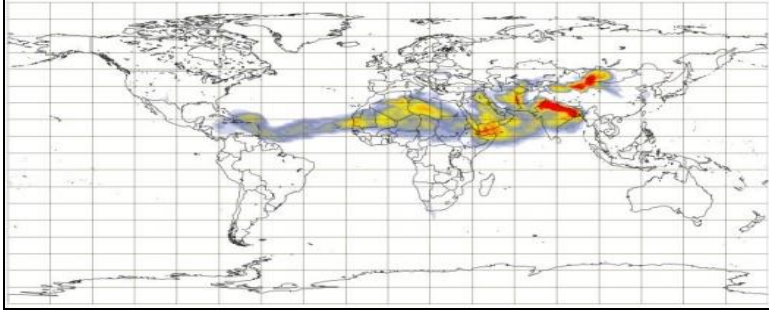


DWR Patiala reflectivity at 1612 IST

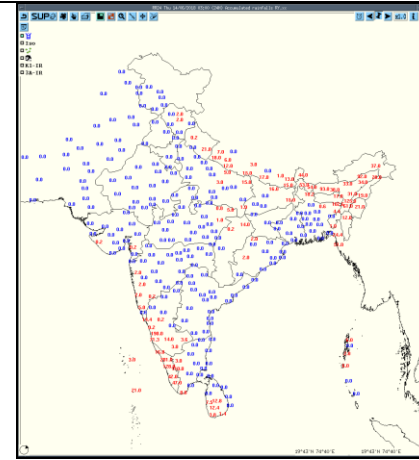


Observed Satellite Dust Images of today

Dust aerosol optical depth at 550 nm (provided by CAMS, the Copernicus Atmosphere Monitoring Service)
 Wednesday 13 Jun, 00 UTC T+24 Valid: Thursday 14 Jun, 00 UTC

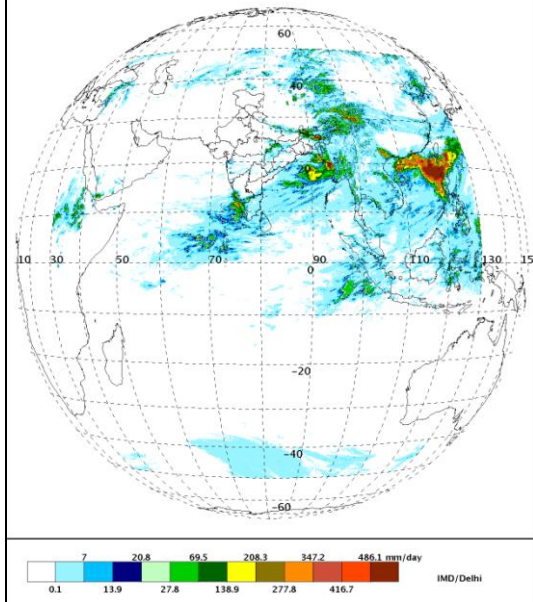


Dust Forecast



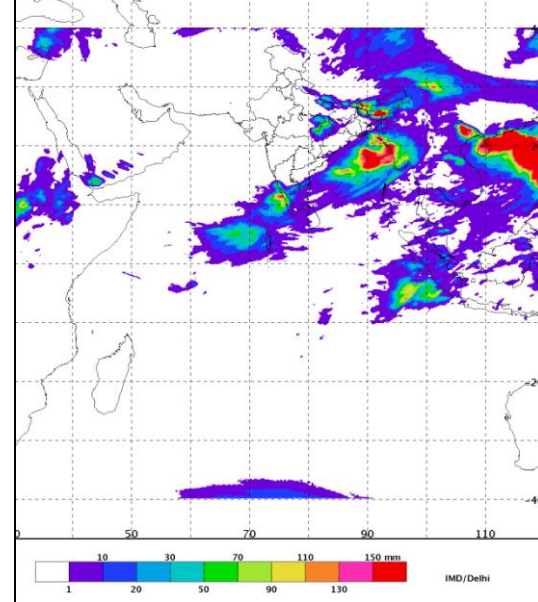
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

SAT :INSAT-3D IMG 13-06-2018 (03:30 GMT) to 14-06-2018 (03:00 GMT)
 Precipitation(HE) Daily
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK

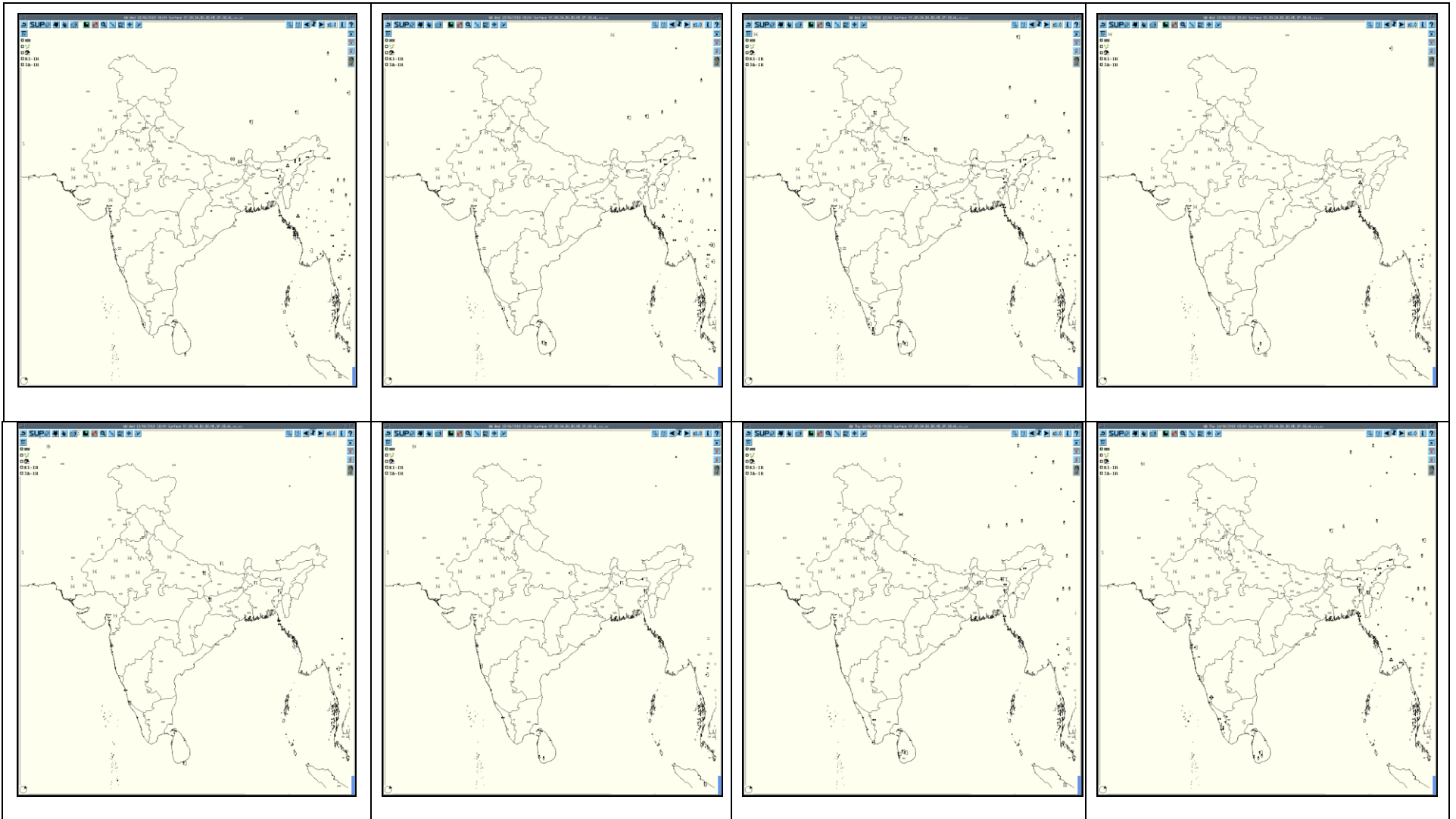


HEM

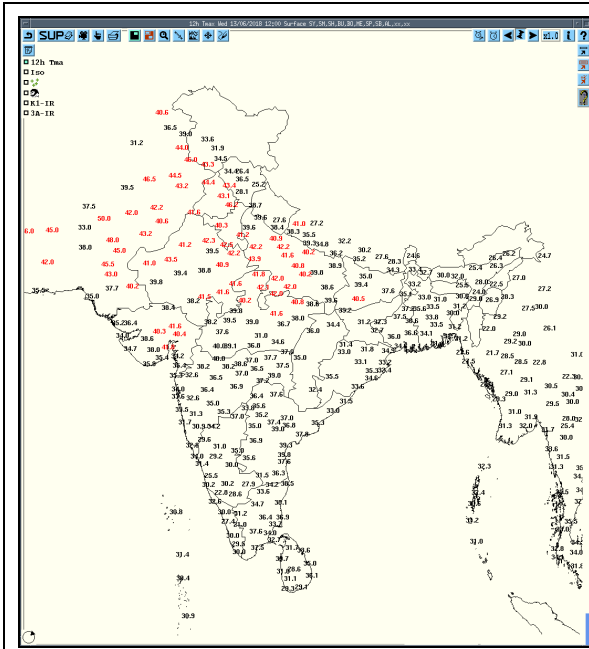
SAT :INSAT-3D IMG 13-06-2018 (03:30 GMT) to 14-06-2018 (03:00 GMT)
 INSAT Multispectral Rainfall(Daily)
 L3G BINNED GEOPHYSICAL PARAMETER GRIDDED



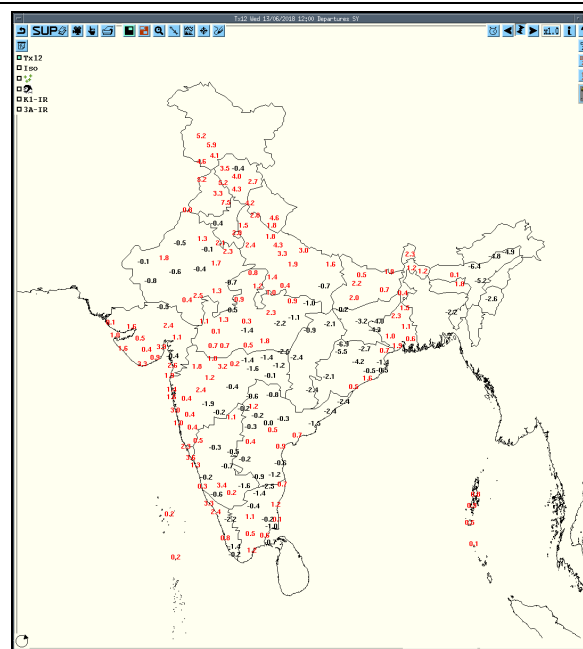
IMR



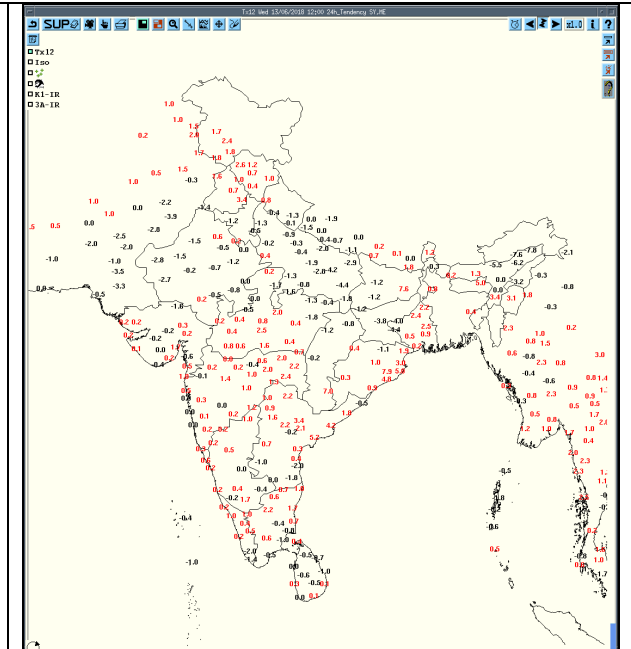
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



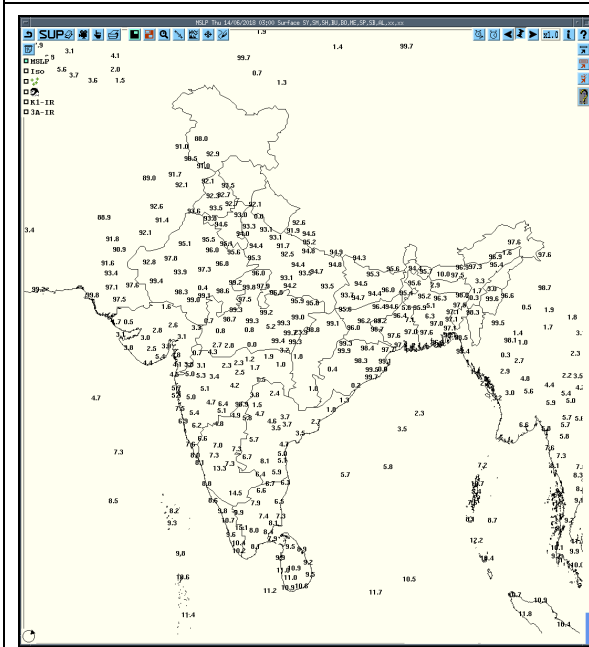
Tmax



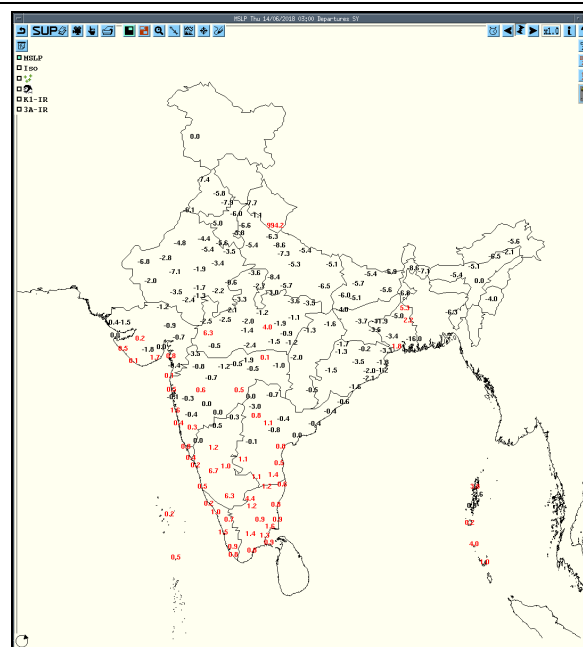
Departure Tmax



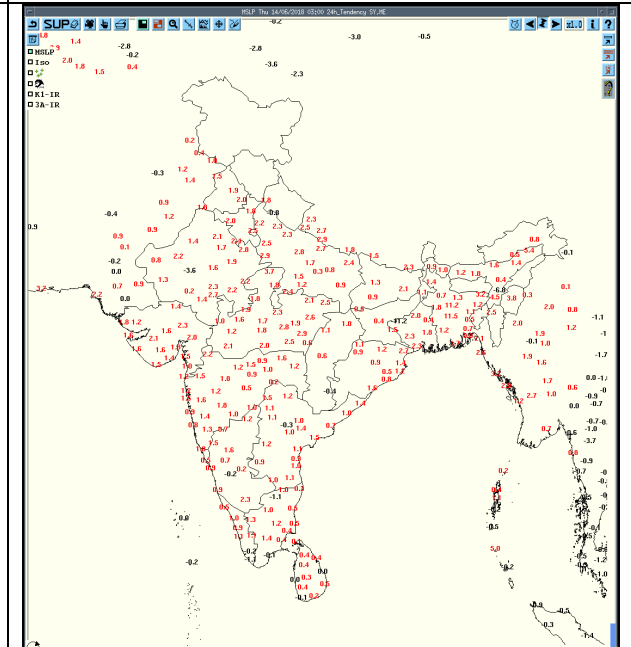
Tendency Tmax



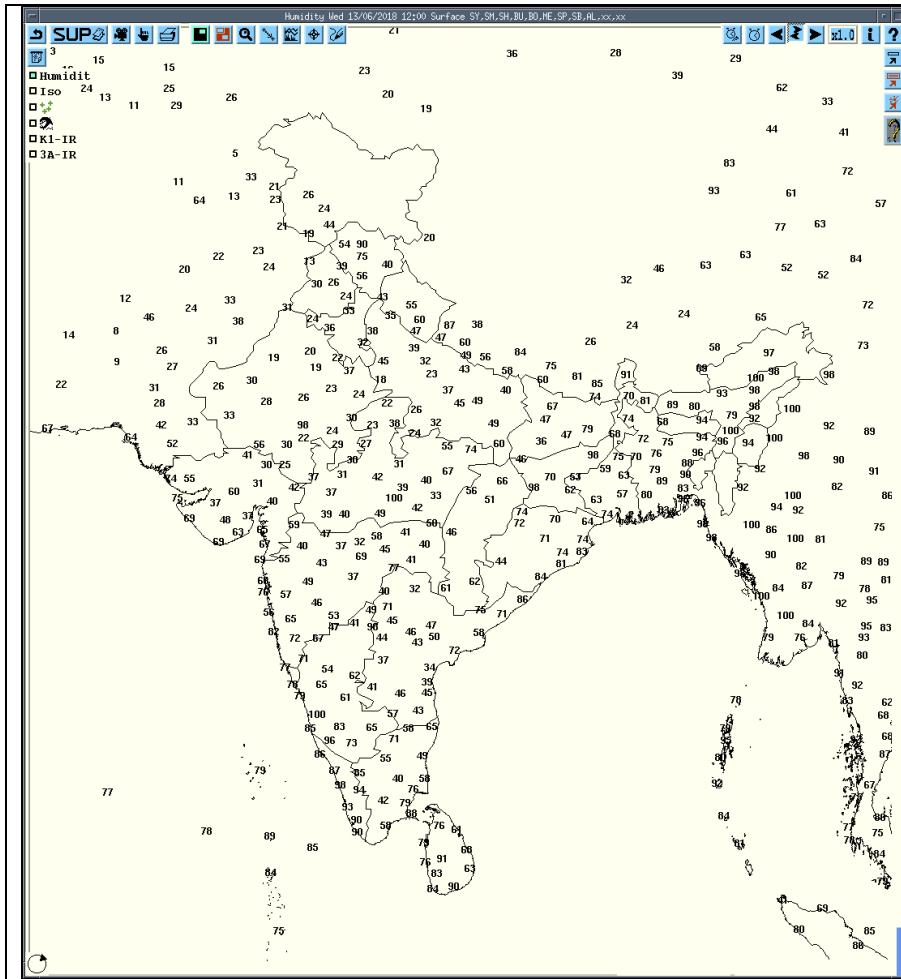
MSLP



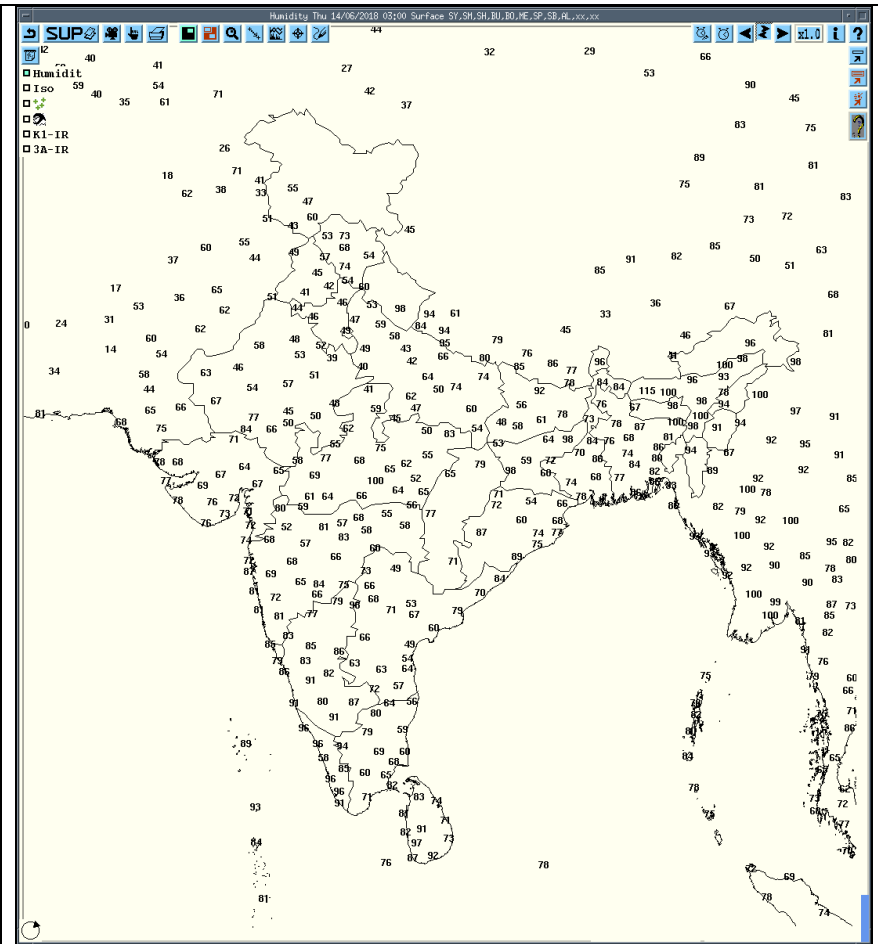
Departure MSLP



Tendency MSLP



RH at 1200UTC yesterday



RH at 0300UTC today

Past 24 hours DWR Report:

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells /multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity.	Formation w.r.t radar station and Direction of movement.	Remarks	Associated severe weather if any	Districts affected
Patiala	14-06-18	13/06/2018 0300 - 0600	NO ECHO	---	-		--
		13/06/2018 0600 -0900	ISOLATED CELL DBZ 48.5 HT. 6-8 KM	Ne Sector, Movement Se Wards			Solan And Its Adjoining Areas
		13/06/2018 0900- 1200	MULTIPLE CELLS DBZ 55.0 HT. 8 KM	E,Ne Sectors, Movement Towards Nedirection		TS/RA	Yamunanagar,Bilaspur, Rohru,Shimla And Their Adjoining Areas.
		13/06/2018 1200 - 1500	MULTIPLE CELLS DBZ 56.5 HT. 11 KM	Ne,E,Se Sectors, Movement Towards Ne Direction		TS/RA	Rishikesh, Uttarkashi And Their Adjoining Areas.
		13/06/2018 1500 -1800	MULTIPLE CELLS DBZ 47.5 HT. 8 KM	Ne,E Sectors Movement E Wards			Rishikesh And Its Adjoining Areas
		13/06/2018 1800 - 2400	NO SIGNIFICANT ECHO=	-----		-----	-----
		14/06/2018 0000-0252	NO SIGNIFICANT ECHO=	-----		-----	-----
Jaipur	14/06/18	13/0300- 14/0552	Multiple cells with average height of 4.0 km & maximum reflectivity 48.5 dBZ	Thunderstorm/ Light rain at Isolated places	Multiple cells development is continue from prior 0300 UTC of 13/06/2018 towards E,NE,SE of Jaipur and moved to SE,E Wards at speed 15-20 km/hr	Multiple cells development is continue from prior 0300 UTC of 13/06/2018 towards E,NE,SE of Jaipur and reaches maximum reflectivity from 0332 UTC to 0342 UTC of 13/06/2018 and died at 0552	Jaipur, Dausa, Karauli, Bharatpur, Dholpur, Alwar, Districts
Agartala	14/06/18	130300 to 140300	Mltpl Cells Formed Over South Tripura, Adjoining B/Desh About 08 To 10 Kms, 40 Dbz.	30 To 150 Kms SW/NW-Ly ; 30 Kmph ; SE & SW- Ly	Cell Dissipated Over South Assam & Adj Hills Of Mizoram At 13/1400z	TSRA	Not Known

DWR Station	Date	Time interval of observation	Organization of the cells (isolated single cell/multiple cells convective regions/squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station & direction of movement	Remarks	Associate d severe weather, if any	Districts affected
Lucknow	13/06/18	130300 UTC TO 130632 UTC	Multiple cell system formed previous day persisted over 50 Km West. Max. reflectivity was observed 54.5 dBZ with height of 8 Km of 20 dBZ echo top.	Cell moved with avg. velocity 60 Km/h SEly.	Dissipated at around 0632 UTC over 150 Km SE of the station.	TSRA	Kannauj, Hardoi Raebareli, Unnao Lucknow, Amethi
		130842 UTC TO 131152 UTC	Multiple cell system formed over 100 Km Soth. Max. reflectivity was observed 53 dBZ with height of 14 Km of 20 dBZ echo top.	Cell moved with avg. velocity 60 Km/h SEly w.r.t. the station.	Moved beyond radar range over 250 Km SSE at around 1152 UTC.	TSRA	Fatehpur, Banda Raebareli, Pratapgarh
		131132 UTC TO 131752 UTC	Multiple cell system formed over 100 Km N to 50 Km NNW. Max. reflectivity was observed 58.5 dBZ with height of 16 Km of 20 dBZ echo top.	Cell became widespread extending from 100 km N to 200 Km later. Moved with avg. velocity 50 Km/h SEly w.r.t. the station	Weakened at around 1612 UTC and moved beyond range around 1752 UTC over 250 Km E.	TSRA SQ HS DS	Sitapur, Gonda Bahraich, Barabanki Faizabad, Basti Shrivasti, Siddharthnagar
		131252 UTC TO 131732 UTC	Multiple cell system formed over 200 Km N. Max. reflectivity was observed 56 dBZ with height of 15 Km of 20 dBZ echo top.	Multiple cell system was widespread, moved with avg. velocity 50 Km/h in SE direction w.r.t. the station.	Weakened at around 1732 UTC and moved beyond range over 250 Km NE.	TSRA/DS/S Q	Shrivasti, Balrampur, Siddharthnagar, Mahrajganj Sant Kabirnagar Bahraich
		131812 UTC TO 140042 UTC	Multiple cell system formed over 100-150 Km NE. Max. reflectivity was observed 54 dBZ with height of 13 Km of 20 dBZ echo top.	Moved with avg. velocity 55 Km/h in SE direction w.r.t. the station.	Dissipated at around 0042 UTC over 200 Km ENE.	TSRA DS	Barabanki, Lakhimpur Kheri, Balrampur Shrivasti, Sant Kabirnagar Maharajganj, Bahraich
Vishakhapatnam	14-06-18	13/0600UTC	Multiple cells with max. reflectivity of 47 dBz and height of 8 kms	SE(61 KMS) moving SEly	CB cells are forming in Bay of Bengal and developing to 47 dBz at 0501 UTC.		Bay of Bengal
		13/0900UTC	Multiple cb cells with max. reflectivity of 52 dBz and height of 8 kms	SE(149KMS) moving SEly	CB cells are forming in Bay of Bengal and dissipating from 0851 UTC.	-	Bay of Bengal
		13/1200UTC	Isolated cb cells with max. reflectivity of 42 dBz and height of 6 kms	SE(176KMS) moving SEly	Dissipated	-	Bay of Bengal

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	13-06-18	0301 – 2351	NIL	NIL	NOSIG ECHO	NIL	NIL
	14-06-18	0001 – 0101	NIL	NIL	NOSIG ECHO	NIL	NIL
	14-06-18	0101 – 0301	PRODUCTS GENERATION STOPPED DUE TO SERVER PROBLEM				

Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)						
Station	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Pantnagar	Northwest India	Uttarakhand	Thunderstorm	13-06-18	2100	2200
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	13-06-18	1836	2000
Tehri	Northwest India	Uttarakhand	Thunderstorm	13-06-18	1910	2105
Gorakhpur	Northwest India	East Uttar Pradesh	Thunderstorm	13-06-18	2100	2330
Bahraich	Northwest India	East Uttar Pradesh	Thunderstorm	13-06-18	2045	2130
Lucknow AP	Northwest India	East Uttar Pradesh	Thunderstorm	13-06-18	1000	1020
Allahabad	Northwest India	East Uttar Pradesh	Thunderstorm	13-06-18	1620	1640
Ambikapur	Central India	Chhattisgarh	Thunderstorm	13-06-18	1805	1900
Bilaspur	Central India	Chhattisgarh	Thunderstorm	13-06-18	1920	2320
Silchar	Northeast India	Assam	Thunderstorm	14-06-18	14/0600	14/0830
Dhubri	Northeast India	Assam	Thunderstorm	13/14-06-18	13/1420 14/0045	13/1530 14/0410
Guwahati	Northeast India	Assam	Thunderstorm	14-06-18	14/0025	14/0815
Barapani	Northeast India	Meghalaya	Thunderstorm	14-06-18	14/0600	14/0830
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	13/14-06-18	13/1540 14/0500	13/1705 14/0830
Shillong	Northeast India	Meghalaya	Thunderstorm	14-06-18	14/0215	14/0615
Mangalore AP	South India	Coastal Karnataka	Thunderstorm	13-06-18	1930	2345
Madikeri	South India	South Interior Karnataka	Thunderstorm	14-06-18	0000	0115
Purnia	East India	Bihar	Thunderstorm	14-06-18	0430	0450
Daltonganj	East India	Jharkhand	Thunderstorm	13-06-18	2230	2330

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

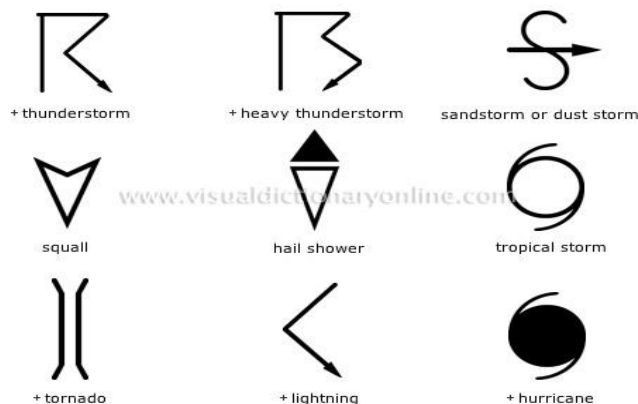
For Radar images of the past 24 hours including mosaic of images:

http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T- Phigram

http://satellite.imd.gov.in/mAndhra_Pradesh_skm2.html

WEATHER SYMBOLS:



	haze
	smoke
	dust or sand storm
	fog
	drizzle
	rain
	snow
	showers
	hail
	thunderstorm
Weather Symbols	