



India Meteorological Department

FDP STORM Bulletin No. 115 (29-06-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC Inference (0300UTC of the day):

- ♦ Southwest monsoon has further advanced into remaining parts of Gujarat state, Rajasthan and north Arabian Sea. Thus the southwest monsoon has covered the entire country today, the 29th June 2018.
- ♦ The axis of monsoon trough at mean sea level passes through Jaisalmer, Kota, Tikamgarh, Daltonganj, Balasore and thence east- south-eastwards to northeast Bay of Bengal. It extends upto 3.1 km above mean sea level.
- ♦ The cyclonic circulation over Chhattisgarh & neighbourhood has merged with the monsoon trough.
- ♦ The Western Disturbance as an upper air cyclonic circulation over Jammu & Kashmir and neighbourhood at 3.1 km above mean sea level has moved away northeastwards.
- ♦ The Western Disturbance as a trough in mid & upper tropospheric westerlies with its axis at 5.8 km above mean sea level now runs roughly along Long 64°E to the north of Lat 30°N.
- ♦ The cyclonic circulation over West Madhya Pradesh & adjoining southeast Rajasthan now lies over east Rajasthan and neighbourhood and extends upto 4.5 km above mean sea level.
- ♦ The cyclonic circulation over south Gujarat region & neighbourhood now lies over northeast Arabian Sea off north Gujarat coast between 4.5 km & 5.8 km above mean sea level.
- ♦ The cyclonic circulation over Southeast Arabian Sea off north Kerala - Karnataka coasts now lies over east central Arabian Sea off south Maharashtra coast at 7.6 km above mean sea level.
- ♦ The off-shore trough at mean sea level from south Gujarat coast to north Kerala coast now runs from south Maharashtra Coast to Kerala coast.

Satellite Observations during past 24 hrs and current observation:

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

Clouds descriptions within India:

North: Scattered low/medium clouds with embedded moderate to intense convection seen over Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Punjab. Scattered low/medium clouds with embedded weak to moderate convection seen over Haryana, Delhi, rest Jammu & Kashmir and rest Uttarakhand and Punjab. Scattered low/medium clouds over rest parts of the region.

East: Isolated low/medium clouds with embedded moderate to intense convection seen over Bihar. Scattered low/medium clouds with embedded weak to moderate convection seen over North Bihar, South Chhattisgarh, South Odisha, West Arunachal Pradesh, Nagaland, Manipur, Mizoram, West Assam and West Bengal. Scattered low/medium clouds over rest parts of the region.

West: Isolated low/medium clouds with embedded intense to very intense convection seen over North Rajasthan. Broken low/medium clouds with embedded moderate to intense convection seen over South Rajasthan, Madhya Pradesh, Vidarbha, Madhya Maharashtra, Marathwada, Konkan & Goa and rest Gujarat,. Broken low/medium clouds with embedded weak to moderate convection seen over rest parts of the region.

South Broken low/medium clouds with embedded intense to very intense convection seen over North Andhra Pradesh, Telangana, Rayalaseema Karnataka, Kerala, North Tamilnadu and Lakshadweep Islands. Scattered low/medium clouds with embedded weak convection seen over rest parts of the region.

Arabian Sea: Scattered low/medium clouds with embedded moderate to intense convection seen over East Arabian Sea off Karnataka - Kerala Coast.

Bay of Bengal & Andaman Sea: Broken low/medium clouds with embedded intense to very intense convection seen over West Central & East Central Bay and Andaman & Nicobar Islands. Scattered low/medium clouds with embedded moderate to intense convection seen over East Bay. Scattered low/medium clouds with embedded weak convection seen over rest parts of the region.

Past Observation: Not Received

DWR and RAPID Observations:

Light to Moderate echoes observed on DWR Agartala, Bhopal, Delhi, Goa, Hyderabad, Jaipur, Nagpur, Patiala and Light echoes over Gopalpur, Lucknow, Kolkata, Kochi, Machilipatnam, Mohanbari, Mumbai, Paradeep, Srinagar and Thiruvananthapuram at around 1700 IST.

RAPID RGB Satellite imagery at 1530 IST indicates significant convection over West Jammu & Kashmir, West Punjab, Rajasthan, Central Northwest Gangetic West Bengal, West Madhya Pradesh, Central Odisha, North Coastal Andhra Pradesh, Telangana, South Coastal Karnataka, Central Kerala adjoining Tamilnadu and Lakshadweep Islands.

Environmental Condition (dust etc) and its Forecast based on 00UTC of date:

Higher Dust concentration was observed over northern Africa, Arab countries and western part of India. Dust concentration is expected to decrease for next few days over IGP and north India.

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

Delhi – SAFAR analysis & Forecast	29.06.2018	30.06.2018
PM10 (micro-g/m ³)	76	68
PM2.5 (micro-g/m ³)	50	45

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs: 00UTC Day0-3: at 850 hPa CYCIR over Gujarat, Rajasthan and adjoining Haryana continuing till Day3.

00UTC Day0-4: Trough over Chhattisgarh and adjoin region and laying down over WB and BIHAR on Day3-4.

925 to 700 hPa CYCIRs at 00&12UTC: Embedded CYCIR in monsoon trough over MP moving NW wards in Day-2

Confluence & wind Discontinuity regions: NIL

Synoptic systems: 00UTC Day1-4 : WD over Pakistan and adjoining region in Day-1 and moving towards delhi via Haryana

At 500hPa: Monsoon trough extends from Odisha to Punjab via UP along the foot hills of Hilayas with strong south-easterlies over the plains and a CIR on Day1-2.

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

3. Convergence at 850 hPa:

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

Day0: Tamilnadu Puducherry,

Day1: Arunachal Pradesh,

Day2:

Day3:

Day4:

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Arunachal Pradesh, Assam Meghalaya, Jammu Kashmir, Tamilnadu Puducherry,

Day1: Arunachal Pradesh, Assam Meghalaya, Tamilnadu Puducherry,

Day2: Arunachal Pradesh, Assam Meghalaya, Bihar, East UP, Uttarakhand, Tamilnadu Puducherry, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, East UP, West UP, Uttarakhand, Himachal Pradesh, Tamilnadu Puducherry, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, Bihar, East UP, Uttarakhand, Tamilnadu Puducherry, Kerala,

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir,

Day1: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP,

Day3: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Odisha, East MP, Chhattisgarh, Coastal AP,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, 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, Uttarakhand, Himachal Pradesh, Jammu Kashmir,
Day1: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir,
Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir,
Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir,
Day4: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir,

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, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Rayalaseema, Tamilnadu Puducherry,
Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East MP, Saurashtra Kutch, Chhattisgarh, SI Karnataka,
Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Odisha, East MP, Vidarbha, Chhattisgarh, Coastal AP,
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 Rajasthan, Odisha, West MP, East MP, Chhattisgarh, Coastal AP,
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 Rajasthan, Odisha, West MP, East MP, Marathwada, Chhattisgarh, Coastal AP, Telangana, 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, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, West Rajasthan, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal Karnataka, SI Karnataka, Kerala,
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, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Tamilnadu Puducherry, Coastal Karnataka, SI Karnataka, Kerala,
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, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal Karnataka, SI Karnataka, Kerala,
Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, East UP, West UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Gujarat Region, Konkan Goa, Madhya Maharashtra, Tamilnadu Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

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

1. Synoptic Systems: The analysis based on 00 UTC shows an East- West oriented Trough extends from Southwest Rajasthan to East Northeast Bay of Bengal in lower Troposphere (850hPa). The forecast shows it will persist till day3 with Northward shift. The analysis shows a cyclonic circulation over East Rajasthan and adjoining area. The forecast shows it will persist till day1. An off-shore Trough is seen in the analysis at mean sea level extends from South Maharashtra coast to Kerala coast and forecast shows it will persist till day2.

2. Location of Jet and Jet Core (>60kt) at 500hPa: There is 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 circulation, East-West Trough, Sikkim, Tamil Nadu, Kerala and NE states during next 3 days; over parts of Himachal Pradesh, Uttarakhand, Uttar Pradesh, along Foothills of Himalaya and adjoining areas from day 3; Low level Positive Vorticity also seen over parts of Vidarbha, Madhya Pradesh, Rajasthan, Gujarat on day 1 and 2.

4. Spatial distribution of T-storm Initiation Index, Lifted Index, Total Total Index, CAPE, CIN and Sweat Index [High potential for thunderstorm]:

T-Storm Initiation Index (> 3): Over parts of Gujarat, coastal Tamil Nadu, coastal Andhra Pradesh, Orissa and GWB on all 3 days; over parts of Vidarbha on day 1; on day 2 over parts of West Rajasthan, some pockets of East Uttar Pradesh, Bihar and Telangana; on day 3 over parts of West Rajasthan, Bihar, Jharkhand, Punjab and adjoining J&K.

Lifted Index (< -2): The value of Index (< -2) lies over parts of J&K, Gujarat, Punjab, Haryana, Rajasthan, Gangetic West Bengal, SHWB, Odisha, coastal Maharashtra, coastal Tamil Nadu, Chhattisgarh, Bihar, Jharkhand, East and west Madhya Pradesh, coastal Andhra Pradesh, Vidarbha, Telangana, Marathwada, along East coast of India, Sikkim, NE states on all 3 days; over parts of J&K, Himachal Pradesh, Haryana, Delhi, Uttarakhand, Uttar Pradesh and adjoining areas from day 2 and 3.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, foothills of Himalaya, Sikkim and Arunachal Pradesh during all 3 days; prominent values are seen over parts of J&K and Himachal Pradesh.

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, Uttarakhand, Himachal Pradesh, Foothills of Himalaya, Sikkim and Arunachal Pradesh.

CAPE (> 1000): Mostly seen over parts of Gujarat, coastal areas along East coast, GWB, SHWB, Jharkhand, coastal Tamil Nadu, coastal Andhra Pradesh, Orissa, Sikkim and NE states on all 3 days; over some parts of Rajasthan, Chhattisgarh, Vidarbha and adjoining areas on day 1; over parts of Chhattisgarh, Northwest Rajasthan and adjoining Punjab on day 2; over some parts of Bihar and Chhattisgarh on day 3.

CIN (50-150): Mostly seen over North, West and Northwest India, GWB, SHWB, Bihar, Jharkhand, Uttar Pradesh, east coast of India and parts of Gujarat, Eastern parts of India and NE states and over most of the parts of the country except J&K and Some parts of North Chhattisgarh adjoining Orissa and Southern parts of Madhya Pradesh on all 3 days.

5. Rainfall Activity:

Above Isolated 130 mm Rainfall: over some parts of Sikkim on day 2.

70-130 mm Rainfall: over Foothills of Himalaya and Arunachal Pradesh on day 2 and 3; over parts of Sikkim on day 2; over parts of Uttarakhand on day 3.

40-70 mm Rainfall: over Foothills of Himalaya, Sikkim and Arunachal Pradesh on all 3 days; over parts of J&K, West Rajasthan and coastal Maharashtra on day 1; over parts of East Uttar Pradesh, Assam and Nagaland on day 2; over parts of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, SHWB, GWB, Assam, Meghalaya, Nagaland and adjoining areas on day 3.

10-40 mm Rainfall: over parts of J&K, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Punjab, Haryana, coastal Kerala, coastal Maharashtra including Mumbai, South coastal Tamil Nadu, Konkan and Goa, Chhattisgarh, Jharkhand, Bihar, Odisha, coastal Andhra Pradesh, Madhya Pradesh, Gujarat, Rajasthan, Sikkim, SHWB, GWB and NE states on day 1 and 2; on day 3 it remains over same region except it disappears over central and southern parts of Madhya Pradesh, Gujarat and Rajasthan.

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

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

1. Model Reflectivity (Max. dBz): >25 dBZ Model Reflectivity: On Day 1 over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, coastal areas along the west coast, Telangana, Konkan and Goa, North Madhya Maharashtra, Marathwada, Gujarat, Rajasthan, Orissa, Bihar, Andhra Pradesh, Kerala, Coastal Maharashtra including Mumbai, Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Sikkim, GWB, Sikkim and NE states; On day 2 it remains over same region except it disappears over East coast and central parts of India also appears over parts of East and West Uttar Pradesh, Bihar and Jharkhand; on day 3 over parts J&K, East Rajasthan, Himachal Pradesh, Uttarakhand, Bihar, Jharkhand, Uttar Pradesh, South Gujarat, coastal Maharashtra including Mumbai, Konkan and Goa, coastal Karnataka and adjoining areas, GWB, Sikkim, SHWB and NE states.

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

Total Index (> 50): The value of the index greater than the threshold value is seen over some parts of J&K, Himachal Pradesh, Punjab, some parts of Andhra Pradesh and North Tamil Nadu on day 2 and 3.

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, Haryana, Delhi and adjoining areas, Rajasthan, Madhya Pradesh, Vidarbha, coastal Maharashtra including Mumbai, Madhya Maharashtra, Marathwada, Karnataka, Telangana, Chhattisgarh, Andhra Pradesh, Kerala, Tamil Nadu, Gujarat, Orissa, Bihar, Jharkhand, Uttar Pradesh, GWB, SHWB, Foothills of Himalaya, Sikkim and NE states during next 3 days.

CAPE (> 1500): Greater than threshold value over Gujarat adjoining Uttarakhand, Rajasthan, coastal areas of East coast, coastal Maharashtra including Mumbai, Konkan & Goa, coastal Karnataka, coastal Kerala, GWB, coastal Orissa, West Uttar Pradesh, coastal Andhra Pradesh, Sikkim, NE states and coastal Tamil Nadu on day 1; over parts of Bihar, Jharkhand, Orissa, Telangana and adjoining Andhra Pradesh on day 3; over parts of Punjab, Haryana, Delhi, GWB, SHWB, J&K, Himachal Pradesh and Uttarakhand on day 2 and 3.

CIN (50-150): The value of the index lies in the 50-150 range over parts of North India, Northwest India, central India, Bihar Jharkhand, GWB and SHWB, NE states except extreme South West Peninsular India and NE states on all 3 days; prominent values are seen over parts of J&K, Himachal Pradesh, Punjab, Haryana, North Rajasthan and adjoining West Uttar Pradesh on day 1.

3. Rainfall and thunderstorm activity:

Above 200 mm Isolated Rainfall: over parts of Assam and Meghalaya on day 3.

130-200 mm Isolated Rainfall: over parts of Assam and Meghalaya on day 2 and 3; over parts of North Haryana adjoining West Uttar Pradesh, Himachal Pradesh and Punjab on day 3.

70-130 mm Rainfall: over parts of Meghalaya and Arunachal Pradesh on day 1; over parts of Uttar Pradesh, East Bihar, Sikkim, Assam, Meghalaya and Arunachal Pradesh on day 2; over parts of Punjab, North Haryana, Himachal Pradesh, Uttarakhand, Uttar Pradesh, East Bihar, Assam, Meghalaya and Arunachal Pradesh on day 3.

40-70 mm Rainfall: over parts of coastal Maharashtra, Konkan and Goa, coastal Karnataka, Sikkim and NE states during all 3 days; over parts of Himachal Pradesh, Uttarakhand, North Haryana, Uttar Pradesh, Bihar, SHWB on day 2 and 3; over parts of GWB on day 3.

10-40 mm Rainfall: over parts of J&K, Himachal Pradesh, Uttarakhand, Rajasthan, Punjab, Haryana, Delhi and adjoining areas, Uttar Pradesh, Foothills of Himalaya, Gujarat, Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, coastal Maharashtra including Mumbai, Sikkim, Orissa, Telangana, Madhya Maharashtra, Marathwada, Chhattisgarh, Bihar, Jharkhand, Andhra Pradesh, Sikkim, GWB, SHWB and NE states on day 2 and 3; on day 1 over parts of Rajasthan and Madhya Pradesh on day 1.

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

3. IOP ADVISORY FOR 24 and 48Hrs:

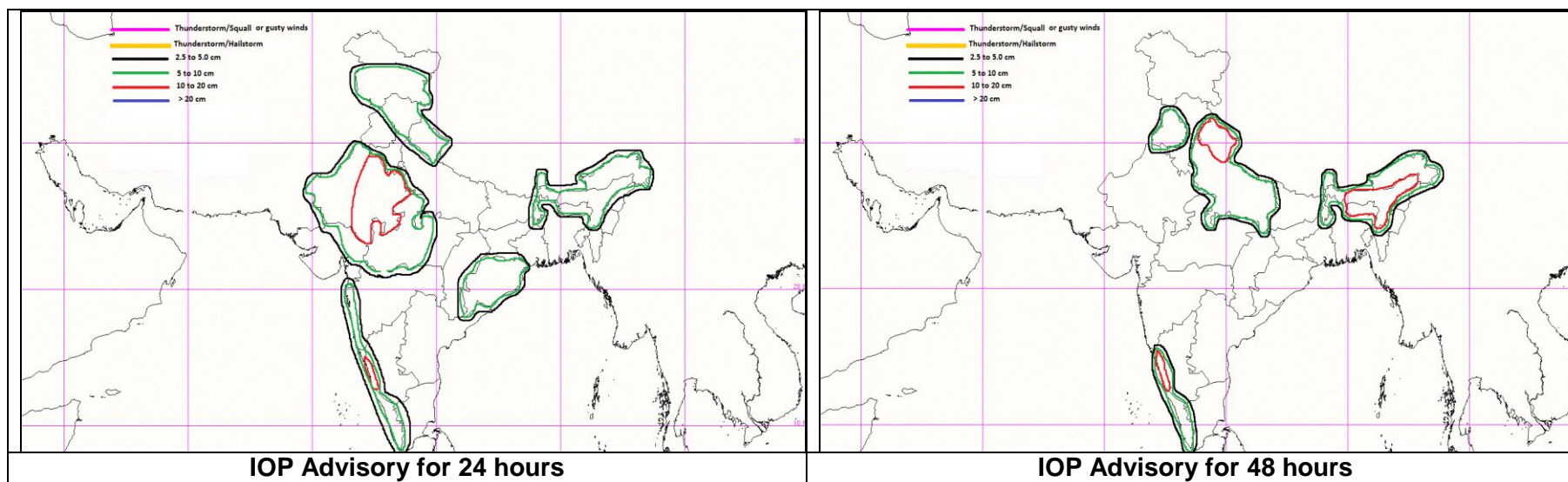
Summary and Conclusions:

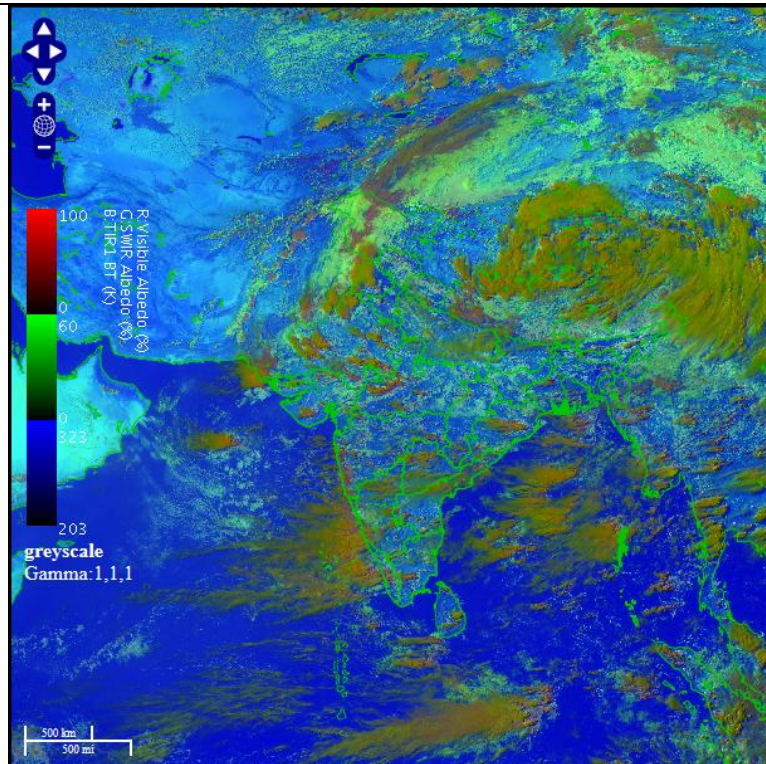
- The synoptic analysis shows that the southwest monsoon has further advanced into remaining parts of Gujarat state, Rajasthan and north Arabian Sea and thus covered the entire country today, the 29th June 2018. The axis of monsoon trough at mean sea level passes through Jaisalmer, Kota, Tikamgarh, Daltonganj, Balasore and thence east-south-eastwards to northeast Bay of Bengal. It extends upto 3.1 km above mean sea level. The cyclonic circulation over Chhattisgarh & neighbourhood has merged with the monsoon trough. The cyclonic circulation over West Madhya Pradesh & adjoining southeast Rajasthan now lies over east Rajasthan and neighbourhood and extends upto 4.5 km above mean sea level. This condition is favourable for significant amount of rainfall over Rajasthan and the western Himalayas on day 1. From day 2, the monsoon trough will start shifting northward. As a result, the major rainfall area will shift to plains of north India and the Himalayas on day2.
- There is a cyclonic circulation over northeast Arabian Sea off north Gujarat coast between 4.5 km & 5.8 km above mean sea level and another cyclonic circulation over east central Arabian Sea off south Maharashtra coast at 7.6 km above mean sea level. The off-shore trough at mean sea level from south Gujarat coast to north Kerala coast now runs from south Maharashtra Coast to Kerala coast. This situation is very likely to cause heavy to very heavy rainfall along the west coast of India and parts of Gujarat on day 1. With the northward shifting of the monsoon trough, weakening of the off-shore trough is likely, leading to reduction in rainfall amounts over west coast. The significant rainfall area is likely to be the southern peninsular region only on day2.

IOP Area for Day-1 & Day-2:

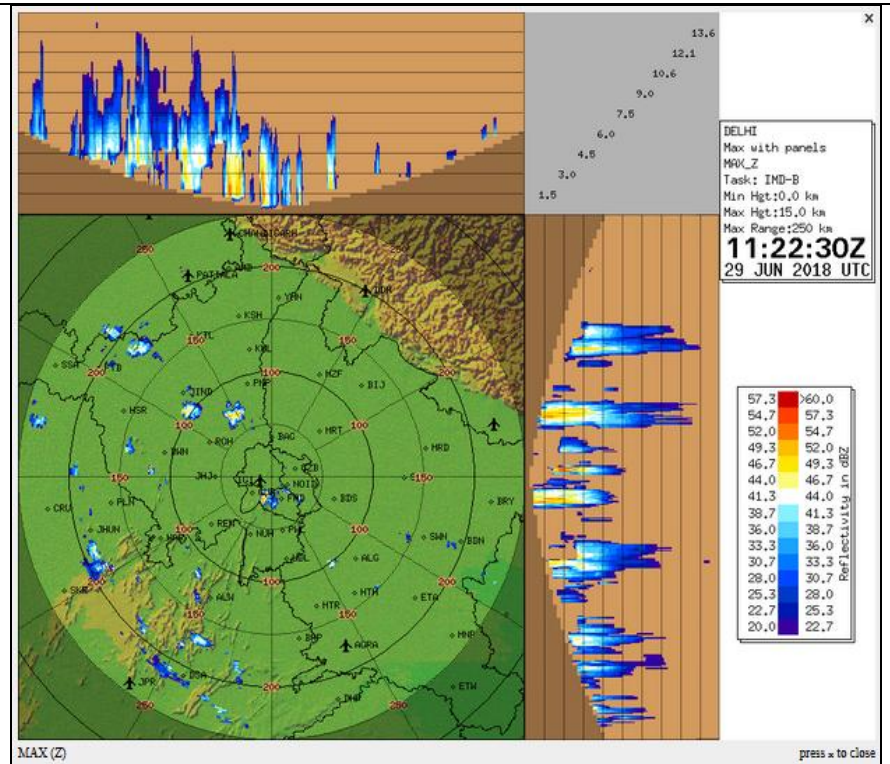
24 hour Advisory for IOP:	48 hour Advisory for IOP:
Significant Rainfall: Coastal Karnataka, Kerala Konkan & Goa, North Gujarat Region West Madhya Pradesh Rajasthan, Uttarakhand Jammu & Kashmir, Himachal Pradesh Sub Himalayan West Bengal, Odisha Arunachal Pradesh, Assam & Meghalaya	Significant Rainfall: Coastal Karnataka, Kerala Uttar Pradesh, Uttarakhand, Punjab Sub Himalayan West Bengal Arunachal Pradesh, Assam & Meghalaya,
Thunderstorm with squall or gusty winds: Nil	Thunderstorm with squall or gusty winds: Nil
Thunderstorm with squall and hail Nil	Thunderstorm with squall and hail Nil
Duststorm/Thunderstorm: Nil	Duststorm/Thunderstorm: Nil

Graphical Presentation of Potential Areas for Severe Weather:

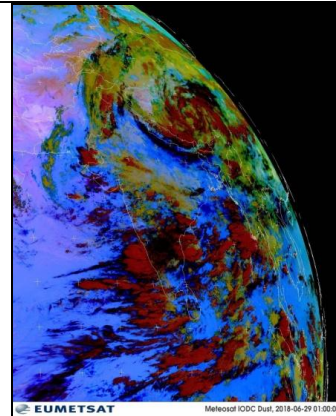
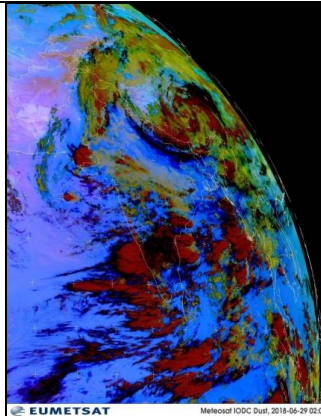
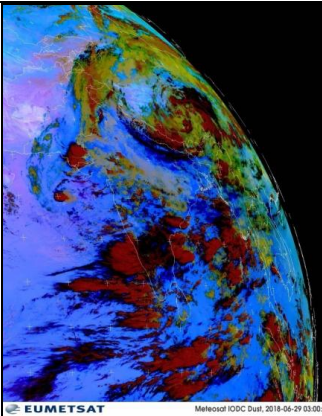
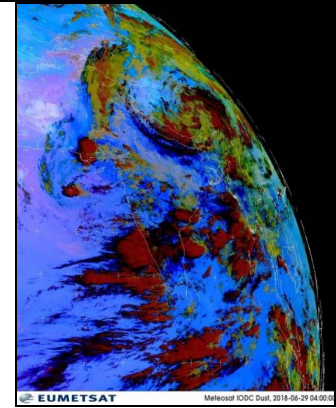
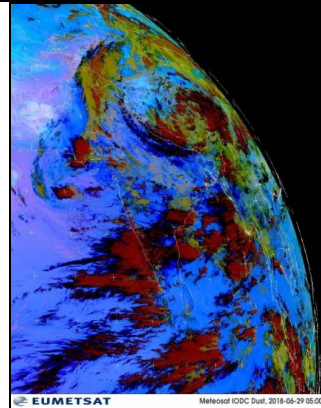
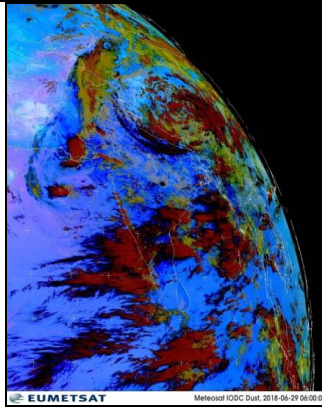




RAPID RGB Satellite Imagery at 1530 IST

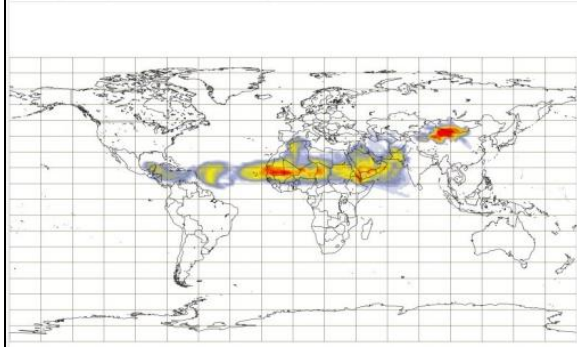


DWR Delhi reflectivity at 1652 IST

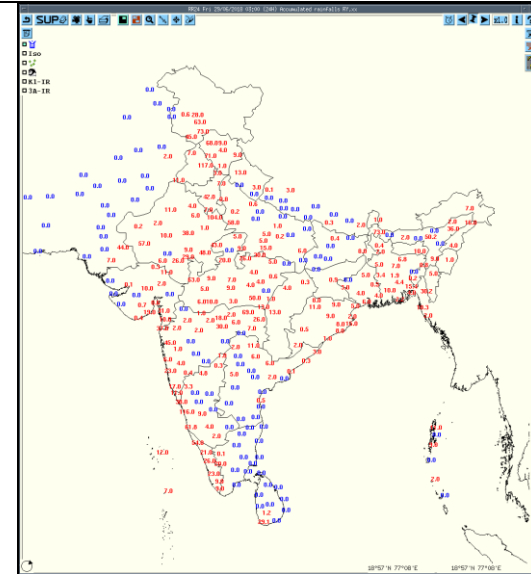


Observed Satellite Dust Images of today

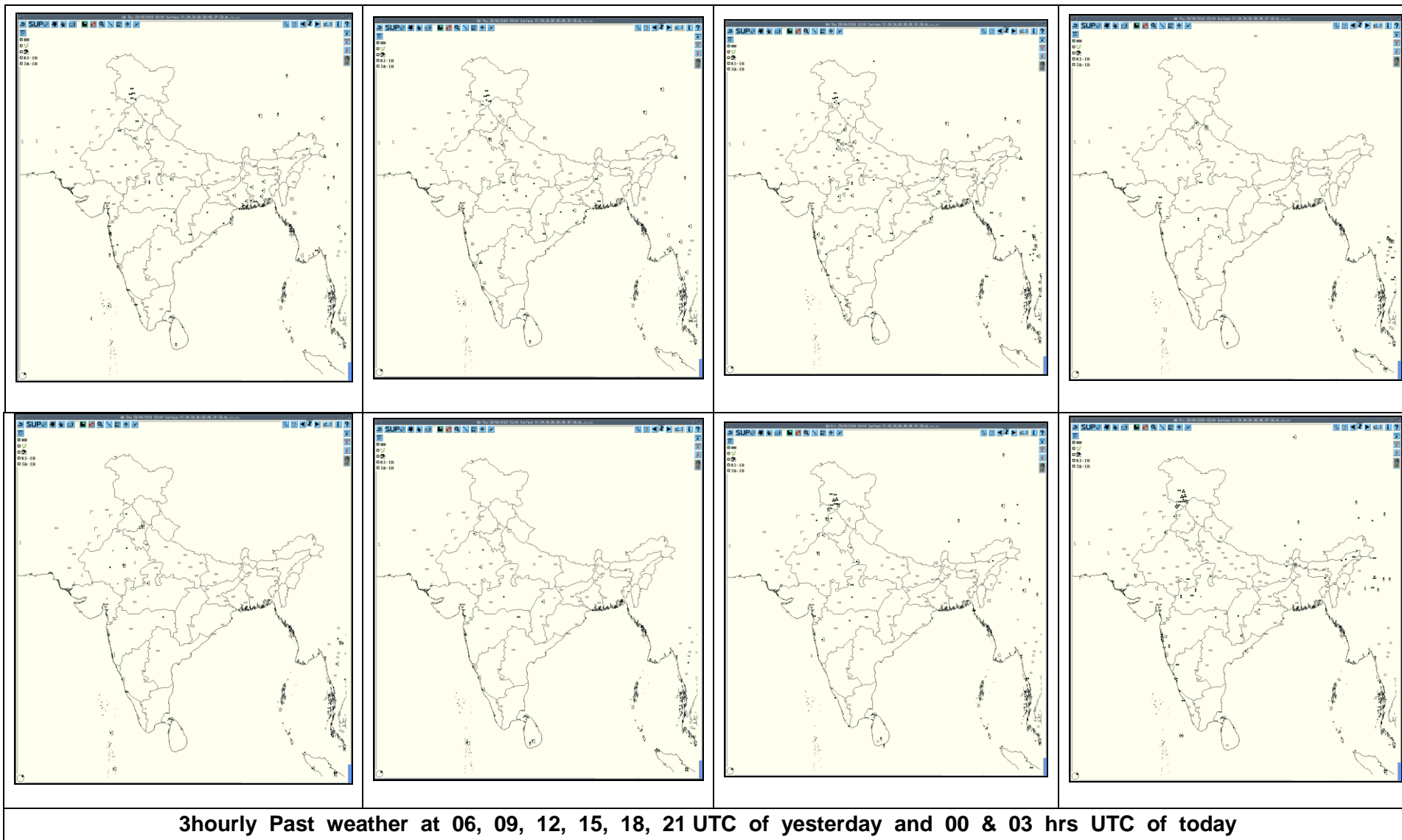
Dust aerosol optical depth at 550 nm (provided by CAMS, the Copernicus Atmosphere Monitoring Service)
Thursday 28 Jun, 00 UTC T+24 Valid: Friday 29 Jun, 00 UTC

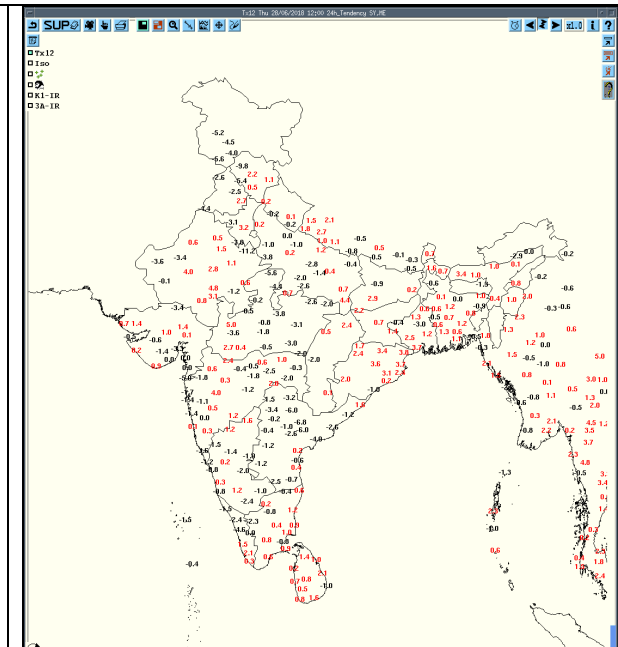
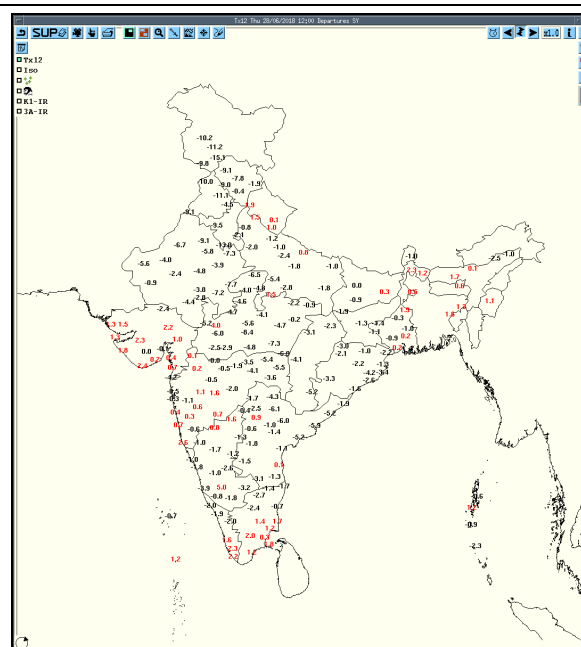
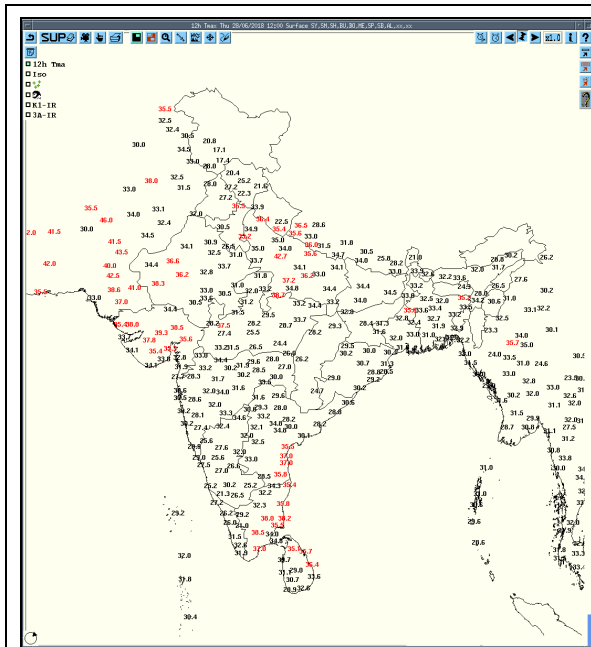


Dust Forecast



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

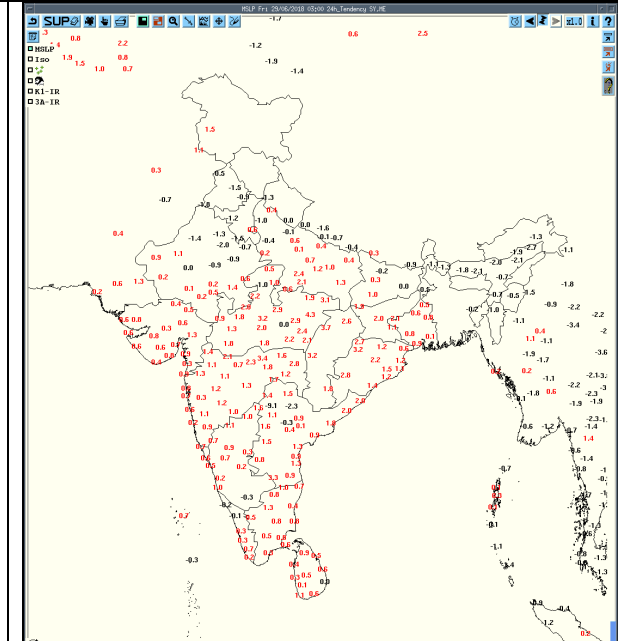
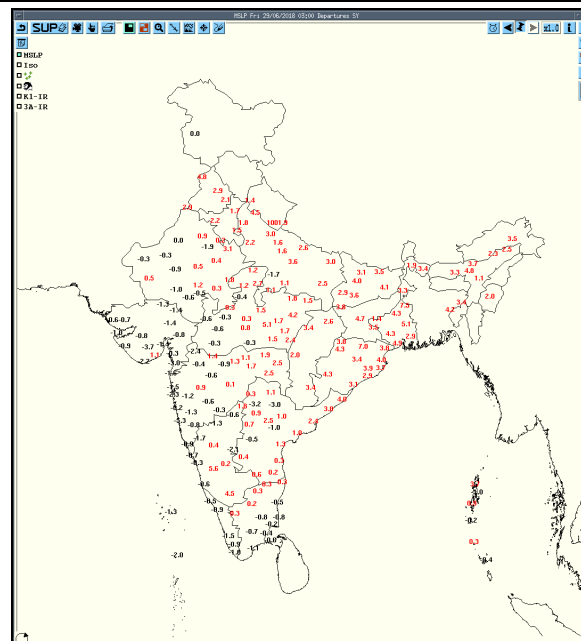
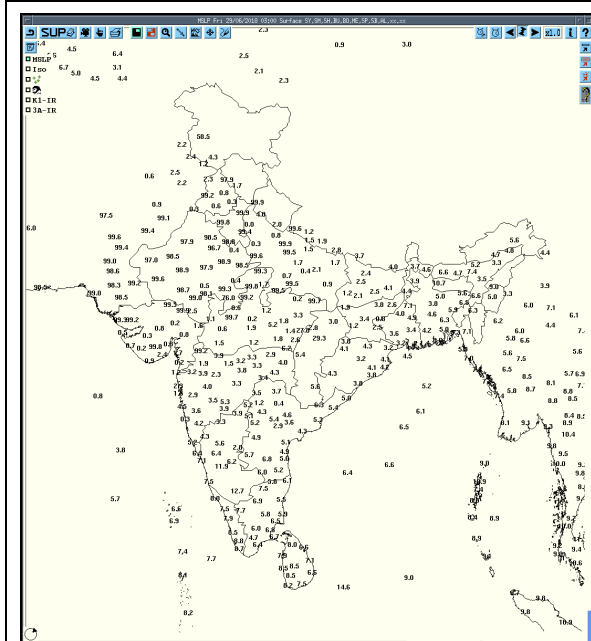




Tmax

Departure Tmax

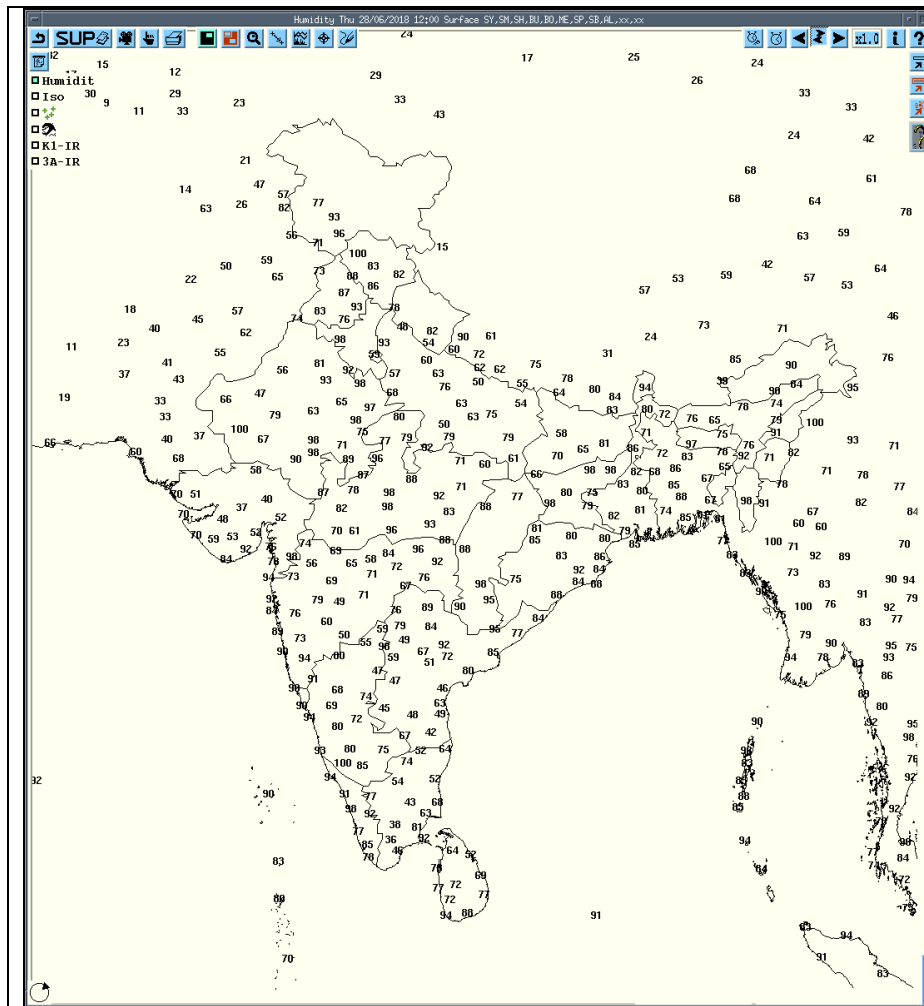
Tendency Tmax



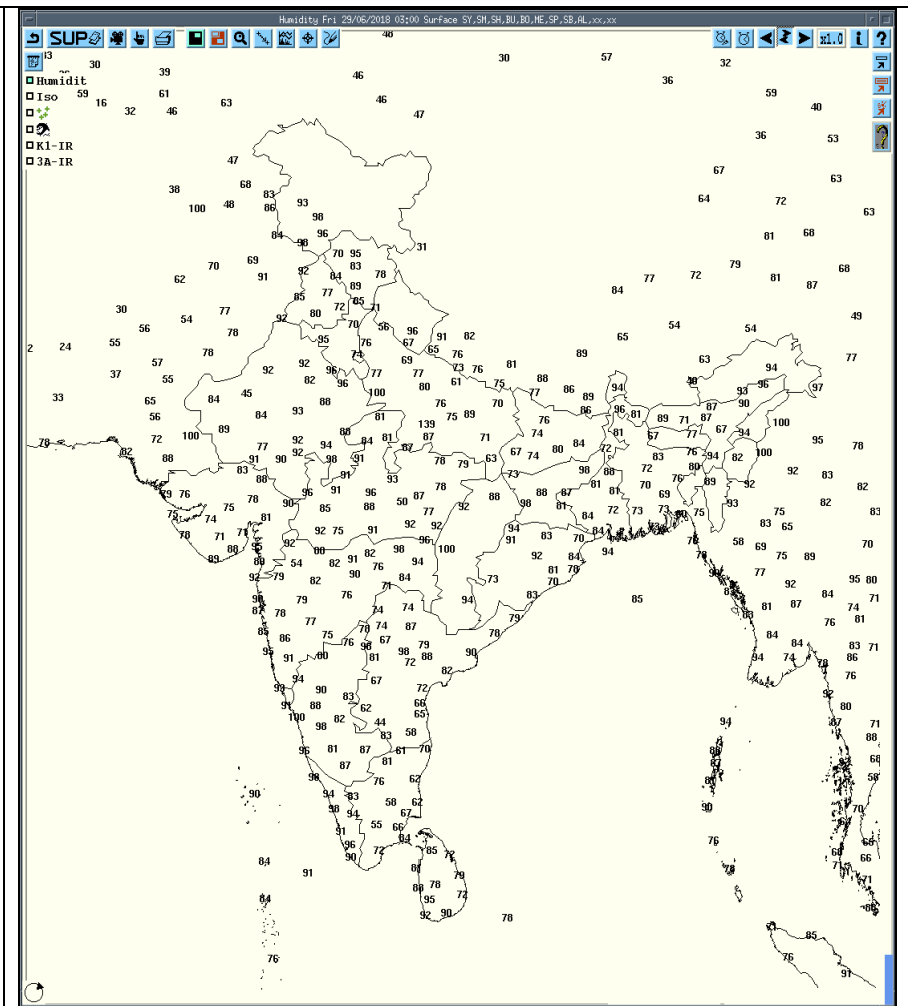
MSLP

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
Jaipur	29/06/18	0300 UTC of 28/06/18 to 0300 UTC of 29/06/18.	Multiple cell with average height of 9.5 km & maximum reflectivity 55.5 dBZ	Multiple cell develop from 0300 UTC of 28/06/18 towards N,NE,E,SE,S,SW ,W,NW of Jaipur and moved to W,NW,SW wards at speed 18-25 km/hr.	Multiple cell (Continue from previous day) develop from 0300 UTC of 28/06/18 towards N,NE,E,SE,S,SW,W, NW of Jaipur and reaches maximum reflectivity from 0722 UTC of 28/06/2018 to 1352 UTC of 28/06/2018 and cells Continue on 0300 UTC OF 29/06/2018	Dust storm/Thunderstorm/ Light to moderate rain at Isolated places	Jaipur,Alwar Ajmer, Nagaur,Pali, Tonk,Dausa,Kota, Bundi,Bhilwara, Jhalawar,Baran, Sawai Madhopur, Karauli,Sikar, Jhunjhunu, Churu,Bikaner, Bharatpur, Dholpur, Chittorgarh,Pali, Rajsamand, Districts.
Visakhapatnam	29/06/18	0300UTC	Isolated cb cells towards West and South with max reflectivity 55 dbz and height 10 kms.	58 kms(S) and moving E ly.	Since last observation cb cells are developing with max. reflectivity at 0101 UTC	Thunder with rain	Visakhapatnam East Godavari(AP) and Bay of Bengal

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	29/06/2018	280044Z UTC TO 280512Z UTC	Multiple cell formed over 150 Km SSW direction at 0442 UTC. Max reflectivity observed was 41.0 dBZ & height reached 09.4 Km of 20 dBZ echo top.	Multiple cell system Almost Stationary w.r.t. the station.	Dissipated at around 0512 UTC over 140 Km SSW direction w.r.t. the station.	NIL	NIL
		280532Z UTC TO 281032Z UTC	Multiple cell formed over 80 Km to 140 Km ENE direction at 0532 UTC. Max reflectivity observed was 49.0 dBZ & height reached 07.5 Km of 20 dBZ echo top.	Multiple cell system moved with avg. velocity 43.2 Km/h in NW direction w.r.t. the station.	Dissipated at around 1032 UTC over 110 Km to SW direction w.r.t. the station.	NIL	NIL
		280642Z UTC TO 280932Z UTC	Multiple cell formed over 200 Km SSW direction at 0642 UTC. Max reflectivity observed was 45.0 dBZ & height reached 14.0 Km of 20 dBZ echo top	Multiple cell system moved with avg. velocity 22.0 Km/h in NW direction w.r.t. the station.	Dissipated at around 0932 UTC over 170 Km SSW direction w.r.t. the station.	NIL	NIL
		280922Z UTC TO 281312Z UTC	Multiple cell formed over 250 Km SE direction at 0922 UTC. Max reflectivity observed was 43.5 dBZ & height reached 13.5 Km of 20 dBZ echo top	Multiple cell system moved with avg. velocity 43.2 Km/h in NW direction w.r.t. the station.	Dissipated at around UTC 1312 over 80 Km South direction w.r.t. the station	NIL	NIL
		281202Z UTC TO 281722Z UTC	Multiple cell sub System formed 250 Km West to 130 Km NW direction at 1202 UTC. Later more stronger and wide spread . Max reflectivity observed was 47.0 dBZ & height reached 13.5 Km of 20 dBZ echo top	Multiple cell sub System moved with avg. velocity 43.2 Km/h in NW direction w.r.t. the station.	Dissipated at around 1722 UTC over 80 Km West to 180 Km WNW direction w.r.t. the station	TSRA	Kanpur Dehat, Auraiya, Etawah, Firozabad

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	29-06-18	28/06/2018 0300 - 0600	Multiple Echoes Z: 51.0 dbz Ht. 9-11 KM.	NW,SW SECTORS Dir. N -WARDS		RA/TS	Patiala,Nabha,Ambala,Samrala,Ludhiana,Phillaur,Nawashar,Una,NDam,Jalandhar,Adampur ,Hoshiarpur,Nadaun,Hamirpur,Palampur,Dalho usie,Chamba and their adjoining areas.
		28/06/2018 0600 -0900	Multiple Echoes Z: 54.5 dbz Ht. 9-11 KM.	NW,SW SECTORS Dir. N -WARDS		RA/TS	Fatehabad,Hissar,Tohana,Barwala,Patran,Jall andhar,Phillur,Adampur,Hoshiarpur,Dasua,Chintpurni and their adjoining areas.
		28/06/2018 0900- 1200	Multiple Echoes Z: 57.0 dbz Ht. 9-11 KM.	SW,NW SECTORS Dir. N -WARDS		RA/TS	Kaithal,Pehowa,Patiala,Sangrur,Patran,Nabha, Mansa,Maham,Hissar,Jind,Narwana,Tohana and their adjoining areas.
		28/06/2018 1200 - 1500	Multiple Echoes Z: 57.0 dbz Ht. 9-11 KM.	SW,NW SECTORS Dir. N -WARDS		RA/TS	Patiala,Nabha,Sanaur,Pehowa,Ambala,Rajpur a,Behat,Kalsi,Sangrur,Rewari,Mohindergarh,jaj jar and their adjoining areas.
		28/06/2018 1500 -1800	Multiple Echoes Z: 50.0 dbz Ht. 8-11 KM.	NW,SW,SE SECTORS Dir. N -WARDS		RA/TS	Rohtak,Maham,Hissar,Jind,Barwala,Fatehaba d,Tohana,Ludhiana,Phagwada,Nawashar,Mus sorie,Shimla and their adjoining areas.
		28/06/2018 1800 - 2100	Multiple Echoes Z: 50.5 dbz Ht. 8-10 KM.	SE,NE SECTORS Dir. N -WARDS		RA/TS	Kaithal,Pehowa,Ambala,Patiala,Chandigarh,K hnna,Ludhiana,Mussorie,Rohru,Rampur and their adjoining areas.
		28/06/2018 2100- 0000	Multiple Echoes Z: 49.0 dbz Ht. 7-9 KM.	SE,NE SECTORS Dir. N -WARDS		RA/TS	Rohru,Rampur,Sundernagar,Mandi,Bhiwani,Si wani,Maham,Fatehabad,Ratia,Muktsar,Faridko t,Ferozpur,TaranTaran,Kapurthala,Amritsar, Batala and their adjoining areas.
		29/06/2018 0000-0252	NO SIGNIFICANT ECHO	-----		-----	-----
Patna	29/06/2018	28/0300- 29/0252	NO SIGNIFICANT ECHO	-----		-----	-----

Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)

Station	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	29-06-18	0714	0716
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	29-06-18	0400	0830
Dehradun	Northwest India	Uttarakhand	Thunderstorm	28-06-18	1935	2115
Tehri	Northwest India	Uttarakhand	Thunderstorm	28-06-18	2250	2335
Patiala	Northwest India	Punjab	Thunderstorm	28-06-18	1820	1915
Ludhiana	Northwest India	Punjab	Thunderstorm	28-06-18	During Night	
Ambala	Northwest India	Haryana	Thunderstorm	28-06-18	2325	0040
Hissar	Northwest India	Haryana	Thunderstorm	28-06-18	0912 1355 1620 2035	1005 1545 1800 2240
Safdarjung	Northwest India	Delhi	Thunderstorm	28-06-18	1910	1940
Etawah	Northwest India	East Uttar Pradesh	Thunderstorm	28-06-18	2000	2100
Allahabad	Northwest India	East Uttar Pradesh	Thunderstorm	28-06-18	1550	1633
Meerut	Northwest India	West Uttar Pradesh	Thunderstorm	28-06-18	1650	1710
Jhansi	Northwest India	West Uttar Pradesh	Thunderstorm	28-06-18	1750	1910
Jaipur	Northwest India	East Rajasthan	Thunderstorm	28-06-18	1945 2040	2005 2335
Vanasthali	Northwest India	East Rajasthan	Thunderstorm	28-06-18	1745	1800
Ajmer	Northwest India	East Rajasthan	Thunderstorm	28-06-18	2300	2345
Sawai Madhopur	Northwest India	East Rajasthan	Thunderstorm	28-06-18	1630	1700
Dabok (Udaipur)	Northwest India	East Rajasthan	Thunderstorm	28-06-18	1410	1515
Pilani	Northwest India	East Rajasthan	Thunderstorm	28-06-18	1530 1915	1625 2030
Chittorgarh	Northwest India	East Rajasthan	Thunderstorm	28-06-18	1230 1600	1240 1900
Jodhpur	Northwest India	West Rajasthan	Thunderstorm	28-06-18	1620	1735
Barmer	Northwest India	West Rajasthan	Thunderstorm	28-06-18	1450	1700
Bikaner	Northwest India	West Rajasthan	Thunderstorm	29-06-18	0420	0540
Nagpur	Central India	Madhya Pradesh	Thunderstorm	28-06-18	1555 2120	1620 2220
Nizamabad	South India	Telangana	Thunderstorm	28-06-18	1440	1530
Vijayawada AP	South India	Coastal Andhra Pradesh	Thunderstorm	28-06-18	1515	1555
Panambur	South India	Coastal Karnataka	Thunderstorm	28-06-18	1405	1435
AMS Bajpe	South India	Coastal Karnataka	Thunderstorm	28-06-18	0830 1357	0920 1445
CIAL Kochi	South India	Kerala	Thunderstorm	28-06-18	1120	1320
Jorhat	Northeast India	Assam	Thunderstorm	28/29-06-18	28/2310	29/0200
Asansol	East India	GWB	Thunderstorm	28-06-18	1250	1440
Sriniketan	East India	Bihar	Thunderstorm	28-06-18	1405 1705	1450 1750
Jamshedpur	East India	Jharkhand	Thunderstorm	28-06-18	1030	1100

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(upto03UTCof today)

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

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

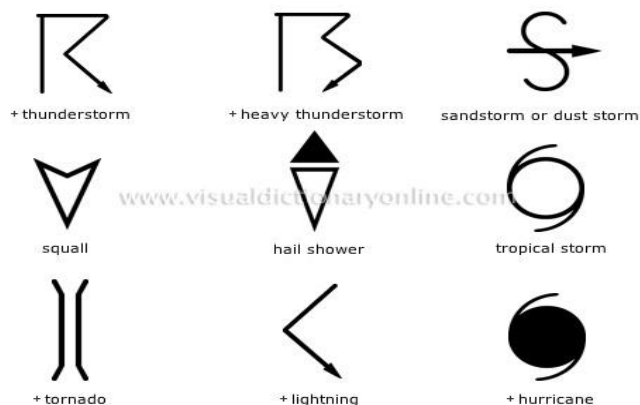
For Radar images of the past 24 hours including mosaic of images:

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	