India Meteorological Department

FDP STORM Bulletin No. 105 (19-06-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC Inference (0300UTC of the day):

♦ The Southwest Monsoon could not advance further since last one week due to weak monsoon flow in associations with
(i) Weak cross equatorial flow
(ii) Unfavourable location of active phase of Madden Julian Oscillation (MJO)
(iii) an equatorial eastwards propagating oscillations which lay over central & east Pacific Ocean, Western Hemisphere and Africa and
(iv) Development of low pressure systems over northwest Pacific Ocean.

♦ However, the monsoon circulation is likely to improved from around 24th June with (i) expected movement of active phase of Madden Julian Oscillation (MJO) to west Equatorial Indian Ocean and adjoining Arabian Sea during next 2-3 days and (ii) development of cyclonic circulations of eastern India leading to strengthening of easterlies winds over Gangetic plains. As a result, the Southwest Monsoon is likely to further advance over reaming parts of Assam, some more parts over Maharashtra, Chhattisgarh, Odisha, West Bengal and some parts over Jharkhand, Bihar and Madhya Pradesh between 23 to 25th June.

♦ The Northern Limit of Monsoon 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.

♦ The off shore trough at mean sea level from south Maharashtra coast to Kerala coast persists.

♦ The Western disturbance as a trough in mid tropospheric westerlies at 5.8 km above mean sea level now runs roughly along Long 72°E to the north of Lat 32°N.

♦ The trough in mid tropospheric westerlies between 2.1 km & 3.1 km above mean sea level now runs roughly along Long 93°E to the north of Lat 25°N.

♦ The cyclonic circulation at 7.6 km above mean sea level over west central Bay of Bengal & adjoining south Odisha & north Coastal Andhra Pradesh now lies over west central Bay of Bengal & adjoining Coastal Andhra Pradesh between 5.8 and 7.6 km above mean sea level.

♦ A trough at 0.9 km above mean sea level runs from east Bihar to north Bay of Bengal across West Bengal.

♦ The cyclonic circulation over Madhya Maharashtra & neighbourhood persists and now extends upto 5.8 km above mean sea level.

Satellite Observations during past 24 hrs and current observation:

Current Observation (based on 0900UTC imagery of INSAT 3D):

Westerly Trough: Trough in Westerlies runs roughly along Long 68.0E & North of Lat 30.0N.

Clouds descriptions within India:

North: Scattered low/medium clouds with embedded isolated weak convection seen over Jammu & Kashmir. Scattered low/medium clouds over Himachal Pradesh, Uttrakhand and South Uttar Pradesh.

East: Broken low/medium clouds with embedded moderate to intense convection seen over Tripura. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over Northeast Bihar, Sub-Himalayan West Bengal, Sikkim and rest Northeastern States. Scattered low/medium clouds over rest parts of the region.

West: Scattered low/medium clouds with embedded isolated weak to moderate convection seen over Central parts of South Madhya Pradesh, Maharashtra and Goa. Scattered low/medium clouds over Rajasthan, Gujarat and rest Madhya Pradesh.

South: Broken low/medium clouds with embedded to intense to very to intense convection seen over Andaman & Nicobar Islands and moderate to intense convection seen over Coastal Karnataka, South Kerala and Lakshadweep Islands. low/medium clouds with embedded isolated weak convection seen over Telangana, Rayalaseema and rest Karnataka and North Kerala. Scattered low/medium clouds over rest parts of the region.

Arabian Sea:
Scattered low/medium clouds with embedded moderate to intense convection seen over East-Central adjoining Southeast Arabian Sea, between lat 10.0N to 18.0N, east of long 68.0E.

Bay of Bengal & Andaman Sea:
Broken low/medium clouds with embedded intense to very intense convection seen over Southeast Bay, East-central Bay and Andaman Sea.

Past Observation:

Convection:-
Moderate to Intense convection was observed over Uttar Pradesh Madhya Pradesh Chhattisgarh Bihar East Jharkhand Odisha West Bengal Sikkim North-East States Maharashtra Goa coastal Karnataka Kerala coastal Tamilnadu Lakshadweep Andaman & Nicobar Islands. Weak to Moderate convection was observed over most parts of rest India.

OLR:-
Up to **150** wm^{-2} was observed over Andaman & Nicobar Islands
Up to **230** wm^{-2} was observed over J&K North Himachal Pradesh North Uttarakhand Meghalaya South Konkan Goa coastal Karnataka South Kerala.

Synoptic features:

Westerly Trough & Jet-Stream: Westerly Trough roughly along longitude 68.0E & north of latitude 30.0N

Dynamic Features:-
Wind shear up to 30-40 Knots is observed over J & K, Peninsula India and 10-20 Knots observed over rest India.
Positive Shear tendency (0 Knots) is observed over Indian region.
Vorticity (850 hPa) up to 250 is observed over Haryana Delhi East Vidarbha adjoining south-East Madhya Pradesh South Konkan Goa coastal Karnataka.
Positive low level convergence (5 Knots) observed over central India, East India and Peninsula India.

Precipitation:

IMR:
Rainfall >150 mm was observed over Andaman & Nicobar islands.
Rainfall up-to 50-90 mm observed over North-East Bihar Sub-Himalayan West Bengal Meghalaya.
Rainfall up-to 20-30 mm observed over South Assam Tripura.
Rainfall up-to 10-20 mm observed over J&K Uttar Pradesh South-west Rajasthan Madhya Pradesh North Chhattisgarh Gangetic West Bengal North Assam Mizoram Maharashtra Goa coastal Karnataka Kerala coastal Tamilnadu Lakshadweep.

DWR and RAPID Observations:

Moderate multiple echoes observed on DWR Bhopal (dBZ around 50and height around 15km), Nagpur (dBZ around 50 and height 13-14km), Patiala ((dBZ around 50 and height around 10km) and Visakhapatnam (dBZ 45-50 and height 13-15km) domains at around 1645IST. Isolated/multiple light to moderate echoes are also seen on DWR Srinagar, Jaipur, Delhi, Patna, Kolkata, Hyderabad, Visakhapatnam, Gopalpur, Paradeep, Kochi, Chennai, Thiruvananthapuram, Goa and Mumbai domains at around 1645IST.

RAPID RGB Satellite imagery at 1530 IST indicates significant convection over Eastern parts of Gangetic West Bengal, Kerala, Coastal Karnataka, North Coastal Andhra Pradesh, Andaman & Nicobar Islands and Lakshadweep. It also indicates multiple significant convection over Maharashtra including Vidarbha, Madhya Pradesh, East Rajasthan, Bihar, Jharkhand, North Telangana and South Chhattisgarh.

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

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

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

Delhi – SAFAR analysis & Forecast	19.06.2018	20.06.2018
PM10 (micro-g/m^3)	159	151
PM2.5 (micro-g/m^3)	59	56

2. NWP MODEL GUIDANCE:

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

1. Synoptic Systems: The analysis based on 00 UTC indicates a trough extends from East Bihar to North Bay of Bengal across Gangetic West Bengal. The forecast shows it will persist till day1. The analysis shows a cyclonic circulation over North Punjab and adjoining areas in lower troposphere (925hPa). The forecast shows it will persist till day2. The analysis shows a cyclonic circulation over South coastal Maharashtra and adjoining Konkan and Goa. The forecast shows it will persist till day 2. The analysis shows an off shore Trough at mean sea level extends from South Maharashtra 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 x 10^{-1}/s)}: Low level Positive Vorticity is seen mostly around the cyclonic circulations, from Foothills of Himalaya, Sikkim to NE states, GWB, SHWB, and over Tamil Nadu, Konkan and Goa, coastal Karnataka, Kerala 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 Gujarat, Rajasthan, Bihar, Jharkhand, East Uttar Pradesh, Gangetic West Bengal, SHWB, Orissa, Madhya Pradesh, Vidarbha, Madhya Maharashtra, Marathwada, Telangana, along east coast of India, coastal and Interior Andhra Pradesh, coastal Tamil Nadu, Sikkim, Assam, Tripura and adjoining areas on all 3 days .

Lifted Index (< -2): over parts of Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Gujarat, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Madhya Maharashtra, Marathwada, Vidarbha, coastal Tamil Nadu, Telangana, Chhattisgarh, East and west Madhya Pradesh, coastal Andhra Pradesh, along east and west coast of India, Sikkim, NE states on day 1; on day 2 and 3 it is seen over same region but disappear over parts of Uttarakhand, Delhi and adjoining areas.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Rajasthan, Uttar Pradesh, Madhya Pradesh, Orissa, Andhra Pradesh, North Madhya Maharashtra, foothills of Himalaya, Sikkim and Arunachal Pradesh on day 1 and 3; on day 2 it is seen mainly over same region but also appears over parts of Vidarbha, Telangana, Marathwada and adjoining areas with highest value of the index lies over parts of Rajasthan, Punjab and adjoining West Haryana.

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 Gujarat and adjoining Rajasthan.

CAPE (> 1000): Mostly seen over parts of Gujarat, Rajasthan, along east coast, GWB, SHWB, Bihar adjoining East Uttar Pradesh, coastal Andhra Pradesh, coastal Tamil Nadu, west Madhya Pradesh, Vidarbha, parts of Maharashtra including Mumbai, North Madhya Maharashtra, Telangana, some parts of Chhattisgarh and Orissa, Assam, Sikkim, Tripura and adjoining areas during next 3 days.

CIN (50-150): Mostly seen over Central India, GWB, SHWB, Bihar, Uttar Pradesh, east coast of India and parts of Peninsular India on all three days.

5. Rainfall Activity:

Above 200 mm Rainfall: over South coastal Maharashtra on day 3.

130-200 mm Rainfall: over South coastal Maharashtra and adjoining South Madhya Maharashtra on day 3.

70-130 mm Rainfall: over South coastal Maharashtra during next 3 days; over parts of South Madhya Maharashtra, Assam and Arunachal Pradesh on day 3.

40-70 mm Rainfall: Along west coast including south coastal Maharashtra, coastal Karnataka, Kerala, Konkan and Goa on all three days. Over parts of Arunachal Pradesh on day 2 and 3; over parts of South Madhya Maharashtra, Andhra Pradesh, Sikkim, Assam and Arunachal Pradesh on day 3.

10-40 mm Rainfall: over parts of coastal and Interior Karnataka, Kerala, coastal Maharashtra, Konkan and Goa, Sikkim, Tamil Nadu, Madhya Maharashtra, Marathwada, Telangana, Vidarbha, Interior Karnataka, Andhra Pradesh, Madhya Pradesh, Orissa and NE states during next 3 days; over parts of J&K, Uttarakhand and East Rajasthan on day 1; over parts of Uttarakhand on day 3.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Northwest Rajasthan, Uttar Pradesh, Foothills of Himalaya, GWB, SHWB, Sikkim, NE states, Bihar, Jharkhand, Orissa, 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; over parts of Haryana, Delhi and adjoining area on day 1.

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

1. Model Reflectivity (Max. dBz):>25 dBZ Model Reflectivity: Mostly seen over North East India, coastal areas along the west coast, parts of central India Madhya Pradesh adjoining East Rajasthan, Vidarbha, Marathwada, Madhya Maharashtra, Telangana, Orissa, Andhra Pradesh, Konkan and Goa, East Bihar and over most parts of South Peninsular India. some parts of J&K and Northwest Rajasthan on day 1

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

Total Index (> 50): Mostly observed over Gujarat, East Uttar Pradesh, Bihar, Jharkhand, Chattisgarh, Madhya Pradesh, Orissa, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidarbha, Sikkim, SHWB, GWB and NE states during next 3 days.

K-Index (> 35): Less than threshold value is observed over most of the part of the country during the next 3 days. Prominent values are found over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, 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.

CAPE (> 1500): Greater than threshold value over coastal Gujarat, East Uttar Pradesh, Rajasthan, Punjab, Haryana, coastal areas of west coast, coastal Maharashtra including Mumbai, Konkan & Goa, coastal Karnataka, Konkan and Goa, coastal Kerala, coastal areas along the east coast, SHWB, GWB, Orissa, coastal Andhra Pradesh, coastal Tamil Nadu, Bihar, Jharkhand and NE states on day 1; on day 2 and 3 it remain over same region but disappear over parts Punjab, Haryana and Northwest Rajasthan.

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 sates except J&K and extreme South Peninsular India on all three days; significant zone with maximum value of index lies over parts of Gujarat, Rajasthan, Punjab, Haryana and East Madhya Pradesh.

3. Rainfall and thunderstorm activity:

Above 200 mm Rainfall: over parts of South coastal Maharashtra on day 1; over parts of coastal Karnataka, Konkan and Goa on day 2.

130-200 mm Rainfall: over pockets of Konkan and Goa during next 3 days; over parts of South coastal Maharashtra on day 1 and 2, over parts of Sikkim and Vidarbha on day 2 and 3; over parts of coastal Karnataka, Vidarbha and Kerala on day 2 and 3; over parts of Assam, Meghalaya and Arunachal Pradesh on day 3.

70-130 mm Rainfall: over parts of South coastal Maharashtra, coastal and Interior Karnataka, Konkan and Goa, Kerala, Sikkim, Assam, Meghalaya, Arunachal Pradesh on all three days; over parts of Vidarbha, adjoining Chhattisgarh and Telangana, South Tamil Nadu on day 2 and 3; over parts of East Bihar on day 3.

40-70 mm Rainfall: over west coast from South coastal Maharashtra, Konkan to Kerala and adjoining South Tamil Nadu, Vidarbha Sikkim and NE states during next 3 days; on day 2 and 3 over parts of South Chhattisgarh, Telangana and adjoining Andhra Pradesh.

10-40 mm Rainfall: Over parts of J&K, Foothills of Himalaya, Madhya Pradesh, Vidarbha, Kerala, Tamil Nadu, coastal and Interior Karnataka, Konkan and Goa, coastal Maharashtra including Mumbai, Sikkim, Orissa, Telangana, Madhya Maharashtra, Marathwada, Chhattisgarh, Andhra Pradesh, Sikkim and NE during NE states; on day 1 and 2 over parts of Himachal Pradesh; over parts of East Rajasthan on day 1.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Punjab, Haryana, Delhi and adjoining areas, 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 indicates a cyclonic circulation over Madhya Maharashtra & neighbourhood extending upto 5.8 km above mean sea level. Also the off shore trough at mean sea level from south Maharashtra coast to Kerala coast persists. In addition a cyclonic circulation lies at 7.6 km above mean sea level over west-central Bay of Bengal & adjoining Coastal Andhra Pradesh between 5.8 and 7.6 km above mean sea level. As a result of above conditions, isolated heavy to very heavy rainfall is expected over Konkan & Goa, while isolated heavy rainfall is likely over Kerala & Coastal Karnataka on Day 1 and Day 2. South Interior Karnataka may get isolated heavy rainfall on Day 2. This situation is also favourable for isolated thunderstorm activity accompanied with gusty winds over Telangana, Rayalaseema, Coastal Andhra Pradesh and Tamilnadu on Day 1 & Day 2.

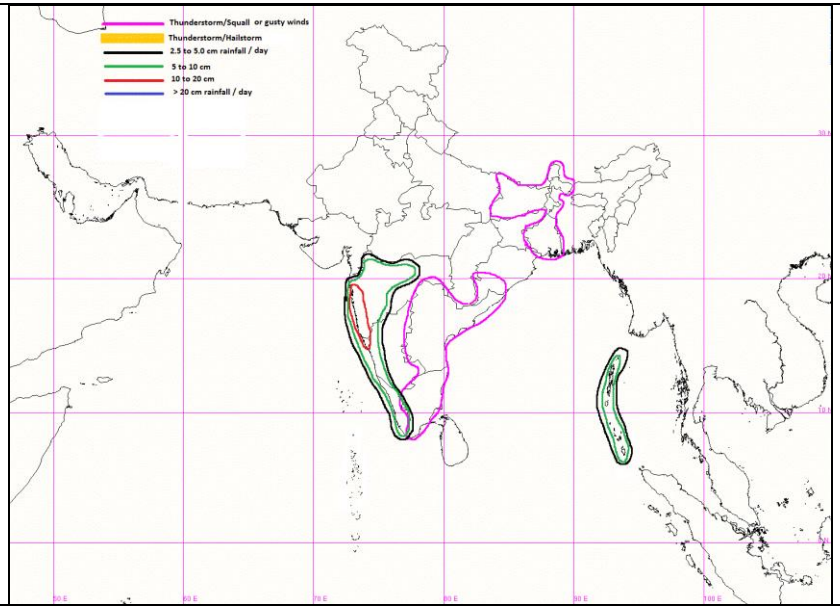
- A trough at 0.9 km above mean sea level runs from east Bihar to north Bay of Bengal across West Bengal. The condition may trigger thunderstorm activity accompanied with gusty winds over East Bihar and West Bengal on Day 1.

- The prevailing synoptic conditions over Bay of Bengal are favourable for isolated heavy rainfall over Andaman and Nicobar islands on Day 1 and day 2 and over Assam & Meghalaya on Day 2.

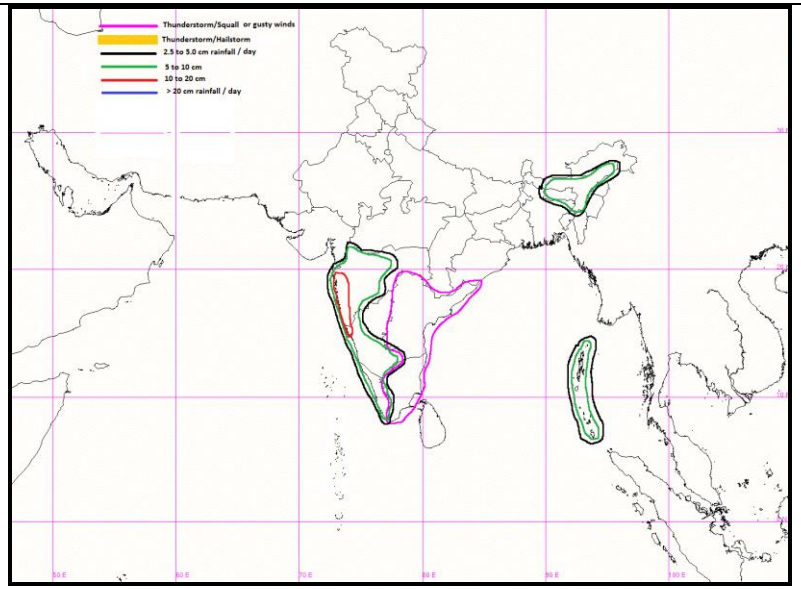
IOP Area for Day-1 & Day-2:

24 hour Advisory for IOP:	48 hour Advisory for IOP:
Significant Rainfall: Konkan & Goa, Madhya Maharashtra Coastal Karnataka, Kerala Andaman & Nicobar Islands **Thunderstorm with squall or gusty winds:** Coastal Andhra Pradesh, Rayalaseema, Telangana, Tamilnadu, West Bengal, Sikkim, Bihar, South Odisha **Thunderstorm with squall and hail** Nil **Thunderstorm/Duststorm:** Nil	**Significant Rainfall:** Konkan & Goa, Madhya Maharashtra Coastal and South Interior Karnataka, Kerala Assam & Meghalaya Andaman & Nicobar Islands **Thunderstorm with squall or gusty winds:** Coastal Andhra Pradesh, Rayalaseema, Telangana, Tamilnadu **Thunderstorm with squall and hail** Nil **Thunderstorm/Duststorm:** Nil

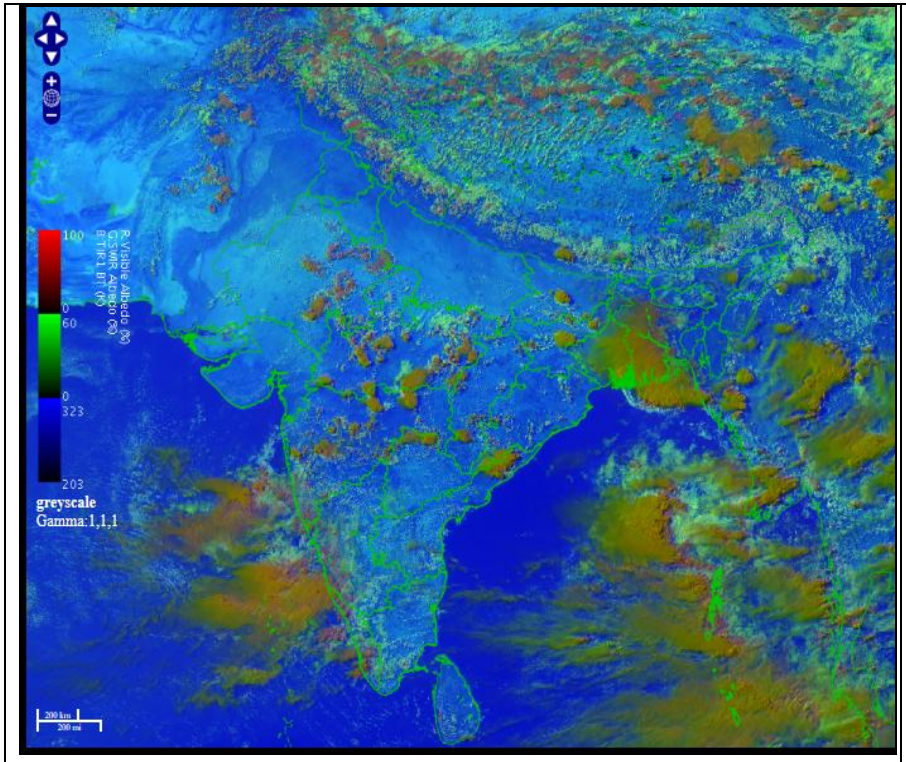
Graphical Presentation of Potential Areas for Severe Weather:



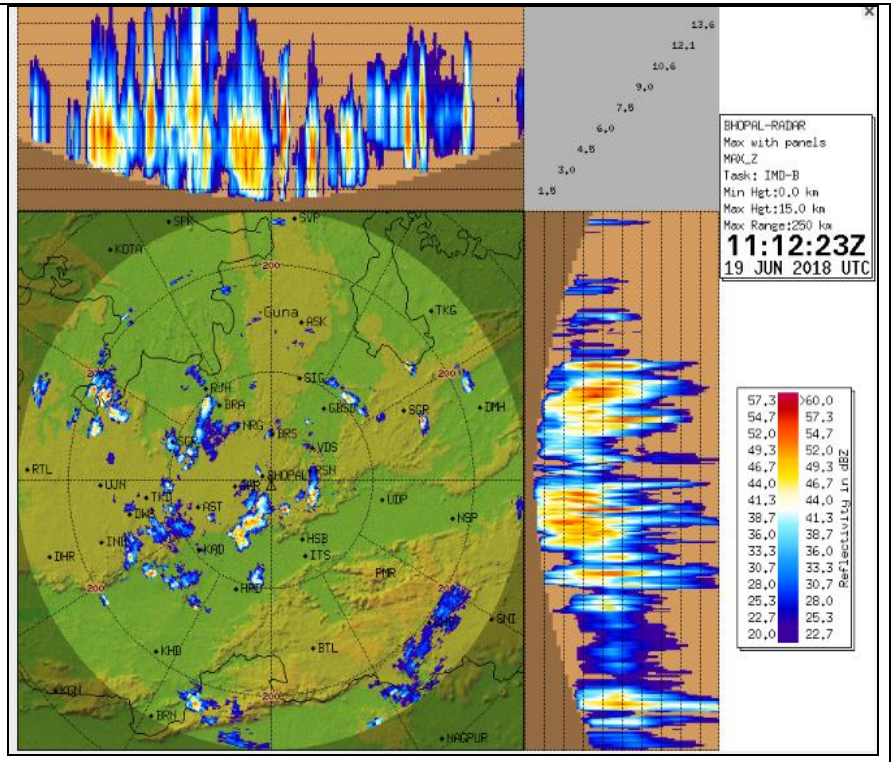
IOP Advisory for 24 hours



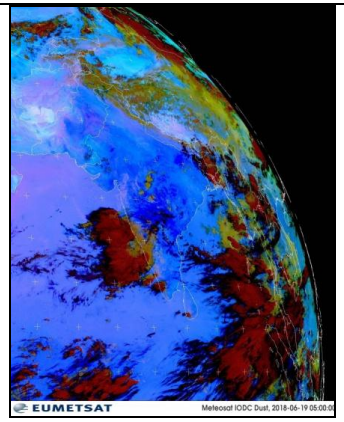
IOP Advisory for 48 hours

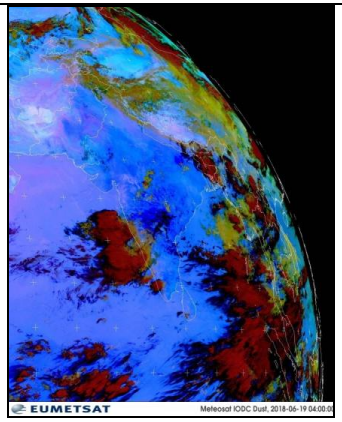


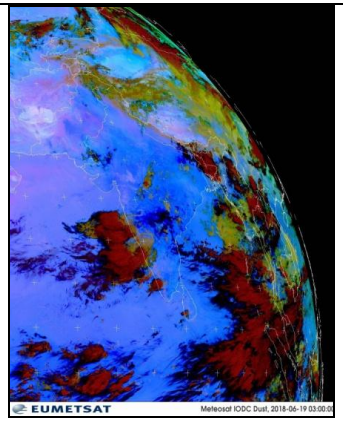
RAPID RGB Satellite Imagery at 1530 IST

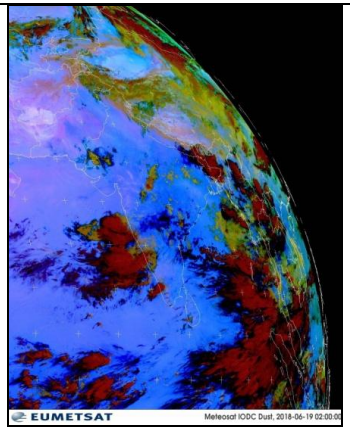


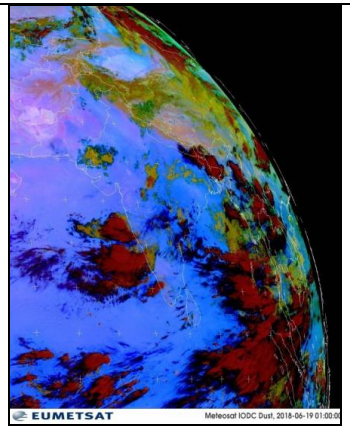
DWR Bhopal reflectivity at 1642 IST

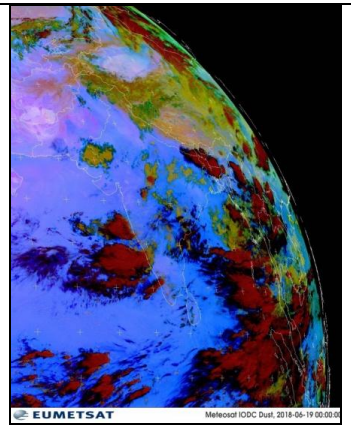




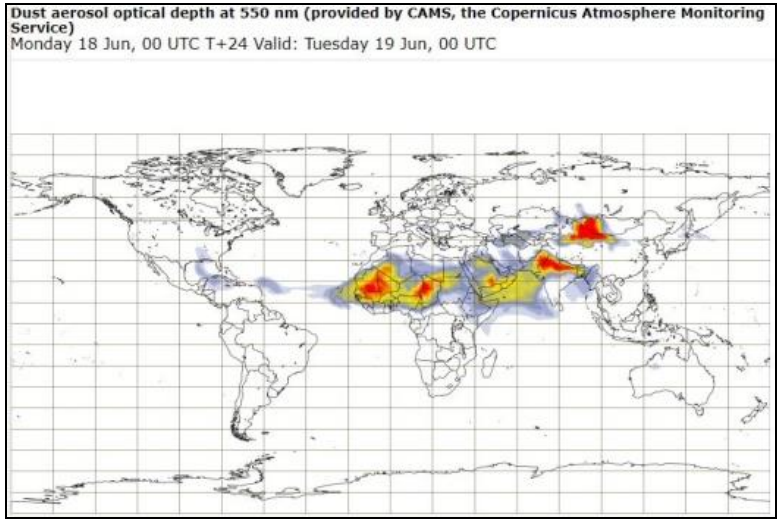




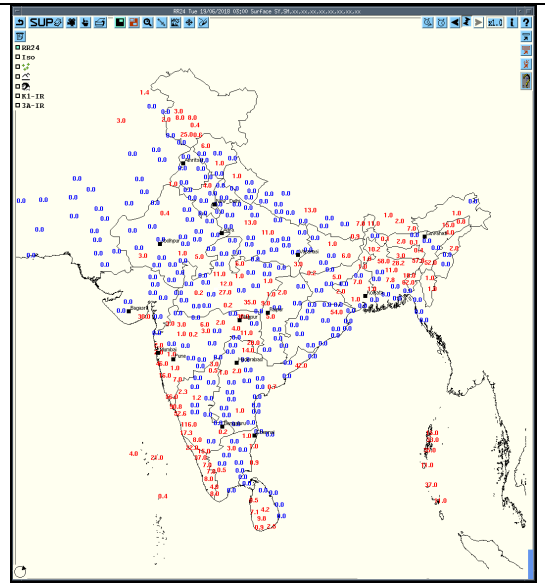




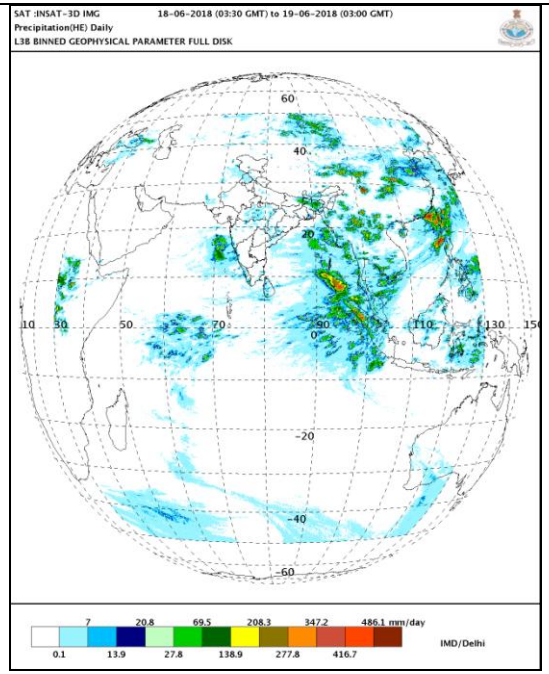
Observed Satellite Dust Images of today



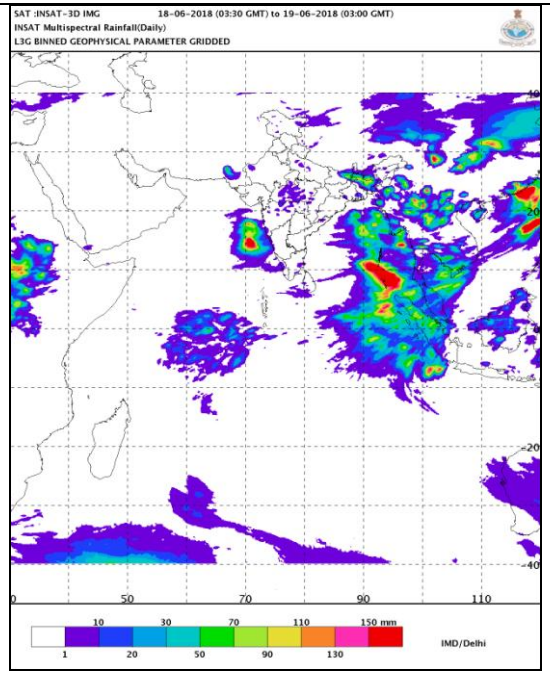
Dust Forecast



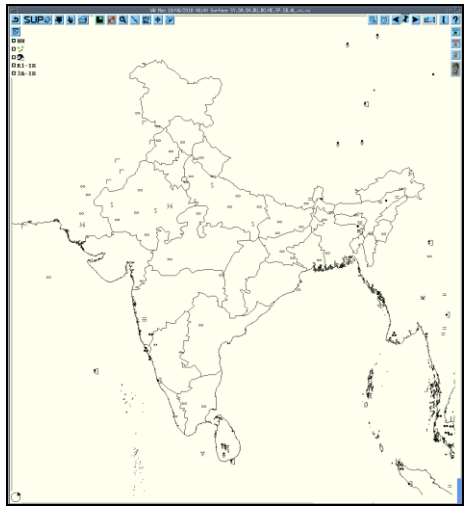
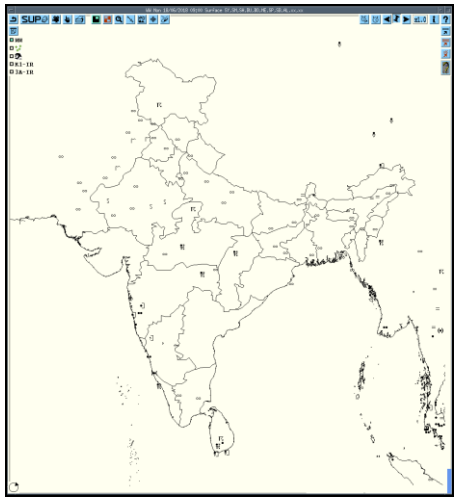
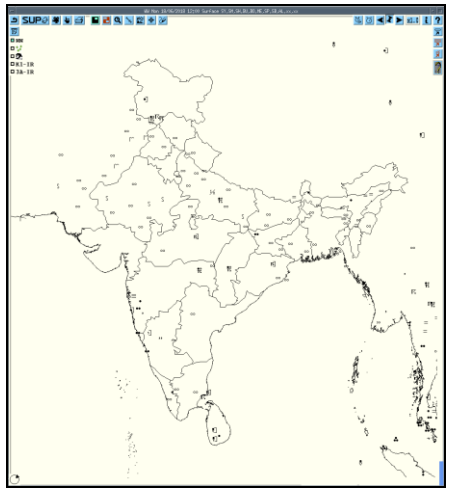
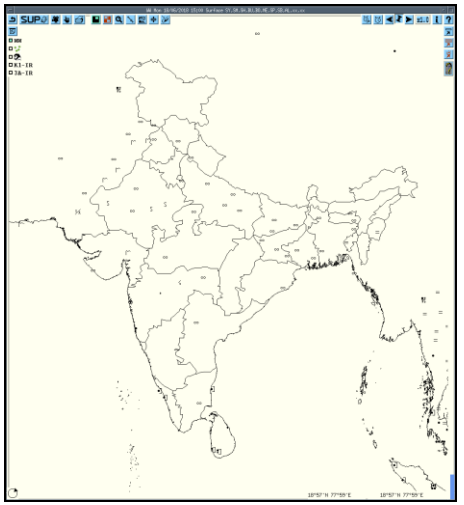
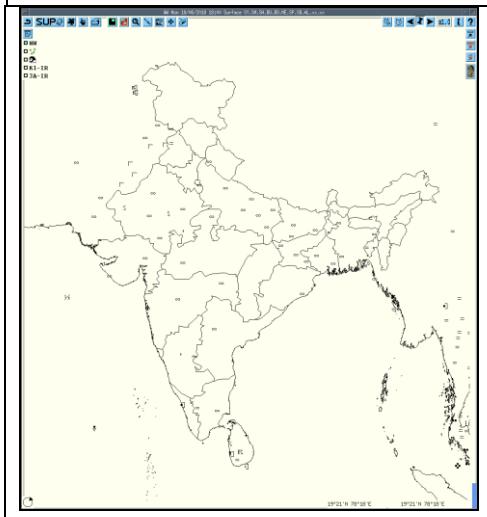
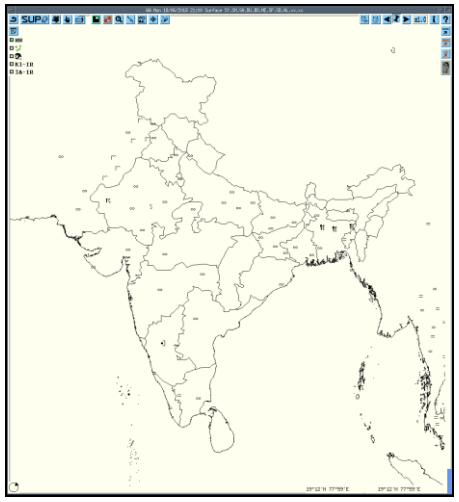
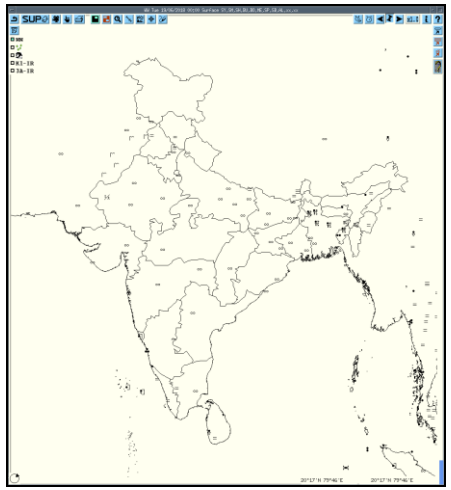
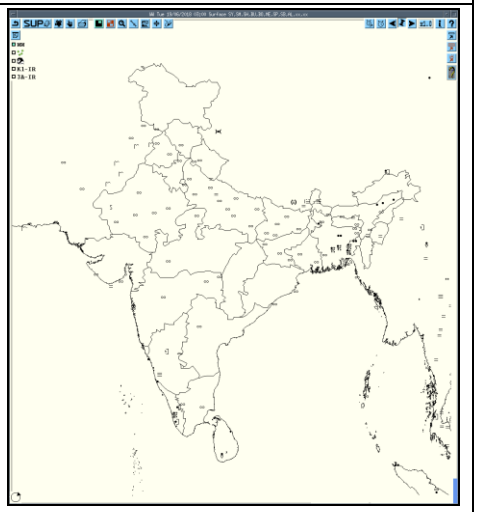
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



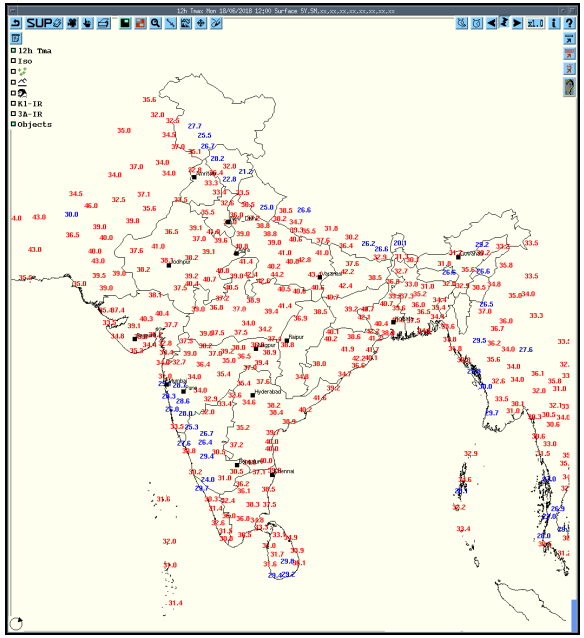
HEM



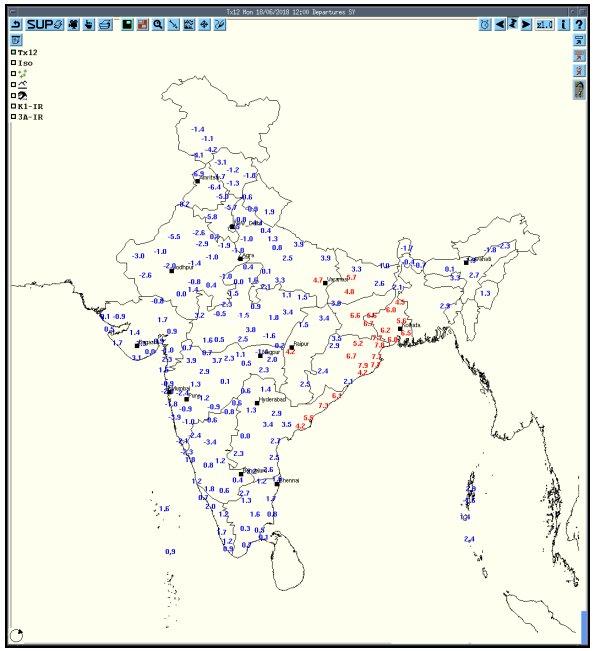
IMR

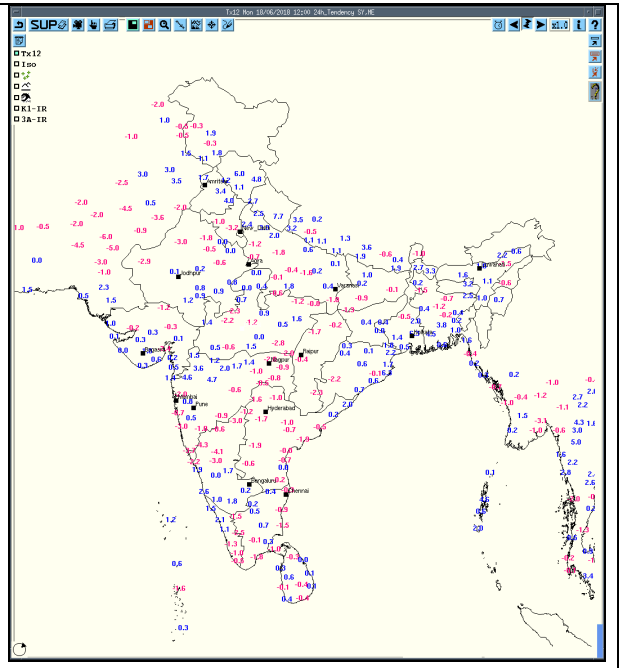
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



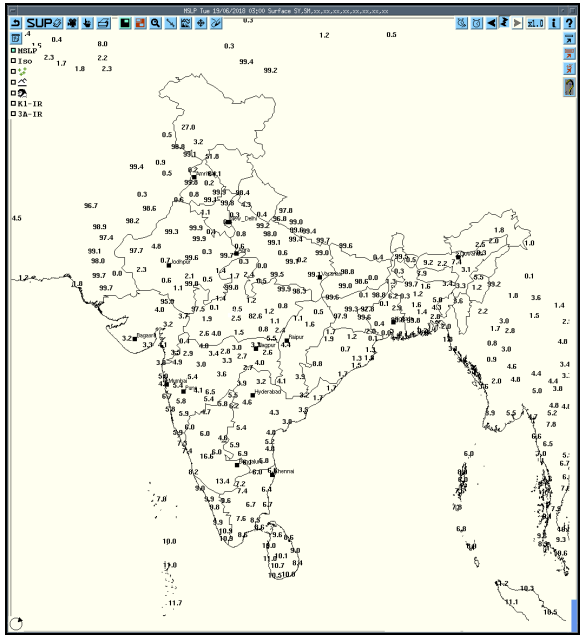
Tmax



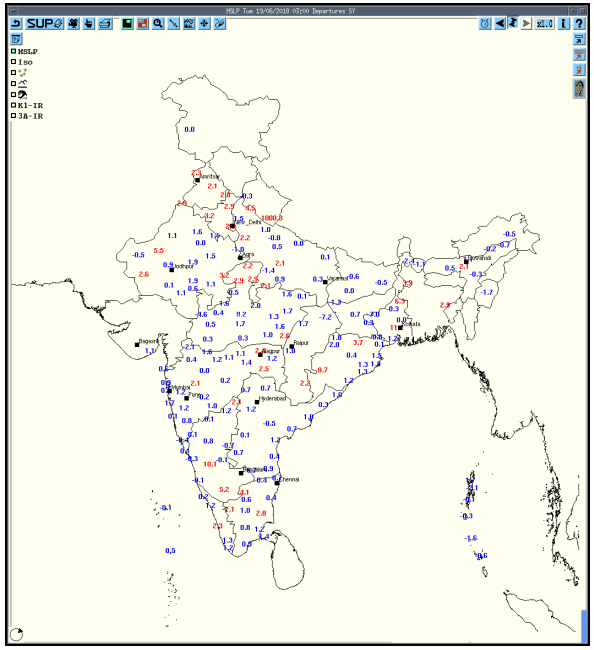
Departure Tmax



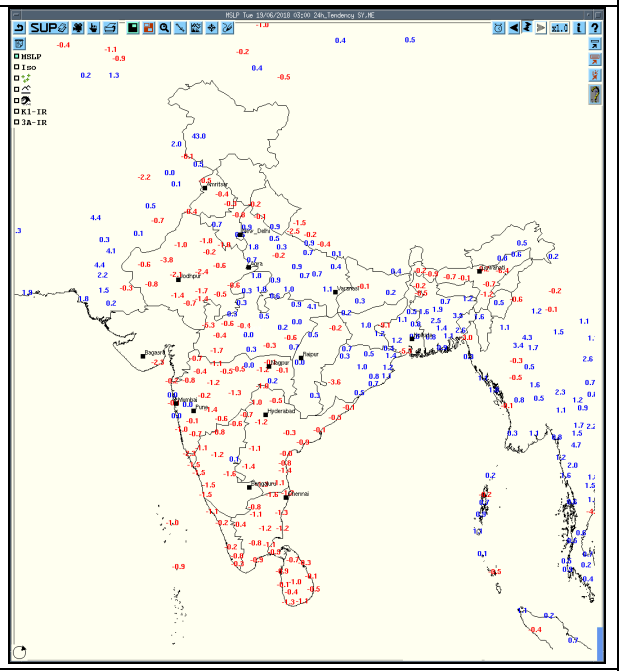
Tendency Tmax



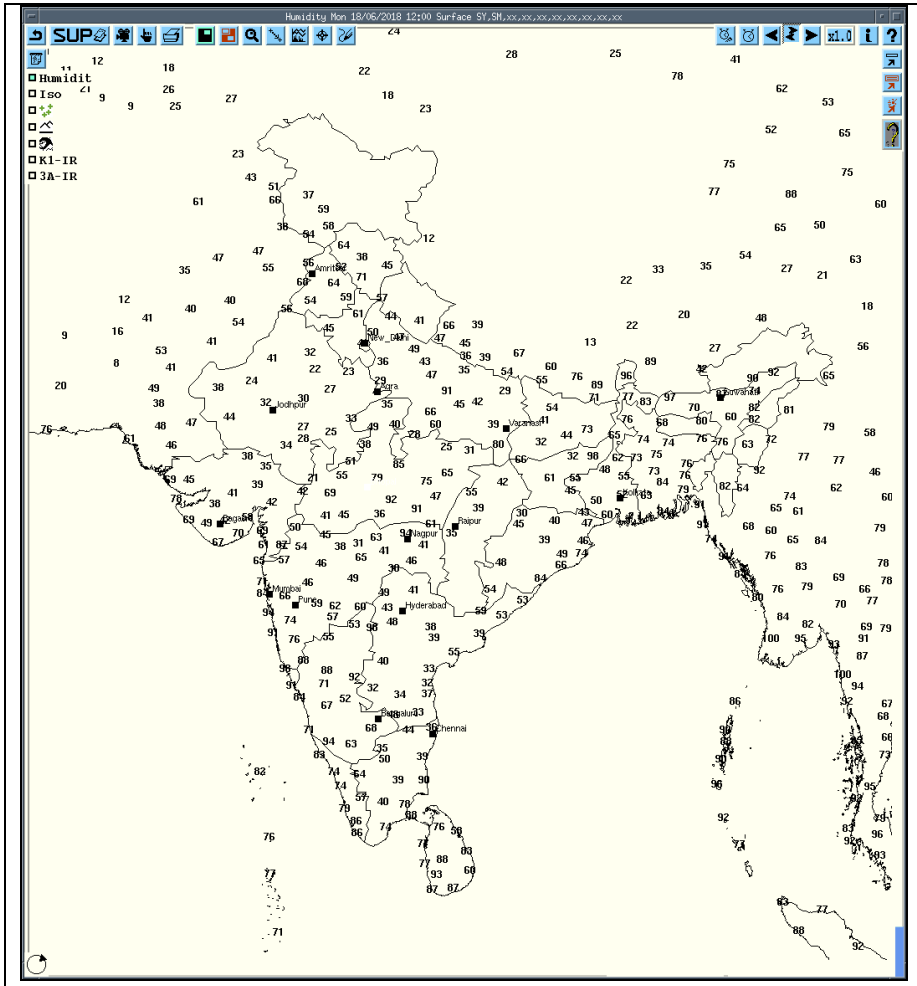
MSLP



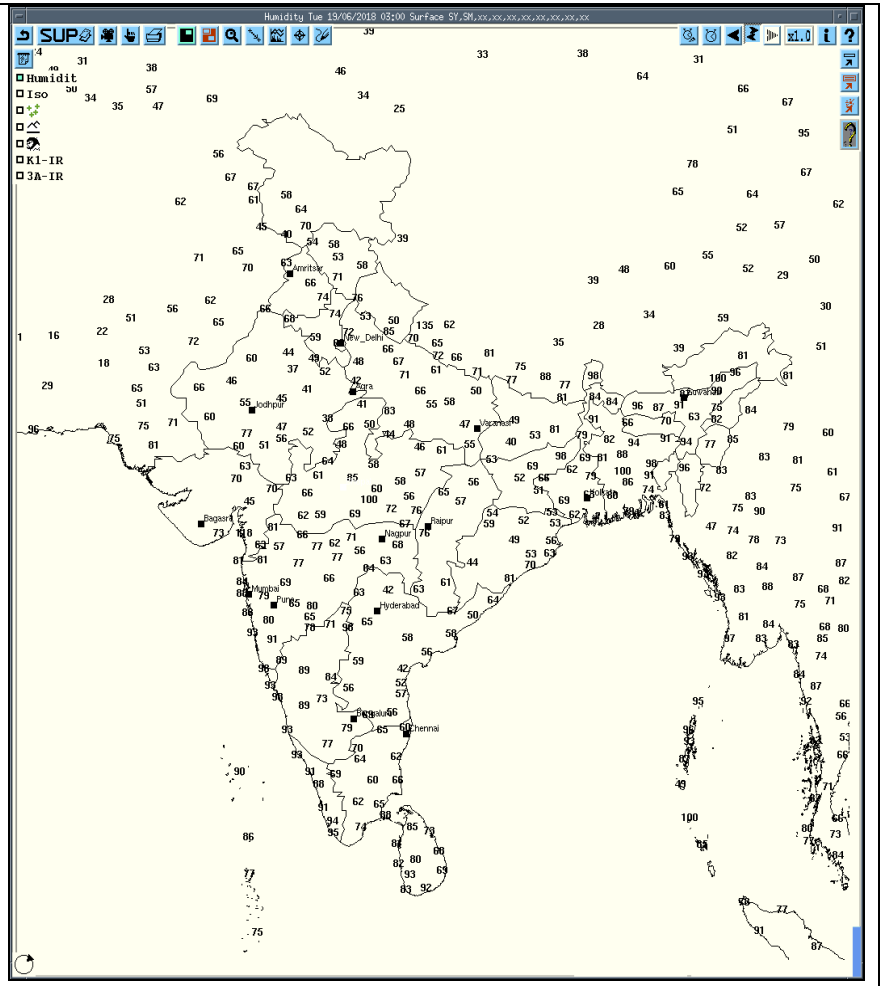
Departure MSLP



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
Jaipur	19/06/18	0302 UTC of 18/06/18 to 1002 UTC of 18/06/18	Multiple cell with average height of 6.0km&maximum reflectivity61.5 dBZ	Multiple cell develop were continue from prior 0300 UTC of 18/06/18 towards NW SE, W &SW of Jaipur and moved to E, SE Wards at speed15-20 km/hr	Multiple cell develop were continue from prior 0300 UTC of 18/06/18 towards NW SE, W &SW of Jaipur and reaches maximum reflectivity from 0602 UTC to 0612 UTC of 18/06/2018 and Died at 1002 UTC.	Dust storm/ Thunderstorm/ Light rain at Isolated places	Nagaur, Sawai Madhopur, karauli, Ajmer, Bharatpur, Dholpur, Sikar, Jaipur, Bundi, KOTA, Jhalawar, Baran, Dausa, Churu, Jhunjhunu, Alwar DISTRICTS.
		1122 UTC OF 18/06/18 TO 1902 UTC OF 18/06/18	Multiple cells with average height of 5 km &maximum reflectivity of 60 DBZ	Multiple cell develop from 1122 UTC of 18/06/2018 towards NW&SW of Jaipur and moved towards SE,S of Jaipur at speed of 15-20 km/hr	Multiple cell develop from 1122 UTC of 18/06/2018 towards NW&SW of Jaipur and reaches maximum reflectivity from 1152 to 1202 UTC of 18/06/2018 and died at 1902 UTC	Dust storm/Thunderstorm/ Light rain at Isolated places	Bundi, Kota, Jhalawar, Tonk, Ajmer, Bhilwara, Nagaur, Sikar, Sawai Madhopur, Districts.
Patiala	19-06-18	18/06/2018 0300 - 0600	MULTIPLE CELLS DBZ 49.0 HT. 06-08 KM	SW,SE-SECTORS MOVEMENT E WARDS		RA	Pehowa, Kureshetra, Sirsa, Bhiwani, Hissar, Rohtak, Jind and their adjoining areas.
		18/06/2018 0600 -0900	MULTIPLE CELLS DBZ 42.5 HT. 06-08 KM	SW,SE-SECTORS MOVEMENT SE WARDS		RA	Bhiwani, Jind, Hissar, Narwana and their adjoining areas.
		18/06/2018 0900- 1200	MULTIPLE CELLS DBZ 53.5 HT. 08-09 KM	NW SECTOR MOVEMENT E -WARDS		RA	Ferozpur, Faridkot, Muktsar, Batala, Amritsar and their adjoining areas.
		18/06/2018 1200 - 1500	MULTIPLE CELLS DBZ 37.0 HT. 08-09 KM	N,NE SECTORS MOVEMENT SE WARDS		RA	Bilaspur, Bhuntur, Dalhousie, Sundernagar and their adjoining areas.
		18/06/2018 1500 - 2400	No Significant Echo	----------		----------	----------
		19/06/2018 0000-0252	No Significant Echo	----------		----------	----------

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	Associated severe weather, if any	Districts affected
Lucknow	19-06-18	18/0610-18/0850	Single cell, 230 Km NW from radar station. Maximum height of was 8KM and Maximum reflectivity was 48dBz.	Cell formed near Badaun district at 0610UTC and it was moving NWW direction	---	TS/DS/ RA	Badaun, Shahjahanpur
		18/0630-18/1350	Multiple cell, 200 Km SWW from radar station. The height of the system reached 10 Km and maximum reflectivity was 54 dBz	Multiple cell entered at 1040 UTC at Jalaun district from M.P in Radar range The system moved West to East (Westerly) direction	---	TS/DS/ RA	Etawah, Auraiya, Jalaun, Mainpuri, Firozabad, Kannauj Hardoi, Sitapur, Lucknow, Kanpur, Unnao, Barabanki, Pratpgarh, Agra, Aligarh, Faizabad
		18/1100-18/1300	Single cell , 145 Km SE from radar station. The height of the system reached 7 Km and maximum reflectivity was 47 dBz .	Cell formed at 1100 UTC and moved NWW Direction.	---	TS/RA	Allahabad, Pratpgarh, Sant Ravidas Nagar, Mirzapur
Agartala	19/06/18	180300Z to 190300Z	MLTPL CELLS OVER ENTIRE TRP@190122Z;13KMS;44dbz	Overhead And Surrounding;Se'ly;30 kmph	Cell Persisted	TSRA	All Dists Of Trp.
Patna	19/06/18	180300-180742	NIL	NIL	NIL	NIL	NIL
		180742-181652	Isolated Multiple Cell Maximum Reflectivity: 42.5 dBZ Echo Top:.6 KM	Range: 50 KM from DWR Patna in South-South-West direction Movement: South-Easterly	Warning Issued	N/A	Bhojpur, Jehanabad, Arwal, Aurangabad, Gaya, Nalanda, Nawada
		181652-181752	NIL	NIL	NIL	NIL	Nil
		181752-182122	Isolated Multiple Cell Maximum Reflectivity: 43 dBZ Echo Top: 12.1 KM	Range: 100 KM from DWR Patna in EAST-SOUTH-EAST direction Movement: Easterly	Warning Issued	Rain	Begusarai, Samastipur, Khagaria, Saharsa, Sheikhpura, Lakhisarai, Munger, Bhagalpur, Darbhanga, Supaul, Araria, Madhepura, Purnea, Katihar, Kishanganj
		182122-190300	NIL	NIL	NIL	NIL	Nil

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)**
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	18-06-18	2030	2230
Pahalgam	Northwest India	Jammu & Kashmir	Thunderstorm	18-06-18	1410	1515
Kupwara	Northwest India	Jammu & Kashmir	Thunderstorm	18-06-18	1700	1717
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	18-06-18	2150	2210
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	18-06-18	1615	2110
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	18-06-18	1615	1815
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	18-06-18	1600	1845
Lucknow AP	Northwest India	East Uttar Pradesh	Thunderstorm	18-06-18	1645	1735
Kanpur C	Northwest India	East Uttar Pradesh	Thunderstorm	18-06-18	1530	1600
Allahabad	Northwest India	East Uttar Pradesh	Thunderstorm	18-06-18	1405 2105	1535 2115
Fatehgarh	Northwest India	East Uttar Pradesh	Thunderstorm	18-06-18	1730	1740
Agra	Northwest India	West Uttar Pradesh	Thunderstorm	18-06-18	1420	1429
Aligarh	Northwest India	West Uttar Pradesh	Thunderstorm	18-06-18	1330	1345
Meerut	Northwest India	West Uttar Pradesh	Thunderstorm	18-06-18	0855	0915
Sawai Madhopur	Northwest India	East Rajasthan	Thunderstorm	18-06-18	1930	2000
Bundi	Northwest India	East Rajasthan	Thunderstorm	18-06-18	2130	2200
Jaisalmer	Northwest India	West Rajasthan	Thunderstorm	18/19-06-18	2350	0330
Akola	Central India	Vidarbha	Thunderstorm	18-06-18	1930	1945
Amravati	Central India	Vidarbha	Thunderstorm	18-06-18	2000	2300
Raipur	Central India	Chhattisgarh	Thunderstorm	18-06-18	1555	1750
Pendra Road	Central India	Chhattisgarh	Thunderstorm	18-06-18	1330	1500
Silchar	Northeast India	Assam	Thunderstorm	19-06-18	19/0200	19/0500
Lengpui	Northeast India	Mizoram	Thunderstorm	19-06-18	19/0805	19/0820
Agartala	Northeast India	Tripura	Thunderstorm	19-06-18	19/0540	19/0830
Malda	East India	SHWB	Thunderstorm	19-06-18	0240	0310
Ranchi	East India	Jharkhand	Thunderstorm	18-06-18	1245	1315
Jamshedpur	East India	Jharkhand	Thunderstorm	18-06-18	1445-	1620
Ramagundam	South India	Telangana	Thunderstorm	18-06-18	2045	2145
Visakhapatnam	South India	Coastal Andhra Pradesh	Thunderstorm	18-06-18	1431	1615
Karaikal	South India	North Interior Tamil Nadu	Thunderstorm	18-06-18	1635	1745

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: