



India Meteorological Department
FDP STORM Bulletin No.107 (20-06-2017)

1. CURRENT SYNOPTIC SITUATION at 0300UTC of the Day:

The Northern Limit of Monsoon (NLM) continues to pass through Lat. 20.5°N / Long. 60.0°E, Lat. 20.5°N / Long. 70.0°E, Valsad, Nasik, Buldana, Yeotmal, Kanker, Jharsuguda, Jamshedpur, Bhagalpur and Lat. 27.0°N / Long. 86.0°E.

Favourable conditions are developing for further advance of southwest monsoon into some more parts of Chhattisgarh, Vidarbha, remaining parts of Odisha, Jharkhand, Bihar, some parts of East Madhya Pradesh and East Uttar Pradesh during next 48 hours.

The trough at mean sea level from northwest Rajasthan to northeast Bay of Bengal, now runs from northwest Rajasthan to northwest Bay of Bengal across Haryana, Uttar Pradesh, Bihar, Jharkhand & Gangetic West Bengal and extends upto 0.9 km above mean sea level with an embedded upper air cyclonic circulation over central parts of Uttar Pradesh extending upto 0.9 km above mean sea level.

The western disturbance as an upper air cyclonic circulation over north Pakistan & neighbourhood, now seen as a trough in mid & upper tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Longitude 71.0°E and north of Latitude 32.0°N.

The upper air cyclonic circulation over Sub-Himalayan West Bengal & Sikkim and neighbourhood now lies over northern parts of Bangladesh & neighbourhood at 1.5 km above mean sea level.

The north-south trough from eastern Bihar to north Bay of Bengal now runs from Sub-Himalayan West Bengal to north Bay of Bengal between 2.1 & 3.1 km above mean sea level.

An upper air cyclonic circulation lies over northwest Rajasthan & neighbourhood and extends upto 0.9 km above mean sea level.

A feeble off-shore trough at mean sea level runs off Karnataka-Kerala Coast.

The upper air cyclonic circulation over southwest Rajasthan & neighbourhood has become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

Current Observation (based on 0300UTC imagery of INSAT 3D):

Convective Activity:

Cell No	Date/time (UTC)	Location/Area	MIN CTT (-DEG C)	Movement	Remarks
3 (old)	20/0000	JHRKND ADJ GWB	88		---
	0100	GWB ADJ JHRKND	85		
	0200	DO	75		
	0300	DO	60		
4 (old)	20/0000	C & NE UP	60		---
	0100	DO	60		
	0200	DO	50		
	0300	NE UP	47		
					DISSIPATING

5 (old)	20/0000	HARY ADJ UP HARY DO DO	46		DISSIPATING
	0100		54		
	0200		62		
	0300		52		
			47		
6 (old)	20/0000	Punjab DO DO DO	69		DISSIPATING
	0100		67		
	0200		57		
	0300		49		

Cloud Description:

Scattered low/medium clouds with embedded moderate to intense convection were seen over E Punjab, Haryana, C Uttar Pradesh, NE Odisha, W Bihar, NE Jharkhand, Gangetic West Bengal, Telangana and N Coastal Andhra Pradesh. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Himachal Pradesh, Uttarakhand, NW Uttar Pradesh and rest parts of East and South India. Scattered low/medium clouds were seen over West India and rest parts of North India.

Arabian Sea:

Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over SE Arabian Sea.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded moderate to intense convection seen over N & WC Bay and Arakan coast. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Andaman Sea.

Past Weather:

Precipitation:

IMR:

Rainfall Up to **150** mm was observed over North East Jharkhand South East Bihar Gangetic West Bengal.

Rainfall Up to **110** mm was observed over North West Bihar.

Rainfall Up to **90** mm was observed over Telangana

Rainfall Up to **70** mm was observed over Rest Bihar North East Odisha Meghalaya Tripura

Tripura Meghalaya Sub Himalayan West Bengal West Assam.

Rainfall Up to **50** mm was observed over Punjab North Tamilnadu

East Bihar South Jharkhand Gangetic West Bengal North Interior Karnataka.

Rainfall Up to **30** mm was observed over North Haryana South Uttarakhand

Rainfall Up to **20** mm was observed over South West J&K Sub Himalayan West Bengal .

Rainfall Up to **10** mm was observed over Rest J&K Himachal Pradesh Rest Haryana Delhi Rest Uttarakhand Uttar Pradesh Extreme

East Rajasthan North Madhya Pradesh South Marathwara Konkan & Goa Chhattisgarh Rest Odisha Sikkim Rest North East States

Karnataka Andhra Pradesh

Rest Tamilnadu Kerala .

HEM:.

Rainfall Up to **208** mm was observed over South West Bengal

Rainfall Up to **70** mm was observed over South West J&K South Uttarakhand South Konkan East Bihar East Jharkhand Rest West Bengal Kerala North Tamilnadu

Rainfall Up to **14** mm was observed over Punjab North Haryana Meghalaya Manipur Tripura Karnataka.

West Bengal Rest North-East States South Chhattisgarh Andhra Pradesh.

Rainfall Up to **07** mm was observed over Himachal Pradesh Rest Uttarakhand North West Uttar Pradesh Delhi Rest Haryana Extreme East Rajasthan North Madhya Pradesh South Marathwara Chhattisgarh Rest Bihar Rest Jharkhand Odisha Rest North East States Telangana Andhra Pradesh Rest Tamilnadu.

RADAR and RAPID Observation:

DWR Bhopal indicated isolated-multiple echoes with dBZ > 50 and height 14-15km at 1312hrs IST. Latest DWR Composite not available.

RAPID RGB Satellite imagery at 12000hrs IST indicated significant convective clouds over J & K, Himachal Pradesh, Punjab, Uttarakhand, N Haryana, W Uttar Pradesh, Gangetic West Bengal adjoining Jharkhand, Coastal Odisha, S Chhattisgarh and Coastal Andhra Pradesh.

Environmental condition (dust etc) and its forecast based on 00UTC of date:

Higher Dust concentration was observed over north Africa and northern part of India. Dust concentration is expected to decrease over north India for next five days. High PM10 concentration was observed over western and northern part of the country and Pakistan, it is expected to decrease over north India and IGP in the next five days.

2. NWP MODEL GUIDANCE:

NCMRWF (NCUM Forecasts based on 00 UTC of the day):-

1. Weather Systems:

12UTC Charts of Day 0-4 show heat low over south Pakistan and adjoining Rajasthan with MSLP values lower than 990hPa.

00 UTC Charts of Day 1-4 show a trough at mean sea level from North Rajasthan/Punjab to West Bengal/Bangladesh across Uttar Pradesh, Bihar, Jharkhand

12UTC charts of Day 0-3: show a zone of wind discontinuity at 925 hPa; SW-NE over Jharkhand and Bihar

00UTC charts of Day 1-3: Western Disturbance as a trough at 500 hPa over North Pakistan, J &K is moving eastward and gets deeper to reach Punjab and HP in Day 3.

00UTC charts of Day 1: A trough at 850 hPa from Bihar to Odisha coast. Trough is seen in Day 2-5 from Bihar to off WB/Odisha coast. Associate CYCIR in Day 4-5 over east Bihar.

00UTC charts of Day 1-2 show a trough over south west Rajasthan and associated CYCIR over adjoining Pakistan. It is seen to reach NW Gujarat in day 4-5

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

Weaker core winds at 12 UTC on all days over India.

3. Convergence at 850 hPa:

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

Day0: Assam Meghalaya, West RJ, East RJ,

Day1: Assam Meghalaya,

Day2: East RJ, Kerala,

Day3: Nill

Day4: Nil

4. Low level Vorticity:-Positive Vorticity ($>15 \times 10^{-5}/s$):

(Day/Index: Subdivisions with Lower Level Vortex $> 15 \times 10^{-5} /s$):

Day0: Bihar, TN Puducherry,

Day1: Bihar, TN Puducherry,

Day2: Assam Meghalaya, Saurashtra Kutch, TN Puducherry, Kerala,

Day3: TN Puducherry,

Day4: TN Puducherry, Kerala

5. Showalter Index: -3 to -4[Very unstable]: (Day/Index: Subdivisions with Showalter Index < -4):

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana,

Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka

6. 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, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Rayalseema, TN Puducherry,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, TN Puducherry,

Day3: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, NI Karnataka

7. 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, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, Guj Reg, Saurashtra Kutch,

Day1: Arunachal Pradesh, Sub Himalayan WB, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Guj Reg, Saurashtra Kutch,

Day2: Arunachal Pradesh, Sub Himalayan WB, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, Guj Reg, Saurashtra Kutch,

Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, Guj Reg, Saurashtra Kutch,

Day4: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir

8. Rainfall and thunder storm activity: (Day/Index: Subdivisions with Precipitation > 2 cm):

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Punjab, Jammu Kashmir, Odisha, Guj Reg, Konkan Goa, Madhya Maharashtra, Coastal AP, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, West UP, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, East UP, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Chhattisgarh, Andaman Nicobar, Coastal AP, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala

****Rainfall >16 cm/day over North east part of Bangladesh in day 2-3**

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

1. Weather Systems:

The model analysis shows a trough from Punjab to GWB running parallel to foothills of Himalayas which persists over the region till day 5. A north-south trough is seen from SHWB extending up to Bay of Bengal with an embedded cyclonic circulation over SHWB and adjoining areas. The trough persists for next 5 days and cyclonic circulation shifted southward along the trough. The wind analysis at 500 hPa show a cyclonic circulation over J&K and adjoining areas which become trough in day 1 and remain over the region till day 2 and again become cyclonic circulation in day 3 over Delhi and adjoining region.

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

No presence of jet core over the Indian region.

3. Low level Vorticity:-Positive Vorticity 850hPa ($>12 \times 10^{-1}/s$):

Mostly along the trough parallel to foot hill of Himalaya. Prominent vorticity zones are found in the morning hours along north-south trough over east India during next 5 days.

4. Spatial distribution of T-Storm Initiation Index, Lifted Index, Total Total Index, CAPE, CINE and Sweat Index (High potential for thunderstorm):

T-Storm Initiation Index (> 4): Above threshold values are mostly over western part of Rajasthan and adjoining Gujarat, isolated pockets of Bihar, GWB and Odisha Coast during next 5 days.

Lifted Index (< -2): Less than threshold value over most parts of the country except J&K, HP, Uttarakhand, UP, parts of central India, NE states and over major parts of the south peninsula during next 5 days.

Total-Total Index (> 50) : Above threshold value over some parts of NW India covering Punjab, Haryana, Delhi and west UP.

Sweat Index (> 300): Higher than threshold value almost all over the country except parts of NW India and isolated pockets over Delhi, UP, Bihar, MP and isolated pockets in the South peninsula.

CAPE (> 1000): Mostly western India, GWB, Bihar, isolated pockets of Odisha, Jharkhand and regions bordering the east coast of the county.

CIN (>150): Consistently over Gujarat and adjoining Rajasthan and over isolated pockets over Maharashtra, coastal region of Bay of Bengal

5. Rainfall and thunderstorm activity:

40-70 mm rainfall and more over SHWB, NE states, GWB, Konkan coast, Vidarbha and along the foothills of the Himalayas over Bihar till day 2. Over Haryana and adjoining areas during day 2. Over coastal Orissa and Andhra Pradesh in during day 3-4.

20-70 mm rainfall over some pockets of central India over Madhya Pradesh, Madhya Maharashtra, Chhattisgarh, and Telangana during the next 5 days.

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

1. Model Reflectivity (Max.dBz):

15-40 dBz model reflectivity over SHWB and regions of NE states and along the foothills of the Himalayas, Konkan and Goa and adjoining areas along west coast for the next 2 days.

15-35 dBZ Model reflectivities over coastal AP and Odisha and some pockets of the South peninsula in day 1. Over some parts north-west India over Haryana, Delhi and adjoining north Rajasthan and west UP.

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

Total-Total Index (> 50) : Above threshold value over northwest India and extending over central and east parts of India during evening hours.

CAPE (> 1000): Mostly along east coast of India, over eastern parts of India, extending along trough over Gangetic Plains Over North-west India mainly over western part of Rajasthan and Gujarat during next 2 days.

CIN (50-150): Over western parts of India including Rajasthan and Gujarat.

3. Rainfall and thunderstorm activity:

70-130 mm and more over SHWB, and NE states and west coast of India for the next 72 hours.

20-70 mm along foothills of the Himalayas, Punjab, Haryana, Delhi, adjoining Rajasthan, UP and north MP for the next 2 days.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day-1 & Day-2:

Presently, the western disturbance as an upper air cyclonic circulation now seen as a trough in mid & upper tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Longitude 71.0°E and north of Latitude 32.0°N. This will give rise to widespread rainfall activities including hailstorm over Northern parts of the country on Day-1 and Day-2.

The upper air cyclonic circulation over Sub-Himalayan West Bengal & Sikkim and neighbourhood now lies over northern parts of Bangladesh & neighbourhood at 1.5 km above mean sea level and the north-south trough from eastern Bihar to north Bay of Bengal now runs from Sub-Himalayan West Bengal to north Bay of Bengal between 2.1 & 3.1 km above mean sea level. Due to this system, SHWB, GWB, Sikkim and Assam, Meghalaya may experience very heavy rainfall on Day-1 and Day2.

The trough at mean sea level runs from northwest Rajasthan to northwest Bay of Bengal across Haryana, Uttar Pradesh, Bihar, Jharkhand & Gangetic West Bengal and extends upto 0.9 km above mean sea level with an embedded upper air cyclonic circulation over central parts of Uttar Pradesh extending upto 0.9 km above mean sea level. This will give rise to Thunderstorm with Gusty winds and isolated rainfall over Bihar, Jharkhand, Uttar Pradesh and Chhattisgarh on Day-1. Associated rainfall is likely to remain heavy in isolated pockets of south Konkan coast on day 1 and day 2.

24 hour Advisory for IOP:

Rainfall:

Assam, Meghalaya, Arunachal Pradesh
Nagaland, Manipur, Mizoram and Tripura
Sub Himalayan West Bengal & Sikkim, Gangetic West Bengal
South Konkan and Goa
Telengana, Coastal Andhra Pradesh
Jammu, Himachal Pradesh, Uttarakhand,
Punjab, Haryana, West and East Uttar Pradesh
Bihar, Jharkhand and Odisha

Thunderstorm with associated phenomena:

Jammu, Himachal Pradesh, Uttarakhand,
Punjab, Haryana, Uttar Pradesh, East and West Rajasthan
Bihar, Jharkhand, Gangetic West Bengal
Madhya Pradesh, Chhattisgarh

48 hour Advisory for IOP:

Rainfall:

Assam, Meghalaya, Arunachal Pradesh
Nagaland, Manipur, Mizoram and Tripura
Sub Himalayan West Bengal & Sikkim, Gangetic West Bengal
South Konkan and Goa
Jharkhand, E Bihar
Jammu, Himachal Pradesh, Uttarakhand,
Punjab, North Haryana, West Uttar Pradesh

Thunderstorm with associated phenomena:

Jammu, Himachal Pradesh, Uttarakhand,
Punjab, Haryana, Uttar Pradesh, East Rajasthan, West Rajasthan
Bihar, Jharkhand, East Madhya Pradesh, Chhattisgarh

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 RAPID tool:

<http://rapid.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

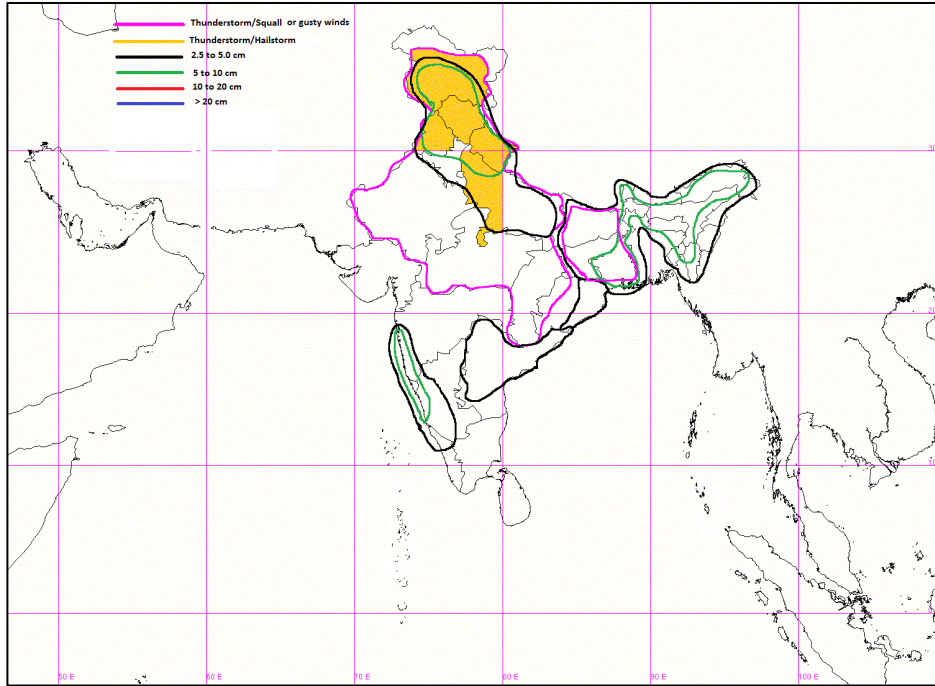
HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg

ForRadarimagesofthepast24hoursincludingmosaicofimages:

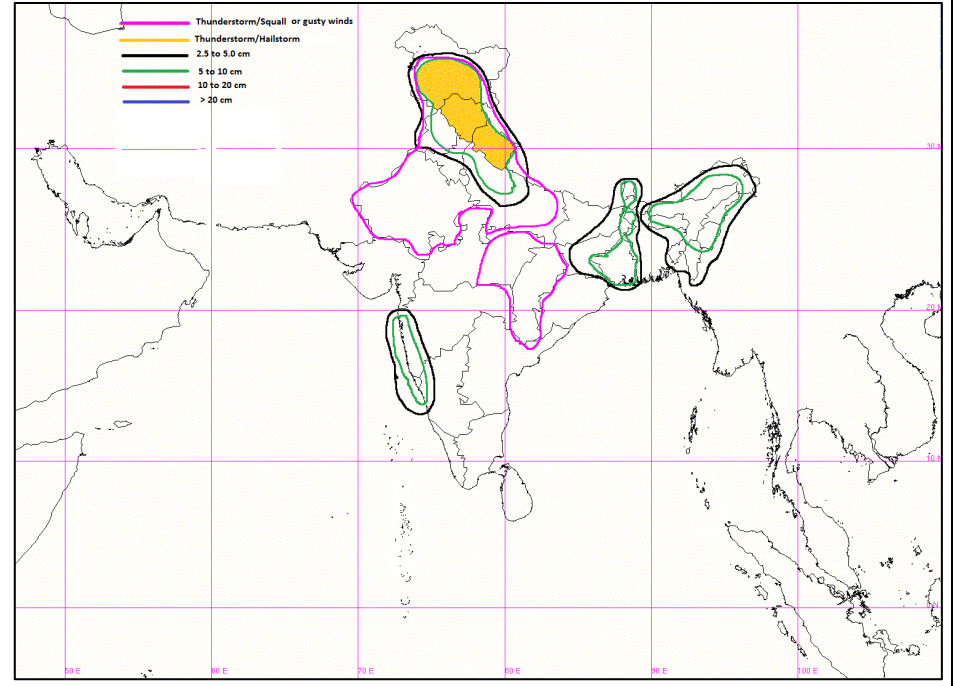
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T- Phigram

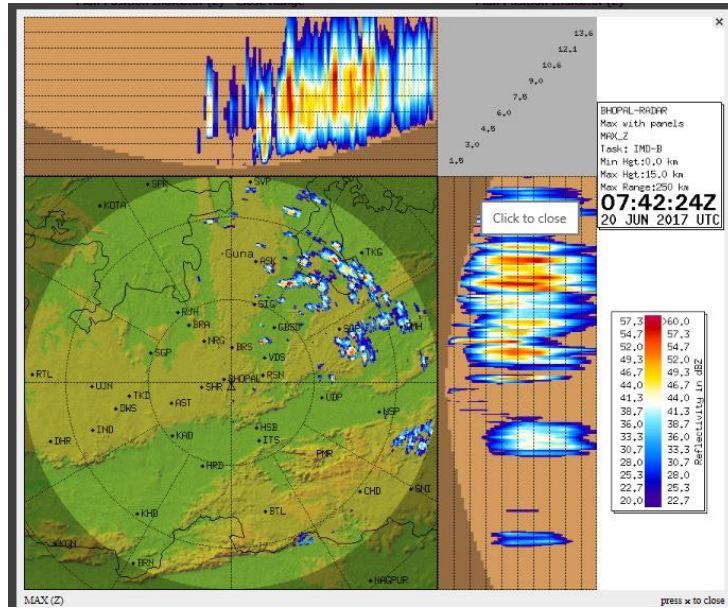
http://satellite.imd.gov.in/map_skm2.html



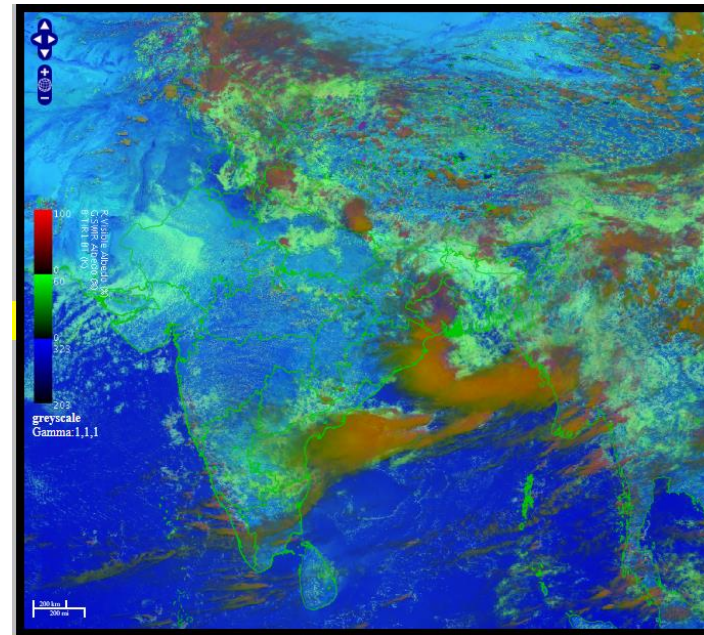
IOP Advisory for 24 hours



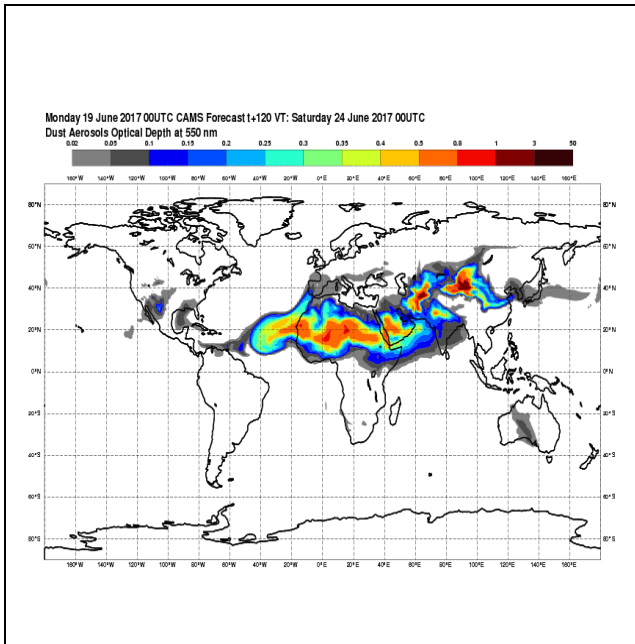
IOP Advisory for 48 hours



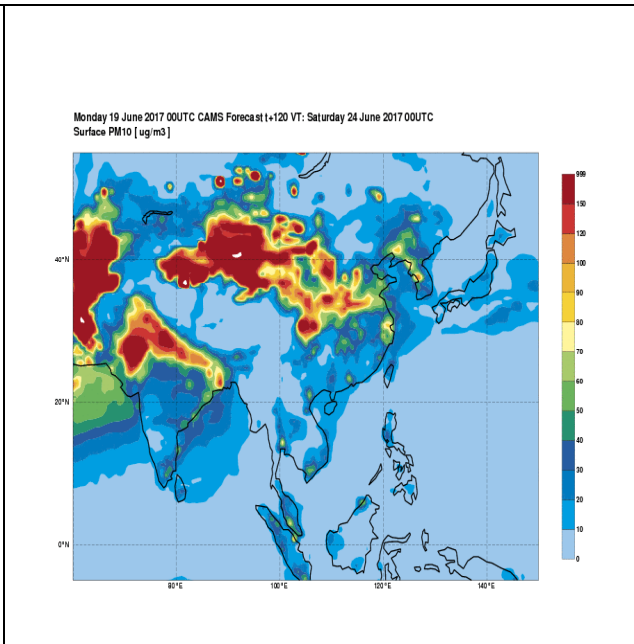
DWR Bhopal at 1312hrs IST



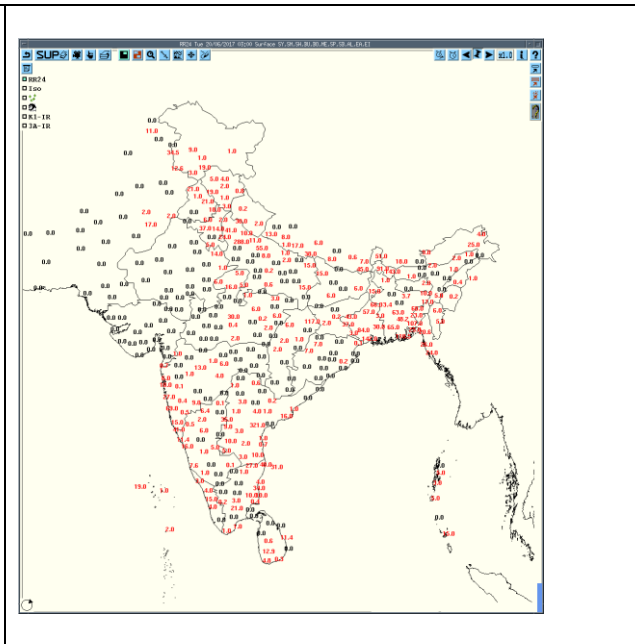
RAPID RGB Satellite Imagery at 1200 hrs IST of today



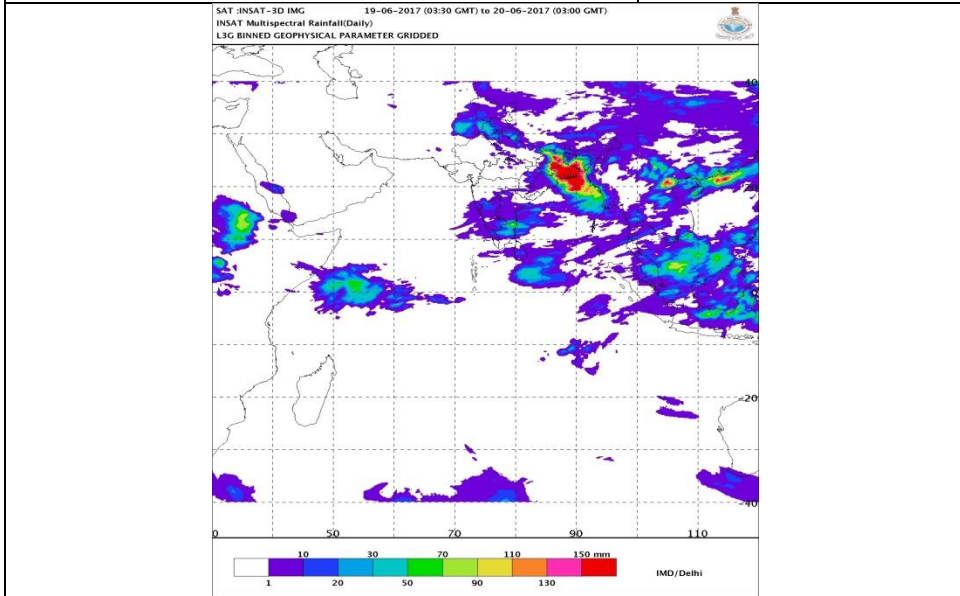
Forecast Dust Concentration for 00UTC of 24th June



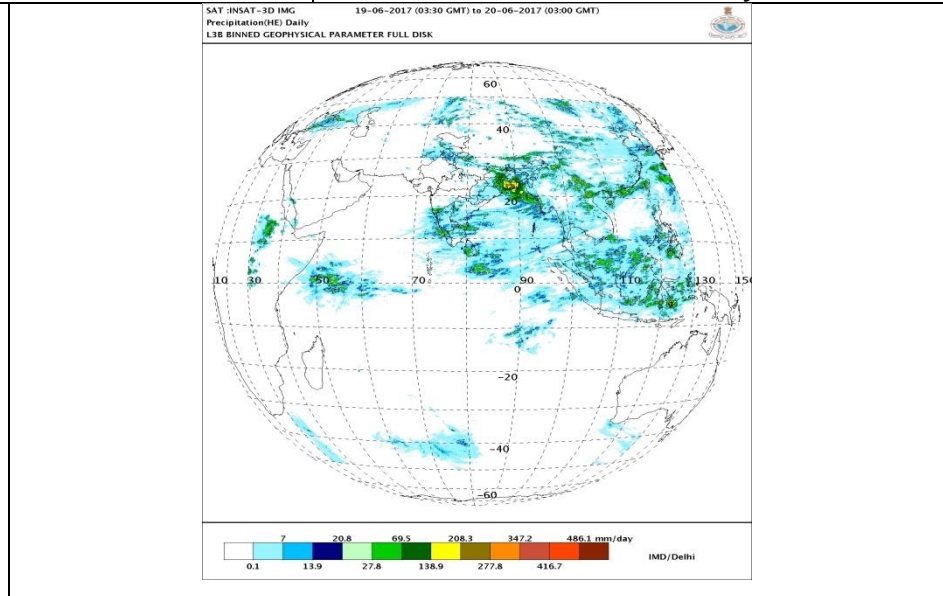
PM10 Forecast for 00UTC of 24th June



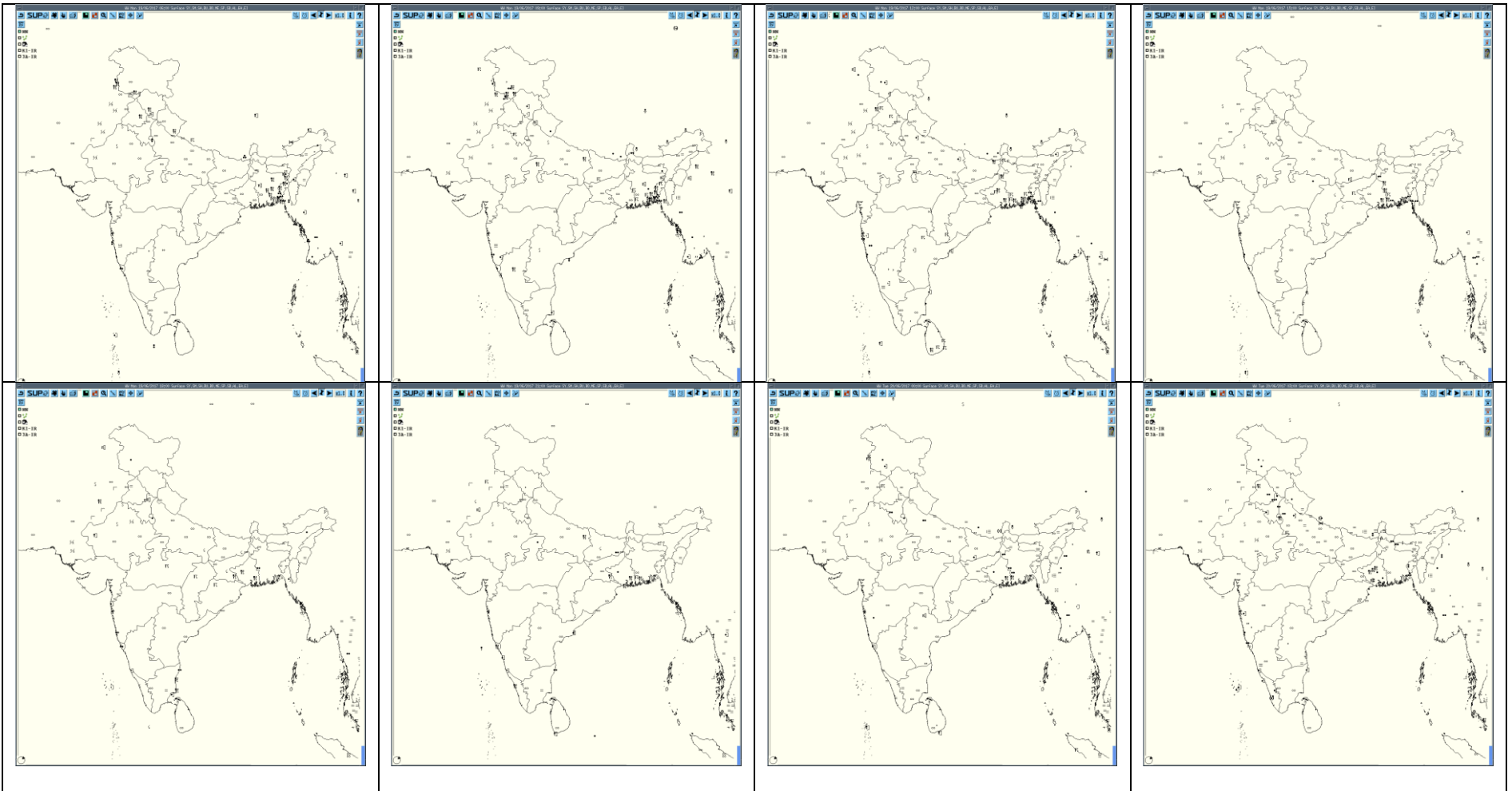
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



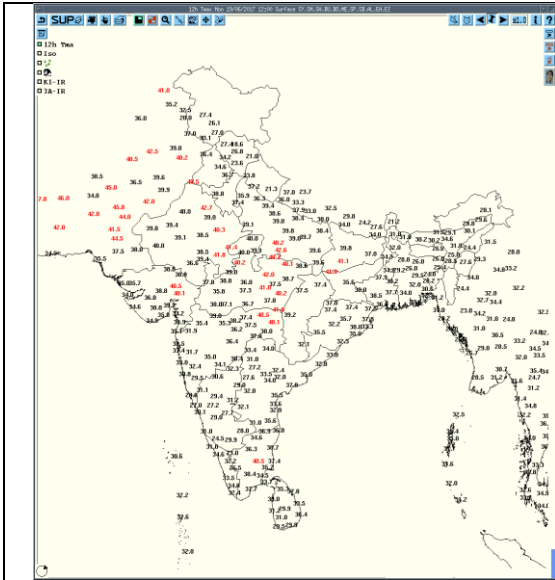
IMR Rainfall



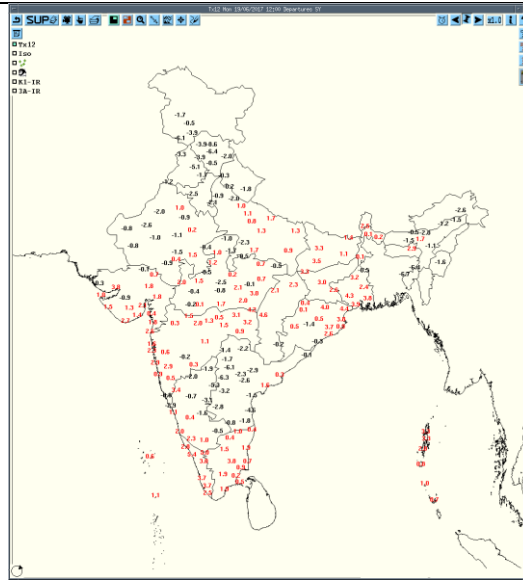
HEM Rainfall



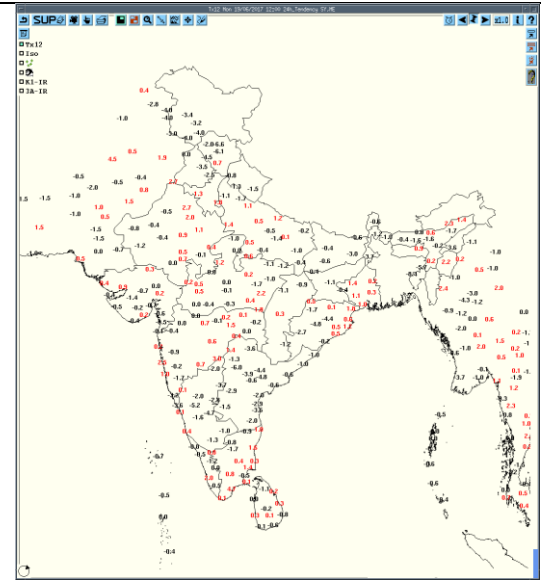
3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today



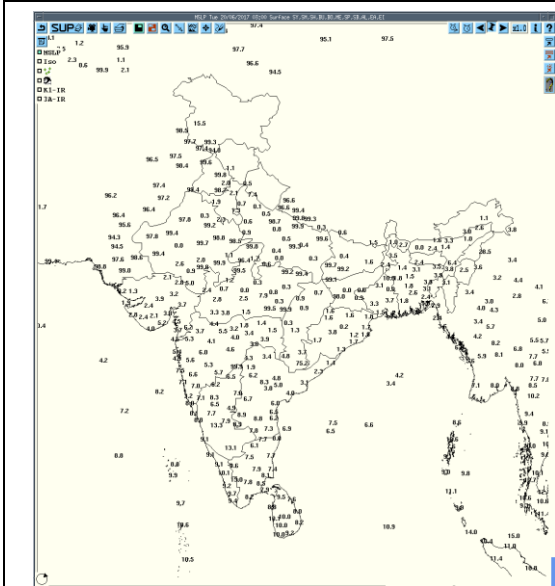
Tmax



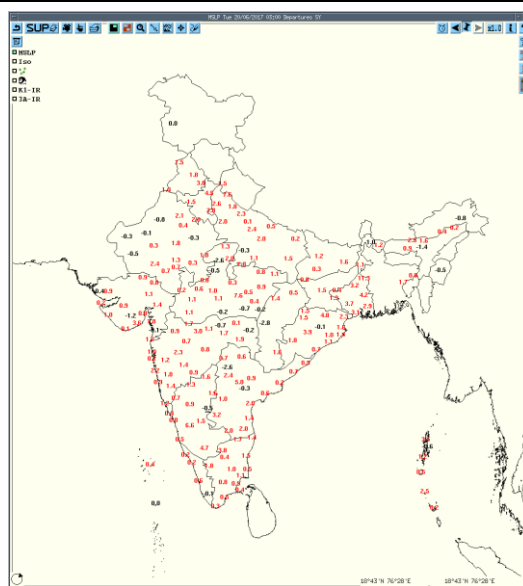
Departure Tmax



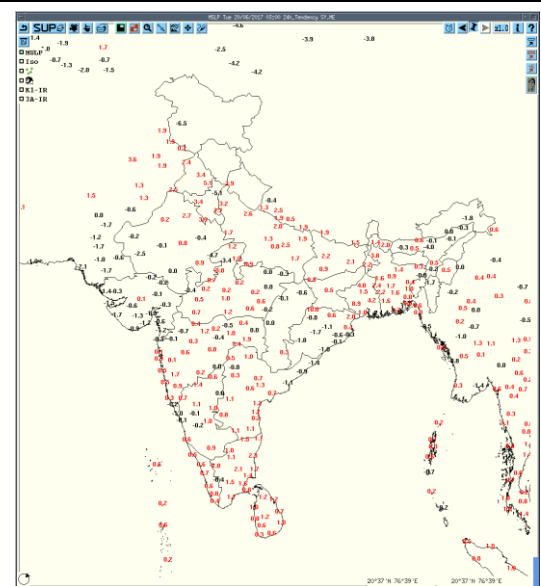
Tendency Tmax



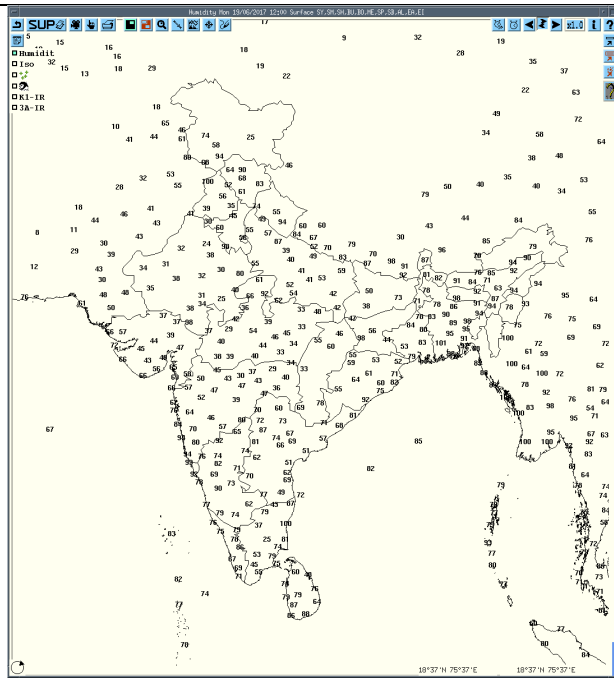
MSLP



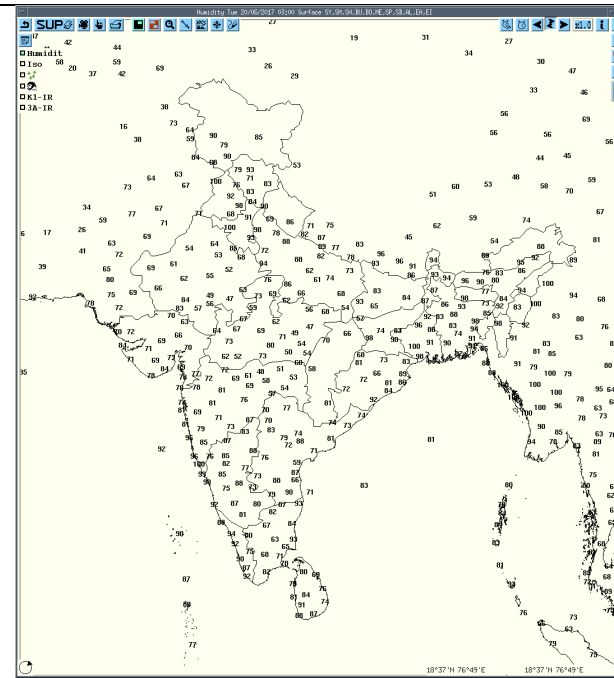
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Realised past 24hrs TS/SQ/HS Data (reported at 0300UTC of the day):

Realized weather past 24hours (Based on SYNERGIE Products)

Date	Time of Reporting	Name of Station Reporting	Region	STATE	Weather Event
19-06-17	0600UTC	Katra, Batote	NW India	J & K	Thunderstorm
		Sundernagar, Shimla	NW India	HP	Thunderstorm
		Ludhiana	NW India	Punjab	Thunderstorm
		Mukteshwar	NW India	Uttarakhand	Thunderstorm
		Agartala	NE India	Tripura	Thunderstorm
19-06-17	0900UTC	Kukernag, Bhaderwah, Katra, Jammu,	NW India	J & K	Thunderstorm
		Hisar	NW India	Haryana	Thunderstorm
		Dehradun	NW India	Uttarakhand	Thunderstorm
		Gorakhpur	NW India	Uttar Pradesh	Thunderstorm
		Gwalior	C India	Madhya Pradesh	Thunderstorm
		Gaya	E India	Bihar	Thunderstorm
		Agartala	NE India	Tripura	Thunderstorm
		Gadag	S India	Karnataka	Thunderstorm
19-06-17	1200UTC	Banihal	NW India	J & K	Thunderstorm
		Amritsar, Ludhiana	NW India	Punjab	Thunderstorm
		Bagdogra, Malda, Shantiniketan, Panagarh, Kolkata(Dumdum)	E India	West Bengal	Thunderstorm
		Jagdapur	C India	Chhattisgarh	Thunderstorm
		Ramagundam	S India	Telangana	Thunderstorm
19-06-17	1500UTC	Patiala	NW India	Punjab	Thunderstorm
		Ambala	NW India	Haryana	Lightening
		Gaya	E India	Bihar	Thunderstorm
		Ranchi	E India	Jharkhand	Thunderstorm
		Jharsuguda	E India	Odisha	Lightening
		Ambikapur	C India	Chhattisgarh	Lightening
		Kolkata(Dumdum & Alipore)	E India	West Bengal	Thunderstorm
		Chennai(Meenambakkam)	S India	Tamilnadu	Thunderstorm with Hail
		Karaikal, Atirampattinam, Cuddalore, Nagapattinam, Kanyakumari	S India	Tamilnadu	Lightening
		Pondicherry	S India	Pondicherry	Lightening
19-06-17	1800UTC	Ambala	NW India	Haryana	Thunderstorm
		Palam	NW India	Delhi	Thunderstorm
		Varanasi	NW India	Uttar Pradesh	Thunderstorm

		Bhagalpur	E India	Bihar	Lightening
		Ranchi	E India	Jharkhand	Lightening
		Jamshedpur	E India	Jharkhand	Thunderstorm
		Jharsuguda	E India	Odisha	Thunderstorm
		Pendra road	C India	Chhattisgarh	Thunderstorm
		Bankura, Kolkata(Dumdum & Alipore)	E India	West Bengal	Thunderstorm
		Pondicherry	S India	Pondicherry	Thunderstorm
		Karaikal, Nagapattinam	S India	Tamilnadu	Thunderstorm
19-06-17	2100UTC	Gorakhpur	NW India	Uttar Pradesh	Thunderstorm
		Patna	E India	Bihar	Lightening
		Jamshedpur	E India	Jharkhand	Thunderstorm
		Kolkata(Dumdum), Digha	E India	West Bengal	Thunderstorm
		Panjim	W India	Goa	Thunderstorm
		Kozhikode	S India	Kerala	Thunderstorm
20-06-17	0000UTC	Palam	NW India	Delhi	Thunderstorm
		Agra	NW India	Uttar Pradesh	Thunderstorm
		Kolkata(Dumdum), Digha	E India	West Bengal	Thunderstorm
		Ramagundam	S India	Telangana	Thunderstorm
20-06-17	0300UTC	Amritsar	NW India	Haryana	Thunderstorm
		Safdarjung, Palam	NW India	Delhi	Thunderstorm
		Sriniketan, Bankura, Panagarh, Midnapore		West Bengal	Thunderstorm

Past 24 hours DWR Report:

Radar Station Name	Date	Time Interval of Observation (UTC)	Organisation of cells (Isolated single cells/multiple cells/convective regions /squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated Severe Weather if any	Districts affected
Jaipur	20-06-17	0302 TO 0452 UTC and	Multiple cell with average height of 5.0 km & maximum reflectivity 37.0 dBZ	Multiple cell develop from 0302(Continueing from previous day) UTC of 19/06/2017 towards North-East of Jaipur and moved to SE Wards at speed 30-35 km/hr	Cell starts forming from from 0302(Continueing from previous day) UTC of 19/06/2017 towards North-East of Jaipur and reaches maximum refelectivity during 0312 0332-UTC .Died down 0452UTC	Thunderst orm/rain at ISOLATE D places	ALWAR, BHARATPUR districts.
		0512 TO 1002 UTC	Multiple cell with height 6.0 km and maximum height 49.0 dbz	Multiple cell develop from 0512 utc of 19/06/2017 towards ESE- of jaipur and moved SE Wards at speed 30-35 km/hr	Cells starts from 0512 utc of at 19/06/2017 at ESE Jaipur and reaches maximum reflecivity during 0722 to 0832 utc and died 1002 UTC .	Thunderst orm/rain at few place	DAUSA KARAULI AND SAWAIMA DHOPUR districts.
		0742 TO 0252 UTC	Multiple cell with height 6.0 km and maximum height 50.0 dbz	Multiple cell develop from 0742 utc of 19/06/2017 towards NE,E of jaipur and moved E,SE Wards at speed 35-40 km/hr	Cells starts from 0742 utc of at 19/06/2017 at E,NE Jaipur and reaches maximum reflecivity during 1142 -1232,1452-1542 UTC and died 0252 of 20/06/2017 UTC .	Thunderst orm/rain at few placeS	DAUSA KARAULI,A LWAR,TON K,KARAULI ,BHARATPUR,DHOLPUR AND SAWAIMA DHOPUR districts
Agartala	20-06-17	190300 - 191242	Multiple cells formed all around of DWR Agartala NW at a distance of 300km with Maximum cell Height 16 km at 0302 and maximum reflectivity 41.5 dBZ at 0302 UTC	Formed all around of DWR Agartala of NW at a distance of 300km and moves SE-wards direction with around 59 kmph.	Dissipated in Mizoram at 1242 utc	N/A	N/A,
		192320-200300	Multiple cells formed NW /S direction of DWR Agartala at a distance of 50/100 km with Maximum cell Height 08 km and maximum reflectivity 37 dBZ at 0252 UTC	Formed all around of DWR Agartala at a distance of 50/100 km and moves N- wards direction with around 4 kmph.	Persists	NA	NA,

Patiala	20-06-17	19 JUNE 0300 UTC-TO 0600 UTC	Multiple cells Max dBZ=60.5 Ht.= 10-13 KMS	N,W,NW AND SE SECTORS. MOVEMENT ESE WARDS		HAIL/RA/ TS	SIRHIND,K HANNA, PATIALA, PANIPAT, KARNAL, CHANDIGA RH, AMBALA, ROOPNAG AR.
		19 JUNE 0600 UTC-TO 0900 UTC	Multiple cells Max dBZ=56.0 Ht.= 10-11 KMS	NW AND SE SECTORS. MOVEMENT ESE WARDS		TS/RA	CHANDIGA RH, SOLAN, ROOPNAG AR, KAITHAL, DEHRADO ON, RISHIKES H, HARIDWA R.
		19 JUNE 0900 UTC-TO 1200 UTC	Multiple cells Max dBZ=51.5 Ht.= 10-12 KMS	NW SECTOR MOVEMENT ESE WARDS		TS/RA	FEROZPU R, FARIDKOT, AMRITSAR , KAPURTH ALA, JALANDHA R, PHAGWAR A, LUDHIANA.
		19 JUNE 1200 UTC TO 1500 UTC	Multiple cells Max dBZ=55.0 Ht.= 09-10 KMS	NW SECTOR.		TS/RA	MOGA, FARIDKOT, FEROZPU R, LUDHIANA, JALANDHA R, KHANNA

		19 JUNE 1500 UTC-TO 1800 UTC	Multiple cells Max dBZ= 52.0 Ht.= 10-11 KMS	MOVEMENT SE WARDS	-----	RA/TS	LUDHIANA, KHANNA, NABHA, PATIALA, RAJPURA, SANAUR, AMBALA, KAITHAL, KARNAL, PANIPAT, SONIPAT, BHIWANI
		19 JUNE 1800 UTC-TO 2100 UTC	Multiple cells Max dBZ= 45.0 Ht.= 8-9 KMS	MOVEMENT SE WARDS		TS/RA	BHIWANI,R OHTAK, PANIPAT, SONIPAT, DELHI, GHAZIABA D, BAGHPAT, FARIDABA D.
		19 JUNE 2100 UTC-TO 0000 UTC	Multiple cells Max dBZ=57.0 Ht.= 10-11 KMS	MOVEMENT SE WARDS	-----	RA/TS	MOGA, HALWARA, MALERKO TLA, DHURI, NABHA, PATIALA, SANGROO R, NIRWANA, KAITHAL, KARNAL, PANIPAT
		19 JUNE 0000 UTC-TO 0252UTC	Multiple cells Max dBZ=46.5 Ht.= 06-08 KMS	MOVEMENT SE WARDS	-----	RA/TS	MOGA, FARIDKOT, BARNALA, BATHINDA, NABHA, PATIALA, SANGRUR, FATEHABA D, HIRWANA, JIND,

							HISSAR, KAITHAL, PANIPAT, KARNAL, SONIPAT.
Kolkata	20-06-17	0301- UTC Contd. From 0001 UTC of 19.06.17	1.Isolated single cell with maximum reflectivity of 59.5 dBz at 0051 UTC and maximum height of 13.80 km at 0201 UTC.	Cells developed in at N/178.6 km from Radar and moving ESE-ly	Isolated single cell developed at 0001 UTC in at N/178.6 km from Radar. Matured, later transformed into a multi cell system and moving into Bangladesh.	Thunderstorm / Rain	N/A
			2..Isolated single cell converted to multicelled system with maximum reflectivity of 59.5 dBz at 0831 UTC and maximum height more than18 km at 0831 UTC	Cell developed at NE/42 km and moving ESE-ly at a speed of 26 kmph	Isolated single cell developed at 0721 UTC in at NE/42 km from Radar. Converted to multicelled system. Matured, merged with cell no 3 at 0921 UTC.	Thunderstorm / Rain	N/A
			3..Isolated single cell converted to multicelled system with maximum reflectivity of 59.0 dBz at 0911 UTC and maximum height more than18 km at 0911 UTC	Cell developed at E/74 km and almost no movement	Isolated single cell developed at 0831 UTC in at E/74 km from Radar. Converted to multicelled system. Matured, merged with cell no 2 at 0921 UTC.	Thunderstorm / Rain	N/A
			4..Isolated single cell converted to multicelled system with maximum reflectivity of 61.0 dBz at 1002 UTC and maximum height more than18 km at 0921 UTC	Cell developed at ENE/79 km and moving ESE-ly at a speed of 25 kmph	Cell 2 & 3 merged at 0921 UTC in ENE/79 km from Radar. Converted to multicelled system. Matured, merged with cell no 1, 6 &7 at 1031 UTC.	Thunderstorm Hail/ Rain	N/A
			5..Isolated single cell converted to multicelled system with maximum reflectivity of 62.5 dBz at 1002 UTC and maximum height more than18 km at 0931 UTC	Cells developed at NW/230 km from Radar and moving E-ly at a speed of 28 kmph	Isolated single cell developed at 0851 UTC in at NW/230 km from Radar. Converted to multicelled system Matured, merged with cell no 8 at 1111 UTC	Thunderstorm Hail/ Rain	N/A
			6 ..Isolated single cell with maximum reflectivity of 63.5 dBz at 1011 UTC and maximum height more than18 km at 0941 UTC	Cells developed at N/84 km from Radar and moving SE-ly at a speed of 28 kmph	Isolated single cell developed at 0921 UTC in at N/84 km from Radar. Matured, merged with cell no 1,4 &7 at 1031 UTC	Thunderstorm Hail/ Rain	N/A

			7 ..Isolated single cell with maximum reflectivity of 59.0 dBz at 1021 UTC and maximum height 11.38 km at 1021 UTC	Cells developed at NNW/27 to NNE/69 km from Radar and moving E-ly at a speed of 13 kmph	Isolated single cells developed between 0931 UTC to 1011 UTC at NNW/27 km to NNE/ 69 km from Radar. Matured, merged with cell no 1,4 &6 at 1031 UTC	Thunderstorm / Rain	N/A
		0301-UTC Contd. From 0001 UTC of 19.06.17	9. Formed due to merger of single cells.	Extended system developed in N/24 km from Radar.	Cell 1,4,6 &7 merged at 1031 UTC in N/24 km from Radar. Details could not be obtained due to fault in DWR.	---	---
			10. Formed due to merger of single cells.	Extended system developed in NNW/200 km from Radar.	Cell 5 & 8 merged at 1111 UTC in NNW/200 km from Radar. Details could not be obtained due to fault in DWR.	---	---
		1941 – 200301 UTC	Extended large system developed in NW sector but time of origin or maximum values of parameters could not be obtained due to fault in DWR.	---	---	---	---
Patna	20-06-17	190300 - 190315	NIL	NIL	N/A	N/A	N/A
		190315 - 190615	MULTIPLE CELL. Maximum Reflectivity : 44 dBZ Echo Top : 14.0 KM	Range: 101.5 KM from DWR Patna in NORTH-NORTH-East direction. Movement- NORTH-Easterly	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	GOPALGANJ,SIWAN, SARAN,PATNA,NALANDA,SEIKHPURA,LAKHISARAI, JAMUI
		190550 - 190850	MULTIPLE CELL. Maximum Reflectivity : 50 dBZ Echo Top : 12.8 KM	Range: 60.5 KM from DWR Patna in NORTH-NORTH-WEST direction. Movement- EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	WEST CHAMPARAN, SIWAN,SARAN (CHHAPRA),EAST

							CHAMPARAN, GOPALGANJ AND MUZAFFARPUR
		190740 - 191040	MULTIPLE CELL. Maximum Reflectivity : 50.5 dBZ Echo Top : 14 KM	Range: 119.3 KM from DWR Patna in EAST direction. Movement- NORTH-EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	MADHUBANI, DARBHANGA, MUNGER, KHAGARIA BEGUSARAI, SAHARSA, BHAGALPUR, SHEOHAR, SITAMARHI, HAJIPUR, PATNA, SAMASTIPUR, NALANDA AND ARA
		190930 - 191230	MULTIPLE CELL. Maximum Reflectivity : 52 dBZ Echo Top : 14 KM	Range: 74 KM from DWR Patna in EAST-NORTH- EAST direction. Movement- EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	MUZAFFARPUR, GAYA, AURANAGABAD, LAKHISARAI, SHEIKHPURA, BANKA, JEHANABAD, VAISHALI & SAMASTIPUR

		191130 - 191430	MULTIPLE CELL. Maximum Reflectivity : 55 dBZ Echo Top : 11.6 KM	Range: 60 KM from DWR Patna in SOUTH-EAST direction. Movement- EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	MADHUBA NI, DARBHAN GA, KHAGARIA SAHARSA, SUPAUL, MADHEPU RA, PURNEA, JAMUI
		191410 - 191710	MULTIPLE CELL. Maximum Reflectivity : 41 dBZ Echo Top : 14 KM	Range: 93 KM from DWR Patna in SOUTH-EAST direction. Movement- EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	GAYA, AURANAG ABAD, JE HANABAD, NAWADA, JAMUI
		191710 - 192000	MULTIPLE CELL. Maximum Reflectivity : 41 dBZ Echo Top : 10.5 KM	Range: 94 KM from DWR Patna in NORTH direction. Movement- SOUTHEASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	KHAGARIA , MUNGER, LAKHISAR AI, JAMUI, BHAGALP UR & BANKA
		192000 - 192145	NIL	NIL	N/A	N/A	N/A
		192145 - 200045	MULTIPLE CELL. Maximum Reflectivity : 44.5 dBZ Echo Top : 8.1 KM	Range: 54 KM from DWR Patna in EAST direction. Movement- EAST- SOUTH-EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	KHAGARIA , MUNGER, LAKHISAR AI, JAMUI, BANKA, BHAGALP UR, SARAN, VAISHALI, SAMASTIP UR, PATNA, NALANDA, BEGUSAR AI,

							SHEIKHPU RA, DARBHAN GA, SAMASTIP UR, MUZAFFA RPUR, SITAMARH I, MADHUBA NI & SHEOHAR, GOPALGA NJ, SIWAN
		200045 - 200200	NIL	NIL	N/A	N/A	N/A
		200200 - 200300	MULTIPLE CELL. Maximum Reflectivity : 48.5 dBZ Echo Top : 14 KM	Range: 80.7 KM from DWR Patna in NORTH- WEST direction. Movement- SOUTH- EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	SIWAN, SARAN, BHOJPUR, PATNA, BEGUSAR AI, LAKHISAR AI,NALAND A, SHEIKHPU RA
Bhuja	20-06-17	190426- 191140	NIL	NIL	NIL	NIL	NIL



+ thunderstorm



+ heavy thunderstorm



sandstorm or dust storm



squall



hail shower



tropical storm



+ tornado



+ lightning



+ hurricane

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haze



smoke



dust or sand storm



fog



drizzle



rain



snow



showers



hail



thunderstorm

Weather Symbols