



India Meteorological Department
FDP STORM Bulletin No.110 (23-06-2017)

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

The Northern Limit of Monsoon (NLM) passes through Lat. 20.5°N / Long. 60°E, Lat. 20.5°N / Long. 70°E, Valsad, Nasik, Buldana, Nagpur, Mandla, Patna and Lat.27°N / Long. 85°E.

Favourable conditions are developing for further advance of southwest monsoon into some more parts of north Arabian sea & south Gujarat during next 48 hours.

Favourable conditions are likely to develop for further advance of southwest monsoon into remaining parts of Madhya Maharashtra, Marathwada Vidarbha, some more parts of East Madhya Pradesh, remaining parts of Bihar and some parts of West Madhya Pradesh and East Uttar Pradesh during next 3-4 days.

The trough at mean sea level from northwest Rajasthan to northwest Bay of Bengal now runs from northwest Rajasthan to north Bay of Bengal across Haryana, Uttar Pradesh, Jharkhand and Gangetic West Bengal.

The off-shore trough at mean sea level from north Maharashtra coast to Kerala coast persists.

The north-south trough from west Assam to northwest Bay of Bengal now runs from eastern parts of Bihar to northwest Bay of Bengal and extends upto 1.5km above mean sea level.

The upper air cyclonic circulation over north Bay of Bengal & neighbourhood persists and now extends between 3.6 & 5.8 km above mean sea level.

The western disturbance as an upper air cyclonic circulation over Himachal Pradesh & neighbourhood persists and now extends between 5.8 km & 7.6 km above mean sea level. It is likely to move east-north-eastwards. The trough aloft roughly along Longitude 77.0°E and north of Latitude 25.0°N has moved away north-eastwards.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Cloud Description:

Scattered low/medium clouds with embedded moderate to intense convection were seen over Coastal Gangetic West Bengal, E Assam, Manipur, Nagaland, & NW Bangladesh, N Coastal Andhra Pradesh, Lakshadweep and Bay Islands. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over S Chhattisgarh, NW Bihar, NE Gangetic West Bengal, Arunachal Pradesh, Meghalaya, C Rajasthan, Vidarbha, and rest parts of South India. J & K, Himachal Pradesh, Uttarakhand, S Haryana, Delhi and Uttar Pradesh, and rest parts of West and East India.

Arabian Sea:

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

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded intense to very intense convection were seen over N & C Bay of Bengal and Andaman Sea.

Past Weather:

Convection:-

Moderate to Intense convection was observed over Punjab Uttarakhand Uttar Pradesh Rajasthan Madhya Pradesh Maharashtra Chhattisgarh Bihar Jharkhand Odisha West Bengal North East States Telangana Andhra Pradesh Kerala Tamilnadu.

OLR:-

Upto **200** wm^{-2} was observed over South Chhattisgarh Coastal Odisha North Gangetic West Bengal Meghalaya Coastal Andhra Pradesh .

Upto **230** wm^{-2} was observed over Rest Chhattisgarh Jharkhand Odisha Rest West Bengal Sikkim North East States Telangana Rest Andhra Pradesh Kerala.

Upto **250** wm^{-2} was observed over J&K Himachal Pradesh Uttarakhand Rajasthan Madhya Pradesh Vidarbha Bihar Karnataka Tamilnadu

Westerly Trough & Jet-Stream:-

Trough in westerly's runs roughly along 77.0E North of Lat 25.0N

No Jet Stream observed over India.

Dynamic Features:-

Medium to High wind shear is observed over North & South India and Low wind shear is observed over Central India .

Negative shear tendency is observed over North West & Central India and Positive shear tendency is observed over rest parts of India.

Positive Vorticity field is observed over North West Rajasthan Saurashtra..

Negative low level convergence is observed over East Uttar Pradesh Bihar Coastal Karnataka Coastal Odisha and Positive low level convergence observed over rest parts of India.

Precipitation:

IMR:

Rainfall Up to **70** mm was observed over North Gangetic West Bengal.

Rainfall Up to **50** mm was observed over North West Bihar Meghalaya East Assam.

Rainfall Up to **30** mm was observed over Jharkhand West Bengal .

Rainfall Up to **20** mm was observed over Chhattisgarh Manipur.

Rainfall Up to **10** mm was observed over J&K Punjab East Uttar Pradesh Rajasthan Madhya Pradesh Maharashtra Telangana Andhra Pradesh Rest Bihar Odisha Rest North East States North Tamilnadu Kerala.

HEM:.

Rainfall Up to **70** mm was observed over South Chhattisgarh Jharkhand North Gangetic West Bengal East Assam

Rainfall Up to **14** mm was observed over Manipur Telangana.

Rainfall Up to **07** mm was observed over J&K Himachal Pradesh Punjab Rajasthan Uttar Pradesh Uttarakhand Madhya Pradesh Maharashtra Rest Chhattisgarh Bihar Odisha Rest Gangetic West Bengal Rest North East States Karnataka Andhra Pradesh Kerala Tamilnadu.

RADAR and RAPID Observation:

DWR composite at 1310hrs IST indicated significant echoes over Gangetic West Bengal, North Odisha, N Madhya Pradesh adjoining W Uttar Pradesh, southern parts of East Uttar Pradesh, S Madhya Pradesh and Telangana.

RAPID RGB Satellite imagery at 1130hrs IST indicated convective clouds over Sub Himalayan West Bengal, E Jharkhand, E Assam adjoining Arunachal Pradesh, Nagaland, Central parts of Rajasthan, S Gujarat, Coastal Andhra Pradesh, Kerala and Andaman & Nicobar Islands.

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

Higher Dust concentration was observed over north Africa and Arabian country . 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 confined to Pakistan and adjoining Rajasthan with MSLP values lower than 992hPa.

00 UTC Charts of Day 3-5 show a trough at mean sea level from North Rajasthan/Punjab to West Bengal/Odisha across Uttar Pradesh, MP, Jharkhand

Some isolated regions of wind discontinuity can be seen as embedded features in monsoon trough on all days.

At 500 hPa the trough (WD) over J & K region has moved eastwards by 12UTC of Day-1. At 850 and 500 hPa: Two CYCIR over (1) Bay of Bengal and (ii) Arabian Sea west of Gujarat are seen in Day-3 forecasts. The two systems are forming east-west trough at 500 hPa in Day-3-5..

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: West MP,

Day1: NIL

Day2: NIL

Day3: NIL

Day4: NIL

4. Low level Vorticity:-Positive Vorticity (>15 x 10⁻⁵/s):

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

Day0: TN Puducherry,

Day1: TN Puducherry,

Day2: TN Puducherry,

Day3: Arunachal Pradesh, Assam Meghalaya, Himachal Pradesh, TN Puducherry, Kerala,

Day4: West MP, Vidarbha, TN Puducherry, Kerala

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

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, Guj Reg, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, Rayalseema, NI Karnataka,

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, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada,

Day3: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, East MP, Guj Reg, Vidarbha, Chhattisgarh,

Day4: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, East MP, Vidarbha, Chhattisgarh.

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, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day1: Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka,

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, Vidarbha, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan 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, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Guj Reg, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, TN Puducherry.

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, Himachal Pradesh, Jammu Kashmir,

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, Vidarbha, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, Rayalseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir,

Day3: 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, Jharkhand, Bihar, West RJ, Odisha, Guj Reg, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: West RJ, Odisha, Guj Reg, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Odisha, Guj Reg, Andaman Nicobar, Coastal AP, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, West MP, East MP, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala.

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 and an associated a feeble low develop over Orissa coast. These features persist till day 5. A prominent off-shore trough is seen along west coast from Konkan and Goa up to Kerala. In the lower troposphere, a cyclonic circulation near Head Bay and adjoining areas remains quasi-stationary over the region till day 5 and a trough from Uttarakhand up to Head Bay appears on day 2. Another cyclonic circulation moving from Pakistan emerges over Gujarat coast on day 2 which moves westward thereafter.

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 x 10⁻¹/s):

Mostly along foothills of Himalayas and around the cyclonic circulations and mainly prominent during morning hours.

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): Not exceeded threshold over the country but prominent values are mostly over western part of Rajasthan and adjoining Gujarat, isolated pockets of east India e.g. Bihar, GWB and Orissa during next 5 days.

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

Total-Total Index (> 50) : Above threshold value is not found over the country.

Sweat Index (> 300): Higher than threshold value almost all over the country except parts of Uttarakhand and UP, Bihar and adjoining areas and isolated pockets in the South peninsula. The value goes below threshold over central India as well during morning hours.

CAPE (> 1000): Mostly western India over Rajasthan and Gujarat. Also over SHWB, GWB, Bihar, isolated pockets of coastal Orissa and Andhra Pradesh.

CIN (>150): Consistently over Gujarat and adjoining Rajasthan and over isolated pockets over central India to east coastal region of Bay of Bengal.

5. Rainfall and thunderstorm activity:

40-70 mm rainfall and more over parts of SHWB, NE states, Konkan coast till day 5. Over parts of UP, Bihar, Jharkhand and Chhattisgarh on day 4 and 5.

20-40 mm rainfall Over rest of coastal Orissa and adjoining Andhra Pradesh till day 5.

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

1. Model Reflectivity (Max.dBz):

15-40 dBz model reflectivity coastal Gujarat and Maharashtra and over AP and adjoining areas during day 1.

15-30 dBz Over Andhra Pradesh and adjoining areas on day 2 and 3.

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

Total-Total Index (> 50) : Above threshold value mainly over northwest India and extending south-eastward over UP and over MP in central India during evening hours during next 2 days.

CAPE (> 1000): Mostly over east coast of India and adjoining eastern parts of India and 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 and some pockets of central India during morning hours..

3. Rainfall and thunderstorm activity:

40-70 mm and more along west coast of India and Gujarat for the next three days. Over Orissa and adjoining GWB, Chhattisgarh and also over Uttarakhand on day 3.

20-40 mm along foothills of the Himalayas, GWB, NE states, coastal Orissa and AP and adjoining Telangana on day 1

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day-1 & Day-2:

Presently, the north-south trough from west Assam to northwest Bay of Bengal now runs from eastern parts of Bihar to northwest Bay of Bengal and extends upto 1.5km above mean sea level. This will give rise to heavy rainfall activity over Sub Himalayan west Bengal and Gangetic West Bengal on Day-1.

Due to the trough, Assam, Meghalaya and NMMT may also experience some heavy rainfall activities on Day-1.

Associated rainfall is likely to remain heavy in isolated pockets of south Konkan coast and Coastal Karnataka on Day 1

24 hour Advisory for IOP:

Rainfall:

Assam Meghalaya
Nagaland, Manipur, Mizoram
Sub Himalayan West Bengal & Sikkim
South Konkan and Goa
Kerala, Lakshadweep

Thunderstorm with associated phenomena:

Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Bihar, Jharkhand,
Gangetic West Bengal
Telangana, Coastal Andhra Pradesh

48 hour Advisory for IOP:

Rainfall:

Konkan and Goa
Andaman and Nicobar Islands
Assam Meghalaya
Nagaland, Manipur, Mizoram, Tripura
South Gujarat and South Kutch
Coastal Karnataka, South Interior Karnataka
Kerala, Lakshadweep
Odisha

Thunderstorm with associated phenomena:

Nil.

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

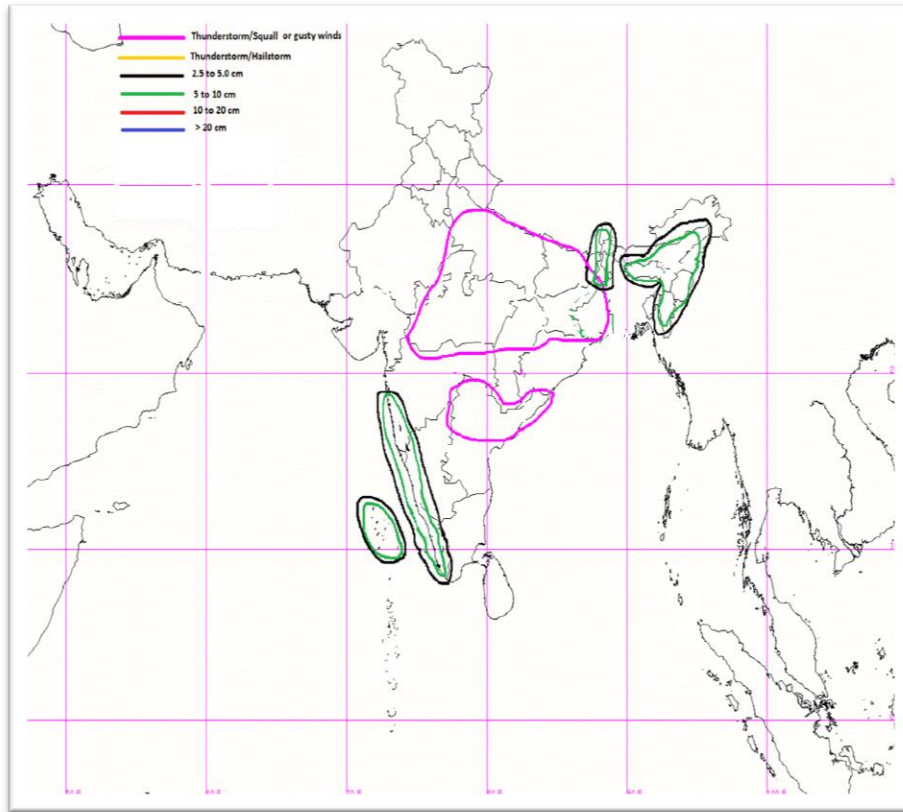
HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg

ForRadarimagesofthepast24hoursincludingmosaicofimages:

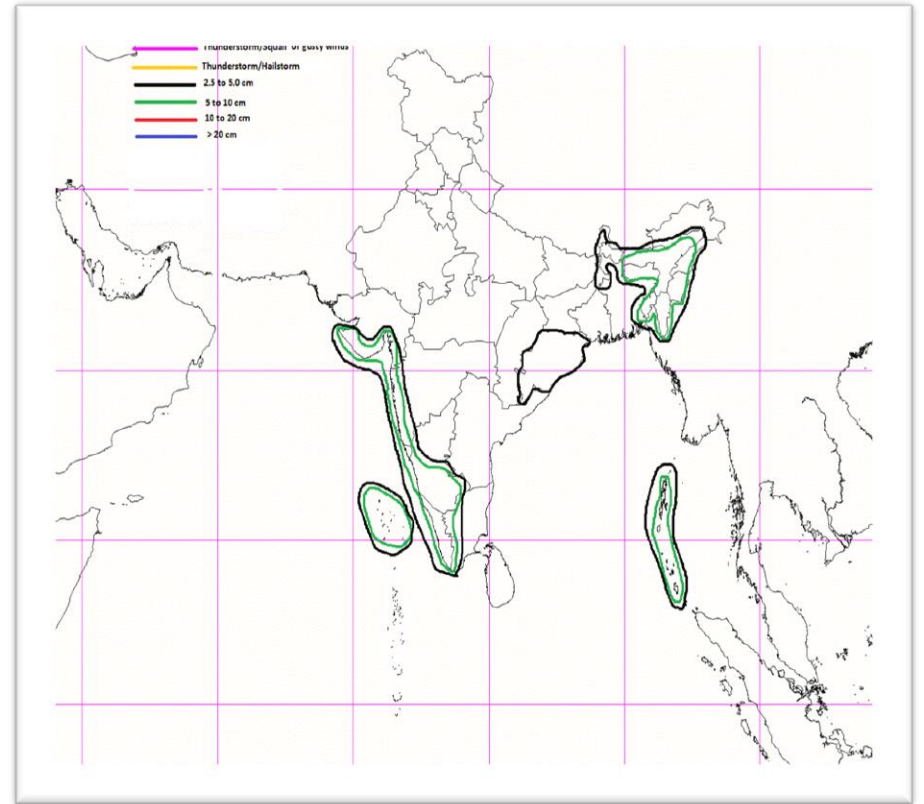
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T- Phigram

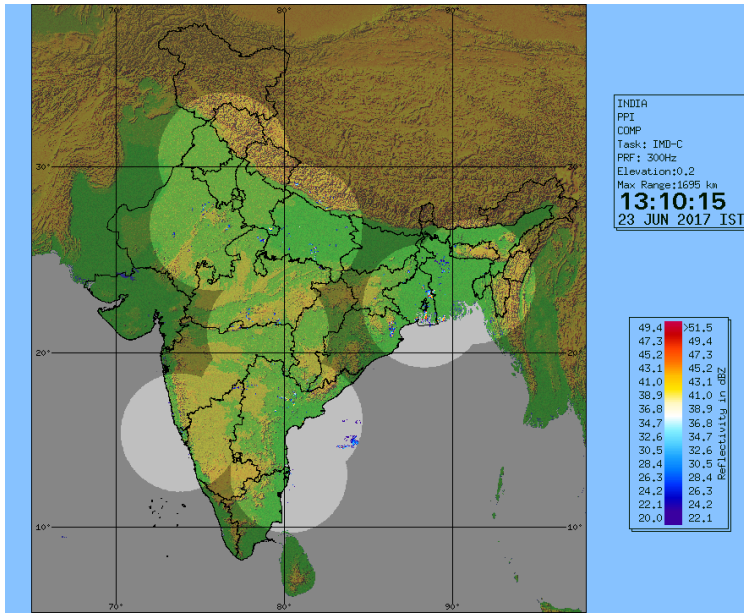
http://satellite.imd.gov.in/map_skm2.html



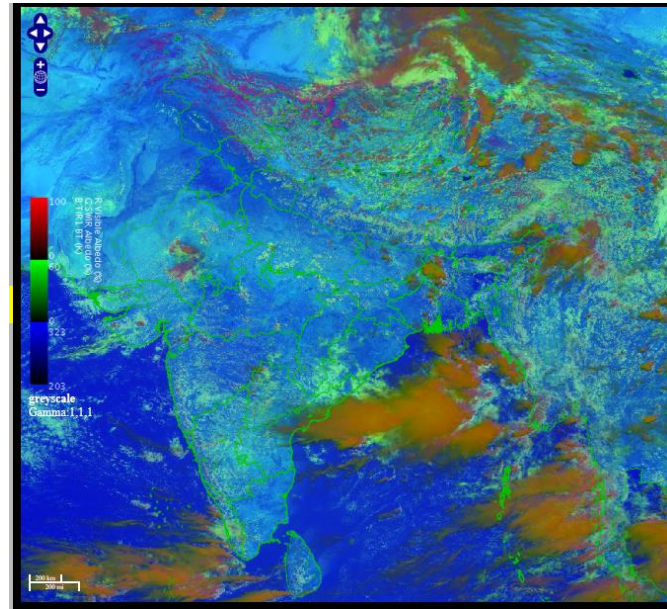
IOP Advisory for 24 hours



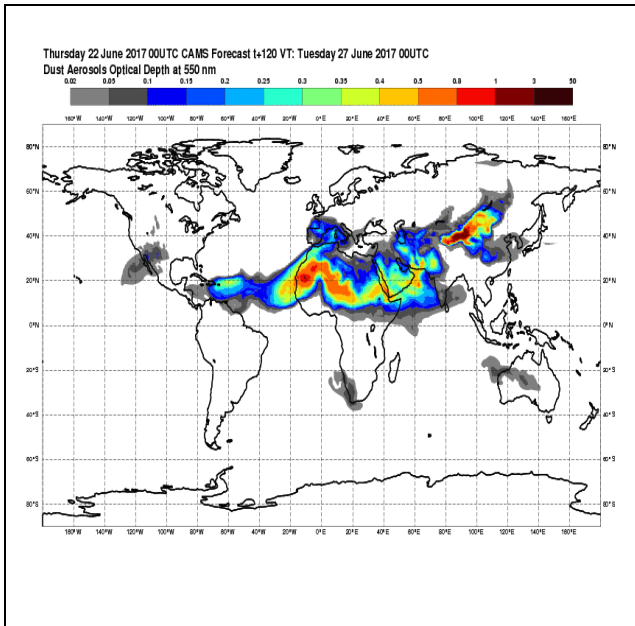
IOP Advisory for 48 hours



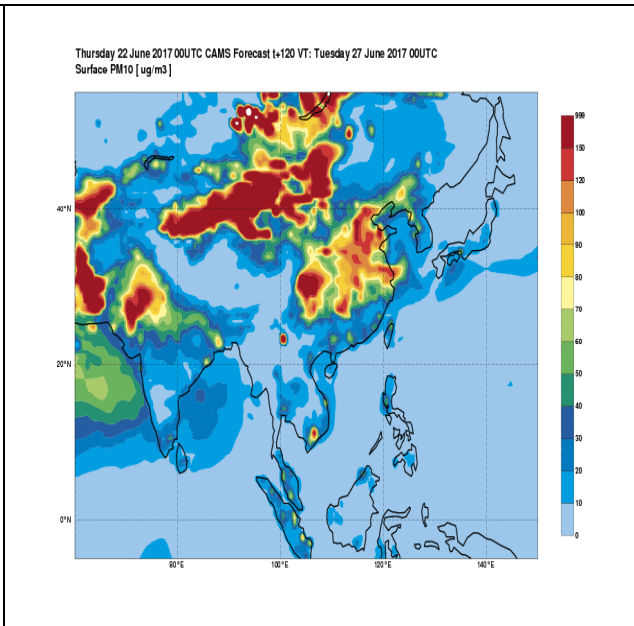
DWR composite at 1310hrs IST



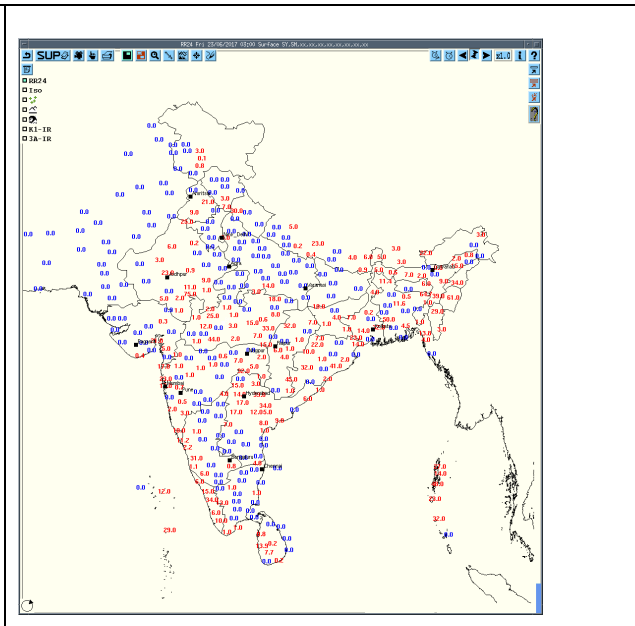
RAPID RGB Satellite Imagery at 1130 hrs IST of today



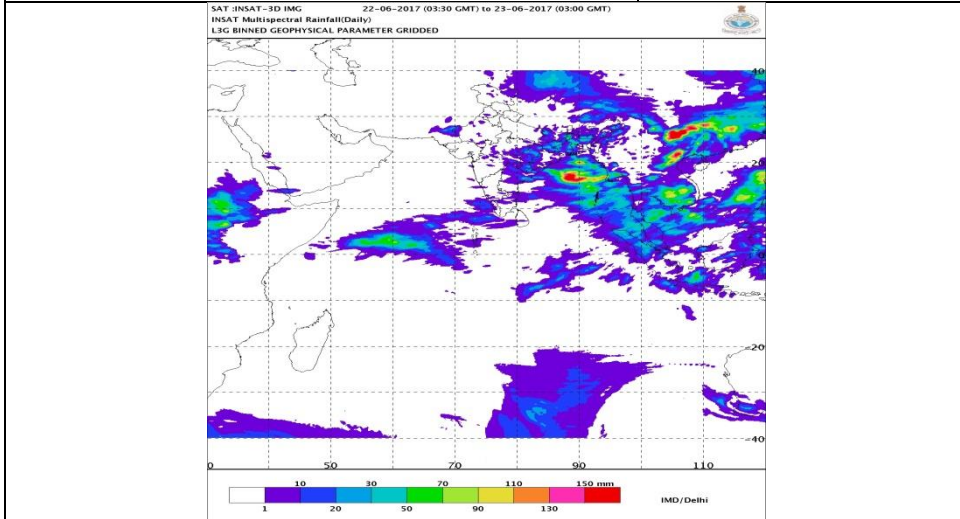
Forecast Dust Concentration for 00UTC of 27th June



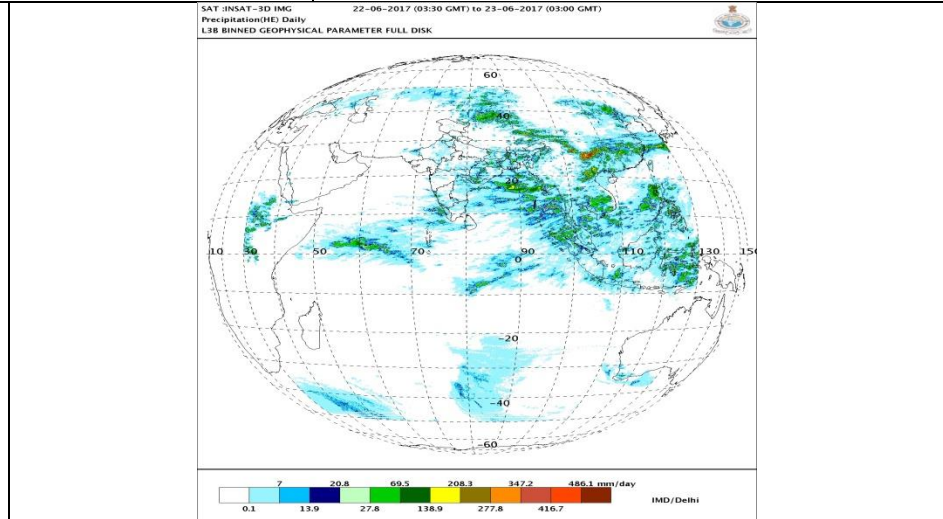
PM10 Forecast for 00UTC of 26th June



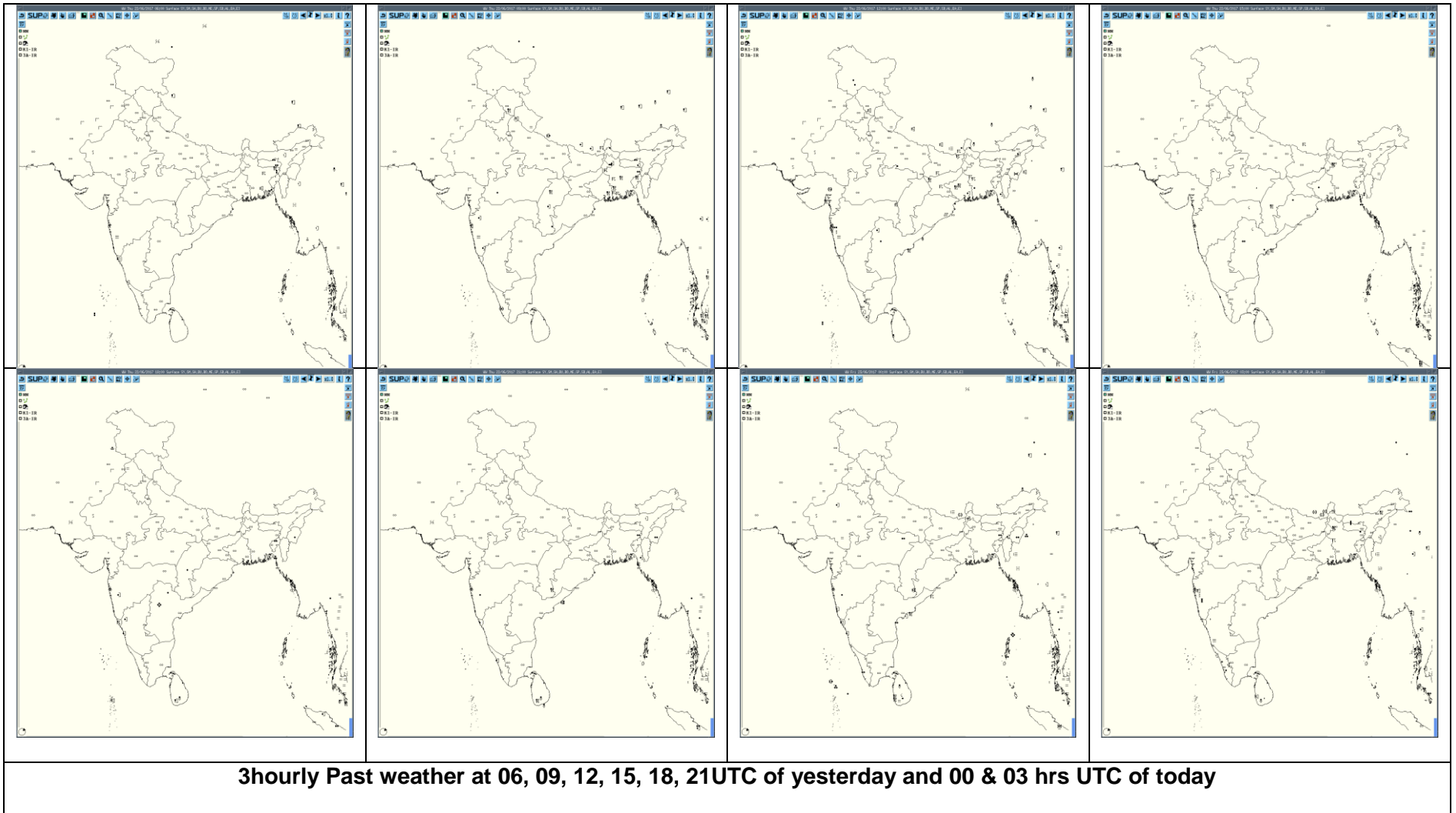
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

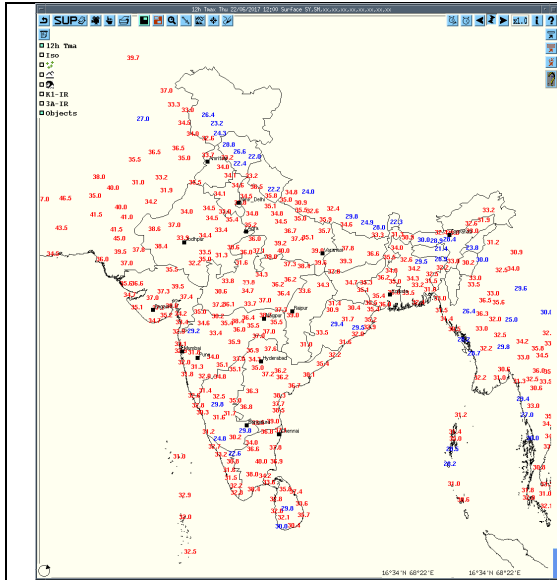


IMR Rainfall

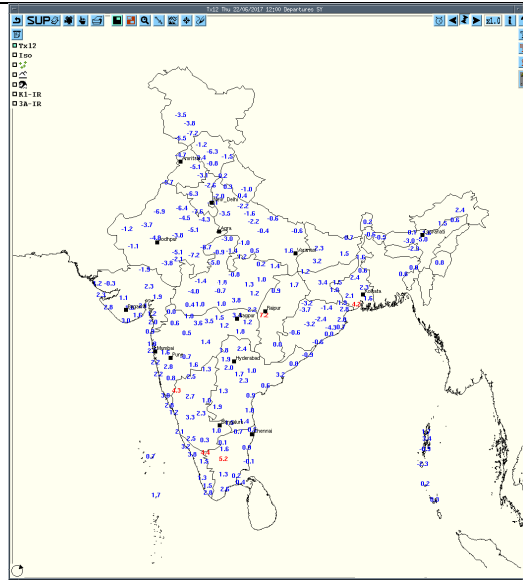


HEM Rainfall

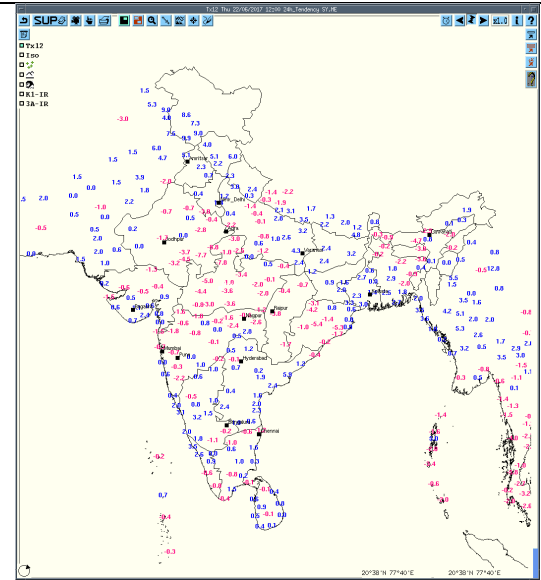




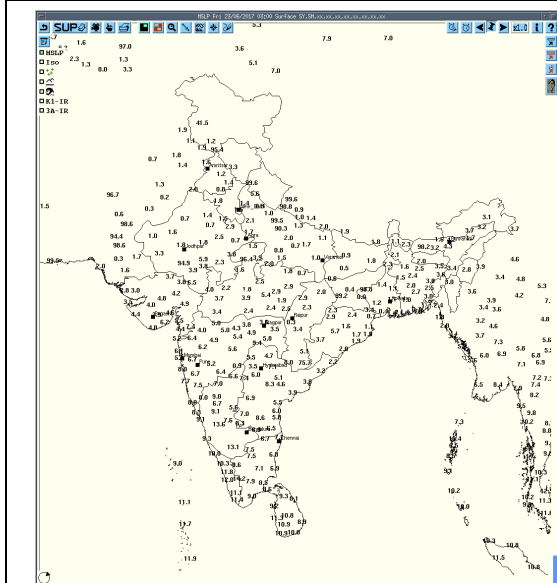
Tmax



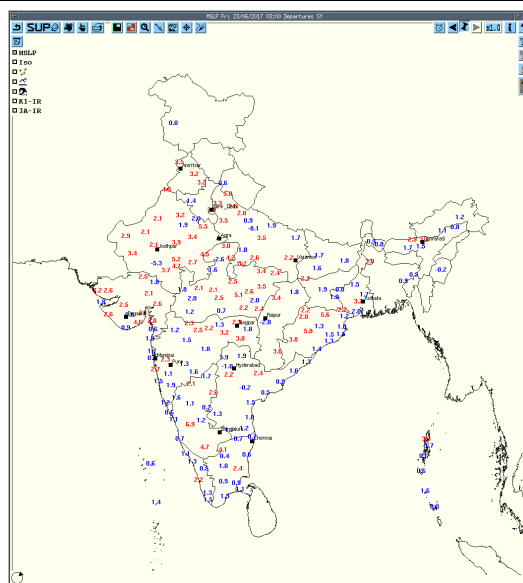
Departure Tmax



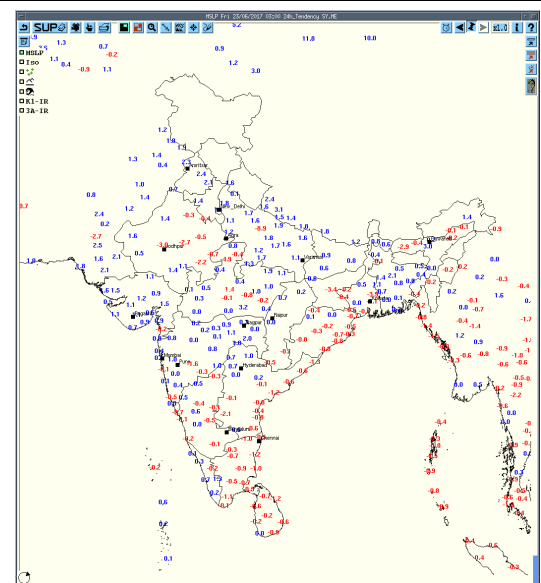
Tendency Tmax



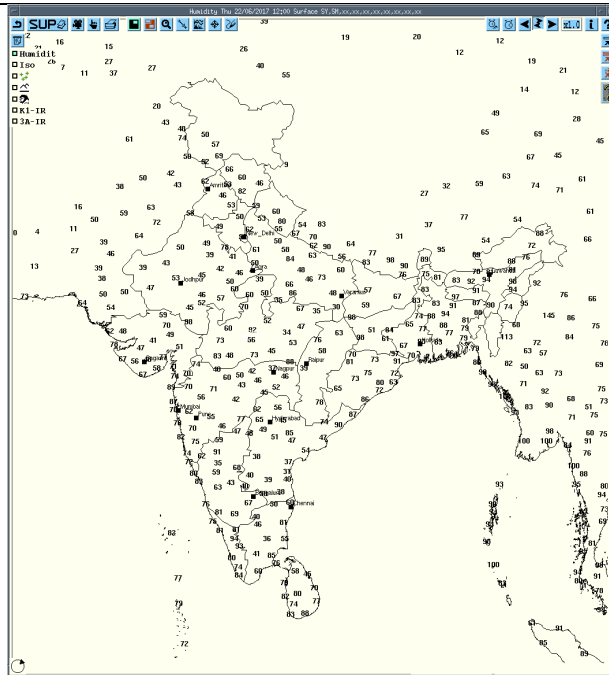
MSLP



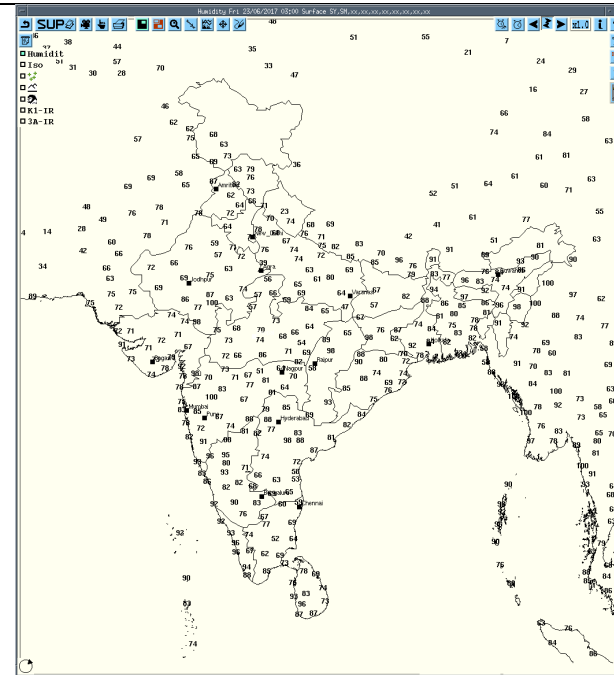
Departure MSLP



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
22-06-17	0600UTC	Cherrapunjee	NE India	Meghalaya	Thunderstorm
22-06-17	0900UTC	Shimla	NW India	Himachal Pradesh	Thunderstorm
		Dehradun	NW India	Uttarakhand	Thunderstorm
		Pendra Road	C India	Chhattisgarh	Thunderstorm
		Kolkata(Dumdum)	E India	West Bengal	Thunderstorm
		Malda	E India	West Bengal	Thunderstorm
22-06-17	1200UTC	Shimla	NW India	Himachal Pradesh	Thunderstorm
		Ahmedabad	W India	Gujarat	Duststorm
		Bhavnagar	W India	Gujarat	Thunderstorm
		Mumbai (Colaba)	W India	Maharashtra	Thunderstorm
		Gaya	E India	Bihar	Thunderstorm
		Daltonganj, Ranchi	E India	Jharkhand	Thunderstorm
		Panagarh, Bankura	E India	West Bengal	Thunderstorm
		Narsapur	S India	Andhra Pradesh	Thunderstorm
		Gondia	S India	Vidarbha	Thunderstorm
22-06-17	1500UTC	Churu	NW India	Rajasthan	Lightening
		Raipur	C India	Chhattisgarh	Thunderstorm
		Narsapur, Machilipatnam	S India	Andhra Pradesh	Thunderstorm
		Tiruchirappalli	S India	Tamilnadu	Lightening
22-06-17	1800UTC	Panjim	W India	Goa	Thunderstorm
22-06-17	2100UTC	Ahmedabad	W India	Gujarat	Thunderstorm
		Vishakhapatnam	S India	Andhra Pradesh	Thunderstorm
		Jagdapur	C India	Chhattisgarh	Thunderstorm
23-06-17	0000UTC	Kalingapatnam, Narsapur	S India	Andhra Pradesh	Thunderstorm
		Jagdapur	C India	Chhattisgarh	Thunderstorm
23-06-17	0300UTC	North Lakhimpur	NE India	Assam	Thunderstorm

Past 24 hours DWR Report:

Radar Station Name	Date of Report	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
Lucknow	23-06-17	220502-221002	Isolated cell with average height of 11km and maximum reflectivity of 52.5 dBZ.	ESE(140KM) from Radar moving in E'ly direction at speed of 21.6kmph.	-	TS	Ambedkarn agar Basti
		220612-220752	Isolated Cell with average height of 10km and maximum reflectivity of 50.5dBZ.	NE(110KM) from Radar moving in NE'ly direction at speed of 21.6 kmph.	-	TS	Gonda
		220642-221032	Isolated cell with average height of 9km and maximum reflectivity of 48dBZ.	WSW(200KM) from Radar moving in E'ly direction at speed of 21.6kmph.	Cell matured and multiple cells formed at 0802UTC and died down at 1032UTC	TS	Etawa Auraiya Jalaun
Nagpur	23-06-17	0512-0602	Single	224 km NW dir.	35 dbz & cloud ht=5.0-7.0 km	Thunderstorm warning started at 1732 till 1012 in NE direction 200 Km away from Radar. 1122-1132 in N dir 125 km away from Radar. 1252-1302 in E dir 200 km away from Radar. 1352-1402 in W dir 125 km. away from Radar. 1702-1842 in S-SE dir 200km away from Radar.	Rainfall in many places in Bhandara, , Brahmपुरi, Umred,Amr aoti, Yeotmal, Chandrapur Hinganghat, Pusad,Adili bad, Goindia Balaghat, Ramtek, Kotal and
		0612-0652	Single	207 km W dir.	26 dbz & cloud ht. 4.7-7.0 km.		
		0702-1252	Multiple	197 km N- NE dir.	51 dbz & cloud ht= 4.5-8.0 km		
		0742-1622	Multiple	236 km W dir Moving towards NE dir.	42 dbz & cloud ht. 5.8-8.1 km.		
		1142-1952	Multiple	188 km W dir moving towards SE-dir.	45 dbZ & cloud ht=4.5-6.0 km		
			115km W dir. Moving towards S direction.	41 dbz & cloud ht= 3.5-5.8 km			

		1902-2352				Hailstorm- NIL	isolated placews in Nagpur , Wardha, Washim and Akola etc
		0002-0302	Multiple	107 km NW dir. Moving towards South dir.	39dbz & cloud ht,.2.0-5.0 km.		
Patiala	23-06-17	22 JUNE 0300 UTC-TO 0600 UTC	NO SIGNIFICANT ECHOS.	-----	-----	-----	-----
		22 JUNE 0600 UTC-TO 0900 UTC	Multiple cells Max dBZ=57.5 Ht.= 10-12 KMS	NE, NW AND NE SECTORS. MOVEMENT E WARDS		TS/RA	ADAMPUR, NARWANA , NARAINGA RH, NAHAN, ROHTAK, DEHRADO ON AND ITS ADJOININ G AREAS.
		22 JUNE 0900 UTC-TO 1200 UTC	Multiple cells Max dBZ=56.0 Ht.= 10-13 KMS	W, NW & NE SECTOR MOVEMENT E- WARDS		TS/RA	B-DAM, MALAOUT, MUKTSAR, BHATINDA, FARIDKOT, PEHOWA AND IT'S ADJOININ G AREAS.
		22 JUNE 1200 UTC TO 1500 UTC	Multiple cells Max dBZ=55.0 Ht.= 12-13 KMS	SW & NW SECTOR MOVEMENT SE- WARDS		TS/RA	BARNALA, MANSA, BHATINDA, KAITHAL AND IT'S ADJOININ G AREAS.

		22 JUNE 1500 UTC-TO 1800 UTC	Multiple cells Max dBZ=55.0 Ht.= 12-13 KMS	SW & NW SECTOR MOVEMENT SE- WARDS		TS/RA	MANSA, KAITHAL AND IT'S ADJOININ G AREAS.
		22 JUNE 1800 UTC-TO 2100 UTC	NO SIGNIFICANT ECHOS.	-----	-----	-----	
		21 JUNE 2100 UTC-TO 0000 UTC	NO SIGNIFICANT ECHOS.	-----	-----	-----	
		23 JUNE 0000 UTC-TO 0252UTC	Multiple cells Max dBZ=46.0 Ht.= 08-10 KMS	SW - SECTOR. MOVEMENT E WARDS	-----	RAIN	BHIWANI, ELENABAD AND ITS ADJOININ G AREAS.
Machilipatnam	23-06-17	0851 to 1241UTC	Isolated Multiple cells average height of 6.9km with maximum reflectivity of 57.0dBZ.	NNW (92Km) and moving SE ly direction with average speed of 30.0 kmph.	Cell started forming at 0851 UTC, at NNW(92 km) from Radar the maximum reflectivity during 0901 UTC to 1231 UTC and died down at 1241 UTC	Possibility of Thunder storm with rain and winds.	Krishna, West Godavari Districts
		1201to 1401UTC	Isolated Multiple cells average height of 5.5 km with maximum reflectivity of 53.5dBZ.	WNW (100Km) and moving E ly direction with average speed of 25.0 kmph	Cell started forming at 1201UTC, at WNW (100 km) from Radar the maximum reflectivity during 1221UTC to 1401 UTC and moved into the sea.	Possibility of Thunder storm with rain and winds.	Guntur, Krishna Districts
		1351 to 1701UTC	Isolated Multiple cells average height of 6.2 km with maximum reflectivity of 51.5dBZ.	NW (250KM) and it is moving SE ly direction with average speed of 20.0 kmph	Cell started forming at 1321UTC, at NW(250km) from Radar the maximum reflectivity during 1351UTC to 1651 UTC and died down at 1701 UTC	Possibility of Thunderstorm with rain and winds.	Jangon, Warangal rural,Waran gal urban,Maha bubabad, Nalgonda, Suryapet, Khamma Districts

		1541 to 2331UTC	Convective region average height of 5.5 km with maximum reflectivity of 57.0dBZ.	NW (180KM) and moving SE ly direction with average speed of 20.0kmph	Cell started forming at 1541UTC, at NW (180Km) from Radar the maximum reflectivity during 1541UTC to 2231 UTC and died down at 2331 UTC	Possibility of Thunder storm with rain and winds.	Jangon, Warangal rural, Warangal urban, Mahabubabad, Nalgonda, Suryapet, Khamma Bhadrakothagudem, Kurnool, Prakasam, Guntur, Krishna, West Godavari, Districts
		1951 to 2221UTC	Isolated Multiple cells average height of 5.5 km with maximum reflectivity of 50.5dBZ.	NE (218KM) and moving SE ly direction with average speed of 27.0kmph	Cell started forming at 1951UTC, at NE (218Km) from Radar the maximum reflectivity during 2001UTC to 2201 UTC and died down at 2221 UTC	Possibility of Thunder storm with rain and winds.	Malkangiri, Visakhapatnam, East Godavari, Districts
		2201 to 0011UTC	Isolated Multiple cells average height of 5.2 km with maximum reflectivity of 50.5dBZ.	NE (50KM) and moving E ly direction with average speed of 30.0kmph	Cell started forming at 2201UTC, at NE (50Km) from Radar the maximum reflectivity during 2211UTC to 0011 UTC and Moved into the sea	Possibility of Thunder storm with rain and winds.	Krishna, West Godavari, Districts
		2231 to 0201UTC	Isolated Multiple cells average height of 5.0 km with maximum reflectivity of 50.5dBZ.	NE (90KM) and moving SE ly direction with average speed of 25.0kmph	Cell started forming at 2231UTC, at NE (90Km) from Radar the maximum reflectivity during 2301UTC to 0121 UTC and died down at 0201 UTC	Possibility of Thunder storm with rain and winds.	Krishna, West Godavari, Districts
Jaipur	23-06-17	221802-230302	Multiple cell with average height of 4.0 km & maximum reflectivity 44.5 dBZ	Multiple cell develop from 1802 UTC of 22/06/2017 towards West Southwest and south of Jaipur and moved to South Wards at speed 10-15 km/hr	Cell starts forming from 1802 UTC of 22/06/2017 towards West, SW and South of Jaipur and reaches maximum relectivity during 0052 0302 UTC OF 23/06/2017 (Continuous)	Thunderstorm/rain at a few places	Ajmer, Pali, Bhilwara, Rajsamand, Chittaurgarh, Bundi

		220302-220602	Multiple cell with height 5.0 km and maximum reflectivity 49.5 dBZ	Multiple cell develop from 0302 UTC of 22/06/2017 towards N, NW,W,S,SW,SES of Jaipur and moved E,SE Wards at speed 20-55 km/hr	Cells starts from 0302 UTC of at 22/06/2017 at N, NW, W, S, SW,SES of Jaipur and reaches maximum reflectivity during 0322-0342UTC OF 22/06/2017 and died 0602	Thunderstorm/rain at few places	Pilani,Churu,Jhunjhunu,Sikar,Nagaur,Jaipur,Ajmer,Bhilwara,kota,bundi,jhalawar,baran,chittoargarh,jodhpur,tonk,bharatpur and Alwar districts.
Agartala	23-06-17	220302 - 221050	Multiple cells formed NNE,NNW,W,SWW and S,SW OF DWR Agartala with Maximum cell Height 12.7 km at 0502 UTC and maximum reflectivity 44 dBZ at 0502 UTC.	Cells moves NNE-wards direction with around 45 kmph	Cells dissipated over Bangladesh at around 1050 UTC.	Thunder and Rain	N/A
		221442 - 221922	Multiple cells formed W,WWN,NE,SSE,SE of DWR Agartala with Maximum cell Height 11.5 km at 1612 UTC and maximum reflectivity 41 dBZ at 1722UTC.	Cells moves North wards with around 45 Kmph.	Cells dissipated over Bangladesh at around 1922 UTC and over Assam and Mizzoram at around 2150UTC.	Thunder and Rain	N/A
Kolkata	23-06-17	0311 - 0401 UTC	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
		0811 - 0931 UTC	Isolated small cell developed to form a big cell with maximum reflectivity of 62.5 dBz at 0831 UTC and maximum height of 9.77 km at 0841 UTC.	Cells formed in NW /242 km from Radar moving in SE-ly direction.	Isolated small cells formed at 0811 UTC in NW /242 km from Radar and mature and dissipated at 0931 UTC in NW/227 km from Radar.	Thunderstorm/Rain	N/A
		0921 - 1721 UTC	Isolated small cell developed and merge with another cells to form a multi cell system with maximum reflectivity of 59.0 dBz	Cells formed in NW /205 km from Radar moving in SSE-ly direction.	Isolated small cells formed at 0921 UTC in NW /205 km UTC and matured and later merged to form a multicelled system, dissipated at 1721 UTC in	Thunderstorm/Rain	N/A

			at 1041 UTC and maximum height of 8.51 km at 1111 UTC.		N/119.9 km from Radar.		
		0931 – 1721 UTC	Isolated small cell developed and merge with above cells to form a multi cell system with maximum reflectivity of 57.5 dBz at 1001 UTC and maximum height of 8.15 km at 1001 UTC.	Cells formed in WNW /230 km from Radar moving in SSE-ly direction.	Isolated small cells formed at 0931 UTC in NW /230 km from Radar and matured and later merged to form a multicelled system and dissipated at 1721UTC in N/180.8 km from Radar.	Thunderstorm/Rain	N/A
		1621 - 1941 UTC	Isolated small cells developed with maximum reflectivity of 54.5 dBz at 1641 UTC and maximum height of 8.42 km at 1641 UTC.	Cells formed in N /204 km from Radar.	Isolated small cells formed at 1621 UTC in N /204 km from Radar and matured and dissipated at 1941 UTC in N/212.9 km from Radar.	Thunderstorm/Rain	N/A
		1951 – 2351 UTC	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
		0001 – 0021 UTC	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
		0031 - 0301 UTC	Isolated small cell developed and merge with another cells to form a multi cell system with maximum reflectivity of 54.5 dBz at 0151 UTC and maximum height of 10.39 km at 0151 UTC.	Cells formed in between N /157.6 km and N/181.9 km from Radar moving in NNW-ly direction.	Isolated small cells formed at 0031 UTC in between N /157.6 km and N/181.9 km and matured and later merged to form a multicelled system.	Thunderstorm/Rain	N/A
Srinagar	23-06-17	220300-230300	Isolated cells developed in eastern side at 0800UTC and grew into multiple cells at 0940 UTC with max. reflectivity of 60-65 dbz and average height 7km.	Dissipated at 1400 UTC with South direction.	Light Rain has occurred at isolated places over the state	NIL	Anantnag and Ramban
Karaikal	23-06-17	220300-230300	--	--	DWR U/S	--	--



+ thunderstorm



+ heavy thunderstorm



sandstorm or dust storm



squall



hail shower



tropical storm

www.visualdictionaryonline.com



+ tornado



+ lightning



+ hurricane

∞	haze
☁	smoke
☁	dust or sand storm
☁	fog
☔	drizzle
•	rain
✪	snow
▽	showers
△	hail
⚡	thunderstorm

Weather Symbols