



India Meteorological Department
FDP STORM Bulletin No.109 (22-06-2017)

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

The south west monsoon has further advanced into remaining parts of Chhattisgarh & Jharkhand, some more parts of Vidarbha & Bihar, some parts of East Madhya Pradesh. The Northern Limit of Monsoon (NLM) passes through Lat. 20.5°N / Long. 60°E, Lat. 20.5°N / Long. 70°E, Valsad, Nashik, Buldhana, Nagpur, Mandla, Patna and Lat.27°N / Long. 85°E.

Favourable conditions are likely to develop for further advance of southwest monsoon into some more parts of north Arabian sea, south Gujarat, remaining parts of Madhya Maharashtra, Vidarbha, some more parts of East Madhya Pradesh and remaining parts of Bihar and some parts of West Madhya Pradesh and East Uttar Pradesh during next 4-5 days.

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

The western disturbance as an upper air cyclonic circulation over northern parts of Punjab & neighbourhood, now lies over Himachal Pradesh & neighbourhood between 3.1 km & 9.5 km above mean sea level with a trough aloft runs roughly along Longitude 75.0°E and north of Latitude 25.0°N.

The upper air cyclonic circulation over north coastal Odisha & neighbourhood, now lies over north Bay of Bengal & neighbourhood between 3.1 & 3.6 km above mean sea level.

The north-south trough from eastern parts of Bihar to north coastal Odisha, now runs from west Assam to northwest Bay of Bengal and extends upto 2.1km above mean sea level.

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

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Convective Activity:

Cell No	Date/time (UTC)	Location/Area	MIN CTT (-DEG C)	Movement	Remarks
1	22/0800 0900	NE Uttar Pradesh do	49 57		Developing
2	22/0800 0900	SW Madhya Pradesh do	54 59		Developing
3	22/0800 0900	NW Maharashtra do	53 64		Developing

Western Disturbance:

Scattered multi-layered clouds were seen over J & K in association with WD over the area.

Westerly Trough:

Trough in westerlies runs roughly along long 75.0°E north of lat 25.0°N.

Cloud Description:

Scattered low/medium clouds with embedded moderate to intense convection were seen over E Gangetic West Bengal, Sub Himalayan West Bengal, Meghalaya, Assam, Nagaland adjoining Manipur, Bangladesh and Bay Islands. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Himachal Pradesh, Punjab, Haryana, Delhi, Uttarakhand, Uttar Pradesh, N Chhattisgarh, Odisha, NE Jharkhand, E Bihar, W Arunachal Pradesh, Madhya Pradesh, NW Maharashtra, N Coastal Andhra Pradesh, South Interior Karnataka, Kerala and Tamilnadu. Scattered low/medium clouds were seen over rest parts of East, West and South 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:

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

Past Weather:**Convection:-**

Moderate to Intense convection was observed over J&K Punjab Himachal Pradesh Uttarakhand Haryana Delhi Uttar Pradesh Rajasthan Vidarbha Chhattisgarh Bihar Jharkhand Odisha West Bengal North East States Karnataka Telangana Andhra Pradesh Kerala Tamilnadu.

OLR:-

Upto **200** wm^{-2} was observed over J&K Chhattisgarh Jharkhand South West Odisha Andhra Pradesh Kerala

Upto **230** wm^{-2} was observed over Himachal Pradesh Uttarakhand Punjab East Uttar Pradesh East Madhya Pradesh Vidarbha Bihar West Bengal Sikkim North East States Rest Odisha Telangana South Interior Karnataka Tamilnadu

Westerly Trough & Jet-Stream:-

Trough in westerly's runs roughly along 75.0°E North of Lat 25.0°N

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 .

Positive shear tendency is observed over the India.

Positive Vorticity field is observed over Haryana South Chhattisgarh Odisha.

Negative low level convergence is observed over Uttar Pradesh Maharashtra Coast Goa Coastal Karnataka and Positive low level convergence observed over rest parts of India

Precipitation:**IMR:**

Rainfall Up to **70** mm was observed over Jharkhand South Chhattisgarh South Odisha

Sub Himalayan West Bengal.

Rainfall Up to **50** mm was observed over Rest Chhattisgarh South West Bihar Meghalaya North East Andhra Pradesh.

Rainfall Up to **20** mm was observed over North East J&K Central Rajasthan.

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

Uttar Pradesh Rest North Rajasthan South East Madhya Pradesh Vidarbha Rest Bihar Rest Odisha West Bengal Sikkim Assam Nagaland Manipur Karnataka Telangana Rest Andhra Pradesh Central Tamilnadu Kerala.

HEM:

Rainfall Up to **70** mm was observed over East J&K South Himachal Pradesh Chhattisgarh West Odisha Jharkhand Sub Himalayan West Bengal Meghalaya

Rainfall Up to **14** mm was observed over Kerala.

Rainfall Up to **07** mm was observed over Punjab North Rajasthan Uttar Pradesh Uttarakhand East Madhya Pradesh Vidarbha Rest Chhattisgarh Bihar Rest Odisha Gangetic West Bengal Rest North East States Karnataka Telangana Andhra Pradesh Tamilnadu.

RADAR and RAPID Observation:

DWR composite at 1700hrs IST indicated isolated convection over Punjab, S Chhattisgarh adjoining Telangana, Coastal Andhra Pradesh, S Madhya Pradesh adjoining Vidarbha and N Tamilnadu.

RAPID RGB Satellite imagery at 1600hrs IST indicated convective clouds over Madhya Pradesh, N Madhya Maharashtra, Chhattisgarh, Bihar, Jharkhand, West Bengal, Meghalaya, Nagaland, Manipur, Punjab, Himachal Pradesh, Uttarakhand, Telangana, N Coastal Andhra Pradesh, Kerala South Interior Karnataka, N Tamilnadu 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 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 confined to Pakistan and adjoining Rajasthan with MSLP values lower than 992hPa.

00 UTC Charts of Day 1-3 show a trough at mean sea level from North Rajasthan/Punjab to West Bengal/Bangladesh across Uttar Pradesh, Bihar, 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. 12UTC Chart on Day-3 show feeble trough over J & K region.

At 850 and 500 hPa: CYCIR over Bay of Bengal in Day-2 forecasts moving towards AP and Odisha coast in Day-3and 4..

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: NIL

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, Kerala,

Day1: NE NMMT, TN Puducherry,

Day2: TN Puducherry, Kerala,

Day3: TN Puducherry, Kerala,

Day4: NE NMMT, 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, 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, NI Karnataka,

Day1: Arunachal Pradesh, Sub Himalayan WB, East 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, Rayalseema, NI Karnataka,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day3: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Jharkhand, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana,

Day4: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, East UP, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, East MP, Guj Reg, Madhya Maharashtra, 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, 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, TN Puducherry, NI Karnataka.

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, East UP, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, East RJ, West MP, East MP, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Rayalseema, TN Puducherry, NI Karnataka, SI Karnataka.

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, 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, TN Puducherry.

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, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, TN Puducherry, NI Karnataka.

Day4: 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, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana.

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, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Saurashtra Kutch.

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

Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir.

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, Bihar, West RJ, East RJ, Guj Reg, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala.

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Odisha, Guj Reg, Konkan Goa, Madhya Maharashtra, Andaman Nicobar, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Keral.

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Andaman Nicobar, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala.

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Odisha, West MP, East MP, Guj Reg, 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, Jharkhand, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, West MP, East MP, Guj Reg, Konkan Goa, Madhya Maharashtra, 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 which persists till day 5. A feeble low develop over Orissa coast on day 2 which persists till day 5. A prominent off-shore trough is seen along west coast from Konkan and Goa up to Kerala. A cyclonic circulation over Head Bay and adjoining GWB and Orissa remains quasi-stationary over the region till day 5. Another cyclonic circulation moving from Pakistan emerges over Gujarat coast on day 3 which moves westward thereafter. The wind analysis at 500 hPa shows a cyclonic circulation over J&K and Punjab moves over Delhi and adjoining areas on day 1.

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 circulation over Head Bay 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 Bihar, and coastal areas of 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, 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 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 Telangana and adjoin Chhattisgarh on day 1 and 2. Over some parts of east Rajasthan and adjoining areas on day 1.

20-40 mm rainfall Over coastal Orissa and adjoining Andhra Pradesh on day 3 to day 5. Parts of Bihar and Jharkhand on day 5.

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

1. Model Reflectivity (Max.dBz):

15-40 dBz model reflectivities over SHWB and regions of NE states, GWB and adjoin Bihar, Jharkhand and coastal areas of Orissa and Andhra Pradesh on day 1. Over most parts of northwest India over Rajasthan, Delhi, Haryana and Uttarakhand and adjoining areas on day 1 shifts eastward over UP and Madhya Pradesh on day 2.

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 central India and peninsular India during evening hours during next 2 days.

CAPE (> 1000): Mostly along east coast of India, over 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 over SHWB, NE states and west coast of India for the next 48 hours. Over parts of GWB and coastal Orissa and south Rajasthan and adjoining Gujarat and MP on day 1.

20-70 mm along foothills of the Himalayas, parts of east UP, MP and adjoining Chhattisgarh and Telangana for 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 lies over Himachal Pradesh & neighbourhood between 3.1 km & 9.5 km above mean sea level with a trough aloft runs roughly along Longitude 75.0°E and north of Latitude 25.0°N. Due to this system, Himachal Pradesh and Uttarakhand may experience rainfall activity on Day-1.

The upper air cyclonic circulation over north coastal Odisha & neighbourhood, now lies over north Bay of Bengal & neighbourhood between 3.1 & 3.6 km above mean sea level. This will give rise to heavy rainfall activities over Sub Himalayan west Bengal and Sikkim including Gangetic West Bengal on Day-1 and Day2.

Due to the north-south trough from eastern parts of Bihar to north coastal Odisha, now runs from west Assam to northwest Bay of Bengal and extends upto 2.1km above mean sea level, Assam, Meghalaya and parts of NMMT may experience heavy rainfall 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 and Tripura
Sub Himalayan West Bengal, Sikkim
Gangetic West Bengal
South Konkan and Goa,
Coastal Karnataka
Odisha,
Chhattisgarh, Vidarbha
Coastal Andhra Pradesh
Himachal Pradesh, Uttarakhand,
North West MP
Andaman and Nicobar Islands

Thunderstorm with associated phenomena:

North Rajasthan, West Uttar Pradesh
Chhattisgarh, Madhya Pradesh
Bihar, Jharkhand, Gangetic West Bengal
Telangana

48 hour Advisory for IOP:

Rainfall:

Sub Himalayan West Bengal & Sikkim
Gangetic West Bengal
South Konkan and Goa
Coastal Karnataka, Kerala
Assam, Meghalaya,
Nagaland, Manipur, Mizoram and Tripura
Andaman and Nicobar Islands

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

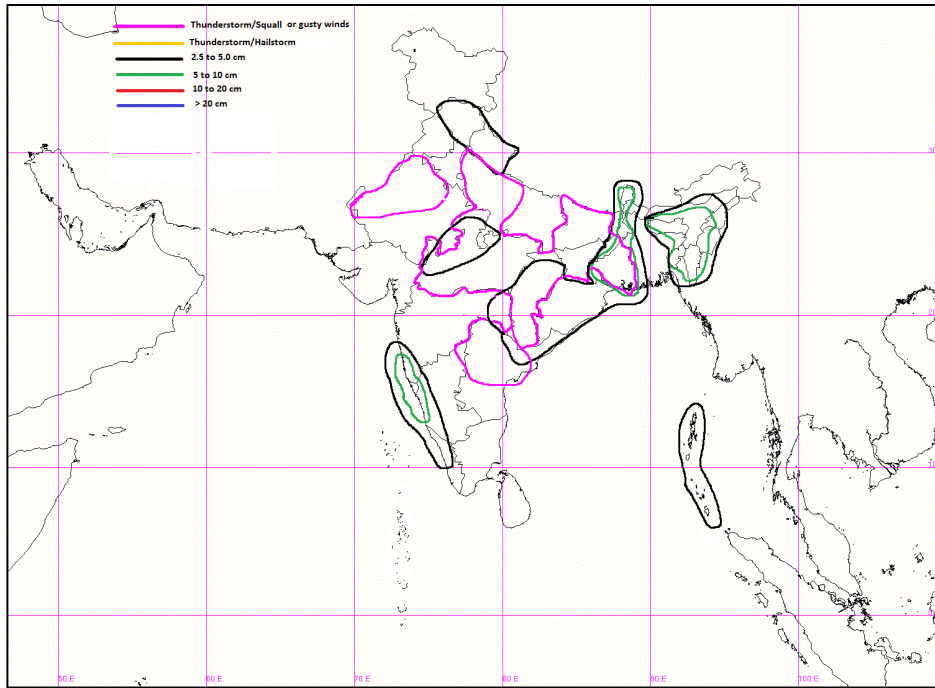
HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg

ForRadarimagesofthepast24hoursincludingmosaicofimages:

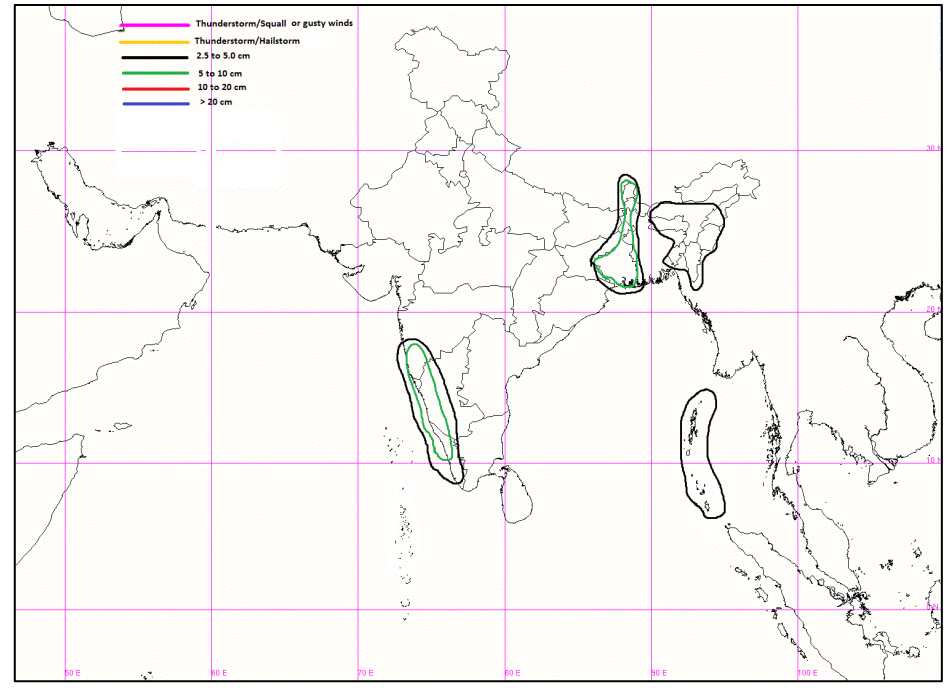
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Satellite sounder based T- Phigram

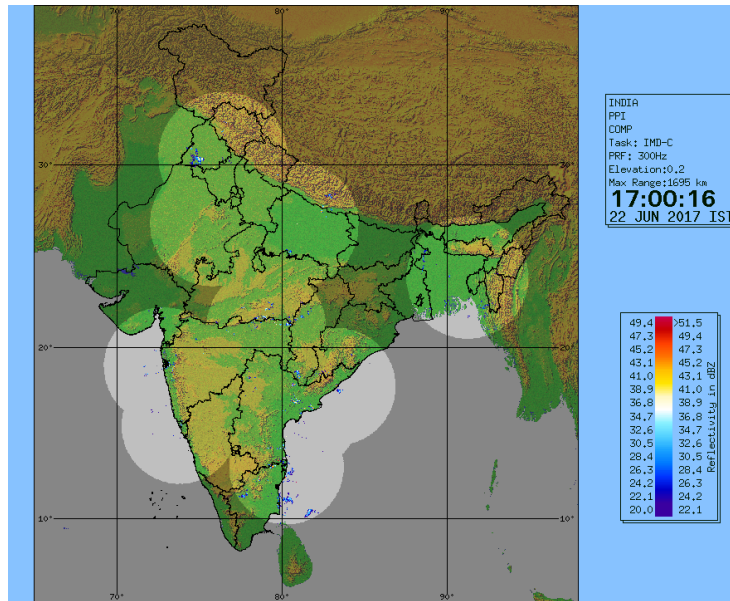
http://satellite.imd.gov.in/map_skm2.html



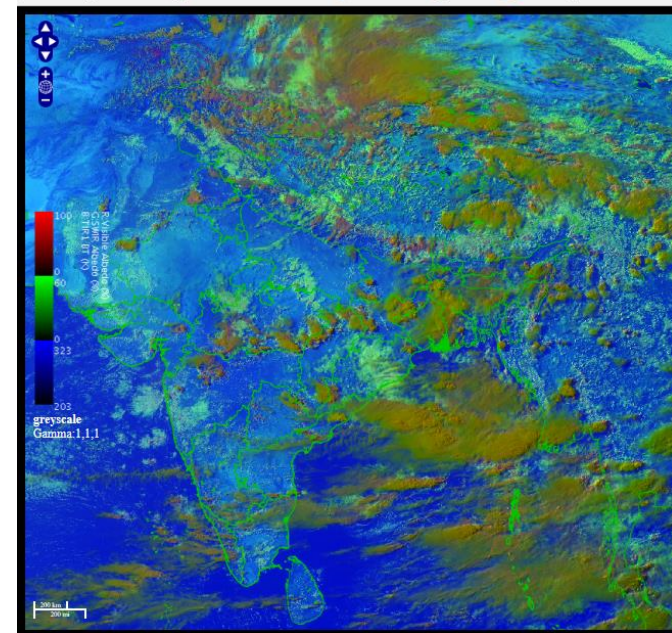
IOP Advisory for 24 hours



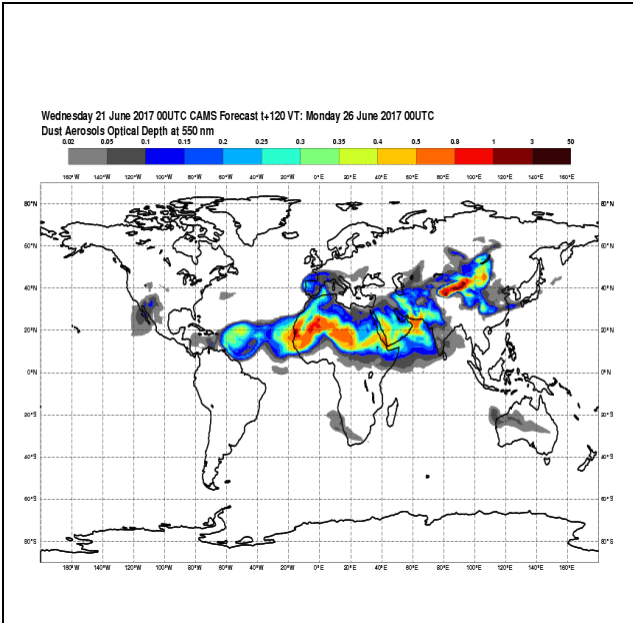
IOP Advisory for 48 hours



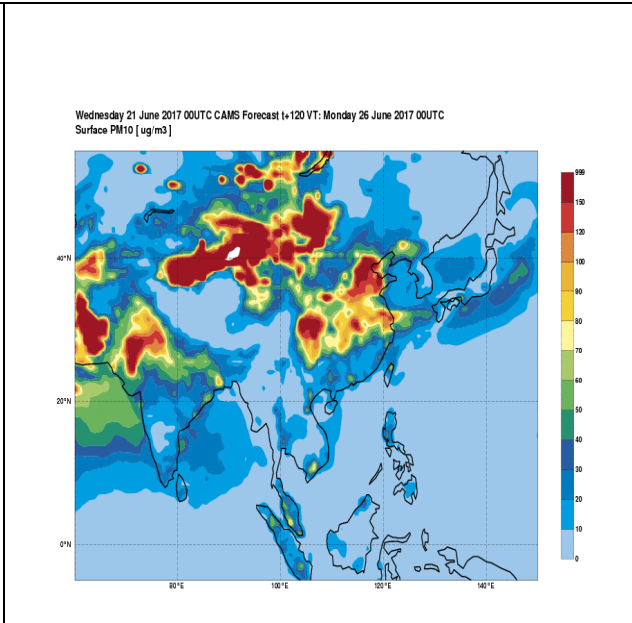
DWR composite at 1700hrs IST



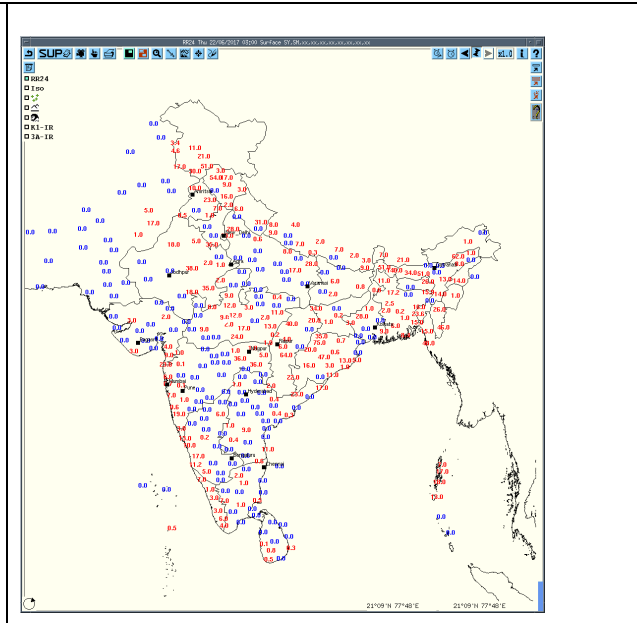
RAPID RGB Satellite Imagery at 1600 hrs IST of today



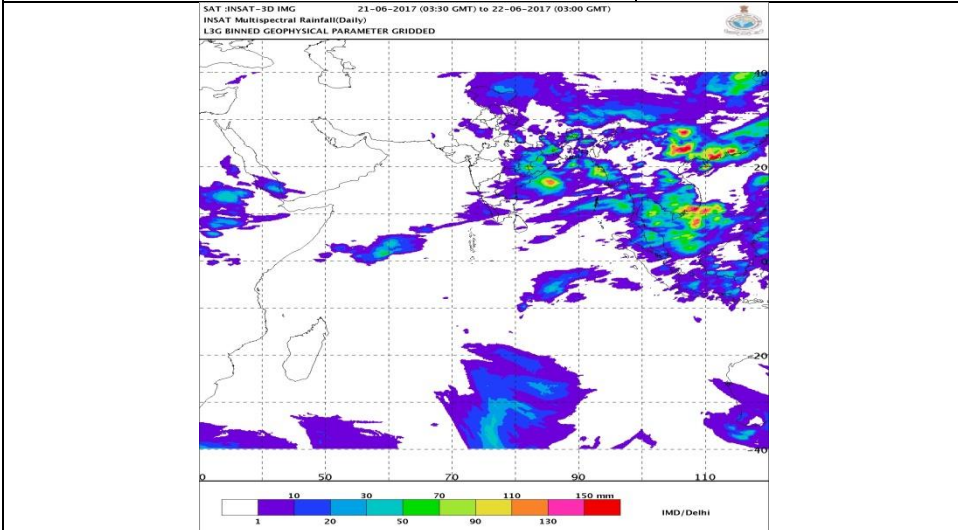
Forecast Dust Concentration for 00UTC of 26th June



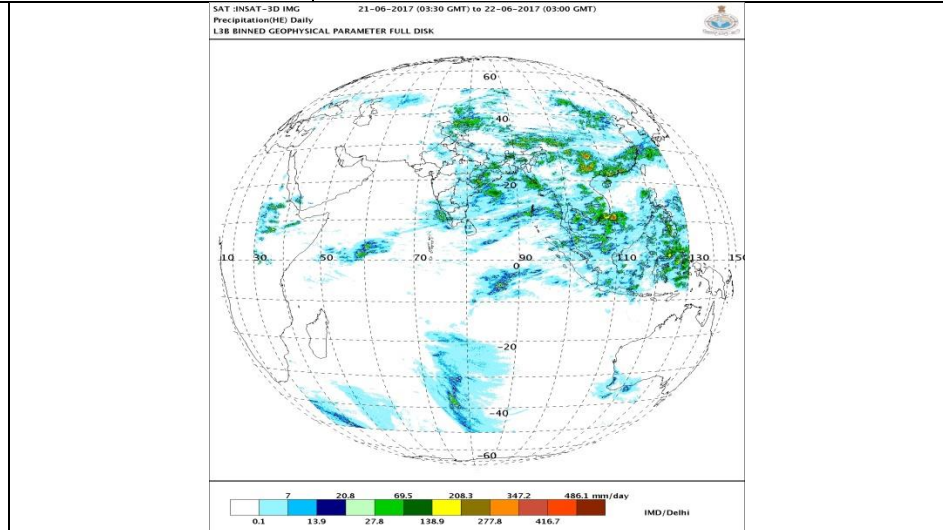
PM10 Forecast for 00UTC of 26th June



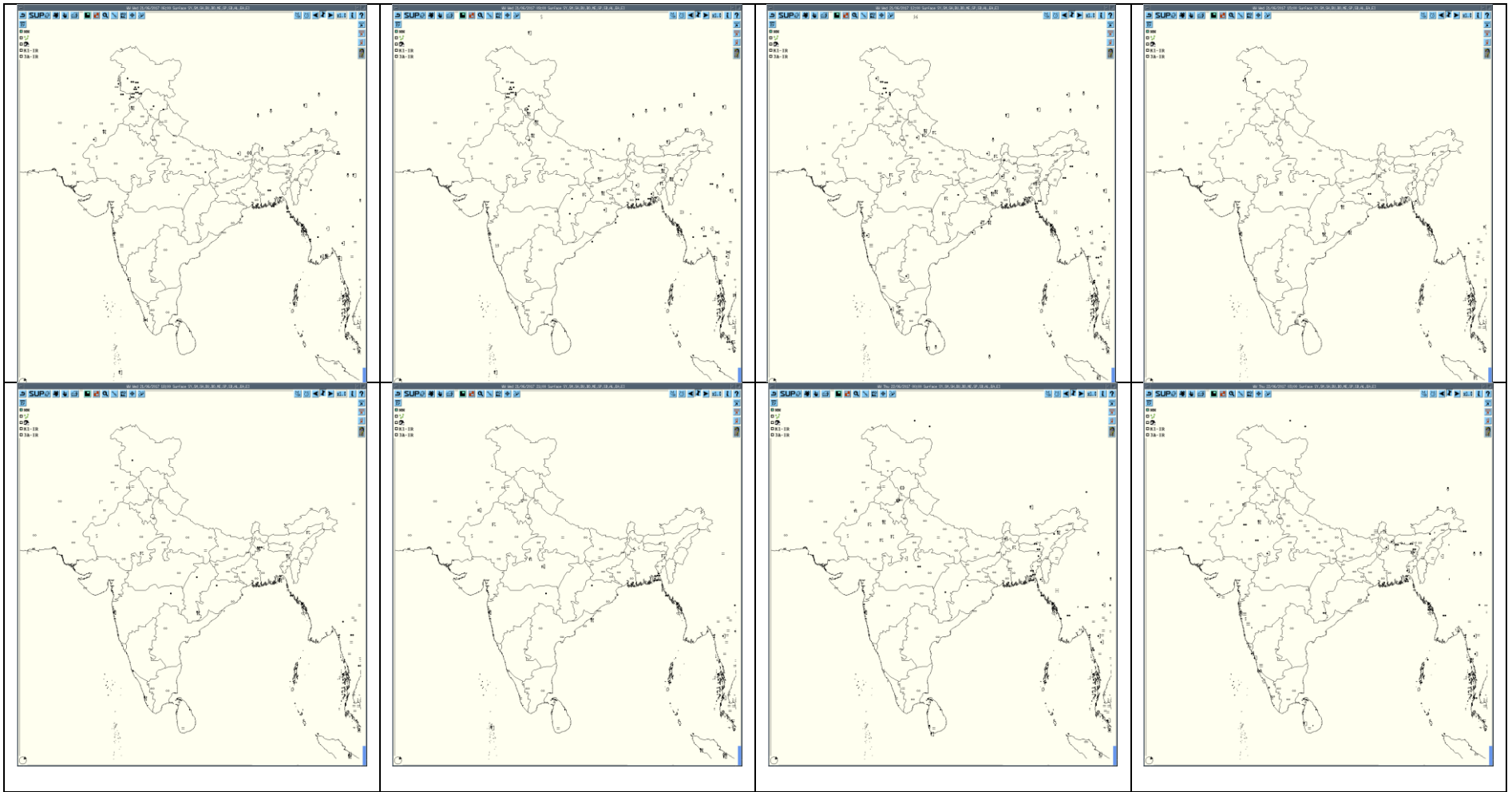
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



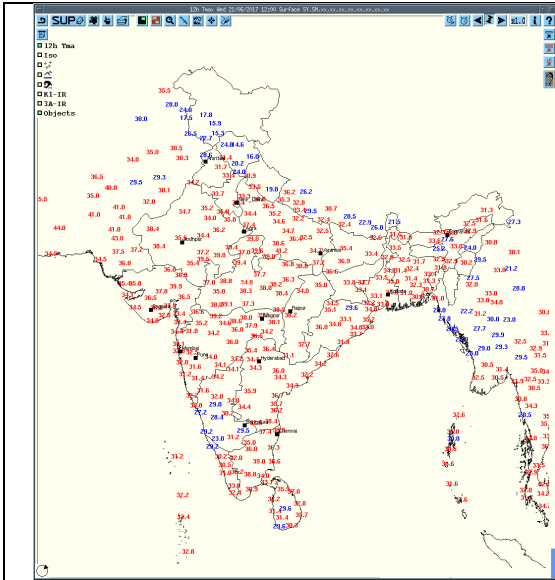
IMR Rainfall



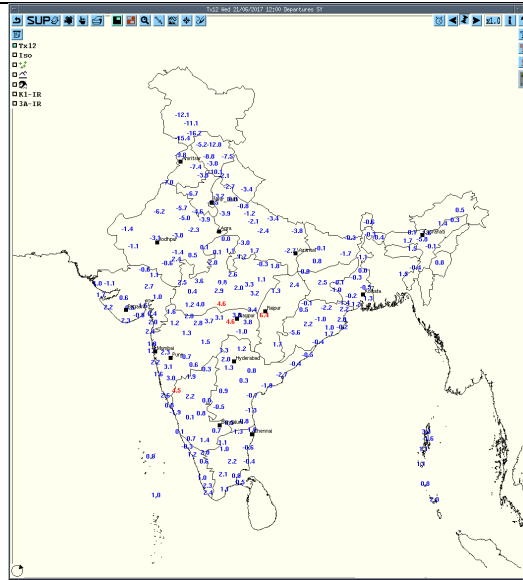
HEM Rainfall



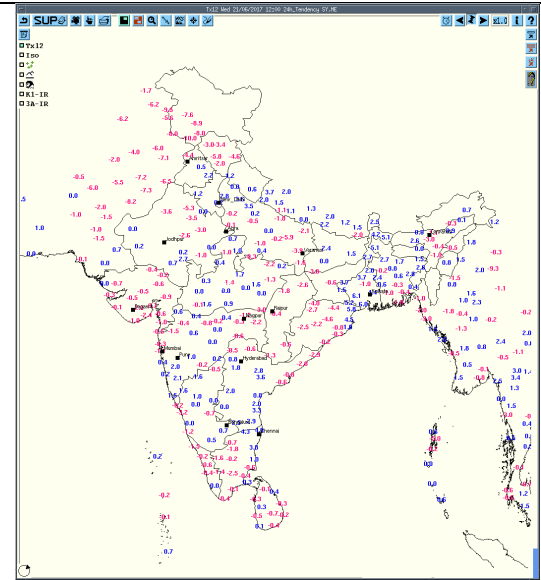
3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today



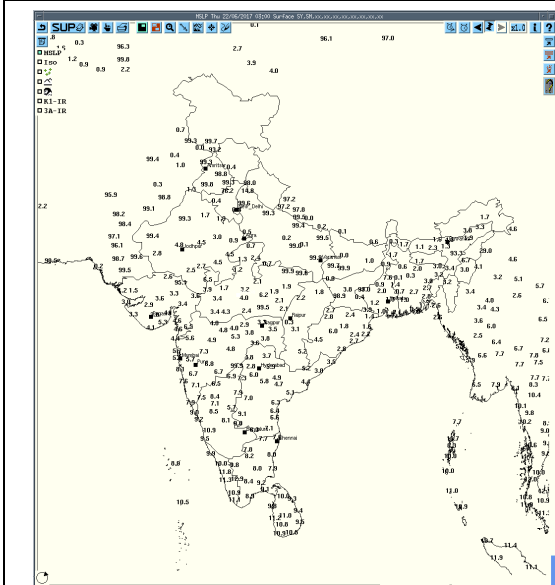
Tmax



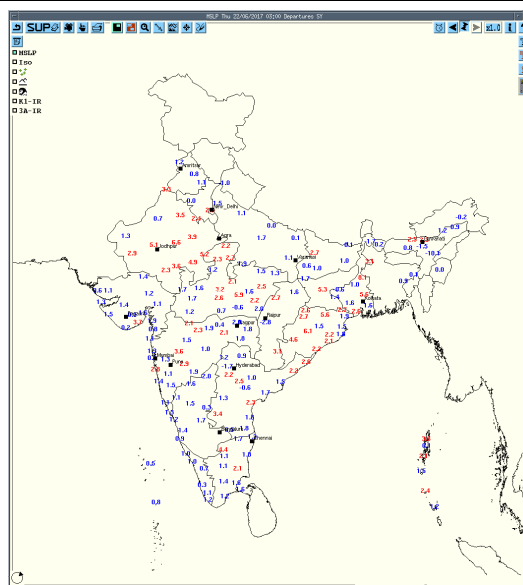
Departure Tmax



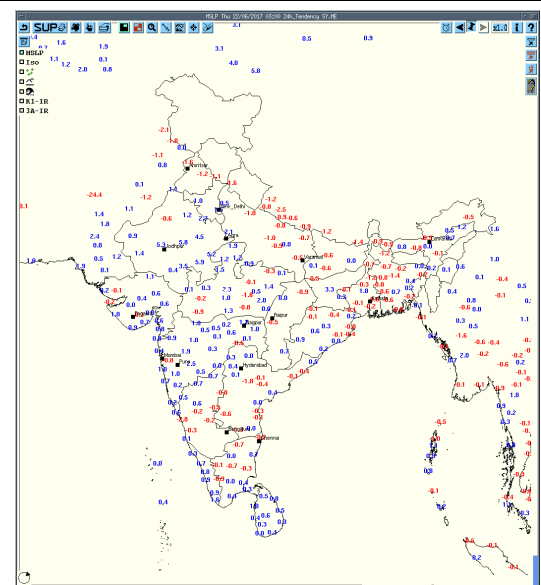
Tendency Tmax



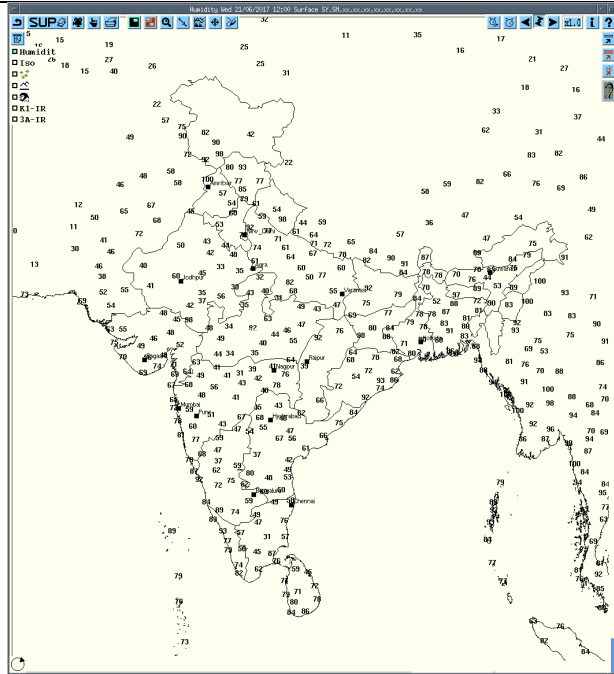
MSLP



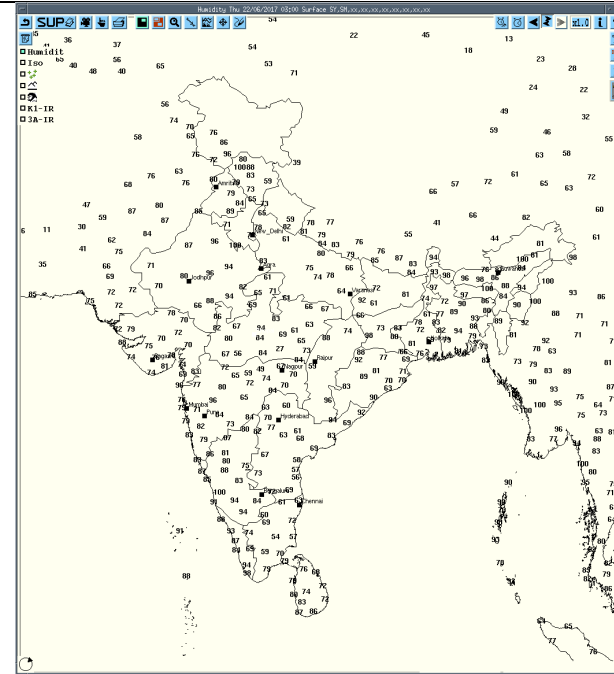
Departure MSLP



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
21-06-17	0600UTC	Amritsar	NW India	Punjab	Thunderstorm
		Dibrugarh	NE India	Assam	Thunderstorm
21-06-17	0900UTC	Sundernagar, Shimla	NW India	Himachal Pradesh	Thunderstorm
		Dehradun	NW India	Uttarakhand	Thunderstorm
		Meerut	NW India	Uttar Pradesh (West)	Thunderstorm
		Gaya	E India	Bihar	Thunderstorm
		Ambikapur	C India	Chhattisgarh	Thunderstorm
		Ranchi	E India	Jharkhand	Thunderstorm
		Shanti Niketan	E India	West Bengal (GWB)	Thunderstorm
21-06-17	1200UTC	Kota	India	Rajasthan	Thunderstorm
		Mukteshwar, Pantnagar	NW India	Uttarakhand	Thunderstorm
		Panagarh, Bankura	E India	West Bengal (GWB)	Thunderstorm
		Jamshedpur	E India	Jharkhand	Thunderstorm
		Raipur, Pendra Road	C India	Chhattisgarh	Thunderstorm
		Paradeep	E India	Odisha	Thunderstorm
		Kailasahar	NE India	Tripura	Thunderstorm
		Palakkad	S India	Kerala	Thunderstorm
21-06-17	1500UTC	Bhopal	C India	Madhya Pradesh (West)	Thunderstorm
		Jharsuguda, Gopalpur	E India	Odisha	Thunderstorm
		Jagdalpur	C India	Chhattisgarh	Thunderstorm
		Malda	E India	West Bengal (SHWB)	Thunderstorm
		North Lakhimpur	NE India	Assam	Thunderstorm
		Agartala	NE India	Tripura	Lightening
		Kurnool	S India	Andhra Pradesh	Lightening
		Karaikal, Nagapattinam	S India	Tamilnadu	Lightening
		Tondi	S India	Tamilnadu	Thunderstorm
21-06-17	1800UTC	Bikaner	NW India	Rajasthan	Lightening
		Kota	NW India	Rajasthan	Thunderstorm
		North Lakhimpur	NE India	Assam	Thunderstorm
		Jagdalpur	C India	Chhattisgarh	Thunderstorm
		Cochin	S India	Kerala	Thunderstorm
21-06-17	2100UTC	Bikaner	NW India	Rajasthan	Thunderstorm

		Guna	C India (West)	Madhya Pradesh (West)	Thunderstorm with Hail
		Sagar	C India (West)	Madhya Pradesh	Thunderstorm
		Kalingapatnam	S India	Andhra Pradesh (CAP)	Thunderstorm
22-06-17	0000UTC	Bikaner, Ajmer, Churu, Jaipur	NW India	Rajasthan	Thunderstorm
		Patiala	NW India	Punjab	Thunderstorm
		North Lakhimpur	NW India	Assam	Thunderstorm
22-06-17	0300UTC	Churu	NW India	Rajasthan	Thunderstorm
		Cherrapunjee	NE India	Meghalaya	Thunderstorm
		Dahanu	W India	Maharashtra	Thunderstorm

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

Name of Station Reporting	Region	STATE	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Sundernagar	NW India	Himachal Pradesh	Thunderstorm	21-06-17	1322 1340	1325 1405
Pendra Road	C India	Chhattisgarh	Thunderstorm	21-06-17	1455	1740
Jagdapur	C India	Chhattisgarh	Thunderstorm	21-06-17	1930	2358
Shimla	NW India	Himachal Pradesh	Thunderstorm	21-06-17	1300	1530
Jammu	NW India	J & K	Thunderstorm	21-06-17	1210	1220
Patiala	NW India	Punjab	Thunderstorm	22-06-17	0240	0445
Amritsar	NW India	Punjab	Thunderstorm	21-06-17	0830	1200
Ludhiana	NW India	Punjab	Thunderstorm	21/22-06-17	During night hours	
Gorakhpur	NW India	Uttar Pradesh (East)	Thunderstorm	21-06-17	1150	1250
Sultanpur	NW India	Uttar Pradesh (East)	Thunderstorm	21-06-17	0830	0920
Kheri	NW India	Uttar Pradesh (East)	Thunderstorm	21-06-17	2030	2045
Ballia	NW India	Uttar Pradesh (East)	Thunderstorm	21-06-17	1245	1330
Sultanpur	NW India	Uttar Pradesh (East)	Thunderstorm	21-06-17	0830	0920
Kota	NW India	Rajasthan (East)	Thunderstorm	21/22-06-17	211710 212310 220550	211730 212330 220800
Chittorgarh	NW India	Rajasthan (East)	Thunderstorm	21-06-17	212345	220200
Ajmer	NW India	Rajasthan (East)	Thunderstorm	22-06-17	0345	0650
Jaipur	NW India	Rajasthan (East)	Thunderstorm	22-06-17	0245	0620
Pilani	NW India	Rajasthan (East)	Thunderstorm	22-06-17	0553	0630
Vanasthali	NW India	Rajasthan (East)	Thunderstorm	22-06-17	0300	0400
Bikaner	NW India	Rajasthan (West)	Thunderstorm	22-06-17	0015	0830
Churu	NW India	Rajasthan (West)	Thunderstorm	22-06-17	0400	0830
Ganganagar	NW India	Rajasthan (West)	Thunderstorm	22-06-17	0715	0745
Safdarjung	NW India	Delhi	Thunderstorm	21-06-17	1305	1335
Bramhapuri	C India	Madhya Pradesh (Vidarbha)	Thunderstorm	21-06-17	1430	1600
Chandrapur	C India	Madhya Pradesh (Vidarbha)	Thunderstorm	21-06-17	1530	1600
Bhopal	C India	Madhya Pradesh (West)	Thunderstorm	21-06-17	1930	2120

Jabalpur	C India	Madhya Pradesh (East)	Thunderstorm	21-06-17	1825	1920
Raipur	C India	Chhattisgarh	Thunderstorm	21-06-17	1350	1730
Ambikapur	C India	Chhattisgarh	Thunderstorm	21-06-17	1315	1440
Bilaspur	C India	Chhattisgarh	Thunderstorm	21/22-06-17	211450 220000	211735 220025
Jorhat	NE India	Assam	Thunderstorm	22-06-17	0220	0435
Silchar	NE India	Assam	Thunderstorm	21-06-17	1400	1530
Dibrugarh	NE India	Assam	Thunderstorm	21-06-17	1010	1150
North Lakhimpur	NE India	Assam	Thunderstorm	21/22-06-17	211950 212030 212330 220230 220530	212030 212330 220230 220530 220830
Guwahati	NE India	Assam	Thunderstorm	22-06-17	0545	0750
Barapani	NE India	Meghalaya	Thunderstorm	21-06-17	1310	1550
Cherrapunjee	NE India	Meghalaya	Thunderstorm	21/22-06-17	212000 220510 220530	212400 220530 220750
Shillong	NE India	Meghalaya	Thunderstorm	21/22-06-17	211415 220628	211435 220710
Kailasahar	NE India	Tripura	Thunderstorm	21-06-17	1620	1750
Agartala	NE India	Tripura	Thunderstorm	21-06-17	1455	1550
Coochbehar	E India	West Bengal (SHWB)	Thunderstorm	21-06-17	0	805
Malda	E India	West Bengal (SHWB)	Thunderstorm	21-06-17	2000	2100
			Lightening	21-06-17	1900	2200
Asansol	E India	West Bengal (GWB)	Thunderstorm	21-06-17	1250	1615
Bankura	E India	West Bengal (GWB)	Thunderstorm & Lightening	21-06-17	1615	1745
Gaya	E India	Bihar	Thunderstorm	21-06-17	1255	1520
			Lightening	21-06-17	1255	1500
Bhagalpur	E India	Bihar	Thunderstorm & Lightening	21-06-17	1330	1425
Purnia	E India	Bihar	Thunderstorm & Lightening	21-06-17	1550	1630
Ranchi	E India	Jharkhand	Thunderstorm	21-06-17	1420	1710
Jamshedpur	E India	Jharkhand	Thunderstorm	21-06-17	1520	1800
Jharsuguda	E India	Odisha	Thunderstorm	21-06-17	1745	2145
Paradeep	E India	Odisha	Thunderstorm	21-06-17	1530	1730
Gopalpur	E India	Odisha	Thunderstorm	21-06-17	1740	2100
Sambalpur	E India	Odisha	Thunderstorm	21/22-06-17	211915	220030
			Lightening	21/22-06-17	211900	220100
Kochi (CIAL)	S India	Kerala	Thunderstorm	21-06-17	2216	0030
Karipur (AP)	S India	Kerala	Thunderstorm	22-06-17	0345	0410
					0655	0700
Bajpe	S India	Karnataka (CK)	Thunderstorm	21-06-17	1610	1635
Tondi	S India	Tamilnadu (South)	Thunderstorm	21-06-17	1900	1945

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	22-06-17	210602-210712	Multiple cell with average height of 3.5 km & maximum reflectivity 48.0 dBZ	Multiple cell develop from 0602 UTC of 21/06/2017 towards East North-East of Jaipur and moved to NE Wards at speed 30-36 km/hr	Cell starts forming from from 0602 UTC of 21/06/2017 towards East North-East of Jaipur and reaches maximum refectionivity during 0622 0702-UTC .Died down 0712UTC	Thunderstorm/rain at ISOLATED places	ALAWAR ,BHARATPUR districts.
		210812-211342	Multiple cell with height 3.0 km and maximum height 56.0 dbz	Multiple cell develop from 0812 utc of 21/06/2017 towards Southwest south - of jaipur and moved E Wards at speed 15-25 km/hr	Cells starts from 0812 utc of at 21/06/2017 at SES Jaipur and reaches maximum refecity during 1012 to 1032 utc and died 1342 UTC .	Thunderstorm/rain at Isolated place	Bhilwara, tonk,kota,swaimadhopur districts.
		211632-220302	Multiple cell with height 3.0 km and maximum height 45.0 dbz	Multiple cell develop from 1632 utc of 21/06/2017 towards S,SW,SES and 1752 utc towards NW Of jaipur and moved E,SE Wards at speed 30-35 km/hr	Cells starts from 1632 utc of at 21/06/2017 at S,SW,SES And towards NW OF Jaipur and reaches maximum refecity during 2242- 0302UTC OF 22/06/2017 and CONTINUOUS .	Thunderstorm/rain at few placeS	Pilani,Churu,Jhunjhunu,Sikar,Nagaur, Jaipur,Ajmer,Bhilwara,kota,bundi,jhalawar,baran

							,chittorgar h,jodhpur, tonk,bhar atpur and Alwar districts.
Agartala	22-06-17	210302 - 210552	Multiple cells formed DWR Agartala West at a distance around 120km with Maximum cell Height 10 km at 1502 UTC and maximum reflectivity 45 dBZ at 1532 UTC	Formed DWR Agartala of South at a distance around 50km and moves N-wards direction with around 15 kmph	Dissipated at 200km in N direction 0552 UTC.	Thunder and Rain	N/A
		211242 - 220300	Multiple cells formed at a distance of 30 km NNW from DWR Agartala with Maximum cell Height 13.8 km at 1302 UTC and maximum reflectivity 38.5 dBZ	Formed at a distance around 30km NNW of DWR Agartala and moves N-wards direction with around 22 kmph	Persist at 50 km in E, NE & NW direction at 0302 UTC.	Rain	N/A
Patiala	22-06-17	210300- 210600	Multiple cells Max dBZ=48.0 Ht.= 6-8 KMS	N & NW SECTORS. MOVEMENT NE WARDS		RA/DZ	AMRITSAR , BATALA, DHARMSH ALA, B- DAM AND ITS ADJOININ G AREAS.
		210600- 210900	Multiple cells Max dBZ=54.5 Ht.= 9-10 KMS	NE AND SE SECTORS. MOVEMENT E WARDS		TS/RA	D SOLAN, BILASPUR, SHIMLA, SONIPAT, PANIPAT AND ITS ADJOININ G AREAS.
		210900- 211200	Multiple cells Max dBZ=58.0 Ht.= 12-13 KMS	NE SECTOR MOVEMENT E- WARDS		TS/RA	SOLAN, SHIMLA NAHAN AND IT'S ADJOININ

							G AREAS.
		211200-211500	NO SIGNIFICANT ECHOS.	-----	-----	-----	----- ---
		211500-211800	NO SIGNIFICANT ECHOS.	-----	-----	-----	----- ---
		211800-212100	Multiple cells Max dBZ= 53.5 Ht.= 8-10 KMS	NW SECTOR. MOVEMENT SE WARDS		TS/RA	LUDHIANA, KHANNA, NABHA, PATIALA AND ITS ADJOININ G AREAS.
		212100-220000	Multiple cells Max dBZ=56.0 Ht.= 10-11 KMS	NW & SW SECTOR. MOVEMENT SE WARDS	-----	RA/TS	LUDHIANA, KHANNA, NABHA, PATIALA, HISAR AND ITS ADJOININ G AREAS
		220000-220300	Multiple cells Max dBZ=51.0 Ht.= 08-10 KMS	SW - SECTOR. MOVEMENT E WARDS	-----	RA/DZ	LOHARU, MOHINDE RGARH AND ITS ADJOININ G AREAS.
Kolkata	22-06-17	210312 - 210500	Single cell with maximum reflectivity 51.5 dBZ at 0411 UTC and maximum height 5.47 km at 0402 UTC	ENE/124 km moving in E/NE direction	SINGLE CELL developed at ENE/124 km since 0312 UTC matured. Dissipation could not be ascertained due to fault in DWR from 0503 to 0701 UTC.	Thunderst orm/Rain	N/A

		210503 - 210701	-----	-----	Fault in DWR from 0503 to 0701 UTC.	-----	-----
		210721 - 211431	1. Isolated small cell merged to form an extended system with maximum reflectivity of 58.5 dBz at 0932 UTC and maximum height of 15.7 km at 0901 UTC	Cells formed in between WNW /229 km and NW/186 km from Radar moving in SE-ly direction with a speed of 34.6 kmph.	Isolated small cells formed from 0721 to 0731 UTC in between WNW /229 km and NW/186 km from Radar and merged at 0901UTC. Did not mature and merged with system 2 at 1012 UTC.	Thunderstorm/Rain	N/A
			2. Isolated small cell merged to form an extended system with maximum reflectivity of 58.5 dBz at 0932 UTC and maximum height of 12.0 km at 0921 UTC	Cells formed in between NW /151 km and NW/175 km from Radar moving in SE-ly direction with a speed of 33.1 kmph.	Isolated small cells formed from 0721 to 0731 UTC in between NW /151 km and NW/175 km from Radar and merged at 0911 UTC. Did not mature and merged with system 1 at 1012 UTC.	Thunderstorm/Rain	N/A
			3. Isolated small cell merged to form an extended system with maximum reflectivity of 56.5 dBz and maximum height of 10.8 km at 0952 UTC.	Cells formed in between NNE /37 km and NNE/83 km from Radar moving in NE-ly direction with a speed of 19.1 kmph.	Isolated small cells formed at 0811 UTC in between NNE /37 km and NNE/83 km from Radar and merged at 0952 UTC. Did not mature and dissipated at 1231 UTC in NE/133 km from Radar.	Thunderstorm/Rain	N/A
			4. Isolated small single cell with maximum reflectivity of 58.5 dBz at 0911 UTC and maximum height of 9.2 km at 0952 UTC.	Cell formed in NE /24 km from Radar moving in NE-ly / ENE-ly direction with a speed of 22.3 kmph.	Isolated small single cell formed in NE /24 km from Radar. Did not mature and dissipated at 1111 UTC in NE/77 km from Radar.	Thunderstorm/Rain	N/A
			5. Extended system formed by merger of systems 1 and 2 with maximum reflectivity of 58.0 dBz at 1022 UTC and maximum height of 14.6 km at 1012 UTC.	System extended in between WNW /184 km and NW/152 km from Radar moving in ESE -ly direction with a speed of 31.3 kmph.	Extended system formed by merger of systems 1 and 2 with at 1012 UTC. Did not mature and dissipated at 1431 UTC in WNW/160 km from Radar.	Thunderstorm/Rain	N/A
			6. Isolated single cell converted to multicelled system with maximum reflectivity of 57.5 dBz at 1122 UTC and maximum height of 10.9 km at 1152 UTC.	ESE /22 km from Radar moving in NE -ly direction with a speed of 16 kmph.	Isolated single cells formed at 1111 UTC in ESE /22 km from Radar. Converted to multicelled system. Did not mature and dissipated at 1251 UTC in E/45 km from Radar	Thunderstorm/Rain	N/A

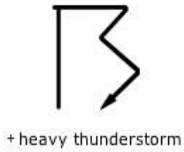
			7. Isolated single cell with maximum reflectivity of 59.5 dBz at 1222 UTC and maximum height of 9.6 km at 1231 UTC.	NE /18 km from Radar moving in NE -ly direction with a speed of 21 kmph.	Isolated single cell formed at 1202 UTC in NE /18 km from Radar. Did not mature and dissipated at 1331 UTC in ENE/47 km from Radar	Thunderstorm/Rain	N/A
		211441 - 212351	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
		220001- 220301	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
Nagpur	22-06-17	0312-0342	Single	204 km S dir.	30 dbz & cloud ht=3.5-4.7 km	Thunderstorm warning started at 1132 til 1442 in NW direction 160 Km away from Radar. 1232-1242 in NE dir 225 km away from Radar. 0642-0702 in NE dir 200 km away from Radar. 0842-1122 in SE dir 250 km.	Rainfall in many places in Bhandara, Gadchiroli, Brahmapuri, Adilibad, Nanded, Umred, Raipur Durg etc
		0512-1102	Multiple	148 km NE dir.	46 dbz & cloud ht= 2.5-8.7 km		
		0602-1522	Multiple	80 km NW dir moving towards SE-dir.	44 dbZ & cloud ht=2.0-7.0 km		
		1822-2352	Multiple	94 km W dir. Moving towards S direction.	42 dbz & cloud ht= 2.0-7.0 km		

						away from Radar. <u>Hailstorm-NIL</u>	
		0002-0302	Nil				
Machilipatnam	22-06-17	0851 to 1041UTC	Isolated Multiple cells average height of 6.3km with maximum reflectivity of 52.5dBZ.	N (192Km) and moving SE ly direction with average speed of 18.0 kmph.	Cell started forming at 0851 UTC, at N (192 km) from Radar the maximum reflectivity during 0901 UTC to 1031 UTC and died down at 1041 UTC	Possibility of Thunder storm with rain and winds.	Mahabubabad, Bhadradi-kothagudem, districts
		1501to 1701UTC	Isolated Multiple cells average height of 6.5 km with maximum reflectivity of 50.0dBZ.	NNE (234Km) and moving SE ly direction with average speed of 25.0 kmph	Cell started forming at 1501UTC, at NNE (234 km) from Radar the maximum reflectivity during 1501UTC to 1621 UTC and died down at 1701.	Possibility of Thunder storm with rain and winds.	Dantewara, Malkangir Visakhapatna m Districts
		1711 to 2101UTC	Isolated Multiple cells average height of 7.6 km with maximum reflectivity of 53.0dBZ.	NE (250KM) and it is moving SE ly direction with average speed of 35.0 kmph	Cell started forming at 1711UTC, at NE (250km) from Radar the maximum reflectivity during 1711UTC to 2051 UTC and died down at 2101 UTC	Possibility of Thunder storm with rain and winds.	Dantewara, Visakhapatna m Districts
		1841 to 2211UTC	Isolated Multiple cells average height of 5.7 km with maximum reflectivity of 50.5dBZ.	N (150KM) and moving SE ly direction with average speed of 30.0kmph	Cell started forming at 1841UTC, at N (150Km) from Radar the maximum reflectivity during 1841UTC to 2201 UTC and died down at 2211 UTC	Possibility of Thunder storm with rain and winds.	Bhadradi-kothagudem, West Godavari, East Godavari Districts
Lucknow	22-06-17	0302 UTC TO 0832 UTC	Multiple cell formed persisting from previous day. Average height of 12.5km and Maximum reflectivity of 53 dBZ.	NW(110KM) moving in E'ly direction at speed of 21.6kmph.	Cells matured and died down at 0832UTC.	TS	Gonda Basti Siddhartnagar Santkabirnagar

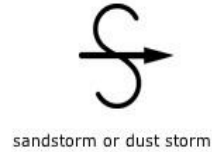
		0622 UTC To 1202 UTC	Isolated cell with average height reaching upto 15km and Maximum reflectivity of 62dBZ.	WSW(230KM) from Radar moving in E'ly direction at speed of 60kmph..	Cell matured and multiple cell formed at 0842UTC .One part moved to North direction and another in the South direction and died down at 1202UTC.	TS/Squall /Hail	Etawa Eta Kasganj Auraiya Jalaun Hamirpur Mainpuri
		1042 UTC To 1722 UTC.	Isolated Cell with average height reaching upto 15km and maximum reflectivity of 53dBZ.	NW(240KM) from Radar moving in E'ly direction at speed of 43.2 kmph.	Cell matured and multiple cells formed which moved in the Southward direction.	TS	Bareilly Pilibhit Lakhimpurk hiri
		21/1312 UTC To 22/0152 UTC	Isolated Cell with average height of 14km and maximum reflectivity of 53dBZ.	NNW(150KM) from Radar moving in SE'ly direction at speed of 43.2 kmph..	Cell matured and multiple cells formed at 1442UTC moving in southward direction and later in North East direction from Radar which died down at 0152UTC	TS	Sitapur Hardoi Bahraich
Karaikal	22-06-17	210300-220300	--	--	DWR U/S	--	--
Srinagar	22-06-17	210300-220300	1. Single cells developed in NW & Multiple cells SE direction of DWR at 0550 UTC and grew into multiple cells in all direction with max. reflectivity of 45-50 dbz and average height 6-7km. 2. Isolated cells developed in SE direction of DWR at 1650UTC and grew into multiple cells with max. reflectivity of 40-45 dbz and average height 6 Km	Dissipated at 1740 UTC with SE direction.	Light to Heavy RainFall occurred at most places over the state	Thunderstorm reported at JAMMU	JAMMU



+ thunderstorm



+ heavy thunderstorm



sandstorm or dust storm



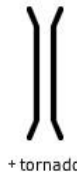
squall



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