



India Meteorological Department
FDP STORM Bulletin No.89 (02-06-2017)

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

Southwest monsoon has further advanced into some more parts of northeast Bay of Bengal, remaining parts of Arunachal Pradesh, Nagaland, Manipur & Mizoram and most parts of Tripura and Assam & Meghalaya.

The Northern Limit of Monsoon (NLM) passes through Lat.10.0°N/Long.60.0°E, Lat.10.0°N/Long.70.0°E, Kochi, Tondi, Lat.14.0°N / Long. 87.0° E, Lat 17° N/ Long 90.0° E, Lat 20.0° N/Long. 91.0°E, Agartala, William Nagar, Kokrajhar and Lat. 27.0°N/Long 90.0° E.

The trough roughly along Long. 82.0°E to the north of Lat. 26.0°N persists and now extends between 3.1 km and 4.5 km above mean sea level.

The off-shore trough at mean sea level from south Maharashtra coast to north Kerala has moved westwards.

The upper air cyclonic circulation over south Konkan & Goa & neighbourhood, now lies over east central Arabian sea off south Maharashtra coast between 1.5 km & 5.8 km above mean sea level.

The upper air cyclonic circulation over southeast Bay of Bengal & neighbourhood persists and now extends between 1.5 & 3.1 Km above mean sea level.

A north south trough runs from Bihar to north Chhattisgarh across Jharkhand and extends upto 0.9 Km above mean sea level.

An upper air cyclonic circulation lies over Vidarbha & neighbourhood and extends upto 1.5 Km above mean sea level.

The trough from West Rajasthan to Bihar across south Uttar Pradesh extending upto 0.9 km above mean sea level has become less marked.

The upper air cyclonic circulation over Southwest Rajasthan & neighbourhood extending upto 1.5 km above mean sea level 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
4 (old)	02/0000	Extreme South Bangladesh	87	--	--
	0100	do	70		
	0200	do	68		
	0300	S Bangladesh	63		

Western Disturbance (WD):-

Scattered multi-layered clouds were seen over North Caspian Sea & neighbourhood in association with WD over the region.

Clouds Description:-

Scattered low /medium clouds with embedded moderate to intense convection were seen over Lakshadweep. Scattered low /medium clouds with embedded isolated moderate to intense convection were seen over S Bangladesh. Scattered low/medium clouds with embedded weak to moderate convection were seen over C Chhattisgarh, Coastal Odisha and NE states. Scattered low/medium clouds with embedded isolated weak convection were seen over Northern parts of South Interior Karnataka. Scattered low/medium clouds were seen over J & K, Himachal Pradesh, N Uttarakhand, S Madhya Pradesh, SE Gujarat, Maharashtra and rest parts of East and South India.

Arabian Sea:

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

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded isolated moderate to intense convection were seen over SW Bay of Bengal.

Past Weather:**Convection:-**

Intense convection was observed over Maharashtra Konkan Gujarat Odisha NE Jharkhand GWB Bangladesh Tripura & Mizoram. Light to moderate convection was observed over central & south India and over rest NE States.

OLR:-

100 to 150 wm^{-2} was observed over S Bangladesh adjoining GWB .

Upto **200** wm^{-2} was observed over central parts of India and NE States.

Westerly Trough & Jet-Stream: Trough in westerly's runs roughly along 82.0E North of Lat 32.0N & No Jet Stream observed over India.

Dynamic Features: Low to Medium wind shear is observed over India.

Positive shear tendency is observed over the entire India.

A positive Vorticity field is observed over N Karnataka extreme S Tamil Nadu, N Uttar Pradesh & Bangladesh.

Negative low level convergence is observed over Vidarbha East Uttar Pradesh extreme N Gujarat and isolated places over N India and

Positive low level convergence observed over rest parts of India.

Precipitation:**IMR:**

Rainfall Up to **150** mm was observed over extreme east GWB, S Bangladesh S Tripura.

Rainfall Up to 130mm to 110 mm was observed over NE Jharkhand N GWB extreme N Konkan & extreme NE Odisha.

Rainfall Up to 70 to **30** mm was observed over rest Bangladesh SHWB NE Odisha E Bihar NW Madhya Maharashtra N Konkan WC Gujarat.

Rainfall Up to **10** mm was observed over extreme NE J&K C Gujarat E Madhya Pradesh N Madhya Maharashtra Vidarbha Chhattisgarh Andhra Pradesh rest NE States and isolated parts of Rajasthan Uttar Pradesh.

HEM:.

Rainfall Up to **208** mm was observed over extreme E GWB and S Bangladesh S Tripura & S Mizoram.

Rainfall Up to **70** mm was observed over N GWB NE Jharkhand extreme NE & central Odisha EC & W Bangladesh N SHWB NW Madhya Maharashtra N Konkan and extreme W Gujarat.

Rainfall Up to 14 mm was observed over Rest Bangladesh rest NE States N adjoining Central Odisha Chhattisgarh C Gujarat E Madhya Pradesh rest Madhya Maharashtra Vidarbha rest Konkan Kerala Tamil Nadu and isolated parts of Rajasthan & Uttar Pradesh.

RADAR and RAPID Observation:

DWR Composite is not available. Isolated multiple significant echoes is seen in DWR Patna (with dBZ 45-50 and height >10-13km) at 1631hrs IST and in RAPID RGB Satellite imagery of 1230hrs IST indicated isolated convective clouds over East Uttar Pradesh, Bihar, North Jharkhand, coastal Odisha, NE states and Lakshadweep.

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

Higher Dust concentration was observed over north Africa and Arab countries . Dust concentration is expected to increase over north India for next five days. High PM10 concentration was observed over Rajasthan and is expected to increase over IGP in next five days.

2. NWP MODEL GUIDANCE:

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

1. Weather Systems: 00 UTC analysis shows the trough from Rajasthan to north-east region across Madhya Pradesh, Chhattisgarh and WB and the off-shore trough from south Maharashtra coast to Kerala coast the forecasting shows this will persist up to day 5.

2. Location of jet and jet core at 500 hPa:-500 hPa Jet core (>60kt): No presence of jet core over the Indian region for the next 5 days except J & K.

3. Low level Vorticity:-Positive Vorticity 850hPa (>12 x 10⁻¹/s): Analysis shows low level positive vorticity (>-12 x 10⁻⁵/s) mainly over isolated pockets in J & K, Haryana, some pocket over central part of country and over the north eastern region. The high vorticity belts are mainly confined over regions of UP, Haryana, Delhi, Bihar, MP, AP and south peninsular region during next 2 to 4 days specially at 18 UTC.

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): Forecast shows high threshold values over along coastal region of Odisha, WB and Bihar for the next 2 to 5 days.

Lifted Index (< -2): The areas with index less than -2 lies along Bihar, Chhattisgarh, GWB and major regions of AP along with Gujarat and Rajasthan for the next 2 to 3 days.

Sweat Index (> 400): 00UTC shows significant values over major parts over Bihar, GWB, Odisha and AP and is expected to persist for the next 4 to 5 days.

CAPE (> 1000): Mostly over Bihar, GWB, Odisha, and AP and other regions over the east coast, Gujarat, Rajasthan, Maharashtra and along with major regions bordering the west coast during the next 3 to 4 days.

CINE (50-150): based on 00 analysis maximum CIN values are found in areas over some packets over east UP, Bihar, GWB, Odisha, AP and TN and along with major pockets in the Maharashtra, Gujarat and Rajasthan region for the next 2-3 days.

5. Rainfall and thunderstorm activity: 00 analysis shows 10-40 mm rainfall northeast region and along west coast of country and it will persist up to day 5 and over some pockets of Maharashtra on day 2 to day 5.

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

1. Model Reflectivity (Max. dBz): 15-40 dBZ over regions of the North-East region of country and isolated pockets of the southern coast region during next 3 days.

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

CAPE (> 1000): Mostly along WB, Odisha, Andhra Pradesh and along major regions bordering the west coast, Gujarat and MP during next 2 to 3 days.

CINE (50-150): Higher values over Gujarat, Rajasthan, Maharashtra, WB, east coast and Odisha during next three days.

Rainfall and thunderstorm activity:

40-70 mm over North-east region, some pockets of WB and west coast of country based on 00 analyses it will persist for next 3 days.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day-1 & Day-2:

In association with the upper air cyclonic circulation over southeast Bay of Bengal & neighbourhood persists and the north south trough from Bihar to north Chhattisgarh, weather is likely over North-east and East India on day 1 and day 2. The south-westerly nature of low level winds over the head Bay region on day 1 and 2 is likely to concentrate the heaviest rainfall over Tripura, Meghalaya, adjoining Assam on both days. While the offshore trough along the west coast of India as well as the upper air cyclonic circulation seen yesterday over south Konkan & Goa & neighbourhood have moved away westwards, the associated wind flow is likely to extend the rainfall along the west coast for the next two days. The upper air cyclonic circulation, which lies over Vidarbha & neighbourhood is likely to pull moisture in from the Arabian Sea, and result in thunderstorm activity over central India on day 1.

24 hour Advisory for IOP:

Kerala, Lakshadweep, Coastal Karnataka, Interior Tamil Nadu,
Sikkim and Sub Himalayan West Bengal,
Arunachal Pradesh, Assam and Meghalaya
Tripura, Mizoram, Nagaland, Manipur,
Madhya Maharashtra, Vidarbha, Chhattisgarh
Gangetic West Bengal
Orissa, Bihar and Jharkhand

48 hour Advisory for IOP:

Kerala, Lakshadweep, Coastal Karnataka, Interior Tamil Nadu
Arunachal Pradesh, Assam and Meghalaya
Tripura, Mizoram, Nagaland, Manipur,
Sikkim and Sub Himalayan West Bengal,
Gangetic West Bengal

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

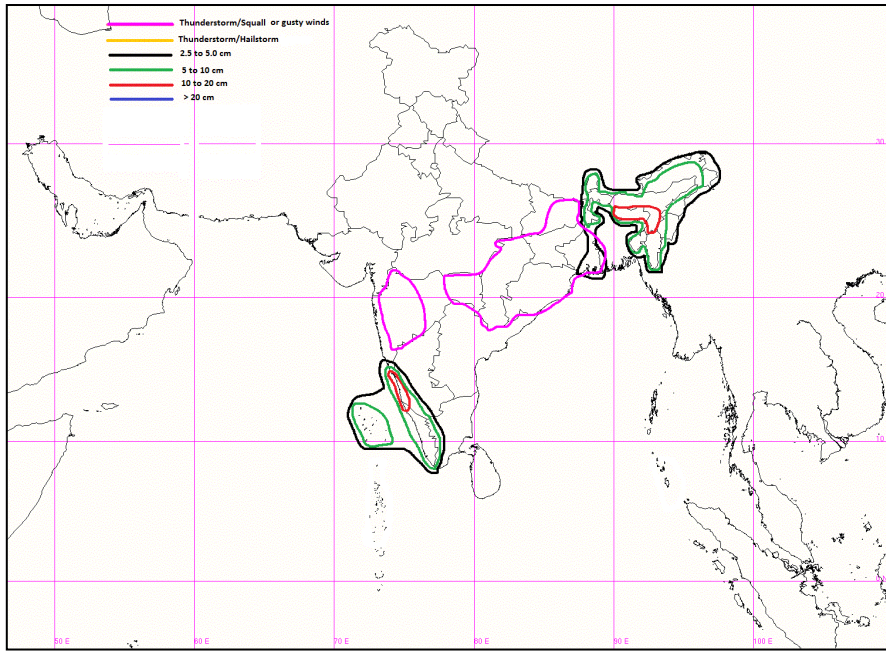
HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg

ForRadarimagesofthepast24hoursincludingmosaicofimages:

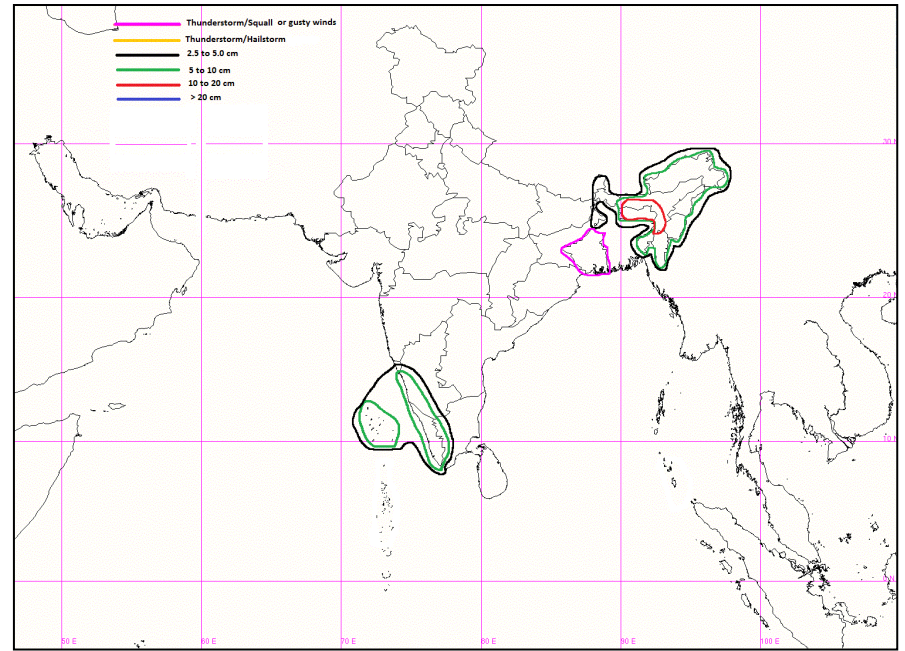
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T- Phigram

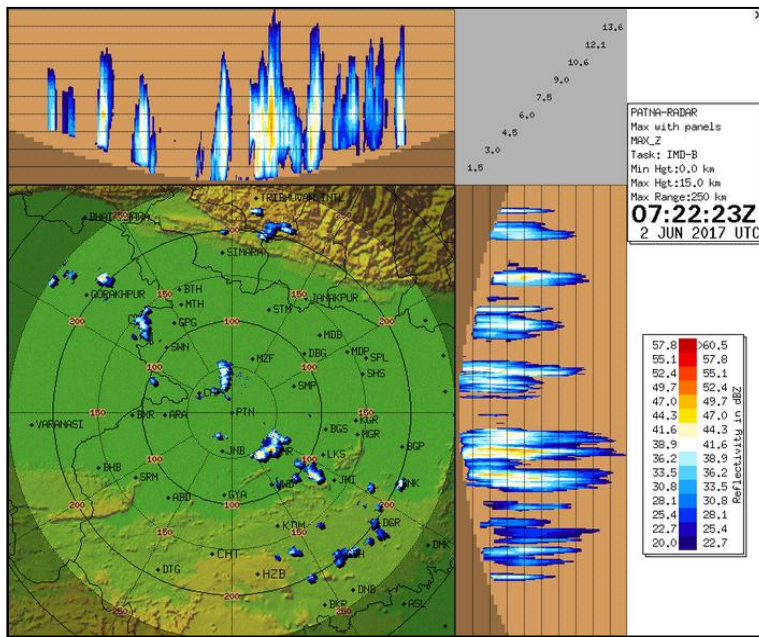
http://satellite.imd.gov.in/map_skm2.html



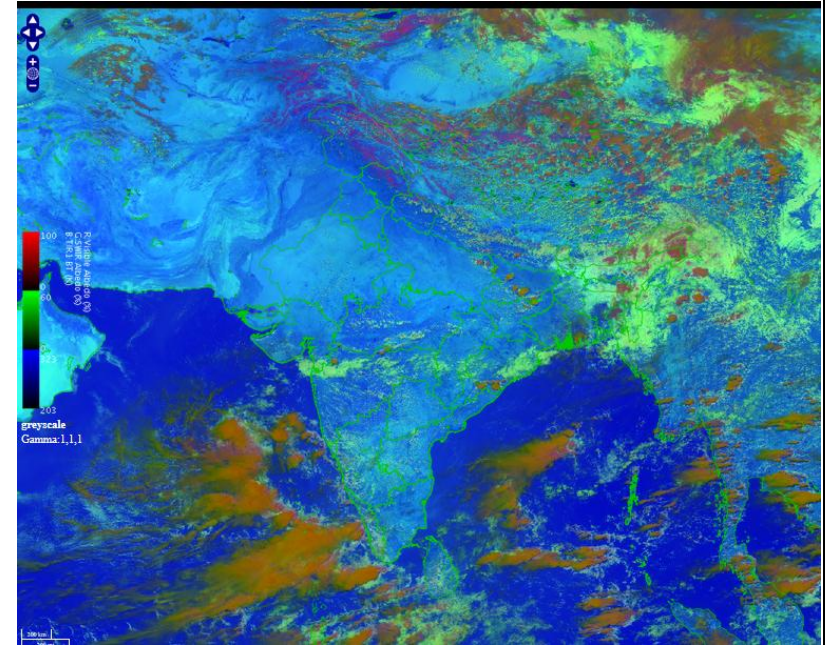
IOP Advisory for 24 hours



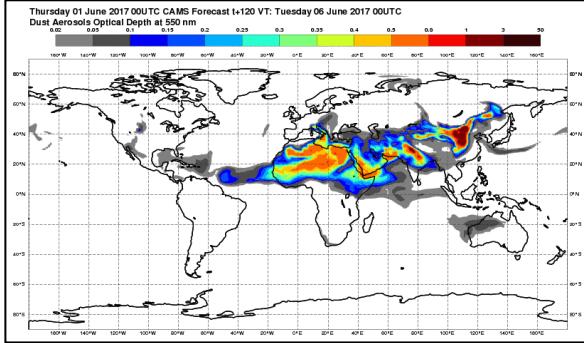
IOP Advisory for 48 hours



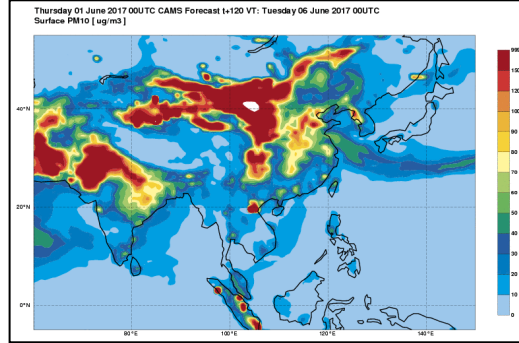
DWR Patna at 1252hrs IST



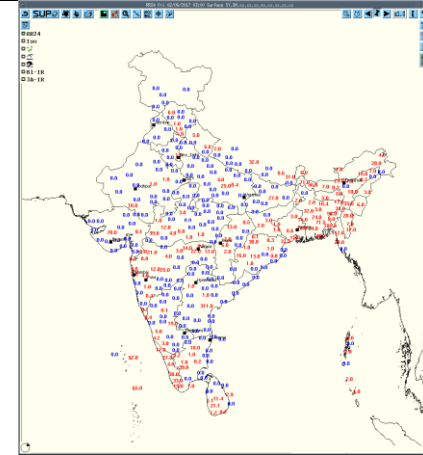
RAPID RGB Satellite Imagery at 1230 hrs IST of today



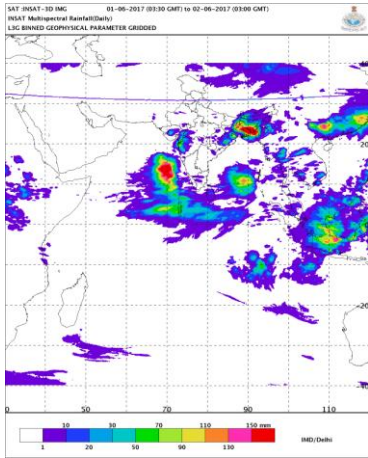
Forecast Dust Concentration



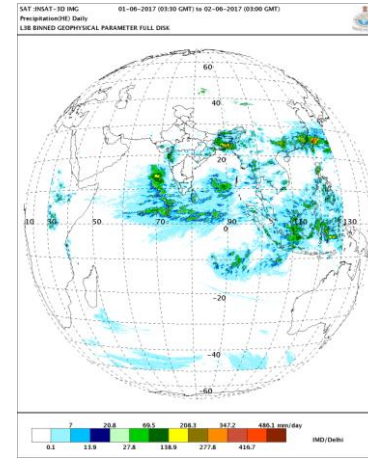
PM10 Forecast



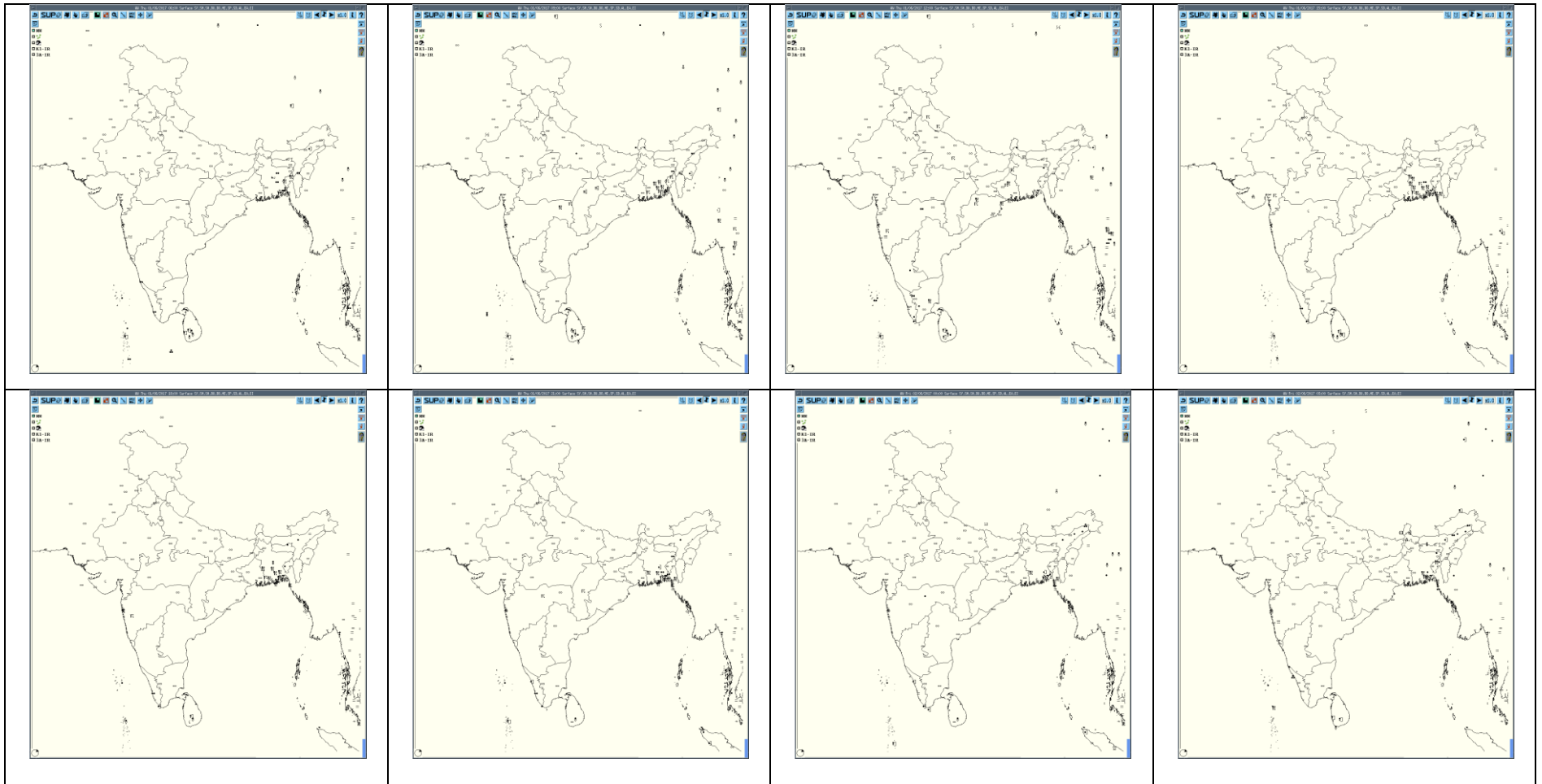
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



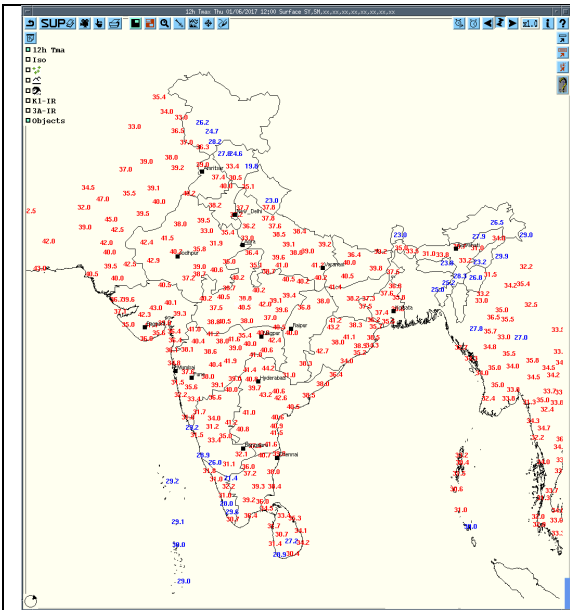
IMR Rainfall



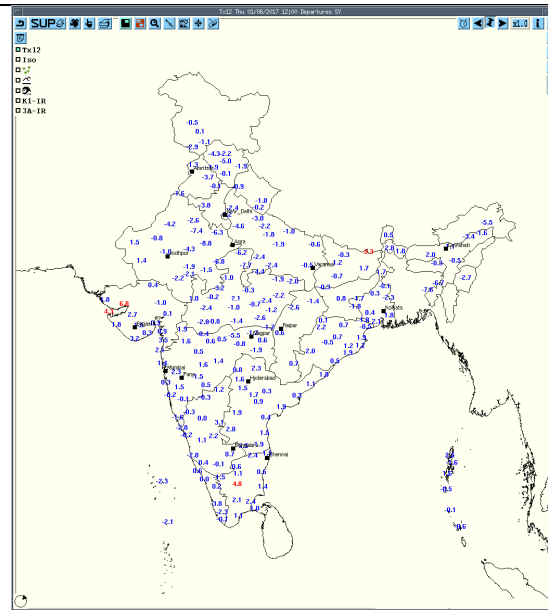
HEM Rainfall



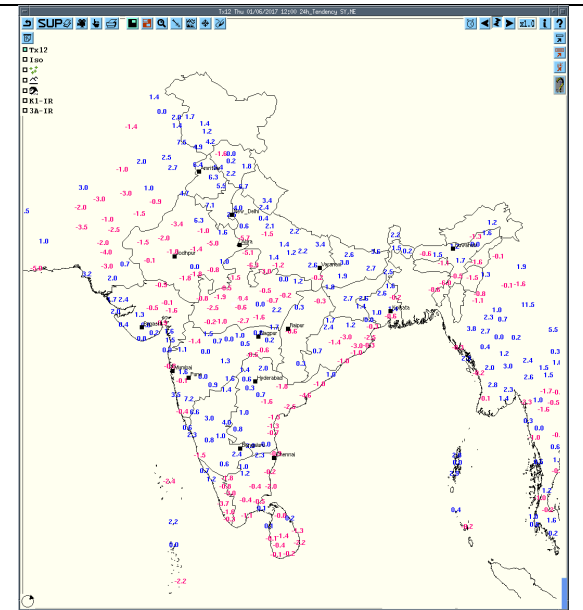
3hourly Past weather at 06,09,12,15,18,21UTC of yesterday and 00 & 03 hrs UTC of today



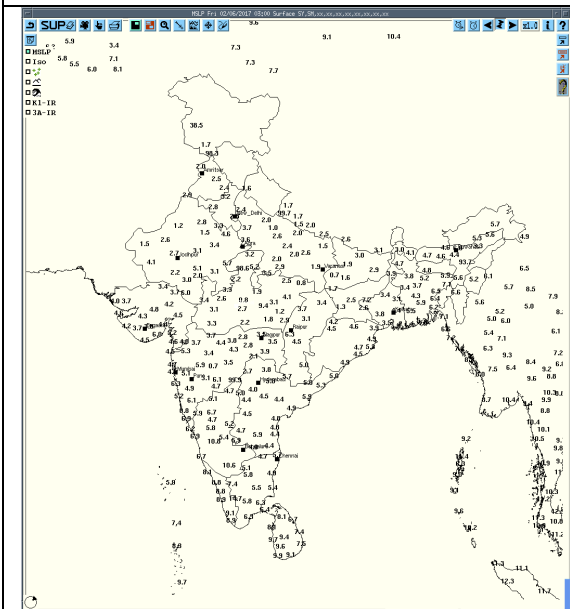
Tmax



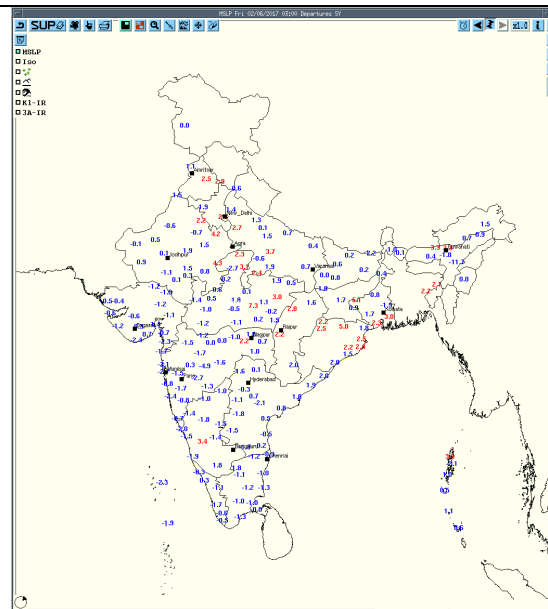
Departure Tmax



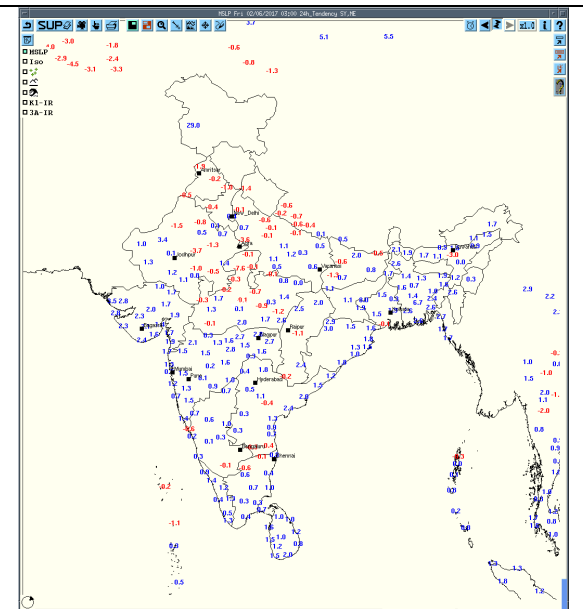
Tendency Tmax



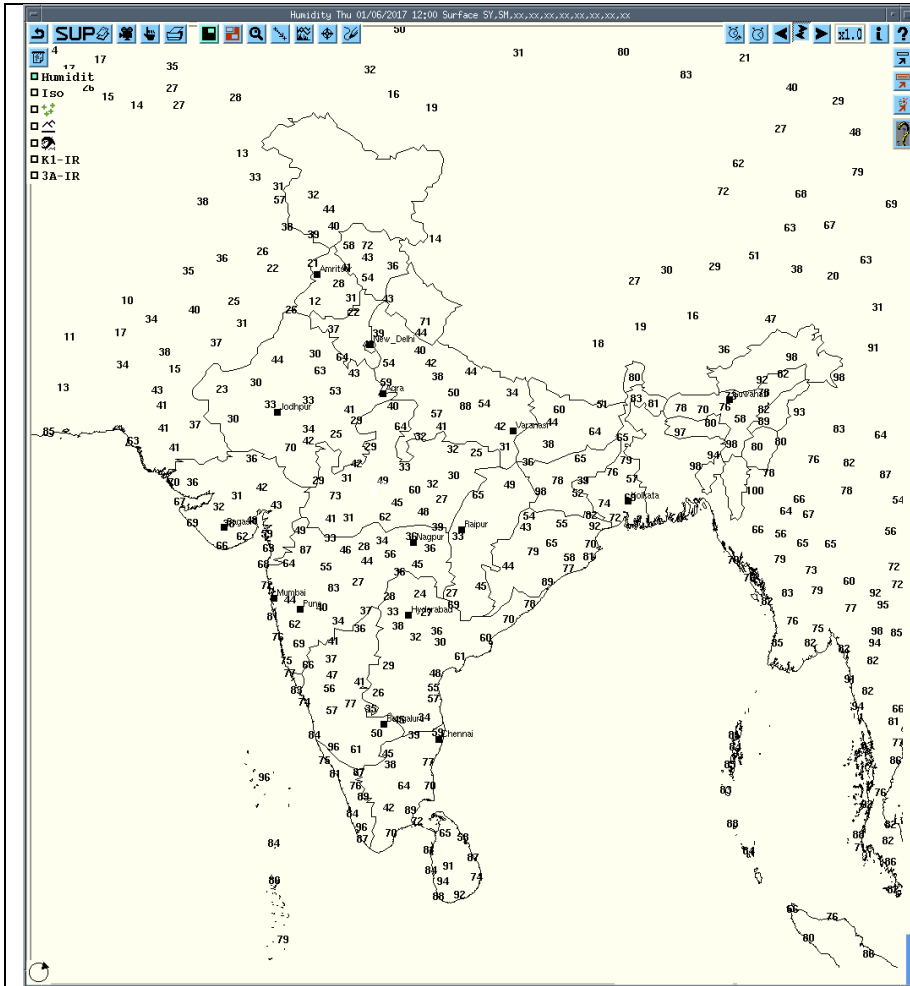
MSLP



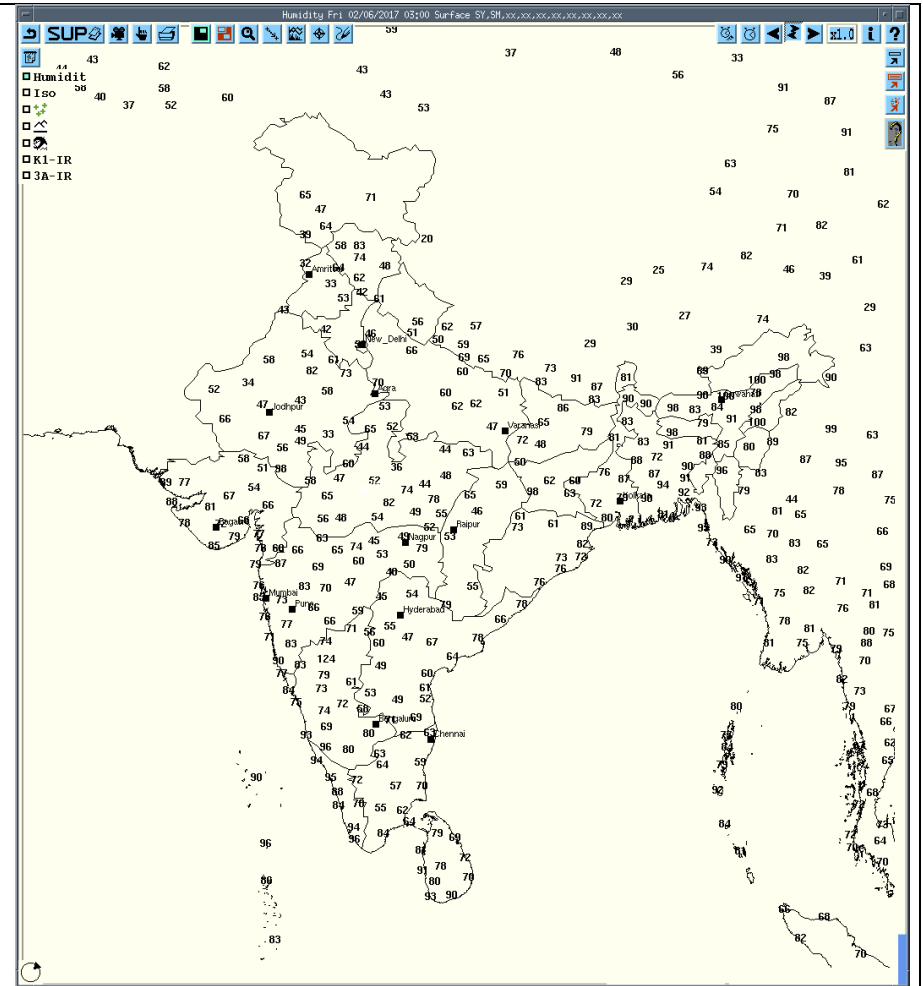
Departure MSLP



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
01-06-17	0600UTC	Agartala, Kailasahar	NE India	Tripura	Thunderstorm
01-06-17	0900UTC	Silchar,	NE India	Assam	Thunderstorm
		Ambikapur, Pendra Road	Central India	Chhattisgarh	Thunderstorm
		Gondia, Nagpur	Central India	Vidarbha	Thunderstorm
01-06-17 01-06-17	1200UTC	Batote	NW India	J & K	Thunderstorm
		Tehri, Mukteshwar	NW India	Uttarakhand	Thunderstorm
		Fursatganj	NW India	J & K	Thunderstorm
		Coochbehar, Malda	East India	West Bengal(SHWB)	Thunderstorm
		Shanti Niketan, Panagarh	East India	West Bengal	Thunderstorm
		Jharsuguda, Sambalpur, Balasore	East India	Odisha	Thunderstorm
		Pune	West India	Maharashtra	Thunderstorm
		Thiruchirapalli	South India	Tamilnadu	Thunderstorm
01-06-17	1500UTC	Rajkot	West India	Gujarat	Thunderstorm/Hail
		Baroda	West India	Gujarat	Thunderstorm
		Akola	Central India	Vidarbha	Lightening
		Jharsuguda, Bhubaneswar	East India	Odisha	Lightening
		Kolkata AP	East India	West Bengal	Lightening
		Malda	East India	West Bengal(SHWB)	Lightening
01-06-17	1800UTC	Rajkot	West India	Gujarat	Lightening
		Pune	West India	Maharashtra	Thunderstorm
01-06-17	2100UTC	Akola	Central India	Vidarbha	Thunderstorm
		Raipur	Central India	Chhattisgarh	Thunderstorm
02-06-17	0000UTC	Nil	Nil	Nil	Nil
02-06-17	0300UTC	Minicoy	South India	Minicoy Island	Thunderstorm

Past 24 hours DWR Report:

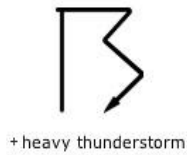
Radars Station Name	Date	Time Interval Of Observation (UTC)	Organisation Of The Cells(Isolated Single Cells/ Multiple Cells/ Convective Regions/ Squall Lines) With Height Of 20 dbZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associate d severe weather if any	Districts affected
Patna	02/06/2017	010300 - 010840	NIL	NIL	N/A	N/A	N/A
		010840 - 011200	Multi Cell. Maximum Reflectivity : 52 dBZ Echo Top : 14.0 KM	Range: 090 KM from DWR Patna in ESE direction. Movement-SE	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	Begusarai, Seikhpura, Munger, Lakhisarai, Khagaria, Bhagalpur & Banka
		020020 - 020300	Single Cell. Maximum Reflectivity : 45 dBZ Echo Top : 09.3 KM	Range: 135 KM from DWR Patna in NNE direction. Movement-SE	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	Sitamarhi & Madhubani
Jaipur	02/06/17	0402-0602 UTC	Multiple cells with average height of 6 km & maximum reflectivity 44.0 dBZ	Cell develop 0402 to 0802 UTC of 01/06/2017 towards NW,W,SW of jaipur and moved to E Wards at speed 25 -30 km/hr	Cells starts forming from 0402 UTC of 02/06/2017 AT NW,W,SW of Jaipur and reaches maximum refelectivity during 0402-0422 UTC and died down 0602 utc.	Thunderstorm/rain at isolated	Jaipur, Nagaur, Ajmer, Tonk

Radars 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
Karaikal	01.06.17	1) 1212-1822 IST 2)1252-2242IST	1)Cluster of individual cells at NW direction at 120-220 km range with max reflectivity of 50dBz and average height of 10 kms 2.cluster of cells in WSW direction (100-250KM) with max reflectivity of 55dBz and Average height of 10KM	1. In NW direction almost stationary 2.moved to NW direction	1) Cells started forming at 1212 and dissipated at 1822IST 2) Cells started forming at 1252IST and dissipated at 2242IST.	N/A	N/A
	02.06.17	Nil	NI	Nil	Nil	Nil	Nil
Patiala	02-06-17	01JUNE 0300 UTC- TO 0600 UTC	No Significant Echo	-----	-----	-----	-----
		01JUNE 0600 UTC- TO 0900 UTC	No Significant Echo	-----	-----	-----	-----
		01JUNE 0900 UTC- TO 1200 UTC	Isolated Cells Max. 53.5dBZ Ht. 8-9 Km	NE sector. movement SE wards		-----	Mussorie and adjoining areas
		01JUNE 1200 UTC TO 1500 UTC	Isolated Cells Max. 51. dBZ Ht. 7-8 Km	NE sector. movement SE wards	-----		Mussorie and adjoining areas
		02JUNE 0000 UTC- TO 0300 UTC	No Significant Echo	----- ---	-----	-----	-----

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Paradeep	1/06/17	0300-2330 UTC	Isolated single cells seen in the Western and later in NW sector of the RADAR between 250-280 and 350-20 degrees respectively and with av. Reflectivity value of 45 dBZ and heights exceeding 14 km. cells later transform into convective regions having low reflectivity values.	Position: Western and Northern sector of radar at a distance of 220 km approx. Movement: Westerly to NWly	NIL	TS with rain	Keonjhar, Deogarh, Bhadrak, Jajpur, Dhenkanal, Angul, Kandhamal, Ganjam, and Nayagarh.
Agartala	02/06/17	010306 - 011302	Multiple cells continued over Tripura with Maximum Height 14 km at 0402UTC and maximum reflectivity 34.50 dBZ at 0442UTC	Persist in direction W to N & SE Tripura extended from DWR Station upto 200km NE	Cell persists.	N/A	N/A
		011752 - 012312	Multiple Cells formed in W to S and SE direction spread between 50 to 200 km from DWR station. Maximum ht of cell 14.0km at 1752 UTC .Reflectivity 29.50 dBZ.	Multiple Cells formed in W to S and SE direction spread between 50 to 200 km from	Dissipating at 2312 towards E.	N/A	N/A
		022224 - 020302	Multiple cells formed with Maximum Height 14 km at 2224 UTC and maximum reflectivity 24.31 dBZ.	Moving towards East	Cell persists.	N/A	N/A



+ thunderstorm



+ heavy thunderstorm



sandstorm or dust storm



squall



hail shower



tropical storm



+ tornado



+ lightning



+ hurricane

www.visualdictionaryonline.com

∞	haze
pw	smoke
⚡	dust or sand storm
☁	fog
⚡	drizzle
•	rain
❄	snow
▽	showers
△	hail
⚡	thunderstorm
Weather Symbols	