India Meteorological Department

FDP STORM Bulletin No. 38 (12-04-2017)

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

SYNOPTIC FEATURES:

The upper air cyclonic circulation over south Konkan & Goa and neighbourhood, now lies over south Madhya Maharashtra & adjoining North Interior Karnataka and extends upto 0.9 km above mean sea level. A trough runs from the above cyclonic circulation over south Madhya Maharashtra and adjoining North Interior Karnataka to south Tamilnadu and extends upto 0.9 km above mean sea level.

An upper air cyclonic circulation lies over northern parts of West Bengal and neighbourhood and extends upto 0.9 km above mean sea level. A trough runs from this system to south interior Odisha and extends upto 0.9 km above mean sea level.

The upper air cyclonic circulation over south Andaman sea and adjoining southeast Bay of Bengal, now seen as a trough of low lies over Andaman & Nicobar Islands & neighbourhood with an embedded upper air circulation over Andaman Sea and adjoining southeast Bay of Bengal and extends upto 3.1 km above mean sea level. It is very likely to become a low pressure area during next 48 hours and well marked during subsequent 24 hours.

The upper air cyclonic circulation over east Assam & neighbourhood extending upto 0.9 km above mean sea level has become less marked. A feeble Western Disturbance as an upper air cyclonic circulation lies over northeast Afghanistan and adjoining north Pakistan and extends upto 3.1 Km above mean sea level.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Convective Activity:

SCT LOW/MED CLOUDS WITH EMBDD MOD TO INT CONVTN OVER COMORIN SRILANKA GULF OF MANNAR SUMATRA S MALAY PENINSULA STR OF MALACCA N VIETNAM BORNEO S CHINA SEA S OF LAT 5.0N JAVA SEA CELEBES ILS N MOZAMBIQUE CHANNEL MADAGASCAR AND OVER INDIAN OCEAN BET LAT 5.0N TO 10.0S EAST OF LONG 80.0E (.)

Arabian Sea:

NO SIG CLOUD OVER THE REGION (.)

Bay of Bengal & Andaman Sea:

SCT LOW/MED CLOUDS WITH EMBDD MOD TO INT CONVTN OVER S BAY AND SOUTH ANDAMAN SEA (.)

Convection:

Light to moderate convection was observed over Arunachal Pradesh and South India.

OLR:- Up to 230 wm-2 was over J&K, North Himachal Pradesh Extreme North Uttarakhand Sikkim Arunachal Pradesh South Interior Karnataka, South Kerala and North West Tamilnadu.

Jet Stream:

No Jet stream and trough observed over India.

Dynamic Features:

Positive shear tendency observed over India .

Low wind shear observed over south and moderate wind shear observed over North India and weak to moderate wind shear observed over central India .
A positive Vorticity field is seen over Uttarakhand, Uttar Pradesh, Bihar, West Bengal and Coastal Karnataka.
Positive Low Level Convergence observed over South Kerala, South Tamilnadu, Central Madhya Pradesh and Negative low level convergence observed over rest India.

Precipitation:

IMR: Rainfall upto 20mm was observed over South South Interior Karnataka. Rainfall upto 10mm was observed over East J&K, West North Interior Karnataka South Kerala and South Tamilnadu,.
HEM:. Rainfall upto 14mm was observed over South Interior Karnataka and South Kerala. Rainfall Upto 7mm was observed over Extreme South Andhra Pradesh and North West Tamilnadu.

RADAR and RAPID observation:

Strong multiple echoes (dbZ >50, height >10km) are not seen in any radar domain at 1650 IST.
RAPID RGB Imagery of 1600 hrs IST indicates convective clouds over Coastal Karnataka and adjoining Kerala.

.

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

No significant dust concentration observed over Arabian Peninsula and west Rajasthan. Dust concentration is expected to increase over north-west India for next three days.

2. NWP MODEL GUIDANCE:

NCMRWF (NCUM Forecasts based on 12 UTC of yesterday):-

1. Weather Systems:

12UTC Charts on all days from Day0-4 show trough in MSLP over J & K extending NW-SE.
12UTC charts on all days from Day0-4 show wind discontinuity at 925 hPa over two regions:(i) SW-NE extending from northern Karnataka-Telangana region to Odisha-WB region. (ii)S-N extending from southern parts of TN to northern parts of Karnataka-Telangana region.
CYCIR formatioin over BoB in Day 0 getting intensified as day progresses moving NE wards **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:

At 12UTC on Day-1 to Day-4: High values along the western ghats in Karnataka, Maharashtra and Kerala
Day3-4: Parts of Odisha and WB along with adjoining Jharkhand and Chattisgarh.

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

At 12UTC : Scattered isolated values in Day-0 to Day-2. In Day-3 and 4 enhanced magnitude over some isolatred regions of WB, Kerala and TN. High Cyclonic vorticity over BoB due to developing system

5. Showalter Index: -3 to -4[Very unstable]:

At 12UTC: Prominent over large west coast of Karnataka,Kerala some parts of Arunachal, Nagaland and Uttarakhand in Day-0 to Day-2. During Day-3 and Day-4 high magnitude over WB, Bihar, Bangladesh and adjoining Assam.

6. K-Index :> 35[Very Unstable thunderstorm likely]:

At 12UTC: Prominent over large west coast of Karnataka,Kerala some parts of Arunachal, Nagaland and Uttarakhand in Day-0 to Day-2. During Day-3 and Day-4 high magnitude over WB, Bihar, Bangladesh and adjoining Assam.
Additionally moderate values of index are prominient over large parts of BoB associated with system.

7. Spatial distribution of TTI: TTI >50 [Scattered Thunderstorms few severe] :

At 12UTC : High values over coast of Karnataka Kerala and parts of Tamilnadu, coastal AP and Odisha and Uttarakhand and Arunachal in Day0- Day-1. In Day-2, enhanced magnitude over J & K region
Day-3: Enhanced values of TTI over J & K, Himachal and Uttarakhand, fresh development over coastal Maharashtra
Day-3&4: Increased values over coast of Maharashtra and Karnataka, parts of Bihar, WB and NE states

8. Rainfall and thunder storm activity:

Rainfall > 2 cm/day: Day-1&2 over some parts of Kerala, Karnataka and Tamilnadu
Day-3 over western part of Assam and some parts of adjoining Meghalaya and Arunachal Pradesh.
Rainfall >4cm/day in Day-3 over Assam Meghalaya and Arunachal.

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

1. Weather Systems:

00 UTC analysis shows a low level CYCIR over south of Marathwada and adjoining north Karnataka region and this CYCIR will persist for the next 2-3 days.
Analysis also shows a north-south oriented low level trough along the east coast of India starting from Gangetic West Bengal (GWB) to coastal Orissa and this trough will persist for the next 3-4 days.

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

(>60kt): No presence of jet core at this level over the Indian region for the next 5 days..

3. Low level Vorticity:-Positive Vorticity (>15 x 10^{-5}/s):

Analysis shows low level positive vorticity (>12 x 10-5/s) mainly over the foothills of Himalaya and isolated pockets of GWB and NE states.
Forecast shows vorticity core zones mainly along the foothills of Himalaya and isolated pockets of GWB and NE states,interior parts of Karnataka and few pockets along the east coast bordering Odisha and SHWB along with few regions of the north eastern states for the next 5 days.

4. T-Storm Initiation Index (> 4):

Significant threshold values are noticed over GWB, along the east of India, Odisha and few pockets in AP and along the west coast of India. Forecast shows significant threshold values over AP, GWB, and eastern coast for the next 4/5 days.

5. Lifted Index (< -2):

The areas with index less than -2 lies along east coast regions, GWB, Odisha, coastal AP, and adjoining areas and along the Kerala coast with gradually the LI areas with less than -2 mainly extended towards south-eastern coastal regions.

6. Sweat Index (> 400):

00UTC shows significant values over major parts along with the east coast extending up to coastal TN and also over few isolated pockets in the NE states. The significant zones are confined along east coast of India over GWB, Odisha, Bangladesh and adjoining regions and high value of SI observed over GWB and NE region for next 5 days and also over few pockets in the south west region.

7. Total Total Index (> 50):

Analysis shows significant values over few pockets in Rajasthan Gujarat ,MP and adjoining areas. Above threshold value in most regions of central and western India and adjoining northern parts of India along with areas bordering north west India from day 1 to day 5 particularly at 12 UTC of each day.

8. CAPE (> 1000):

Mostly along east coast of India over GWB, Odisha and adjoining regions along with parts in south peninsular region and coastal Kerala and Karnataka during the next 5 days.

9. CIN (50-150):

Maximum CIN values are found in some areas of GWB and along east coast over Odisha, coastal AP and Tamil Nadu and also over Bihar, Jharkhand and adjoining areas

10. Rainfall and thunder storm activity:

10-40 mm rainfall is forecasted tomorrow over isolated pockets in the NE states particularly over Arunachal pradesh and Kerala regions. Isolated light to moderate rainfall activity over pockets of NE states and Kerala will continue for the next 2-3 days.

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

NOT RECEIVED

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

In association with the trough that runs from south Madhya Maharashtra to south Tamilnadu, thunderstorm activity accompanied by gusty winds is expected over Karnataka and Kerala on day 1. The trough is likely to persist on day 2, and associated thunderstorm activity is likely to persist over the same region.

In association with upper air cyclonic circulation over northern parts of West Bengal and neighbourhood, there is a southerly wind flow in the lower levels into North-east India. This is likely to result in thunderstorm activity accompanied by gusty winds over Tripura, Meghalaya and adjoining South Assam on day 1. The cyclonic circulation is likely to move eastwards on day 2. The associated thunderstorm activity accompanied by squall and hail on day 2 is likely over Meghalaya, Manipur, Nagaland and adjoining Assam.

In association with the upper air cyclonic circulation over south Andaman sea and adjoining southeast Bay of Bengal, thunderstorm activity is likely over Andaman and Nicobar islands. The rainfall is likely to intensify over Nicobar Islands on day 2.

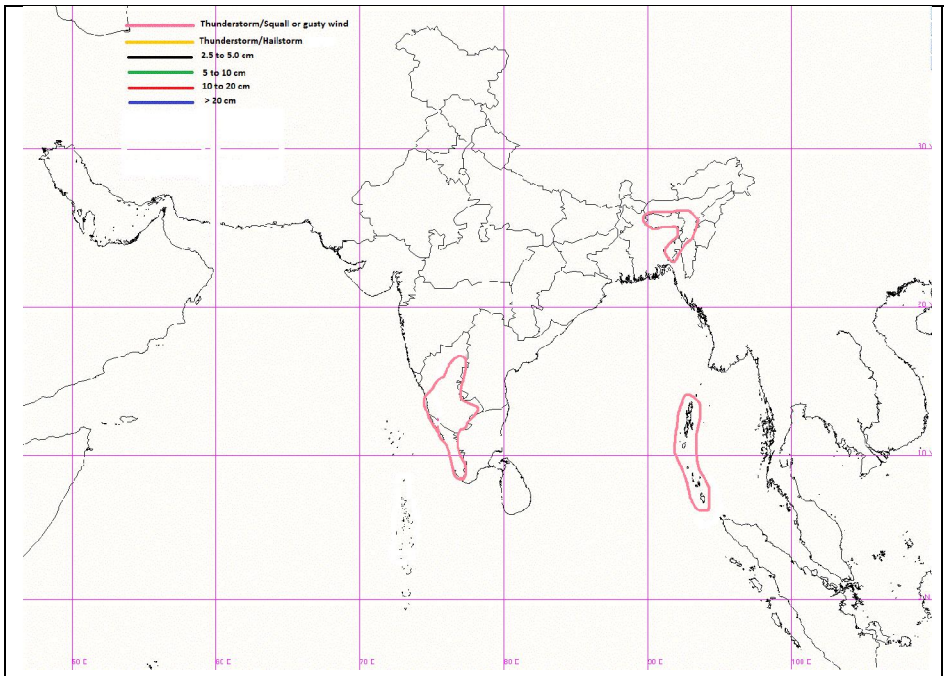
Day 1 & Day 2:

24 hour Advisory for IOP:

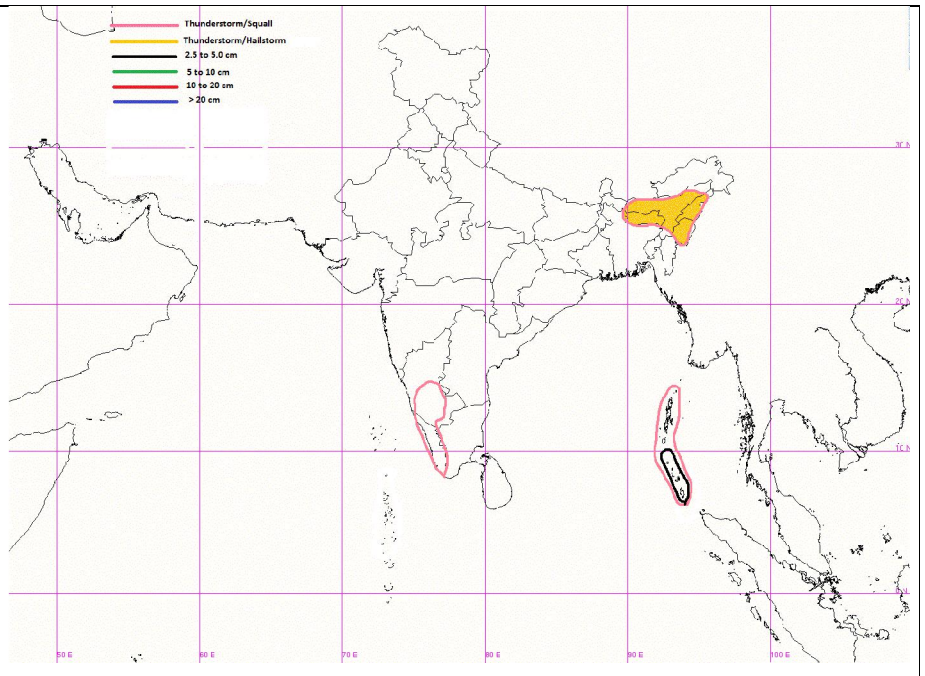
Andaman and Nicobar Islands
Kerala and South Interior Karnataka
South Assam, Meghalaya and Tripura

48 hour Advisory for IOP:
Andaman and Nicobar Islands
Assam, Meghalaya, Nagaland, Manipur
Interior Karnataka and Kerala

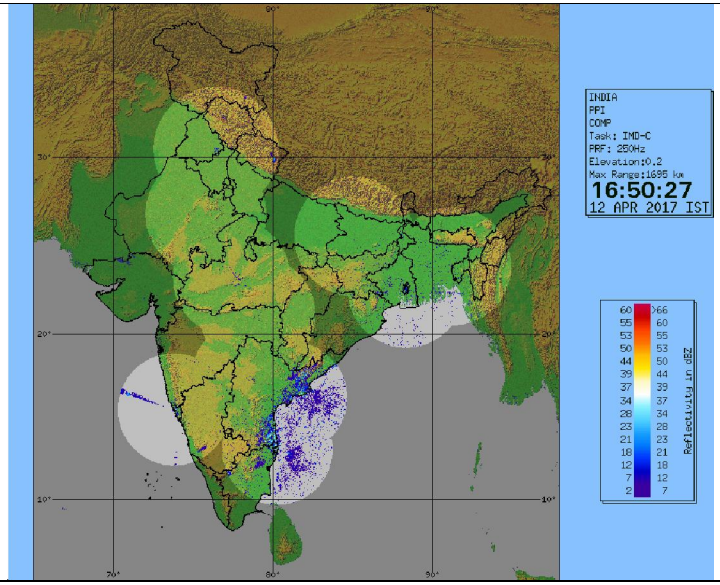
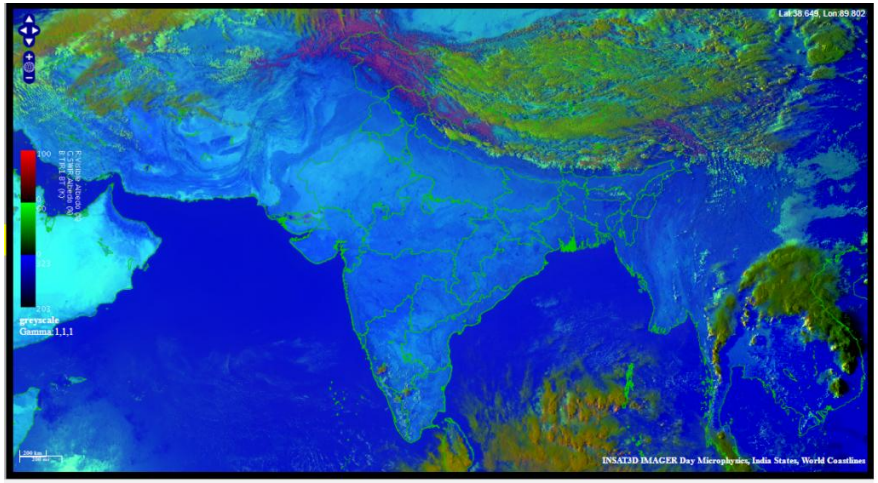
ForNCMRWFNWPproducts:(http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php)
ForIMDNWPproducts:(http://nwp.imd.gov.in/diagpro_new.php)
ForSynopticplotteddataandcharts
http://amssdelhi.gov.in/
http://www.amsskolkata.gov.in/
ForRAPIDtool:
http://rapid.imd.gov.in/
LowLevelWinds
http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/LLW/MAR_2017/?C=M;O=D
Upperlevelwinds
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-Phi gram
http://satellite.imd.gov.in/map_skm2.html

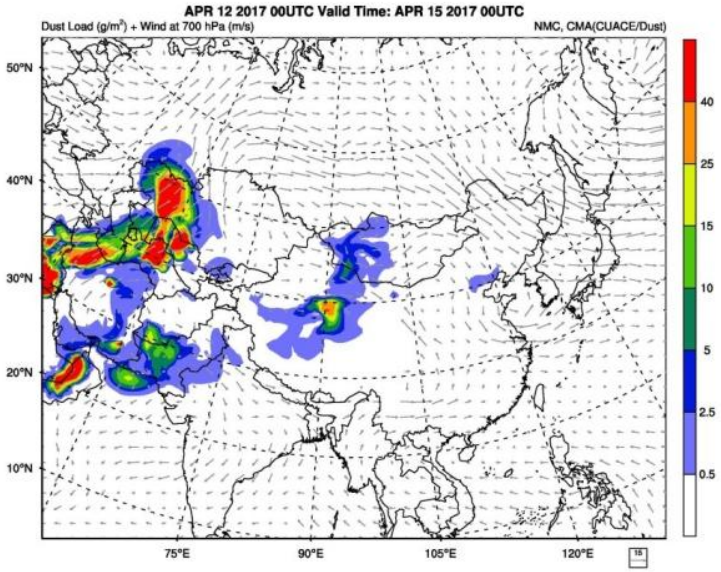


IOP Advisory for 24 hours

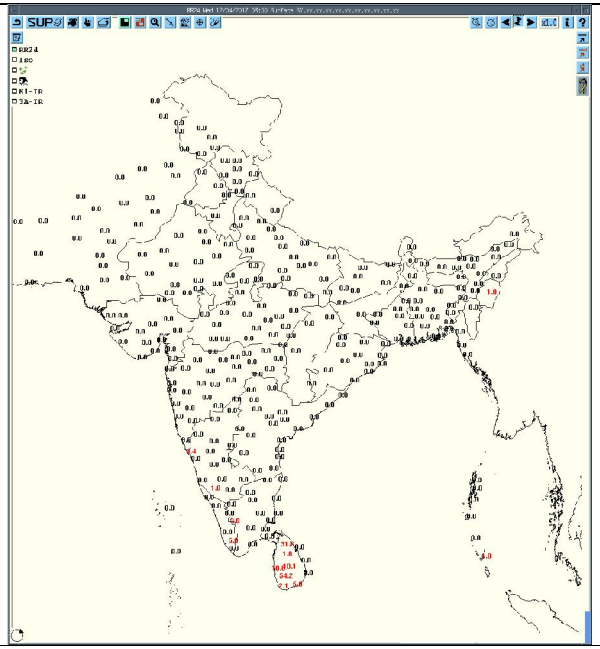


IOP Advisory for 48 hours

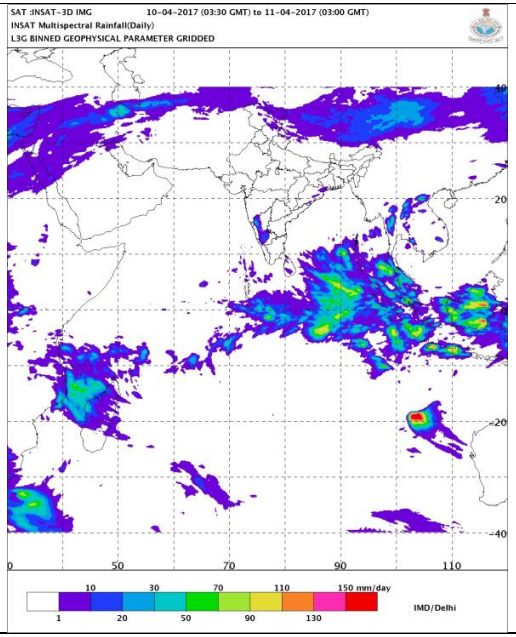
	
Composite Image at 1650 hrs IST	**RAPID RGB Image of INSAT 3D at 1600 hrs IST**



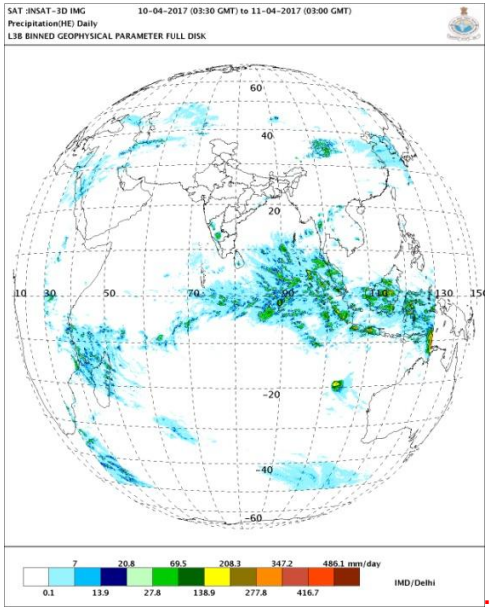
Forecast Dust Concentration for 00 UTC of 12 April



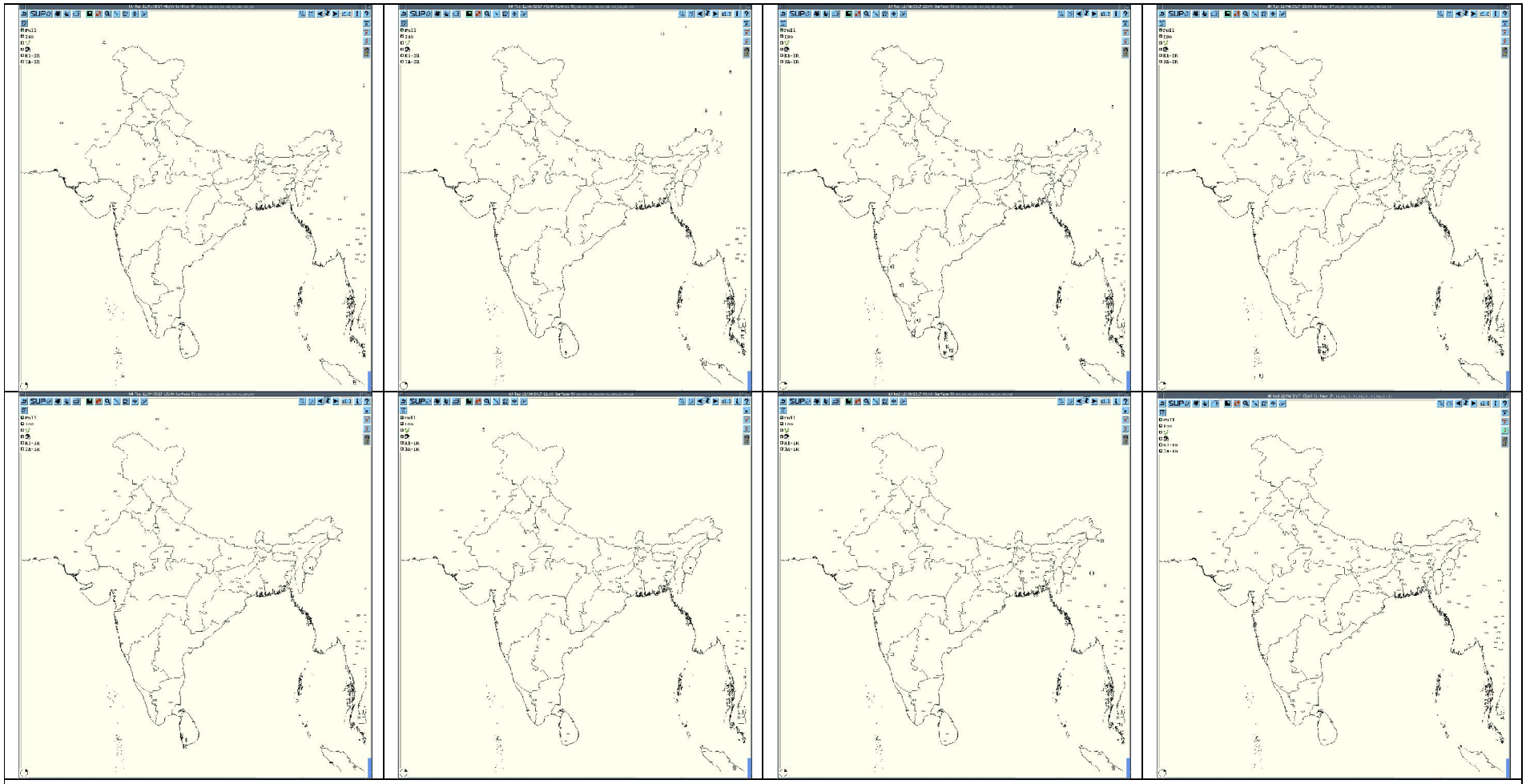
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



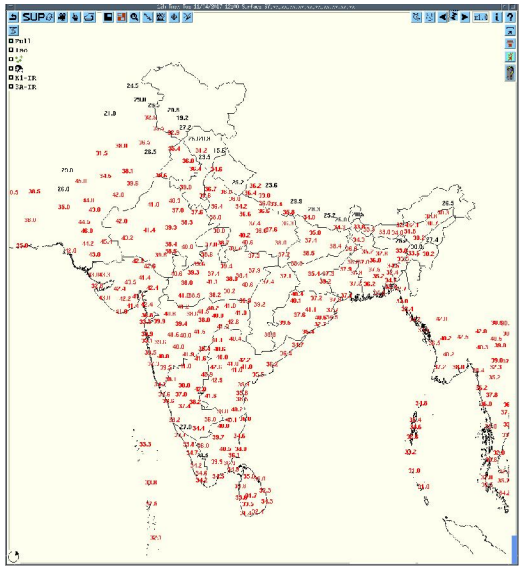
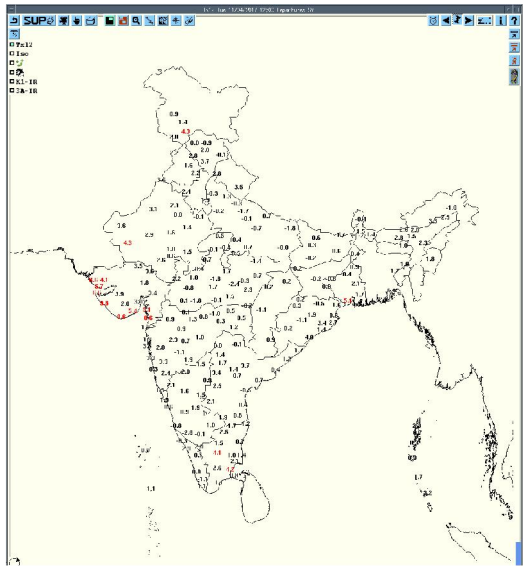
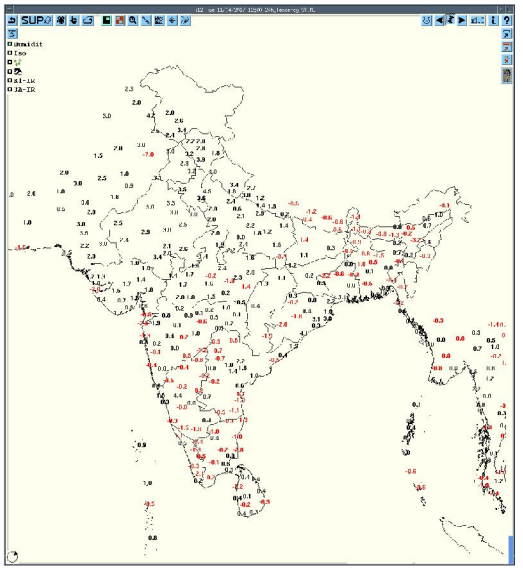
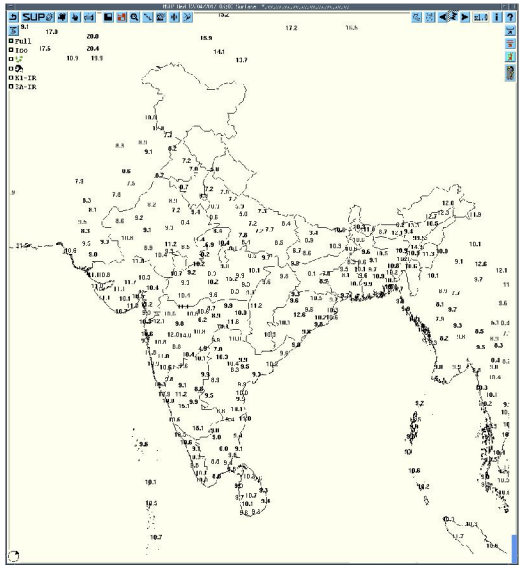
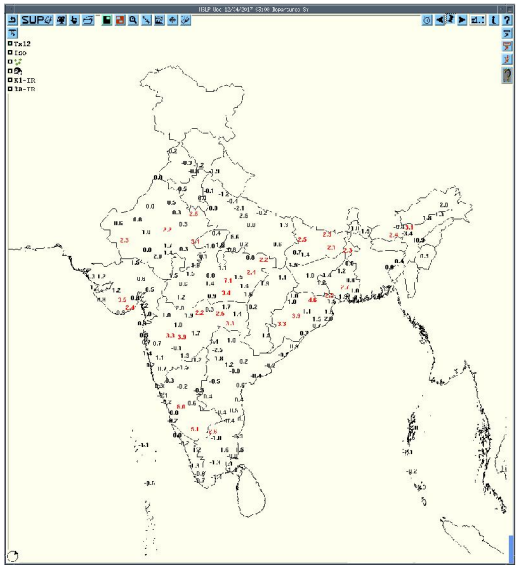
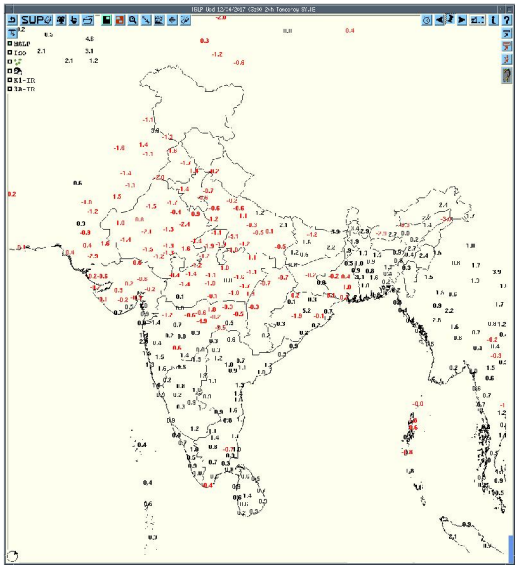
IMR Rainfall

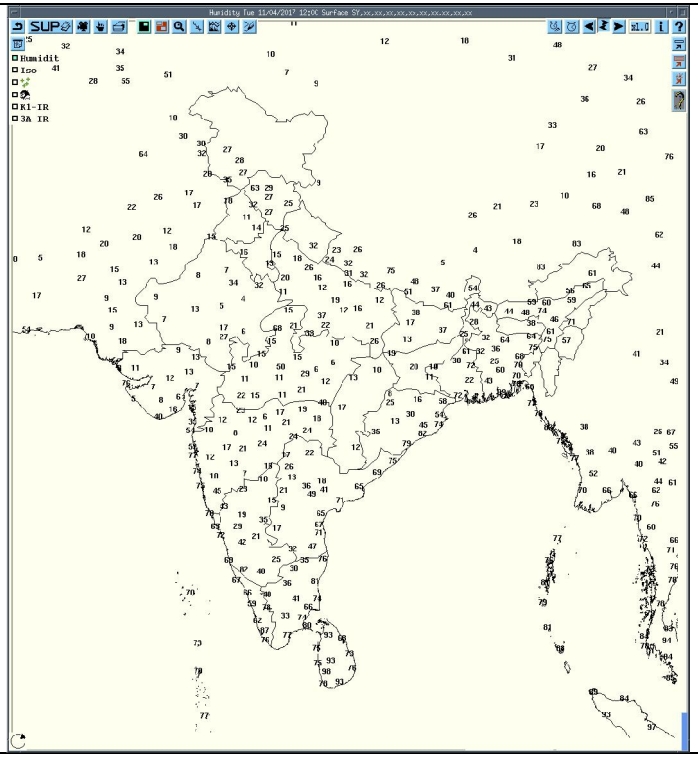


HEM Rainfall

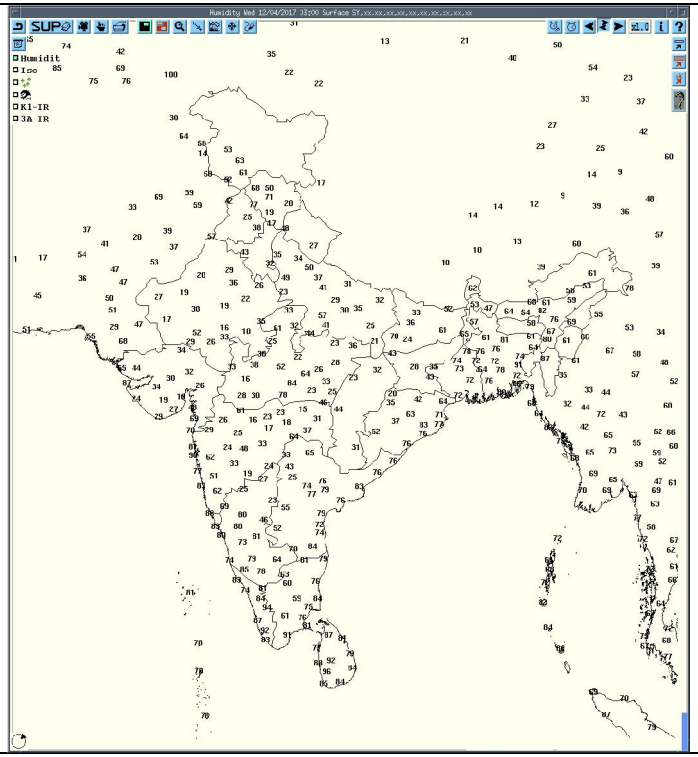


3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today

		
Tmax	**Departure Tmax**	**Tendency Tmax**
		
MSLP	**Departure MSLP**	**Tendency MSLP**



RH at 12UTC yesterday



RH at 03UTC today

Realized weather past 24 hours (based on SYNERGIE data)					
Date	**Time of Reporting**	**Name of Station Reporting**	**Region**	**STATE**	**Weather Event**
11-04-2017	1200UTC	Belgaum,Shimoga,Bajpe,Chamrajnagar	South India	Karnataka	Thunderstorm
		Thiruvananthapuram,Alapuza, Punalur	South India	Kerala	Thunderstorm

Past 24 hours DWR Report:

Machilipatnam

Radar Station name DWR Machilipatnam	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
	03Z of 11/04/17 to 03Z of 12/04/17	NIL	NIL	NIL	NIL	NIL	NIL

KOLKATA

Radar Station Name		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
DWR KOLKATA	11-04-2017	0311-1321 UTC	NIL	NIL	NO ECHO	NIL	NIL
	11-04-2017	1331-2351 UTC	NIL	NIL	NO ECHO	NIL	NIL
	12-04-2017	0001-0301 UTC	NIL	NIL	NO ECHO	NIL	NIL

PATNA

Radar 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	Associated severe weather if any	Districts affected
PATNA	12/04/2017	110300 - 120300	NIL	NIL	N/A	N/A	N/A

AGARTALA

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**
AGARTALA	12/04/17	111530 – 111910	Multiple Cells with Maximum Height **11 km** and maximum reflectivity **43 dBZ** (at 1700 UTC over South Assam)	Formed NE (110 KM) from DWR Agartala, at 1530 UTC moved Eastwards at around 35 kmph	Celldissipated at 1910 UTC of 11.04.17 over South Assam & Manipur	N/A	N/A
		111650 - 112020	Single Cell with Maximum Height **10 km** and maximum reflectivity **40dBZ** (at 1920 UTC over Khowai District of	Formed WNW(40 KM) from DWR Agartala, at 1650 UTC moved ENE-wards at around 20 kmph	Celldissipated at 2020 UTC of 11.04.17 over Dhalai District of Tripura	N/A	N/A

			Tripura)				

Paradeep

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
DWR Paradeep	11/04/17	0300-1800 UTC	Convective regions having max. reflectivity of 25dBZ and av. Heights not exceeding 5.5 kms.	Position: 150-240 degrees in the range of 80-200 kms.	NIL	NIL	NIL

VISAKHAPATNAM

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**
DWRVSK	11/04/17	0600 UTC-0900 UTC	Isolated single cell with average height of 7km with maximum reflectivity of 56 dBZ	S(225KM) moving sly	Cell start forming at 0601UTC at S (225 KM) from radar and start dissipating from 0611UTC.	-	-
DWRVSK	11/04/17	0900 UTC-1200 UTC	Isolated single Cels are formed in south westerly with maximum reflectivity	SW(110 Km) moving sly	Cells with maximum reflectivity 45DBZ at 11.11 and start dying from 11:31UTC.	-	-

			45dBZ with average height 10kms .				
DWRVSK	11/04/17	1200 UTC-1500 UTC	Isolated single Cels are seen in NE with maximum reflectivity 54dBZ with average height 06kms .	NE(165 Km) moving NEly	-	-	-
DWRVSK	11/04/17	1500 UTC-1800 UTC	Multiple Cells are seen in NE &SW with maximum reflectivity 54dBZ with average height 05kms .	NE(140 to 220 Km) moving NEly	-	-	-
DWRVSK	11/04/17	1800 UTC-0000 UTC	Multiple Cells are seen in SW &NE with maximum reflectivity 52dBZ with average height 06kms .	SW(46 to 220 Km from Radar) moving NWy	Cells are forming and dissipating quickly.	-	-

Lucknow

DWR Station	Date	Time interval of observation	Organization of the cells(isolated single cell/multiple cellsconvective regions/squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station & direction of movement	Remarks	Associated severe weather, if any	Districts affected
MC Lucknow	12/04/2017	110300 UTC TO 120300UTC	NIL	NIL	NIL	NIL	NIL

NAGPUR

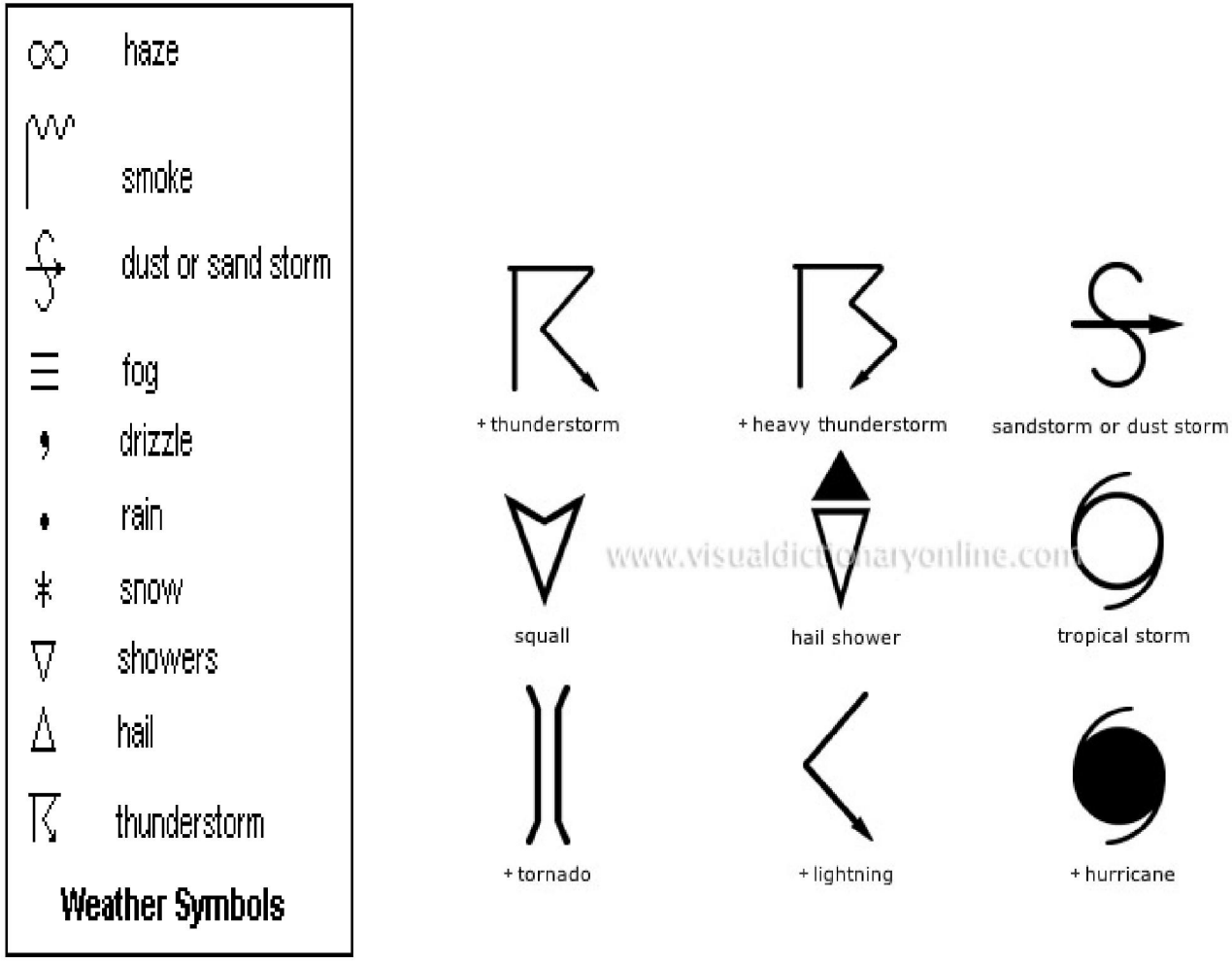
Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
NAGPUR	11/04/17	0722-1052	**Single**	**33 km NEE,moving NEE**	**< 7 dBZ**	**Nil**	**Nil**
		1252	**Single**	**125 km NWW**	**20 dBZ**		
		1342-1702	**Single**	**20 km E, moving SEE'ly**	**< 7 dBZ**		
			Second single cell	**124 km NEE**	**< 7 dBZ**		
	12/14/17	0002-0302	**Nil**	**Nil**	**No Echoes**	**Nil**	**Nil**

PATIALA

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
PATIALA (42101)	12/04/2017	11 April 0302 to 12 April 0252 UTC	Nil	Nil	No Echoes	Nil	Nil

JAIPUR

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
MC JAIPUR	12/04/17	0300	NIL	--	-	-	-


haze
smoke
dust or sand storm
fog
drizzle
rain
snow
showers
hail
thunderstorm
Weather Symbols
+ thunderstorm
+ heavy thunderstorm
sandstorm or dust storm
squall
hail shower
tropical storm
+ tornado
+ lightning
+ hurricane