



**India Meteorological Department**  
**FDP STORM Bulletin No.92 (05-06-2017)**

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

The Northern Limit of Monsoon continues to pass 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 upper air cyclonic circulation over west-central Arabian sea & neighbourhood persists and now extends upto 5.8 km above mean sea level.

The upper air cyclonic circulation over west-central Bay of Bengal & neighbourhood, now lies off north Andhra Pradesh coast and extends between 3.1 & 3.6 Km above mean sea level.

The trough at mean sea level from northwest Uttar Pradesh to south Bangladesh, now runs from northwest Uttar Pradesh to Gangetic West Bengal across East Uttar Pradesh, southwest Bihar & Jharkhand and extends upto 0.9 km above mean sea level.

An upper air cyclonic circulation lies over East Uttar Pradesh & neighbourhood and extends upto 1.5 km above mean sea level.

An upper air cyclonic circulation lies over eastern parts of Assam & Meghalaya and neighbourhood, and extends upto 0.9 km above mean sea level.

The western disturbance as a trough in mid-tropospheric westerlies with its axis at 3.1 km above mean sea level, now runs roughly along Longitude 62.0°E and north of latitude 30.0°N.

**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	05/0000	S Chhattisgarh	80		Developing
	0100	Do	75		
	0200	S Chhattisgarh adjoining Vidarbha	64		
	0300	Do	59		
	0400	S Vidarbha adjoining Chhattisgarh adjoining Telangana	65		
	0500	Do	61		
	0600	S Vidarbha adjoining Telangana	79		
	0700	Do	83		
	0800	Do	75		

2	05/0000	Coastal Odisha Coastal Gangetic West Bengal & NW Bay	89		Developing	
	0100	Do	74			
	0200	Do	74			
	0300	Do	72			
	0400	Coastal Odisha & NW Bay	70			
	0500	Do	63			
	0600	Do	64			
	0700	Do	56			
	0800	S Odisha adjoining Chhattisgarh	75			
3	05/0100	NE Bihar	80		Developing	
	0200	Do	86			
	0300	Do	89			
	0400	E & NW Bihar	82			
	0500	Bihar adjoining Jharkhand adjoining N Gangetic West Bengal	75			
	0600	NE Jharkhand adjoining Bihar adjoining GWB	84			
	0700	Do	84			
	0800	Do	80			
4	05/0300	NE Uttar Pradesh	76		Developing	
	0400	NE Uttar Pradesh	65			
	0500	Adjoining Bihar	54			Merged With Cellno.3.
		W Bihar adjoining Uttar Pradesh				
5	05/0300	C Madhya Pradesh	65		Developing	
	0400	Do	64			
	0500	Do	55			
	0600	Do	42			
	0700	Do	--			Dissipating
				Dissipated		

**Low Level Circulation (LLC):**

Scattered low/medium clouds with embedded intense to very intense convection over WC Arabian Sea in association with low level circulation over the area.

**Western Disturbance (WD):**

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

**Cloud Description:**

Broken low /medium clouds with embedded intense to very intense convection were seen over NE Jharkhand C Gangetic West Bengal, Bangladesh, C & S Odisha and adjoining Chhattisgarh. Scattered low /medium clouds with embedded intense to very intense convection

were seen over Vidarbha adjoining Madhya Pradesh. Scattered low/medium clouds with embedded moderate to intense convection were seen over Bihar, rest Jharkhand, W Chhattisgarh, Arunachal Pradesh, Kerala and S Coastal Karnataka. Scattered low/medium clouds with embedded isolated moderate to intense convection were seen over C Madhya Pradesh. Scattered low/medium clouds were seen over rest Himachal Pradesh, Uttarakhand, rest Madhya Pradesh, rest Maharashtra and rest parts of East and South 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 moderate to intense convection over EC Bay of Bengal and Andaman Sea.

**Past Weather:**

**Convection:-**

Moderate to Intense convection was observed over Madhya Pradesh Maharashtra Chhattisgarh Odisha East Bihar East Jharkhand West Bengal Karnataka Kerala Tamilnadu Telangana & Andhra Pradesh.

**OLR:-**

Upto **230**  $\text{wm}^{-2}$  was observed over Maharashtra South Chhattisgarh North Interior Karnataka. Upto **250**  $\text{wm}^{-2}$  was observed over South Interior Karnataka Kerala Mizoram Tripura

**Westerly Trough & Jet-Stream:**

No Westerly Trough & No Jet Stream observed over India.

**Dynamic Features:**

Low to Medium wind shear is observed over India.

Negative shear tendency is observed over South Interior Karnataka Kerala Tamilnadu and Positive shear tendency is observed over rest parts of India.

A positive Vorticity field is observed over Uttar Pradesh Bihar West Bengal .

Negative low level convergence is observed over Coastal Maharashtra Goa Coastal Karnataka Kerala Gujarat and Positive low level convergence observed over rest parts of India

**Precipitation:**

**IMR:**

Rainfall Up to **50** mm was observed over North-East Bihar.

Rainfall Up to **20** mm was observed over South Madhya Maharashtra Vidarbha adjoining Chhattisgarh. Rainfall Up to **10** mm was observed over Sub Himalayan West Bengal west Assam Manipur Mizoram Tripura South East Rajasthan South Madhya Pradesh rest Maharashtra Chhattisgarh Coastal Odisha Andhra Pradesh Kerala.

**HEM:.**

Rainfall Up to **70** mm was observed over South Madhya Maharashtra South Vidarbha.

Rainfall Up to **14** mm was observed over North-East Bihar Mizoram Tripura Rayalaseema. Rainfall Up to **07** mm was observed over South East Rajasthan South Madhya Pradesh Chhattisgarh Rest Maharashtra Meghalaya Rest North-East States Andhra Pradesh Karnataka Kerala.

**RADAR and RAPID Observation:**

DWR Composite at 1650hrs IST indicated strong convection over Coastal Andhra Pradesh, Telangana, S Odisha and extreme West Gangetic West Bengal. It also indicated isolated moderate convection over N Tamilnadu, NW Madhya Pradesh and Uttarakhand.

RAPID RGB Satellite imagery at 1600hrs IST indicated significant convective clouds over Madhya Pradesh, Chhattisgarh, Jharkhand, Gangetic West Bengal, South Odisha, Telangana, Vidarbha, Marathawada, Kerala, South Interior Karnataka, Tamilnadu, Lakshadweep & Minicoy 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 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 Northern and eastern part of the country in next five days.

## **2. NWP MODEL GUIDANCE:**

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

#### **1. Weather Systems:**

The analysis based on 00 UTC show a low level trough extends from Uttarakhand to Gangetic West Bengal. Forecasts show that the eastern part of the trough would shift southwards and a CYCIR would develop over north Andhra Pradesh and adjoining Odisha on day4.

#### **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.

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

The high vorticity belts are mainly over regions of Punjab, UP, Jharkhand and Chhattisgarh region..

#### **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):** Mostly over Bihar, along coastal region of Odisha, WB and during next 2 days.

**Lifted Index (< -2):** Less than threshold value mostly over Bihar, along coastal region of Odisha, WB and south peninsula.

**Total Total Index (> 50) :** Above threshold value over the most parts of Gangetic plain during next 12 hours.

**Sweat Index (> 300):** Mostly over Bihar, along coastal region of Odisha, Bihar, Jharkhand, WB and south peninsula during next 2 days.

**CAPE (> 1000):** Mostly over UP, Bihar, Jharkhand, West Bengal and along east coast during next 2 days.

**CIN (50-150):** Mostly along Gangetic plain, eastern parts of country and south peninsula during next 3 days.

#### **5. Rainfall and thunderstorm activity**

10-40 mm rainfall over NE states and along the foot hills of Himalaya during next five days.

10-40 mm rainfall over J&K on day2

10-70 mm rainfall over south peninsula during next five days

10-70 mm rainfall over Gangetic West Bengal and Odisha during day3 to day4

70-130 mm rainfall over Sub-Himalayan West Bengal on day3 and day4

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

**Not Received.**

### **3. IOP ADVISORY FOR 24 and 48Hrs:**

#### **Summary and Conclusions:**

##### **Day-1 & Day-2:**

Presently, the upper air cyclonic circulation over west-central Arabian Sea & neighbourhood persists and now extends upto 5.8 km above mean sea level, this will give rise to isolated heavy rainfall over Kerala and Coastal Karnataka on Day-1 and Day-2.

The trough at mean sea level from northwest Uttar Pradesh to south Bangladesh now runs from northwest Uttar Pradesh to Gangetic West Bengal across East Uttar Pradesh, southwest Bihar & Jharkhand and extends upto 0.9 km above mean sea level.

An upper air cyclonic circulation lies over East Uttar Pradesh & neighbourhood and extends upto 1.5 km above mean sea level, this will give rise to thunderstorm with gusty wind over Bihar, Jharkhand, Orissa, Chhattisgarh on Day-1 and Day-2

##### **24 hour Advisory for IOP:**

Kerala, Lakshadweep, Coastal Karnataka  
Jharkhand, Bihar, GWB, Orissa,  
Telangana, Madhya Maharashtra, Marathwada,  
Vidarbha, Chhattisgarh  
West Assam, Meghalaya, Tripura, Sub Himalayan West Bengal  
Andaman & Nicobar Islands  
Madhya Pradesh, Coastal Andhra Pradesh

##### **48 hour Advisory for IOP:**

Kerala, Lakshadweep, Coastal Karnataka  
Jharkhand, GWB  
J & K, Himachal Pradesh, Uttarakhand, West UP, Punjab, Haryana  
Bihar, Orissa, Vidarbha, Chhattisgarh

For NCMRWF NWP products:(<http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php>)

For IMD NWP products:([http://nwp.imd.gov.in/diagpro\\_new.php](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](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](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](http://satellite.imd.gov.in/img/3Ddaily_imr.jpg)

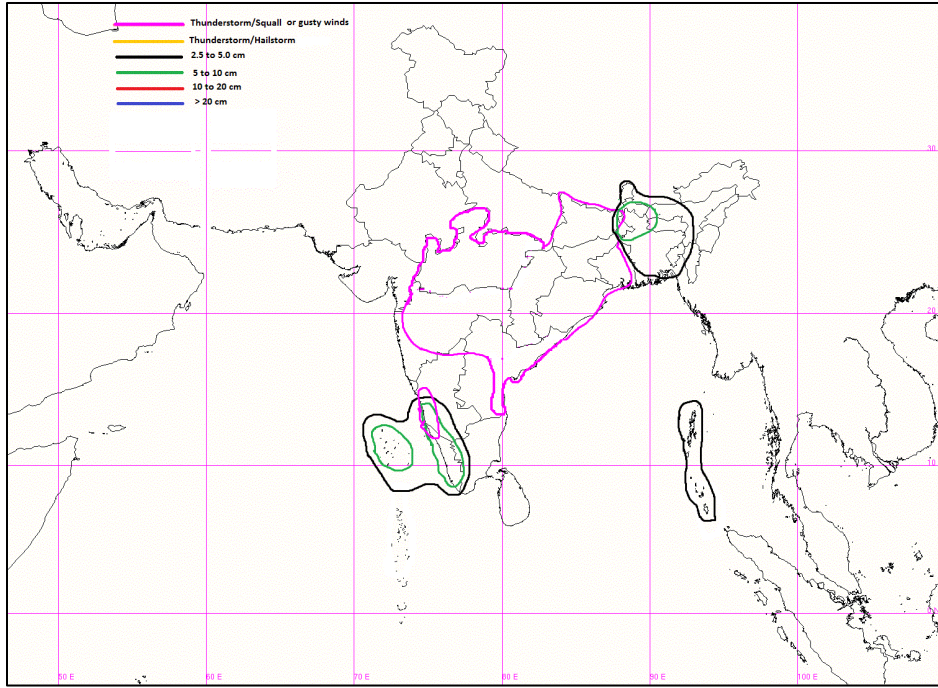
HEM: [http://satellite.imd.gov.in/img/3Ddaily\\_he.jpg](http://satellite.imd.gov.in/img/3Ddaily_he.jpg)

ForRadarimagesofthepast24hoursincludingmosaicofimages:

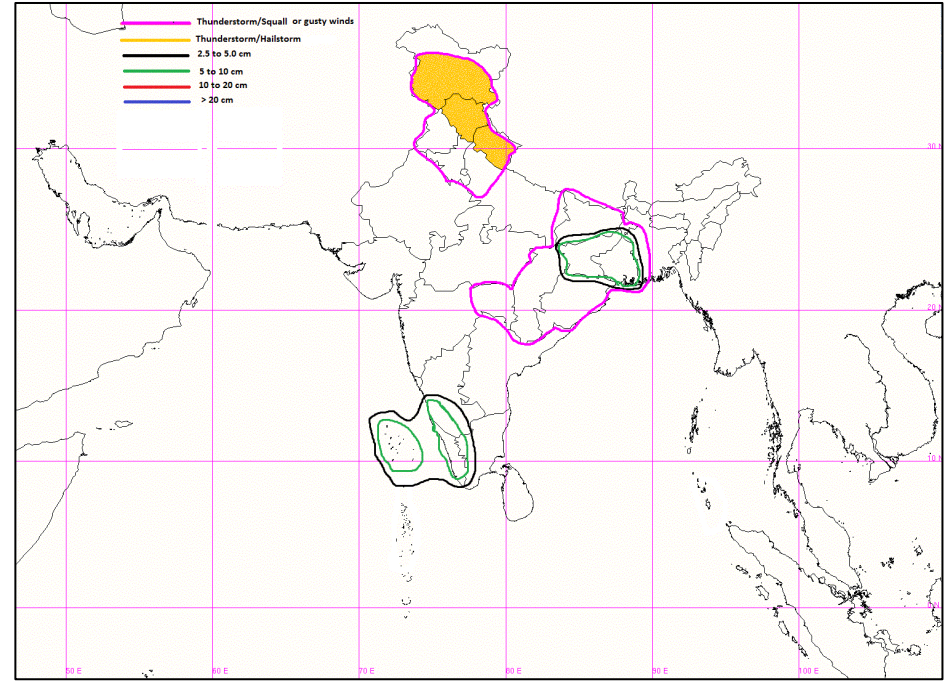
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Satellite sounder based T- Phigram

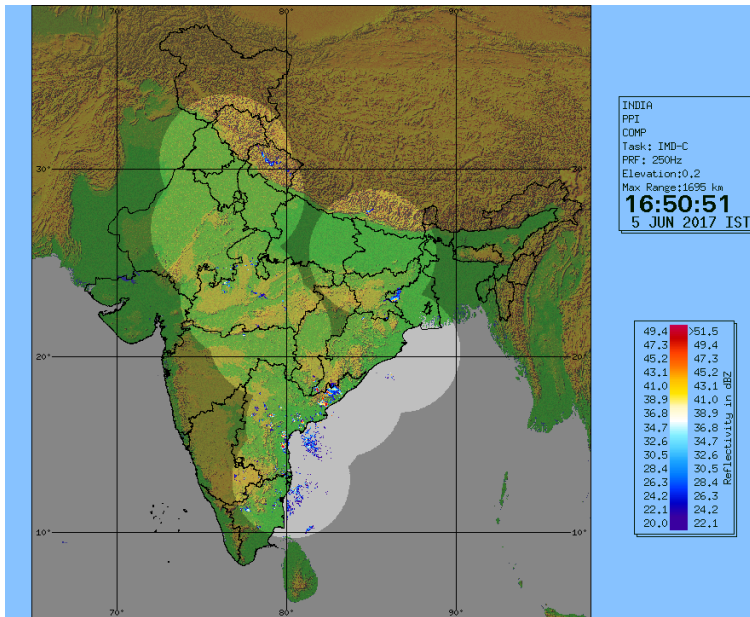
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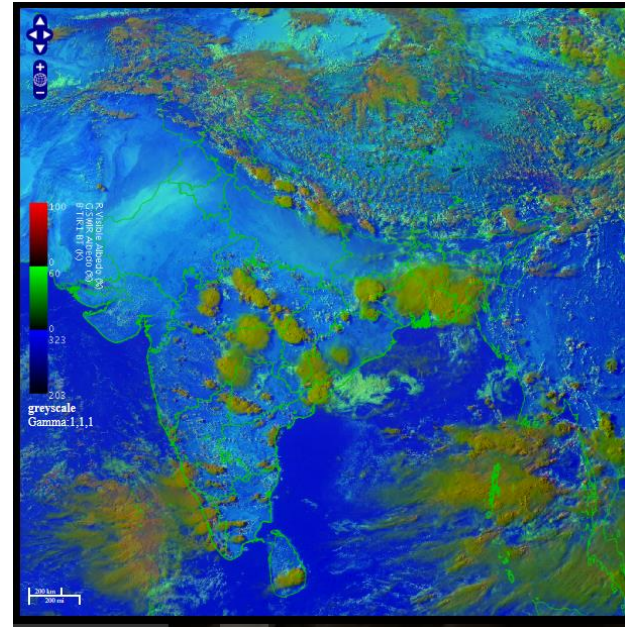
**IOP Advisory for 24 hours**



**IOP Advisory for 48 hours**

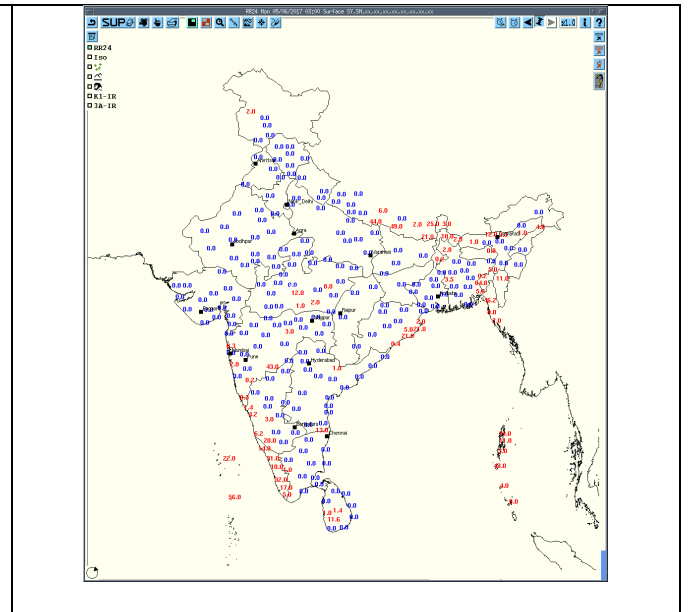
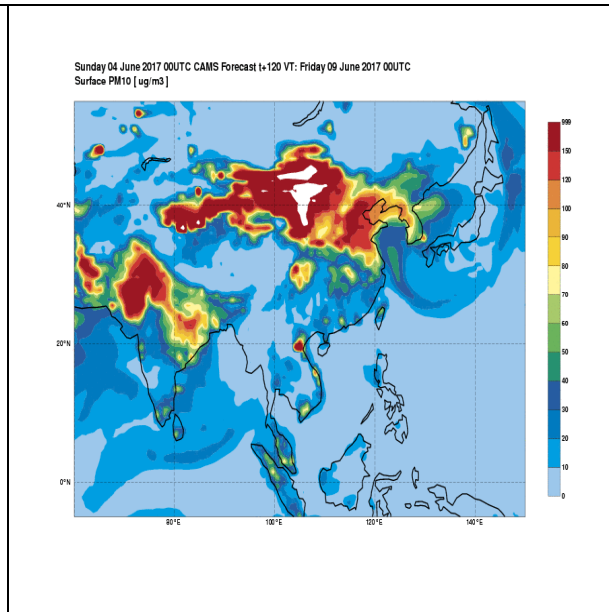
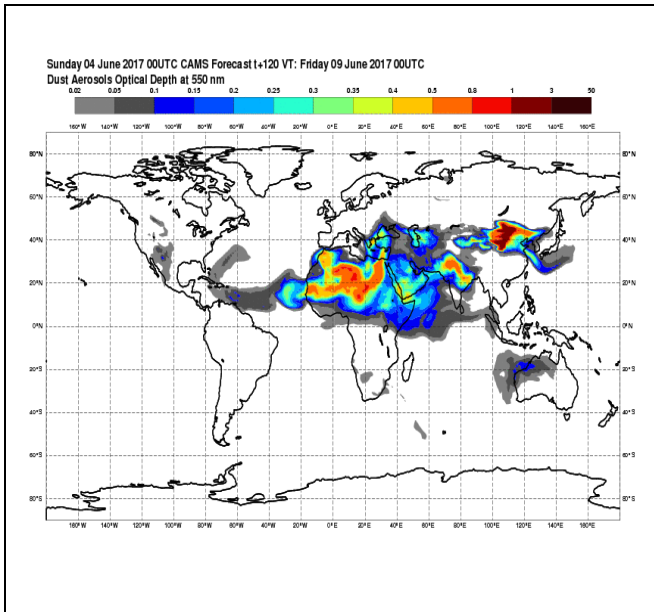


**DWR composite at 1650 hrs IST**



**RAPID RGB Satellite Imagery at 1600 hrs IST of today**

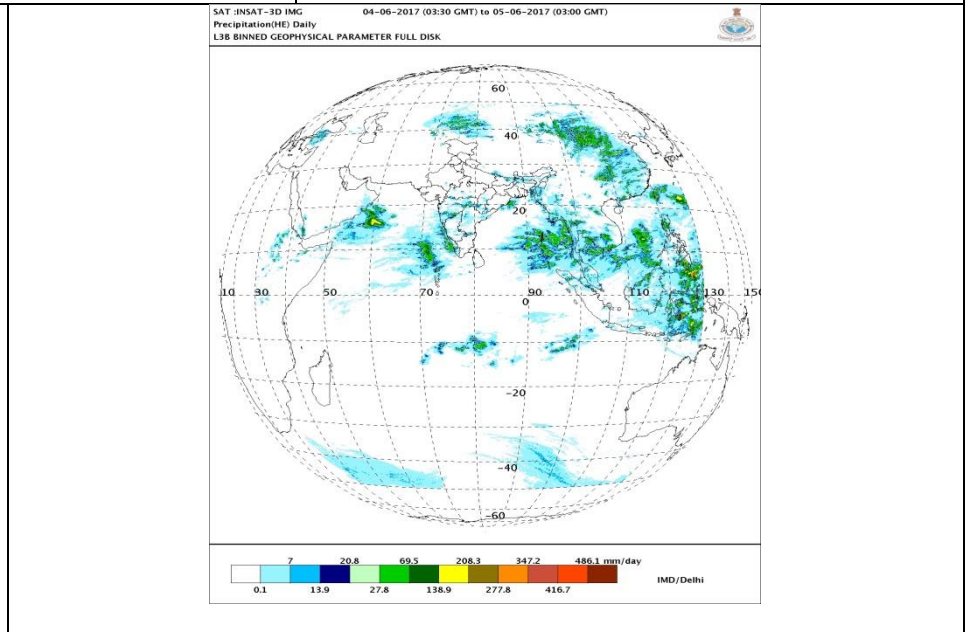
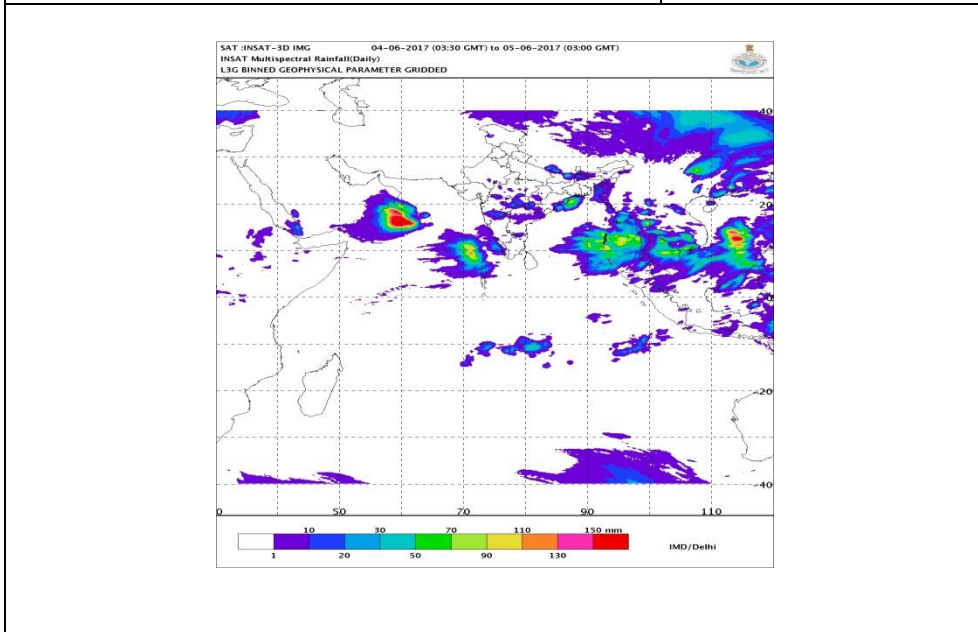




**Forecast Dust Concentration for 00UTC of 9<sup>th</sup> June**

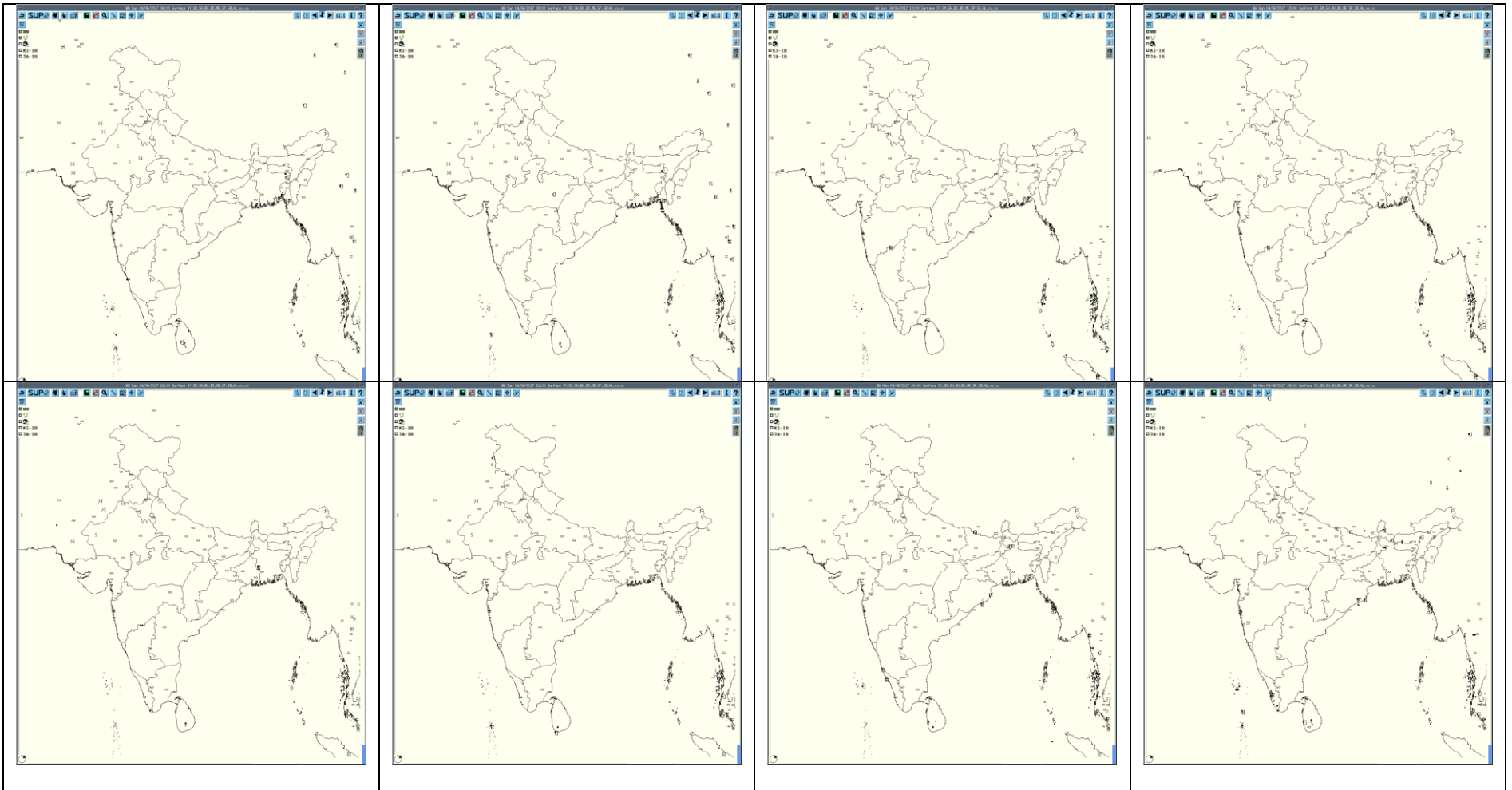
**PM10 Forecast for 00UTC of 9<sup>th</sup> June**

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

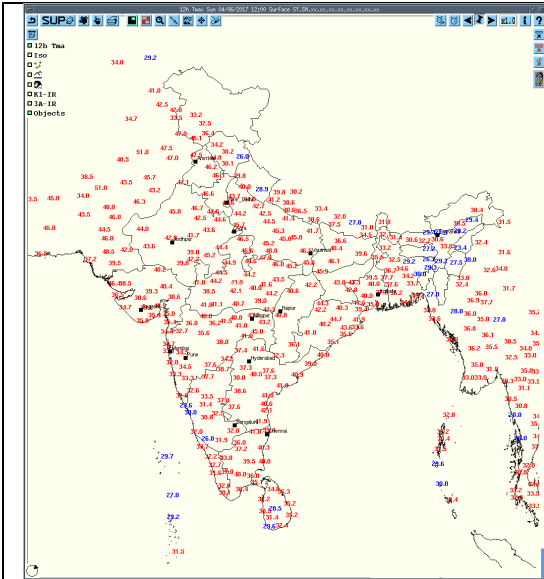


**IMR Rainfall**

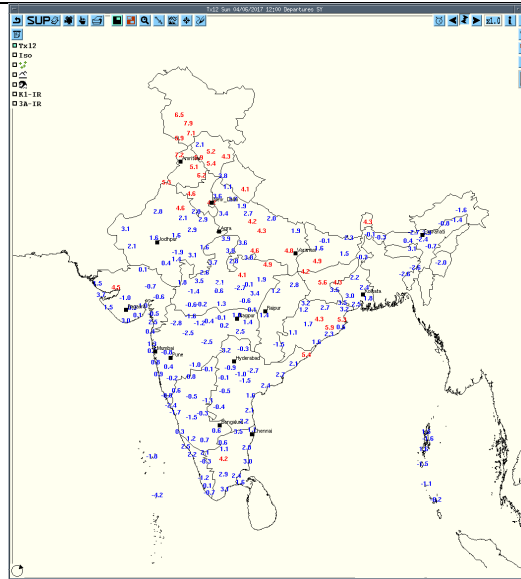
**HEM Rainfall**



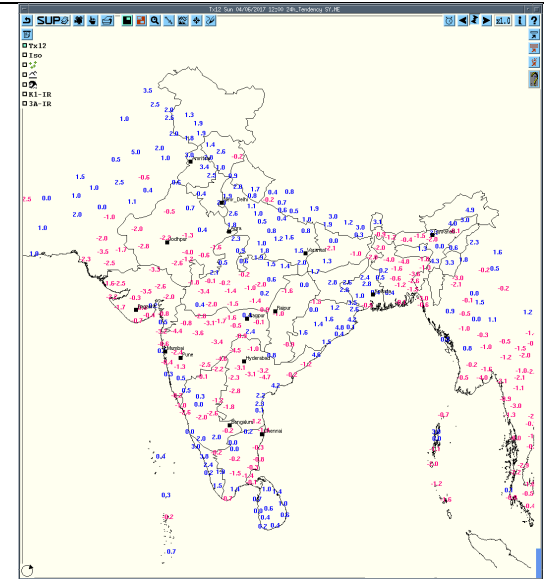
3hourly Past weather at 06,09,12,15,18,21UTC of yesterday and 00 & 03 hrs UTC of today



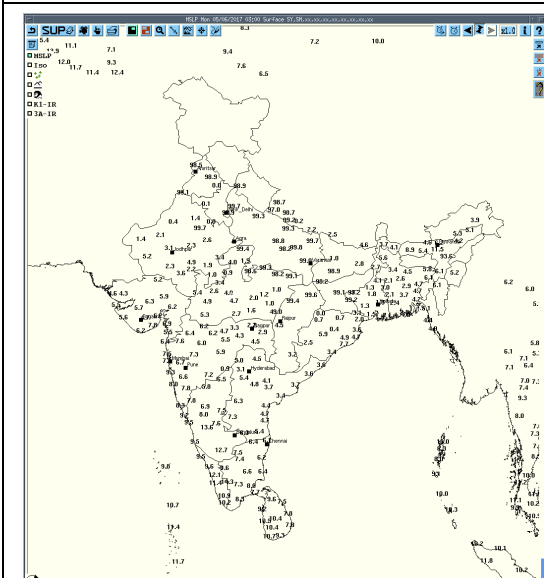
Tmax



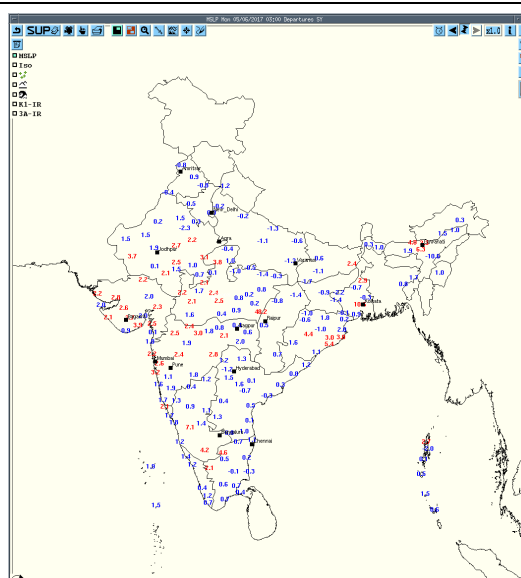
Departure Tmax



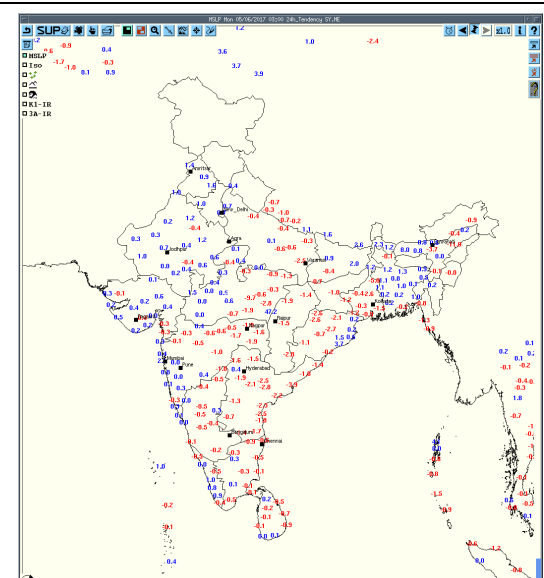
Tendency Tmax



MSLP



Departure MSLP



Tendency MSLP



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

<b>Realized weather past 24hours (Based on SYNERGIE Products)</b>					
<b>Date</b>	<b>Time of Reporting</b>	<b>Name of Station Reporting</b>	<b>Region</b>	<b>STATE</b>	<b>Weather Event</b>
04-06-17	0600UTC	Nil	--	--	--
	0900UTC	Jabalpur	C India	Madhya Pradesh	Thunderstorm
04-06-17	1200UTC	Tirupati	S India	Andhra Pradesh(RYLSM)	Thunderstorm
04-06-17	1500UTC	Nagpur	C India	Maharashtra (Vidarbha)	Lightening
		Sholapur	C India	Maharashtra (Vidarbha)	Thunderstorm
04-06-17	1800UTC	Nil	--	--	--
04-06-17	2100UTC	Nil	--	--	--
05-06-17	0000UTC	Bhopal	C India	Madhya Pradesh	Thunderstorm
		Bajpe	S India	Karnataka	Thunderstorm
		Kannur	S India	Kerala	Thunderstorm
		Chandbali, Puri	E India	Odisha	Thunderstorm
05-06-17	0300UTC	Tezpur	NE India	Assam	Thunderstorm
		Bhubaneshwar, Paradeep	E India	Odisha	Thunderstorm
		Cochin	S India	Kerala	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)
Jabalpur	E India	Madhya Pradesh (East)	Thunderstorm	04-06-17	1315	1410
Wardha	C India	Vidarbha	Thunderstorm	05-06-17	0700	0730
Bhopal	C India	Madhya Pradesh	Thunderstorm	05-06-14	0430	0600
Chindwada	C India	Madhya Pradesh	Thunderstorm	04-06-17	1615	1630
Tuni	S India	Andhra Pradesh(CAP)	Thunderstorm	04-06-17	0820	0915
Kakinada	S India	Andhra Pradesh(CAP)	Thunderstorm	04-06-17	0850	0920
Tirupati	S India	Rayalaseema	Thunderstorm	04-06-17	1610	1740
Srinagar	NW India	J & K	Thunderstorm	05-06-17	0445	0515
Tezpur	NE India	Assam	Thunderstorm	05-06-17	0635	0745
Dhubri	NE India	Assam	Thunderstorm	05-06-17	0500	0735
Lengpui	NE India	Mizoram	Thunderstorm	05-06-17	0850	1225
Kailasahar	NE India	Tripura	Thunderstorm	04-06-17	0830	1020
				05-06-17	0500	0630
Agartala	NE India	Tripura	Thunderstorm	04-06-17	0830	0850
Nasik	W India	Maharashtra(Madhya)	Thunderstorm	04-06-17	1400	1700
					2000	2045
Sholapur	W India	Maharashtra(Madhya)	Thunderstorm	04-06-17	1750	2030
					2030	2115
Cooch Behar	E India	West Bengal(SHWB)	Thunderstorm	05-06-17	--	0715
Purnea	E India	Bihar	Thunderstorm & Lightening	05-06-17	0740	0820
Bhubaneswar	E India	Odisha	Thunderstorm	05-06-17	0325	0520
	E India				0820	0830
			Lightening	05-06-17	0255	0325
					0520	0555
Chandbali	E India	Odisha	Thunderstorm	05-06-17	0345	0545
Paradeep	E India	Odisha	Thunderstorm	05-06-17	0550	0830
Puri	E India	Odisha	Thunderstorm	05-06-17	0435	0550
Gopalpur	E India	Odisha	Thunderstorm	05-06-17	0610	0710
Bajpe	S India	Karnataka(CK)	Thunderstorm	05-06-17	0402	0535
Yelahanka	S India	Karnataka(SIK)	Thunderstorm	05-06-17	1800	1900

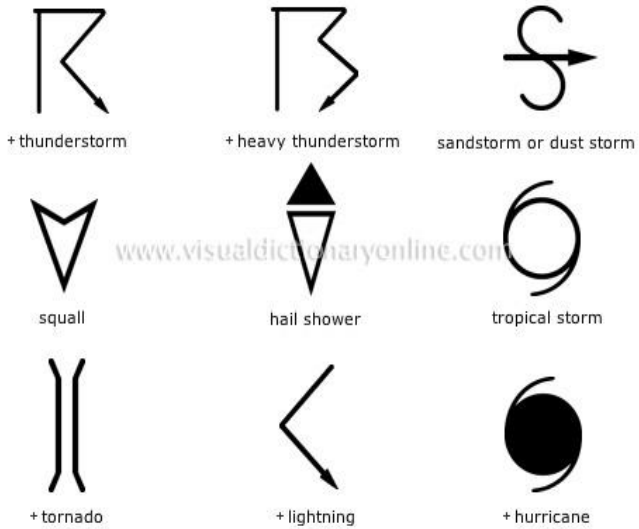
## Past 24 hours DWR Report:

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	05-06-17	040300-050300	Nil	--	--	--	--
Kolkata	05-06-17	040301-0418011	NIL	NIL	NO ECHO	NIL	
		041801-041821	1. A small isolated cell developed with maximum reflectivity of 52.5 dBz at 1801 UTC and maximum height more than 5.65 km at 1801 UTC.	NE (125 km) moving towards SE-ly	1. A small Single cell s developed at 1801 UTC and Dissipated at 1821 UTC in NE at a distance of 120 km from radar.	Thunderstorm / Squall /Hail / Rain	
		050000-050300	NIL	NIL	NO ECHO	NIL	
Paradeep	05-06-17	040300-042330	Isolated single cells seen in the Western and Eastern sector of the RADAR between 270-280 and 50-70 degrees respectively and with av. Reflectivity value of 45 dBZ and heights exceeding 14 km. cells later transform into convective regions having reflectivity values of the order of 33 dBZ approx.	Postion: Western and Northen sector of radar at a distance of 150 km approx. Movement: Nly	NIL	TS with Rain and lightening.	BHADRAK, JAJPUR, KANDHAMAL, GANJAM, JAGATSIN GHPUR, KHORDA, CUTTACK, PURI, GANJAM AND NAYAGAR H.
Karaikal	05-06-17	041200-041600	1.One cell with average height of 14 Km with maximum reflectivity of 50 dBz	1.NNW(240Km) moving in SW-ly direction at a speed of 20 Km/hr.	1.Cells started forming at 1200 UTC and started dissipating at1600 UTC	N/A	N/A

Patna	05-06-17	040300 - 042300	NIL	NIL	N/A	N/A	N/A
		042300 - 050300	Multiple Cells. Maximum Reflectivity : 48 dBZ Echo Top : 14.0 KM	Range: 130 KM from DWR Patna in NE direction. Movement- SE	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	THUNDERST- ORM & RAIN	MADHBANI, DARBHAN GA, MADHEPU RA, PURNIA, ARARIA, SUPAUL, SAHARSA, BEGUSARA I, MUNGER & KHAGARIA
		050020 - 050300	Multiple Cells. Maximum Reflectivity : 44.5 dBZ Echo Top :14.0 KM,  Multiple Cells. Maximum Reflectivity : 45 dBZ Echo Top :14.0 KM.  Note: Both cells merged at 0200 UTC.	Range: 190 KM from DWR Patna in NNW direction. Movement- SOUTHERLY,  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	WEST CHAMPAR AN, EAST CHAMPAR AN, GOPALGA NJ, SITAMARHI  SHEOHAR, MADHUBA NI, DARBHAN GA MUZAFFAR PUR
Vishakhapatnam	05-06-17	040300- 040600	Multiple CB cells towards SW and SE directions with Max ht reaching 14 km with Max reflectivity of 52dBz.	CB cells at 110 to 200 Km Sw from the Radar and 70 km SE from the Radar.	CB cells are in maturing stage.	-	-
		041800- 042100	Single cells formed with height of 9 km of maximum reflectivity 50dBz.	NNE(235 KMS) moving S direction	Single Cells are formed and developed to Max. reflectivity 50dBz and start dissipating.	-	-
		041800- 050000	Single cells formed with height of 9 km of	NNE(235 KMS) moving S direction	Single Cells are formed and developed to Max.	-	-



			maximum reflectivity 50dBz.		reflectivity 50dBz and start dissipating.		
		050000-050300	Multiple cells with Max height of 17 km of maximum reflectivity 50dBz.	NE(180 to 250 KMS) moving SEly direction	CB Cells are fully matured and dissipating.	-	-
Machilipatnam	05-06-17	040301-040401	Isolated Multiple cells average height of 9.2. km with maximum reflectivity of 58.5dBZ	NE (166KM) and moving SE ly direction with average speed of 15.0kmph	Cell started forming at 0301UTC, at NE(166km) from Radar the maximum reflectivity during 0301 to 0351 UTC and died down at 0401UTC	Possibility of Thunder storm with rain and winds.	Visakhapatnam and East Godavari Districts.
Jaipur	05-06-17	040932-041412	Multiple cells with average height of 6 km & maximum reflectivity 46.0 dBZ	Multiple Cells develop 0932 to 1412 UTC of 04/06/2017 towards SW of Jaipur and moved to NE Wards at speed 25 -30 km/hr	Cells starts forming from 0932 UTC of 04/06/2017 AT SW of Jaipur and reaches maximum reflectivity during 1012-1022 UTC and died down 1412 UTC.	Thunderstorm/rain at isolate places	Rajsamand and Bhilwara
Bhuj	05-06-17	040130-041230	Multiple cell initially at Ht. of 1.5 Km to 18 Km with 56 dBz Max.Z successively at Ht. of 2 Km to 18 Km with 53 dBz Max.Z	Initially 120 KM to 200 KM S to SE move towards Northwesterly successively at 50 KM NW and 120 KM to 200 KM SSE move towards E.	Observed during 08:07 UTC to 12:07 UTC	TS or TSRA	(1) Rajkot (2) Jamnagar (3) Kuchh



∞	haze
⌋	smoke
⌋→	dust or sand storm
≡	fog
⚡	drizzle
•	rain
✱	snow
▽	showers
△	hail
⌋	thunderstorm
<b>Weather Symbols</b>	