India Meteorological Department

FDP STORM Bulletin No.100 (13-06-2017)

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

The Northern Limit of Monsoon (NLM) continues to pass through Lat 20.5°N/Long 60.0°E, Lat. 20.5°N /Long. 70.0°E, Valsad, Nasik, Parbhani, Adilabad, Narsapur, Paradeep, Digha, Kolkata, Krishnanagar and Lat 27.4°N/Long 87.7°E.

Favourable conditions are developing for further advance of southwest monsoon into remaining parts of Coastal Andhra Pradesh, west, central, & northwest Bay of Bengal, some more parts of Odisha and some parts of south Chhattisgarh during next 48 hours.

The well marked low pressure weakened further into a low Pressure area & now lies over west Assam & neighbourhood and associated upper air cyclonic circulation extends upto mid tropospheric levels.

The trough at mean sea level from Punjab to the centre of well marked low pressure area, now runs from Punjab to the centre of low pressure area over west Assam & neighbourhood across Haryana, Uttar Pradesh & Bihar and extends upto 0.9 Km above mean sea level with two embedded upper air cyclonic circulations. One embedded upper air cyclonic circulation lies over Haryana & neighbourhood and extends upto 0.9 km above mean sea level and another embedded 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 south Chhattisgarh & neighbourhood between 3.1 & 5.8 km above mean sea level. A trough extends from this cyclonic circulation to south Konkan between 3.1 & 5.8 km above mean sea level.

The upper air cyclonic circulation over central Pakistan & adjoining West Rajasthan persists and now extends upto 1.5 Km above mean sea level.

The western disturbance as an upper air cyclonic circulation over eastern parts of Jammu & Kashmir persists and now extends upto 5.8 km above mean sea level. The trough aloft roughly along longitude 80.0°E and north of latitude 28.0°N has become less marked.

The off shore trough from south Maharashtra coast to Kerala coast now runs off Karnataka to Kerala coast.

The upper air cyclonic circulation over south Konkan & adjoining Madhya Maharashtra has become less marked

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

LOW LEVEL CIRCULATION (LLC):-

Broken low/medium clouds with embedded intense to very intense convection were seen over NE Bay, Mizoram and in association with Low Level Circulation over the area.

WESTERN DISTURBANCE (WD):

Scattered multi-layered clouds were seen over J & K and area between Lat 37.0N to 47.0N, Long 70.0E to 80.0E in association with WD over the area.

Cloud Description:

Broken low/medium clouds with embedded intense to very intense convection were seen over north coastal Andhra Pradesh,

Scattered low/medium clouds with embedded moderate to intense convection were seen over West Assam, Meghalaya, Gangetic West Bengal, Coastal Odisha, South Konkan, Northeast Tamilnadu and Kerala.

Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Southeast Haryana, Delhi, rest NE states, Northeast Rajasthan, rest Maharashtra, Southeast Gujarat, rest Andhra Pradesh, Telangana, Karnataka, and Lakshadweep.

Scattered low/medium clouds were seen over rest Haryana, Northwest Uttar Pradesh, Himachal Pradesh, Uttarakhand, rest East Gujarat, and Madhya Pradesh.

Arabian Sea:

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

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded intense to very intense convection were seen over rest Bay North of Lat. 16.0N Gulf of Martban. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over rest Bay North of Lat. 10.0N.

Past Weather:

Convection:-

Intense convection was observed over Odisha Andhra Pradesh Tripura & Mizoram.

Moderate to Intense convection was observed over J&K Himachal Pradesh Gujarat Madhya Pradesh Maharashtra rest North East States.

Light to Moderate convection was observed over rest parts of the country.

OLR:-

Upto **200** wm^{-2} was observed over Maharashtra Chhattisgarh Odisha South Jharkhand West Bengal Andhra Pradesh Karnataka Kerala Tamilnadu North East States .

Upto **230** wm^{-2} was observed over J&K Extreme South Gujarat South Madhya Pradesh Rest Jharkhand Sikkim. Upto **230** wm^{-2} was observed over North Himachal Pradesh Bihar.

Westerly Trough & Jet-Stream: Westerly trough runs roughly along longitude 80.0°E and north of latitude 24°N.

No Jet Stream observed over India.

Dynamic Features:

Medium to High wind shear is observed over N & S India while Low wind shear is observed over Central India.

Positive shear tendency is observed over India.

A Positive Vorticity field is observed over Haryana Uttar Pradesh Bihar Telangana Coastal Andhra Pradesh.

Negative low level convergence is observed over Gujarat Coastal Karnataka South Coastal Odisha and Positive low level convergence observed over rest parts of India,

Precipitation:

IMR:

Rainfall Up to **90** mm was observed over South Tripura. Rainfall from **70** mm was observed over North Chhattisgarh South East Jharkhand South West Bengal Meghalaya Mizoram North Tripura North East Andhra Pradesh. Rainfall Up to **50** mm was observed over Maharashtra West Assam Coastal Karnataka Telangana.

Rainfall Up to **30** mm was observed over South Kerala. Rainfall Up to **20** mm was observed over South East Gujarat South Chhattisgarh Extreme West Arunachal Pradesh Extreme North Karnataka.

Rainfall Up to **10** mm was observed over Extreme North J&K Extreme South Rajasthan Extreme West and Extreme East Madhya Pradesh Rest Odisha East Bihar Rest Jharkhand Rest West Bengal Sikkim Rest Karnataka Rest Andhra Pradesh North Kerala Rest Tamilnadu Rest Arunachal Pradesh Rest Assam Nagaland Manipur.

HEM:

Rainfall Up to **208** mm was observed over Coastal Karnataka

Rainfall Up to **139** mm was observed over North Kerala South Vidarbha.

Rainfall Up to **70** mm was observed over Rest Maharashtra North Odisha Meghalaya Tripura West Arunachal Pradesh West Assam Rest West Karnataka Telangana South West Bengal . Rainfall Up to **14** mm was observed over South Madhya Pradesh South Chhattisgarh Rest Arunachal Pradesh. Rainfall Up to **07** mm was observed over Extreme South Rajasthan South Gujarat Rest Chhattisgarh Bihar Rest Jharkhand Rest West Bengal Rest Assam Nagaland Manipur Rest Karnataka Rest Andhra Pradesh Rest Odisha

RADAR and RAPID Observation:

DWR Composite at 1300hrs IST indicated significant isolated convection Central Odisha and South Chhattisgarh.

RAPID RGB Satellite imagery at 1230hrs IST indicated significant convective clouds over J& K, Himachal Pradesh, East Assam, East Meghalaya, Manipur, Mizoram, Tripura, Central Odisha, Telangana, North coastal Andhra Pradesh and Northwest Tamilnadu.

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

Higher Dust concentration was observed over North Africa. Dust concentration is expected to increase over north India for next five days.

High PM10 concentration was observed over western part of the country and Pakistan; it is expected to increase days over north India 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 except day 1 show evolution of heat low over NW India and adjoining Pakistan with MSLP values lower than 990hPa. On Day-4 MSLP reaches to 986 hPa.

12UTC charts on days from Day 0-2: show a zone of wind discontinuity at 925 hPa; SW-NE extending from Maharashtra across MP to Jharkhand

CYCIR over Head Bay of Bengal has moved to Assam/Meghalaya and is seen less marked in Day 0.

12 UTC charts in Day 0 -2: Day 0: Trough over Maharashtra. Day 1-2 CYCIR over Maharashtra

12 UTC charts in Day 0-2: Feeble Western Disturbance is seen over northern parts of J&K. System moves eastward and gets deeper in Day 3 & 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:

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT
Day1: Assam Meghalaya
Day2: TN Puducherry
Day3: Assam Meghalaya
Day4: Arunachal Pradesh, Assam Meghalaya

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

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

Day0: Arunachal Pradesh, Assam Meghalaya, Telangana, TN Puducherry
Day1: Arunachal Pradesh, Assam Meghalaya, TN Puducherry
Day2: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Himachal Pradesh, Jammu Kashmir, TN Puducherry
Day3: Assam Meghalaya, Uttarakhand, Himachal Pradesh, TN Puducherry
Day4: Arunachal Pradesh, Assam Meghalaya, Bihar, Uttarakhand, Himachal Pradesh, TN Puducherry

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

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh

Day3: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, West MP, East MP, Gujarat region, 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, West UP, Uttarakhand, Haryana Chandigarh Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana Chandigarh Delhi, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana Chandigarh Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, TN Puducherry,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East RJ, Odisha, West MP, East MP, Marathwada, Vidarbha, Chhattisgarh, TN Puducherry

7. Spatial distribution of TTI (TTI >50 [Scattered Thunderstorms few severe): **(Day/Index: Subdivision with Total Totals Index > 52):**

Day0: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Haryana Chandigarh Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Gujarat region,

Day1: Arunachal Pradesh, Sub Himalayan WB, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East MP,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Haryana Chandigarh Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ,

Day3: Arunachal Pradesh, Sub Himalayan WB, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, East RJ, West MP, East MP, Gujarat region, Saurashtra Kutch, Chhattisgarh,

Day4: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West MP, East MP

8. Rainfall and thunder storm activity: (Day/Index: Subdivisions with Precipitation > 2 cm):

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, Jammu Kashmir, Gujarat region, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Coastal AP, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jammu Kashmir, Gujarat region, Konkan Goa, Madhya Maharashtra, Coastal AP, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, West MP, Gujarat region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day5: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Jharkhand, Bihar, Gujarat region, Konkan Goa, Madhya Maharashtra, Coastal Karnataka, SI Karnataka, Kerala

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

1. Weather Systems:

The analysis based on 00 UTC shows a low level CYCIR along Bangladesh region. It also shows a trough from Punjab extending up to Bangladesh. Forecasts show that the system is moving further north east ward and further weakening. The trough is now seen extending from Punjab along Bihar up to GWB and is seen persisting for the next 5 days.

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 x 10^{-1}/s):

The high vorticity belts are mainly over the Gangetic plains, foot hills of Himalaya, parts of Central India, south peninsula and parts of the north eastern states along with isolated pockets over the east coast 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): Above threshold values are mostly over Gujarat and Rajasthan and over isolated pockets of Bihar and Odisha region during next 5 days.

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

Total Total Index (> 50): Greater than threshold value over northwest India and parts of MP and adjoining central India during next 5 days.

Sweat Index (>300): Higher than threshold value almost all over the country except parts of NW India and isolated pockets over UP, Bihar and GWB.

CAPE (> 1000): Mostly over parts of Rajasthan, Gujarat, central parts of India, West Bengal, Bihar, isolated pockets of Odisha and regions bordering the east coast of the county.

CIN (50-150): Mostly all over the country except parts of south peninsula, J&K and western parts of Gangetic plains.

5. Rainfall and thunderstorm activity:

20-70 mm rainfall: over Sub- Himalayan West Bengal, Vidarbha region, parts of NE states, major regions bordering the west coast and few pockets along the Odisha coast during next five days with very heavy rainfall (70-130 mm) over SHWB and NMMT region on day1.

20-70 mm: rainfall over parts of Maharashtra and isolated pockets of coastal Andhra Pradesh during next 5 days.

40-70 mm rainfall: over west coast, coastal Maharashtra during next 5 days with very heavy rainfall (70-130 mm) over NMMT, GWB and isolated pockets of Odisha and Andhra coast during the next 4 days.

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

1. Model Reflectivity (Max. dBz):

15-35 dBZ Model reflectivity over south peninsula, AP, Odisha and over NE states during next 24 hours and over isolated pockets of NE states on day2 and day3.

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

Total Total Index (> 50): Above threshold value over northwest and central parts of India and Gangetic plain during next 72 hours.

K-Index (> 35): Less than threshold value over the entire country during the next 72 hours.

CAPE (> 1000): Mostly over Gujarat, parts of AP, Telangana, central India, east UP, Bihar and NE states during next 3 days.

CIN (50-150): Over north west parts of India, east UP, Bihar, parts of central India and south peninsula during next three days.

3. Rainfall and thunderstorm activity:

40-70 mm: along west coast with very heavy rainfall (70-130) mm over Konkan, Vidarbha and NE states during next 24 hours.

20-70 mm: over parts of Chhattisgarh, GWB and with very heavy rainfall (70-130) mm over SHWB, NE states during day2 to day3.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day-1 & Day-2:

Yesterday's well marked low pressure weakened into a low Pressure area & over west Assam & neighbourhood and associated upper air cyclonic circulation extends upto mid-tropospheric levels. The presence of this system can cause widespread rainfall activity over northeastern states during 24 hours with isolated heavy to very heavy falls. Extremely heavy rain is also expected at isolated places over Assam and Meghalaya. With the further eastward movement of this system, rainfall activity will reduce on day 2, except for Meghalaya and Mizoram, where the prevailing southerly wind along with orography will cause isolated heavy rainfall to occur.

The upper air cyclonic circulation seen over south Chhattisgarh & neighbourhood between 3.1 & 5.8 km above mean sea level along with the trough from this cyclonic circulation to south Konkan between 3.1 & 5.8 km above mean sea level is expected to cause good rainfall activity during next 24 hours over Konkan and Goa, Marathwada, Madhya Maharashtra, Karnataka, Telangana, Coastal AP, South Orissa and south Chhattisgarh. The rainfall activity will continue on day 2 also, however, the areal coverage is expected to reduce a little.

The off shore through from Karnataka coast to Kerala coast is expected to cause the heavy rainfall activity observed over Karnataka coast and over Kerala to continue for next 49 hours also.

24 hour Advisory for IOP:
Assam, Meghalaya,
Nagaland, Manipur, Mizoram and Tripura
Arunachal Pradesh
Sub Himalayan West Bengal, South Orissa, South Chhattisgarh
Entire Karnataka, Kerala,
Telangana, Coastal Andhra Pradesh
Konkan and Goa, Madhya Maharashtra, Marathwada

48 hour Advisory for IOP:
Meghalaya, Mizoram
Coastal and south interior Karnataka, Kerala,
Telangana, Coastal Andhra Pradesh, South Orissa
South Konkan and Goa, Madhya Maharashtra, Marathwada

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)
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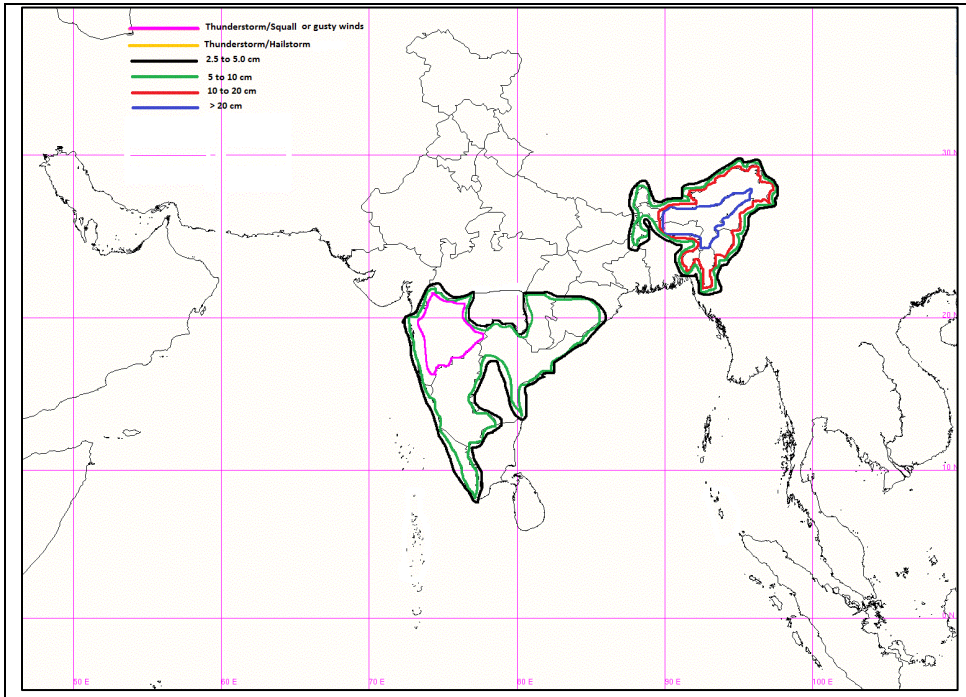
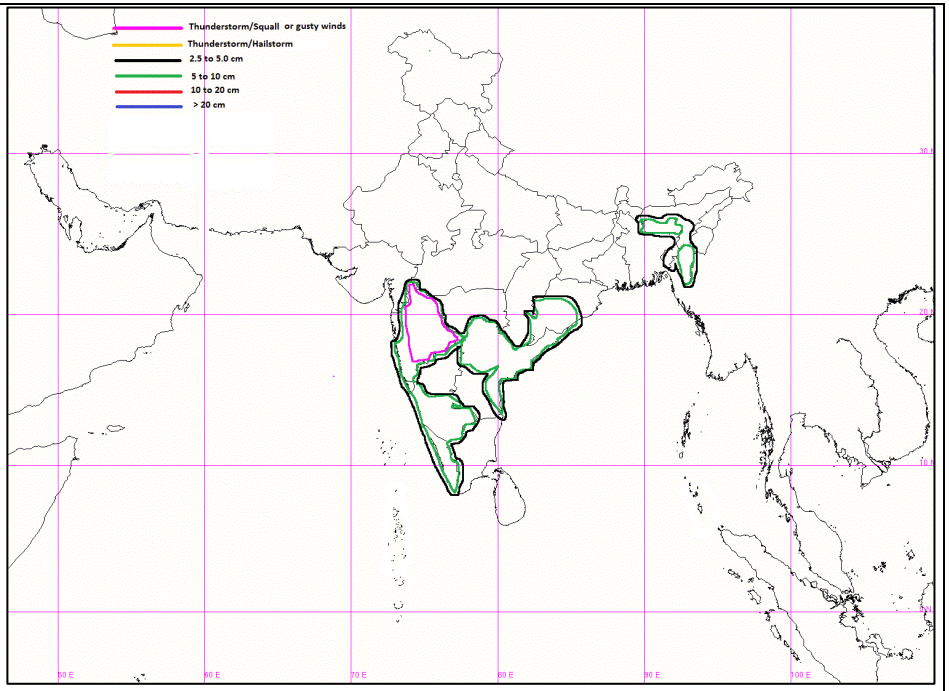
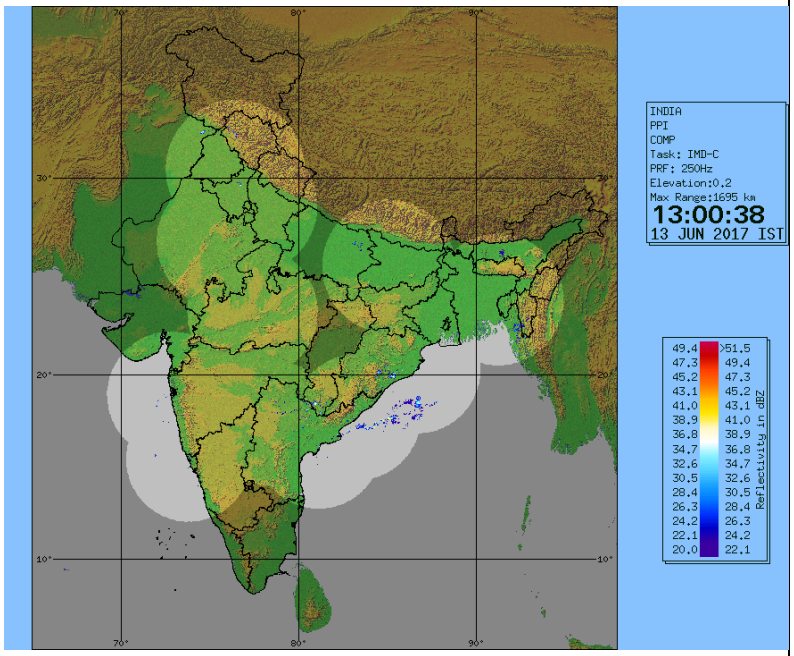
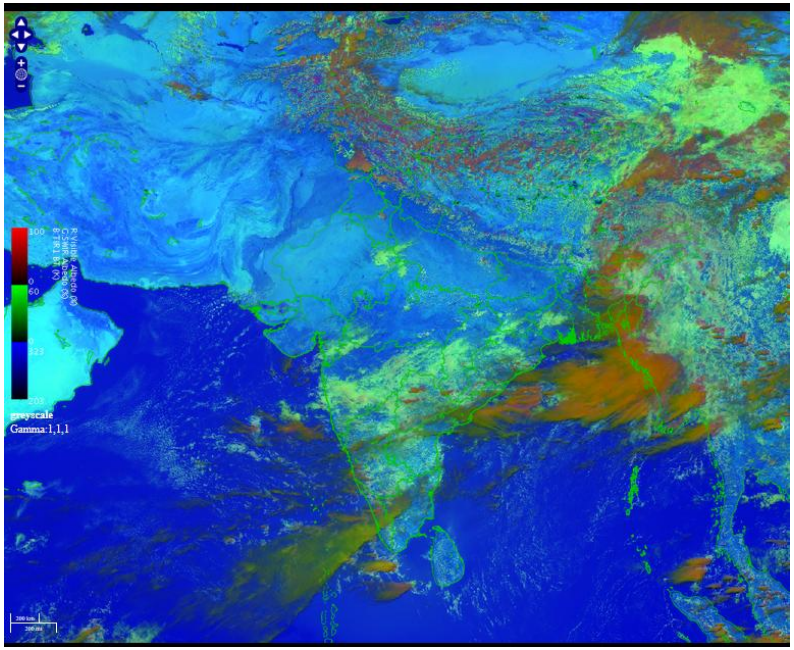


IOP Advisory for 24 hours



IOP Advisory for 48 hours

	
DWR composite at 1300 hrs IST	**RAPID RGB Satellite Imagery at 1230 hrs IST of today**

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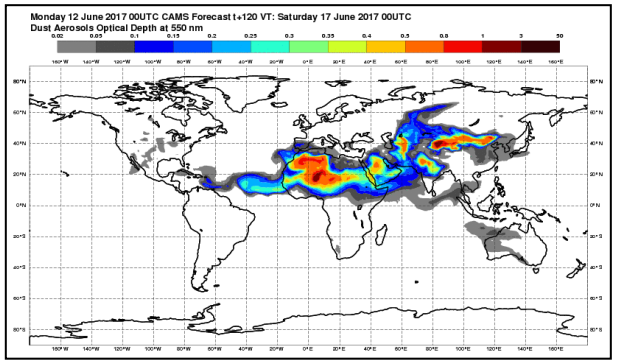
<td> 
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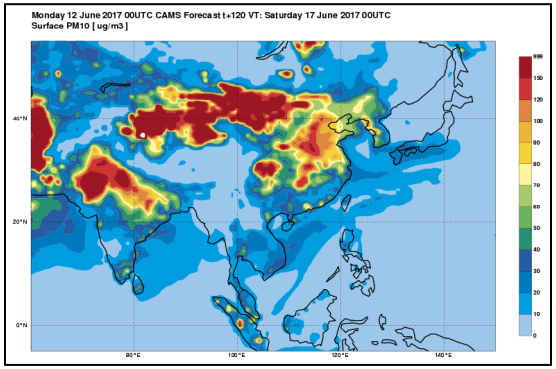
<td> 
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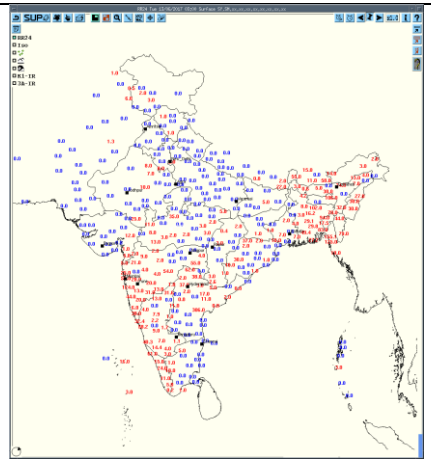
<td>  </td>
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<td>Forecast Dust Concentration for 00UTC of 16th June</td>
<td>PM10 Forecast for 00UTC of 16th June</td>
<td>Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today</td>
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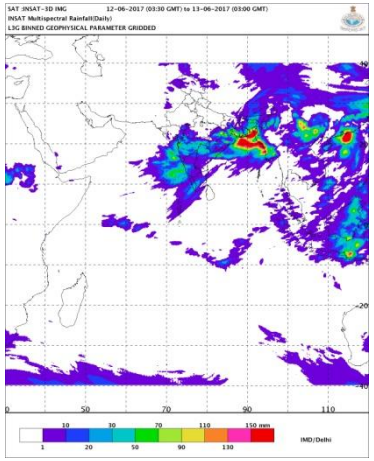
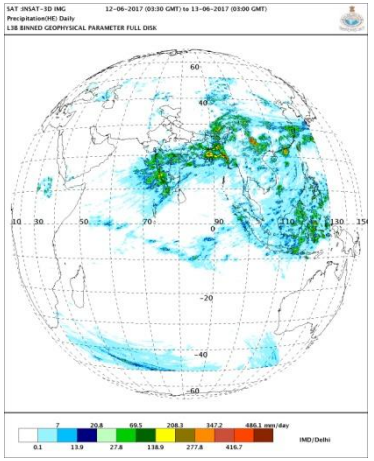
<td colspan="2">  </td>
<td colspan="2">  </td>
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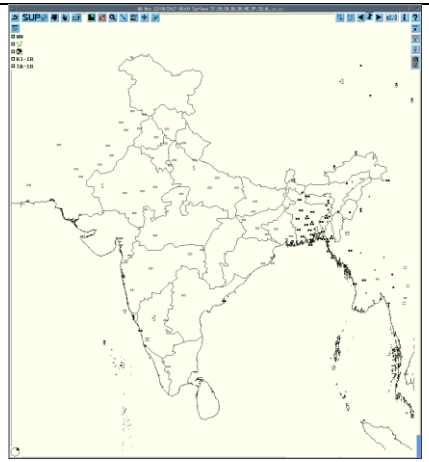
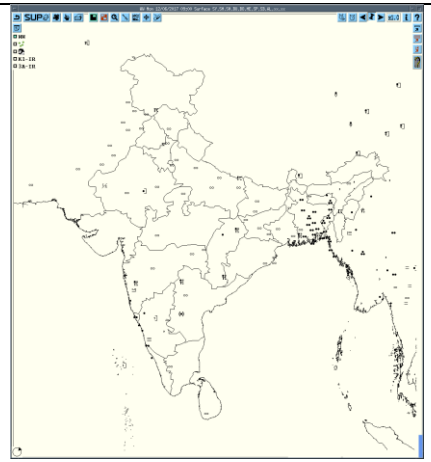
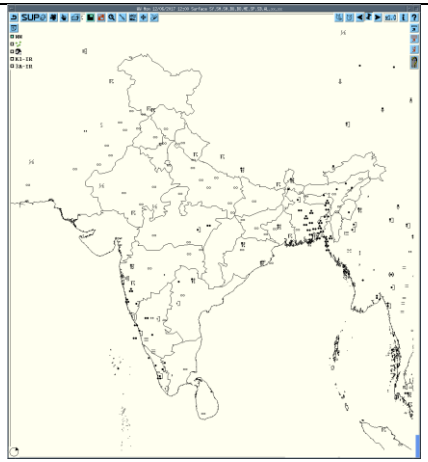
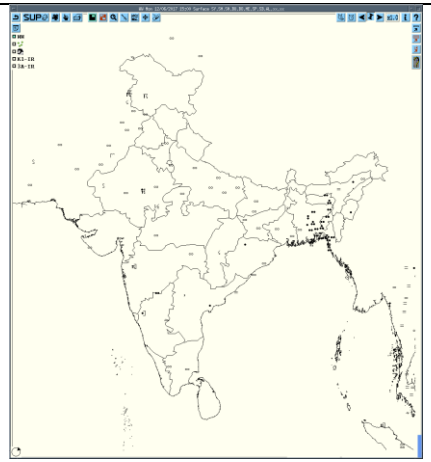
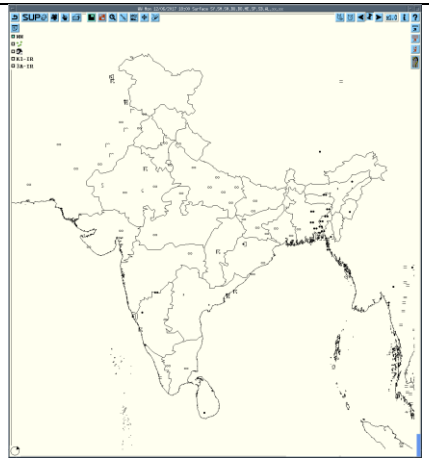
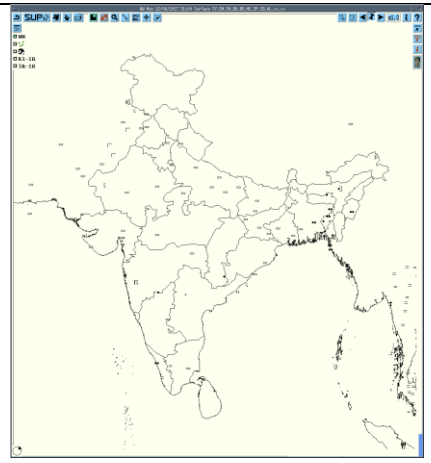
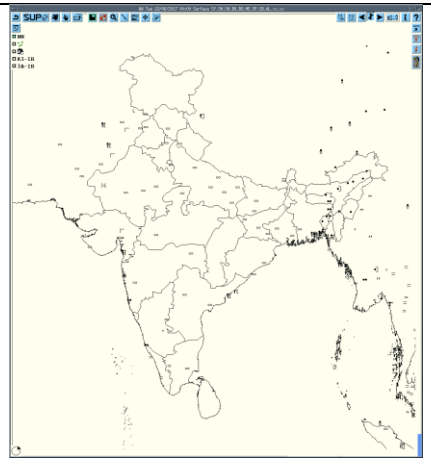
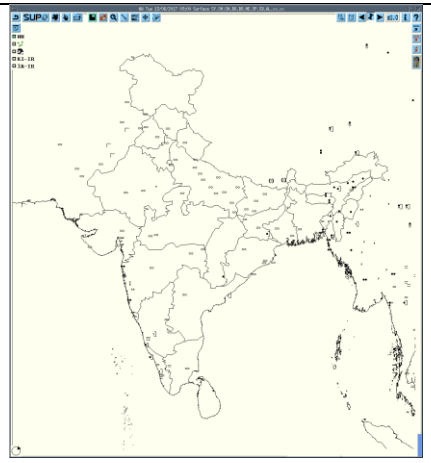
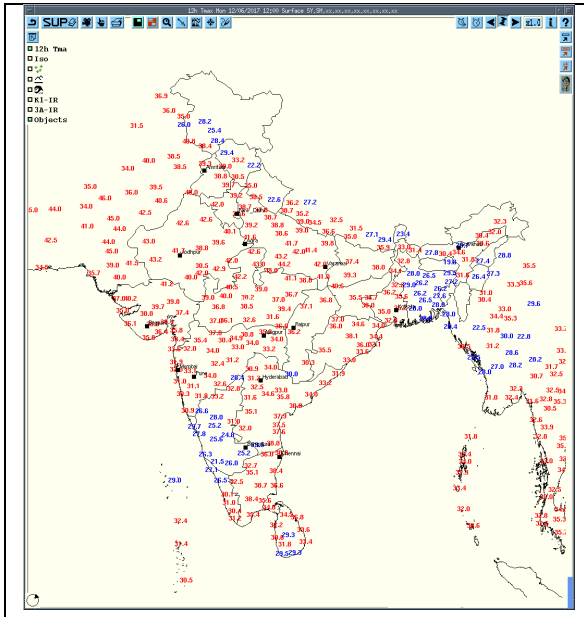
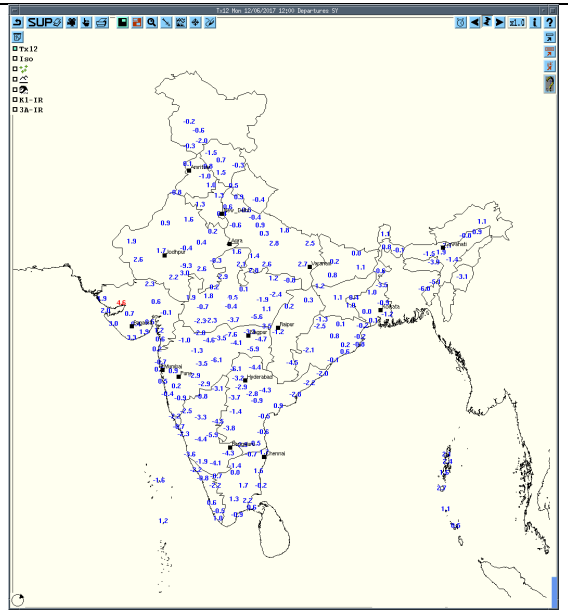
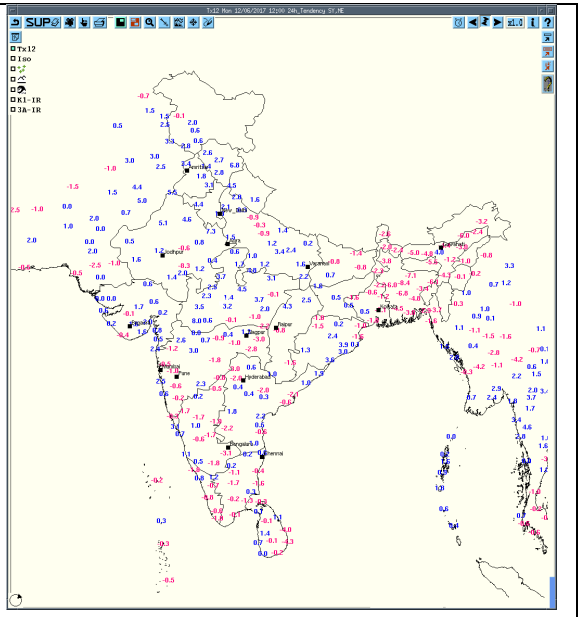
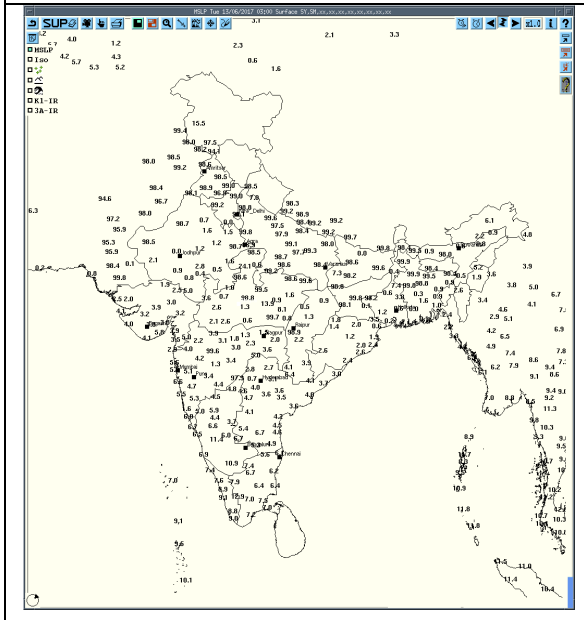
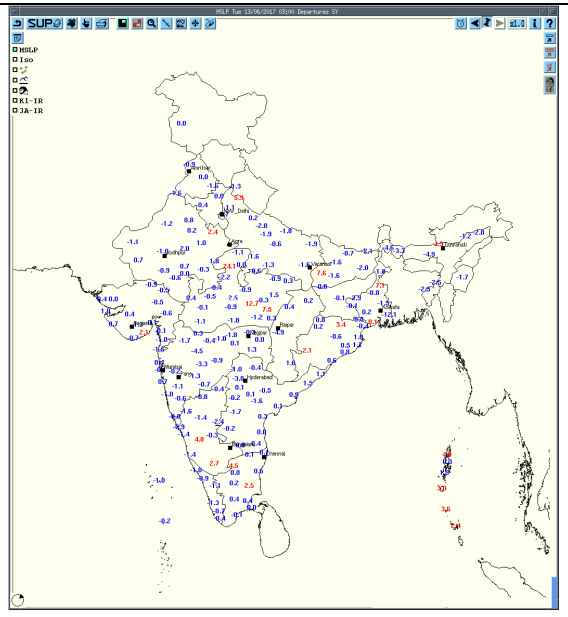
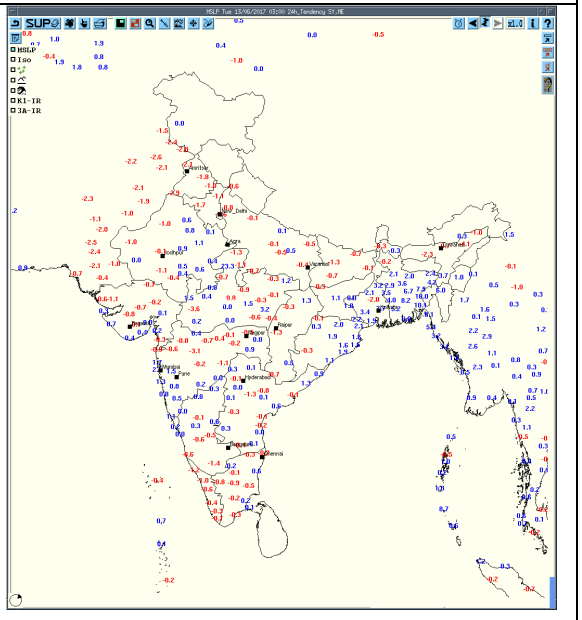
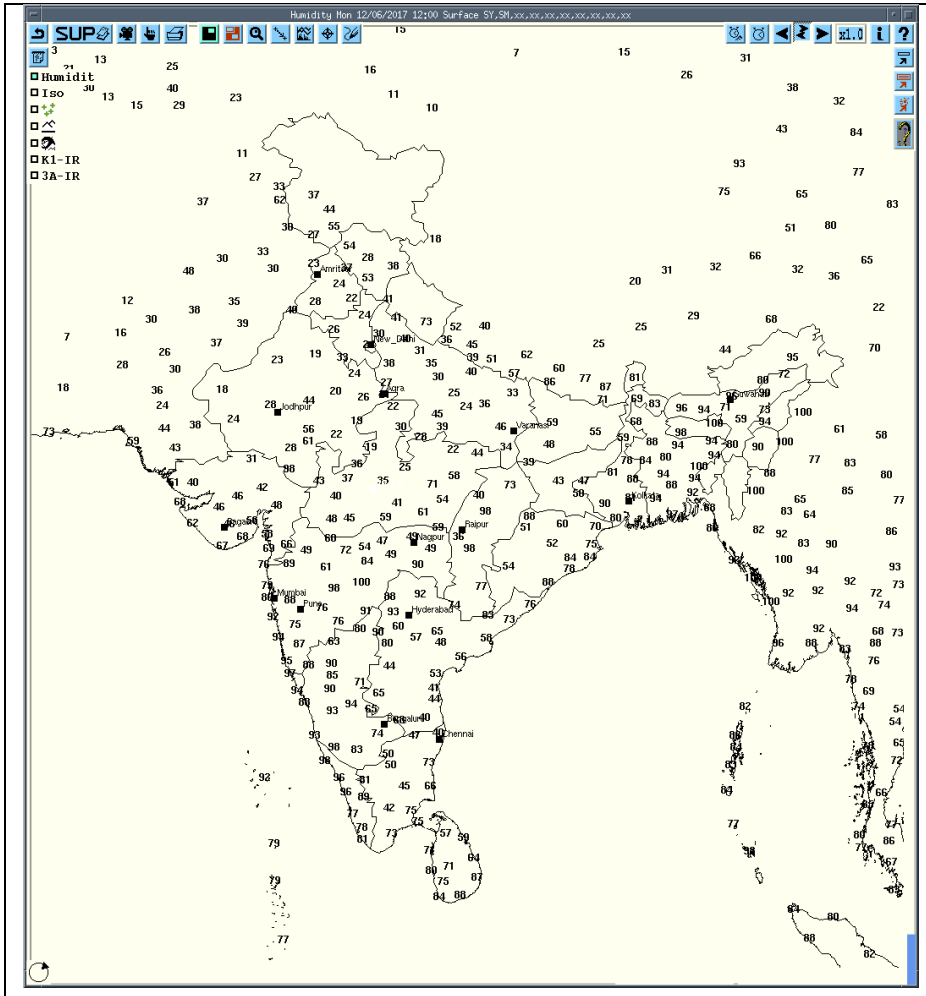
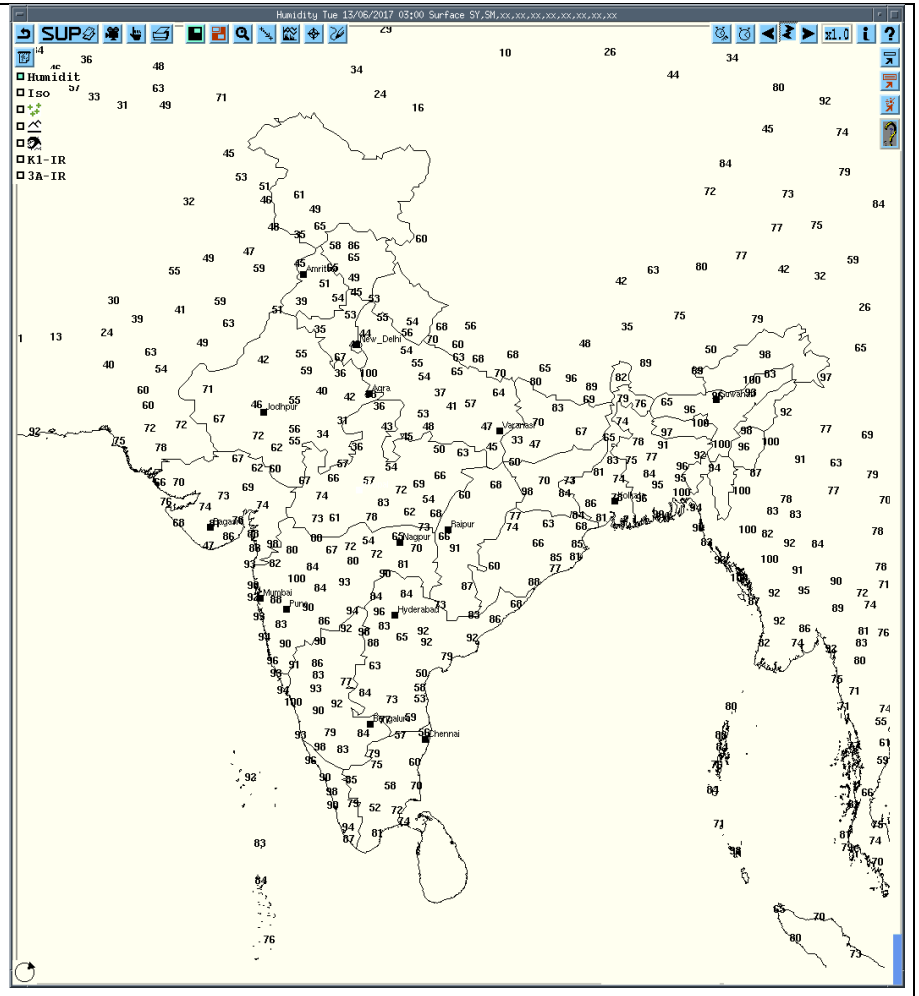









3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today

		
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**
12-06-17	0600UTC	Nil	--	--	--
12-06-17	0900UTC	Bhaderwah	NW India	J & K	Thunderstorm
		Ambikapur, Jagdalpur	C India	Chhattisgarh	Thunderstorm
		Pune	C India	Maharashtra	Thunderstorm
		Nizamabad	S India	Andhra Pradesh	Thunderstorm
12-06-17	1200UTC	Batote, Bhaderwah	NW India	J & K	Thunderstorm
		Mukteshwar	NW India	Uttarakhand	Thunderstorm
		Gangtok	E India	Sikkim	Thunderstorm
		Panagarh, Kolkata	E India	West Bengal	Thunderstorm
		Jharsuguda, Bhubaneswar	E India	Odisha	Thunderstorm
		Udaipur	NW India	Rajasthan	Thunderstorm
		Nasik, Pune	W India	Maharashtra	Thunderstorm
		Ramagundam	S India	Andhra Pradesh	Thunderstorm
12-06-17	1500UTC	Srinagar	NW India	J & K	Thunderstorm
		Ajmer	NW India	Rajasthan	Thunderstorm
		Nasik	W India	Maharashtra	Thunderstorm
12-06-17	1800UTC	Churu	NW India	Rajasthan	Thunderstorm
		Raipur	C India	Chhattisgarh	Thunderstorm
		Honavar	S India	Karnataka	Thunderstorm
		Vishakhapatnam, Kakinada	S India	Andhra Pradesh	Thunderstorm
12-06-17	2100UTC	Pune	W India	Maharashtra	Thunderstorm
13-06-17	0000UTC	Nil	--	--	--
13-06-17	0300UTC	Nil	--	--	--

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
Agartala	13/06/17	120302 - 130302	Multiple cells formed all around OF DWR Agartala at a distance of 40km with Maximum cell Height 09 **km** and maximum reflectivity 45.50 **dBZ at 0302 UTC**	Formed all around of DWR Agartala at a distance of 40km and moves anti clockwise direction with around 90 kmph.	Persists over Meghalaya & Assam	Mod-Heavy rain	All distt of Tripura, East Khashi Hills of Meghalaya, Mamit distt of Mizoram
		121512 - 130302	Multiple cells formed South OF DWR Agartala at a distance of 250 km with Maximum cell Height 15 **km** and maximum reflectivity 49.50 **dBZ at 2112 UTC**	Formed 250 km South of DWR and moved SW wards at around 40kmph	Persists over SE direction at 100 km	N/A	N/A
Paradeep	12/06/17	0300-2200 UTC	Isolated single/multiple cells seen in the NW and NE sector of the RADAR between270-60 degrees(clockwise) and with highest Reflectivity values of the order of 37 dBZ and heights exceeding 14 km.	Position: NW and NE sector of radar at a distance of 150-250 km approx. scattered in the zone. Movement: NWly.	NIL	RAIN with TS.	Dhenkanal Bhadrak, Jajpur, Nayagarh, Keonjhargarh, Mayurbhanj, Khorda, Cuttack, Deogarh, Baleshwar, Puri Ganjam.
Srinagar	13.06.17	12/0300 13/0300	A single cell developed in the SW direction of DWR and moved SE wards with max reflectivity of 50-55 DBZ and average height 8kms. Multiple cells developed all around DWR at 0700 UTC with max reflectivity 55-60 DBZ and height 9-10 kms.	1. Moved SE direction and dissipated around 0640 UTC 2. mowed Se direction and dissipated around 1710 UTC	Light rain at isolated places	Thunderstorm reported at Qazigund, Kukernag ,Banihal Pahalgam Batote Bhaderwah	Anantnag, Baramulla Ramban Doda

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
Visakhapatnam	13.06.17	12/0300 12/0600	Squally line of cb cells over SE sector 53kms from radar with max reflectivity 53 dbz and average height 11kms.	Squally line of cb cells are continued to be formed since last observation and moving Easterly.	Formation of squally line of cb cells stopped by 05:51 UTC of today.	-	-
		12/0600 12/0900	Isolated single cells formed in SEly direction at 169KM with 8 KM max ht. with max reflectivity of 45dBz. Convictive region of cb cells formed from E to SE 50 Km from radar with max reflectivity 43 dbz and height of 9 km.	169 Km and moving Ely	Convective region cells gradually decreasing in reflectivity and moved away from radar range.	-	-
		12/0900 12/1200	Isolated single cells formed in Nly direction at 195 KM with 16 KM max ht. with max reflectivity of 52 dBz.	195 Km and moving SEly	Gradually decreasing in reflectivity.	-	-
		12/1200 12/1500	Isolated single cells formed in NEly direction at 175 KM with 10 KM max ht. with max reflectivity of49 dBz.	NE(175 KM) and moving Ely	Gradually decreasing in reflectivity.	-	-
		12/1500 12/1800	Convective region of CB cells of max. reflectivity of 45dBz with average ht. of 8 KM.	SE(230 KM) and moving NEly	Gradually increase in reflectivity.	-	-
		12/1800 13/0000	Multiple cells of max. reflectivity of 47dBz with average ht. of 10 KM.	SE(80 KM) and moving NEly	Gradually increase in reflectivity and moving to BOB.	-	-
		13/0000 13/0300	Multiple cells of max. reflectivity of 52dBz with average ht. of 14 KM.	S(110 KM) and moving Ely	Gradually decrease in reflectivity and moving to BOB.	-	-

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	13.06.17	120045 - 120330	Multi Cell. Maximum Reflectivity : 42dBZ Echo Top : 09.3 KM	Range: 150 KM from DWR Patna in N.E. and N direction. Movement- South Easterly	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	Thunderstorm and Lightning	West Champaran, East Champaran, Sheohar, Sitamarhi, Madhubani, Gopalganj, Muzaffarpur, Dharbhanga, Vaishali, Samastipur.
		121055 - 121355	Multi Cell. Maximum Reflectivity : 40 dBZ Echo Top : 14.0KM	Range: 125 KM from DWR Patna in ESE direction. Movement-ESE	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	Thunderstorm and Lightning	Lakhisarai, Munger, Bhagalpur, Banka, Jamui.
Jaipur	13.06.17	12/0300 13/0300	Multiple cell with average height of 6.5 km & maximum reflectivity 60 dBZ	Multiple cell develop 0302 to 0300 UTC of 12/06/2017 towards North-West of Jaipur and moved to South- East Wards at speed 30-35 km/hr	Cell starts forming from 0302 to 0300 of 12/06/2017 at NW of Jaipur and reaches maximum reflectivity during 0812-0222 UTC. REMAIN CONTINUE	Thunderstorm/rain at isolate places	Nagaur, Sikar, Ajmer, Bhilwara, Kota, Jaipur, Churu, Jhunjhunu, Pilani, Alwar.

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	13.06.17	12/0300 12/0600	NO ECHOS	----------	-------	-	----------
		12/0600 12/0900	Multiple cells Max dBZ=36.5 Ht.=7-9 KMS	ECHOS FORMED NORTH & NE OF DWR MOVEMENT SE - WARDS	--------	----------	
		12/0900 12/1200	Multiple cells Max dBZ=50.0 Ht.=7-8 KMS	ECHOS FORMED NE THEIR MOVEMENT SE WARDS			Rampur, Bhuntar, Rohru, Uttarkashi
		12/1200 12/1500	Multiple cells Max dBZ=48.5 Ht.=7-8 KMS	ECHOS FORMED NE THEIR MOVEMENT SE WARDS			Uttarkashi, Gangotri, Rohru
		12/1500 12/1800	NO ECHO	----------	----------	----------	----------
		12/1800 12/2100	Isolated cells Max dBZ=41.5 Ht.= 5 KMS	SSW SECTOR OF DWR			
		12/2100 13/0000	Isolated cells Max dBZ=52.5 Ht.= 6 KMS	SSW SECTOR OF DWR. MOVEMENT SE WARDS			Bhiwani
		13/0000 13/0300	Isolated cells Max dBZ=52.5 Ht.= 6 KMS	SSW SECTOR OF DWR. MOVEMENT SE WARDS			Sangrur, Nabha, Devigarh
Karaikal	12.06.17	1.1200Z - 1300Z 2.1512Z - 1902Z	1) isolated cell in WNW direction 250 km range with max reflectivity of 37dBz and Average height of 08 km. 2) isolated cell in WNW direction 250 km range with max reflectivity of 34dBz and Average height of 06 km.	Moving towards NE Direction Moving towards NE Direction	1.Cells started forming at 1212 Z and dissipated at 1302IST 2.Cells started forming at 1512 Z and dissipated at 1902IST	N/A	N/A
	13.06.17			Nil			

	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Radar Station name Machilipatnam		0831 to 1001 UTC	Isolated Multiple cells average height of 3.8 km with maximum reflectivity of 50 dBZ.	NW (65KM) and moving E ly direction with average speed of 15.0kmph	Cell started forming at 0831 UTC, at NW(65 km) from Radar the maximum reflectivity during 0831 UTC to 0931 UTC and died down at 1001 UTC	Possibility of Thunder storm with rain and winds.	Guntur, Krishna Districts
		1111 to 1841 UTC	Convective region average height of 6 km with maximum reflectivity of 52dBZ.	W (200KM) and moving NE ly direction with average speed of 30.0kmph	Cell started forming at 1111UTC, at W (200km) from Radar the maximum reflectivity during 1111UTCto 1831 UTC and died down at 1841UTC	Possibility of Thunder storm with rain and winds.	Prakasam,Guntur, Krishna,WestGodavariEast Godavari, Visakhapatnam,Nalgonda,Suryapet, Warangal-rural&urgan, Mahabubabad, Khammam,Bhadradri-Kothagudem,Jayasankar-Bhupalapalli, Dantewara, Malkangir,Districts
		2201to 2311 UTC	Isolated Multiple cells average height of 4.5 km with maximum reflectivity of 47.5dBZ.	E (200KM) and moving NE ly direction with average speed of 20.0kmph	Cell started forming at 2201UTC, at E (200km) from Radar the maximum reflectivity during 2201UTC to 2301 UTC and died down at 2311 UTC	Possibility of Thunder storm with rain and winds.	East Godavari, Visakhapatnam Districts.
		2211to 0131 UTC	Isolated Multiple cells average height of 3.7 km with maximum reflectivity of 50.5dBZ.	NE (128KM) and moving NE ly direction with average speed of 25.0kmph	Cell started forming at 2211UTC, at NE (128km) from Radar the maximum reflectivity during 2211UTC to 0111 UTC and died down at 0131 UTC	Possibility of Thunder storm with rain and winds.	Suryapet Khammam,Bhadradri-Kothagudem East Godavari, Visakhapatnam Districts.
		2201to 0011 UTC	Isolated Multiple cells average height of 6.5 km with maximum reflectivity of 55dBZ.	NE (150KM) and moving NE ly direction with average speed of 25.0kmph	Cell started forming at 2201UTC, at NE (150km) from Radar the maximum reflectivity during 2201UTC to 2351 UTC and died down at 0011 UTC	Possibility of Thunder storm with rain and winds.	East Godavari, Visakhapatnam Districts.

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
Kolkata	13-06-2017	0301-0451	NIL	NIL	NO ECHO	NIL	NIL
		0531-0950 UTC	1. Isolated small multi cells merged to form an extended multi cell system with maximum reflectivity of 61.0 dBz at 0711 UTC and maximum height more than 10.84 km at 0711 UTC.	1.Between NNE/101.5 km and NE/78.7 km moving towards S/SSW-ly	1. Isolated small multi cells developed at 0531 UTC in between NNE/101.5 km and NE/78.7 km from Radar merged to form an extended multi cell system at 0651 UTC. Matured. Dissipated at 0950 UTC in N at a distance of 65.7 km from radar.	Thunderstorm / Rain	N/A
		0950-1511 UTC	2. Isolated multiple cells merged to form an extended multi cell system with maximum reflectivity of 65.0 dBz at 1051 UTC and maximum height more than 16.75 km at 0950 UTC.	2.Between NW/37.8 km and ESE/94.8 km moving towards SE-ly	2. Isolated multiple cells developed in between NW/37.8 km and ESE/94.8 km from Radar merged to form an extended multi cell system at 1041 UTC. Matured. Dissipated at 1511 UTC.	Thunderstorm Hail/Squall/ Rain	N/A
		0950-1241 UTC	3. Isolated multiple cells merged to form an extended multi cell system with maximum reflectivity of 62.5 dBz at 1022 UTC and maximum height more than 17.28 km at 1031 UTC.	3.Between NW/160.9 km and SW/80.7 km moving towards SE-ly	3. Isolated multiple cells developed in between NW/160.9 km and SW/80.7 from Radar merged to form an extended multi cell system at 1041 UTC. Matured. Dissipated at 1241 UTC in WSW at a distance of 58.0 km from radar.	Thunderstorm Hail/Squall/ Rain	N/A
		0000-0300	NIL	NIL	NO ECHO	NIL	NIL
Bhuj	12/06/2017	0430 (UTC) TO 1200 (UTC)	Isolated cell at height from 03 to 12 Kms. with maximum 56 dBZ.	220 Kms. In SE	Observed during 11:13 to 11:43 UTC.	TS or TSRA.	1) Amreli