India Meteorological Department

FDP STORM Bulletin No. 07 (12-03-2017)

1. CURRENT SYNOPTIC SITUATION at 03UTC of 12-03-2017

Synoptic Features:

The Western Disturbance as an upper air cyclonic circulation over north Pakistan & adjoining Jammu & Kashmir has moved away east-north-east-wards. A fresh feeble Western Disturbance as a trough in mid-tropospheric westerlies runs roughly along longitude 73.0° E and north of latitude 35.0° N. The upper air cyclonic circulation over eastern parts of Bihar & adjoining Sub Himalayan West Bengal extending upto 0.9 Km above mean sea level persists. The trough from the above system to Telangana across Gangetic West Bengal, Odisha & south Chhattisgarh now runs from the above system to south Chhattisgarh and extends upto 0.9 KM above mean sea level. Another Western Disturbance likely to affect Western Himalayan region from 15th and adjoining plains from 16th onwards.
The wind discontinuity from Telangana to south Tamilnadu across Rayalaseema at 0.9 km above mean sea level has become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation (Based on 0300 UTC Imagery of INSAT-3D):
Clouds (based on 0300UTC imagery):

WESTERN DISTURBANCE (WD) :-
Scattered multi-layered clouds over Caspian Sea and neighbourhood in association with western disturbance over the area.
Scattered Low/Medium clouds over Jammu & Kashmir, Himachal Pradesh, North Uttarakhand, central parts of North Uttar Pradesh, Jharkhand, adjoining Bihar, North Gangetic West Bengal, Northeast States, Northwest Tamilnadu, north Kerala, and Lakshadweep.
Arabian Sea:- No significant clouds over the region.
Bay Of Bengal & Andaman Sea:- Scattered Low/Medium clouds over North and Southwest Bay.

RADAR observation during past 24 hrs and current observation based on *0600UTC*
Not significant

Environmental condition (dust etc) and its forecast based on 00UTC of date:
No significant dust concentration observed over Arabian Peninsula and west Rajasthan. No significant change in dust concentration expected.

2. NWP MODEL GUIDANCE

NCMRWF (NCUM Forecasts based on 00UTC of the day):

1. Weather Systems: Feeble trough in forecasts Day-0 to Day-4 at MSLP over J & K.
Wind discontinuity only in Day-0-4: at 925 extends WE & NS from parts of AP, Maharashtra, Odisha, Chhattisgarh and parts of Bihar. (NS trough at 850 hPa in 00UTC charts over peninsula)
Anticyclonic flow over Bay of Bengal at 850 hPa approaching Odisha coast Day-1 to Day3
2. Location of jet and jet core at 500hPa:-**500hPa Jet core (>60kt)**
Day-0to Day-1 SH Gangetic plains, (>100kt over Bihar) Diminishing in Day1 to Day2 confined to NE India
3. Convergence at 850 hPa: - Weak noisy low level convergence at several places over India
4. Low level Vorticity:-Positive Vorticity (>15 x 10^{-5}/s) Weak noisy scattered in 12UTC on all days. Day-2 to Day-5 NS orientation over peninsula near 77E along the NS trough at 850 hPa
5. Showalter Index: -3 to -4[Very Unstable]
Day-1-2: Parts of TN extending to AP and Karnataka. NS orientation, covering Maharashtra and MP.
Day-3- 4: Day-4-5: NS orientation, Central peninsula covering parts of Telangana, Karnataka, Maharashtra, MP, Chhattisgarh and Odisha (on day5)
6. K-Index :> 35[Very Unstable thunderstorm likely]:-
Day-1-2: Parts of TN extending to AP and Karnataka . NS orientation, covering Maharashtra and MP.
Day-3- 4: Day-4-5: NS orientation, Central peninsula covering parts of Telangana, Karnataka, Maharashtra, MP, Chhattisgarh and Odisha (on day5)
7. Spatial distribution of TTI
TTI >44 [Scattered Numerous Thunderstorms]
Day-2-4: NS orientation, Central peninsula covering parts of Telangana, Karnataka, Maharashtra, MP, Chhattisgarh and Odisha (on day4)
8. Rainfall and thunder storm activity: -
Day-0 -1: (>2cm/day) Manipur, Mizoram and Arunachal. **(highest >4cm/day)**

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

1. Weather systems:- A quasi-stationary CYCIR at 850 hPa over south peninsula and adjoining areas and another feeble CYCIR over Odisha adjoining areas would develop during Day-2 to Day-3. A CYCIR over the central parts of India would also develop on Day-5.
2. Location of jet and jet core at 500hPa:-**500hPaJetcore(>60kt):- 500hPa Jet core (>60kt):** The Jet at 500 hPa over India along around 26 deg. N latitude would weaken from Day-1.
3. Spatial distribution of Low level Vorticity:- 850hPa Positive Vorticity (>12 x 10^{-1}/s): Mainly along foothill of Himalaya during next 5 days. Over Karnataka and adjoining areas during Day-2 to Day-4.
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): Less than the threshold value all over the country during next 5 days.

Lifted Index (< -2): Less than threshold value over the Tamilnadu coast during next 24 hours, along east coast from Day-2 to Day-3 and over Odisha and Gangetic West Bengal during Day-4 to Day-5.
Total Total Index (> 50) : Above threshold value over Maharashtra, Gujarat and adjoining south Rajasthan and Karnataka at 12 UTC during next 5 days.
Sweat Index (> 300): Over NE states during next 24 hours, mostly along east coast during Day-2 to Day-3 and over the south peninsula on Day-4 and Day-5.
CAPE (> 1000): Mostly along Andhra Pradesh and Tamilnadu coast during next 3 days and over Odisha and West Bengal coast during Day-4 to Day-5.
CINE (50-150): Over Odisha, AP, Telangana and Tamilnadu from Day-2 to Day-5.
5. Rainfall activity:- 10-40 mm rainfall over extreme south peninsula during next 5 days,
20-70 mm rainfall over extreme parts of NE states during next 24 hours.

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

1. Weather Systems: Strong north-westerly flow (25-30) kts would establish along the foothills of Himalaya on Day-1 and anticyclonic flow would establish all over the country with its centre over the central parts of India during Day-2 to Day-3.
2. Location of jet and jet core at 500 hPa:- **500 hPa Jet core (>60kt):** The Jet at 500 hPa persists over India along around 25 deg. N latitude would weakens after 48 hours.
3. **Spatial distribution of Low level Vorticity-850 hPa Positive Vorticity (>12x10^{-1}/s):** Mostly along foothills of Himalaya on Day-1 and Day-2 and over Karnataka and adjoining areas during next 3 days.
4. **Model reflectivity (Max. dBz)**: 15-30 dBz over isolated places of NE states during next 24 hours and 5-15 dBz over isolated places of J&K and Andhra Pradesh during subsequent 24 hours.
5. Spatial distribution of Total Total Index, K-Index, CAPE and CIN [High potential for thunderstorm]
Total Total Index (> 50) : Above threshold value mostly over most parts of NW India during next 3 days.
K-Index (> 35): Less than threshold value over the India during next 3 days.
CAPE (> 1000): Mostly over Andhra Pradesh and Tamilnadu coast during next 48 hours and over the south peninsula at 12 UTC of 14.03.2017.
CIN (50-150): More than -200 over most parts of the India during next 3 days.
5. Rainfall activity: - 20-40 mm over Arunachal Pradesh and adjoining areas during next 24 hours and over extreme south peninsula during next 72 hours.

ECMWF (based on 0000 UTC of the day):

Mean sea level: No significant systems over Indian region till 16th March 2017.
Lower Level Winds (925 hpa & 850 hpa):
An upper air cyclonic circulation is seen over northwest Rajasthan and adjoining Pakistan on 12th March, seen over northwest Rajasthan on 13th March and become less marked thereafter.
Another upper air cyclonic circulation is seen over Marathwada and adjoining Vidarbha on 14th March and persisted over the same area on 15th March and become less marked thereafter.
A trough in westerlies from Gangetic West Bengal to north Costal Andhra Pradesh across Odisha is seen on 12th March and become less marked thereafter.

Western Disturbance (700 hpa & 500 hpa)
The western disturbance as trough running roughly along 73° E and north of 34° N at 500 hpa is seen on 12th March; on 13th March trough running roughly along 76° E and north of 32° N and moved away. Another western disturbance as a trough running roughly along longitude 63° E and north of 34° N seen on 15th March.

3. IOP ADVISORY FOR 24 and 48 Hrs

Summary and Conclusions:
Synopsis based on synoptic conditions, NWP models and satellite imageries is as follows:

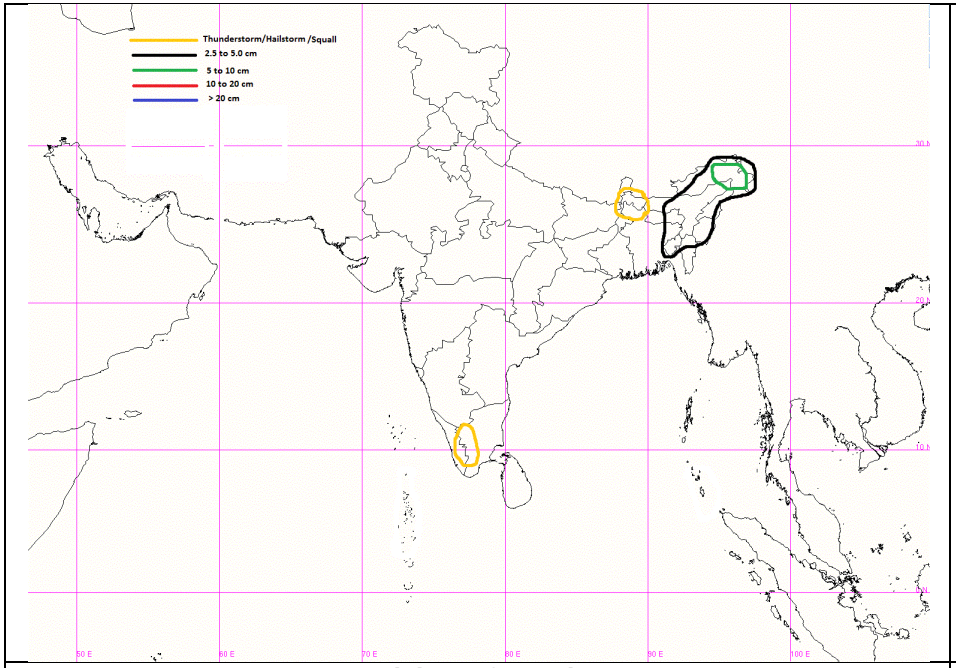
Day1 & Day2:
Presently, the Western Disturbance as an upper air cyclonic circulation over north Pakistan & adjoining Jammu & Kashmir has moved away eastnortheastwards. A fresh feeble Western Disturbance as a trough in mid-tropospheric westerlies runs roughly along longitude 73.0° E and north of latitude 35.0° N. The upper air cyclonic circulation over eastern parts of Bihar & adjoining Sub Himalayan West Bengal extending upto 0.9 Km above mean sea level persists. The trough from the above system to Telangana across Gangetic West Bengal, Odisha & south Chhattisgarh now runs from the above system to south Chhattisgarh and extends upto 0.9 KM above mean sea level. However another Western Disturbance likely to affect Western Himalayan region from 15th and adjoining plains from 16th onwards.
Due to the above systems, East Arunachal Pradesh and North eastern region will experience rainfall activity, whereas Sub - Himalayan west Bengal will get some thunder squall activities. Thunder squall activity may also be in the parts of Kerala and Interior Tamilnadu.

On Day 2, due to the movement of western disturbance to eastward, the thunder accompanied with rainfall activity will decrease over north eastern region. Similarly due to the wind discontinuity from Telangana to south Tamilnadu across Rayalaseema, the Thunder squall activity will decreases over Kerala and Interior Tamilnadu.

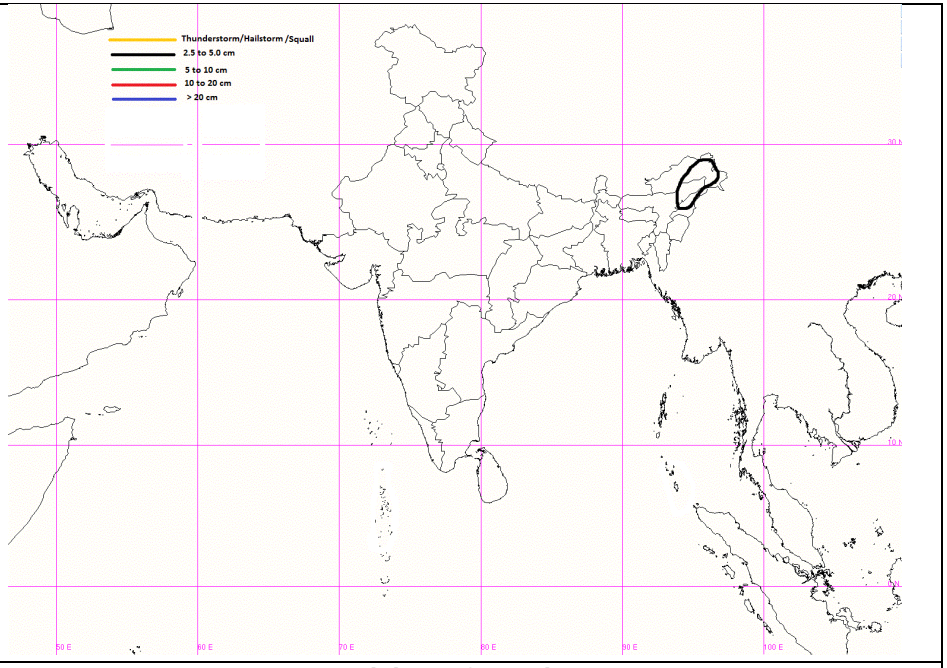
24 hour Advisory for IOP:
- East Arunachal Pradesh
- Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura
- Sub Himalayan West Bengal
- Kerala and Interior Tamilnadu

48 hour Advisory for IOP:
Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura

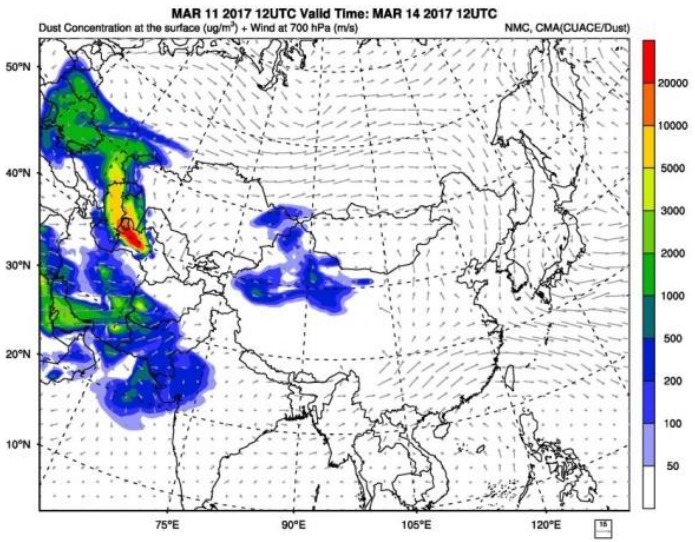
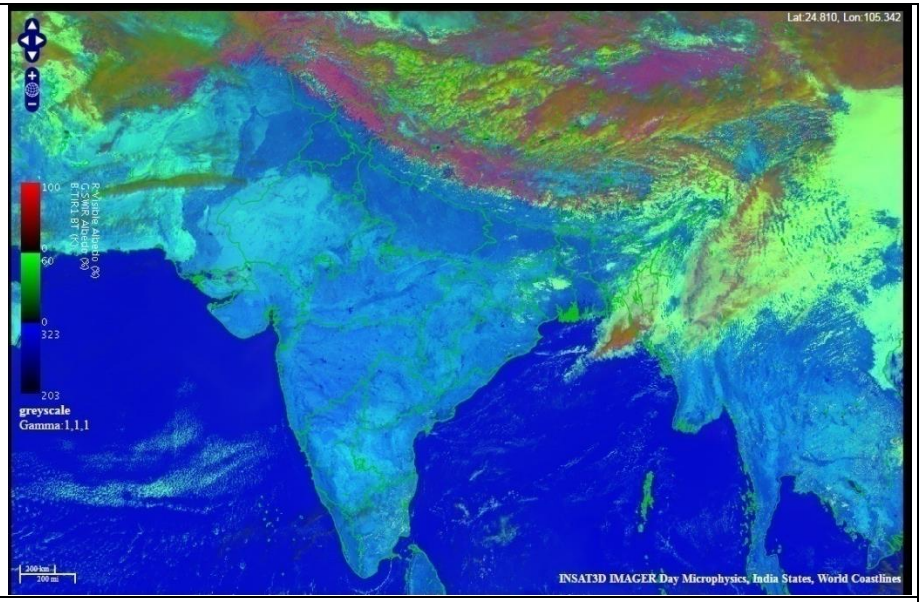
For NCMRWF NWP products: (http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php)
For IMD NWP products: (http://nwp.imd.gov.in/diagpro_new.php)
For Synoptic plotted data and charts
http://amssdelhi.gov.in/
http://www.amsskolkata.gov.in/
For RAPID tool:
http://rapid.imd.gov.in/
Low Level Winds
http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/LLW/MAR_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
Past 24 hour HEM and IMR rainfall (upto03UTCoftoday)
IMR: http://satellite.imd.gov.in/img/3Ddaily_imr.jpg
HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg
For Radar images of the past 24 hours including mosaic of images:
http://ddgmui.imd.gov.in/dwr_img/

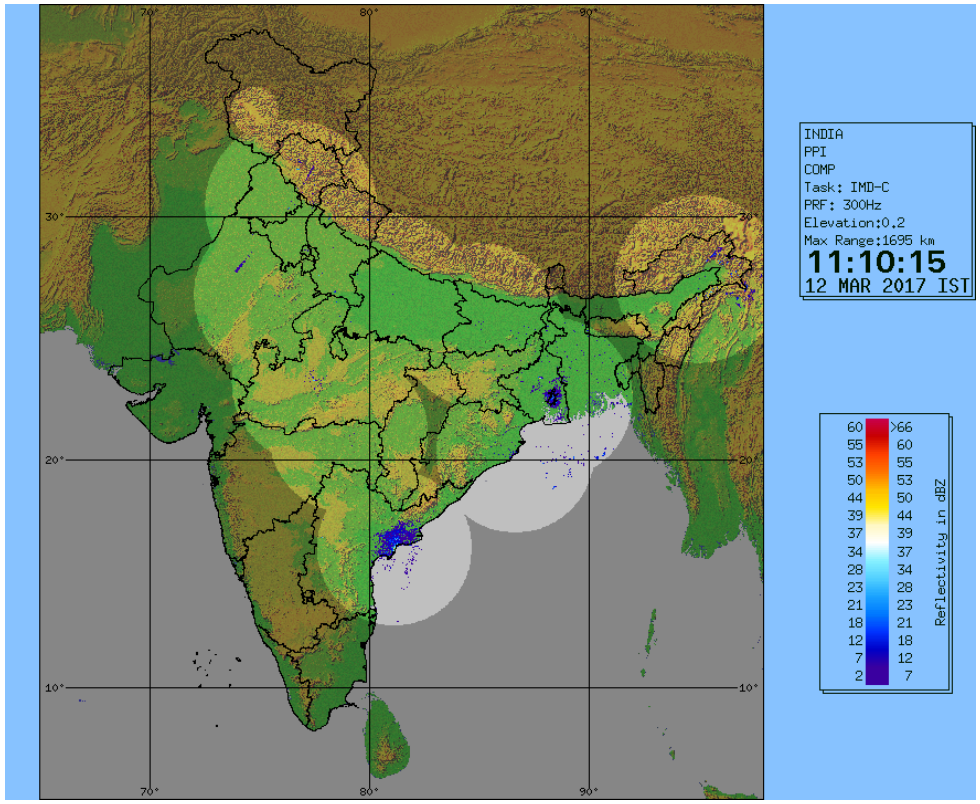


IOP Advisory for 24 hours

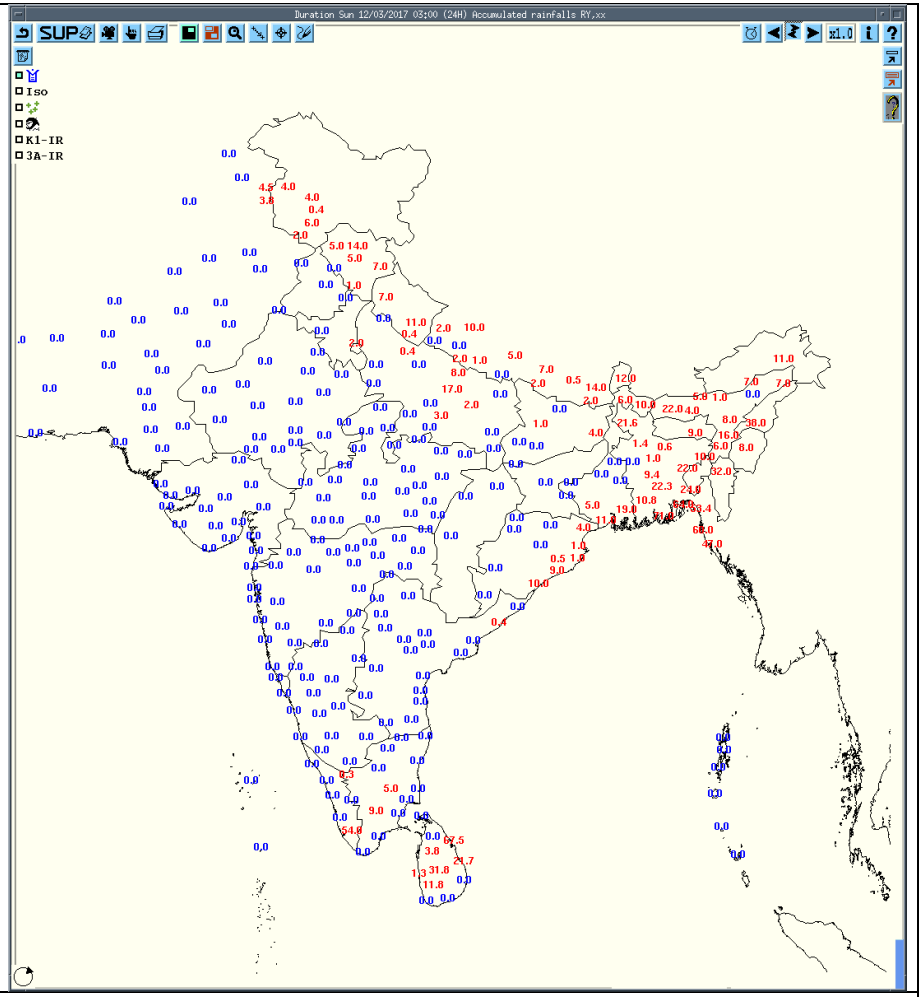


IOP Advisory for 48 hours

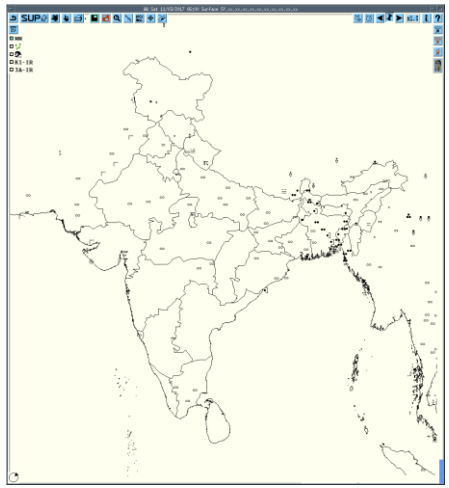
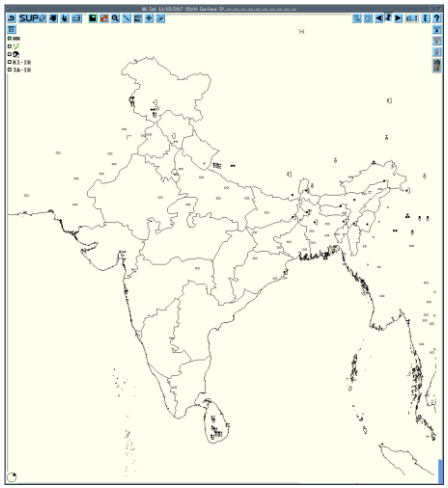
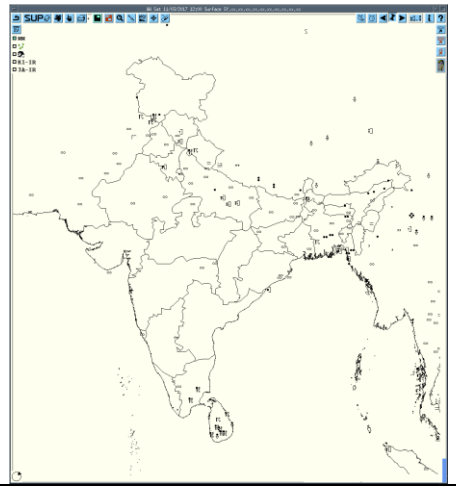
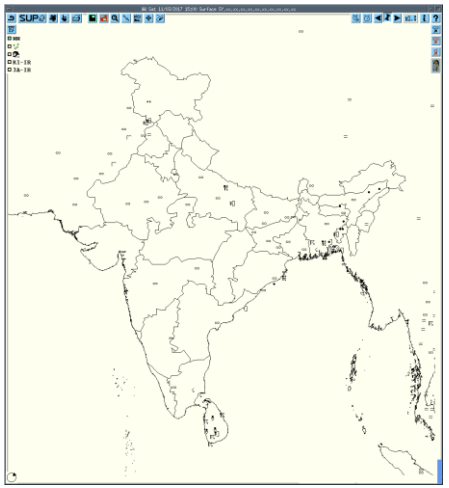
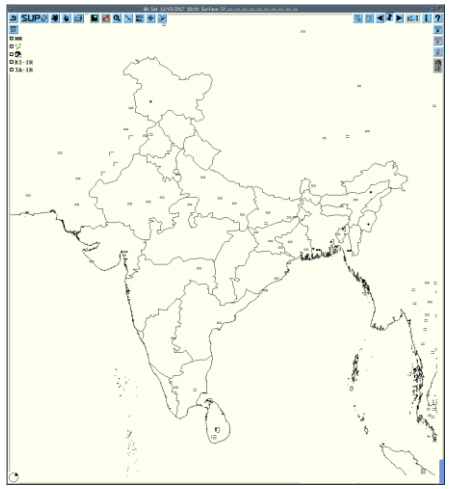
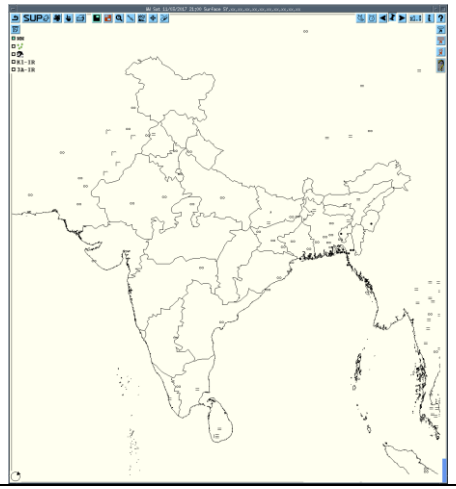
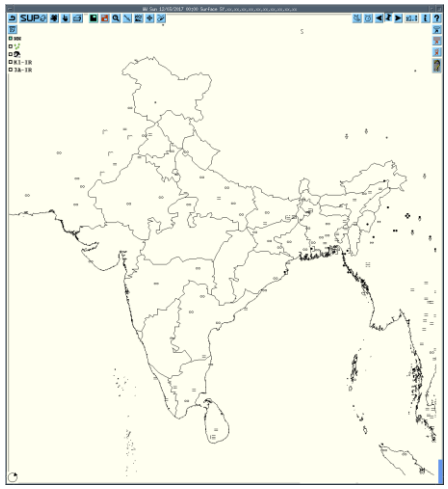
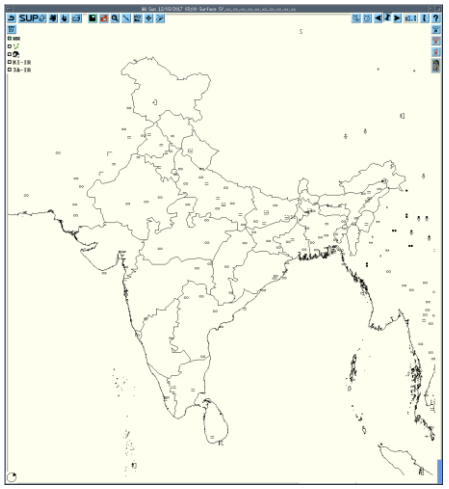
	
Forecast Dust Concentration	**RGB Image of INSAT3D at 0530 UTC**



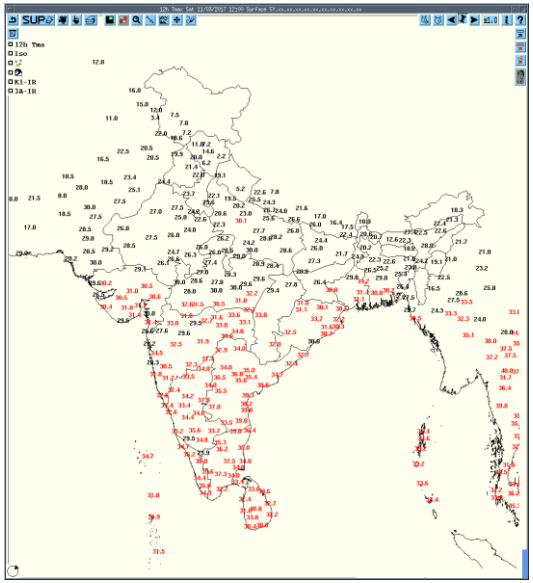
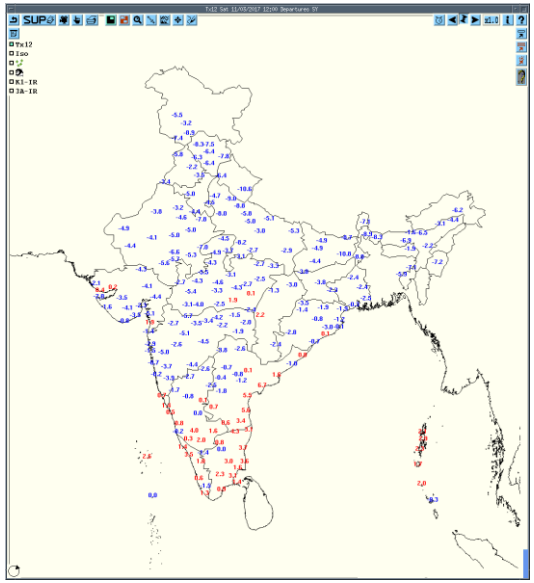
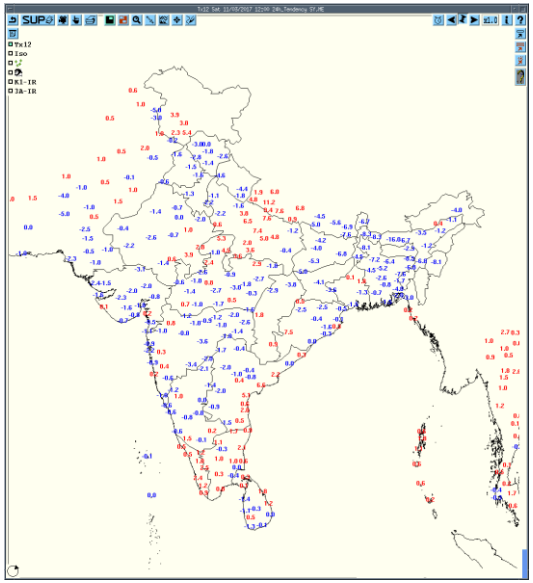
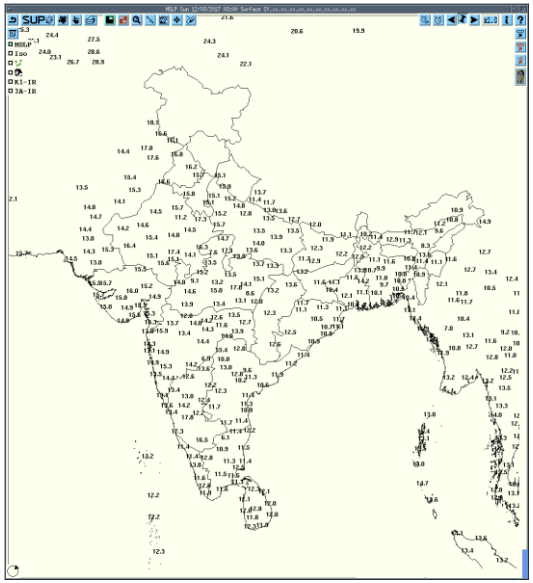
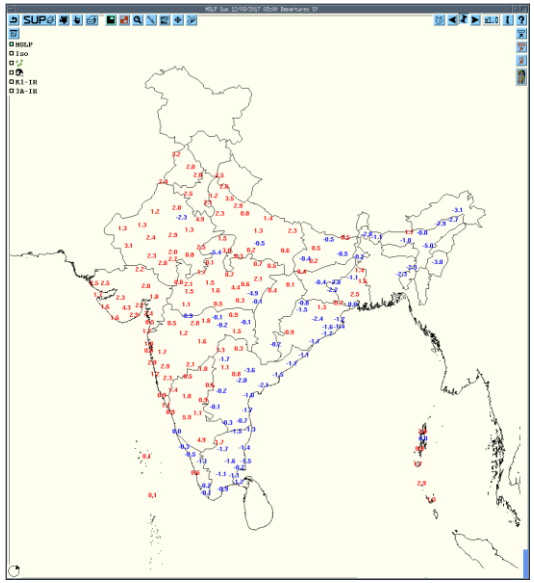
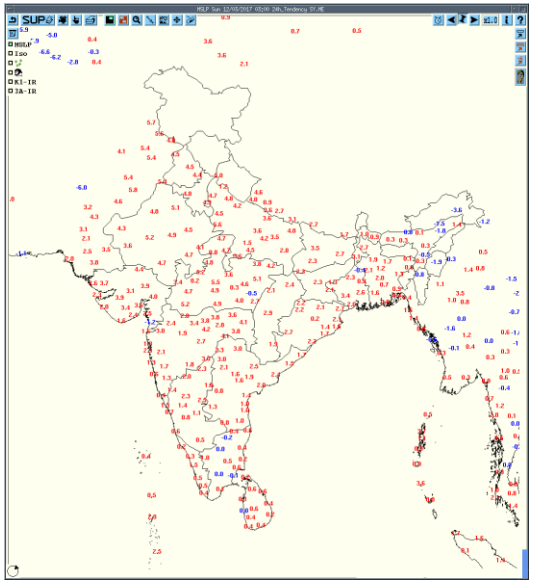
DWR Composite at 1110 hrs IST of today high lighting regions of convection

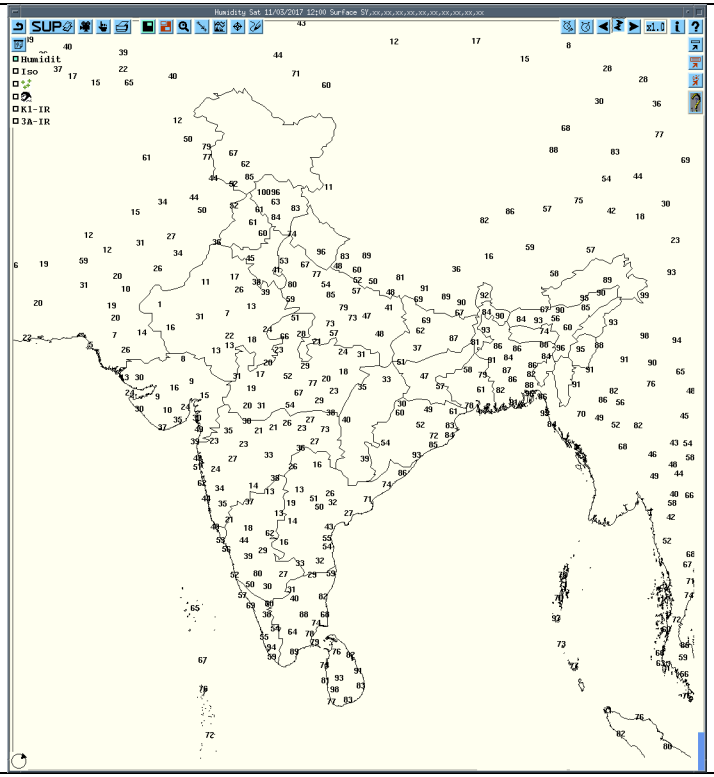


Accumulated 24 Hour rainfall (in red) recorded at 0300 UTC of today

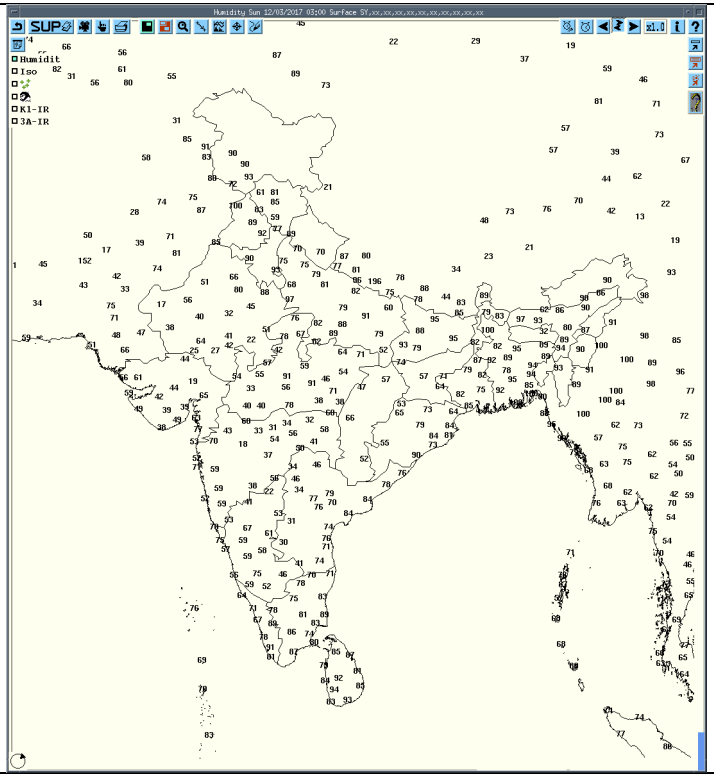









3 hourly Past weather at 06, 09, 12, 15, 18 , 21 UTC of yesterday and 00 & 03hrs UTC of today

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



RH 12UTC yesterday



RH 03UTC today

Realizedweatherpast24hours					
Date	**Time of Reporting**	**Name of Station Reporting**	**Region**	**STATE**	**Weather Event**
11-03-17	0600 UTC	Mukteshwar	NW India	Uttrakhand	Thunderstorm
11-03-17	0900 UTC	Bhaderwah	NW India	Jammu & Kashmir	Thunderstorm
11-03-17	1200 UTC	Katra	NW India	Jammu & Kashmir	Thunderstorm
		Shimla	NW India	Himachal Pradesh	Thunderstorm
		Tehri	NW India	Uttrakhand	Thunderstorm
		Lucknow	NW India	Uttar Pradesh	Thunderstorm
		Fursatganj	NW India	Uttar Pradesh	Thunderstorm
		Sultanpur	NW India	Uttar Pradesh	Thunderstorm
		Bagdogra	East India	West Bengal	Thunderstorm
		Tiruchchirappalli	South India	Tamilnadu	Thunderstorm
		Madurai	South India	Tamil Nadu	Thunderstorm
11-03-17	1500UTC	Jammu	NW India	Jammu & Kashmir	Thunderstorm
		Bahraich	NW India	Uttar Pradesh	Thunderstorm
		Sultanpur	NW India	Uttar Pradesh	Thunderstorm
11-03-17	1800 UTC	Nil	Nil	Nil	Nil
11-03-17	2100 UTC	Nil	Nil	Nil	Nil
12-03-17	0000 UTC	Nil	Nil	Nil	Nil
12-03-17	0300 UTC	Nil	Nil	Nil	Nil

Name of Station Reporting	Region	STATE	Weather Event	Date	Time of Commencement (IST)	Time of end (IST)
Jammu	Northwest India	Jammu & Kashmir	TSRA	11-03-17	1545	1950
Batote	Northwest India	Jammu & Kashmir	TSRA	11-03-17	1325	1440
Katra	Northwest India	Jammu & Kashmir	TSRA	11-03-17	1545	1820
MO Shimla	Northwest India	Himachal Pradesh	TSRA	11-03-17	1200 1600	1210 1610
PBO Sunder Nagar	Northwest India	Himachal Pradesh	TSRA	11-03-17	1145	1150
New Delhi (Safdarjung)	Northwest India	Delhi	TSRA	12-03-17	0335	0445
New Delhi (Palam)	Northwest India	Delhi	TSRA	12-03-17	0330	0600
Bareilly	Northwest India	Uttar Pradesh	TS	11-03-17	1230	1235
Ballia	Northwest India	Uttar Pradesh	TS	12-03-17	0145	0200
Kheri	Northwest India	Uttar Pradesh	TS	11-03-17	1720	1800
Bahraich	Northwest India	Uttar Pradesh	TS	11-03-17	1825	2100
Ghazipur	Northwest India	Uttar Pradesh	TS	11-03-17	1200	1210
MC Dehradun	Northwest India	Uttrakhand	TSRA	11-03-17	1600	1740
MO Mukteshwar	Northwest India	Uttrakhand	TSRA	11-03-17	1235	1320
MO Tehri	Northwest India	Uttrakhand	TSRA	11-03-17	1700	1725
Coochbehar	East India	West Bengal	TSRA	11-03-17	0830	0840
Alipore	East India	West Bengal	TSRA	11-03-17	1800	1830
Alipore	**East India**	**West Bengal**	**Squall (NW /47 Kmph)**	**11-03-17**	**1806**	**1807**
Diamond Harbour	East India	West Bengal	TSRA	11-03-17	2135	2220
Digha	East India	West Bengal	TSRA	11-03-17	2100	2110
Bhubaneswar	East India	Odisha	TSRA	11-03-17	1850	1920
Paradeep	East India	Odisha	TSRA	11-03-17	2000	2110
Lengpui	Northeast India	Mizoram	TSRA	11-03-17	2126	2200
Agartala	Northeast India	Tripura	TSRA	11-03-17	1850	1950

Severe Weather warning based on DWR observation	
Name of issuing Radar station	**DWR Kolkata**
Geo-coordinates of issuing Station (Lat,Long,Alt)	22.5705°N/88.353°E,7m
Date and time of issue in UTC(yyyyMMddhhmm)	201703120611 UTC
Nature of severe weather expected	Nil
Name of issuing Radar station	**DWR KARAIKAL**
Geo-coordinates of issuing Station (Lat,Long,Alt)	Lat:10.91381N,Long:79.84141E/Alt:25mamsl
Date and time of issue in UTC(yyyyMMddhhmm)	DWR U/S
Nature of severe weather expected	--
Name of issuing radar station	**DWR LUCKNOW**
Geo-coordinates of issuing Station (Lat,Long,Alt)	$26^0$46'07" N / $80^0$53'07" E/ 127.71 M
Date and time of issue in UTC(yyyyMMddhhmm)	201703120700
Nature of severe weather expected	Nil
Name of issuing radar station	**DWR Machilipatnam**
Geo-coordinates of issuing Station (Lat,Long,Alt)	LAT: 16.12' LONG: 81.09' ALT: 3.05m
Date and time of issue in UTC(yyyyMMddhhmm)	201703120601
Nature of severe weather expected	Nil