India Meteorological Department

FDP STORM Bulletin No.48 (22-04-2017)

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

SYNOPTIC FEATURES:

The western disturbance as a trough in mid tropospheric westerlies, now seen as an upper air cyclonic circulation over Afghanistan & neighbourhood and extends upto 3.1 Km above mean sea level with a trough aloft runs roughly along longitude 60.0°E and north of latitude 22.0°N.

The feeble western disturbance as an upper air cyclonic circulation over eastern parts of Jammu & Kashmir and neighbourhood at 3.1 km above mean sea level persists.

The upper air cyclonic circulations over Haryana & neighbourhood, now lies over northwest Uttar Pradesh and adjoining Haryana and extends upto 1.5 Km above mean sea level.

The upper air cyclonic circulations over southeast Uttar Pradesh & neighbourhood, now lies over Bihar and adjoining Jharkhand & Gangetic West Bengal and extends upto 3.1 Km above mean sea level.

The upper air cyclonic circulations over Nagaland, Manipur, Mizoram & Tripura & neighbourhood persists and now extends upto 1.5 km above mean sea level.

A trough runs from Vidarbha to south Tamilnadu across Telangana & Rayalaseema and extends upto 0.9 Km above mean sea level.

The upper air cyclonic circulation over northeast Arabian sea & adjoining Saurashtra & Kutch persists and now seen between 1.5 & 5.8 Km above mean sea level.

The trough at mean sea level from south Punjab to Manipur now runs from northwest Rajasthan to north Coastal Odisha across north Madhya Pradesh and Jharkhand.

A trough from Marathawada to east-central Arabian sea has become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Convective Activity and cloud description:

Convective Activity:

Cell No.	Date/Time	Area/Location	CTBT (minus ^{0}C)	Movement	Remarks
1	22/0800	NE Bihar	57	---	Developing
	0900	do	65	---	---
2	22/0900	EC Jharkhand	65	---	Developing

Scattered multi-layered clouds seen over J & K, Himachal Pradesh, E Punjab, N Haryana and N Uttarakhand in association with western disturbance over the area. The trough in westerlies runs roughly north of latitude 20.0ºN and longitude 58.0ºE

Scattered low/medium clouds with embedded moderate to intense convection were seen over NE Bihar, EC Jharkhand, SHWB, Arunachal Pradesh, C Assam, S Nagaland, Manipur, Tripura, Mizoram and east Bangladesh. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over rest north eastern states. Scattered low/medium clouds were seen over rest Punjab, rest Uttarakhand, extreme NW & SE Uttar Pradesh, Odisha, Chhattisgarh, rest Jharkhand, E Madhya Pradesh, SW South Interior Karnataka, Kerala, N Tamilnadu and Nicobar Islands.

Arabian Sea:

No significant clouds over the region.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded moderate to intense convection were seen over extreme N Bay of Bengal and S Andaman sea.

Past Weather:

Convection:

Moderate to Intense convection was observed over J&K Himachal Pradesh Punjab Uttarakhand Bihar Sikkim North-East States Andhra Pradesh south interior Karnataka Kerala & Tamilnadu.

OLR:-

Up to 280 wm^{-2} was over Punjab Himachal Pradesh east Uttar Pradesh Bihar Jharkhand Gangetic West Bengal Andhra Pradesh South Interior Karnataka Kerala & Tamilnadu.

Up to 310 wm^{-2} was over Haryana west Uttar Pradesh Chhattisgarh & Orissa.

Up to 340 wm^{-2} was over rest parts of India.

Westerly Trough:

Trough in Westerlies runs roughly north of Lat 23.0N along Long 58.0E

Dynamic Features:

Negative shear tendency observed over Maharashtra Orissa and Positive shear tendency observed over rest parts of India.

A low wind shear is observed over central & south India and medium to high wind shear is observed over rest parts of India.

A positive Vorticity field is observed over Rajasthan Uttar Pradesh Bihar Jharkhand Orrisa Gangetic West Bengal & Andhra Pradesh.

Negative low level convergence observed over J&K Himachal Pradesh Gujarat Maharashtra and Positive Low Level Convergence observed over rest parts of India

Precipitation:

IMR:

Rainfall upto 50 was observed over west Assam Meghalaya Mizoram. Rainfall upto 30 was observed over extreme north-west J&K, north coastal Andhra Pradesh south Interior Karnataka north Tamilnadu. Rainfall upto 10 mm was observed over rest J&K Himachal Pradesh north Punjab Uttarakhand rest North-East States south Coastal Andhra Pradesh Kerala.

HEM: Rainfall upto 70 mm was observed over west J&K north Himachal Pradesh north Uttarakhand Meghalaya Manipur Mizoram Tripura. Rainfall upto 28 mm was observed over south Himachal Pradesh Sikkim Arunachal Pradesh Assam Nagaland north coastal Andhra Pradesh south Interior Karnataka Kerala north Tamilnadu . Rainfall upto 14 mm was observed over south Uttarakhand north-east Bihar. Rainfall upto 7 mm was observed over north Punjab.

RADAR and RAPID observation:

Strong convection appears to be in progress over Western parts of GWB and East Jharkhand in DWR composite at 1650hrs IST. It also indicated isolated convection over W Uttar Pradesh, Delhi and N Tamilnadu. Isolated/multiple echoes were seen in DWR Kolkata (dBZ 55-60 & height 12-15km), DWR Delhi (dBZ 55 & height 12km), Chennai (dBZ 50-55 & height 10-15km), DWR

Machilipatnam (dBZ 45 & height 8-10km), DWR Paradeep (dBZ 45-50 & height 9-10km), Patna(dBZ 45 & height 10-12km), DWR Vishakhapatnam (dBZ 45-50 & height 10km) and DWR Agartala (dBZ 30-35 & height 7-8km) at 1100UTC(1630hrs IST).
RAPID RGB imagery at 1600hrs IST indicated convective clouds over J & K, Himachal Pradesh, N Haryana, west Uttar Pradesh, north-eastern states, E-Jharkhand adjoining West Bengal, Sub-Himalayan West Bengal, Sikkim, Coastal Odisha, South Interior Karnataka and North Tamilnadu..

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 00 UTC of the day):

1. Weather Systems:

12UTC Charts of all the days from day-0 to Day-2 show feeble trough over J & K.
12UTC Charts of Day-0 to Day-2 show **Heat Low over Rajasthan and adjoining Pakistan** and its extension over IG plains is prominent. Subsequently, the heat low is less intense with MSLP is at around 998 hPa.
12UTC charts on all days from Day0-4 show two zones of wind discontinuity at 925 hPa:(i) SW-NE extending from northern Telangana region to Odisha-WB region. (ii) S-N extending from southern parts of TN to northern parts of Telangana-AP region. During Day3 and Day4 confined to south peninsula, the wind discontinuity is prominent over TN and AP.
At 12UTC from Day0-2 a CYCIR (850 hPa) can be seen over SHWB and Bihar region. Similarly at 850 hPa a CYCIR associated with Heat Low is prominent over Pakistan on Day-1 and 2.

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

Weaker core winds at 12 UTC on Day0-1. Strong core over isolated region over WB and adjoining Bangladesh at 12 UTC on Day-2, over Bangladesh and Meghalaya on Day-3

3. Convergence at 850 hPa:

At 12UTC Day-0&1 moderate values over isolated locations of Chhattisgarh, Odisha and AP, Rajasthan-Haryana. In Day-2 over Assam and adjoining Nagaland, over isolated locations in WB, Odisha and AP. In the north over Punjab and Himachal region. In Day-3&4 mainly over Assam and AP coast with enhanced activity in Day-4.
At 00UTC very high values : over Tripura, Manipur region in Day-1, several places in Assam in Day-3, and over Assam-Arunachal region in Day-4 & 5.

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

At 12UTC : very high values at isolated location over SHWB, Bihar and Bangladesh-Meghalaya border in day-0. Over WB and adjoining states and over Assam in Day-1. At several places over Assam in Day-2 to Day-4.

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

Very high values of Showalter Index over entire Arunachal on all Days
In Day-0-1: J & K, Uttarakhand, north UP Bihar & Jharkhand WB and southern parts of NE India. Over isolated locations in Odisha AP and over peninsula mainly coastal and SI Karnataka with adjoining TN and Kerala.

Day-2: J & K, Himachal Uttarakhand, NMMT. over peninsula mainly coastal & SI Karnataka and adjoining TN and Kerala. Additionally over southern and eastern Gujarat.
Day-3-4: reduced activity over most parts. Mainly active over Kerala and over some isolated regions of NE

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

In Day-0-1: J & K, Uttarakhand, north UP Bihar & Jharkhand WB and southern parts of NE India. Over isolated locations in Odisha AP and over peninsula mainly coastal and SI Karnataka with adjoining TN and Kerala.
Day-2: J & K, Himachal Uttarakhand, NMMT. over peninsula mainly coastal & SI Karnataka and adjoining TN and Kerala. Additionally over southern and eastern Gujarat.
Day-3-4: reduced activity over most parts. Mainly active over Kerala and over some isolated regions of NE

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

At 12UTC : Day0-1: Most parts of eastern India over eastern UP, Bihar, Jharkhand adjoining Chhattisgarh and WB. Over North and NW India mainly over J & K, Punjab, HP Uttarakhand and adjoining UP. And Haryana.
At 12UTC : Day2-3: Prominent over Gujarat and adjoining West MP. Over north mainly over J & K with adjoining HP and Punjab.

8. Rainfall and thunder storm activity:

>4 cm/day in Day-2-4 over Assam, Meghalaya and adjoining Bangladesh.
>16cm/day in Day-4&5 over Arunachal
>16cm/day in Day 1-3 over Meghalaya and adjoining Bangladesh.
>2cm in Day 2 & 3 over J&K

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

1. Weather Systems:

00 UTC analyses shows a low level trough starting from west UP and adjoining regions to Gangetic West Bengal (GWB) regions and this trough will persist for the next 2 days.
Another north-south oriented low level trough starting from Jharkhand and adjoining GWB regions to central India and this trough will persist for the next 1 day and shift eastward in the subsequent day.
Analyses also shows a low level CYCIR over NE India and another over Punjab and adjoining regions, both of this CYCIR will persist for the next 2 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 3 days.

3. Low level Vorticity:-Positive Vorticity 850hPa (>12 x 10^{-1}/s):

Analysis shows low level positive vorticity mainly over the foothills of Himalaya, along the west coast of India, east UP, Bihar, SHWB, Jharkhand, GWB and isolated pockets of NE states.
Forecast shows vorticity core zones mainly along the foothills of Himalaya, west coast of India, and isolated pockets of SHWB, GWB and NE states, Marathawada, north interior parts of Karnataka and few pockets along the east coast bordering Odisha and AP along with few regions of the north eastern states for the next 3 days.

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): Significant threshold values are noticed over Gangetic plains, Jharkhand, GWB, along the east of India and few pockets in NE India and along the west coast of India. Forecast shows significantly high threshold values over west coast of India, GWB and eastern coast for the next 3 days.
Lifted Index (< -2): The areas with index less than -2 lies along east coast regions, GWB, Odisha, coastal AP, and along the west coast of India and Kerala coast with gradually the above threshold value mainly extended towards southern coastal regions.

Sweat Index (> 400): 00UTC shows significant values over major parts along with the east coast extending up to coastal AP and also over west coast of India and 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 south AP coastal regions and NE region for next 3 days and also over few pockets in the south west region.
Total Total Index (> 50): Analysis shows significant values over few pockets in 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 for the next 2-3 days.
CAPE (> 1000): Mostly along east coast of India over Gangetic plains, GWB, Odisha and adjoining AP regions along with parts in south peninsular region and coastal Kerala and Karnataka during the next 3 days.
CINE (50-150): Maximum CINE values are found in some areas of GWB and along east coast over Odisha, coastal AP and Tamil Nadu and also along the west coast of India for the next 2-3 days.

5. Rainfall and thunderstorm activity:

10-40 mm rainfall is forecasted tomorrow over most parts of the NE states and J&K, and some parts of HP, Punjab, Uttarakhand, SHWB, GWB, Orissa and adjoining north AP, Karnataka, north Tamilnadu and Kerala regions. Rainfall activity over NE states will increase from today onwards for the next 3-4 days and light to moderate rainfall activity will continue over J&K, GWB, SHWB, Kerala for the next 3 days.

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

1. Model Reflectivity (Max.dBz): (>25 dBZ))

Model reflectivity exceeding the threshold value, is forecasted over most parts of NE states, HP, J&K and some parts of Uttarakhand, Gangetic plains, SHWB,GWB, coastal Orissa and adjoining AP and Kerala on day 1. Model reflectivity exceeding the threshold value are also forecasted over most parts of NE states, J&K regions and some isolated pockets of Orissa, north AP ,Karnataka, north Tamilnadu and Kerala in the day-2 forecast

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

Total Total Index (> 50) Above threshold values is observed over most parts of NE India, along the east coast of India during next 24 hour.
K-Index (> 35): Above threshold values is observed over most parts of NE India and over Kerala regions during the next 24 hour.
CAPE (> 1000): Mostly along east coast of India over GWB, along the east coast and west coast of India during next 1-2 days. Another zone along west coast of India, particularly over coastal Kerala, coastal Karnataka and Konkan & Goa during next 2 days.
CINE (50-150): CINE values are mostly small all over coastal regions of India during all three days of forecasts except some areas over Odisha, GWB, Eastern UP, Bihar, Jharkhand, coastal AP, coastal Karnataka and Konkan-Goa during next 3 days.

3. Rainfall and thunderstorm activity:

Rainfall activity (~ 10-40 mm) is expected to persist till next 3 days over most parts of NE states, J&K,HP, GWB, Kerala, some parts of Punjab, Uttarakhand , Karnataka, north Tamilnadu and this rainfall activity will start **increase** from today onwards over most parts of GWB and NE states

3. IOP ADVISORY FOR 24 and 48 Hrs:

Summary and Conclusions:

Day 1 & Day 2:

Presently, the feeble western disturbance as an upper air cyclonic circulation over eastern parts of Jammu & Kashmir and neighbourhood at 3.1 km above mean sea level persists and the upper air cyclonic circulations over northwest Uttar Pradesh and adjoining Haryana and extends upto 1.5 Km above mean sea level. Due to this, Jammu and Kashmir, Punjab, Haryana will experience the thundersquall with gust wind activity on Day-1. However, Himachal Pradesh, Uttarakhand and West UP may experience the thunderstorm with hail on Day-1.

The associated upper air cyclonic circulations over Bihar and adjoining Jharkhand & Gangetic West Bengal will give rise to thunderstorm with hail over Bihar and Jharkhand on Day-1. The upper air cyclonic circulations over Nagaland, Manipur, Mizoram & Tripura & neighborhood persists and now extends up to 1.5 km above mean sea level which will give rise to heavy to very rainfall over the Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura on Day-1. However intensity of the rainfall may decreases on Day-2.

A trough runs from Vidarbha to south Tamilnadu across Telangana & Rayalaseema and extends upto 0.9 Km above mean sea level. Due to this system, Telangana, Rayalaseema, Coastal Andhra Pradesh, Interior Tamilnadu will experience the thundersquall with gust wind activity on Day-1

24 hour Advisory for IOP:

Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura
Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana and West UP
Bihar, Sub Himalayan West Bengal, Sikkim
Telangana, Rayalaseema, Coastal Andhra Pradesh, Interior Tamilnadu
Orissa, Jharkhand, GWB
Arunachal Pradesh

48 hour Advisory for IOP:

Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura
Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana and West UP
Sub Himalayan West Bengal, Sikkim
South Coastal Orissa, GWB

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
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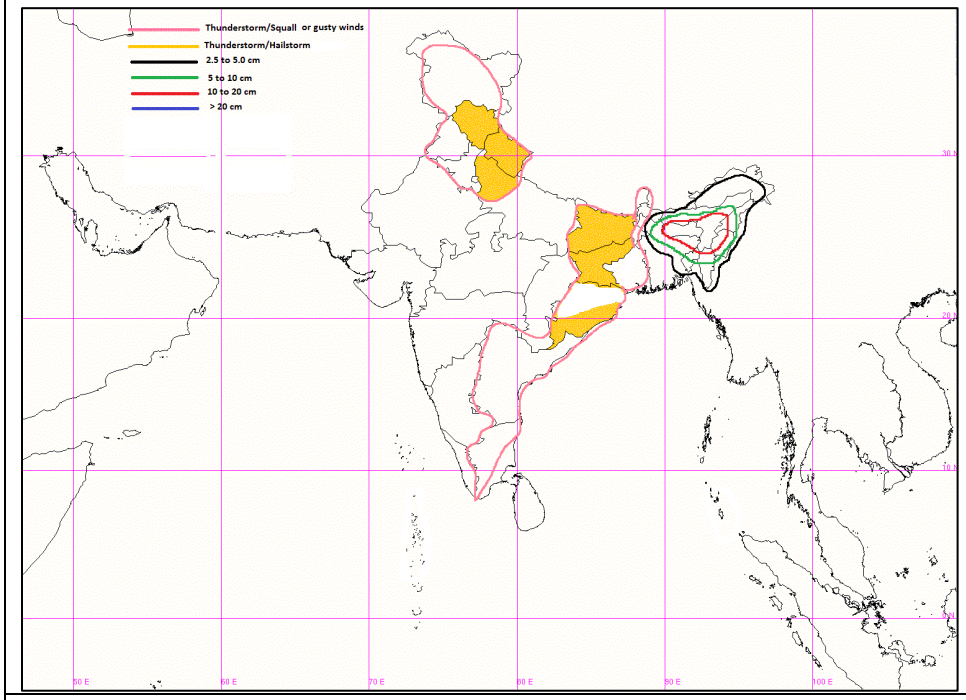
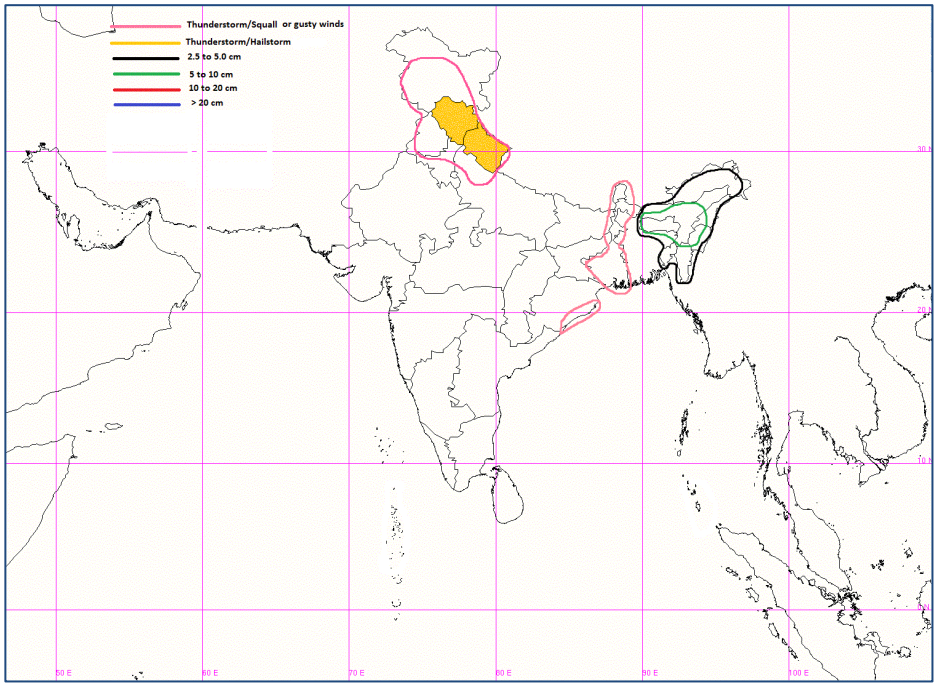
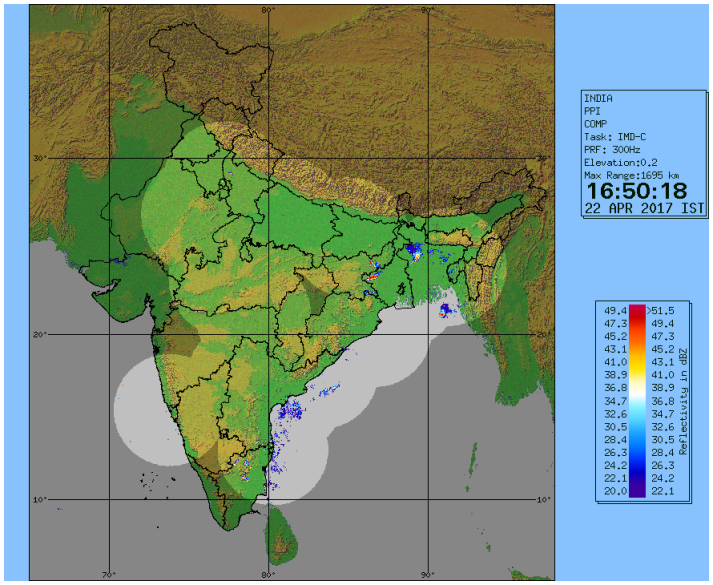
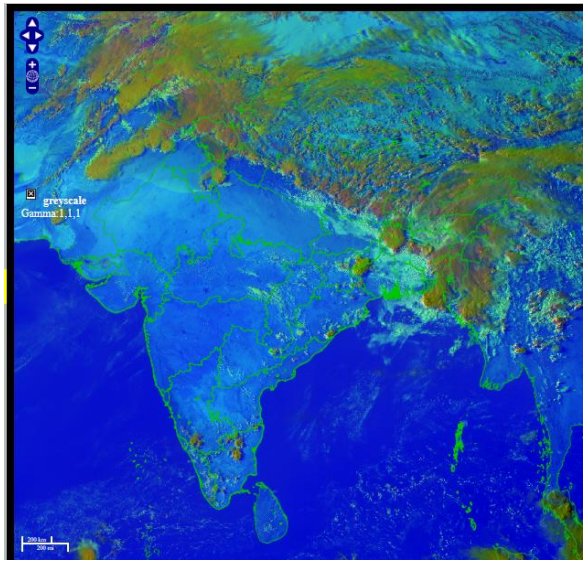
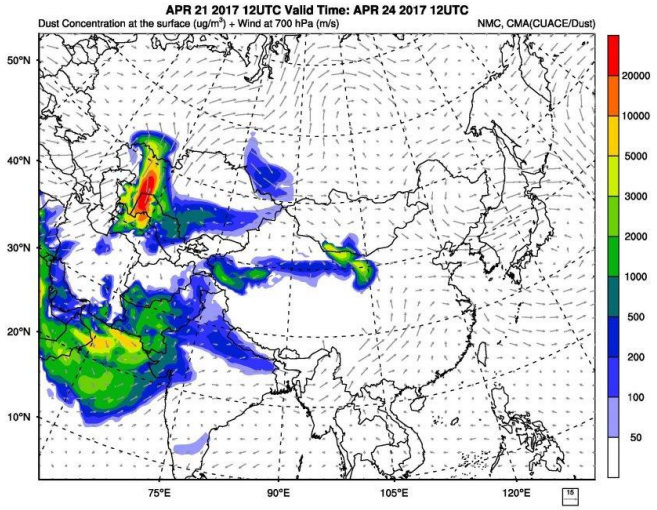


IOP Advisory for 24hours

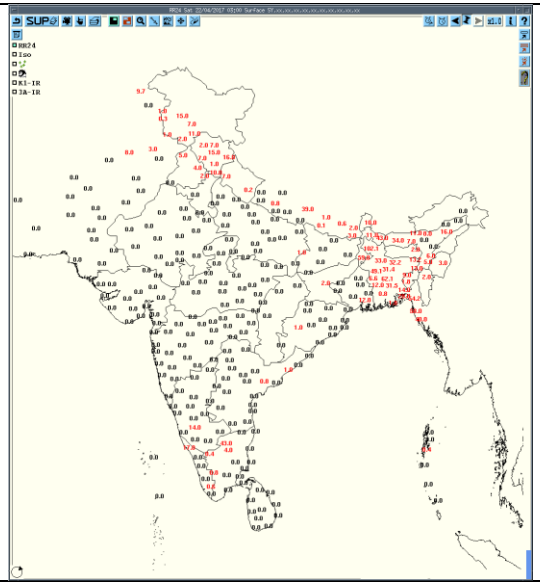


IOP Advisory for 48hours

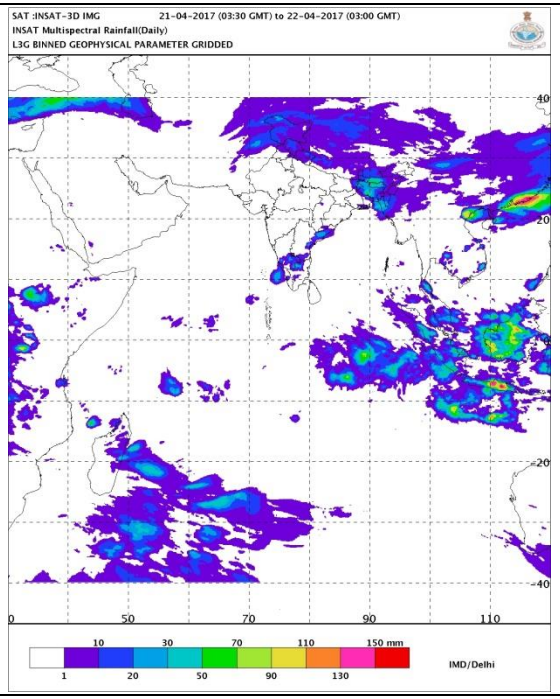
	
DWR Composite at 1650hrs IST of today	**RAPID RGB Image of INSAT 3D at 1600hrs IST of today**



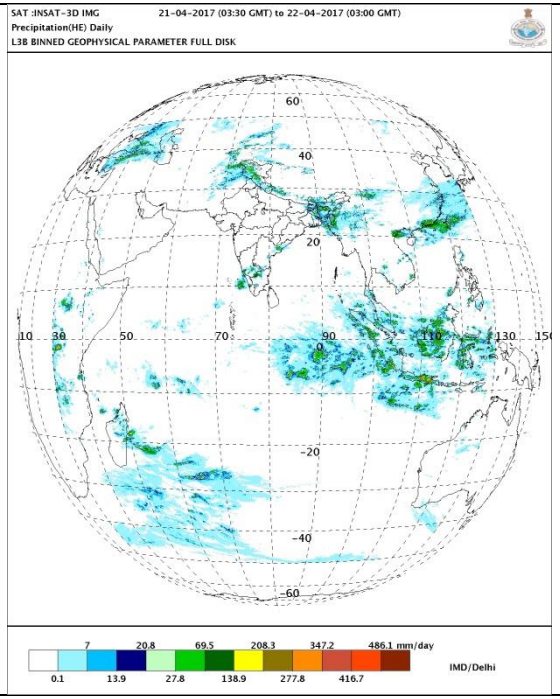
Forecast Dust Concentration for 12UTC of 24th April



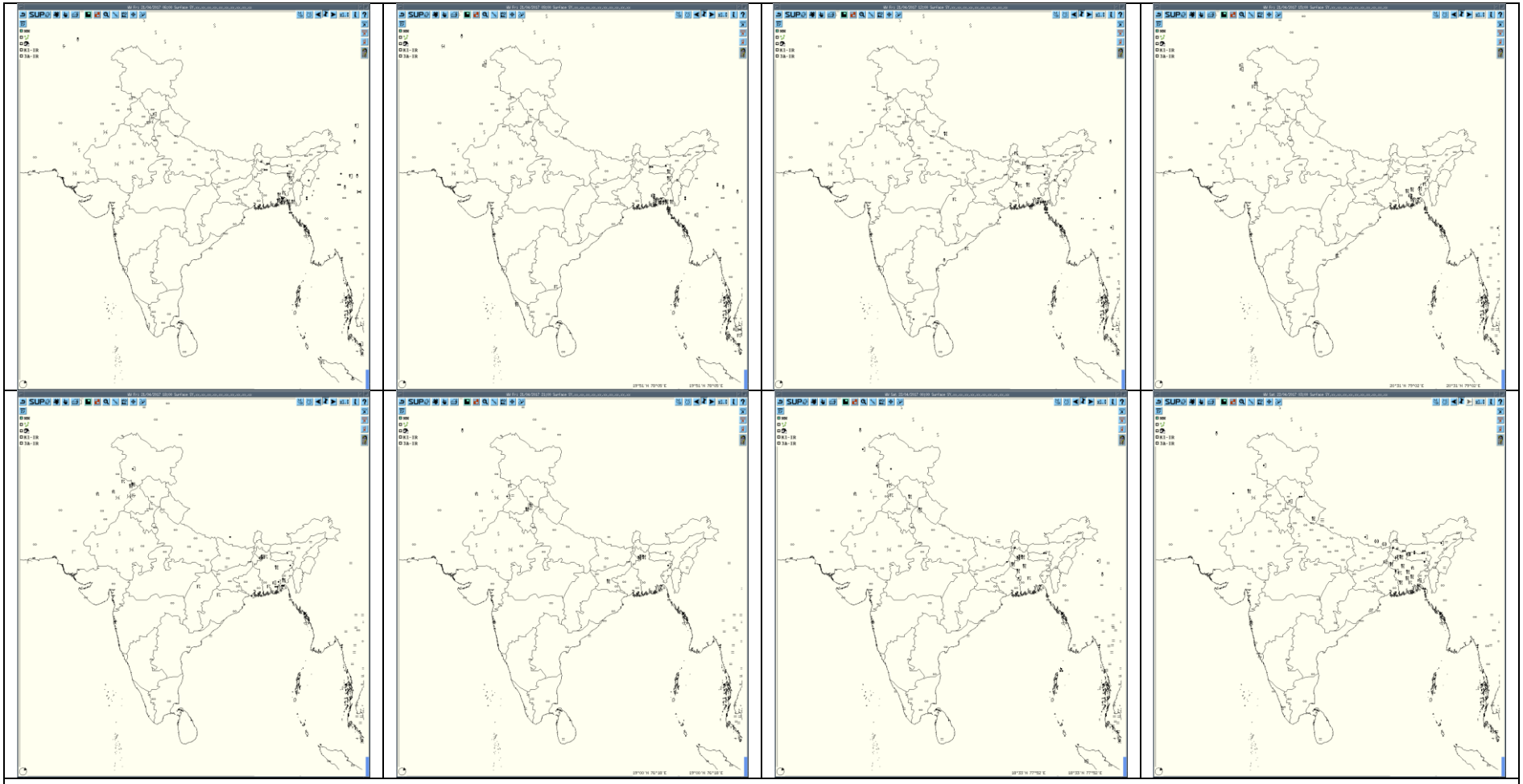
Accumulated 24 Hour rainfall (in red) recorded at 0300 UTC of today



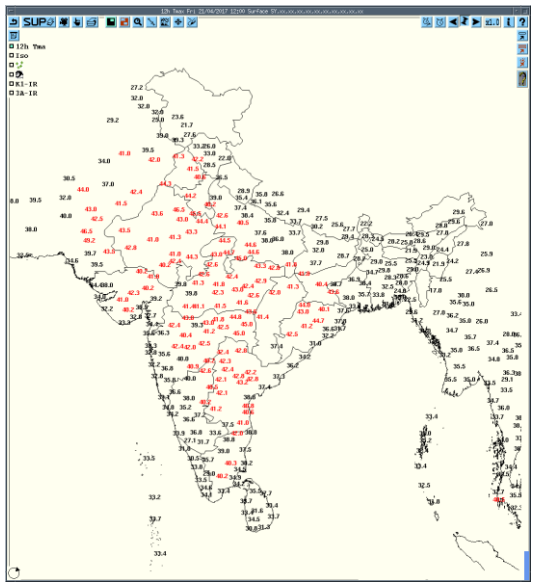
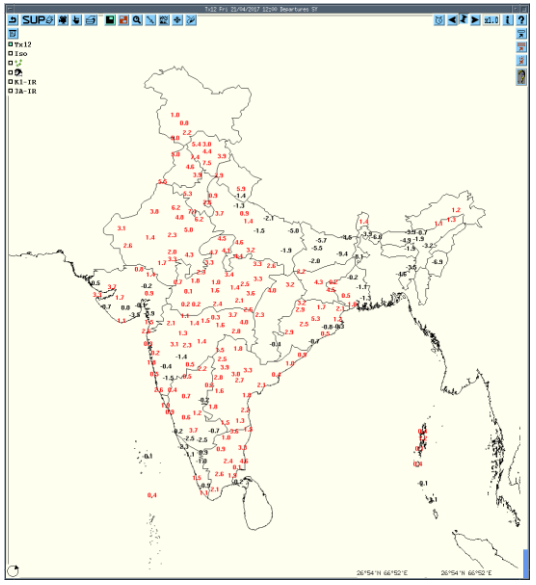
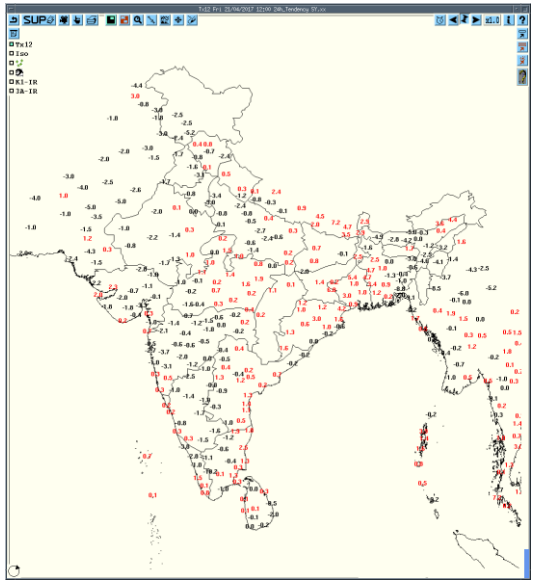
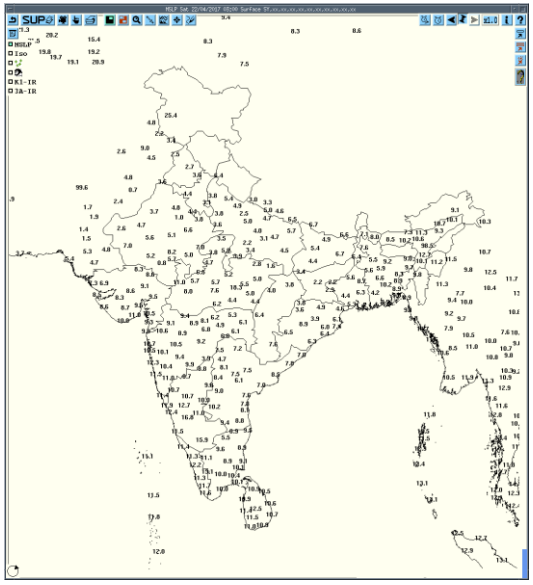
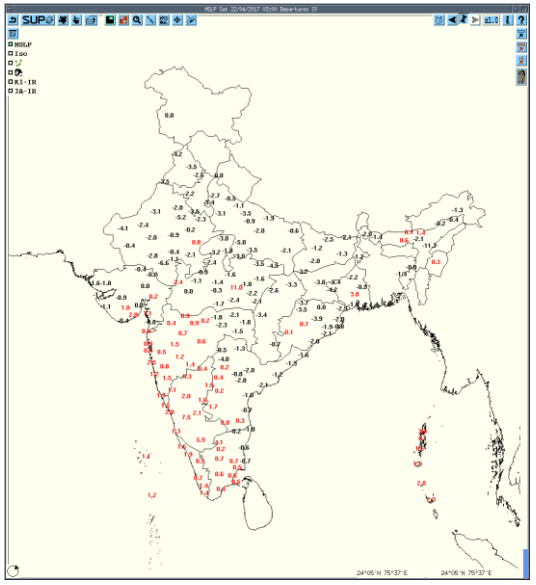
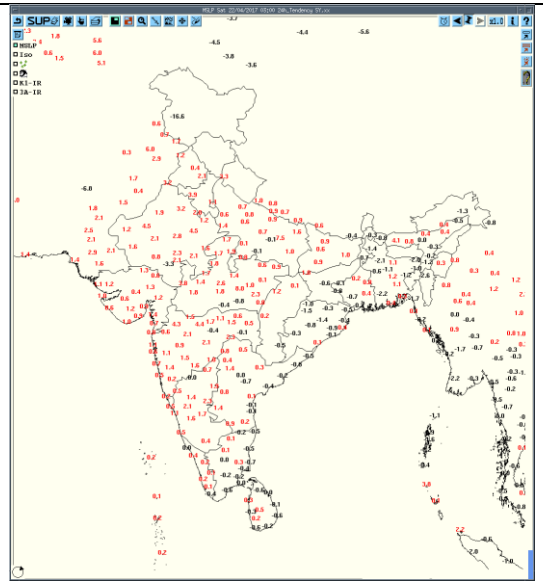
IMR Rainfall

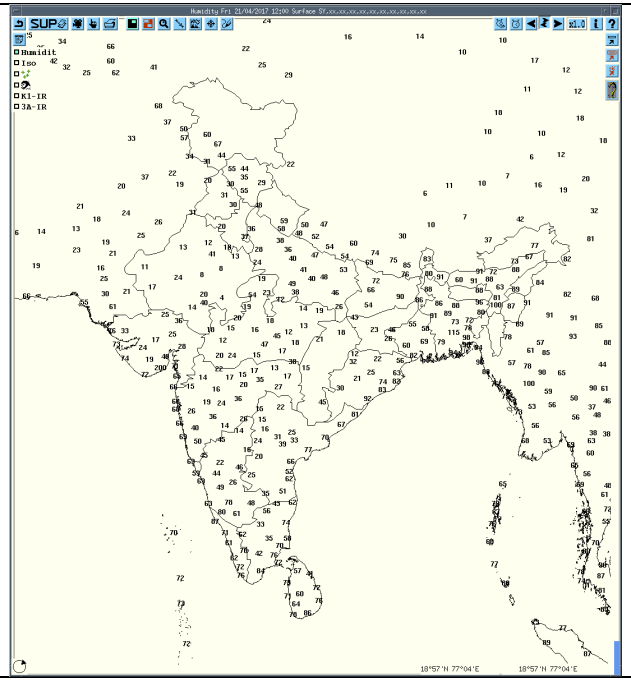
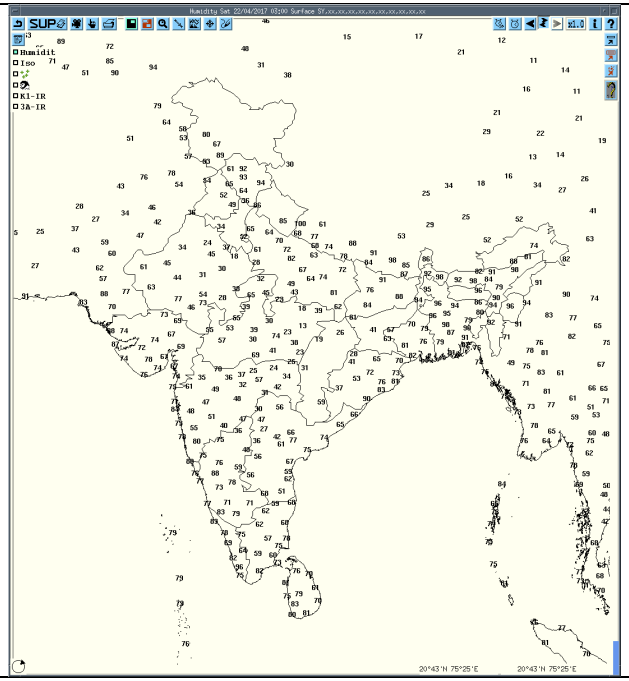


HEM Rainfall



3 hourly Past weather at 06, 09, 12, 15, 18, 21 UTC 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 past24 hours (Based on SYNERGIE Products)					
Date	**Time of Reporting**	**Name of Station Reporting**	**Region**	**STATE**	**Weather Event**
21-04-17	0600 UTC	Shimla	Northwest India	Himachal Pradesh	Thunderstorm
		Cherrapunjee	Northeast India	Meghalaya	Thunderstorm
21-04-17	0900 UTC	Tirupati	South India	Andhra Pradesh	Thunderstorm
		Cunnur	South India	Kerala	Thunderstorm
		Shillong	Northeast India	Meghalaya	Thunderstorm
21-04-17	1200 UTC	Ongole, Vishakhapatnam	South India	Andhra Pradesh	Thunderstorm
		Vijaywada	South India	Andhra Pradesh	Thunderstorm with hail
		Pendra Road	Central India	Chhattisgarh	Thunderstorm
		Gangtok	East India	Sikkim	Thunderstorm
		Cooch Behar	East India	West Bengal(SHWB)	Thunderstorm
21-04-17	15000 UTC	Kakinada	South India	Andhra Pradesh	Thunderstorm
		Tuni	South India	Andhra Pradesh	Lightening
		Pendra Road	Central India	Chhattisgarh	Thunderstorm
		Agartala	Northeast India	Tripura	Thunderstorm
21-04-17	1800 UTC	Jammu	Northwest India	J & K	Thunderstorm
		Amritsar	Northwest India	Punjab	Duststorm
		Kolkata	East India	West Bengal	Thunderstorm
		Pendra Road	Central India	Chhattisgarh	Thunderstorm
		Jharsuguda	East India	Jharkhand	Thunderstorm
		Coimbatore	South India	Tamilnadu	Thunderstorm
21-04-17	2100 UTC	Chandigarh	Northwest India	Chandigarh	Thunderstorm
		Patiala	Northwest India	Punjab	Thunderstorm
		Ranchi	East India	Jharkhand	Thunderstorm
22-04-17	0000 UTC	Jammu	Northwest India	J & K	Lightening
		Amritsar	Northeast India	Punjab	Thunderstorm
		Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm
		Dehradun	Northeast India	Uttarakhand	Thunderstorm

		Malda		West Bengal(SHWB)	Thunderstorm
22-04-17	0300 UTC	Shimla	Northwest India	Himachal Pradesh	Thunderstorm
		Mukteshwar	Northwest India	Uttarakhand	Thunderstorm
		Dhubri, Malda	East India	West Bengal(SHWB)	Thunderstorm
		Purnea	East India	Bihar	Thunderstorm

Realized 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)**
Agartala	Northeast India	Tripura	Thunderstorm	21-04-17	1845	2100
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	22-04-17	0320	0500
Jagdalpur	East India	Jharkhand	Thunderstorm	21-04-17	1600	1645
Dehradun	Northwest India	Uttarakhand	Thunderstorm	22-04-17	0450	0700
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	22-04-17	0812	0830
Tehri	Northwest India	Uttarakhand	Thunderstorm	22-04-17	0550	0715
Ambala	Northwest India	Haryana	Thunderstorm	22-04-17	0335	0435
Patiala	Northwest India		Thunderstorm	22-04-17	0210	0325
Amritsar	Northwest India	Punjab	Thunderstorm	22-04-17	0120 0230 0645	0210 0630 0830
Ludhiana	Northwest India	Punjab	Thunderstorm With Hail	21/22-04-17	During Night Hours	
Chandigarh	Northwest India	Chandigarh	Thunderstorm	22-04-17	0200	0335
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	22-04-17	0315 0645	0415 0735
Ghazipur	Northwest India	Uttar Pradesh	Thunderstorm	21-04-17	1318	1325
Churk	Northwest India	Uttar Pradesh	Thunderstorm	21-04-17	1510	1520
Bilaspur	East India	Chhattisgarh	Thunderstorm	21-04-17	1800	2000
Dharampuri	South India	Tamilnadu	Thunderstorm	21-04-17	1800	1830
Kodaikanal	South India	Tamilnadu	Thunderstorm	21-04-17	1300	1430

Kannur	South India	Kerala	Thunderstorm	21-04-17	1300	1600
Gangtok	Northeast India	Sikkim	Thunderstorm	21-04-17	1640	1850
Tadong	Northeast India	Sikkim	Thunderstorm	21-04-17	1725	1800
Coochbehar	Northeast India	West Bengal	Thunderstorm	21-04-17	0915	1020
	Northeast India	West Bengal	Thunderstorm	21-04-17	1630	1740
	Northeast India	West Bengal	Thunderstorm	22-04-17	----	0700
Malda	Northeast India	West Bengal	Thunderstorm	22-04-17	0300	0645
	Northeast India	West Bengal	Thunderstorm	22-04-17	0800	0830
Alipore	Northeast India	West Bengal	Thunderstorm	21-04-17	2200	2245
Diamond Harbour	Northeast India	West Bengal	Thunderstorm	22-04-17	0515	0610
Haldia	Northeast India	West Bengal	Thunderstorm	22-04-17	0537	0608
	Northeast India	West Bengal	Thunderstorm	22-04-17	0619	0627
Purnia	Northeast India	Bihar	Thunderstorm	22-04-17	0423	0520
	Northeast India	Bihar	Thunderstorm	22-04-17	0720	0820
Jharsuguda	Northeast India	Odisha	Thunderstorm	21-04-17	2145	2400
Guwahati	Northeast India	Assam	Thunderstorm	21-04-17	0850	0940
Lengpui	Northeast India	Mizoram	Thunderstorm	21-04-17	0902	1003
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	21-04-17	1116 1805	1600 1831
Silchar	Northeast India	Assam	Thunderstorm	21-04-17	1200 1600	1330 1630
Dhubri	Northeast India	Assam	Thunderstorm	21-04-17	1210 1550	1405 0830
Shillong	Northeast India	Meghalaya	Thunderstorm	21-04-17	1220 1430 1750	1450 1515 1900
Barapani	Northeast India	Meghalaya	Thunderstorm	21-04-17	1515	1800
Agartala	Northeast India	Tripura	Thunderstorm	21-04-17	1845	2100
Tuni	South India	Andhra Pradesh	Thunderstorm	21-04-17	1750	1920
Vijayawada AP	South India	Andhra Pradesh(CAP)	Thunderstorm	21-04-17	1725	1755
Kakinada	South India	Andhra Pradesh(CAP)	Thunderstorm	21-04-17	1940	2050

Ongole	South India	Andhra Pradesh(CAP)	Thunderstorm	21-04-17	1655	1830
Tirupathi AP	South India	Andhra Pradesh(RYLSM)	Thunderstorm	21-04-17	1355	1630

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
Karaikal	22-04-17	210300-220300	--	--	DWR U/S		
Jaipur	22-04-17	210300-220300	Nil	Nil	Nil		
Patiala	22-04-17	210300-211800	NO ECHO	NIL		NIL	NIL
		211800-212100	Isolated multiple cells maximum 52.5 DBZ, HT 13 KMS	Direction of movement :SE wards		TS/ RA	FEROZPUR, KAPURTHALA, AMRITSAR, HOSHIARPUR, JALANDHAR, GURDASPUR.
		212100-220000	isolated multiple cells 59.5 DBZ 14 KM	Direction of movement :ESE wards		RA/TS (POSSIBILITY OF HAIL AT AMBALA AND NAHAN DISTRICTS)	PATIALA, NAWANSHAHAR, LUDHIANA, FATEHGARHSAHIB, AMBALA, CHANDIGARH, ROOPNAGAR, NAHAN,MOHALI
		220000-220300	Super cells 53.0 DBZ 11-12 KM	Direction of movement : SE wards		TS/ RA	BEHAT, DEOBAND, HARIDWAR, ROORKEE,

							DEHRADUN
Paradeep	22-04-17	210900-211000	Isolated less convective cells observed forming after 1430 IST with average height of 07 km and mximum height of 10 km & reflectivity 32 dBZ. The Cells weakened gradually.	Position: Lat.:-19.7 deg.N Long:-84.3deg.E Range:-Around 245 km to 250km. Az:-253 deg.-255 deg. Movement-NWly.	NIL .	Slight TS with rain	Kalahandi, ,Ganjam,
Vishakhapatnam	22-04-17	210300-210600	Multiple Cells of max reflectivity 48 DBz SWly at 176 kms with average height 4kms.	Moving SWly	Not matured and hence they are being dissipated.	-	-
		210600-210900	Multiple Cells of max reflectivity 55 dbz WSWly at 73 kms with average height 12kms.	Cell s are continued to be forming and moving Ely.	Cells formed in said directions and are developing/maturing stage.	-	-
		210900-211200	Multiple Cells of max reflectivity 57 dbz Wly at 194 kms with average height 16kms.	Cell s are continued to be forming and moving swly.	Cells formed in said directions and are developing/maturing stage.	-	-
		211200-211500	Multiple Cells of max reflectivity 56 dBZ Maximum height of 18kms.	W (50kms to 250 kms) moving SEly.	Multiple Cells formed, developed and matured well. Maximum reflectivity of 56Dbz during the period 1201UTC to 1421UTC and start dissipating.	-	-

		211500-211800	Multiple Cells of max reflectivity 53 dBZ Maximum height of 13kms.	SW (150kms to 200 kms) moving SEly.	Multiple Cells formed, developed and matured well and dissipated.	-	-
		211800 -220000	Convective regions of max reflectivity 40 dBZ Average height of 6 kms.	NE (220kms) S(230 kms) moving NEly.	Convective regions formed in BOB, not developed well and dissipated.	-	-
		220000-220300 UTC	NIL	NIL	NIL	-	-
Lucknow	22-04-17	210300-220300	Nil	Nil	Nil		
Hyderabad	22-04-17	210752 –211302	Isolated cells with an average height of9 Km with a max reflectivity of 54 dBZ	SSE (170 Kms) moving in SE ly Direction at a speed of about 18 Kmph.	Cells started forming at 0752 UTC at SSE from radar, Matured a bit in size. Max reflectivity was between 0902 and 0932 UTC and dissipated at 1022 UTC.	Moderate Thunderstorm with or without rain	Not known.
Agartala	22-04-17	210300-211410	Multiple Cells with Maximum Height **14 km** and maximum reflectivity **35 dBZ** (at 0310 UTC of 21.04.17 over South Bangladesh-150km South of DWR AGT)	Formed 300 km NW of DWR AGT at 1500 UTC of 20.04.17 and moved ESE-wards at around 45 kmph	The two systems merged at 0500 UTC and travelled SE-wards thereafter and dissipated at 1410 UTC of 21.04.17 over South Bangladesh and adj BoB	TS with rain	South and Gomati districts of Tripura
		210400-211410	Multiple Cells with Maximum Height **15 km** and maximum reflectivity **45 dBZ** (at 0630 UTC over Bangladesh-80km SW of DWR AGT)	Formed 100 km SW of DWR AGT at 1500 UTC of 20.04.17 and moved SE-wards at around 35 kmph			

		210530-211840	Multiple Cells with Maximum Height **15 km** and maximum reflectivity **40 dBZ** (at 1000 UTC over Meghalaya-170km NNW of DWR AGT)	Formed 300 km NW of DWR AGT at 0530 UTC of 21.04.17 and moved SE-wards at around 60 kmph	The two systems merged at 1310 UTC and travelled SE-wards thereafter and dissipated at 1840 UTC of 21.04.17 over Tripura and Mizoram	1.TS with Heavy rain at Cherrapunjee 2.TS with light to moderate rain in other places	All Districts of Tripura, Esat Khasi hills District of Meghalaya
		210750-211840	Multiple Cells with Maximum Height **15 km** and maximum reflectivity **48 dBZ** (at 1140 UTC over Bangladesh-190km WSW of DWR AGT)	Formed 210 km WNW of DWR AGT at 0750 UTC of 21.04.17 and moved SE-wards at around 30 kmph			
		211700-220300	A line Structure Cells with Maximum Height **13 km** and maximum reflectivity **38 dBZ** (at 0300 UTC of 22.04.17 over West Tripura District)	Formed 300 km NW of DWR AGT at 1700 UTC of 21.04.17 and moved ESE-wards at around 70 kmph	At 0300 UTC of 22.04.17, cells still persist over western parts of Tripura and intensifying	TS with rain	West Tripura district
Machilipatnam	22-04-17	211051-211251	Isolated multiple cells with average height of 10.4 km with maximum reflectivity of 62dBZ	W (150KM) moving SE ly direction average speed of 5 kmph	Cells started forming at 1051UTC at W (150km) from radar. Maximum reflectivity during 1051 to 1241 and died down at 1251UTC	Possibility of Thunder storm with hail and moderate winds.	Prakasam District
		211021-211221	Isolated multiple cells average height of 10 km with maximum reflectivity of 59dBZ	NW(88KM) moving SE ly direction average speed of 22 kmph	Cells started forming at 1021UTC at NW(88km) from radar. Maximum reflectivity during 1021 to 1211 and died down at 1221 UTC	Possibility of Thunder storm and Rain with moderate winds.	Krishna District

		211021-211211	Isolated single cell with average height of 10.5km with maximum reflectivity of 57.5 dBZ	N (135KM) Moving SE ly direction average speed of 12.5kmph	Cells started forming at1021UTC at N (135km) from radar. Maximum reflectivity during 1021 to 1201 and died down at 1211 UTC	Possibility of Thunder storm and rain with moderate winds.	Khammam District
		210951-21 1511	Isolated multiple cells with average height of 11km with maximum reflectivity of 59 dBZ	N (180KM) Moving SE ly direction average speed of 15.6kmph	Cells started forming at 0951UTC at N (180km) from radar. Maximum reflectivity during 0951 to 1511 and died down at 1521 UTC	Possibility of Thunder storm and rain with moderate winds.	Khammam District
		211121-211411	Isolated multiple cells with average height of 12.5 km with maximum reflectivity of 61.5 dBZ	NE (190KM) Moving SE ly direction average speed of 7.2kmph	Cells started forming at 1121UTC at NE (190km) from radar. Maximum reflectivity during 1121 to 1401 and died down at 1411 UTC	Possibility of Thunder storm with hail and moderate winds.	Visakhapatnam District
Patna	22-04-17	210300-211930	NIL	NIL	N/A	N/A	N/A
		211930-212330	Multiple Cell. Maximum Reflectivity : 44.5 dBZ Echo Top : 11.6 KM	Range : 242KM from DWR Patna in North-East. Movement-Easterly	NIL	THUNDER-STORM WITH RAIN	SUPAUL, MADHEPURA, SAHARSA, ARARIA, KHAGADIA, PURNIA, BHAGALPUR
		212330-220300	Nil	Nil	Nil	--	--
Kolkata	22-04-17	210311-210432	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
		210442 -211351	Isolated single cells with maximum height of one of them at 12.9 km at 0731 UTC and maximum	ENE (239 km) to E (247km) moving ENE-ly direction with a speed of 25 kmph	Isolated single cells started forming at 0442 UTC in between ENE (239 km) to E (247km) from radar. Matured, moving towards SE-ly then S-	Thunderstorm /Squall / Hail/Rain	N/A

			reflectivity of 61.0 dBz at 0721 UTC		ly into Bay of Bengal.		
		210822-211601	Isolated single cells merged at 0911 UTC into a multi cell system at 0911 UTC with maximum reflectivity of 66.5 dBz at 1151 UTC and maximum height of 16.39 km at 1151 UTC	NNE (242.2 km) to NE (209.4km) moving SE-ly direction with a speed of 34 kmph	Formation started of isolated cells in NNE at 0822 UTC in between 242.2 km and 209.4 km from radar. Matured, moving towards SE-ly.	Thunderstorm /Squall / Hail/Rain	N/A
		210951-211311	Isolated single cell with maximum reflectivity of 65.5 dBz at 1021 UTC and maximum height of 14.24 km at 1201 UTC	NNE (198.8 km) moving SE-ly direction with a speed of 38 kmph	Formation started at 0951 UTC in NNE at a distance of 198.8 km from Radar. Matured and moving towards SE-ly.	Thunderstorm /Squall / Hail/Rain	N/A
		211441-212011	Isolated single cell with maximum reflectivity of 53 dBz at 1741 UTC and maximum height of 11.56 km at 1701 UTC	NW (78.2 km) moving SE-ly direction with a speed of 45 kmph	Formation started at 1441 UTC in NW at a distance of 78.2 km from Radar. Matured and moving towards SE-ly.	Thunderstorm /Rain	Hooghly, Kolkata and North 24 Parganas.
		211641 -211942	Isolated single cell with maximum reflectivity of 60.0 dBz at 1711 UTC and maximum height of 10.30 km at 1731 UTC	NE (116.9 km) moving SE-ly direction with a speed of 43kmph	Formation started at 0951 UTC in NE at a distance of 198.8 km from Radar. Matured and moving towards SE-ly.	Thunderstorm /Squall / Hail/Rain	N/A (Bangladesh)
		211942 -212042	Single cell with maximum reflectivity of 55.0 dBz at 2011 UTC and maximum height of 10.39	NW (243.3 km) moving SE-ly direction with a speed of 50kmph	Formation started at 1942 UTC in NW at a distance of 243.3 km from Radar. Matured and moving towards SE-ly.	Thunderstorm /Rain	Purulia

			km at 2021 UTC				
		212211 - 220302	Single cell with maximum reflectivity of 59.0 dBz at 0211 UTC and maximum height of 16.03km at 0231 UTC	West (96.9 km) moving SE-ly direction with a speed of 60 kmph	Isolated single cell, started forming at 2211 UTC in West at a distance of 96.9 km from Radar. Matured and moving towards SE-ly, then S-ly into Bay of Bengal.	Thunderstorm /Squall / Hail/Rain	West Midnapore, East Midnapore , and South 24 parganas
		212231 - 220302	Single cell with maximum reflectivity of 62 dBz at 0302 UTC and maximum height of 15.5Km at 0302 UTC	North (249.2 km) moving SE-ly direction with a speed of 72 kmph	Formation started at 2231 UTC in North at a distance of 249.2 km from Radar. Matured and converted to multicelled system.and moving towards SE-ly, then S-ly into Bay of Bengal.	Thunderstorm /Squall / Hail/Rain	Murshidabad And Bangladesh
Nagpur	22-04-17	210902-211052	Single	220 km S ,moving SE'ly	< 30 dBZ(28), ht. of cloud=5.5 to 9.6/more km	--	---
		211012-211042	Single	210 km NEE	< 10 dBZ		
		211022-211102	Single	240 km NEE, moving NE'ly	< 30 dBZ(29), ht. of cloud=6 to 11 km		
		211912-211942	Single	150 km NE, moving SW'ly	< 10 dBZ		
		220002-220302	Nil	--	--	--	--