



India Meteorological Department
FDP STORM Bulletin No.50 (24-04-2017)

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

SYNOPTIC FEATURES:

The western disturbance as an upper air cyclonic circulation over north Pakistan & neighbourhood now lies over north Pakistan & adjoining Jammu & Kashmir and extends upto mid tropospheric level.

The trough at mean sea level from northwest Rajasthan to north Coastal Odisha across north Madhya Pradesh, north Chhattisgarh and Jharkhand persists.

The trough at mean sea level runs from Jharkhand to South Tamilnadu and extends up to 0.9 Km above mean sea level.

A trough runs from east Bihar to northwest Bay of Bengal and extends upto 1.5 Km above mean sea level.

The upper air cyclonic circulation lies over southwest Rajasthan & neighbourhood and extends upto 1.5 Km above mean sea level.

The upper air cyclonic circulation over Nagaland, Manipur, Mizoram & Tripura & neighbourhood extending upto 1.5 km above mean sea level persists.

The upper air cyclonic circulation over southwest Uttar Pradesh & neighbourhood extending upto 0.9 Km above mean sea level 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:

Cell No.	Date/Time	Area/Location	CTBT (minus °C)	Movement	Remarks
1	240300	W Bangladesh adjoining Gangetic West Bengal	67	---	---
	0400	C Bangladesh	66	---	---
	0500	S Bangladesh	68	---	---
	0600	do	67	---	---
	0700	do	66	---	---
	0800	do	62	---	---
	0900	Mizoram adjoining Bangladesh & Tripura	54	---	---
2	24/0900	C adjoining N Tamilnadu	58	---	---

Scattered multi-layered clouds seen over north J & K and Himachal Pradesh and Uttarakhand in association with western disturbance over the area

Scattered low/medium clouds with embedded moderate to intense convection were seen over Central Rajasthan, Mizoram adjoining Bangladesh & Tripura, C and adjoining N Tamilnadu. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over E Meghalaya, Assam and Manipur. Scattered low/medium clouds were seen over N Jharkhand, Sikkim, rest NE states, Wester parts of South Interior Karnataka, E Andhra Pradesh, Kerala and Bay Islands.

Arabian Sea:

Scattered low/medium clouds with embedded weak to moderate convection were seen over SE Arabian Sea.

Bay of Bengal & Andaman Sea:

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

Past Weather:**Convection:**

Moderate to Intense convection was observed over J&K Himachal Pradesh Punjab Uttarakhand N Rajasthan Uttar Pradesh Bihar Jharkhand N Odisha West Bengal NE States and Tamilnadu.

OLR:-

Up to 280 wm^{-2} was over J&K Punjab Himachal Pradesh Uttarakhand NE Bihar E Jharkhand West Bengal Kerala & west Tamilnadu.

Up to 310 wm^{-2} was over N Rajasthan Haryana rest Uttar Pradesh rest Bihar rest Jharkhand rest Odisha rest Tamil Nadu S Karnataka.

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

Westerly Trough & Jet Stream:

No Trough & Jet stream observed

Dynamic Features:

Negative shear tendency observed over coastal Odisha NE Uttar Pradesh and Positive shear tendency observed over rest parts of India.

Medium to high wind shear is observed over India.

A positive Vorticity field is observed over coastal Andhra Pradesh West Bengal E Assam and central Uttar Pradesh.

Negative low level convergence observed over Uttarakhand Uttar Pradesh Vidarbha Madhya Maharashtra Konkan & east Gujrat and

Positive Low Level Convergence observed over Bihar adjoining SHWB Sikkim NE States coastal Odisha & coastal Karnataka

Precipitation:**IMR:**

Rainfall upto 50 mm was observed over extreme E Jharkhand central Gangetic West Bengal S Bangladesh. Rainfall 10 – 20 mm was observed over J&K NE Jharkhand rest Gangetic West Bengal rest Bangladesh Mizoram Tripura NW Tamil Nadu. Rainfall upto 10 mm was observed over N Punjab Himachal Pradesh NE Uttarakhand NW Rajasthan N adjoining central Uttar Pradesh NE Bihar SHWB E Assam and E Arunachal Pradesh.

HEM: Rainfall upto 70 mm was observed over SW J&K N Uttarakhand E Gangetic West Bengal S Bangladesh S Manipur Mizoram. Rainfall upto 14 mm was observed over NW Rajasthan Punjab N adjoining central Uttar Pradesh NE Bihar SHWB rest Gangetic West Bengal rest Bangladesh and rest NE States

RADAR and RAPID observation:

DWR composite at 1610 hrs IST indicated significant isolated convective activity over Tamilnadu & South Andhra Pradesh. Isolated/multiple echoes were seen in DWR Chennai (dBZ >55 & height 10-15 km), DWR Machilipatnam (dBZ around 55 & height 13km), DWR Delhi (dBZ 40-50 & height 8-10km), DWR Srinagar (dBZ 45 & height 8km) at around 1045UTC(1615hrs IST).

RAPID RGB imagery at 1530hrs IST indicated convective clouds over Tamilnadu, South Andhra Pradesh, Mizoram adjoining Tripura, Central and East Rajasthan, J & K , Himachal Pradesh and Uttarakhand.

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

Dust concentration was observed over northern Africa and some parts of eastern Asia. Dust concentration is expected to decrease over west and north India for next five days.

High PM10 concentration was observed over north India. PM10 concentration is expected increase over north India for 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 to Day-4 show moderate **Heat Low over Rajasthan and adjoining Pakistan** and its extension over IG plains is prominent with MSLP is at around 1002 hPa.

12UTC charts on all days from Day0-4 show two zones of wind discontinuity at 925 hPa: (i) SW-NE extending from northern Karnataka-Telangana region to Odisha region. (ii) S-N extending from southern parts of TN to northern parts of Telangana-AP region.

Trough at 850 hPa over WB and Bangladesh region from Day-0 to Day-4. CYCIR over SIK and TN region in Day-1 & 2, over Srilanka from Day-3-4. Strong anti-cyclone at 500 hPa from Day-0 to Day-2 over TN and AP..

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

Weaker core winds at 12 UTC on all days over India. Highest core winds of about 50 Kt widespread over Assam and Meghalaya from on all days. Peak core strength about 60 kt over Assam on Day-2

3. Convergence at 850 hPa:

At 12UTC Day-0-3: high values over isolated locations over Odisha and at several locations along the Western Ghats. Parts of Assam and over Jharkhand. On Day-4 Enhanced activity over Western Ghats and Assam.

At 00UTC very high values : over several places in Assam and over Assam-Arunachal region in Day-2 & 4..

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

At 12UTC on Day-0-4 :mainly over Assam, Bangladesh. On Day-1 and 2 over isolated locations of AP and Odisha.

At 00UTC : very high values along the line of low level confluence and strong convergence

5. Showalter Index: Day-wise Sub-divisions with Showalter index <-4:

Day0: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Bihar, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, Odisha, Guj_Reg, Saurashtra_Kutch, Coastal_AP, Rayalseema, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Uttarakhand, Himachal_Pradesh, Coastal_AP, TN_Puducherry, SI_Karnataka, Kerala,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, Coastal_AP, TN_Puducherry, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Bihar, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, Odisha, Saurashtra_Kutch, Coastal_AP, Telangana, TN_Puducherry, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Bihar, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, Saurashtra_Kutch, Coastal_AP, Telangana, TN_Puducherry, SI_Karnataka, Kerala

6. K-Index : Daywise Sub-divisions with K-index >40:

Day0: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, Bihar, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Guj_Reg, Coastal_AP, Rayalseema, TN_Puducherry, SI_Karnataka, Kerala,

Day1: Arunachal_Pradesh, Sub_Himalayan_WB, Uttarakhand, Coastal_AP, Telangana, TN_Puducherry, SI_Karnataka, Kerala,

Day2: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, SI_Karnataka, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Odisha, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Uttarakhand, Jammu_Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka, SI_Karnataka, Kerala

7. Spatial distribution of TTI: Daywise Sub-divisions with TTI >52:

Day0: Arunachal_Pradesh, Sub_Himalayan_WB, Bihar, East_UP, West_UP, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, Guj_Reg, Saurashtra_Kutch, Coastal_AP,

Day1: Arunachal_Pradesh, Sub_Himalayan_WB, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, West_MP, Saurashtra_Kutch, Coastal_AP, TN_Puducherry,

Day2: Arunachal_Pradesh, Sub_Himalayan_WB, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, East_MP, Guj_Reg, Madhya_Maharashtra, Chhattisgarh, Coastal_AP, TN_Puducherry, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Saurashtra_Kutch, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, TN_Puducherry, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, Guj_Reg, Saurashtra_Kutch, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, NI_Karnataka, SI_Karnataka,

8. Rainfall : Daywise Sub-divisions with Precipitation >2cm:

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB,

Day3: Arunachal_Pradesh, Assam_Meghalaya, Jammu_Kashmir,

Day4: Arunachal_Pradesh, Assam_Meghalaya,

Day5: Arunachal_Pradesh, Assam_Meghalaya, Sub_Himalayan_WB, Jammu_Kashmir,,

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

1. Weather Systems:

00 UTC analyses shows a north-south oriented low level trough over West Bengal extended to coastal AP and adjoining regions and this trough will persist for the next 5 days. Forecasts show a feeble CYCIR would develop over Punjab and adjoining areas during day-3 to day-7. Analysis also shows a low level CYCIR over NE India and this CYCIR will persist for the next 5 days. Contour at 500 hPa shows approaching of a WD over the northern parts of the India during Day-1 to Day-4 forecast

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):

Mostly along the trough at 850 hPa, Gangetic plain and along the foot hill of Himalaya during next 5 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): Mostly over east coast, eastern part of the country and over Gujarat and adjoining areas during next 5 days.

Lifted Index (< -2): Less than threshold value mostly along east coast from Gangetic West Bengal to south peninsula and eastern part of the country during next 5 days.

Total Total Index (> 50) : Above threshold value over the most parts of central and eastern parts of India at 12 UTC during next 5 days.

Sweat Index (> 300): Mostly along east coast, eastern part of India and Gujarat and adjoining areas during next 5 days.

CAPE (> 1000): Mostly along east coast, extreme south peninsula and Gujarat and adjoining areas during next 5 days.

CINE (50-150): Mostly along east coast, west coast and Gujarat and adjoining areas at 12 UTC during next 5 days.

5. Rainfall and thunderstorm activity:

10-70 mm rainfall over NE states during next two days.

10-40 mm rainfall over NE states during day 3 to day5.

10-40 mm rainfall over extreme south peninsula during next 2 days. .

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

Model Reflectivity:

5-15 dBZ Model reflectivity over most parts of NE states, some parts of J&K, HP, Gujarat, SHWB,GWB and coastal Odisha during next 48 hours

Spatial distribution of Total Total Index, K-Index, CAPE and CINE:

Total Total Index (> 50) : Above threshold value is observed over most parts of the country except south peninsula and J&K during next 72 hour.

K-Index (> 35): Less than threshold value is observed over the country during the next 72 hour.

CAPE (> 1000): Mostly along east coast of India, over SHWB and over GWB during next 3 days.

CINE (50-150): CINE values are mostly less than threshold value over coastal regions and higher than central parts of India during next three days

Rainfall Activity:

Rainfall activity (~ 10-40 mm) over most parts of NE states during next 3 days and some parts of J&K and extreme south peninsula the next 2 days.

3. IOP ADVISORY FOR 24 and 48 Hrs:

Summary and Conclusions:

Day 1 & Day 2:

Presently, the upper air cyclonic circulation over Nagaland, Manipur, Mizoram & Tripura & neighbourhood extending upto 1.5 km above mean sea level persists and the upper air cyclonic circulation over Nagaland, Manipur, Mizoram & Tripura & neighbourhood extending upto 1.5 km above mean sea level persists which may give rise to heavy rainfall over the isolated places of Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura on Day-1. However intensity of the rainfall may decrease on Day-2.

The trough at mean sea level from northwest Rajasthan to north Coastal Odisha across north Madhya Pradesh, north Chhattisgarh and Jharkhand persists. This will give rise to thunder squall with gust wind activity over South Chhattisgarh, Jharkhand, Eastern parts of Vidarbha and South Coastal Orissa on Day-1

24 hour Advisory for IOP:

Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura, Arunachal Pradesh
Jammu and Kashmir, Himachal Pradesh
Sub Himalayan West Bengal, Sikkim, GWB
Kerala, Telangana, Coastal Andhra Pradesh, Interior Tamilnadu, South Interior Karnataka
South Coastal Orissa, Jharkhand, Eastern parts of Vidarbha and South Chhattisgarh

48 hour Advisory for IOP:

Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura
Sub Himalayan West Bengal, Sikkim and GWB
South Coastal Orissa, Kerala

ForNCMRWFNWPproducts:(<http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php>)

ForIMDNWPproducts:(http://nwp.imd.gov.in/diagpro_new.php)

ForSynopticplotteddataandcharts

<http://amssdelhi.gov.in/>

<http://www.amsskolkata.gov.in/>

ForRAPIDtool:

<http://rapid.imd.gov.in/>

LowLevelWinds

http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/LLW/MAR_2017/?C=M;O=D

Upperlevelwinds

http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/HLW/MAR_2017/?C=M;O=D

Past24hourHEMandIMRrainfall(upto03UTCoftoday)

IMR:http://satellite.imd.gov.in/img/3Ddaily_imr.jpg

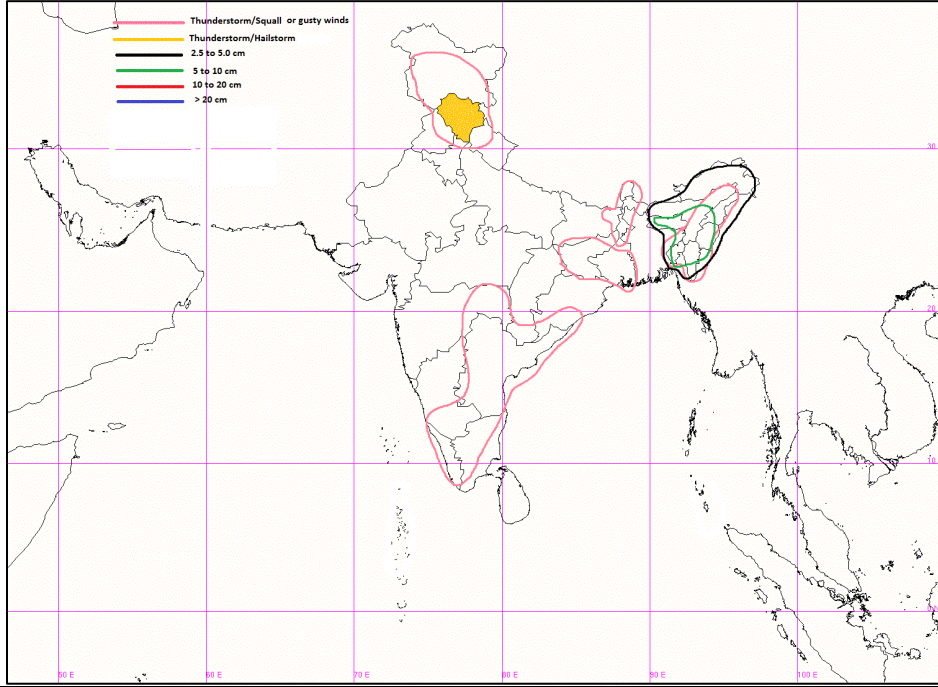
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ForRadarimagesofthepast24hoursincludingmosaicofimages:

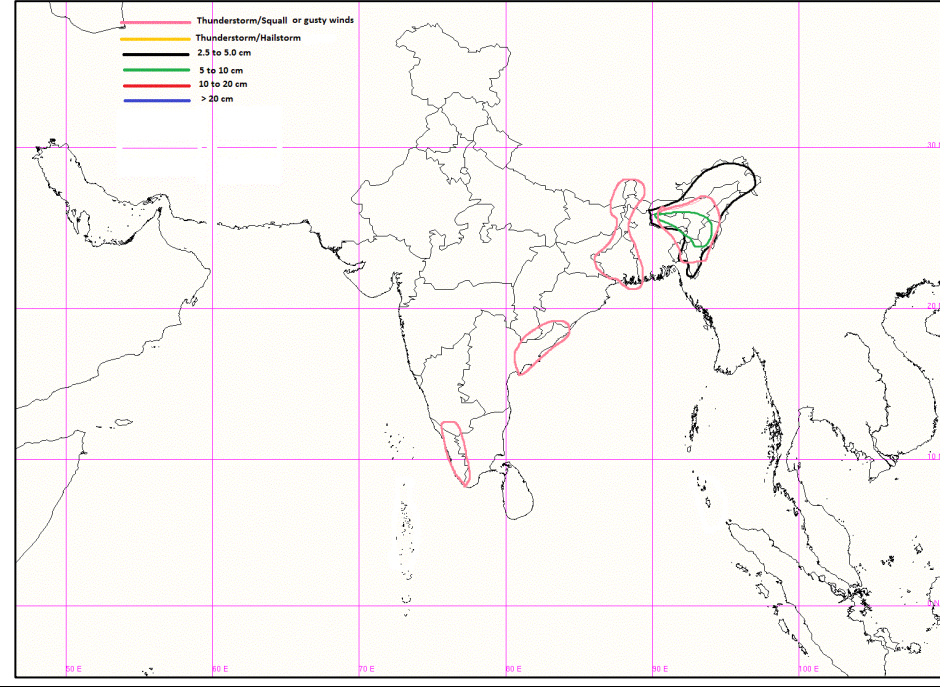
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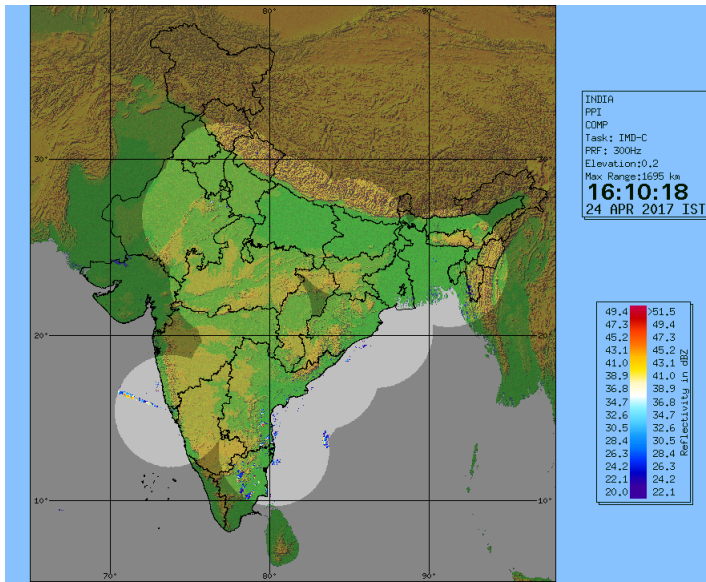
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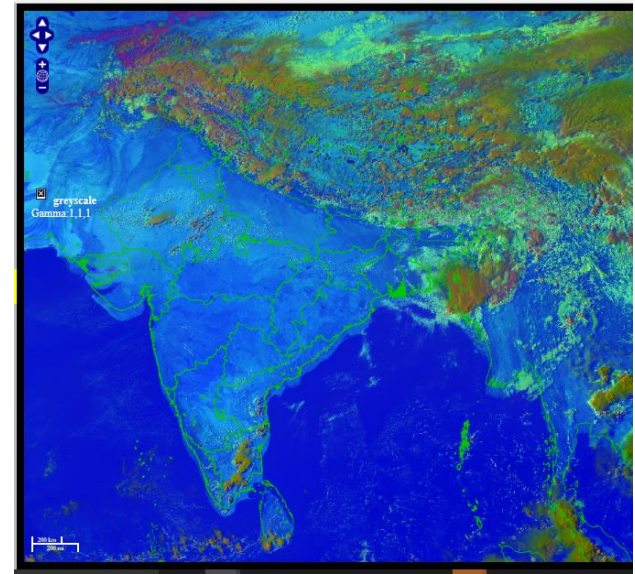
IOP Advisory for 24hours



IOP Advisory for 48hours

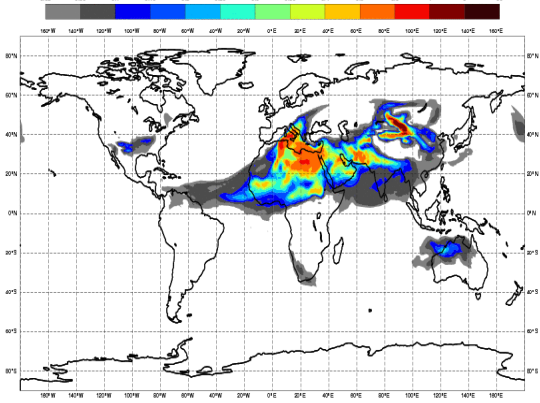


DWR Composite at 1610hrs IST of today

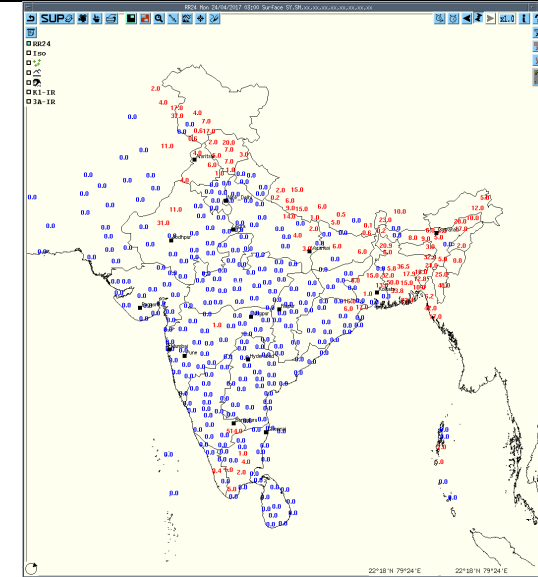
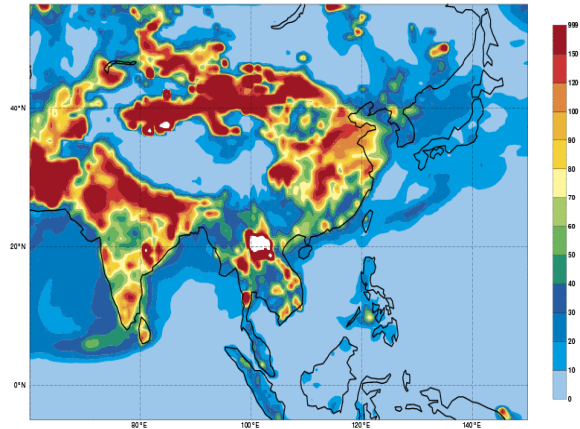


RAPID RGB Image of INSAT 3D at 1530hrs IST of today

Sunday 23 April 2017 00UTC CAMS Forecast t+120 VT: Friday 28 April 2017 00UTC
Dust Aerosols Optical Depth at 550 nm



Sunday 23 April 2017 00UTC CAMS Forecast t+120 VT: Friday 28 April 2017 00UTC
Surface PM10 [ug/m3]

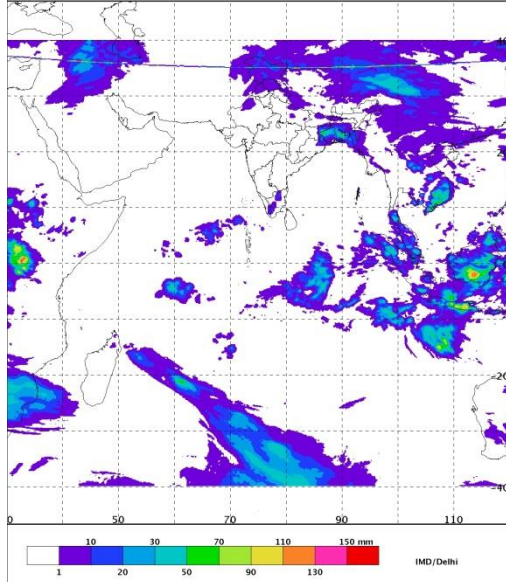


Forecast Dust Concentration for 00UTC of 28th April

PM10 Forecast for 00UTC of 28th April

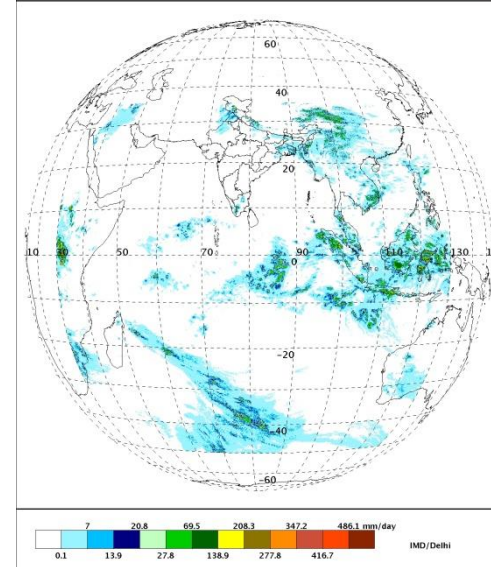
Accumulated 24 Hour rainfall (in mm) recorded at 0300 UTC of today

SAT :INSAT-3D IMG 23-04-2017 (03:30 GMT) to 24-04-2017 (03:00 GMT)
INSAT Multispectral Rainfall(Daily)
L3G BINNED GEOPHYSICAL PARAMETER GRIDDED

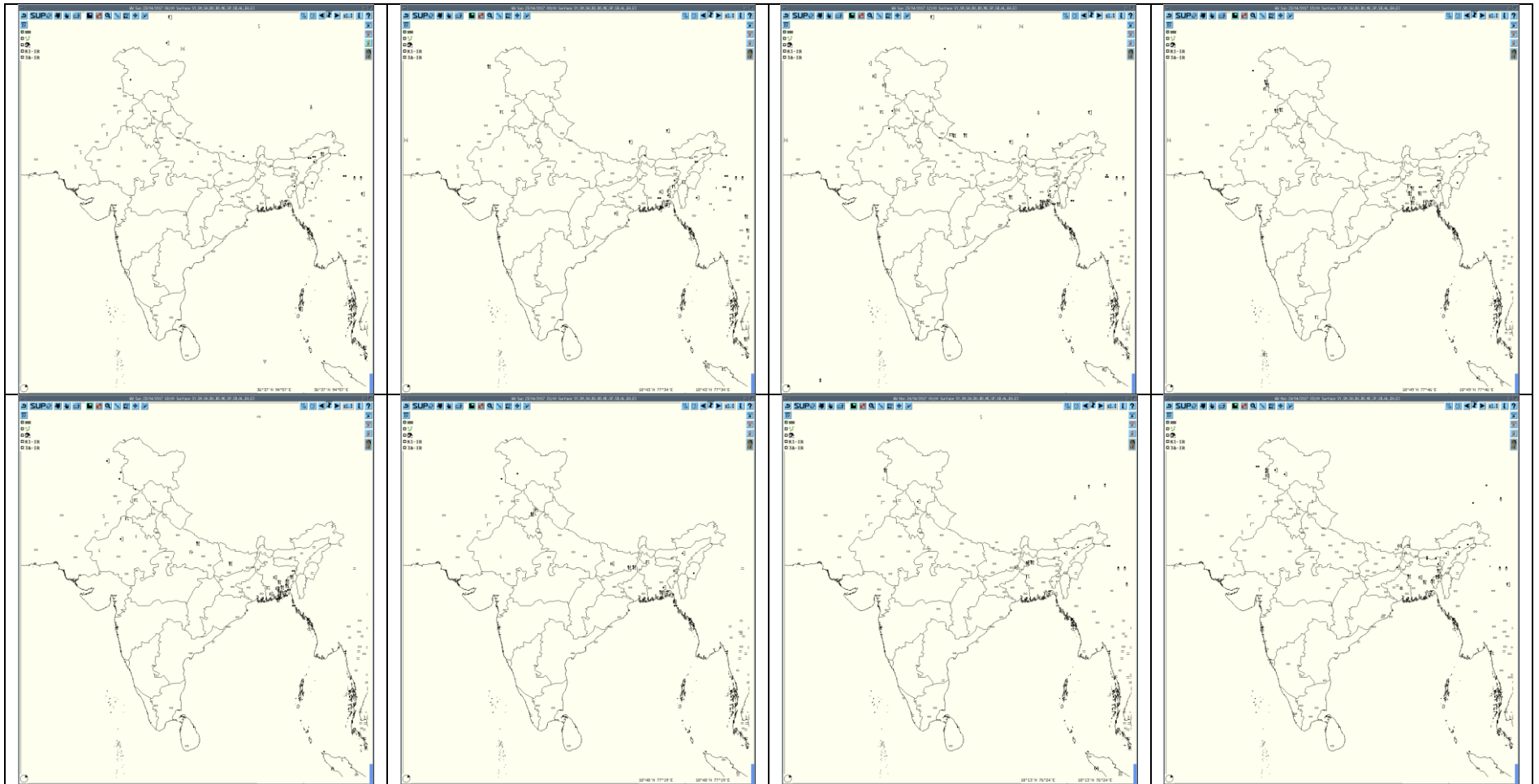


IMR Rainfall

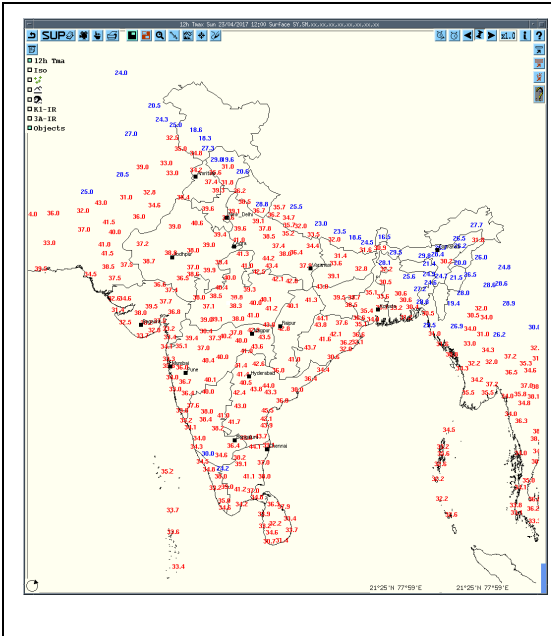
SAT :INSAT-3D IMG 23-04-2017 (03:30 GMT) to 24-04-2017 (03:00 GMT)
Precipitation(HE) Daily
L3B BINNED GEOPHYSICAL PARAMETER FULL DISK



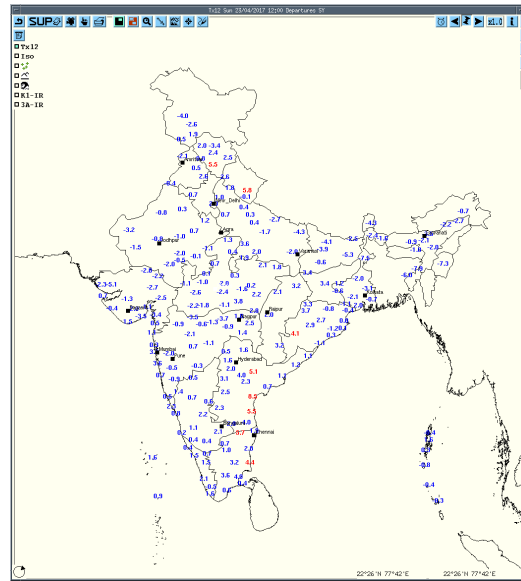
HEM Rainfall



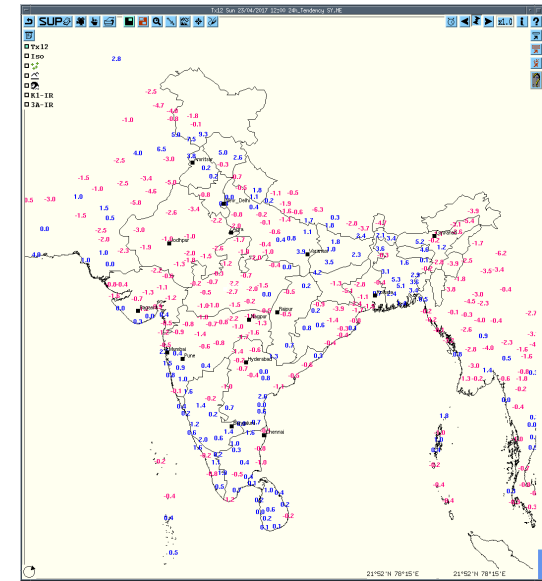
3 hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



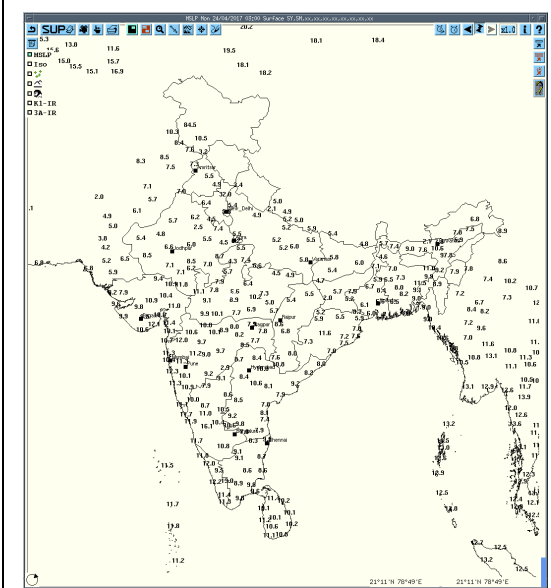
Tmax



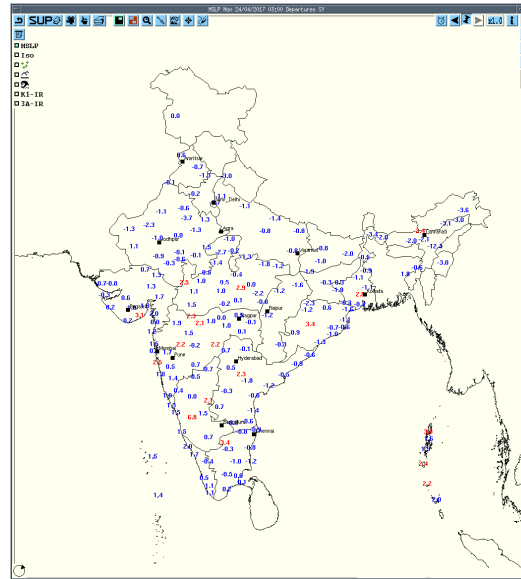
Departure Tmax



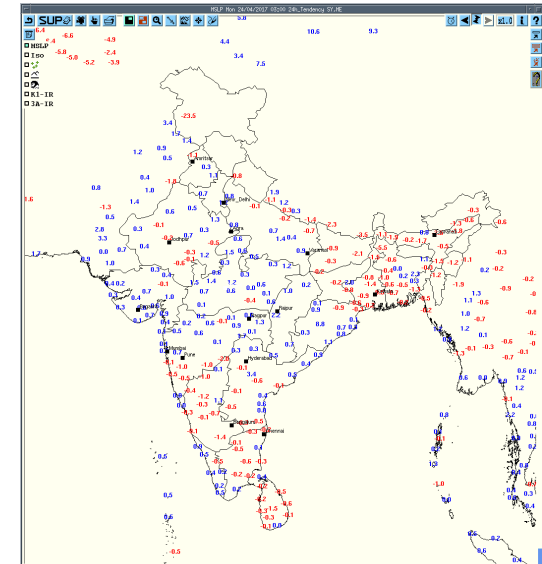
Tendency Tmax



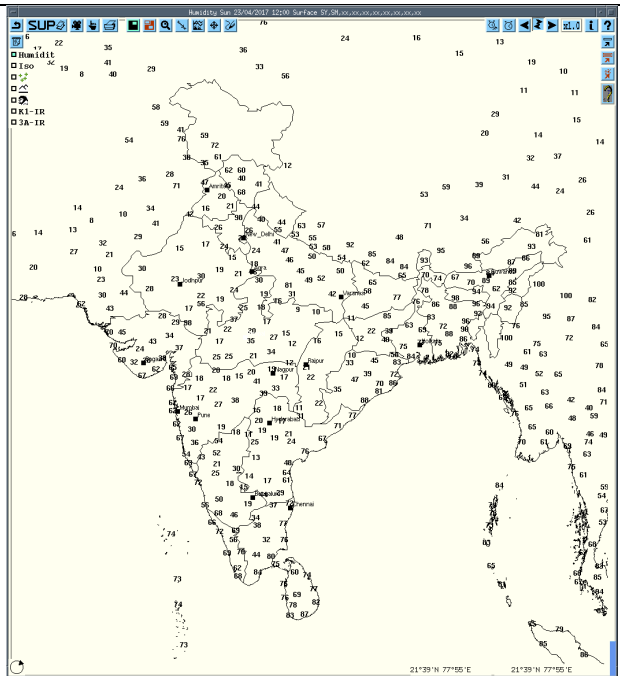
MSLP



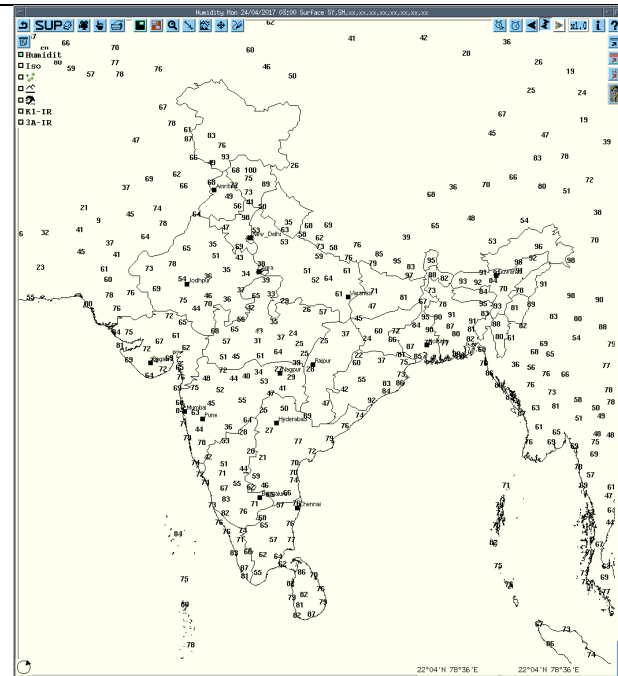
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Realized weather past 24 hours (Based on SYNERGIE Products)					
Date	Time of Reporting	Name of Station Reporting	Region	STATE	Weather Event
23-04-17	0600 UTC	Dibrugarh	Northeast India	Assam	Thunderstorm
23-04-17	0900 UTC	Keonjhar	East India	Odisha	Thunderstorm
		Agartala	Northeast India	Tripura	Thunderstorm
		Silchar	Northeast India	Assam	Thunderstorm
23-04-17	1200 UTC	Kodaikanal	South India	Tamilnadu	Thunderstorm
		Thiruvananthapuram AP & City	South India	Kerala	Thunderstorm
		Bankura	East India	West Bengal	Thunderstorm
23-04-17	1500 UTC	Amritsar	Northwest India	Punjab	Thunderstorm
		Tiruchirappalli	South India	Tamilnadu	Thunderstorm
		Kolkata	East India	West Bengal	Thunderstorm
23-04-17	1800 UTC	Amritsar	Northwest India	Punjab	Thunderstorm
		Ganganagar	Northwest India	Rajasthan	Thunderstorm
		Lucknow	Northwest India	Uttar Pradesh	Duststorm
		Bahraich	Northwest India	Uttar Pradesh	Thunderstorm
		Patna	East India	Bihar	Thunderstorm
		Agartala	Northeast India	Tripura	Thunderstorm
23-04-17	2100 UTC	Chandigarh	Northwest India	Chandigarh	Thunderstorm
		Patiala	Northwest India	Punjab	Thunderstorm
		Ambala	Northwest India	Haryana	Lightening
		Jodhpur	Northwest India	Rajasthan	Lightening
		Patna, Bhagalpur, Purnea	East India	Bihar	Thunderstorm
24-04-17	0000 UTC	Purnea	East India	Bihar	Thunderstorm
24-04-17	0300 UTC	Burdwan	East India	West Bengal	Thunderstorm with Hail

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)
Qazigund	Northwest India	J & K	Thunderstorm	23-04-17	2000	2100
Pahalgam	Northwest India	J & K	Thunderstorm	23-04-17	2040	2130
Kupwara	Northwest India	J & K	Thunderstorm	23-04-17	1100	1105
Kukernag	Northwest India	J & K	Thunderstorm	23-04-17	1845	1925
Banihal	Northwest India	J & K	Thunderstorm	23-04-17	1930	2100
Batote	Northwest India	J & K	Thunderstorm	23-04-17	1740	1945
Katra	Northwest India	J & K	Thunderstorm	23-04-17	1755	1835
Bhaderwah	Northwest India	J & K	Thunderstorm	23-04-17	1740	1840
N/Lakhimpur	Northeast India	Assam	Thunderstorm	23-04-17	0830	1010
Dibrugarh	Northeast India	Assam	Thunderstorm	23-04-17	0940	1140
Lengpui	Northeast India	Mizoram	Thunderstorm	23-04-17	1105	1410
Silchar	Northeast India	Assam	Thunderstorm	23-04-17	1420	2240
Passighat	Northeast India	Arunachal Pradesh	Thunderstorm	24-04-17	0000	0130
Shillong	Northeast India	Meghalaya	Thunderstorm	24-04-17	0643	0710
Guwahati	Northeast India	Assam	Thunderstorm	24-04-17	0715	0815
Kailasahar	Northeast India	Tripura	Thunderstorm	24-04-17	0810	0830
Agartala	Northeast India	Tripura	Thunderstorm	24-04-17	0802	0830
N/Lakhimpur	Northeast India	Assam	Thunderstorm	23-04-17	23/0830	23/1010
Dibrugarh	Northeast India	Assam	Thunderstorm	23-04-17	23/0940	23/1140
Lengpui	Northeast India	Mizoram	Thunderstorm	23-04-17	23/1105	23/1410
Silchar	Northeast India	Assam	Thunderstorm	23-04-17	23/1420	23/2240
Passighat	Northeast India	Arunachal Pradesh	Thunderstorm	24-04-17	24/0000	24/0130

Shillong	Northeast India	Meghalaya	Thunderstorm	24-04-17	24/0643	24/0710
Guwahati	Northeast India	Assam	Thunderstorm	24-04-17	24/0715	24/0815
Kailasahar	Northeast India	Tripura	Thunderstorm	24-04-17	24/0810	24/0830
Agartala	Northeast India	Tripura	Thunderstorm	24-04-17	24/0802	24/0830
Alipore	East India	West Bengal	Lightening	23-04-17	1925	1950
Bankura	East India	West Bengal	Thunderstorm	23-04-17	1630	1820
			Lightening	23-04-17	1630	2000
Sriniketan	East India	West Bengal	Thunderstorm	23-04-17	1750	1820
			Lightening	23-04-17	at night	---
Patna	East India	Bihar	Thunderstorm	23/24-04-17	2320	240100
			Lightening	23/240417	2320	240100
Bhagalpur	East India	Bihar	Thunderstorm	24-04-17	240145	240305
Purnia	East India	Bihar	Thunderstorm	24-04-17	240240	240349
			Lightening	24-04-17	240240	240349
Balasure	East India	Odisha	Thunderstorm	23-04-17	1520	1625
Keonjargarh	East India	Odisha	Thunderstorm	23-04-17	1245	1350
Agartala	Northeast India	Tripura	Thunderstorm	24-04-17	0802	0830
Kaiulasahar	Northeast India	Tripura	Thunderstorm	24-04-17	0810	0830
Bikaner	Northwest India	Rajasthan	Thunderstorm		2040	2300
Ganganagar	Northwest India	Rajasthan	Thunderstorm	23/24-04-17	1650 1815 2250 232345	1652 1845 2350 240100
Shimla	Northwest India	Himachal Pradesh	Thunderstorm	24-04-14	0345	0600
Patiala	Northwest India	Punjab	Thunderstorm	24-04-17	240145	240400
Amritsar	Northwest India	Punjab	Thunderstorm	23/24-04-17	230830 231830	230920 240200
Ludhiana	Northwest India	Punjab	Thunderstorm	23/24-04-17	Mid Night	--

Chandigarh	Northwest India	Chandigarh	Thunderstorm	24-04-17	0155	0410
Varanasi(AP)	Northwest India	Uttar Pradesh	Thunderstorm	23-04-17	1930	2100
Gazipur	Northwest India	Uttar Pradesh	Thunderstorm	23-04-17	2038	2132
Ballia	Northwest India	Uttar Pradesh	Thunderstorm	23-04-17	2200	2215
Bahraich	Northwest India	Uttar Pradesh	Thunderstorm	23-04-17	2145	2300
Allahabad	Northwest India	Uttar Pradesh	Thunderstorm	23/24-04-17	231630 240100	231825 240200
Kanpur(IAF)	Northwest India	Uttar Pradesh	Thunderstorm	23-04-17	1530	2100
Kanpur City	Northwest India	Uttar Pradesh	Thunderstorm	23-04-17	1600	1900
Kheri	Northwest India	Uttar Pradesh	Thunderstorm	23-04-17	2030	2200
Thiruvananthapuram City	South India	Kerala	Thunderstorm	23-04-17	1620 1735	1645 1745
Tiruchi	South India	Tamilnadu	Thunderstorm	23-04-17	2015	2220

Past 24 hours DWR Report:

Radars 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
Patna	24-04-17	230300-231630	NIL	NIL	N/A	N/A	N/A
		231630-231930	Multiple Cell. Maximum Reflectivity : 40 dBZ Echo Top : 10.5 KM	Range: 56 KM from DWR Patna in West direction. Movement- Easterly	Warning E-mail sent to State Disaster management Authority and Concern DMs	THUNDER-STORM WITH RAIN	BUXAR,BHOJPUR,PATNA,SARAN,CHAPRA SIWAN,VAISHALI
		231930-240000	Multiple Cell. Maximum Reflectivity : 52.5dBZ Echo Top : 12.8 KM	Range: 182.0 KM from DWR Patna in North-West direction. Movement- South-Easterly	Warning E-mail sent to State Disaster management Authority and Concern DMs	THUNDER-STORM WITH RAIN	West champaran,east champaran,Siwan,Saran,Samastipur,Sitamarhi,Sheohar,Madhubani,Vaishali,Muzaffarpur,Supaul,Motihari,Madhepura,Khagadia,Begusarai,Munger,Lakhisarai,Darbhanga
		240000-240300	NIL	NIL	NIL	NIL	NIL
Agartala	24-04-17	230630-231510	Multiple cells with Maximum Height 14km and maximum reflectivity 40 dBZ (at 1000 UTC of 22.04.17 over Central	Formed 150 km WNW of DWR AGT at 0630 UTC of 23.04.17 and moved ESE-wards at around 70kmph	Cells Dissipated at 1510 UTC of 23.04.17 over Mizoram	TS with rain	West, Sipahijala, South, Gomati, Dhalai district of Tripura

			Parts of Tripura)				
		230800-231720	Multiple Cells with Maximum Height 15 km and maximum reflectivity 39 dBZ (at 1330 UTC over South Bangladesh)	Formed 200 km SW of DWR AGT at 0800 UTC of 23.04.17 and moved ESE-wards at around 30 kmph	Cells Dissipated at 1720 UTC of 23.04.17 over South Bangladesh and adjoining BoB	N/A	N/A
		231100-232130	Squall Line with Maximum Height 14 km and maximum reflectivity 45dBZ (at 1500 UTC over Bangladesh)	Formed 450 km WSW of DWR AGT at 1100 UTC of 23.04.17 and moved ESE-wards at around 65kmph	Cells Dissipated at 2130 UTC of 23.04.17 over Mizoram	TS with rain	All Districts of Tripura, Mamit District of Mizoram
		232120-240300	Multiple Cells with Maximum Height 12 km and maximum reflectivity 42 dBZ (at 0100 UTC over Meghalaya)	Formed 400 km NW of DWR AGT at 2120 UTC of 23.04.17 and moved Eastwards at around 75 kmph	Cells Dissipated at 0300 UTC of 24.04.17 over Meghalaya	N/A	N/A
		232250-240300	Squall Line with Maximum Height 14 km and maximum reflectivity 45 dBZ (at 0200 UTC over Bangladesh-70km NW of DWR AGT)	Formed 290 km WNW of DWR AGT at 2250 UTC of 23.04.17 and moving ESE-wards at around 55kmph	At 0300 UTC of 24.04.17, cells still persists over Western parts of Tripura	1.TS with squall at Agartala Airport. 2.TS with Rain at other places	West, Sipahijala, Khowai, Dhalai, North, Unakoti district of Tripura
		240130-240300	Squall Line with Maximum Height 10 km and maximum reflectivity 34 dBZ (at 0300 UTC over Bangladesh-230km West of DWR AGT)	Formed 340 km WNW of DWR AGT at 0130 UTC of 24.04.17 and moving ESE-wards at around 60kmph	At 0300 UTC of 24.04.17, cells still persists over over Bangladesh and approaching towards Tripura	N/A	N/A

Paradeep	24-04-17	230600-231300	Isolated single cells seen to develop having maximum reflectivity of 57 dBZ and heights exceeding 14 kms. single cells transforming into multiple cells during later stages of observation.	Position: 310-45 degrees(clockwise) Range:230-80 kms from the RADAR	NIL	TS with Rain	Sundergarh, Debagarh, Angul, Sudergarh, Keonjhar, Mayurbhanj, Bhadrak, Baleshwar, Jajpur and Dhenkanal.
Vishakhapatnam	24-04-17	230600-230900	Isolated single cells with Maximum reflectivity of 49dBZ and Max.height of 10 kms.	NE(200 kms) moving SEly	Cells are start forming from 0841UTC and developing.	-	■
		230900-231200	Isolated single cells with Maximum reflectivity of 53dBZ and Max. height of 10 kms.	NE(180 kms) & W(120 kms) moving SEly	Cells are forming, well developed up to 53dBZ and dissipated.	-	■
		231200-231500	Isolated single cell with Maximum reflectivity of 34dBZ and Max. Height of 8 kms.	NE(197 kms) and moving Ely	Cell is gradually dissipated.	-	■
		240000-240300	0600 UTC-0900 UTC	Isolated single cells with Maximum reflectivity of 49dBZ and Max.height of 10 kms.	NE(200 kms) moving SEly	-	-
Lucknow	24-04-17	230802-231342	Squall line convective system with average height of 13 km with Maximum reflectivity of 52	SSW(100KM) moving in NE'ly Direction at speed of 65km/hr	Cells started forming at 0752 UTC at SSW(100KM) from Radar organized into squall line MCS during 0842 UTC to 1212 UTC and	Fatehpur,Hamir pur,Kanpur(urban), Kanpur(rural),Unnao, Raibarely,Pratapgarh










			dBZ		disorganized at 1232 UTC and so formed multiple cells dissipated at 1352 UTC		
		231002-231042	Isolated cell with average height of 12 km with Maximum reflectivity of 38 dBZ	NW(170KM) moving in SE'ly direction at speed of 43km/hr	Single isolated cell started forming at 0952 UTC at NW(175KM) did not intensified and dissipated at 1042 UTC at NW(150KM) from radar	Badaun,Bareilly
		231112-231502	Multiple cells with average height of 15 km with Maximum reflectivity of 46 dBZ	SSE(200KM) moving in NE'ly direction at speed of 83 km/hr	Cells started forming at 1042 UTC at SSE(185KM) from Radar ,matured at 1212 UTC and disappeared from LKN radar at 1512 UTC at ESE(250KM)	Allahabad,Jaunpur, Sant Ravidas Nagar,Varanasi,Mirzapur
		231342-232012	Squall line convective system with average height of 15 km with Maximum reflectivity of 56 dBZ	NNW (120KM) moving in E'ly direction at speed of 65km/hr and N(250KM) moving in SE'ly direction at speed of 128 km/hr	Cells started forming at 1342 UTC at NNW(140KM) from radar and organized into squall line MCS at 1412 UTC and merged with already formed(at N(250KM) at 1242 UTC) squall line convective system at 1602 UTC and dissipated at 2012 UTC at ESE(225KM) from radar Note: radar was on standby mode during 1805 UTC to 1830 UTC due to power failure.	Hardoi,Sitapur,Lakhimpur Kheri,Baharaich,Gonda, Balrampur,SiddharthNagar, Barabanki,Basti,Sant kabir Nagar,Gorakhpur,Deoria, Faizabad,Jaunpur,Balia , Sultanpur,Kushinagar, Azamgarh,Gazipur,Sravasti
Kolkata	24-04-17	230301 –230551	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
		230602–230821	Cluster of isolated single cells with	ENE (74 km) moving in E-ly direction with a	Formation started at 0602 UTC of in ENE at a distance of 74	Thunderstorm /Rain	N/A

			maximum reflectivity of 55.5 dBz at 0651 UTC and maximum height of 11.6 Km at 0702 UTC.	speed of 25.6 kmph.	km from Radar. Did not mature and dissipated at 0821 UTC in ESE at a distance of 221 km from Radar.		
		230742-231242	Isolated single cells merged to form extended multi celled system with maximum reflectivity of 65.5 dBz at 0931 UTC and maximum height of more than 18.0 Km at 0901 UTC.	E (97 km) To ENE (154 km). Moving in ESE-ly/ SE-ly direction with a speed of 47.2 kmph.	Formation started at 0742 UTC in between E (97 km) and ENE (154 km) from Radar. Matured. Dissipated at 1242 UTC in ESE at a distance of 241 km from Radar.	Hailstorm/ Thunderstorm /Squall / Rain	N/A
		230831-230931	Isolated mature single cell with maximum reflectivity of 66.5 dBz at 0851 UTC and maximum height of 14.1 Km at 0831 UTC.	W (244 km). Moving in E-ly direction with a speed of 37.8 kmph.	Matured cell first observed at 0831 UTC in W at distance of 244 km from Radar. Dissipated at 0931 UTC in W at a distance of 189 km from Radar.	Hailstorm/ Thunderstorm /Squall / Rain	N/A
		230851-231132	Single cells as part of multi celled system merged to form a large single cell with maximum reflectivity of 61.0 dBz at 1031 UTC and maximum height of 17.6 Km at 0911 UTC.	WSW (237 km) To SW (207 km). Moving in ESE-ly/ SE-ly direction with a speed of 40.7 kmph.	Formation started at 0851 UTC in between WSW (237 km) and SW (207 km) from Radar. Matured and dissipated at 1132 UTC in SSW at a distance of 168 km from Radar.	Thunderstorm / Hail /Squall / Rain	N/A
		230851 -231212	Single cell with maximum reflectivity of 64.5 dBz at 1101 UTC and maximum height more than 18.0 Km at 1002 UTC.	W (247 km). Moving in ESE-ly direction with a speed of 60.1 kmph.	Formation started at 0851 UTC in W at a distance of 247 km from Radar. Matured and dissipated at 1212 UTC in SW at a distance of 63 km from Radar.	Hailstorm /Thunderstorm /Squall / Rain	N/A

		230951 -231901	1. Scattered cells with maximum reflectivity of 65.5 dBz at 0951 UTC and maximum height more than 17.82 km at 1002 UTC.	WNW (227 km) moving ESE-ly direction with a speed of 60.0 kmph.	Formation started at 0951 UTC in WNW at a distance of 227 km from Radar. Matured and merged with cell no. 2 below at 1052 UTC and formed a multi cell system and after formed a squall line pattern at 1132 UTC moving towards ESE-ly into Bangladesh and then towards SE-ly later.	Hailstorm /Thunderstorm /Squall / Rain	N/A
		231002-231901	2. Scattered cells with maximum reflectivity of 63.5 at 1021 UTC and maximum height more than 16.84 km at 1041 UTC.	NW (247 km) moving ESE-ly /SE-ly direction with a speed of 60.0 kmph.	Formation started at 1002 UTC in NW at a distance of 247 km from Radar merged with cell no. 1 above and formed a multi cell system at 1052 UTC and after formed a squall line pattern at 1132 UTC moving towards ESE-ly into Bangladesh and then after towards SE-ly .	Hailstorm /Thunderstorm /Squall / Rain	N/A
		232251 –240111	Single isolated cell formed and later transformed into multi cell system with a maximum reflectivity of 60.5 dBz and maximum height of 12.81 km at 240021 UTC	N (224.2km) moving ESE-ly direction with a speed of 60.0 kmph	Formation started at 2251 UTC in N at a distance 224.2 km from radar, matured into multi cell system at 2321 UTC moving towards ESE-ly direction	Thunderstorm /Rain	N/A
		240121-240312	Single isolated cell formed , later transformed into a multi cell system and then after formed a squall line with	N (203.2 km) moving towards SE-ly direction with a speed of 65.0 kmph	Formation started at 0121 UTC in N at a distance of 203.2 km from radar, matured into multi cell system at 0202 UTC and later formed into a	Hailstorm /Thunderstorm /Squall / Rain	N/A

			maximum reflectivity of 58.5 dBz and maximum height of 14.42 km at 0202 UTC.		squall line at 0252 UTC with maximum width more than 10 km and maximum is more than 100 km, moving towards SE-ly in Bangladesh		
Machilipatnam	24-04-17	230921-231021	Isolated single cell with average height of 6.4 km with maximum reflectivity of 63 dBZ	NE (206KM) stationary	Cells started forming at 0921UTC at NE (204km) from radar. Maximum reflectivity during 1001 to 1011 and died down at 1121UTC	Possibility of Thunder storm with hail, Rain and moderate winds.	Vishakhapatnam District
		231031-231051	Isolated single cell average height of 4.5km with maximum reflectivity of 60dBZ	NE(200KM) stationary	Cells started forming at 1031UTC at NE (200km) from radar. Maximum reflectivity during 1031 to 1051 and died down at 1051 UTC	Possibility of Thunder storm and Rain with moderate winds.	Visakhapatnam District
		230921-231021	Isolated single cell with average height of 6.4 km with maximum reflectivity of 63 dBZ	NE (206KM) stationary	Cells started forming at 0921UTC at NE (204km) from radar. Maximum reflectivity during 1001 to 1011 and died down at 1121UTC	Possibility of Thunder storm with hail, Rain and moderate winds.	Vishakhapatnam District
Nagpur	24-04-17	231002-231042	Single	115 km NE,moving NE'ly	< 10 dBZ	---	---
		240002-240302	Nil	Nil	Nil	Nil	Nil
Hyderabad	24-04-17	230300-240300	Nil	Nil	Nil	Nil	Nil
Jaipur	24-04-17	230300-240300	Nil	Nil	Nil	Nil	Nil
Karaikal	24-04-17	230300-240300	---	---	DWR U/S	--	--
Bhuj	24-04-17	230300-230900	Nil	Nil	Nil	Nil	Nil
Patiala	24-04-17	230300-240300	--	--	DWR U/S	--	--

∞	haze
☁	smoke
☄	dust or sand storm
☁	fog
☂	drizzle
•	rain
❄	snow
☁	showers
☁	hail
☁	thunderstorm
Weather Symbols	

		
+ thunderstorm	+ heavy thunderstorm	sandstorm or dust storm
		
squall	hail shower	tropical storm
		
+ tornado	+ lightning	+ hurricane

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