



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 0300UTC imagery of INSAT 3D):

Convective Activity and cloud description:

Convective Activity:

Cell No.	Date/Time	Area/Location	CTBT (minus °C)	Movement	Remarks
9(old)	20/2130	Meghalaya, adjoining Bangladesh Assam Manipur, Tripura and Mizoram	58	--	Developing
	2300	do	54	--	--
	21/0000	do	54	--	--
	0100	do	69	--	--
	0200	do	69	--	--
	0300	do	67	--	--
	0530	Assam, Meghalaya adjoining Bangladesh	56	--	--

	0700	do	56		
	0800	do	54		
	0900	do	59		
	1000	do	56		
	1100	do	56		
	1200	do	50		
	1300	do	56		
	1400	do	57		
	1500	do	56		
	1700	Meghalaya, W Assam, N Bangladesh, NE Bihar	56		
	2130	do	72		
	22/0000	do	69		
	0100	do	68		
	0200	NE Bihar, SHWB, W Assam, Meghalaya, Tripura, BD	67		
	0300	do	65	E-wards	
5 (21-04-17)	21/1200	C Bangladesh`	78	--	Developing
	1300	do	55	--	--
	1400	do	55		
	1500	do	52		
	1700	do	37		Dissipating
	2130	do	47		merged with cell no. 9 above

Scattered multi-layered clouds seen over J & K, N Himachal Pradesh and Uttarakhand in association with western disturbance over the area. The trough in westerlies runs roughly north of latitude 23.0°N and longitude 58.0°E

Scattered low/medium clouds with embedded moderate to intense convection were seen over NE Bihar, SHWB, Meghalaya W Assam, Tripura, BD and Bhutan. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Sikkim and rest north eastern states. Scattered low/medium clouds were seen over Punjab, Uttar Pradesh and rest parts of north eastern states, E Madhya Pradesh, South Interior Karnataka, Andhra Pradesh, Kerala, Tamilnadu, and Bay Islands.

Arabian Sea:

No significant clouds over the region.

Bay of Bengal & Andaman Sea:

No significant clouds over the region.

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 Orissa 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:

Convection appears to be in progress over Punjab in DWR composite at 1310hrs IST. Isolated/multiple echoes were seen in DWR Patiala, Delhi (dBZ 40-45 & height 8-10km) and DWR Patna (dBZ 40-45 & height around 8km) at 0800UTC (1330hrs IST).

RAPID RGB imagery at 1230hrs IST indicated convective clouds over J & K, Punjab, Himachal Pradesh, north-eastern states, E-Bihar, Sikkim and north Kerala coast.

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 00UTC of the day:

Not Received

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

Not Received

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 decrease 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

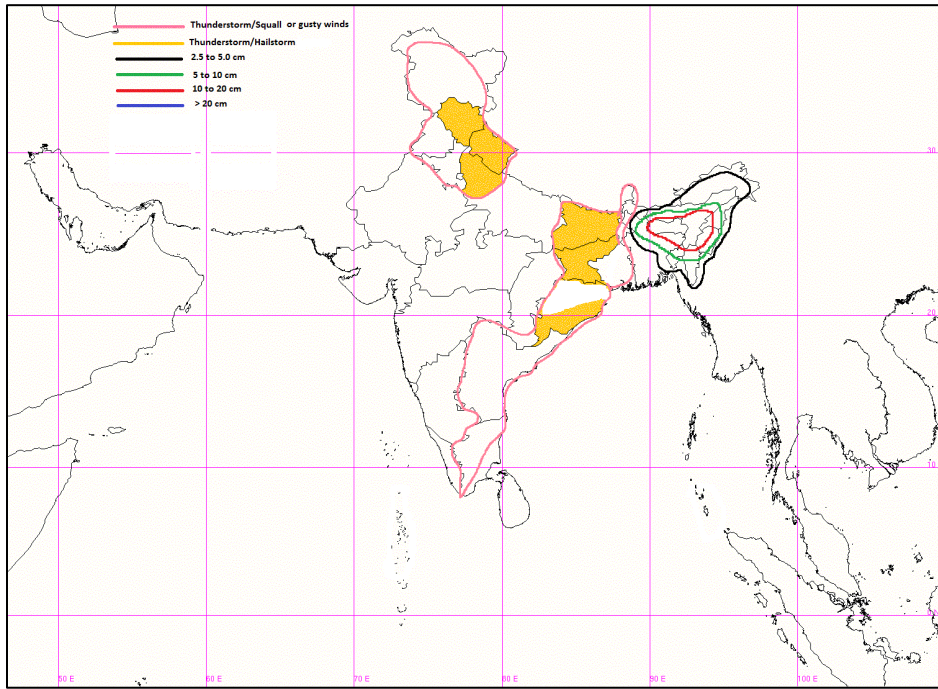
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ForRadarimagesofthepast24hoursincludingmosaicofimages:

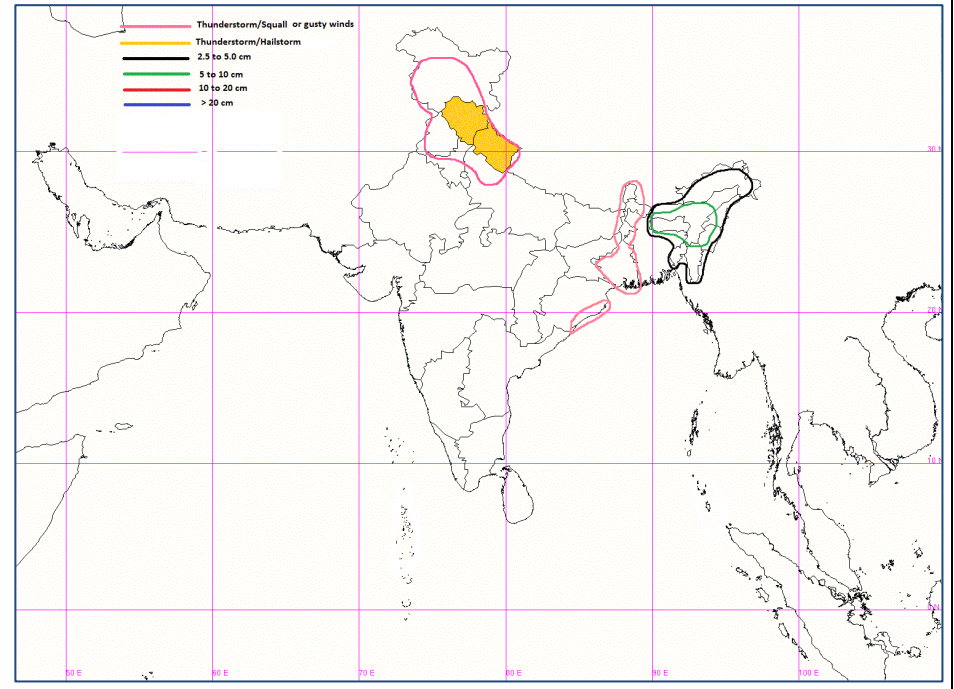
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SatellitesounderbasedT-Phigram

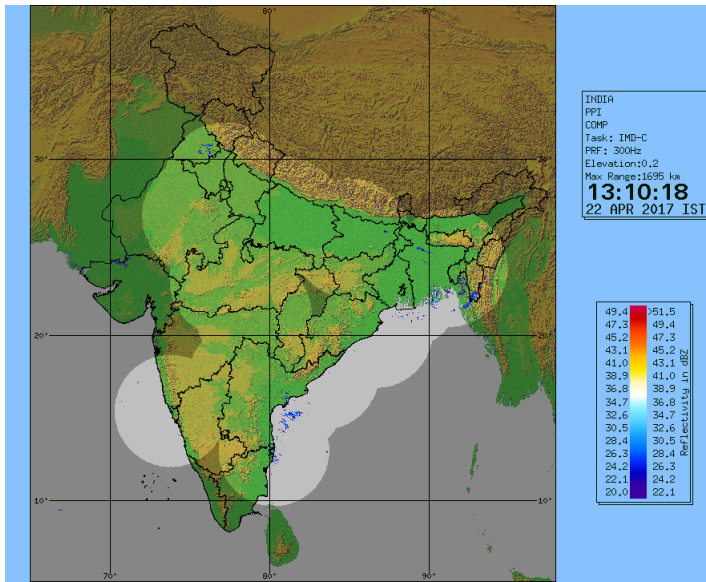
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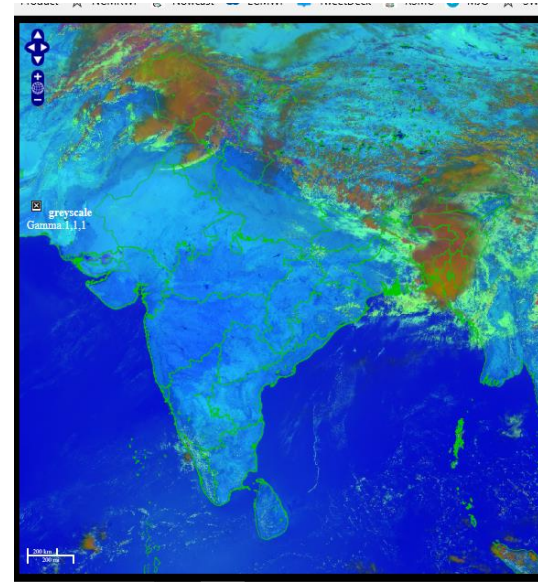
IOP Advisory for 24hours



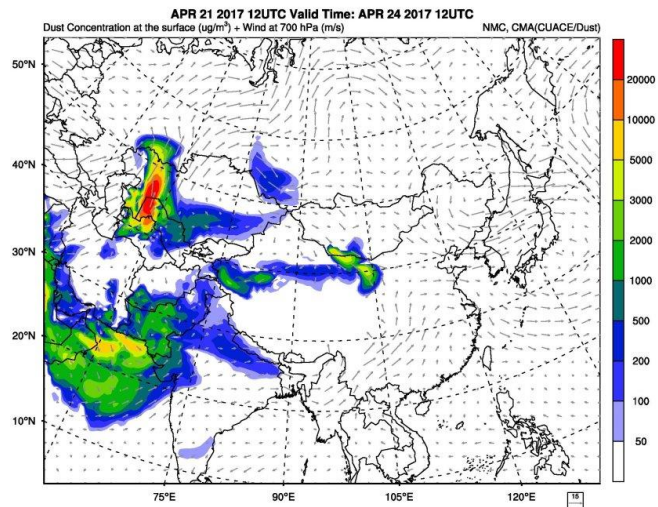
IOP Advisory for 48hours



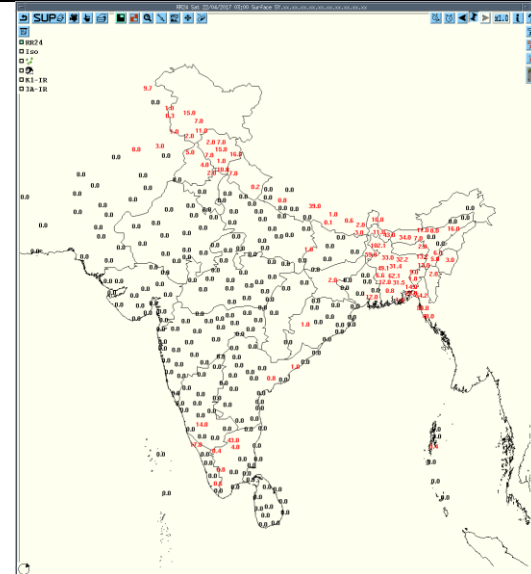
DWR Composite at 1310hrs IST of today



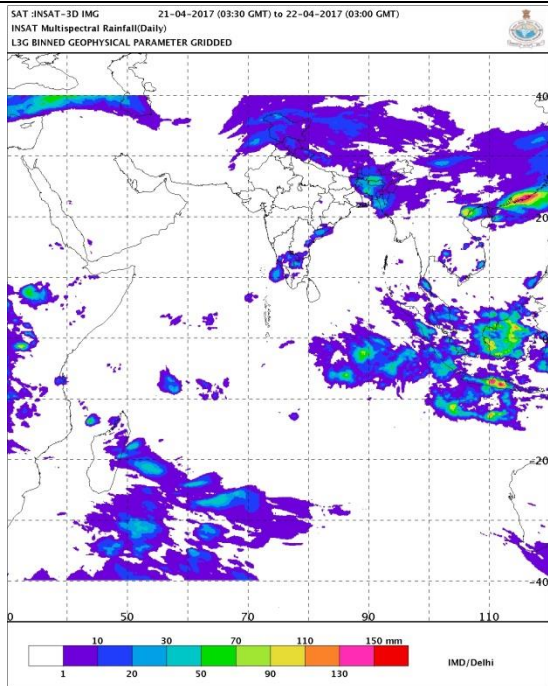
RAPID RGB Image of INSAT 3D at 1230hrs IST of today



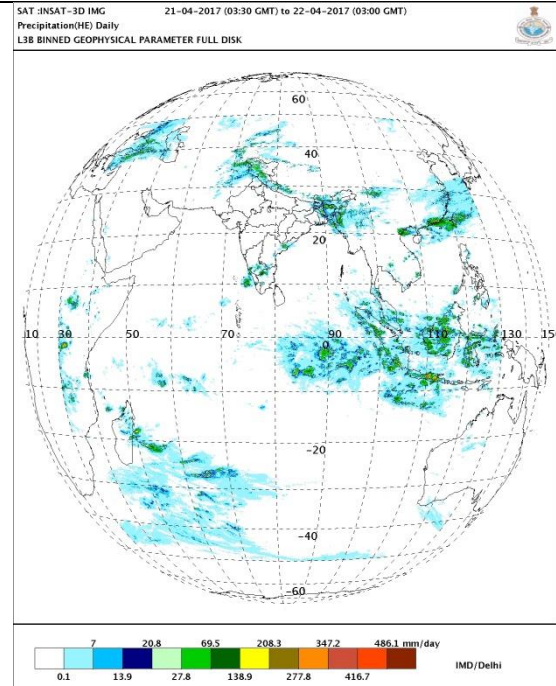
Forecast Dust Concentration for 12UTC of 24th April



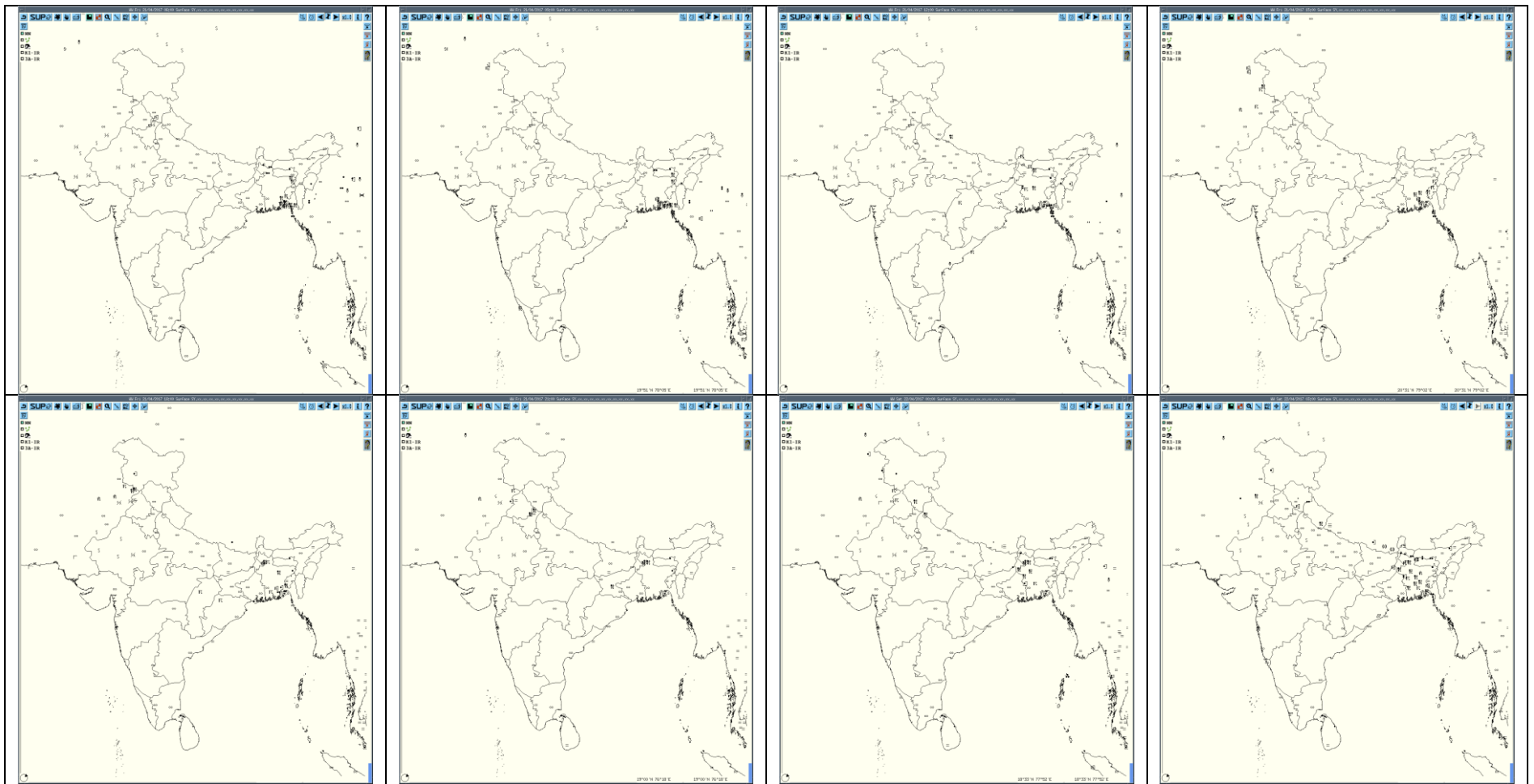
Accumulated 24 Hour rainfall (in red) recorded at 0300 UTC of today



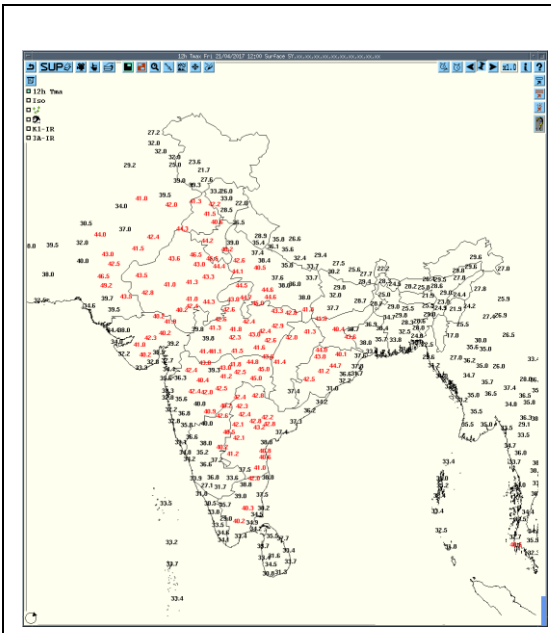
IMR Rainfall



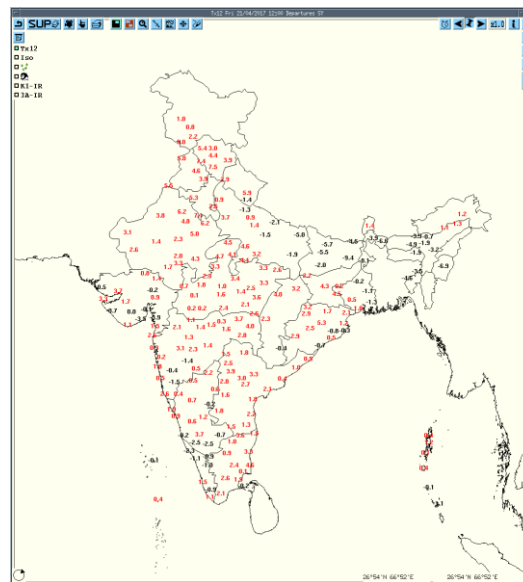
HEM Rainfall



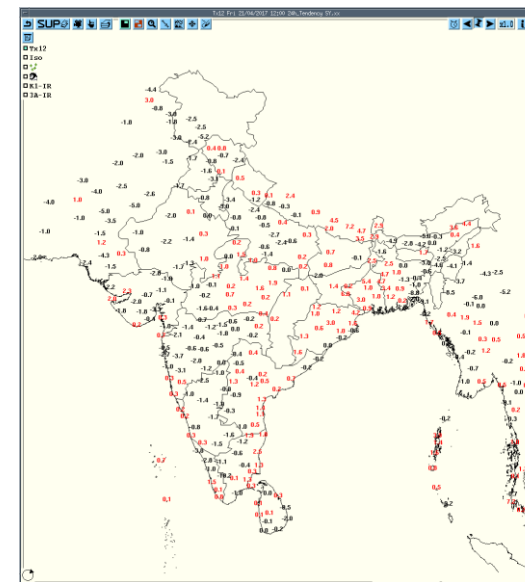
3 hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



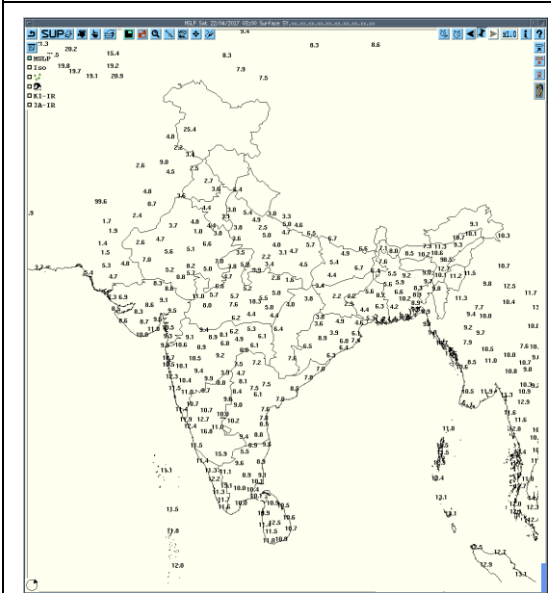
Tmax



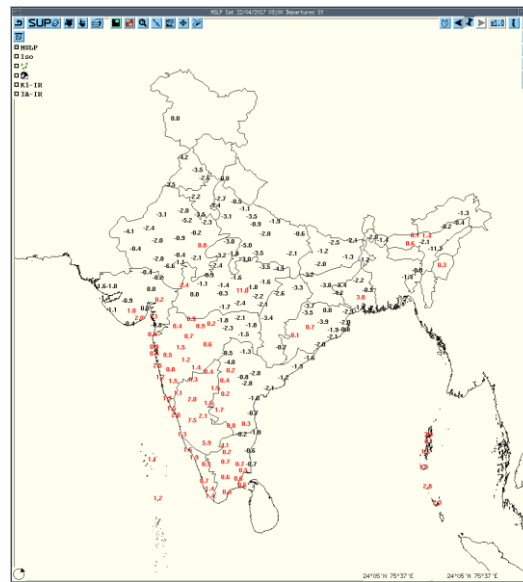
Departure Tmax



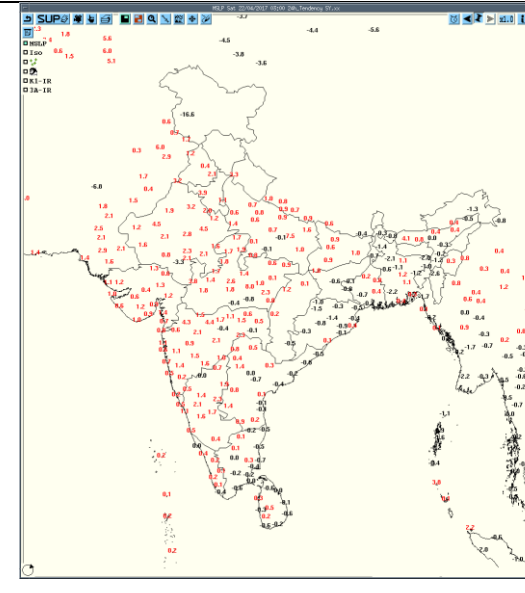
Tendency Tmax



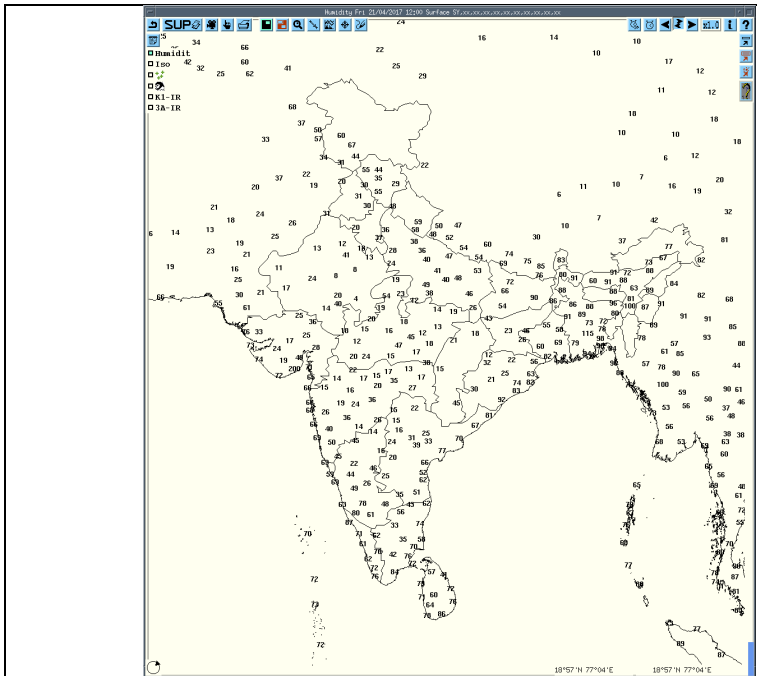
MSLP



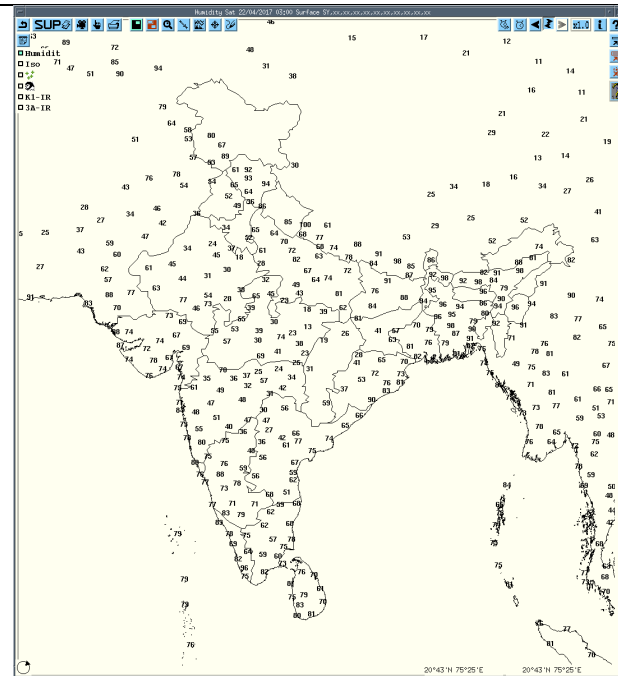
Departure MSLP



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

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 of 9 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 at 1021UTC 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	--	--	--	--

∞	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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