



India Meteorological Department
FDP STORM Bulletin No. 37 (11-04-2017)

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

SYNOPTIC FEATURES:

The trough from Marathawada to North Interior Karnataka has become less marked. The upper air cyclonic circulation over North Interior Karnataka & neighbourhood, now lies over south Konkan & Goa & neighbourhood and extends upto 0.9 km above mean sea level.

The trough from interior Tamilnadu to Comorin area extending upto 0.9 km above mean sea level persists.

A trough from north Gangetic West Bengal to south Chhattisgarh across interior Odisha now runs from north coastal Andhra Pradesh to Telangana and extends upto 0.9 km above mean sea level.

An upper air cyclonic circulation over Tenasserim coast & adjoining Andaman Sea, now lies over south Andaman Sea & neighbourhood and extends upto 3.1 km above mean sea level. A low pressure area very likely to form over southeast & adjoining east-central Bay of Bengal around 14th April.

An upper air cyclonic circulation over Assam & neighbourhood, now lies over east Assam & neighbourhood and extends upto 0.9 km above mean sea level.

Strong surface winds very likely to continue over Indo-Gangetic plains during next 36 hours.

A fresh feeble Western Disturbance very likely to affect western Himalayan region from 13th April onwards.

SATELLITE OBSERVATIONS (during past 24hrs and current observation):

Cloud Description (based on 0900UTC imagery of INSAT 3D):

Scattered low/medium clouds with embedded isolated moderate to intense convection were seen over south Interior Karnataka, south Andhra Pradesh, west Tamilnadu, coastal Kerala and Bay Islands. Scattered low/medium clouds were seen over northeast J & K, north Himachal Pradesh, north Uttarakhand, Sikkim, Arunachal Pradesh and rest parts of south India.

Arabian Sea:

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

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded intense to very intense convection were seen over southeast Bay and south Andaman Sea. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over rest south Bay of Bengal. **Convection:**

Light to moderate convection was observed over Coastal Odisha, South West Bengal and Karnataka.

OLR:- Up to 230 wm^{-2} was over J&K, North Himachal Pradesh Extreme North Uttarakhand Arunachal Pradesh South Interior Karnataka, Extreme North West North Interior Karnataka.

Jet Stream:

No Jet stream and trough observed over India.

Dynamic Features:

Positive shear tendency observed over India.

Low wind shear observed over south and moderate wind shear observed over North India and weak to moderate wind shear observed over Central India.

A positive Vorticity field is seen over Uttarakhand, Uttar Pradesh, Bihar, West Bengal, , West Karnataka.

Positive Low Level Convergence observed over India except Negative low level convergence observed over South India.

Precipitation:

IMR: Rainfall Upto **30mm** was observed over Extreme North West North Interior Karnataka. Rainfall upto **20mm** was observed over South Interior Karnataka. Rainfall upto **10mm** was observed over East J & K, extreme North Himachal Pradesh, Coastal Odisha and Rest North Interior Karnataka.

HEM: Rainfall upto 14mm was observed over North East North Interior Karnataka and South Interior Karnataka. Rainfall Upto 7mm was observed over Coastal Odisha

RADAR and RAPID observation:

Isolated convection appears to be in progress over Karnataka & West Tamilnadu in DWR composite at 1630 hrs IST.

RAPID RGB Satellite imagery of 1600 hrs IST indicates convective cells over Karnataka, Kerala & Nicobar Islands.

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

No major dust concentration was observed over Arabian Peninsula and west Rajasthan. Dust concentration is expected to increase over western India for next three days.

2. NWP MODEL GUIDANCE:

NCMRWF (NCUM Forecast based on 00UTC of today):

1. Weather Systems:

12UTC Charts on all days from Day0-4 show trough in MSLP over J & K extending NW-SE.

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

CYCIR formation over BoB in Day 0 getting intensified as day progresses.

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

Weaker core winds at 12 UTC on all days over India.

Associated with the Bay of Bengal CYCIR, on Day-5 00UTC strong core winds in the vicinity of the system.

3. Convergence at 850 hPa:

At 12UTC on Day-1 to Day-4: High values along the Western Ghats in Karnataka, Maharashtra and Kerala

Day 3-4: Parts of Odisha and WB along with adjoining Jharkhand and Chhattisgarh.

Day 5 00UTC: Associated with the Bay of Bengal CYCIR.

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

At 12UTC on Day-0 high values mainly along the IG plains extending NW to SE-wards covering parts of HP, Uttarakhand and UP.

Day1: System moves SE and covers UP and Bihar

Day-0 & Day-4 over some parts of Assam

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

Day-0 at 12UTC: Prominent over large west coast of Karnataka, Kerala some parts of coastal AP, Arunachal and Nagaland.

Day 2-4: Same as in day-0 with subdued activity over coastal AP. Enhanced activity over west coast of Karnataka, Kerala and Maharashtra.

Day-4 enhanced values over Bihar, WB and Adjoining Bangladesh and over parts of NE India.

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

Day-0 at 12UTC: Prominent over large parts of southern peninsula covering west coast of Karnataka large parts of Arunachal and Nagaland.

Day 1to3: Along the western coast activity subdued as day progresses

Day-4: Enhanced values over parts of IG plains over UP, Bihar, adjoining WB and parts of NE India

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

Day 0: at 12UTC : Over coast of Karnataka extending to NI Karnataka, Telangana, parts of Tamilnadu.

Day-1& 2: over coastal Karnataka and parts of Arunachal and adjoining Assam and parts of Uttarakhand.

Day-3: Enhanced values of TTI over J & K, Himachal and Uttarakhand, fresh development over coastal Maharashtra

Day-4: Increased values over coast of Maharashtra and Karnataka, parts of Bihar, WB and NE states

8. Rainfall and thunder storm activity:

Rainfall > 2 cm/day: Day-1 over some parts of Kerala, Karnataka and Tamilnadu

Day-5 over western part of Assam and some parts of adjoining Meghalaya and Arunachal Pradesh.

Day 4 &5: >16 cm/day Associated with CYCIR over BoB

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

1. Weather Systems:

00 UTC analysis shows a low level CYCIR over Marathwada and adjoining north Karnataka region and this CYCIR will persist for the next 2-3 days.

Analysis also shows a north-south oriented low level trough along the east coast of India starting from Gangetic West Bengal (GWB) to coastal Orissa and this trough will persist for the next 3-4 days.

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

No presence of jet core over the Indian region for the next 5 days.

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

Analysis shows low level positive vorticity (>12 x 10⁻⁵/s) mainly over the foothills of Himalaya and isolated pockets of GWB and NE states.

Forecast shows vorticity core zones mainly along the foothills of Himalaya and isolated pockets of GWB and NE states, UP, Bihar, interior parts of Karnataka and few pockets along the east coast bordering Odisha and SHWB along with few regions of the north eastern states for the 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): Significant threshold values are noticed over GWB, along the east of India, Odisha and few pockets in AP and along the west coast of India. Forecast shows significant threshold values over AP, GWB, and eastern coast for the next 4/5 days.

Lifted Index (< -2): The areas with index less than -2 lies along east coast regions, GWB, Odisha, coastal AP, and adjoining areas and along the Kerala coast with gradually the LI areas with less than -2 mainly extended towards south-eastern coastal regions.

Sweat Index (> 400): 00UTC shows significant values over major parts of Bihar and Jharkhand along with the east coast extending up to coastal TN and also over 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, Bihar, and east UP, Bangladesh and NE region for next 5 days and also over few pockets in the south west region.

Total Total Index (> 50): Analysis shows significant values over few pockets in Rajasthan 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 from day 1 to day 5 particularly at 12 UTC of each day.

CAPE (> 1000): Mostly along east coast of India over GWB, Odisha, Bihar, Jharkhand and adjoining regions along with parts in south peninsular region and coastal Kerala and Karnataka during the next 5 days.

CINE (50-150): Maximum CINE values are found in some areas of GWB and along east coast over Odisha, coastal AP and Tamilnadu and also over Bihar, Jharkhand and adjoining areas.

5. Rainfall and thunderstorm activity:

10-40 mm rainfall is forecasted tomorrow over isolated pockets in the NE states particularly over Arunachal Pradesh and Kerala regions. Isolated light to moderate rainfall activity over pockets of NE states and Kerala will continue for the next 2-3 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 isolated pockets of NE states and some parts of Kerala on day 1. Model reflectivity exceeding the threshold value are also forecasted over many pockets of NE during the evening hours for all the three days.

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 India during next 3 days except parts of extreme south peninsular region, north-eastern states and J & K.

K-Index (> 35): Less than threshold value over most parts of India during next 3 days.

CAPE (> 1000): Mostly along east coast of India over GWB, Andhra Pradesh, Odisha and Bihar during next 3 days. Another zone along west coast of India, particularly over coastal Kerala, coastal Karnataka and Konkan & Goa during next 3 days.

CINE (50-150): CINE values are mostly small all over 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 2 days over few pockets in the NE states particularly over Arunachal Pradesh and Kerala

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day 1 & Day 2:

Presently, the upper air cyclonic circulation over North Interior Karnataka & neighbourhood, now lies over south Konkan & Goa & neighbourhood and extends upto 0.9 km above mean sea level. The trough from interior Tamilnadu to Comorin area extending upto 0.9 km above mean sea level persists. Due to the system, the Kerala and North and South Karnataka will experience thunderstorm with gusty wind on Day-1.

Secondly, an upper air cyclonic circulation lies over south Andaman Sea & neighbourhood and extends upto 3.1 km above mean sea level which will give rise to thunderstorm with gusty wind activities on Day-1 and Day-2.

Day-1

Andaman and Nicobar Islands
Kerala and North and South Interior Karnataka

Day-2

Andaman and Nicobar Islands
Kerala and South Interior Karnataka

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

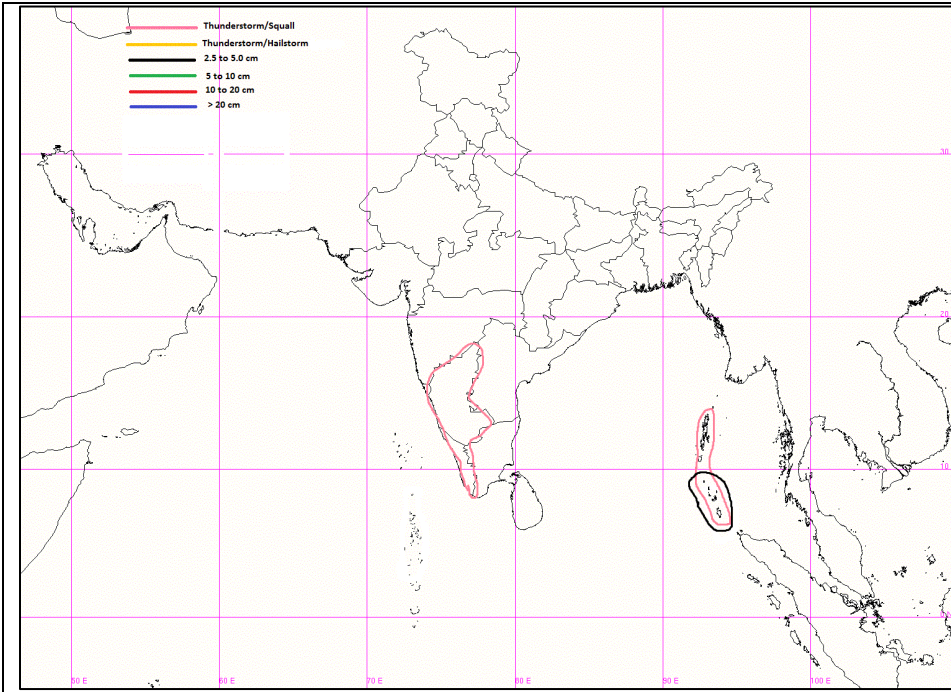
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ForRadarimagesofthepast24hoursincludingmosaicofimages:

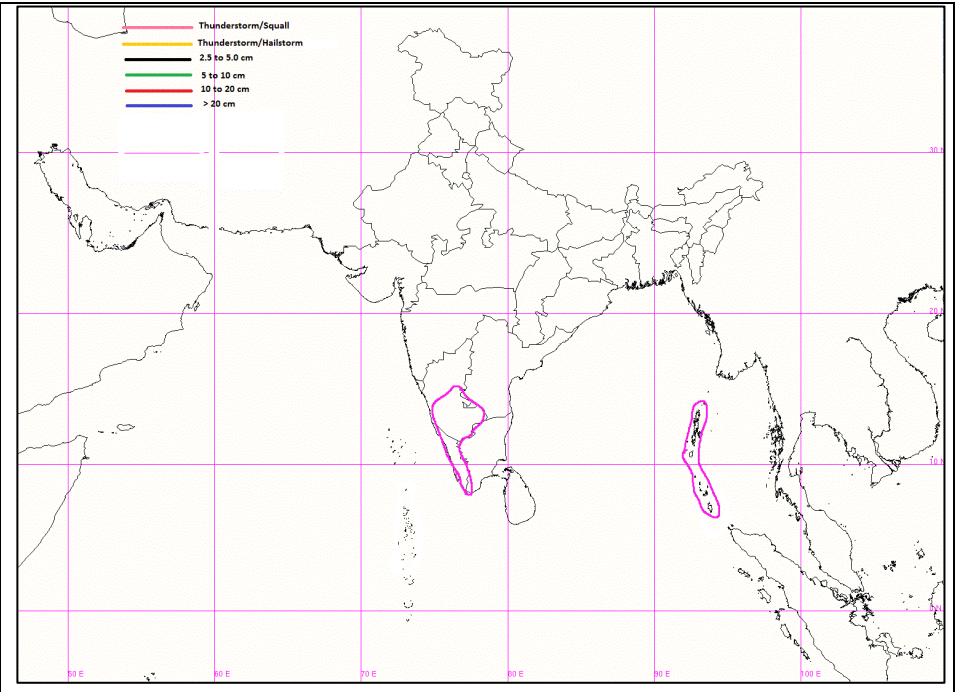
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T-Phi gram

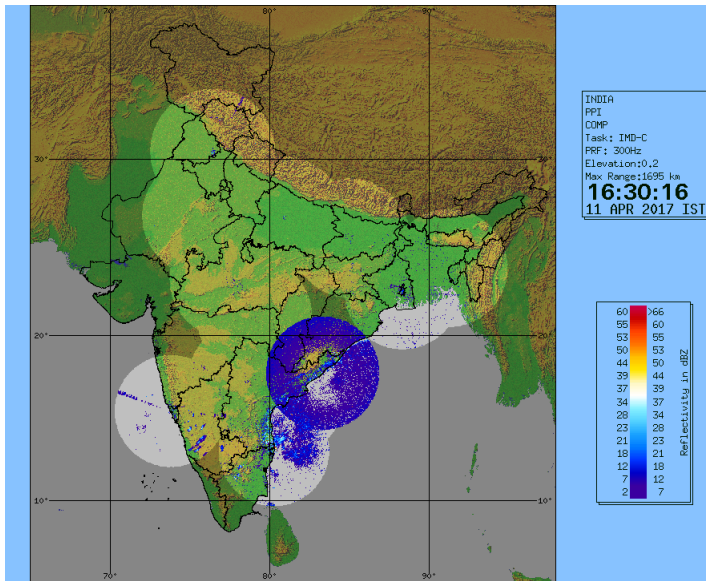
http://satellite.imd.gov.in/map_skm2.html



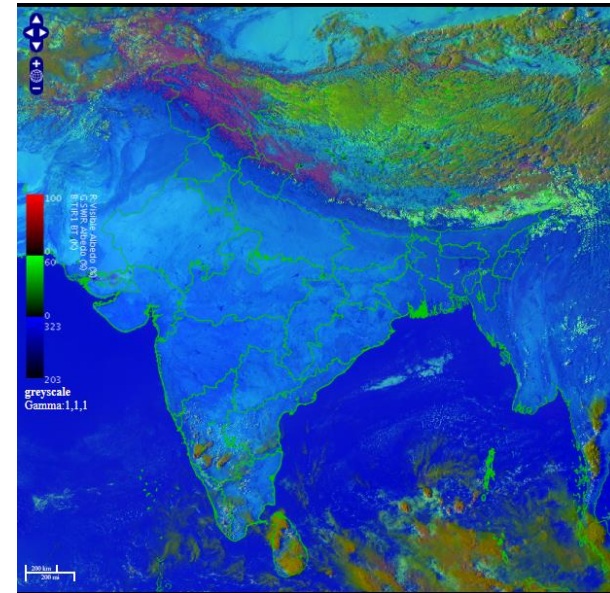
IOP Advisory for 24 hours



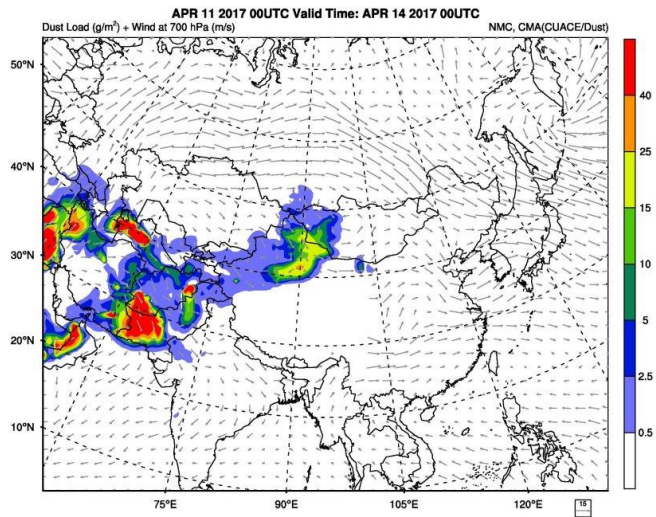
IOP Advisory for 48 hours



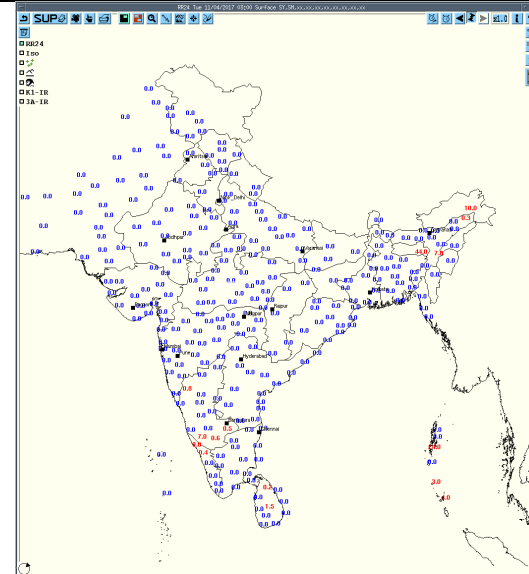
DWR Composite at 1630 hrs IST of today



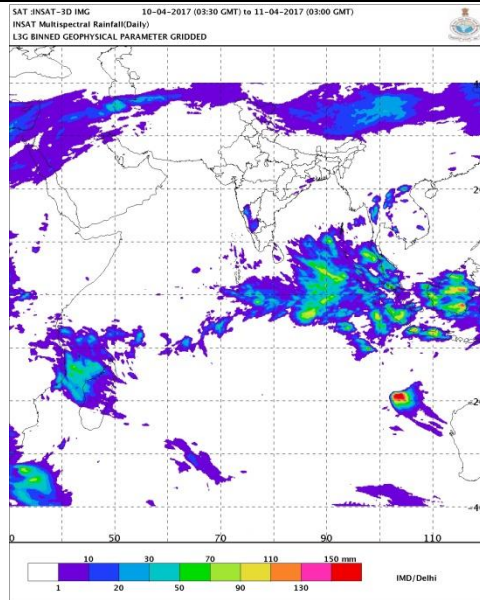
RAPID RGB Image of INSAT 3D at 1600 hrs IST of today



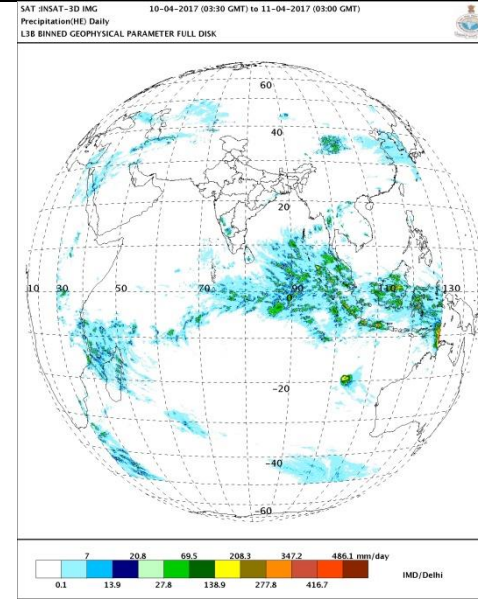
Forecast Dust Concentration for 00UTC of 14th April



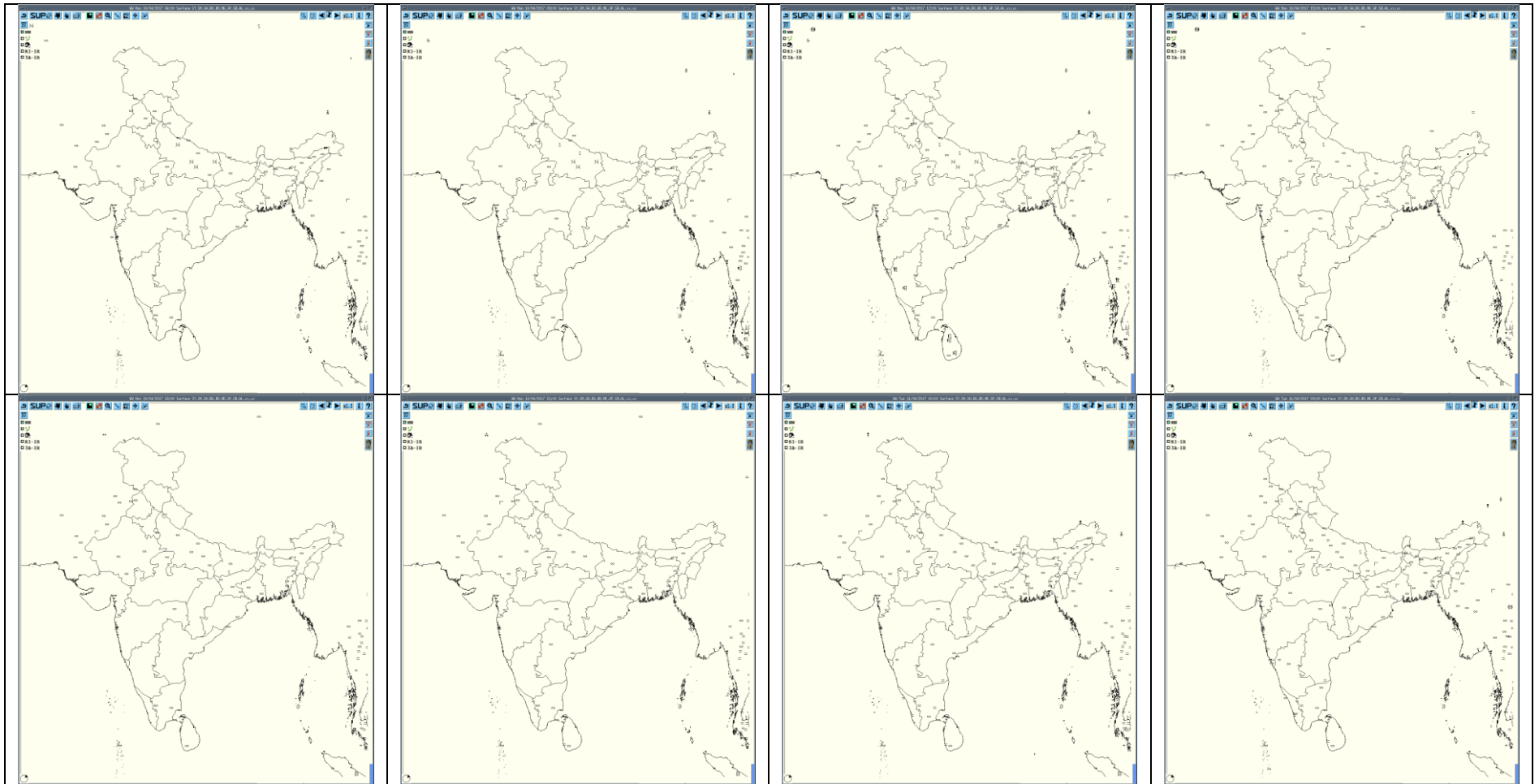
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



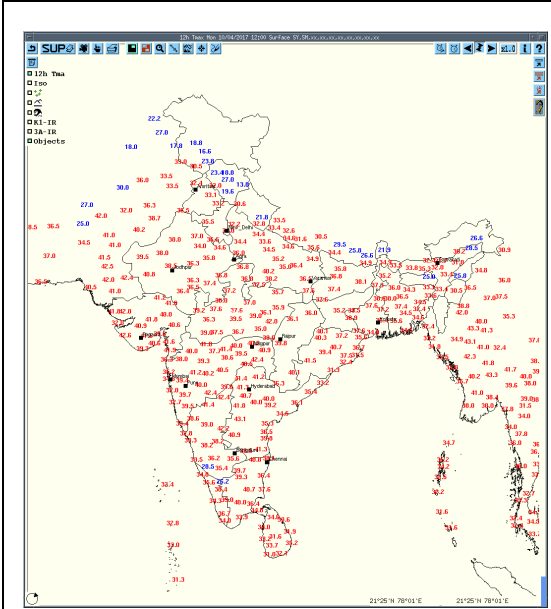
IMR Rainfall



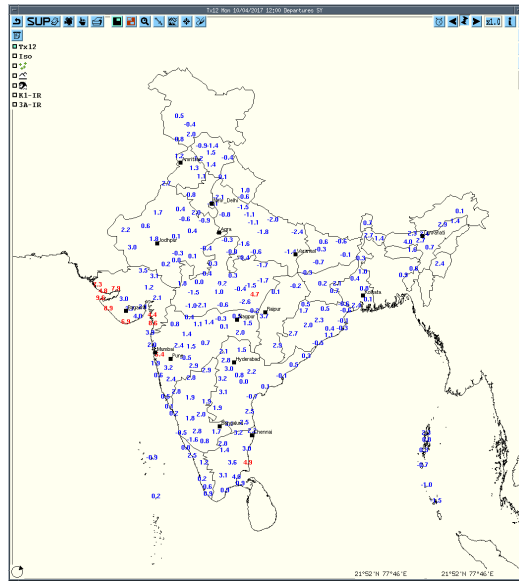
HEM Rainfall



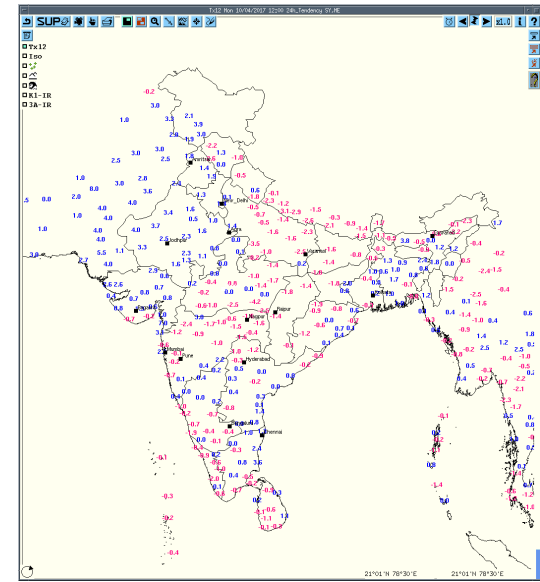
3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today



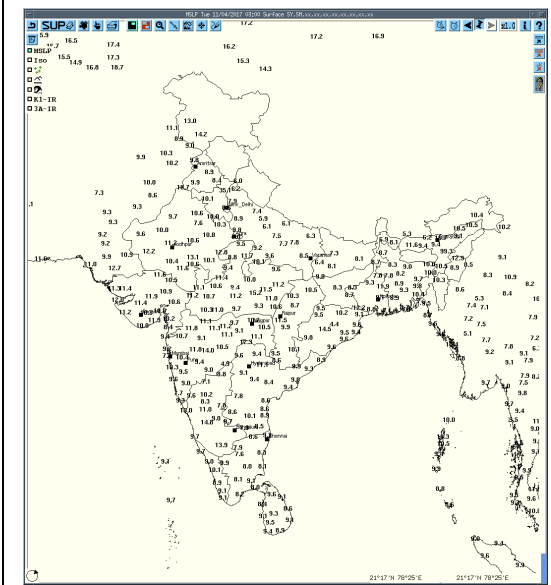
Tmax



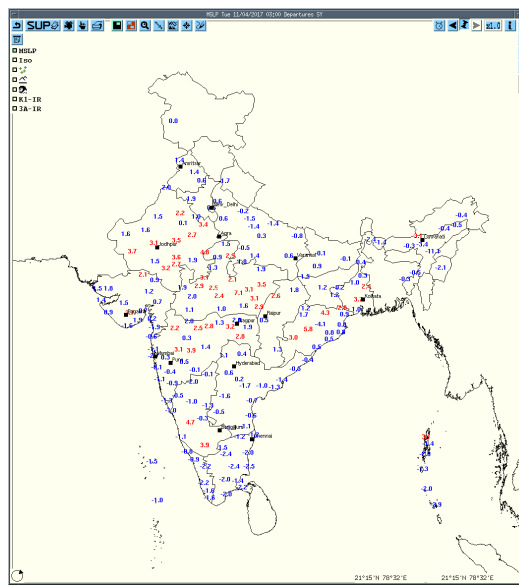
Departure Tmax



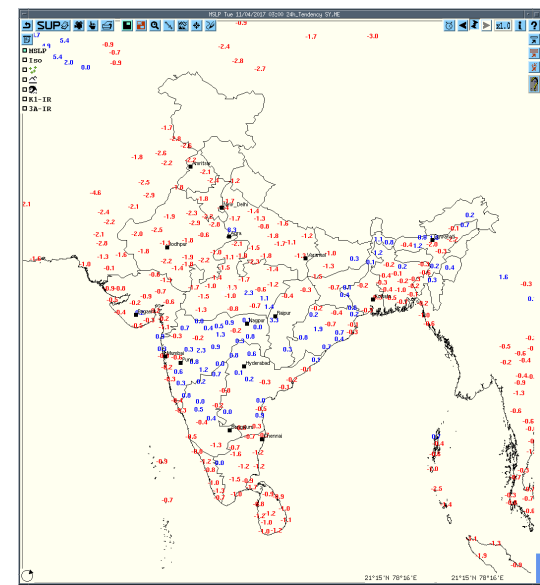
Tendency Tmax



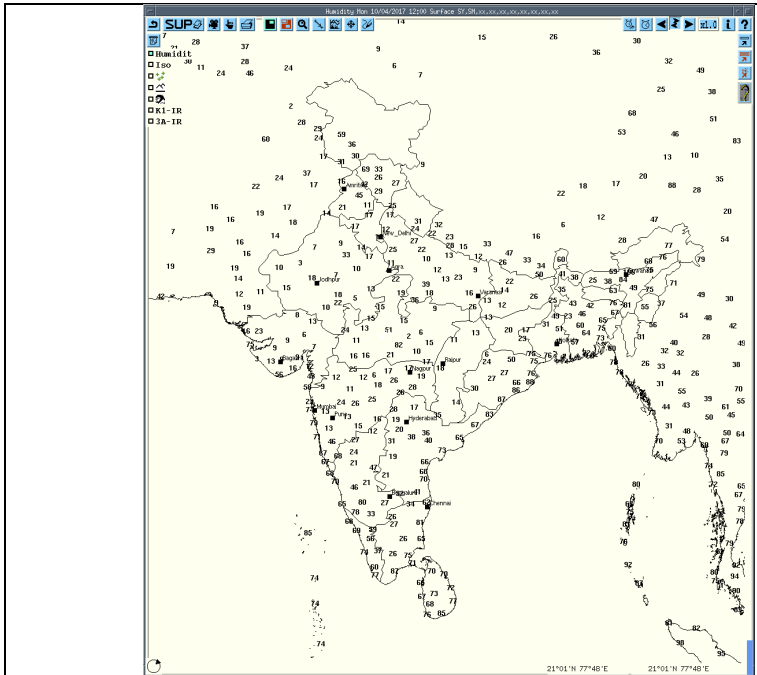
MSLP



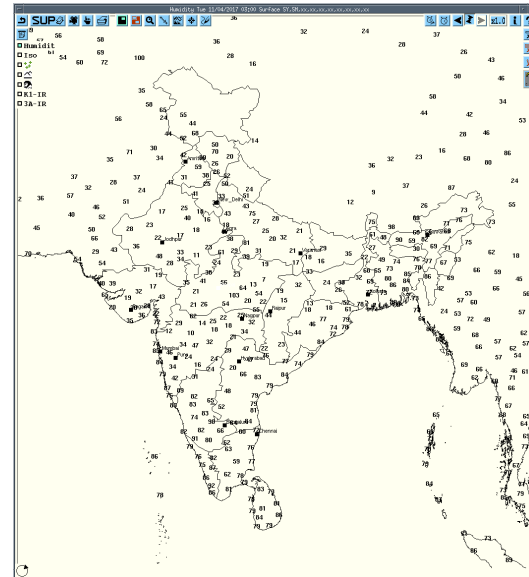
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Realized weather past 24 hours (Based on SYNERGIE Products)					
Date	Time of Reporting	Name of Station Reporting	Region	STATE	Weather Event
10-04-17	0600 UTC	Nil	Nil	Nil	Nil
10-04-17	0900 UTC	Nil	Nil	Nil	Nil
10-04-17	1200 UTC	Simoga, Belgaum	South India	Karnataka	Thunderstorm
10-04-17	1500 UTC	Nil	Nil	Nil	Nil
10-04-17	1800 UTC	Nil	Nil	Nil	Nil
10-04-17	2100 UTC	Nil	Nil	Nil	Nil
11-04-17	0000 UTC	Nil	Nil	Nil	Nil
11-04-17	0300 UTC	Nil	Nil	Nil	Nil

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)
Dibrugarh	Northeast India	Assam	Squall from NW direction with max speed 35Kts.	10-04-17	2050	2051
Tezpur	Northeast India	Assam	Thunderstorm	10-04-17	2045	2345
Thiruvananthapuram City	South India	Kerala	Thunderstorm		1140	1155










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	Associate d severe weather if any	Districts affected
Agartala	11-04-17	101730-102300	Single Cell with Maximum Height 14 km and maximum reflectivity 46 dBZ (at 2010 UTC over Meghalaya)	NNW (150 KM) from DWR Agartala, at 1730 UTC of 10.04.17 initially moving Eastwards and later ESE-wards at around 45 kmph	Cell passed through Meghalaya, South Assam and Manipur and dissipated at 2300 UTC of 10.04.17 over Manipur	N/A	N/A
Hyderabad	11-04-17	100702-101002	Isolated cells with an average height of 12 Kms with max reflectivity of 52.5 dBZ	Formed at SSE Direction, moving in SSW direction at a speed of about 6Km/hr	Cells started forming at 0702 UTC at SSE Direction (175 Kms) from radar and dissipated at 0812 UTC	Not known	Not Known.
		100822-101012	Isolated cells with an average height of 9 Kms with max reflectivity of 51.0 dBZ	Formed at SSW Direction, moving in SSW direction at a speed of about 9Km/hr	Cells started forming at 0822 UTC at SSW Directions and dissipated at 1012 UTC.	Not known	Not known
		101022-101232	Isolated cells with an average height of 12 Kms with a max ref of 52.0 dBZ	ESE direction moving with an approx speed of 6 Km/hr	Cells started forming at ESE Direction (178 Kms) from radar and dissipated at 1222 UTC.	Not known	Not known
Machilipatnam	11-04-17	100641-100811	Isolated cell, multiple cells with average height of 6 km with maximum reflectivity of 58 dBZ	NE(228KM) moving in SW'ly direction, average speed of 8kmph	Cells started forming at 0641 UTC at NE(237 km) from radar. Maximum reflectivity during 0701 to 0721 and died down at 0801 UTC	Possibility of rain with light winds.	Visakhpatnam
		100821-101021	Isolated ,single cell with average height of 7.8 km with maximum reflectivity of 57.5 dBZ	W (244KM) stationary	Cells started forming at 0821 UTC at W (243 km) from radar. Maximum reflectivity during 0841 to 0851 and died down at 1021UTC	Possibility of rain with wind.	Kurnool,
		100831-101001	Isolated single cell with average height of 7.4km with maximum reflectivity of 61.5 dBZ	NE (172KM) moving SW ly average speed of 4 Kmph	Cells started forming at 0831 UTC at NE (170 km) from radar. Maximum reflectivity during 0841 to 0901 and died down at 1001 UTC	Possibility of moderate Rain with moderate wind.	East Godavari,
		101001-101051	Isolated single cell with average height of 5.7 km	N (184KM) moving in SW'ly direction with	Cells started forming at 1001 UTC at N (184 km) from radar.	Possibility of rain	Khammam

			with maximum reflectivity of 55.5 dBZ	average speed of 4 kmph.	Maximum reflectivity during 1011 to 1021 and died down at 1051 UTC	with wind.		
		101011-101241	Isolated single cell with average height of 9 km with maximum reflectivity of 58 dBZ	NNW (178KM) moving in SE'ly direction with average speed of 16 kmph.	Cells started forming at 1011 UTC at NW (218 km) from radar. Maximum reflectivity during 1211 to 1231 and died down at 1241 UTC	Possibility of rain	Khammam	
Vishakhapatnam	11-04-17	100600-100900	Multiple Cells are formed around the station with maximum reflectivity 59dbz westerly with average height 11kms .	A cell of highest reflectivity moving wsw -	Cells are well organized around the radar .	-	!	
		100900-101200	Cells are formed in the westerly with maximum reflectivity 59dbz with average height 12kms . And Cells at NE with Max reflectivity 59dbz with average height 12 kms	Cells are being formed from the past and moving SW ly	Cells with reflectivity 59DBZ is dying during 09.01UTC TO 10.11UTC	-	!	
		101200-101500	Isolated single cells towards SE around 200km with average height of 2 km with max reflectivity 40dBZ & Isolated single cells towards NE around 170km with average height of 2 km with max reflectivity 50dBZ	--	--	--	--	!!
		101500-101800	Isolated single cells towards SE and SSE around 100km with average height of 2 km with max reflectivity 40dBZ	--	--	--	--	!!
		101800-110000	Isolated single cells between SSE and SSW region with average height of 2 km with max reflectivity 40dBZ	Moving SWly	Cells are forming, not matured well and dissipating			
		110000-110300	A Cell of max reflectivity 43 DBZ with height 3 kms	A CELL AT SW	-	-	-	!

Paradeep	11-04-17	100300-101200	Isolated single cell with max. reflectivity value of 58 dBZ and av. heights of 12km approx. and exceeding 14kms. in later stages. The cell is seen to transform into multicell in dissipation stage.	Position: Lat:21.13 Lon:85.73 Movement: SWly	--	TS with rain	Dhenkanal, Jajpur, Cuttack
		101200-101700	Two isolated single cells seen developing with heights exceeding 14kms. and having max. dBZ value of 56.	Position and movement: Cell 1: Lat:20.16 Lon:84.74 Movement: E ly Cell 2: Lat:21.09 Lon:86.23 Movement: E ly		TS with rain	Kandhamal, Ganjam, Nayagarh, Keonjhar, Jajpur, Bhadrak
Nagpur	11-04-17	100752-101012	Single	25 km NE, nearly standstill	< 10 dBZ	Nil	Nil
		101322-101732	Single	25 Km East, moving E'ly (nearly Standstill)	< 10 dBZ		
		100002-100302	Nil	Nil	No Echoes	Nil	Nil
Patna	11-04-17	100300-110300	Nil	Nil	No Echoes	Nil	Nil
Kolkata	11-04-17	100311-110301	Nil	Nil	No Echoes	Nil	Nil
Jaipur	11-04-17	100300-110300	Nil	Nil	No Echoes	Nil	Nil
Patiala	11-04-17	100302-110252	Nil	Nil	No Echoes	Nil	Nil
Lucknow	11-04-17	100437-110300*	NIL	NIL	*100300-10437- DWR U/S	NIL	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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