



India Meteorological Department
FDP STORM Bulletin No. 35 (09-04-2017)

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

SYNOPTIC FEATURES:

A trough runs from Lakshadweep area to Telangana with embedded upper air cyclonic circulations over Telangana extending upto 0.9 km above mean sea level and over North Interior Karnataka at 1.5 km above mean sea level.

A trough extends from north Gangetic West Bengal to south Chhattisgarh across interior Odisha and extends upto 0.9 km above mean sea level.

The upper air cyclonic circulation over Malaya peninsula and adjoining Tenasserim coast extending upto 2.1 km above mean sea level persists.

The Western Disturbance as an upper air cyclonic circulation over Jammu & Kashmir and adjoining north Pakistan extending upto 3.1km above mean sea level with a trough aloft roughly along Longitude 74.0°E and north of Latitude 30.0°N has become less marked.

The north-south trough from Marathwada to south Tamilnadu across interior Karnataka extending upto 0.9 km above mean sea level has become less marked.

The upper air cyclonic circulation over Assam & neighbourhood between 1.5 km & 2.1 Km above mean sea level has become less marked.

The upper air cyclonic circulation over north Chhattisgarh & adjoining Jharkhand extending upto 0.9 Km above mean sea level has become less marked.

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

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

Cloud Description:

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

Scattered low/medium clouds with embedded moderate to intense convection were seen over Bay Islands. Scattered low/medium clouds with isolated weak convection were seen over east Arunachal Pradesh. Scattered low/medium clouds were seen over rest Himachal Pradesh, rest Uttarakhand, Sikkim, rest Arunachal Pradesh and Nagaland.

Arabian Sea:

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

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded moderate to intense convection were seen over southeast Bay and Andaman Sea.

Convection:

Light to moderate convection was observed over North India, Odisha, West Bengal, North East states, Karnataka, Kerala, Telangana and Andhra Pradesh.

OLR:- Up to 200 wm^{-2} was over J&K, North Himachal Pradesh, North Uttarakhand. Up to 230 wm^{-2} was over rest Himachal Pradesh, South Odisha adjoining Andhra Pradesh,

Sikkim, North East Arunachal Pradesh. Up to 250 wm^{-2} was over, South Interior Karnataka, North Gangetic West Bengal and Rest Arunachal Pradesh.

Jet Stream:

No Jet stream and trough observed roughly along Longitude 74.0deg.E and North of Latitude 30.0deg.N over India.

Dynamic Features:

Positive shear tendency observed over North India and Negative shear tendency observed over rest part of 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, South East Madhya Pradesh adjoining Odisha, Vidarbha and South Interior Karnataka adjoining Kerala.

Positive Low Level Convergence observed over South Central India, Coastal Odisha.

Precipitation:

IMR: Rainfall Upto **50**mm was observed over South West Gangetic West Bengal, South Odisha adjoining Andhra Pradesh. Rainfall upto **20**mm was observed over Extreme North J&K, North Gangetic West Bengal and extreme South Kerala. Rainfall upto **10**mm was observed over Rest J&K, North East Himachal Pradesh, North Uttarakhand, West Arunachal Pradesh, extreme West Assam, South Nagaland, rest Gangetic West Bengal, South Interior Karnataka and rest Kerala.

HEM: Rainfall upto 70mm was observed over Extreme South Odisha adjoining Andhra Pradesh, Extreme South Kerala, North West Gangetic West Bengal, South Interior Karnataka, and Extreme South Kerala. Rainfall Upto 7mm was observed over Extreme North East Odisha, North Gangetic West Bengal, East Meghalaya, Nagaland and rest South Kerala.

RADAR and RAPID observation:

Isolated convection appears to be in progress over South Assam, Andhra Pradesh, Telangana and Odisha in DWR Composite of 1232 hrs IST

RAPID RGB Satellite imagery of 1200hrs IST indicates convective clouds over south Assam and adjoining Nagaland & Manipur.

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 northern and western India for next three days.

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

12UTC Charts on all days from Day 0-4 show trough in MSLP over J & K extending NW-SE.

12UTC charts on all days from Day 0-4 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.

Weak CYCIR over northern Karnataka and adjoining Maharashtra from day-1 to Day-3 at 00UTC

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

At 12UTC on Day-0-Day1 strong over Sikkim, Assam, Meghalaya and Nagaland at 12UTC on day-1 strong core is seen widespread extending from parts of WB to most parts of NE India.

At all subsequent times the core strength is weaker

3. Convergence at 850 hPa:

At 12UTC on Day-1 to Day-4: High values along the Western Ghats in Karnataka and Maharashtra, parts of Odisha and WB along with adjoining Jharkhand and Chhattisgarh.

At 00UTC on all Days high values are seen over northern part over rtN and adjoining AP..

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

At 12UTC on Day-3 to Day-4 high values mainly along the IG plains extending NW to SE wards covering parts of HP, Uttarakhand and western UP.

Day-1 to Day-4 over some parts of Assam

At 00UTC on Day-1 to Day-2 & Day5: along the line of low level confluence. In Day-3 to Day-5 along the Maharashtra coast and over NW India in Rajasthan and adjoining Pakistan

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

Day-0 : at 12UTC on Day-0 prominent over coast of Odisha and AP in east and Kerala and Karnataka coasts in west.

Day-1: There is overall weakening of the values in Day-1 to Day-3 over most parts except over coastal Karnataka and parts of Meghalaya and Nagaland.

Day-4 at 12 UTC enhanced values are seen over Bihar and adjoining WB

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

Day-0 at 12UTC: Prominent over large parts of southern peninsula covering coast-to-coast, and over eastern India extending from Jharkhand and WB covering some parts of Arunachal.

Day-1: Same as in day-0 with subdued activity. In Day-2 further reduction in K-Index values and prominent only over west coast of Karnataka and Kerala and some parts of NE India. Similarly in Day-3 to Day-5

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

Day 0 : at 12UTC on Day-0 prominent over J&K, Himachal Pradesh, Uttarakhand, UP, Bihar & Jharkhand. Relatively weaker over coast of Odisha and AP extending to Telangana and northern Karnataka.

Day-1: There is overall weakening of the TTI values in Day-1 to Day-3 over most parts except over coastal Karnataka and parts of Meghalaya and Nagaland.

Day-4 at 12 UTC enhanced values of TTI are seen over Bihar and adjoining WB

8. Rainfall and thunder storm activity:

Day-1-2:(> 4cm/day) Arunachal Pradesh and adjoining Assam. No cases of rainfall>4cm in Day-3 to Day5 over India.

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

1. Weather Systems:

00 UTC analysis shows CYCIR over UP, Bihar, Jharkhand, WB and adjoining areas. The day 1 forecast shows a trough from the above system from Marathawada region extending up to the Konkan region. The forecast on day 3 shows a trough from the above CYCIR extending up to the interior TN areas. The trough is persistent till day 4 and is now prominent over Jharkhand, coastal Odisha, WB and adjoining areas.

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 the low level positive vorticity mainly over isolated pockets of UP, Bihar, Karnataka and NE states. Forecast shows vorticity core zones mainly along UP, Bihar, interior parts of Karnataka and few pockets along the east coast bordering Odisha and West Bengal 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 values over Odisha, WB and few pockets in AP. Threshold values are noticed over Odisha, WB and eastern coast adjoining Bangladesh during 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 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 WB, Bihar, and east UP, Bangladesh and NE region for day 1 to day 5 and also over few pockets in the south west region.

Total Total Index (> 50): 00UTC shows significant values over few pockets in UP, 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 4 particularly at 12 UTC of each day.

CAPE (> 1000): Mostly along east coast of India over Gangetic West Bengal, Odisha, Bihar, Jharkhand and adjoining regions along with parts in south peninsular region and coastal Karnataka during 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 Tamil Nadu 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. Isolated pockets over NE states are also forecasted for rain till the next three 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 on day 1. Model reflectivity exceeding the threshold value is 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 Andhra Pradesh, Odisha, GWB and Bihar during next 3 days. Another zone along west coast over 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.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day 1 & Day 2:

Presently, a trough runs from north Gangetic West Bengal to south Chhattisgarh across interior Odisha and extends upto 0.9 km above mean sea level. The upper air cyclonic circulation over Assam & neighbourhood between 1.5 km & 2.1 Km above mean sea level has become less marked but some rainfall activities over Assam and Arunachal Pradesh may be experienced. Thundersquall with hail possibilities are in Assam, Meghalaya and NMMT on Day-1. An upper air cyclonic circulation over Malaya peninsula and adjoining Tenasserim coast extending upto 2.1 km above mean sea level persists. The Andaman and Nicobar islands may experience some rainfall activities on Day-1.

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

The guidance from the NWP model output from ECMWF, IMD1534 and NCEP, IITM GFS, NCUM, NEPS and Satellite imageries are also suggesting the similar area of rainfall activities on Day1 and Day2.

24 hour Advisory for IOP:

Assam, Meghalaya, Arunachal Pradesh
Andaman and Nicobar Islands
Telangana, Rayalseema, Kerala
North Coastal Andhra Pradesh
South and North Interior Karnataka
North Coastal Orissa and Gangetic West Bengal

48 hour Advisory for IOP:

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

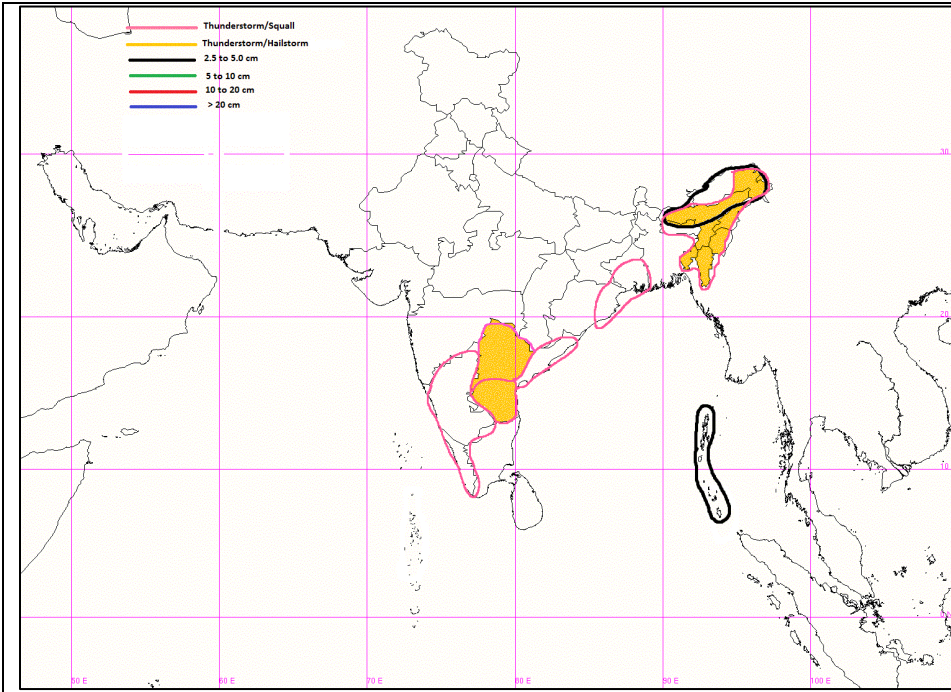
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ForRadarimagesofthepast24hoursincludingmosaicofimages:

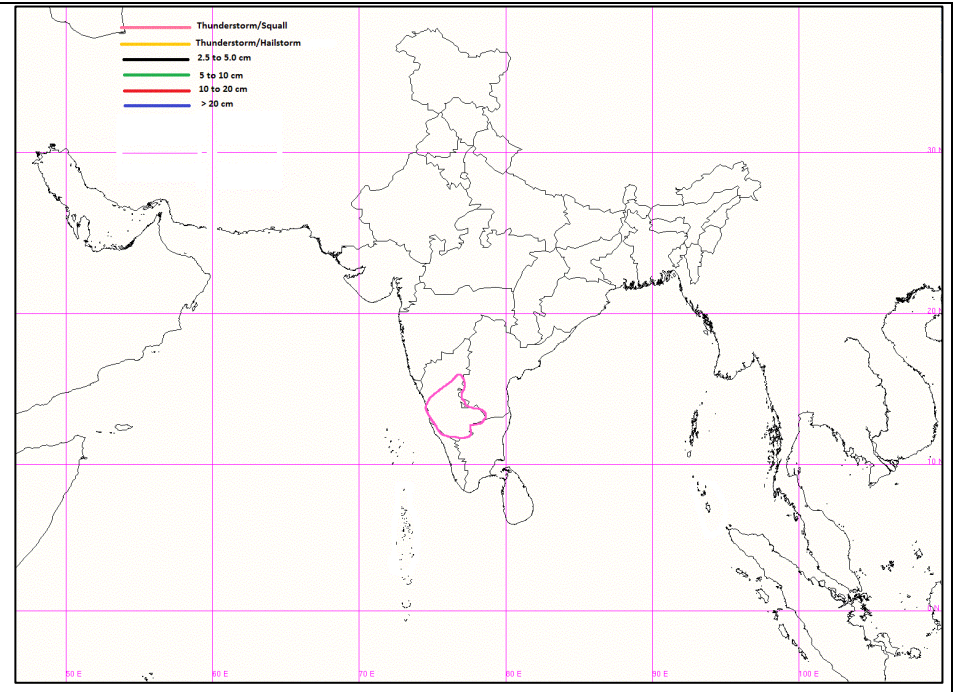
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T-Phi gram

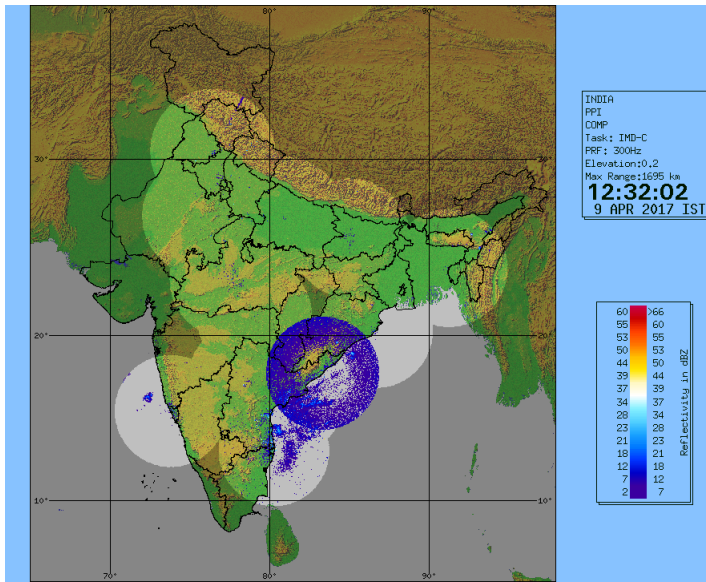
http://satellite.imd.gov.in/map_skm2.html



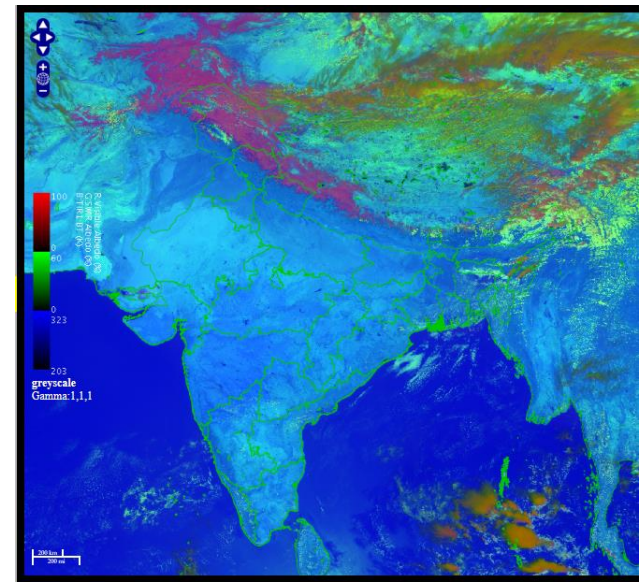
IOP Advisory for 24 hours



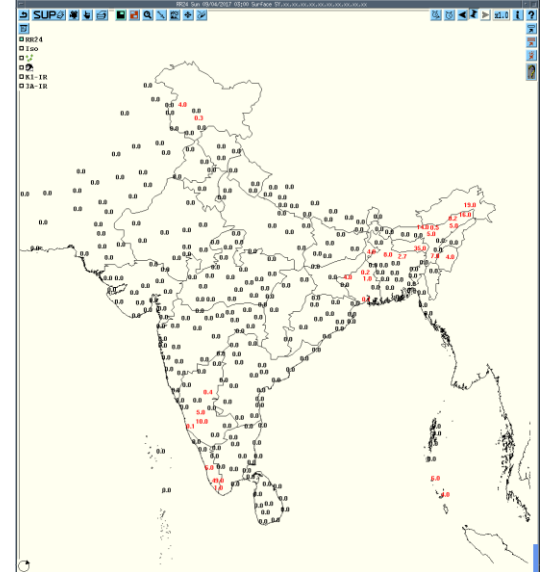
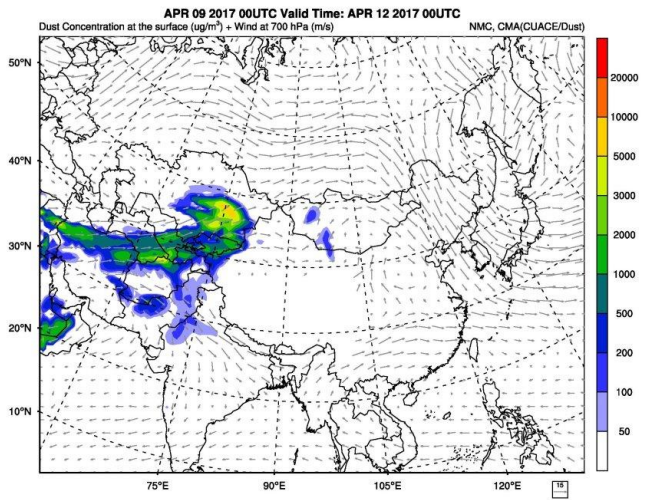
IOP Advisory for 48 hours



DWR Composite at 1232 hrs IST of today

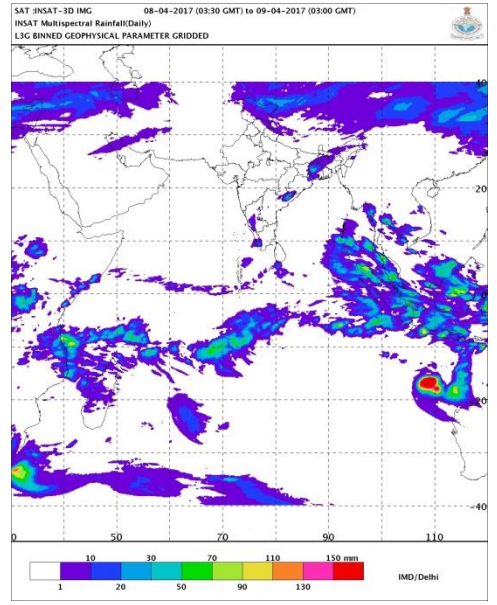


RAPID RGB Image of INSAT 3D at 1200hrs IST of today

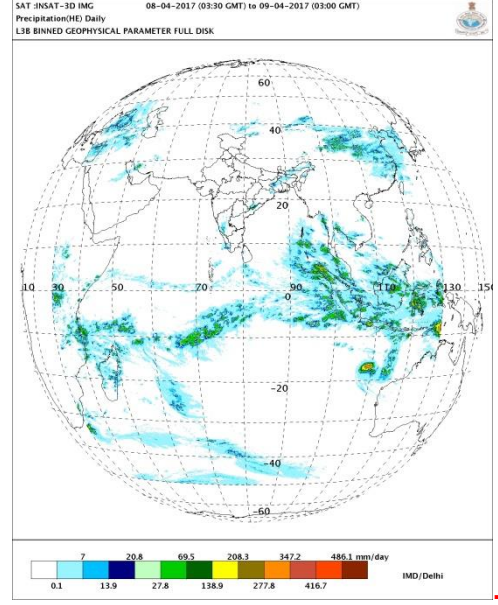


Forecast Dust Concentration for 00UTC of 12th April

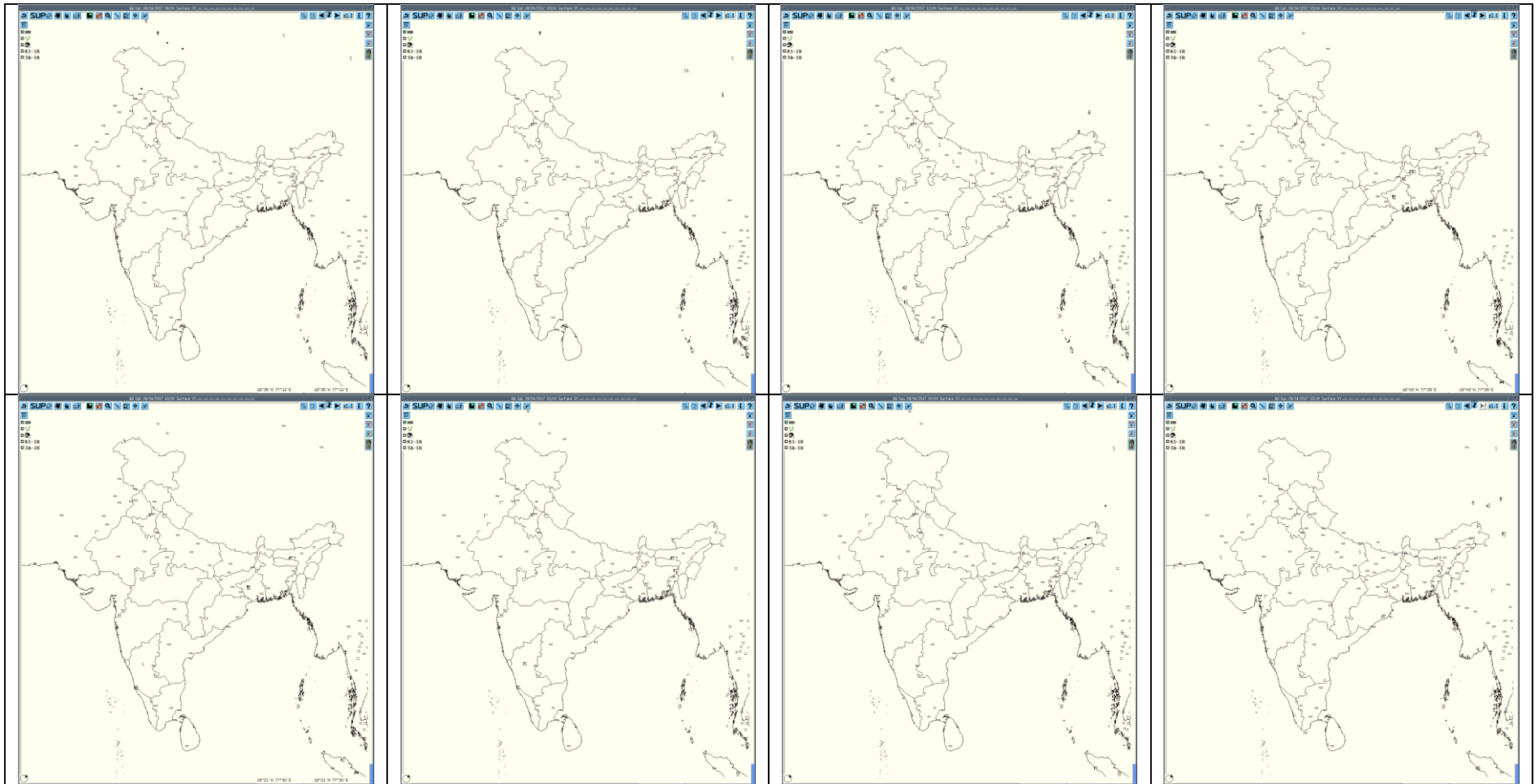
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



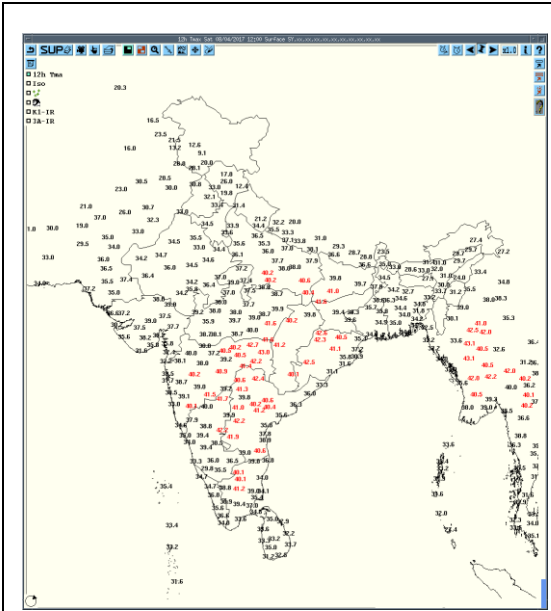
IMR Rainfall



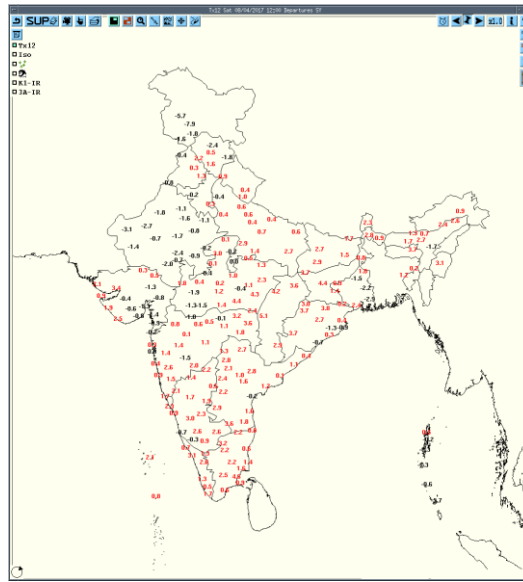
HEM Rainfall



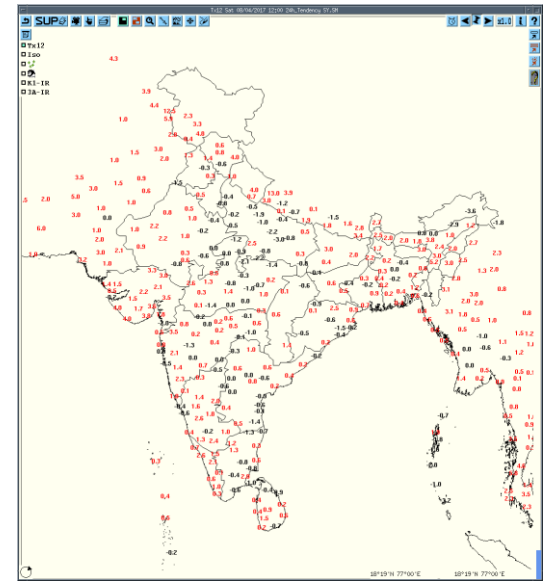
3hourly Past weather at 06, 09, 12, 15, 18, 21UTC of yesterday and 00 & 03 hrs UTC of today



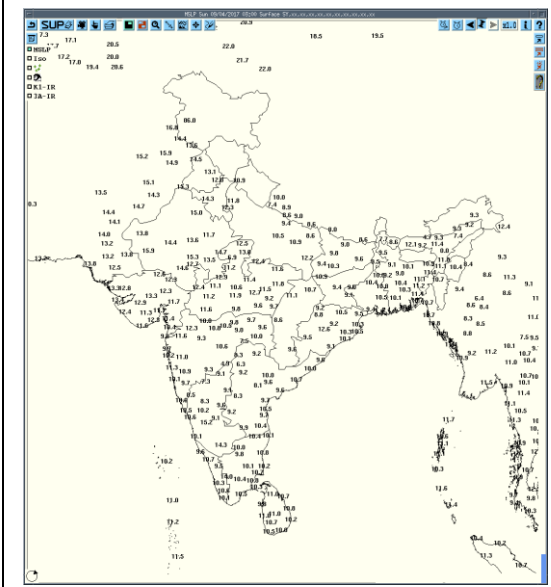
Tmax



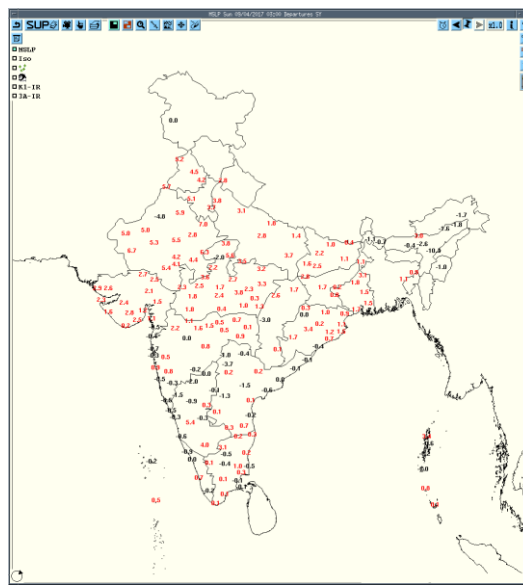
Departure Tmax



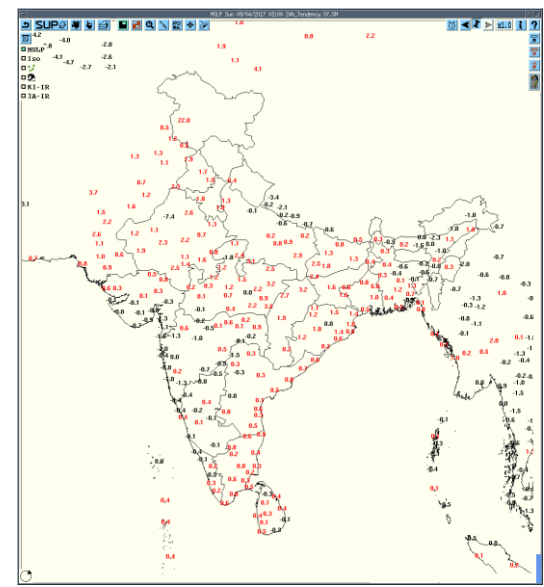
Tendency Tmax



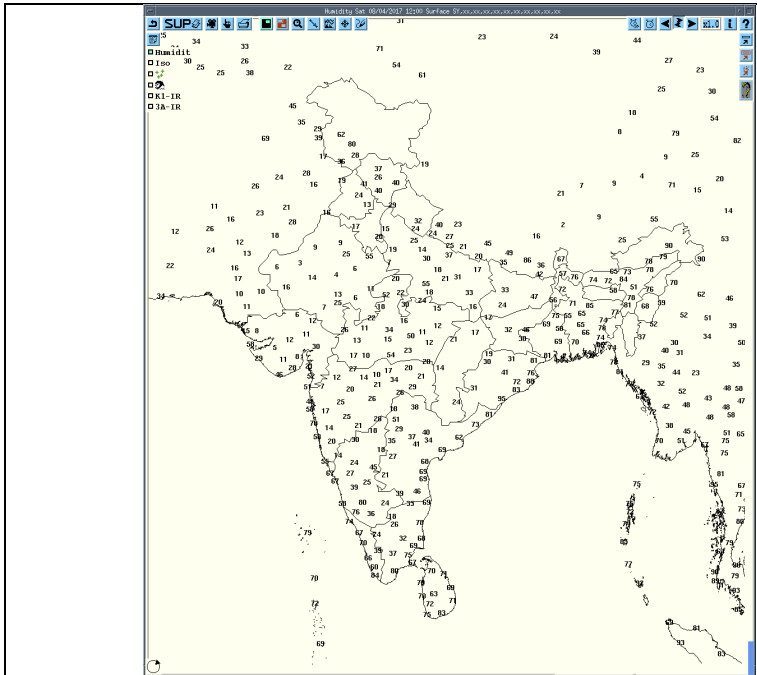
MSLP



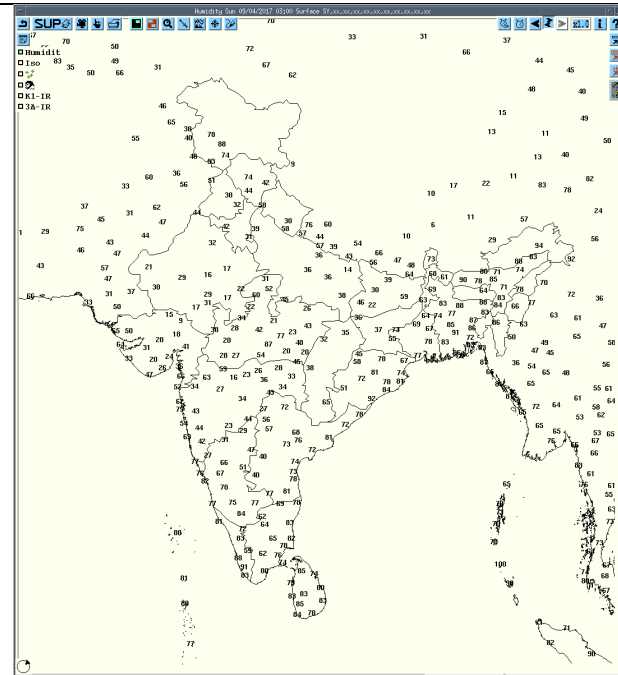
Departure MSLP



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
08-04-17	0600 UTC	Nil	Nil	Nil	Nil
08-04-17	0900 UTC	Nil	Nil	Nil	Nil
08-04-17	1200 UTC	Shimoga, Madikeri	South India	Karnataka	Thunderstorm
		Thiruvananthapuram	South India	Kerala	Thunderstorm
08-04-17	1500 UTC	Gadag	South India	Karnataka	Lightening
		Bankura, Malda	East India	West Bengal(GWB)	Thunderstorm
08-04-17	1800 UTC	Gadag	South India	Karnataka	Lightening
		Bajpe	South India	Karnataka	Thunderstorm
		Bankura	East India	West Bengal(GWB)	Thunderstorm
		Guwahati	Northeast India	Assam	Thunderstorm
08-04-17	2100 UTC	Gadag	South India	Karnataka	Thunderstorm
		Bajpe	South India	Karnataka	Thunderstorm
		Guwahati	Northeast India	Assam	Thunderstorm
09-04-17	0000 UTC	Nil	Nil	Nil	Nil
09-04-17	0300 UTC	Nil	Nil	Nil	Nil










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	09-04-17	081300-082120	Single Cell with Maximum Height 13km and maximum reflectivity 46 dBZ (at 1610-1620 UTC over Bangladesh- 180 KM WNW of DWR Agartala)	WNW (400 KM) from DWR Agartala at 1300 UTC of 08.04.17 moving Eastwards at around 60 kmph	Cells dissipated at 2120 UTC of 08.04.17 over Manipur	N/A	N/A
Vishakhapatnam	09-04-17	080300-080600	Isolated cells with average height of 6kms with max reflectivity 57DBZ	SE (200kms) moving SWly	Cells are formed at 03.01UTC into a well conviction with reflectivity 57dbz. Max reflectivity during the period 03.11UTC to 04.01 UTC and start dissipating.		
		080600-080900	Convective region WNW 100km with average height of 16 km with max reflectivity 60dbz and Isolated cells NE 177 km with average height of 10kms with max reflectivity 44dbz	WNW (120kms) moving SWly and NE 177km moving SWly	Cells are formed at 06.41UTC into a well conviction with reflectivity 60dbz. Max reflectivity during the period 06.41UTC to 09.01 UTC and start dissipating.		
		080900-081200	Convective region WNW 100km with average height of 16 km with max reflectivity 60dbz and Isolated cells NW 180 km with average height of 9kms with max reflectivity 50dbz	WNW (90kms) moving SWly and NW 180km moving SWly	Cells are formed at 09.01UTC into a well conviction with reflectivity 60dbz. Max reflectivity during the period 09.01UTC to 12.01 UTC and start dissipating.		
		0802000-081500	Convective region NNW 220km with max reflectivity 43dbz and average height 16kms. Isolated cells which are being formed at SOUTHERLY 62.7 km WITH MAX REFLECTIVITY 42 DBZ	NNW (220kms) moving Easterly .	Cells are continued to be formed and originated at NNW into a dissipated stage with reflectivity 43dbz. Max reflectivity dies during the period 14.51 to 12.01 UTC.	-	■
		081500-081800	Isolated cells at SEly 97km with max reflectivity 48dbz.	SE (94kms) moving SWly .	Organized into squally line with average reflectivity	-	■

					46DBZ. It is being dissipated .		
		081800-082400	Conviction region at S ly 206km with max reflectivity 49dbz with average height 9kms.	Southerly (152kms) moving SWly .	Conviction region is continued to be prevailed and Organized into squally line with average reflectivity 46DBZ. This conviction led to a well squally line of average reflectivity 46 DBZ and dissipated .	-	
		090000-090300	Isolated cells with average height of 5kms with max reflectivity 30dbz	SSE (244kms) moving Sly	Cells are formed at 00.21UTC into a well conviction with reflectivity 30dbz. Max reflectivity during the period 00.11UTC to 02.11 UTC and start dissipating.		
Hyderabad	09-04-17	080732-081402	Isolated cells with an average height of 9 Kms with max reflectivity of 50.5 dBZ	Formed at NE and South Direction (168 Kms), moving in SSW direction at a speed of about 9Km/hr	Cells started forming at 0732 UTC at south Direction (168 Kms) from radar. Lasted till 1032 Hrs and dissipated.	Not known	Not Known.
		080932-081342	Isolated cells with an average height of 12 Kms with a max reflectivity of 52.2 dBZ.	ENE (192 Kms) moving in Southerly direction at a speed of approx 9 Km/hr.	Cells started forming at 0932 UTC at ENE Direction. Matured during 1022 to 1042 and dissipated at 1132 UTC.	Not known	Not known
Patna	09-04-17	081700-081920	Single Cell, Height : 11 Km Range : 177 Km Maximum Reflectivity : 51 dBZ	Position : SE from Patna. Direction of movement: NE.	NIL	RAIN	Jamui and Banka
Paradeep	09-04-17	080700-081300	Isolated cells observed forming after 1230 IST with average height of 13.5 km and maximum height 14.5 km at longitude 85.460 degree E and latitude 21.816 degree N with reflectivity value reaching upto 50 dBZ.	Isolated cells observed forming in the range of 90-215 km from RADAR station.Movement-NWly .	Cells started developing after 1240 IST and dissipated by 1830 IST with a speed of 24 km/hr with reflectivity 20 dBZ to 50 dBZ.	TS with rain	Debgarh,A nugul, Jajpur,Bha drak.
Kolkata		080311-080901	NIL	NIL	NO ECHO	NIL	NIL

		080901-081911	<p>Isolated single cell with maximum height of 08.69 Km at 0901 UTC and maximum reflectivity of 51.5 dBz at 0911 UTC</p> <p>Isolated single cell with maximum height more than 18 Km at 1121 UTC and maximum reflectivity of 63.5 dBz at 1221 UTC</p> <p>Isolated single cell with maximum height of 11.65 Km at 0941 UTC and maximum reflectivity of 63.0 dBz at 0941 UTC</p>	<p>WSW (220.7 km) moving in SE-ly direction at a speed of 17.6 kmph.</p> <p>WNW (233.4 km) moving in SE-ly direction at a speed of 28.1 kmph.</p> <p>NW (248.0 km) moving in ESE-ly direction at a speed of 55.8 kmph</p>	<p>Cell started forming at 0901 UTC at WSW (220.7 Km) from radar. Not matured, dissipated at 0921 UTC in WSW at a distance of 219.4 km from Radar.</p> <p>Cell started forming at 0901 UTC at WNW (233.4 Km) from radar. Matured, dissipated at 1241 UTC in W at a distance of 154.1 km from Radar</p> <p>Cell started forming at 0932 UTC at NW (248.0 Km) from radar. Matured, dissipated at 1021 UTC in NW at a distance of 208.9 km from Radar.</p>	<p>Thunderstorm /Rain</p> <p>Thunderstorm /Rain</p> <p>Thunderstorm /Rain</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>
		081912-082359	NIL	NIL	NO ECHO	NIL	NIL
		090000-90300	NIL	NIL	NO ECHO	NIL	NIL
Nagpur	09-04-17	080302-090302	Nil	Nil	Nil	Nil	Nil
Patiala	09-04-17	080302-090252	Nil	Nil	Nil	Nil	Nil
Jaipur	09-04-17	080300-090300	Nil	Nil	Nil	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

www.visualdictionaryonline.com