



India Meteorological Department
FDP STORM Bulletin No. 33 (07-04-2017)

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

SYNOPTIC FEATURES:

The Western Disturbance, now seen as an upper air cyclonic circulation over north Pakistan & adjoining Jammu & Kashmir and extends upto 4.5 km above mean sea level with a trough aloft runs roughly along Longitude 70.0°E and north of Latitude 25.0°N. The induced upper air cyclonic circulation over Punjab, adjoining north Rajasthan & Haryana, now lies over Punjab & adjoining Haryana and extends upto 1.5 km above mean sea level.

The trough from induced upper air cyclonic circulation to northwest Bay of Bengal, now runs from induced upper air cyclonic circulation to north coastal Odisha across south Uttar Pradesh, north Chhattisgarh and extends upto 0.9 km above mean sea level with an embedded upper air cyclonic circulation over south Uttar Pradesh & adjoining north Madhya Pradesh and extends upto 0.9 km above mean sea level.

The north south trough from Telangana to south Tamilnadu, now runs from south Madhya Maharashtra to south Tamilnadu across interior Karnataka and extends upto 0.9 km above mean sea level.

An upper air cyclonic circulation lies over Assam & neighbourhood and extends upto 1.5 km above mean sea level.

A trough runs from southeast Srilanka to south coastal Tamilnadu between 1.5 to 2.1 km above mean sea level.

The upper air cyclonic circulation over Gulf of Siam & neighbourhood, now lies over Malaya peninsula & neighbourhood and extends upto 2.1 km above mean sea level.

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

Cloud Description:

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

Scattered low/medium clouds with embedded weak to moderate convection were seen over Karnataka, Kerala adjoining Arabian Sea, northwest Tamilnadu and Bay Islands. Scattered low/medium clouds were seen over Sikkim, north-eastern states, and Rayalaseema. Isolated low/medium clouds were seen over northwest Punjab.

Arabian Sea:

Scattered low/medium clouds with embedded weak to moderate convection were seen over southeast Arabian Sea off Kerala & Karnataka coast.

Bay of Bengal & Andaman Sea:

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

Convection:

Light to moderate convection was observed over North India and South Karnataka Kerala adjoining Andhra Pradesh.

OLR:-

Upto 150 wm^{-2} was over Extreme North J&K East Himachal Pradesh Up to 200 wm^{-2} was over rest J&K, North Himachal Pradesh North Uttarakhand. Upto 230 wm^{-2} was over Rest Himachal Pradesh, Rest Uttarakhand, Sikkim, Arunachal Pradesh, Coastal Odisha, extreme South Interior Karnataka and Kerala.

Jet Stream: No Jet stream and no trough observed over India.

Dynamic Features:

Positive shear tendency observed over North West Rajasthan, Uttar Pradesh and Odisha. Negative shear tendency observed over rest India.

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

A positive Vorticity field is seen over Gujarat, Uttar Pradesh, Bihar, North East Odisha and South Interior Karnataka.

Positive Low Level Convergence observed over Gujarat, East Madhya Pradesh, Telangana and South Interior Karnataka.

Precipitation:

IMR: Rainfall Upto **50**mm was observed over J&K North Himachal Pradesh Extreme North Uttarakhand South Kerala. Rainfall upto **30**mm was observed over Central Coastal Odisha. Rainfall upto **20**mm was observed over Rest North Uttarakhand Extreme South Karnataka North Kerala Rayalaseema North East Jharkhand adjoining Bihar. Rainfall upto **10**mm was observed over Rest Uttarakhand, Rest Himachal Pradesh Rest South Karnataka Central Kerala South West Bengal.

HEM: Rainfall Upto 70mm was observed over J&K, Himachal Pradesh, Uttarakhand, Extreme South Karnataka and extreme North & South Kerala. Rainfall upto 14mm was observed over Rayalaseema Central Coastal Odisha Jharkhand adjoining Bihar. Rainfall Upto 7mm was observed over Rest South Karnataka adjoining North Tamilnadu

RADAR and RAPID observation:

No Significant convection was seen in DWR Composite at 1240hrs IST.

RAPID RGB Imagery of 1200hrs IST indicates convective clouds over J & K, Himachal Pradesh and Uttarakhand

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

Not Received

2. NWP MODEL GUIDANCE:

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

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: SW-NE extending from northern Karnataka-Telangana region to Maharashtra-Chhattisgarh region. This is also reflected at 850 hPa.

Weak CYCIR over Pakistan region in Day-0. Weak CYCIR near Thailand coast at 00UTC from Day-1 to Day-4 moving NW-wards over Bay of Bengal. N-S trough over southern peninsula at 850hPa in all days at 00UTC.

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

At 12UTC on Day-1 strong at isolated regions over Pakistan and Afghanistan in the west.

From 12UTC on Day-1 to 00UTC on Day-3 strong over Sikkim, Assam, Meghalaya and Nagaland

From 06UTC on Day-2 to 06UTC on Day-4 strong over large parts of UP

3. Convergence at 850 hPa:

At 12UTC on Day-1 strong at isolated regions over Pakistan and Afghanistan in the west.

From 12UTC on Day-1 to 00UTC on Day-3 strong over Sikkim, Assam, Meghalaya and Nagaland

From 06UTC on Day-2 to 06UTC on Day-4 strong over large parts of UP

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

Day-1 to Day-4 over many parts of Assam At 12UTC on Day-3 to Day-4 high values mainly along the IG plains extending NW to SEwards covering parts of HP, Uttarakhand and western UP.

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

Day-0 at 12UTC: Prominent over NW India extending along the IG Plains from west UP towards Bihar, Jharkhand and WB. It also covers the coast of Odisha and AP.

Day 1-2: Southern parts of NE India, Jharkhand , WB, AP and Kerala

Day3-4: Along west coast from Kerala to south Maharashtra

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

Day-0 at 12UTC: Prominent over NW India extending along the IG Plains from west UP towards Bihar, Jharkhand and WB. also extends towards the coast of Odisha, AP and Tamilnadu

Day 1-2: Over Arunachal Pradesh, Jharkhand , WB, AP and Kerala (weaker in day 2)

Day3-4: Along west coast from Kerala to south Maharashtra

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

Day-0 at 12UTC: Prominent over NW India extending along the IG Plains from west UP towards Bihar, Jharkhand and WB. also extends towards the coast of Odisha, AP and Tamilnadu

Day 1-2: Over Arunachal Pradesh, Jharkhand , WB, AP and Kerala (weaker in day 2)

Day3-4: Along west coast from Kerala to south Maharashtra

8. Rainfall and thunder storm activity:

Day-1: (>4cm/day) over J & K region (SW region)

Day-2-4:(> 4cm/day) over Assam and Arunachal Pradesh

Day5: (> 4cm/day) North of J&K over Tajikistan & Afghanistan due to approaching WD

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 over west UP and along the foothills valid for today. Isolated pockets are also forecasted over parts of Bihar during the evening hours of day1.

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 along coastal areas of India 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 J & K and for all the three days over isolated pockets in the NE states.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Presently, the Western Disturbance, now seen as a upper air cyclonic circulation over north Pakistan & adjoining Jammu & Kashmir and extends upto 4.5 km above mean sea level with a trough aloft runs roughly along Longitude 70.0°E and north of Latitude 25.0°N, which will give to very heavy rainfall over Jammu and Kashmir, on Day-1. With this system, Himachal Pradesh and Utrakhand will also experience thunder squall with hail possibilities on Day-1. The rainfall activities may also continue over the same areas on Day-2. Another trough runs from southeast Srilanka to south coastal Tamilnadu between 1.5 to 2.1 km above mean sea level, Due to this system, rainfall and thunder squall with hail possibilities over north Kerala and South Karnataka on Day-1.

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:

Jammu and Kashmir, Himachal Pradesh, Utrakhand,
Kerala and South Karnataka
East Uttar Pradesh, Bihar, Jharkhand

48 hour Advisory for IOP:

Jammu and Kashmir, Himachal Pradesh, Utrakhand
Assam, Meghalaya,
Manipur, Mizoram and Tripura
Jharkhand
North 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

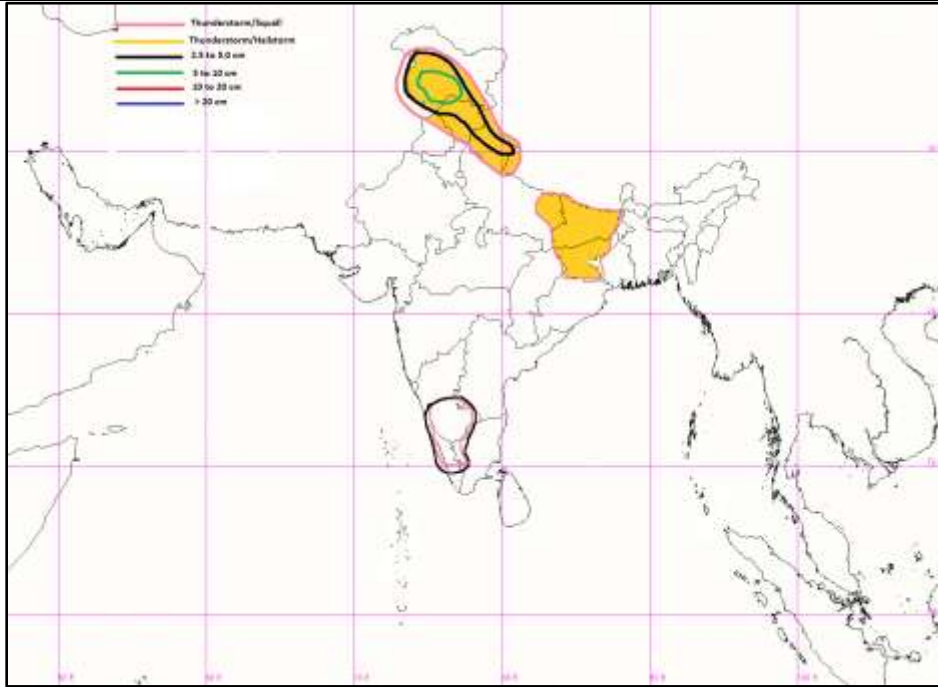
HEM:http://satellite.imd.gov.in/img/3Ddaily_he.jpg

ForRadarimagesofthepast24hoursincludingmosaicofimages:

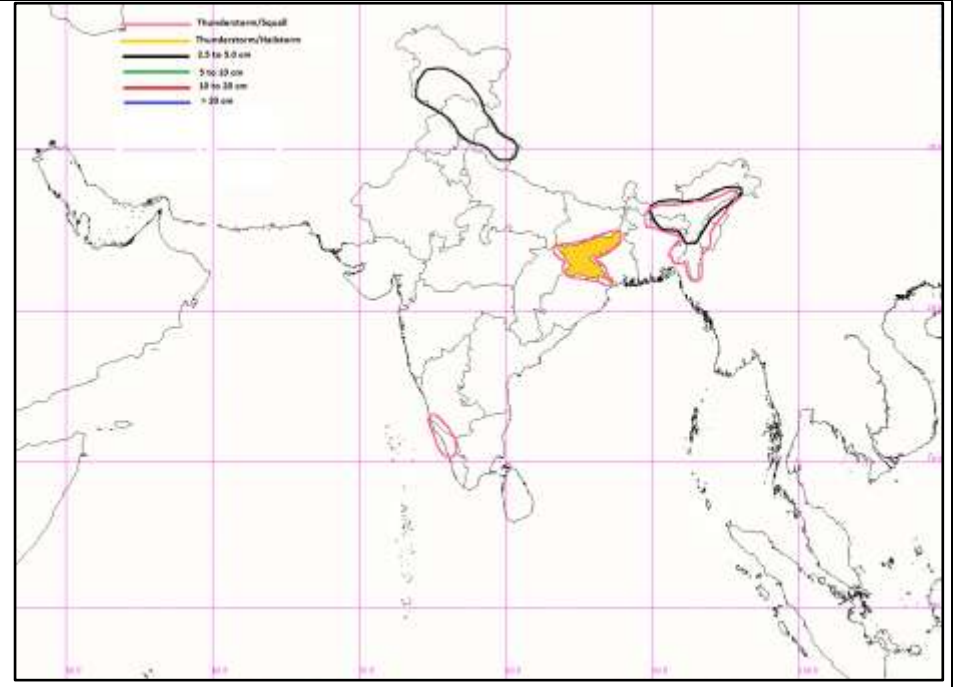
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T-Phi gram

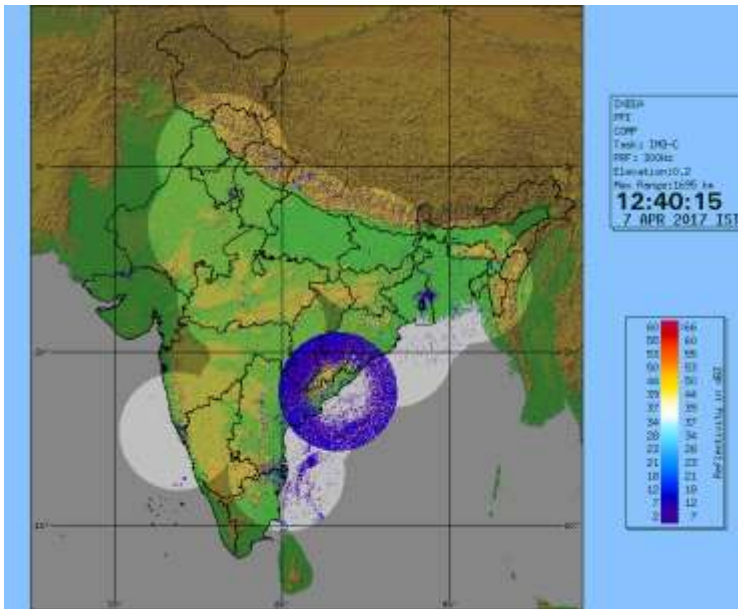
http://satellite.imd.gov.in/map_skm2.html



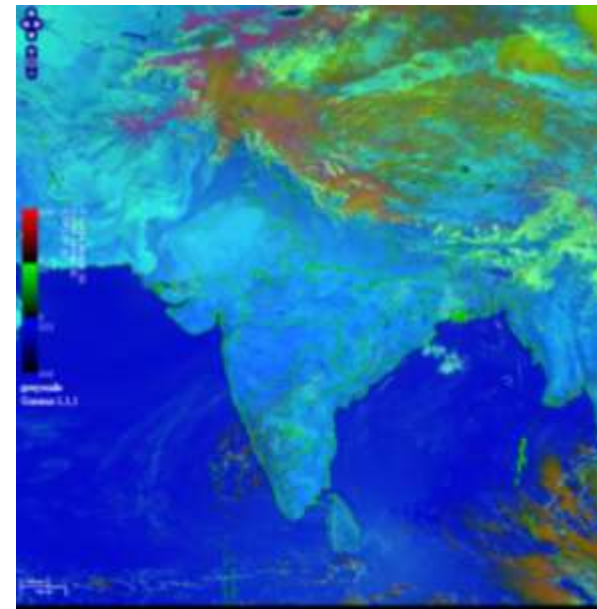
IOP Advisory for 24 hours



IOP Advisory for 48 hours



DWR Composite at 1240 hrs IST



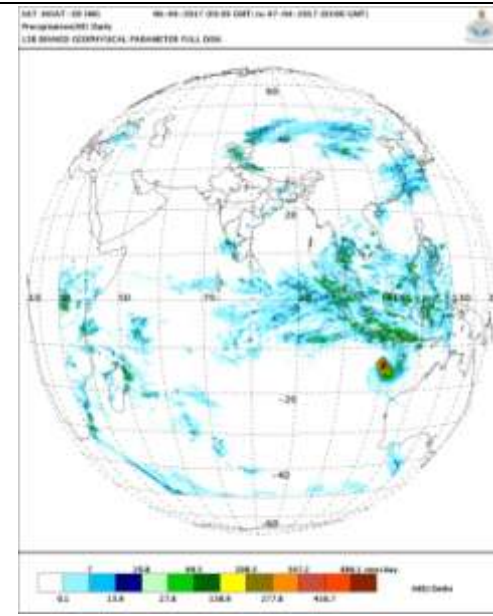
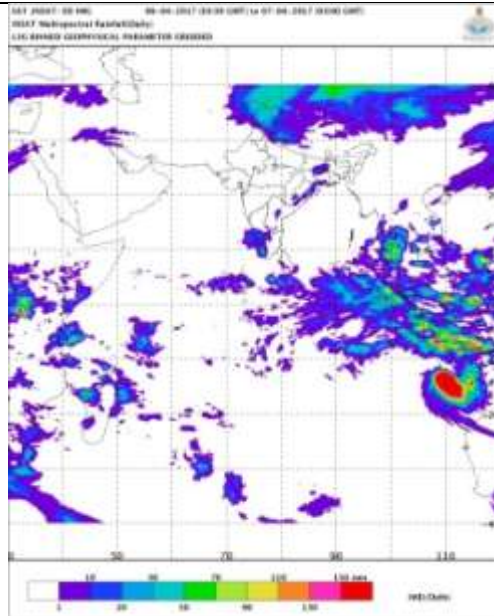
RAPID RGB Image of INSAT 3D at 1200 hrs IST

Not Received



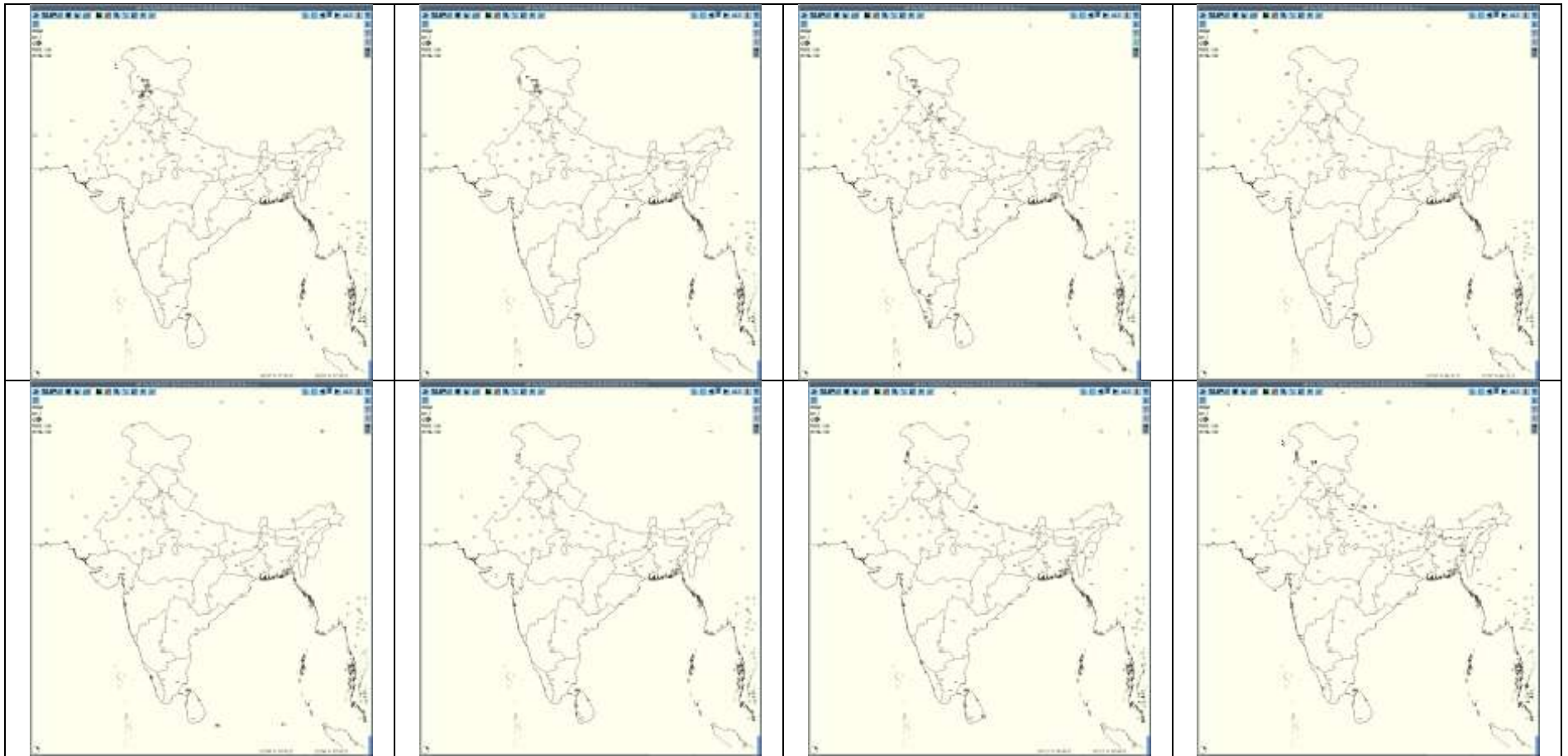
Forecast Dust Concentration

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



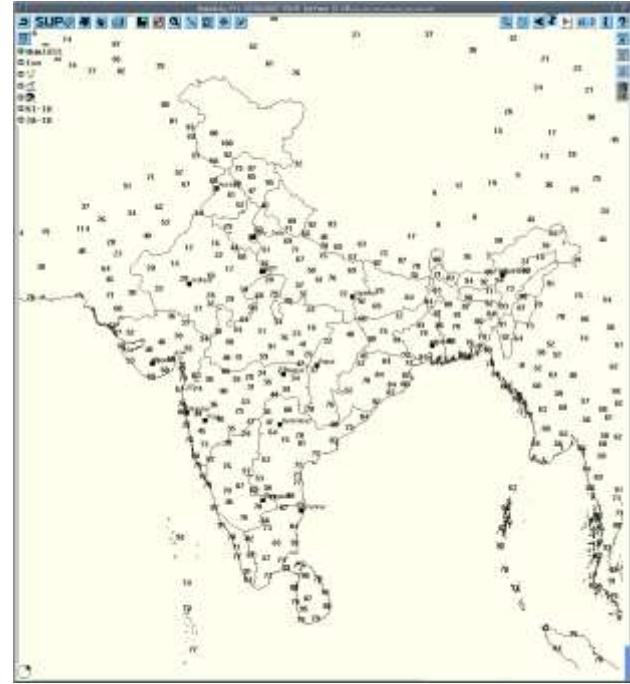
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today










Realized weather past 24 hours					
Date	Time of Reporting	Name of Station Reporting	Region	STATE	Weather Event
06-04-17	0600 UTC	Srinagar, Pahalgam, Qazigund, Banihal, Kukernag, Katra, Batote, Bhaderwah, Jammu	Northwest India	J & K	Thunderstorm
		Amritsar	Northwest India	Punjab	Thunderstorm
06-04-17	0900 UTC	Pahalgam, Qazigund, Banihal, Kukernag, Batote, Bhaderwah	Northwest India	J & K	Thunderstorm
		Keonjhar	East India	Odisha	Thunderstorm
06-04-17	1200 UTC	Qazigund, Banihal, Pahalgam, Bhaderwah	Northwest India	J & K	Thunderstorm
		Bhunter, Sundernagar, Shimla	Northwest India	Himachal Pradesh	Thunderstorm
		Tehri, Dehradun, Mukteshwar	Northwest India	Uttarakhand	Thunderstorm
		Jagdapur	East India	Chhattisgarh	Thunderstorm
		Keonjhar	East India	Odisha	Thunderstorm
		Rajkot	West India	Gujarat	Duststorm
		Madikeri, Chamarajanagar	South India	Karnataka	Thunderstorm
		Kottayam, Punalur, Thiruvananthapuram	South India	Kerala	Thunderstorm
06-04-17	1500 UTC	Coonoor	South India	Tamilnadu	Thunderstorm
		Dehradun	Northwest India	Uttarakhand	Thunderstorm
		Coimbatore	South India	Tamilnadu	Thunderstorm
06-04-17	1800 UTC	Cochin	South India	Kerala	Lightening
		Kozhikode	South India	Kerala	Thunderstorm
06-04-17	2100 UTC	Cochin	South India	Kerala	Lightening
		Nil	Nil	Nil	Nil
07-04-17	0000 UTC	Bajpe	South India	Karnataka	Thunderstorm
07-04-17	0300 UTC	Banihal	Northwest India	J & K	Thunderstorm
		Mukteshwar	Northwest India	Uttarakhand	Thunderstorm with hail

Past 24 hours DWR Report:

Radar Station Name	Date	Time Interval of Observation (UTC)	Organisation of 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
Paradeep	07/04/17	06/0700-06/1300	Isolated cells observed forming after 1200 IST with av. Heights of 9kms. and maximum height exceeding 14 kms. reflectivity values reaching upto 55 dBZ .	Isolated cells observed forming between 250-350 degrees and in the range of 170-250 kms from RADAR. Movement: NWly	Cells started developing after 1200 IST and dissipated by 1900 IST.	TS with Rain	Nayagarh, Khorda, Jajpur, Bhadrak, Cuttack, Ganjam, Kendrapada, Mayurbhanj
Srinagar	06/04/17	060300-070300	Multiple cells developed at scattered places from SW and NW directions of DWR Srinagar at 0830 UTC and moved SE and NE direction as strong cyclonic circulation persist over DWR Srinagar and n-hood.	Developed from NW and SW directions of DWR site Srinagar and moved towards DWR Srinagar.	Thunderstorm observed/reported at Srinagar, Kupwara, Gulmarg, Kupwara, Pahalgam , Qazigund and Kukernag dist.	Thunderstorm accompanied by rain/snow reported from all stations and hail isolated places	Light to moderate with isolated heavy rain/snow over entire districts of state.
Kolkata	06/04/17						
		0941 - 1241	Isolated single cell with maximum height of 17.5 Km at 1121 UTC and maximum reflectivity of 60.5 dBz at 1111 UTC	W (241 km) moving in SE-ly direction at a speed of 22.0 kmph	Cell started forming at 0900 UTC at W (250 Km) from radar. Matured. Dissipated at 1241 UTC	Thunderstorm /Hailstorm/ Squall	N/A
		1242 - 2351	NIL	NIL	NO ECHO	NIL	NIL
	07/04/17	0001- 0300	NIL	NIL	NO ECHO	NIL	NIL

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	Associa ted severe weather if any	Districts affected
Patiala	07/04/17	0300-0600 0600-0900 0900-1200 1200-1500 1500-1800 1800-2100 06/2100-070302	No significant echos Multiple cells maximum 55.5 DBZ, HT 10-11KMS Multiple Super cells, 62.0 DBZ 11-12 KM Multiple super cells, 60.5 DBZ 12-15 KM multiple cells, 52 DBZ 10-12 KM Isolated cells, 48.0 DBZ 10 KM NO SIGNIFICANT ECHO	Nil Formed in NNW sector from DWR. Movement: NNE wards Formed in North sector from DWR. Movement : NNE wards NE and ESE SECTORS Direction of movement : E, NE Formed in ESE SECTORS Direction of movement : Eastwards NW SECTORS Direction of movement : NE wards NIL	TS/ RA Hail/RA/TS HAIL/TS/ RA RA/TS	NIL NIL	NIL Hishiarpur, Dasua, Nadaun, Hamirpur, Palampur. BDAM, Una,Hahan, Chandigarh Nahan, Saharanpur, Behat Rishikesh Haridwar Gurdaspur NIL
Agartala	07/04/17	060300-070300	NIL	NIL	NIL	NIL	NIL
Lucknow	07/04/17	06/0922 - 07/1142	Single Cell with average height of 11 km with maximum reflectivity of 54dbZ Multiple Cells started forming at 0952UTC, one W(140km) with average height of 8 km and second W(160km) with average height of 6km and remained stable upto 1142 UTC.	SW(100km) moving in E'ly direction at speed of 43km/hr		NIL	Kanpur, Unnao, Kannauj.
Patna	07/04/17	060300-070300	NIL	NIL	NIL	NIL	NIL
Jaipur	07/04/17	060300-070300	NIL	NIL	NIL	NIL	NIL
Nagpur	07/04/17	060300-070300	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

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