



India Meteorological Department

FDP STORM Bulletin No. 45 (20-04-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ The Western Disturbance as an upper air cyclonic circulation extending upto 3.1 Km above mean sea level over Pakistan & neighbourhood now lies over north Pakistan & neighbourhood. The trough aloft in mid and upper tropospheric levels with its axis at 5.8 Km above mean sea level now runs roughly along longitude 68°E to the north of latitude 28°N.
- ◆ A cyclonic circulation lies over northwest Madhya Pradesh and adjoining East Rajasthan and extends upto 1.5 km above mean sea level.
- ◆ A trough runs from north Pakistan to above cyclonic circulation across southern parts of Punjab & Haryana and extends upto 1.5 km above mean level.
- ◆ A cyclonic circulation lies over East Uttar Pradesh & neighbourhood and extends upto 0.9 km above mean sea level.
- ◆ A cyclonic circulation lies over Sub Himalayan West Bengal & adjoining west Assam and extends upto 1.5 km above mean level.
- ◆ The east west trough at 0.9 km above mean sea level from east Bihar to south Assam now runs from cyclonic circulation over East Uttar Pradesh & neighbourhood to Manipur across Bihar and the cyclonic circulation over Sub Himalayan West Bengal & adjoining west Assam.
- ◆ The cyclonic circulation at 0.9 km above mean sea level over Chhattisgarh and adjoining Odisha now lies over interior parts of Odisha at 1.5 km above mean sea level.
- ◆ The north south wind discontinuity at 0.9 km above mean sea level from North Interior Karnataka to south Tamilnadu now runs from southeast Madhya Pradesh to south Tamilnadu across east Vidarbha, Telangana & Rayalaseema.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

Current Observation (based on 0300UTC imagery of INSAT 3D):

Western Disturbance (WD):

Broken multi-layered clouds seen over Afghanistan, North Pakistan, Jammu & Kashmir, Himachal Pradesh, Punjab, Uttarakhand, North Uttar Pradesh, and over the area between lat 37.0°N to 43.0°N and long 70.0°E to 100.0°E in association with Western Disturbance over the area.

Westerly trough & Jet Stream:-

trough in westerlies runs roughly along long 65.0°E & north of lat 28.0°N.

Westerly jet stream observed over North India.

Convective Activity:-

Nil.

Precipitation Nowcast Based On WMO Scope Product:

Based on 0300 UTC satellite data indicate precipitation is likely to take place during next three (03 hrs) over Jammu & Kashmir, North Himachal Pradesh, and Lakshadweep.

Clouds descriptions within India:

Broken low/medium clouds with embedded moderate to intense convection seen over Jammu & Kashmir, Himachal Pradesh (Minimum CTT Minus65DegC), and Lakshadweep (Minimum CTTMinus65DegC). Scattered low/medium clouds with embedded isolated weak to moderate convection seen over Punjab, Uttarakhand, North Uttar Pradesh, Rayalaseema, Karnataka, and North Kerala. Scattered low/medium clouds with embedded isolated weak convection seen over Sikkim, Northeastern States, and Northeast Rajasthan. Scattered low/medium clouds seen over East Haryana, Delhi, South Uttar Pradesh, extreme South Chhattisgarh, Odisha, Bihar, Gangetic and Sub-Himalayan West Bengal, South Konkan & Goa, South Telangana, Coastal Andhra Pradesh, Kerala and Tamilnadu.

Arabian Sea:-

Scattered low/medium clouds with embedded intense to very intense convection seen over Lakshadweep and neighbourhood.

Bay of Bengal & Andaman Sea:

NO significant clouds seen over the region.

Past Weather:**Convection (during last 24 hrs):**

Intense to Very Intense convection was observed over Karnataka Kerala and

Moderate to Intense convection was observed over Jammu & Kashmir Himachal Pradesh Punjab Uttarakhand Tripura Rayalseema Tamilnadu and

Weak to Moderate convection observed over Rajasthan North-West Madhya Pradesh Haryana Delhi Uttar Pradesh Sikkim Rest North-East States Coastal Odisha South Konkan & Goa South Telangana South Coastal Andhra Pradesh.

OLR:-

Up-to 230wm² observed over Jammu & Kashmir Himachal Pradesh North Uttrakhand Sikkim Arunachal Pradesh Assam Nagaland South Coastal Andhra Pradesh Rayalseema Goa South Interior Karnataka Kerala North Tamilnadu.

Synoptic features: Westerly Trough: roughly along Longitude 68.0E & north of Latitude 28.0N

Dynamic Features:

Up to 30- 80 knots **wind shear** is observed over North & Central India and 10-15 knots over south peninsula India.

Negative Shear tendency observed over J & K Himachal Pradesh and Positive Shear tendency over rest parts of India

Positive Vorticity field at 850 hPa is observed over J & K Himachal Pradesh Punjab Haryana Uttarakhand Uttar Pradesh Bihar North-East Madhya Pradesh Telangana.

Negative Low Level Convergence over Uttarakhand north Uttar Pradesh & Positive Low Level Convergence over rest parts of India.

Precipitation:**IMR:**

Rainfall upto 130-150 mm observed over South Interior Karnataka North Kerala and

Rainfall upto 50-70 mm observed over some parts of West Jammu & Kashmir and

Rainfall upto 30-50 mm observed over some parts of East Jammu & Kashmir North Himachal Pradesh West Rayalseema South Kerala and

Rainfall upto 01-10 mm observed over South Himachal Pradesh North Punjab north Uttrakhand Meghalaya Tripura South Telangana East Rayalseema South Coastal Andhra Pradesh Tamilnadu.

HEM:

Rainfall upto 139-278 mm observed over West Parts of South Interior Karnataka and

Rainfall upto 70-139 mm observed over West Jammu & Kashmir North Kerala and

Rainfall upto 27-70 mm observed over North Himachal Pradesh and

Rainfall upto 0.1-07 mm observed over North Punjab South Himachal Pradesh North Uttarakhand North-West Uttar Pradesh Meghalaya Tripura south Telangana Rayalseema South Coastal Andhra Pradesh South Kerala North Tamilnadu

RADAR and RAPID RGB Observation:

Moderate Isolated/multiple echoes were seen on DWR Vishakhapatnam and Lucknow (dBZ>50 and height>10km)at around 1315 IST. Light Moderate Isolated/multiple echoes were seen on DWR Patiala at around 1215 IST.

RAPID RGB Satellite imagery at1100ISTindicates significant convection over Jammu & Kashmir, North Himachal Pradesh, North Uttarakhand, Central & Northern parts of Uttar Pradesh and Lakshadweep Islands.

Environmental Condition (dust etc) and its Forecast based on 00UTC of date:

Higher Dust concentration was observed over northern Africa, Arab countries and western part of India. Dust concentration is expected to decrease over north-western part of India for next few days.

Particulate matter concentration is expected to remain in moderate category for next 2 days in Delhi.

Delhi – SAFAR analysis & Forecast	20.04.2018	21.04.2018
PM10 (micro-g/m ³)	217	197
PM2.5 (micro-g/m ³)	87	80

2. NWP MODEL GUIDANCE:**NCMRWF (NCUM forecast based on 00UTC the day):****1. Weather Systems:****Low level Cycirs, Troughs:**

00 & 12UTC of Day 1-2: 850 hPa trough from U.P to Peninsular India across MP and Maharashtra

Confluence & Wind Discontinuity Regions:

12 UTC of Day 0-2: 925& 850 hPa N-S discontinuity over Southern Peninsular India and in Day 0-4 SW-NE discontinuity over MP Chhattisgarh & Odisha

Synoptic Systems: 12 UTC of Day 0-2: WD as a trough over J &K

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

12UTC of Day 0 Over Rajasthan associated with WD.

3. Convergence at 850 hPa:

Day/Index: Subdivisions with Lower Level Convergence $> 15 \times 10^{-5} /s$

Day0: Jharkhand, West UP, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Telangana,

Day1: Assam Meghalaya, Gangetic WB, Jharkhand, Madhya Maharashtra, SI Karnataka,

Day2: Arunachal Pradesh, NE NMMT, Odisha, East MP, Madhya Maharashtra, NI Karnataka, SI Karnataka,

Day3: Assam Meghalaya, Jharkhand, Odisha, West MP, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, NI Karnataka, SI Karnataka,

Day4: Odisha, Madhya Maharashtra, Chhattisgarh, Tamilnadu, Puducherry, SI Karnataka.

4. Low level Vorticity:-Positive Vorticity:

Day/Index: Subdivisions with Lower Level Vortex $> 15 \times 10^{-5} /s$

Day0: Assam Meghalaya, Sub Himalayan WB, Bihar, East UP, West UP, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, East MP,

Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Himachal Pradesh,

Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Uttarakhand, Himachal Pradesh,

Day3: Arunachal Pradesh, Assam Meghalaya, Himachal Pradesh,

Day4: Arunachal Pradesh, Assam Meghalaya, Odisha.

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Sub Himalayan WB, Bihar, East UP, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Odisha, Konkan Goa, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Tamilnadu, Puducherry, Coastal Karnataka, SI Karnataka, Kerala.

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

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal Pradesh, Sub Himalayan WB, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, East MP, Gujarat Region, Saurashtra Kutch, Chhattisgarh, Coastal AP, Telangana, Rayalseema,
Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Bihar, East UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Coastal Karnataka, SI Karnataka, Kerala,
Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, NI Karnataka

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Odisha, Gujarat Region, Saurashtra Kutch, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Uttarakhand, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, SI Karnataka, Kerala,
Day2: Arunachal Pradesh, Sub Himalayan WB, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, SI Karnataka, Kerala,
Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day4: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalseema, Tamilnadu, Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

8. Rainfall and thunder storm activity:

Day/Index : Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir,
Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Kerala,
Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Coastal AP,
Day5: Arunachal Pradesh, Odisha.

3. IOP ADVISORY FOR 24 and 48Hrs:

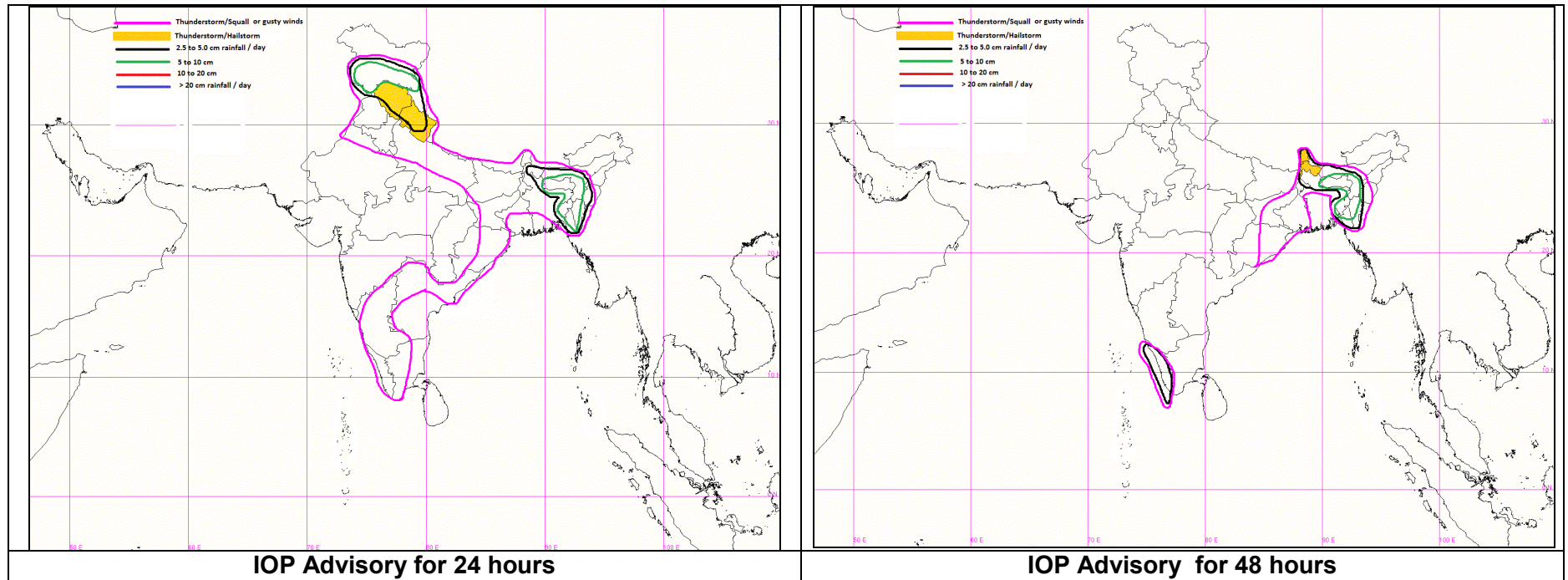
Summary and Conclusions:

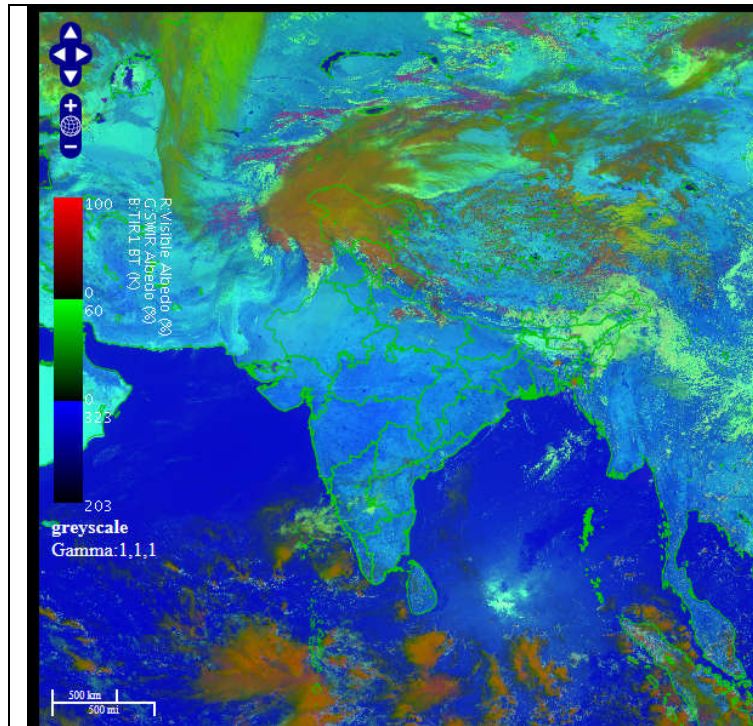
- o Most thermodynamic indices (T-STORM Initiation Index, Lifted Index, CAPE, CINE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence along the peninsular coast of India – from Gujarat, southwards to Maharashtra, Karnataka, Kerala, Tamilnadu, Coastal Andhra Pradesh and northwards to Odisha, West Bengal, Bihar and plains of Uttar Pradesh. The values decrease in spatial extent as well as intensity on day 2, and are confined mostly to the east and south peninsular coast of India. SWEAT index which also accounts for the wind shear between 850 and 500 hPa levels, indicates a maximum probability of thunderstorms over Gujarat and Northern Uttar Pradesh on day 1 and with increasing probability over West Bengal, Jharkhand and Odisha on day 2. Reflectivity values from IMD WRF model indicate high probability of convection over Jammu and Kashmir, Himachal Pradesh, Assam and Meghalaya, Tripura and Mizoram on day 1. The 850-200 hPa wind shear is very high over North India on both day 1 and 2.
- o Synoptic analysis indicates that two cyclonic circulations lie in the lower levels (1) over East Uttar Pradesh & neighbourhood and (2) over Sub Himalayan West Bengal & adjoining west Assam. An east west trough in the lower levels runs from the cyclonic circulation over East Uttar Pradesh & neighbourhood to Manipur across Bihar and the cyclonic circulation over Sub Himalayan West Bengal & adjoining west Assam. There is another cyclonic circulation in the lower levels over interior parts of Odisha. All three circulations are also captured by models. Due to the above cyclonic circulations, thunderstorms are expected to occur over east and North East India on day 1. On day 2, the models indicate that the thunderstorm intensity is likely to increase over East and North east India.
- o There is also a cyclonic circulation over northwest Madhya Pradesh and adjoining East Rajasthan in the lower levels. A trough runs from north Pakistan to above cyclonic circulation across southern parts of Punjab & Haryana in the lower levels. The overlying westerly trough appears to be moving very fast, and only on day 1, thunderstorms are expected over Northwest India and some heavy rainfall over Jammu and Kashmir. Intensity is likely to decrease on day 2.
- o A north south wind discontinuity in the lower levels runs from southeast Madhya Pradesh to south Tamilnadu across east Vidarbha, Telangana & Rayalaseema. ECMWF and IMD GFS deterministic model indicate that the discontinuity line is likely to move eastwards across the peninsular India on day 2. Associated widespread thunderstorm activity is expected over south peninsular India on day 1.

Day-1 & Day-2:

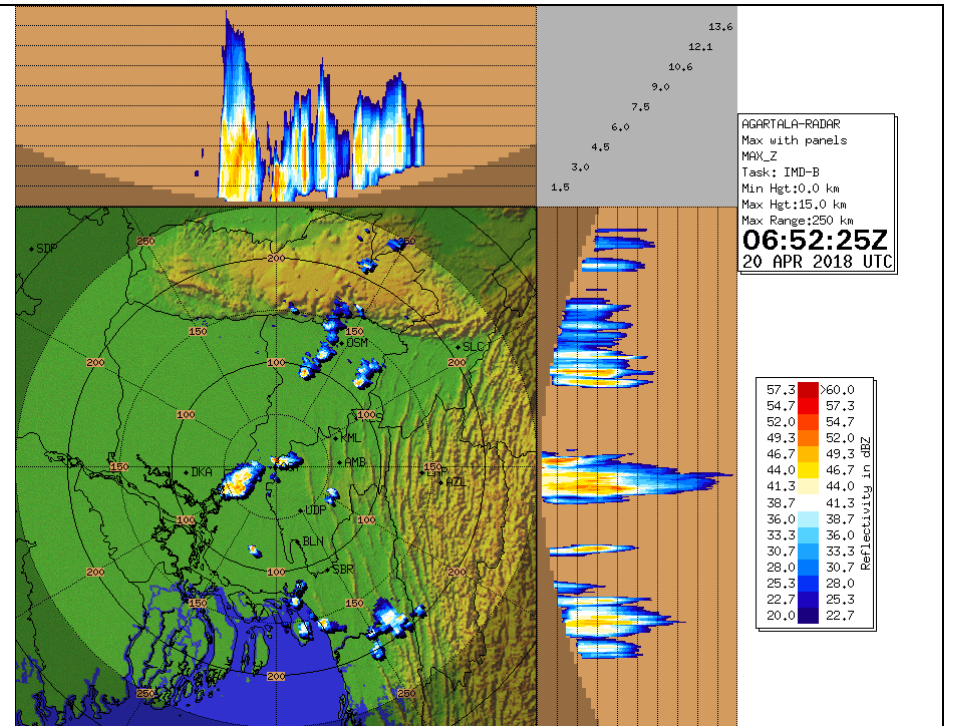
<p>24hour Advisory for IOP:</p> <p>Significant Rainfall: Jammu and Kashmir, Himachal Pradesh, Uttarakhand, South and west Assam and Meghalaya, Mizoram and Tripura Sub Himalayan West Bengal</p> <p>Thunderstorm with squall or gusty winds: Interior Tamil Nadu, Kerala, Karnataka, Telangana, Coastal Andhra Pradesh Punjab, Haryana, Uttar Pradesh, North Rajasthan North Gangetic West Bengal, Sub Himalayan West Bengal, Bihar, Jharkhand, Odisha Tripura, Mizoram, Manipur, South and west Assam and Meghalaya</p> <p>Thunderstorm with squall and hail Himachal Pradesh, Uttarakhand</p>	<p>48hour Advisory for IOP:</p> <p>Significant Rainfall: South and west Assam and Meghalaya, Mizoram and Tripura, Sub Himalayan West Bengal Kerala</p> <p>Thunderstorm with squall or gusty winds: Kerala, Gangetic West Bengal, Odisha, Jharkhand West and South Assam, Meghalaya, Mizoram and Tripura</p> <p>Thunderstorm with squall and hail Sub Himalayan West Bengal</p>
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Graphical Presentation of Potential Areas for Severe Weather:

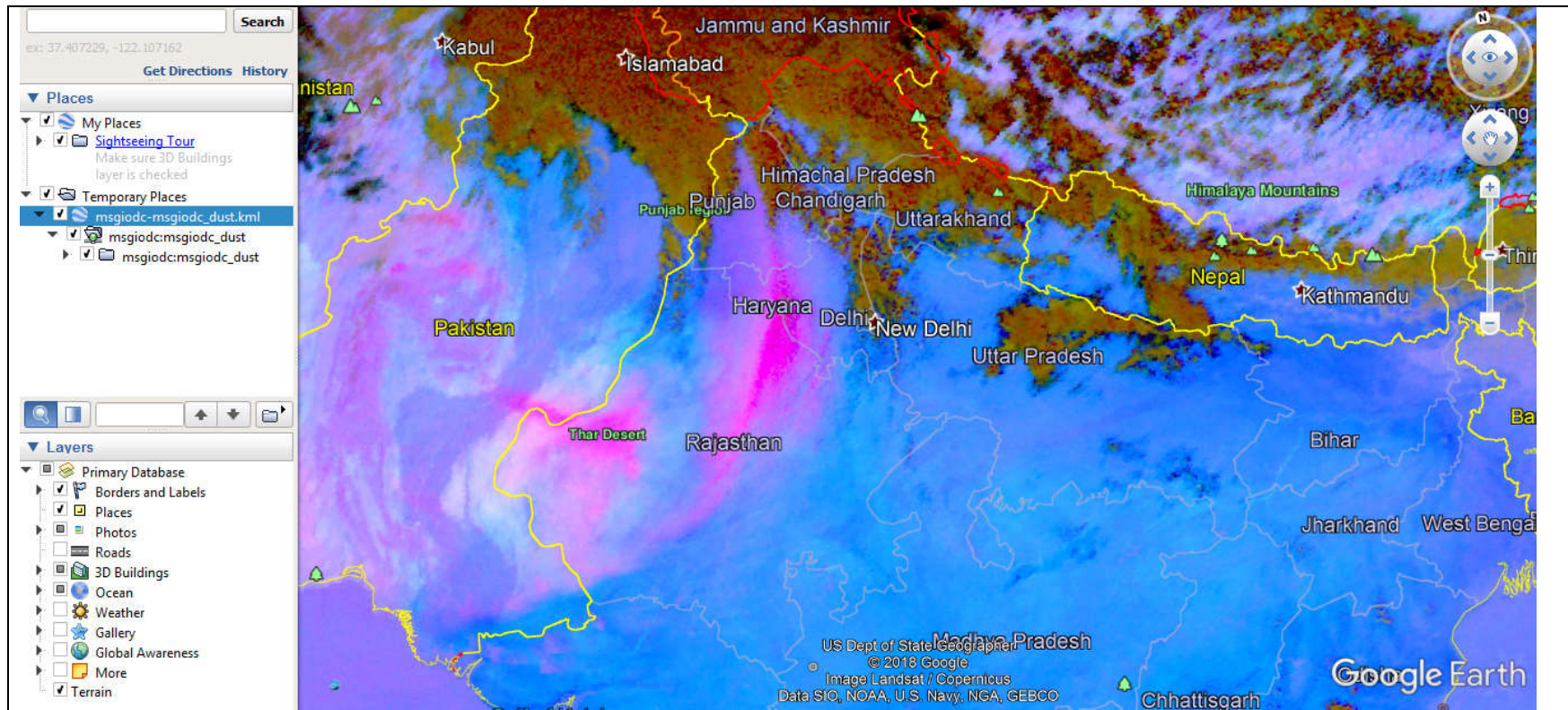




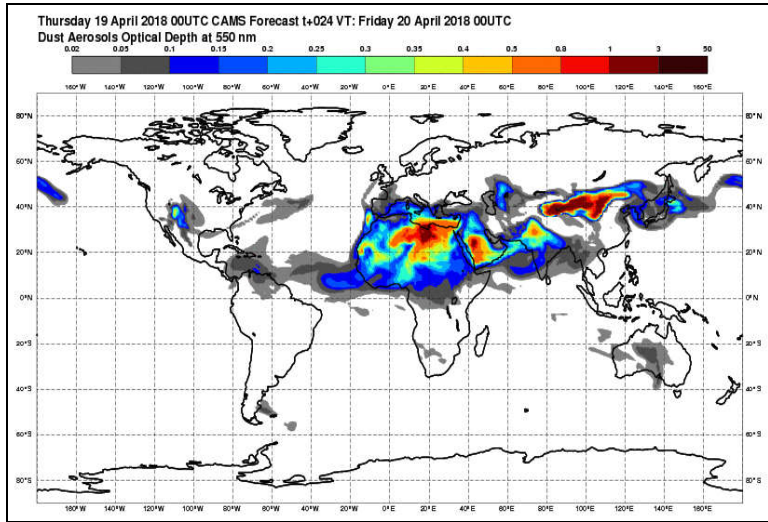
RAPID RGB Imagery at 1100 IST of the Day



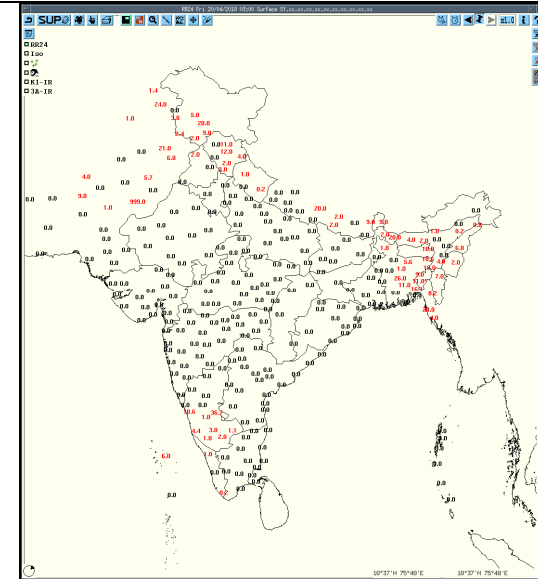
DWR Agartala at 1222 IST of the Day



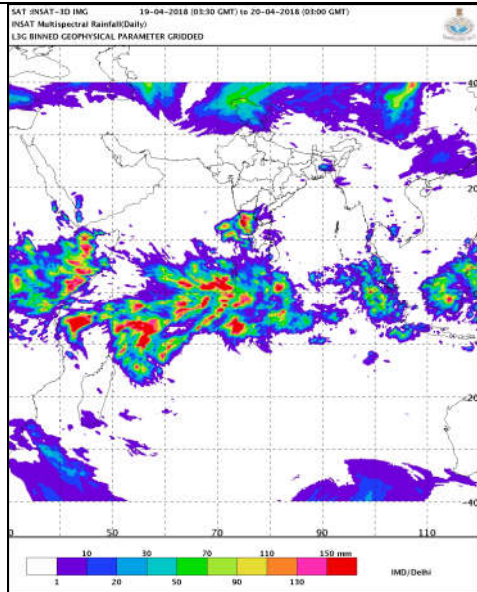
Dust storm located at west side of Delhi as on 2018-04-20:06:45:00 UTC



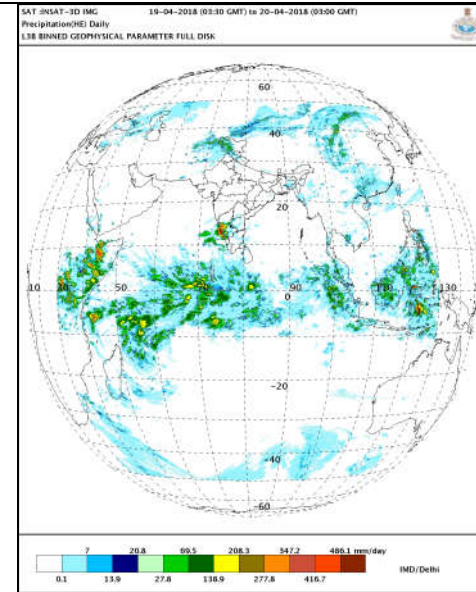
Dust Forecast



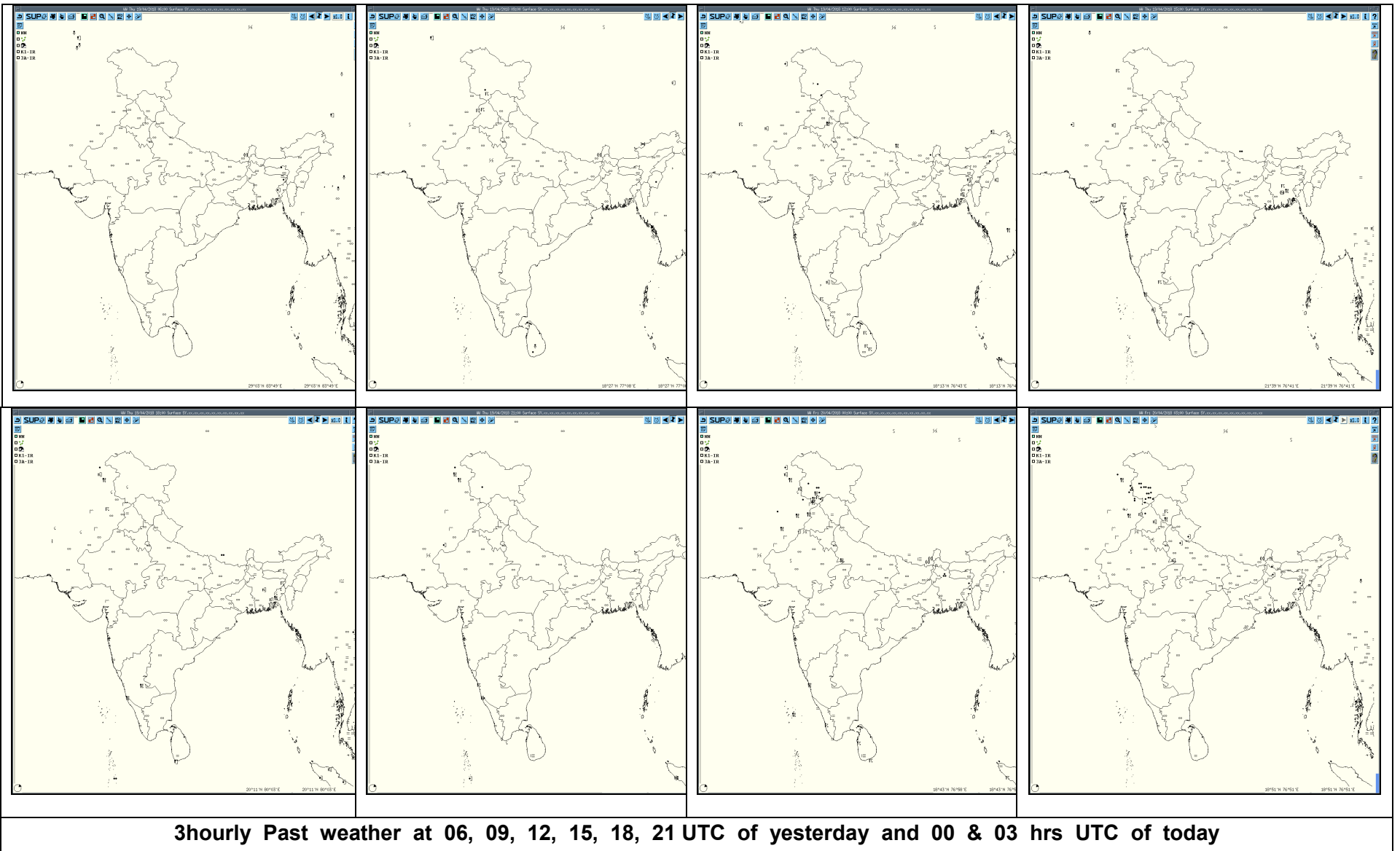
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

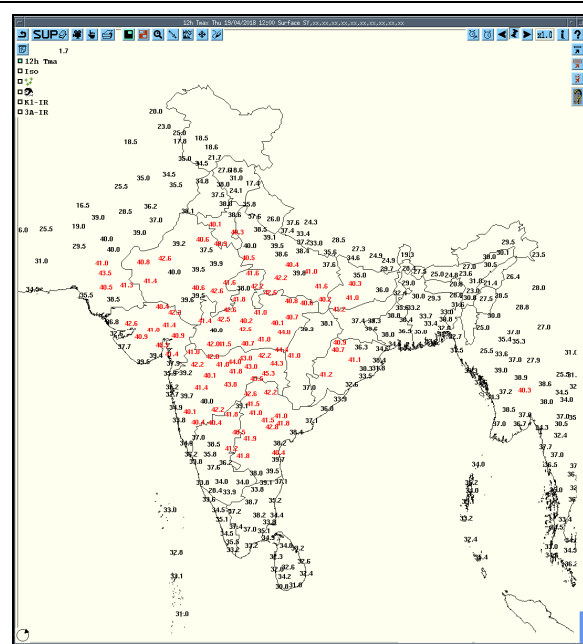


IMR

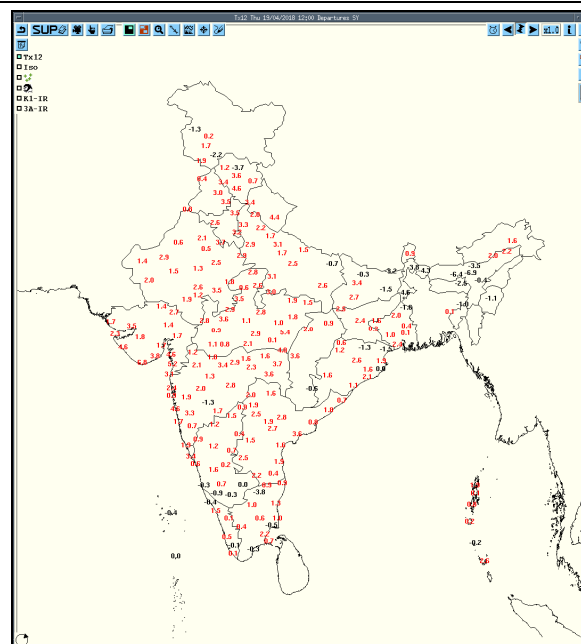


HEM

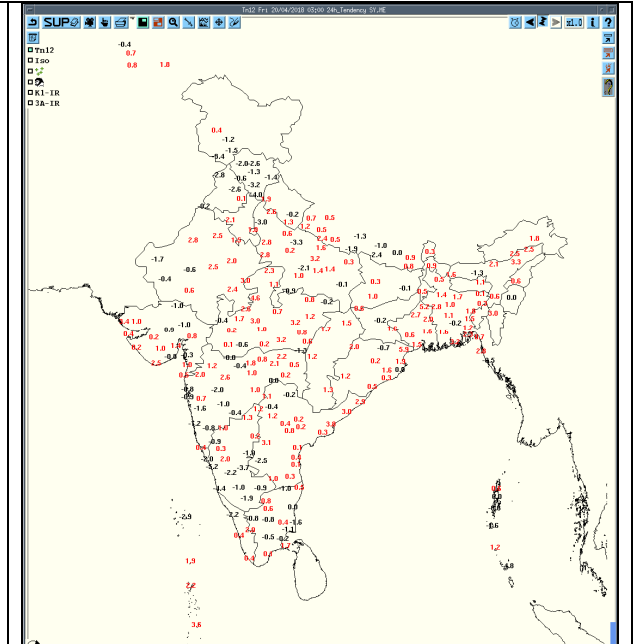




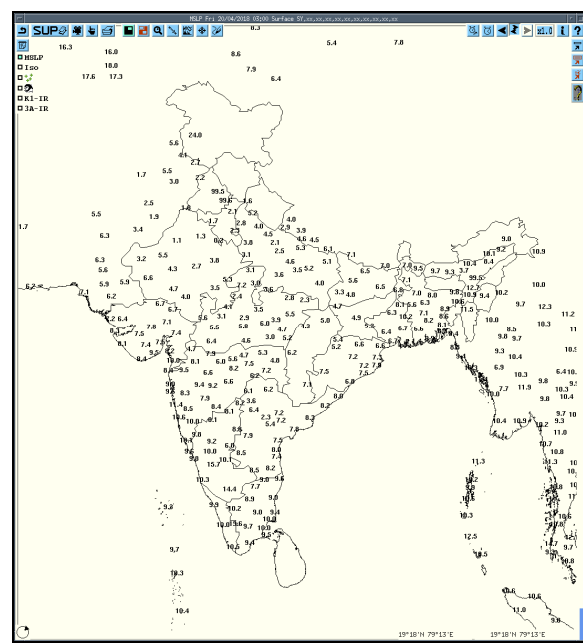
Tmax



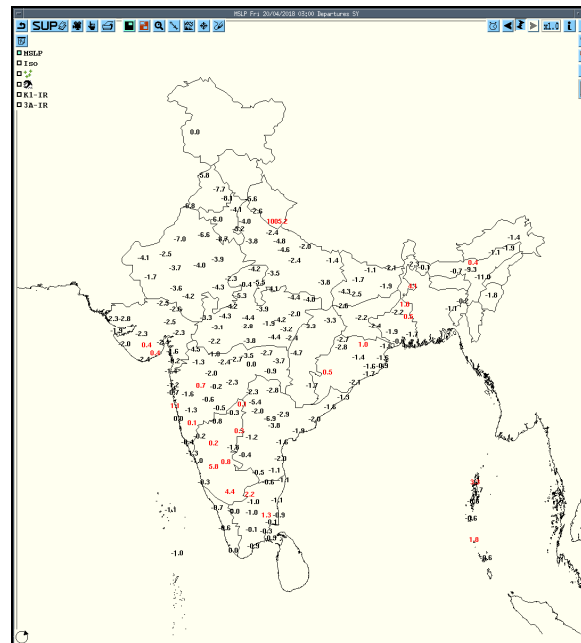
Departure Tmax



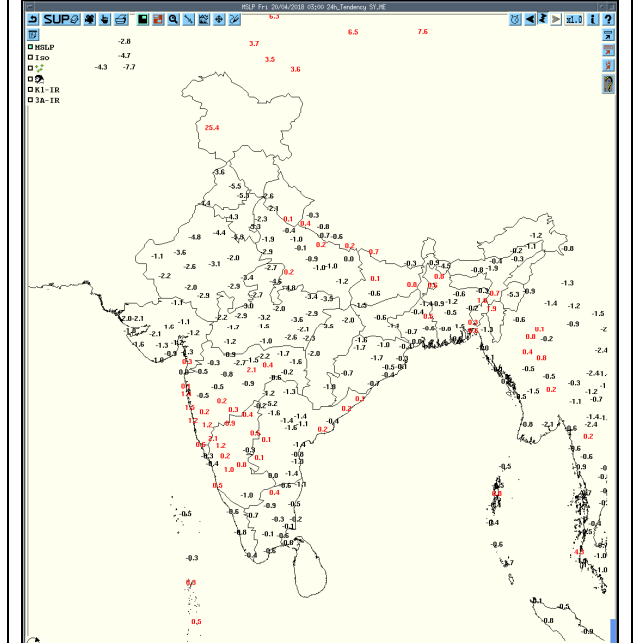
Tendency Tmax



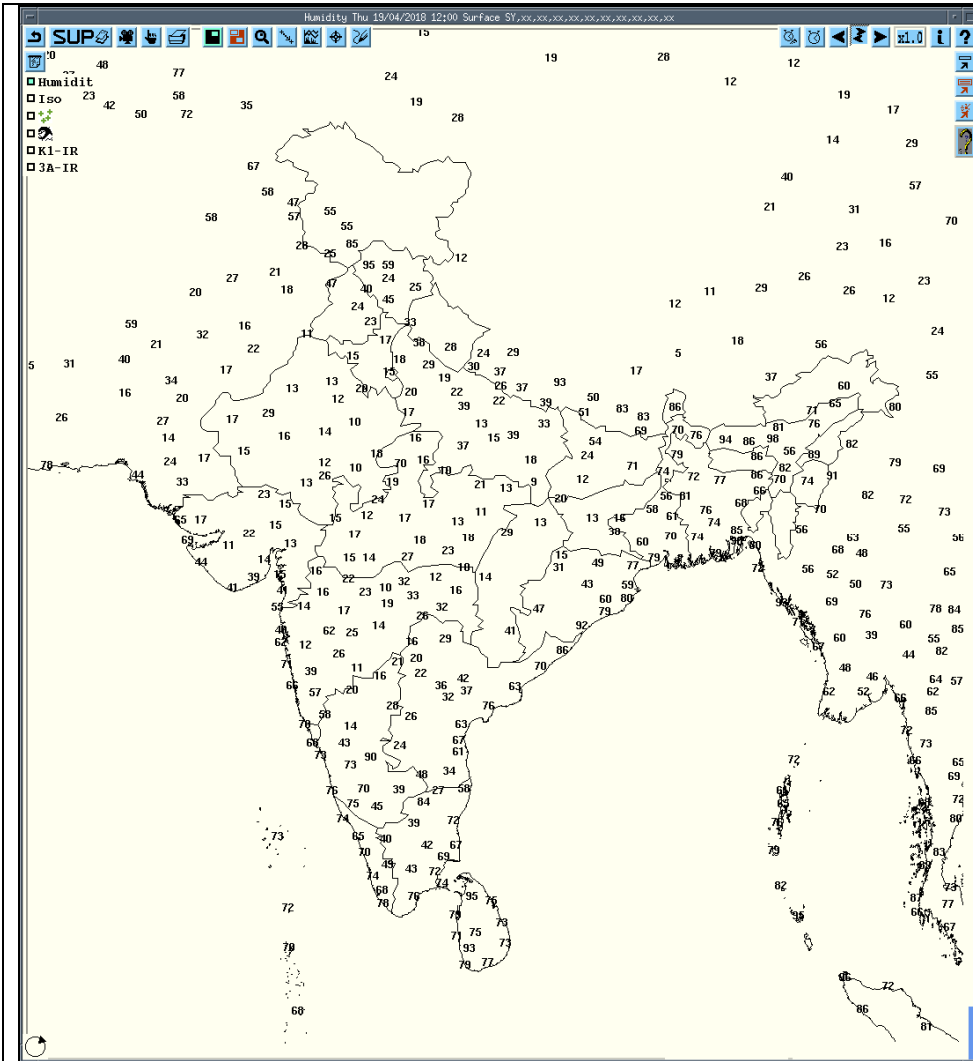
MSLP



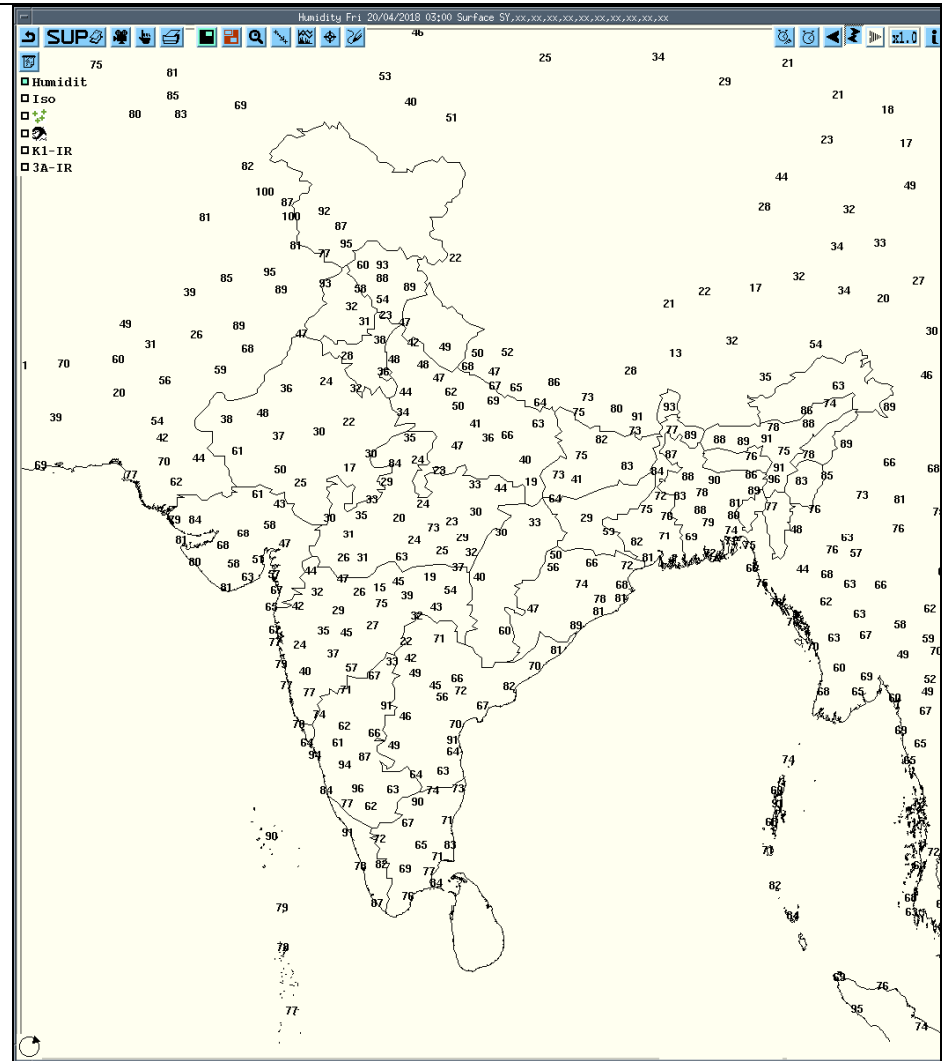
Departure MSLP



Tendency MSLP



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

Radar Station Name	Date	Time Interval Of Observation (UTC)	Organisation Of The Cells(Isolated Single Cells/ Multiple Cells/ Convective Regions/ Squall Lines) With Height Of 20 dbZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Patna	20-04-18	190300-190432	Multiple Cells Lat-26.2874N Long-86.0431E Maximum Reflectivity: 51 dBZ Echo Top: 6 KM	Range: 125 KM from DWR Patna in NE direction Movement: Stationary	Warning issued	Thunderstorm	MADHUBANI, DARBHANGA
		190432-191542	NIL	N/A	N/A	N/A	N/A
		191542-191652	Single Cell Lat-26.7830N Long-85.4273E Maximum Reflectivity: 50.5 dBZ Echo Top: 12 KM	Range: 138 KM from DWR Patna in NNE direction Movement: towards South East	Warning issued	Thunderstorm	SITAMADHI, MADHUBANI, DARBHANGA
		191652-200300	NIL	N/A	N/A	N/A	N/A
Srinagar	20-04-18	190300-200300	Multiple cells continued to persist in se and NW direction and moves SE&NE- wards.	Persisted over SE an NE of DWR Srinagar	Thunderstorm Observed/Reported at Qazigund, Kukernag, Pahalgam, Gulmarg, Banihal, Baderwah, Batote, Katra And Jammu	Light to moderate rain /thunder/hail with heavy falls at south Kashmir	Light to moderate rain most places with heavy falls at isolated places
Kolkata	20-04-18	190301-200300	Nil	Nil	No Sig Echo	Nil	Nil
Jaipur	20-04-18	191712-200300	Multiple cell with average height of 6.0 km & maximum reflectivity 55.0 dBZ	Multiple cell develop from 1712 UTC of 19/04/2018 towards E,NE of Jaipur and moved to SW,W Wards at speed 10-15 km/hr.	Multiple cell develop from 0732 UTC of 15/04/2018 towards NW,W, SW,S,SE of Jaipur and reaches maximum reflectivity during 2032 UTC OF 19/04/2018 to 0212 UTC of 20/04/18 and continue up to 0300 UTC OF 20/04/2018	Thunderstorm, Duststorm with Light rain at Isolated places	Jaipur, Bharatpur, Dholpur, Dausa, Karuli, Tonk, Ajmer, Sawai madhopur Districts

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
Patiala	20-04-18	190300-190900	NO ECHO	--	--	--	--
		190900-191200	Multiple echoes Reflectivity: 64.0 dbz Ht. 13 kms.	All sectors Dir. NE - ly	--	Duststorm/ Thundersto rm/Rain	Amritsar, Sangrur, Nabha, Patiala, Roop Nagar, Chandigarh, Rajpura, Rohru, Solana etc.
		191200-191500	Multiple echoes Reflectivity: 58.5 dbz Ht. 12 kms.	NE/ SE Sectors Dir. NE-ly	--	Duststorm/ Thundersto rm/Rain	Ambala, Chandigarh, Rajpura, Solana, Sirhind etc. ,
		191500-191800	Multiple echoes Reflectivity: 50.5 dbz Ht. 11-12 kms.	NW/NE SECTORS DIR. NE-ly	--	Duststorm/ Thundersto rm/Rain	Amritsar, Gurdaspur, Mandi, Nadun, Palampur.
		191800 - 192100	Multiple echoes Reflectivity: 50.0 dbz Ht. 10-12 kms.	NE/WNW SECTORS DIR. NE - ly	--	Duststorm/ Thundersto rm/Rain	Mandi, Bhunter, Chamba, Dalhousie.
		192100-200000	Multiple echoes Reflectivity: 42.5dbz Ht. 08-10 kms.	NE/NW SECTORS DIR. NE - ly	--	Duststorm/ Thundersto rm/Rain	Rohru, Gurdaspur, Ferozpur, Hoshiarpur
		200000-200252	Multiple echoes Reflectivity: 46.5dbz Ht. 08-09 kms.	NW sector DIR. NE- ly	--	Duststorm/ Thundersto rm/Rain	Faridkot, Amritsar, Gurdaspur, Hoshiarpur, Hoshiarpur, Bathinda.
Lucknow	20-04-18	192222-200132	NO SIGNIFICANT CELL	--	--	-	-
		200132-200302	Multiple cells with average height of 6.0KM with Maximum Reflectivity of 41.0 dBZ	W(200KM)moving in E'ly Direction at speed of 67 km/hr.	Multiple cell at 01:32 UTC at W(200KM) moved in E'ly direction and got maximum reflectivity at 02:22 UTC at W(150KM) and remained stable upto 03:02 UTC from W(100KM) to WNW(100KM).	-	-

Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24 hours ending at 0300UTC of today(received from RMCs/MCs)						
Name of Station Reporting	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Qazigund	Northwest India	Jammu & Kashmir	Thunderstorm	19/20-04-18	192215	200355
Kukernag	Northwest India	Jammu & Kashmir	Thunderstorm	20-04-18	0200	0240
Jammu	Northwest India	Jammu & Kashmir	Thunderstorm	20-04-18	0100 0425	0110 0530
Banihal	Northwest India	Jammu & Kashmir	Thunderstorm	19/20-04-18	191435 192200 200258	191520 192350 200635
Batote	Northwest India	Jammu & Kashmir	Thunderstorm	19/20-04-18	191245 200505	191535 200655
Katra	Northwest India	Jammu & Kashmir	Thunderstorm	19/20-04-18	192200 200200	192300 200600
Gulmarg	Northwest India	Jammu & Kashmir	Thunderstorm	19-04-18	1420 1815	1515 2000
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	19/20-04-18	191819 192250 200000 200648	191910 192400 200020 200720
L. Kheri	Northwest India	East Uttar Pradesh	Thunderstorm	20-04-18	0715	0740
Agra(IAF	Northwest India	West Uttar Pradesh	Thunderstorm	20-04-18	0600	0830
Agra(TAJ)	Northwest India	West Uttar Pradesh	Thunderstorm	20-04-18	0630	0730
Moradabad	Northwest India	West Uttar Pradesh	Thunderstorm	20-04-18	0530	0630
Najibabad	Northwest India	West Uttar Pradesh	Thunderstorm	20-04-18	0700	0745
Meerut	Northwest India	West Uttar Pradesh	Thunderstorm	20-04-18	0710	0750
Muzaffarnagar	Northwest India	West Uttar Pradesh	Thunderstorm	20-04-18	0730	0800
Jaipur	Northwest India	East Rajasthan	Thunderstorm	20-04-18	0550	0610
Banasthali	Northwest India	East Rajasthan	Thunderstorm	20-04-18	0530	0540
Ambala	Northwest India	Haryana	Thunderstorm	19-04-18	1745	1810
Patiala	Northwest India	Punjab	Thunderstorm	19-04-18	1650	1735
Amritsar	Northwest India	Punjab	Thunderstorm	19/20-04-18	191428 200430 200630	191550 200520 200815
Ludhiana	Northwest India	Punjab	Thunderstorm	19/20-04-18	191540 00700	191620 200800
Chandigarh	Northwest India	Chandigarh	Thunderstorm	19-04-18	1720	1750
Dehradun	Northwest India	Uttarakhand	Thunderstorm	19-04-18	2055	2130
Tehri	Northwest India	Uttarakhand	Thunderstorm	19-04-18	2050	2220
Barapani	Northeast India	Meghalaya	Thunderstorm	19-04-18	1315	1330
Shillong	Northeast India	Meghalaya	Thunderstorm	19-04-18	0900	1100
Agartala	Northeast India	Tripura	Thunderstorm	19-04-18	2125	2225
Barapani	Northeast India	Meghalaya	Thunderstorm	19-04-18	1315	1330
Port Blair	East India	Andaman & Nicobar Islands	Thunderstorm	19-04-18	1210	1340

Realised TS/HS/SQ during past 24 hours ending at 0300UTC of today(received from RMCs/MCs)						
Name of Station Reporting	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Kannur	South India	Kerala	Thunderstorm	19-04-18	1815	1900
Karipur A P	South India	Kerala	Thunderstorm	19-04-18	1745	2200
Kozhikode	South India	Kerala	Thunderstorm	19-04-18	1835	1955
Thiruvananthapuram AP	South India	Kerala	Thunderstorm	19-04-18	1530	1800

IMPORTANT LINKS:

For NCMRWF NWP products:(<http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php>)

For IMD NWP products:(http://nwp.imd.gov.in/diagpro_new.php)

For Synoptic plotted data and charts

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

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

For RANDHRA PRADESHID tool:

http://rAndhra_Pradeshid.imd.gov.in/

Low Level Winds

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

Upper level winds

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

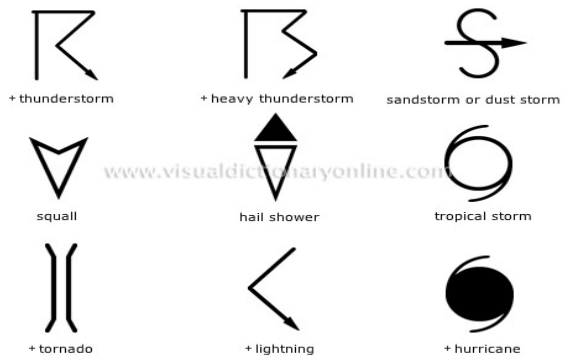
ForRadarimagesofthepast24hoursincludingmosaicofimages:

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

Satellite sounder based T- Phigram

http://satellite.imd.gov.in/mAndhra_Pradesh_skm2.html

WEATHER SYMBOLS:



∞	haze
☁	smoke
☁	dust or sand storm
☁	fog
☁	drizzle
•	rain
*	snow
▽	showers
△	hail
☁	thunderstorm

Weather Symbols