India Meteorological Department

FDP STORM Bulletin No.80 (24-05-2017)

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

The upper air cyclonic circulation over Southeast Bay of Bengal & neighbourhood persists and now extends upto 5.8 Km above mean sea level.
The shear zone roughly along latitude 10.0°N, now runs roughly along latitude 08.0°N between 1.5 & 3.1 km above mean sea level.
The Western Disturbance as an upper air cyclonic circulation over Jammu & Kashmir & neighbourhood now lies over eastern parts of Jammu & Kashmir between 3.6 km & 5.8 km, with a trough aloft roughly along Long. 77.0° E and north of Lat. 34.0° N.
The induced upper air cyclonic circulation over Punjab & neighbourhood now lies over Haryana & neighbourhood between 1.5 and 2.1 Km above mean sea level.
A trough runs from eastern parts of Bihar to north coastal Andhra Pradesh across interior Odisha and extends upto 0.9 Km above mean sea level.
An upper air cyclonic circulation lies over south Chhattisgarh & neighbourhood and extends upto 0.9 Km above mean sea level.
The upper air cyclonic circulation over western parts of west central Arabian Sea & neighbourhood extending upto 1.5 km above mean sea level persists.
The upper air cyclonic circulation over southwest Rajasthan & adjoining south Pakistan extending upto 2.1 Km above mean sea level has become less marked.
The upper air cyclonic circulation over north Chhattisgarh & neighbourhood and trough from this system to north coastal Andhra Pradesh across interior Odisha extending upto 0.9 km above mean sea level both have become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

Current Observation (based on 0900UTC imagery of INSAT 3D):

Convective Activity:

Cell No	Date/time (UTC)	Location/Area	MIN CTT (- DEG C)	Movement	Remarks
1	24/0900	C Odisha	82	--	Developing

Western Disturbance:
Scattered multi-layered clouds seen over J & K, Himachal Pradesh & Uttarakhand in association with WD over the Area.
Cloud Description:
Scattered low/medium clouds with embedded intense to very intense convection were seen over C Odisha and EC Bangladesh. Scattered low/medium clouds with embedded moderate to intense convection were seen over central parts of W Rajasthan and Nicobar Islands. Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over E Assam, Nagaland and coastal Andhra Pradesh. Scattered low/medium clouds were seen over N Punjab, S Haryana, SE Uttar Pradesh, rest parts of W Rajasthan, Madhya Pradesh, Maharashtra, rest parts of East India and rest parts of South India except Telangana.

Arabian Sea:
Scattered low/medium clouds with embedded moderate to intense convection were seen over South Arabian Sea.
Bay of Bengal & Andaman Sea:
Scattered low/medium clouds with embedded intense to very intense convection were seen over S Bay of Bengal. Scattered low/medium clouds with embedded moderate to intense convection were seen over Andaman Sea.
Past Weather:
Convection:-
Moderate to Intense convection was observed over J&K Himachal Pradesh North Rajasthan Uttarakhand Bihar Jharkhand West Bengal Meghalaya North East States Andhra Pradesh Karnataka Kerala Tamilnadu.
OLR:-
Upto **230** wm^{-2} was observed over East J&K North-East Jharkhand Sikkim South Interior Karnataka Tamilnadu.
North North-West Uttar Pradesh Sikkim West Assam East Meghalaya West Gangetic West Bengal South Andhra Pradesh.
Upto **250** wm^{-2} was observed over Rest J&K Himachal Pradesh Uttarakhand South-East Bihar East Assam Arunachal Pradesh North Nagaland Kerala South Andhra Pradesh.
Westerly Trough & Jet-Stream:
Trough in Westerlies runs roughly along Longitude 72.0E north of Latitude 30.0N.
No Jet Stream observed over India.
Dynamic Features:
Low to Medium wind shear is observed over India.
Negative shear tendency is observed over North coastal Andhra Pradesh Coastal Odisha and Positive shear tendency is observed over rest parts of India
A positive Vorticity field is observed over South Uttar Pradesh Saurashtra Telangana North Interior Karnataka Coastal Odisha.
Positive low level convergence is observed over North India and Saurashtra South Chhattisgarh Karnataka Andhra Pradesh Odisha West Bengal and Negative low level convergence observed over rest parts of India.
Precipitation:
IMR:
Rainfall Up to **50** mm was observed over South Interior Karnataka North East Jharkhand East Meghalaya. Rainfall Up to **20** mm was observed over E Bihar West Assam. Rainfall Up to **10** mm was observed over East J&K South Himachal Pradesh West Uttarakhand North-West Rajasthan Coastal Odisha Rest Bihar Sikkim Rest Assam Nagaland North East Tamilnadu Andhra Pradesh South Kerala.
HEM:.
Rainfall Up to **70** mm was observed over South Interior Karnataka Meghalaya.
Rainfall Up to **14** mm was observed over West Himachal Pradesh South-West Uttarakhand West Assam East Arunachal Pradesh North-East Andhra Pradesh.
Rainfall Up to **07** mm was observed over North West Rajasthan Bihar North-East Jharkhand North West Bengal Rest Assam Nagaland Tamilnadu Kerala

RADAR and RAPID Observation:

DWR Composite at 1600hrs IST indicated significant convection over Odisha, Rayalaseema, extreme NE Jharkhand, E Rajasthan and N Tamilnadu. Multiple echoes with max dBZ >52 and height >15km were seen in DWR Paradeep at 1102UTC (1632hrs IST). Isolated/multiple echoes with dBZ around 50 and height 9-12km were also observed in DWR Jaipur at 1112UTC (1642hs IST).
RAPID RGB Satellite imagery at 1530hrs IST indicated significant convective clouds over Odisha, East Rajasthan, J & K, Himachal Pradesh, Uttarakhand, Coastal Andhra Pradesh, Rayalaseema, Tamilnadu, Kerala and Andaman & Nicobar Islands.

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

Higher Dust concentration was observed over north-west Africa and Arab countries. Dust concentration is expected to increase over north-west India for next five days. High PM10 concentration was observed over Rajasthan and is expected to increase over north India in next five days.

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

12UTC Charts of Day 0-4 show evolution of heat low over NW India and adjoining Pakistan with MSLP values lower than 992hPa on Day-3 to Day-4.

12UTC charts on days from Day0-2: show a zones of wind discontinuity at 925 hPa : SW-NE extending from NIK-Maharashtra region to Jharkhand and WB region. In Day 3-4 discontinuity confines to AP, Odisha and Jharkhand

A CYCIR is seen over Arabian Sea: from Day-0 to Day-3 moving north westwards.

A CYCIR is seen over Bay fo Bengal: from Day-1 to Day-4 moving northwards reaching Myanmar coast on Day-5 00UTC System intensifies as the 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

3. Convergence at 850 hPa:

(**Day/Index : Subdivisions with Lower Level Convergence > 15 x 10^-5 /s):**

Day0: Jharkhand, Odisha, Chhattisgarh, Telangana
Day1: Jharkhand, Bihar, Madhya Maharashtra, Chhattisgarh, SI Karnataka
Day2: Bihar, Odisha, West MP, NI Karnataka
Day3: Jharkhand, East UP, West UP, Hry Chd Delhi, Odisha, Vidarbha, Chhattisgarh, TN Puducherry
Day4: Gangetic WB, Jharkhand, Odisha, Chhattisgarh

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

(Day/Index : Subdivisions with Lower Level Vortex > 15 x 10^-5 /s):

Day0: Arunachal Pradesh, Assam Meghalaya, Telangana,
Day1: Jharkhand, Bihar, Konkan Goa, TN Puducherry,
Day2: Assam Meghalaya, Bihar, East UP, Himachal Pradesh, TN Puducherry,
Day3: Jharkhand, East UP, West UP, Hry Chd Delhi, Himachal Pradesh, TN Puducherry,
Day4: Assam Meghalaya, Jharkhand, Bihar, Saurashtra Kutch, Chhattisgarh, TN Puducherry

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

(Day/Index : Subdivisions with Showalter Index < -4):

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, Odisha, East MP, Chhattisgarh, Coastal AP, Telangana, TN Puducherry, SI Karnataka

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

(Day/Index : Subdivisions with K Index > 40):

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, West MP, Madhya Maharashtra, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, Guj Reg, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,
Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, SI Karnataka,
Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Madhya Maharashtra, Marathawada, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka

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

(Day/Index : Subdivision with Total Totals Index > 52):

Day0: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, Saurashtra Kutch, Coastal AP, Telangana, Coastal Karnataka, SI Karnataka,
Day1: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Himachal Pradesh, Jammu Kashmir, TN Puducherry,
Day2: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Chhattisgarh, Coastal AP, Telangana,
Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, Chhattisgarh, Coastal AP, Telangana,
Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Hry Chd Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West RJ, East RJ, Odisha, East MP, Marathawada, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka

8. Rainfall and thunder storm activity:

(Day/Index : Subdivisions with Precipitation > 2 cm):

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Himachal Pradesh, Odisha,
Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Andaman Nicobar, TN Puducherry, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, East UP, Uttarakhand, Andaman Nicobar, Kerala,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, East UP, West UP, Uttarakhand, Andaman Nicobar,
Day5: Arunachal Pradesh, NE NMMT, Bihar, East UP, Odisha, Andaman Nicobar, Kerala.

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

1. Weather Systems:

00 UTC analysis shows an east west trough over Haryana, UP, Bihar, Jharkhand and adjoining areas. The trough now has a N-S component extending along Bihar, interior MP and adjoining areas and is seen persisting during next 4 to 5 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 few pockets in the north eastern states, Interior MP, AP and Karnataka and over few pockets in the south peninsular region. The high vorticity belts are mainly confined over regions of Bihar, MP, AP and south peninsular region during next 3 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, Odisha, Coastal AP and also over few regions in Gujarat in the analysis. Forecast shows high threshold values over west coast of India mainly over the Gujarat and Maharashtra coast and regions over Bihar, Odisha, GWB, coastal AP and TN for the next 3 days.

Lifted Index (< -2): The areas with index less than -2 lies along east UP, Bihar, Chhattisgarh, GWB and major regions of AP and TN along with major regions along the west coast for the next 3 days.

Sweat Index (> 400): 00UTC shows significant values over major parts over Bihar, GWB, Odisha, Coastal AP, TN and over major regions bordering the west coast of the country and is expected to persist for the next 3 days.

CAPE (> 1000): Mostly along east coast of India, Bihar, GWB, Odisha, and AP and along major regions bordering the west coast during the next 3 days.

CIN (50-150): Maximum CIN values are found in areas over Bihar, GWB, Odisha, AP and TN along with major pockets in the Gujarat region for the next 2-3 days.

5. Rainfall and thunderstorm activity:

10-40 mm rainfall is forecasted tomorrow over major pockets over Kerala, north eastern states and over isolated pockets in WB and is expected to persist for the next 5 days.

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

1. Model Reflectivity (Max.dBz):

15-40 dBZ over isolated pockets of the south peninsular and in the north eastern region today
15-40 dbz over major parts of the north eastern states and few pockets over Bihar during day2

2. Spatial distribution of Total Total Index, K-Index, CAPE and CIN [High potential for thunderstorm]

CAPE (> 1000): Mostly along Bihar, Jharkhand, GWB, Odisha, AP and TN and along major regions bordering the west coast during next 3 days.

CIN (50-150): Higher values over most regions of India except over central India, J & K region and NE states during next three days

3. Rainfall and thunderstorm activity:

10-40 mm over isolated pockets in the north eastern region and it is expected to persist for the next 3 days and 10-40 mm over the Himalayan foothills during day3.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day-1 & Day-2:

Presently an upper air cyclonic circulation lies over south Chhattisgarh & neighbourhood and extending upto 0.9 Km above mean sea level. There is a trough from eastern parts of Bihar to north coastal Andhra Pradesh across interior Odisha and extends upto 0.9 Km above mean sea level. These two systems together is likely to cause thunderstorms with squall or gust on day 1 over the eastern states and peninsular India. The activity will reduce on day 2 and will occur only over Kerala, Coastal and south interior Karnataka, Tamil Nadu and Orissa.

The Western Disturbance as an upper air cyclonic circulation over eastern parts of Jammu & Kashmir with a trough aloft is not likely to cause severe weather over the region.

24 hour Advisory for IOP:

Kerala, South Interior Karnataka, Coastal Karnataka, Tamilnadu, North Coastal Andhra Pradesh, Telengana, Rayalaseema
Orissa, Jharkhand, Gangetic West Bengal,
Assam & Meghalaya, NMMT
East Rajasthan

48 hour Advisory for IOP:

Kerala, South Interior Karnataka, Coastal Karnataka, Tamilnadu
Orissa, Gangetic West Bengal, Assam

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 RAPID tool:
http://rapid.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
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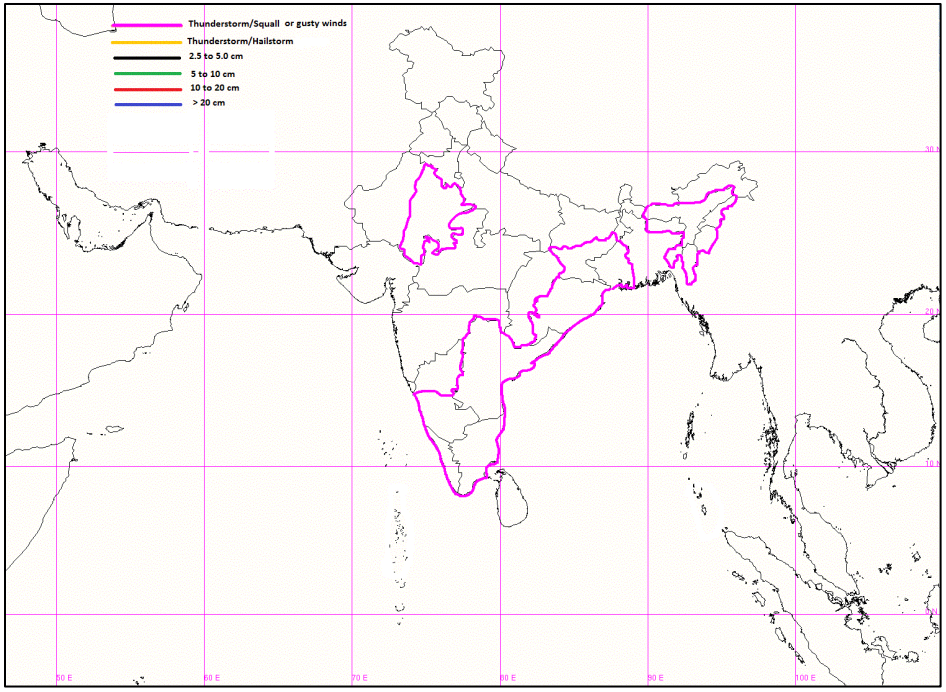
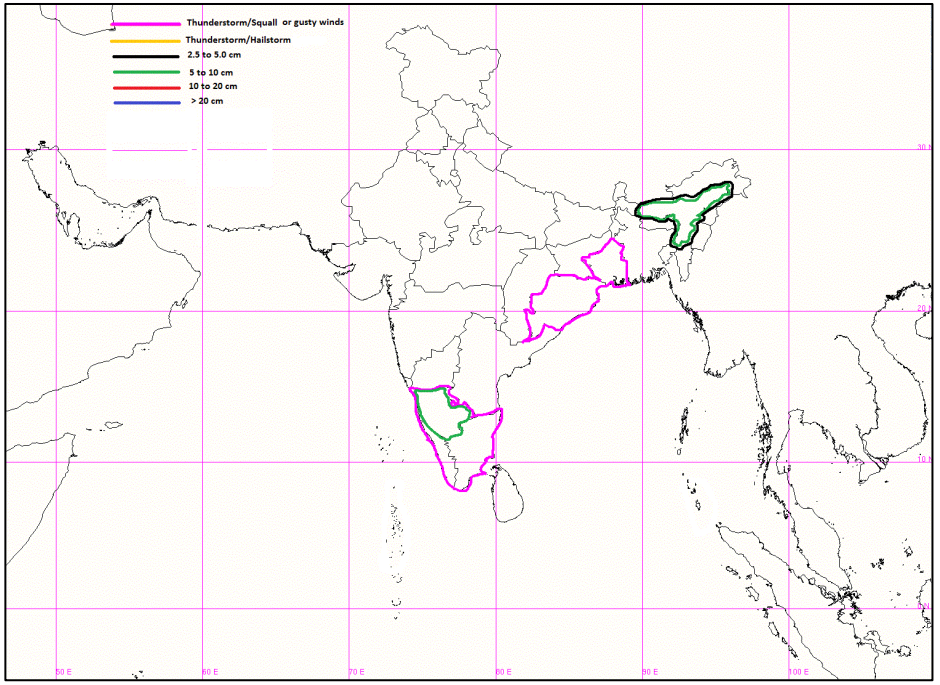
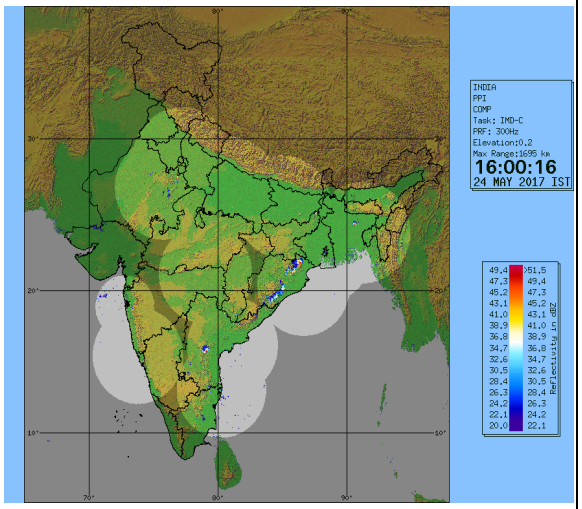
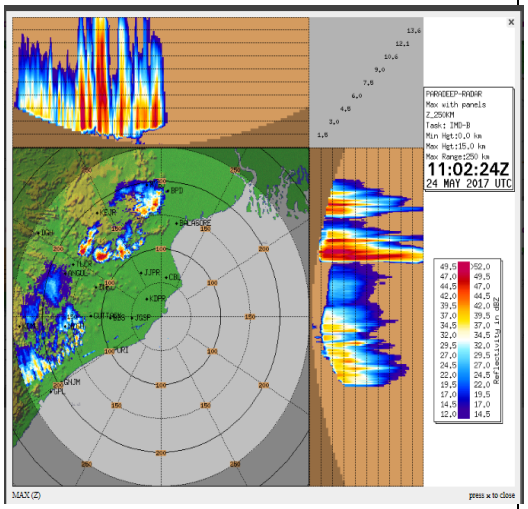
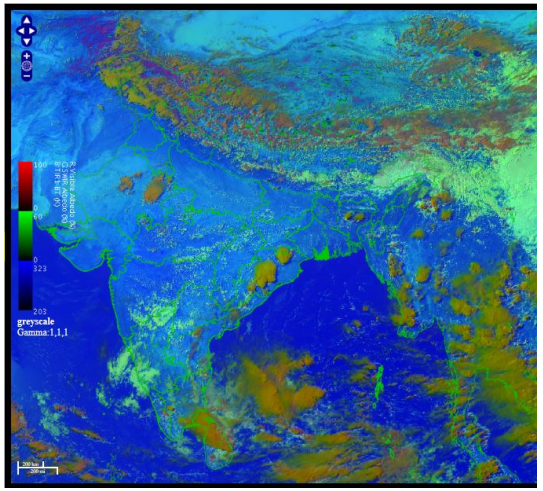
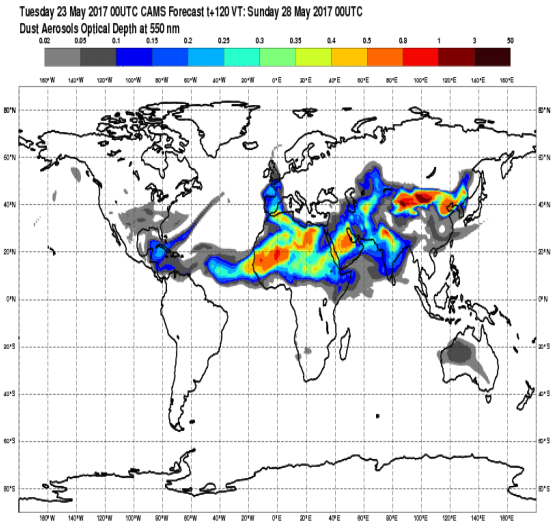


IOP Advisory for 24 hours

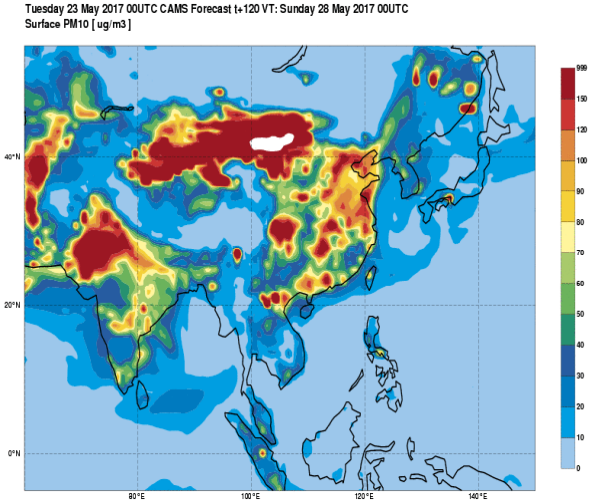


IOP Advisory for 48 hours

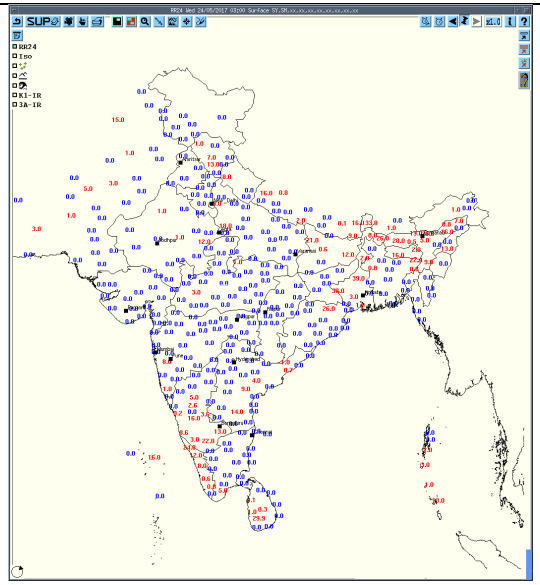
		
DWR Srinagar at 1600hrs IST	**DWR Paradeep at 1102UTC** **(1632hrs IST)**	**RAPID RGB Satellite Imagery at 1530 hrs IST of today**



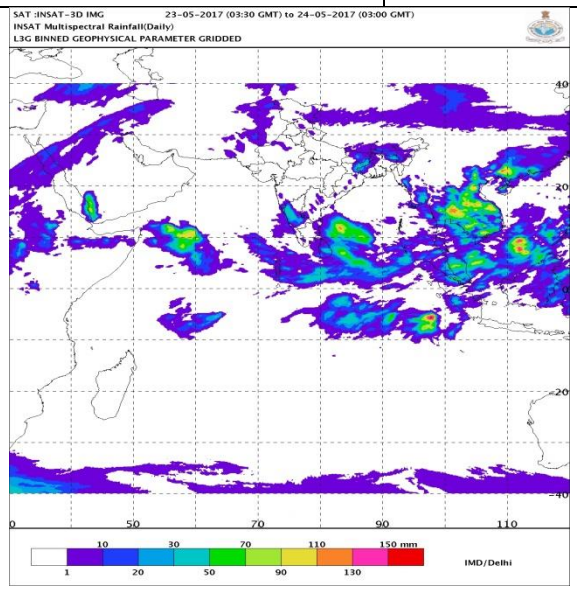
Forecast Dust Concentration for 00UTC of 28th May



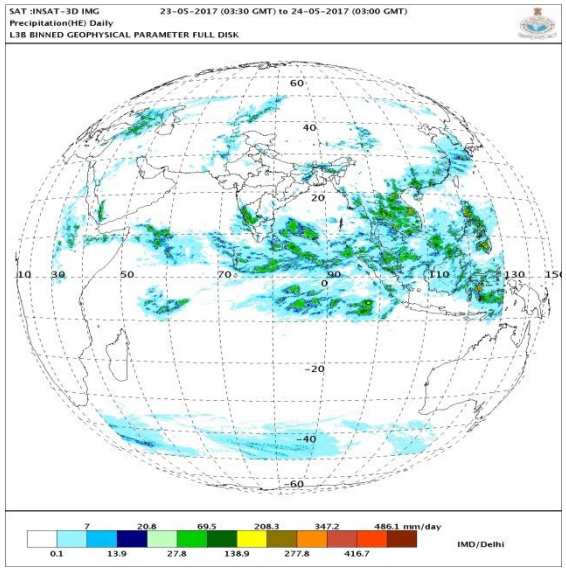
PM10 Forecast for 00UTC of 28th May



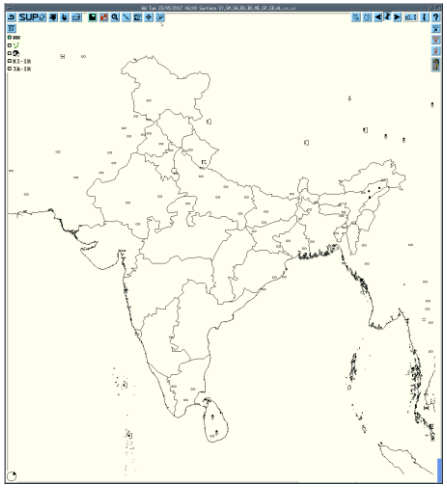
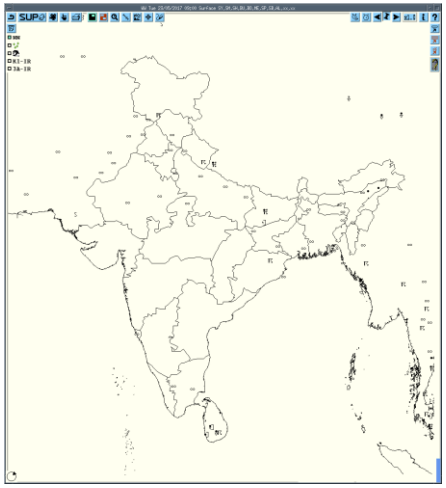
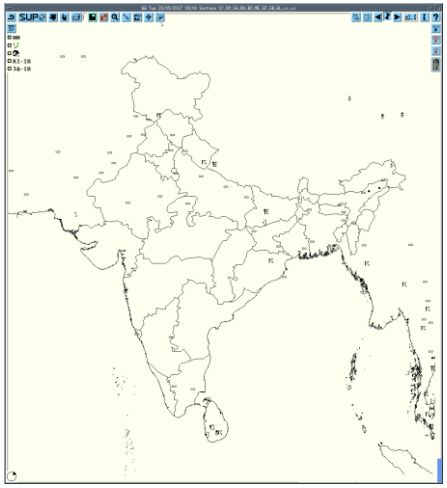
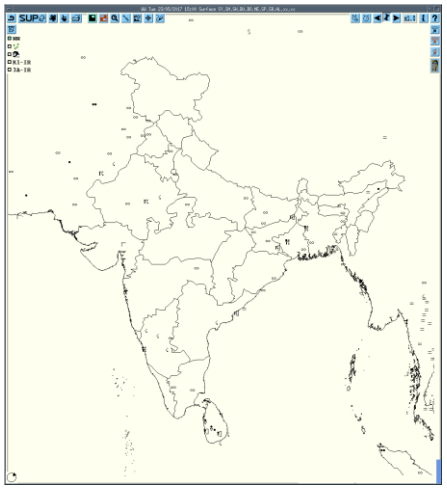
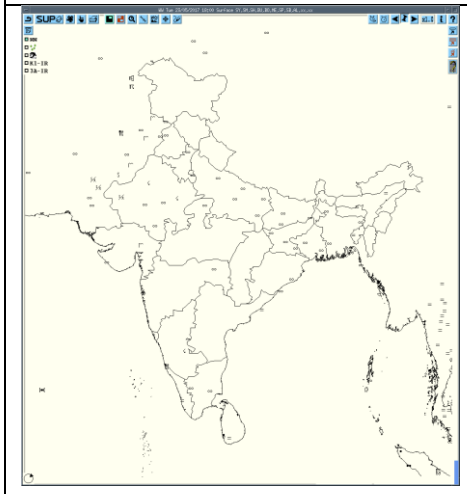
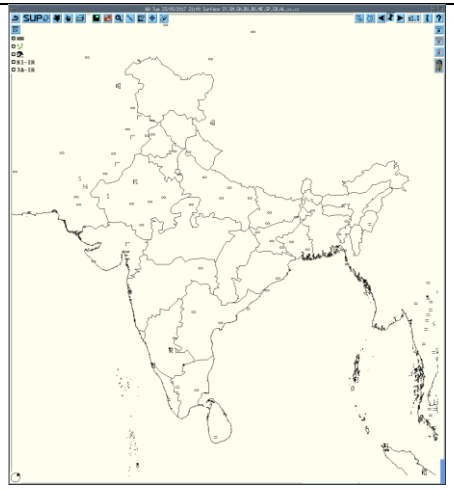
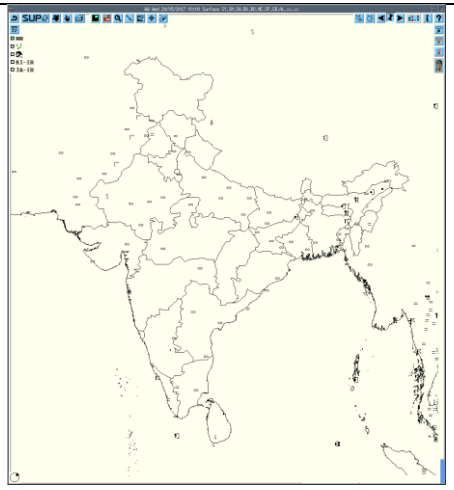
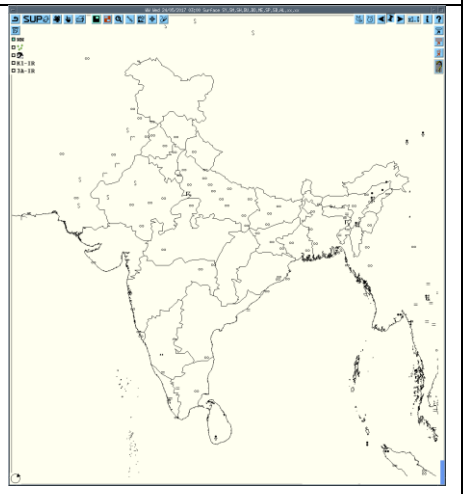
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



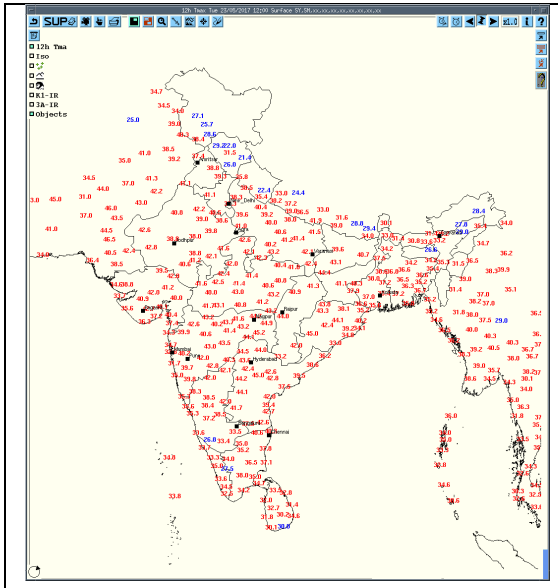
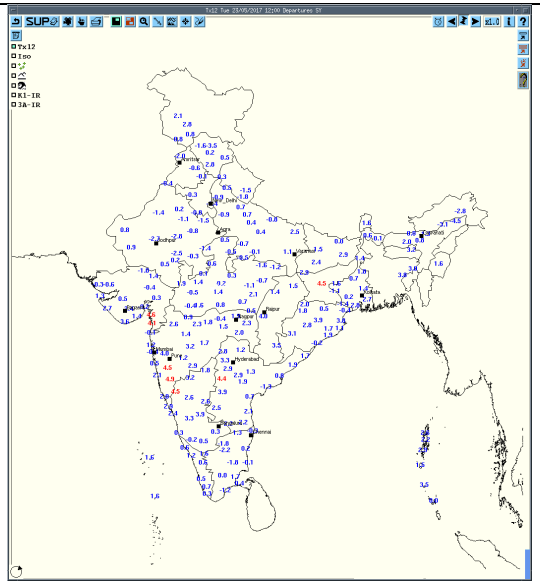
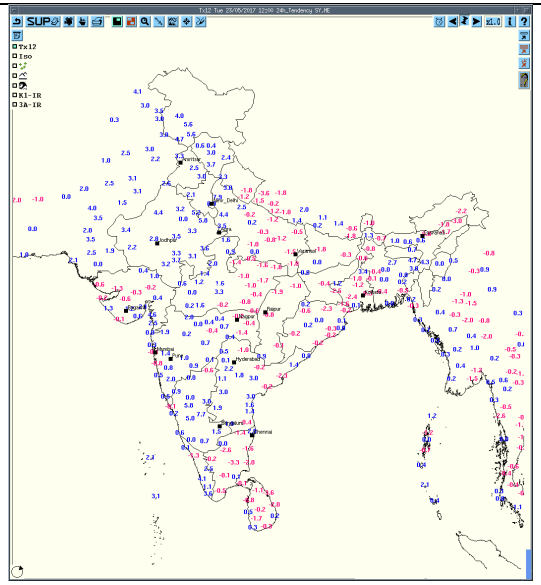
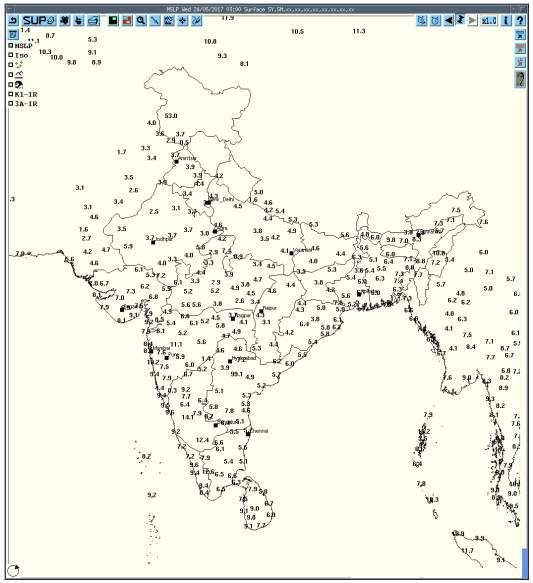
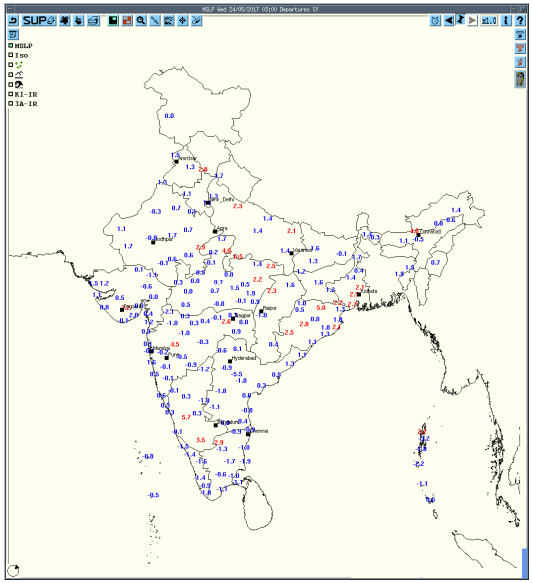
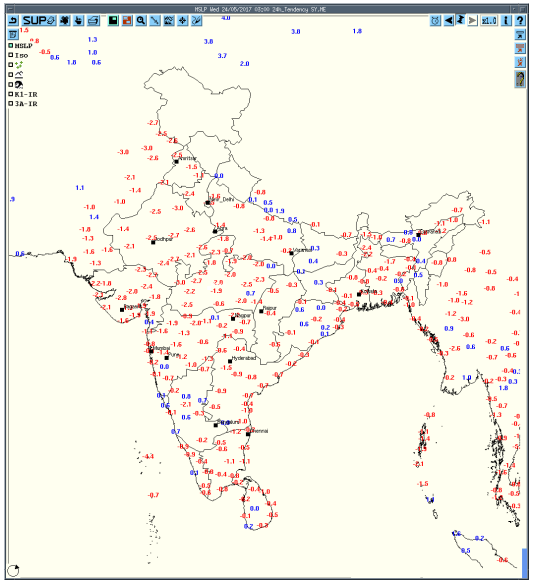
IMR Rainfall

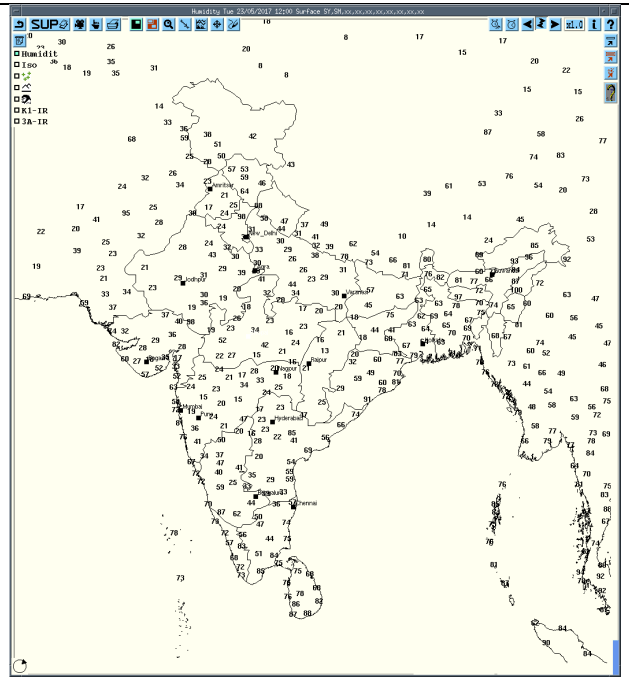
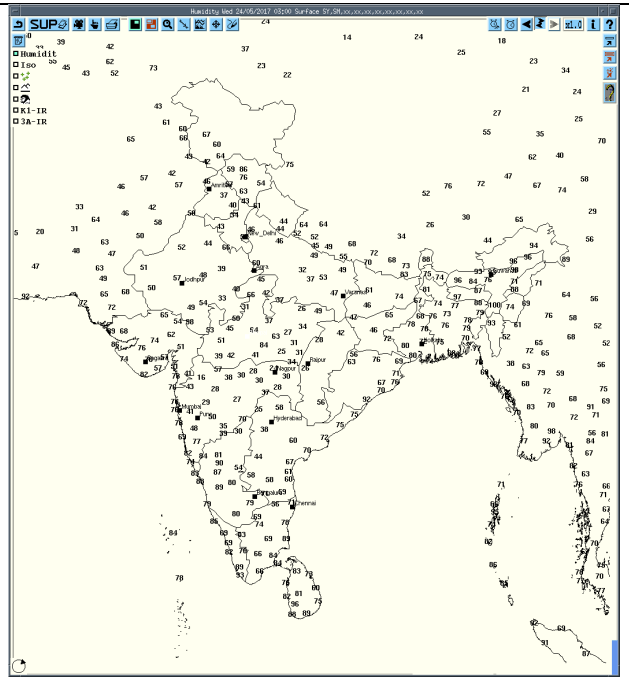


HEM Rainfall

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**

Realised past 24hrs TS/SQ/HS Data (reported at 0300UTC of the day):

Realized weather past 24hours (Based on SYNERGIE Products)					
Date	**Time of Reporting**	**Name of Station Reporting**	**Region**	**STATE**	**Weather Event**
23-05-17	0600UTC	Mukteshwar	NW India	Uttarakhand	Thunderstorm
23-05-17	0900UTC	Bhaderwah	NW India	J & K	Thunderstorm
		Mukteshwar	NW India	Uttarakhand	Thunderstorm
		Patna	E India	Bihar	Thunderstorm
		Keonjhargarh	E India	Odisha	Thunderstorm
23-05-17	1200UTC	Sundernagar	NW India	Himachal Pradesh	Thunderstorm
		Dehradun	NW India	Uttarakhand	Thunderstorm
		Indore	C India	Madhya Pradesh	Thunderstorm
		Panagarh, Shantiniketan	E India	West Bengal	Thunderstorm
		Pune, Mahableshwar	W India	Maharashtra	Thunderstorm
		Satna	C India	Madhya Pradesh	Thunderstorm
		Sangli	W India	Maharashtra	Thunderstorm
		Belgaum, Gadag, Haveri	S India	Karnataka	Thunderstorm
		Anantapur, Vijayawada	S India	Andhra Pradesh	Thunderstorm
23-05-17	1500UTC	Ajmer,	NW India	Rajasthan	Thunderstorm
		Purnea	E India	Bihar	Thunderstorm
		Jamshedpur	E India	Jharkhand	Thunderstorm
		Bankura	E India	West Bengal	Thunderstorm
		Honavar	S India	Karnataka	Thunderstorm
		Tuni	S India	Andhra Pradesh	Thunderstorm
23-05-17	1800UTC	Bajpe	S India	Karnataka	Thunderstorm
23-05-17	2100UTC	Bikaner	NW India	Rajasthan	Thunderstorm
		Chitradurga, Bajpe	S India	Karnataka	Thunderstorm
24-05-17	0000UTC	Tezpur	NE India	Assam	Thunderstorm
		Shillong	NE India	Meghalaya	Thunderstorm
		Kailasahar	NE India	Tripura	Thunderstorm
24-05-17	0300 UTC	Agartala	NE India	Tripura	Thunderstorm
		Jorhat, Silchar	NE India	Assam	Thunderstorm
		Alappuzha	S India	Kerala	Thunderstorm

Realised 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)**
Bhaderwah	Northwest India	Jammu & Kashmir	Thunderstorm	23-05-17	1345	1445
Ajmer	Northwest India	Rajasthan	Thunderstorm	23-05-17	1900	2045
Vanasthali	Northwest India	Rajasthan	Thunderstorm	23-05-17	1730	1830
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	23-05-17	1455 1729	1729 1815
Dehradun	Northwest India	Uttarakhand	Thunderstorm	23-05-17	1605	1800
Dehradun	Northwest India	Uttarakhand	**Squall(Direction: NE, Max. speed 40 Kmph)**	23-05-17	1615	1635
Pantnagar	Northwest India	Uttarakhand	Thunderstorm	23-05-17	1630	1800
Mukteshwar	Northwest India	Uttarakhand	Thunderstorm	23-05-17	1030	1530
Tehri	Northwest India	Uttarakhand	Thunderstorm	23-05-17	1420 1505	1500 1630
Tehri	Northwest India	Uttarakhand	**Hail (Diameter: 0.5 cm)**	23-05-17	1500	1505
Indore	Central India	Madhya Pradesh	Thunderstorm	23-05-17	1520	1750
Jorhat	Northeast India	Assam	Thunderstorm	24-05-17	0200	0830
Guwahati	Northeast India	Assam	Thunderstorm	24-05-17	0400	0505
Tezpur	Northeast India	Assam	Thunderstorm	24-05-17	0240	0555
Silchar	Northeast India	Assam	Thunderstorm	24-05-17	0650	0830
Shillong	Northeast India	Meghalaya	Thunderstorm	24-05-17	0500	0710
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	24-05-17	0530	0615
Barapani	Northeast India	Meghalaya	Thunderstorm	24-05-17	0630	0710
Kailasahar	Northeast India	Tripura	Thunderstorm	24-05-17	0645	0700
Malda	East India	West Bengal	Thunderstorm	23-05-17	1745	1900
Malda	East India	West Bengal	Lightning	23-05-17	1800	1915
Asansol	East India	West Bengal	Thunderstorm	23-05-17	1630	2030
Asansol	East India	West Bengal	Lightning	23-05-17	1630	2100
Patna	East India	Bihar	TS/ Lightning	23-05-17	1320	1725
Bhagalpur	East India	Bihar	TS/ Lightning	23-05-17	1740	1840
Purnia	East India	Bihar	TS/ Lightning	23-05-17	1935	1950
Keonjhargarh	East India	Odisha	Thunderstorm	23-05-17	1400	1600
CIAL Kochi	South India	Kerala	Thunderstorm	23-05-17	2030	2140
Kannur	South India	Kerala	Thunderstorm	24-05-17	0510	0535
Karipur A P	South India	Kerala	Thunderstorm	24-05-17	0115	0215
Kozhikode	South India	Kerala	Thunderstorm	24-05-17	0545	0625
Tuni	South India	Andhra Pradesh	Thunderstorm	23-05-17	2000	2015
Vijayawada AP	South India	Andhra Pradesh	Thunderstorm	23-05-17	1645	2045
Kanyakumari	South India	Tamilnadu	Thunderstorm	23-05-17	2315	0045
Bajpe	South India	Karnataka	Thunderstorm	23-05-17	2150	2400
Bajpe	South India	Karnataka	Thunderstorm	24-05-17	0000	0230
Bengaluru City	South India	Karnataka	Thunderstorm	24-05-17	0015	0100

					0200	0235
Bengaluru City	South India	Karnataka	**Squall(Direction: N, Max. speed 60 Kmph)**	24-05-17	0035	0036
Bengaluru HAL	South India	Karnataka	Thunderstorm	24-05-17	0017	0115
Yelahanka IAF	South India	Karnataka	Thunderstorm	23-05-17	2245	2400
Yelahanka IAF	South India	Karnataka	Thunderstorm	24-05-17	0000	0200
Bengaluru KIAL	South India	Karnataka	Thunderstorm	23-05-17	0009	0250
Chitradurga	South India	Karnataka	Thunderstorm	23-05-17	1735	1820
Chitradurga	South India	Karnataka	Thunderstorm	24-05-17	0045	0235

Past 24 hours DWR Report:

Radar Station name	**Date of Reporting**	**Time interval of observation (UTC)**	**Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity**	**Formation w.r.t radar station and Direction of movement**	**Remarks**	**Associated severe weather if any**	**Districts affected**
Patiala	24-05-17	230300-230900	NO SIGNIFICANT ECHO	---------.	-------	--------	----------
		230900-231200	Multiple cells Max= 57.0 dBz Ht.= 12-13 km	IN NE AND ESE DIR. MOVEMENT IN N TO NW DIR	-------	--------	SOLAN,MANDI,BILASPURAND CHAMBA
		231200-231500	Multiple cells Max= 56.5 dBz Ht.= 10-12 km	IN NE AND ESE DIR. MOVEMENT IN N TO NW DIR	-------		DDN,MUSSORIE, MANDI AND BILASPUR
		231500-240000	NO ECHO				
		240000-240252	Multiple Cells Max dbz=46.5 HT 9-11 KM	FORMATION IN SOUTH DIR AND MOVEMENT IN SE DIRECTION	----------	----------	BHIWANI

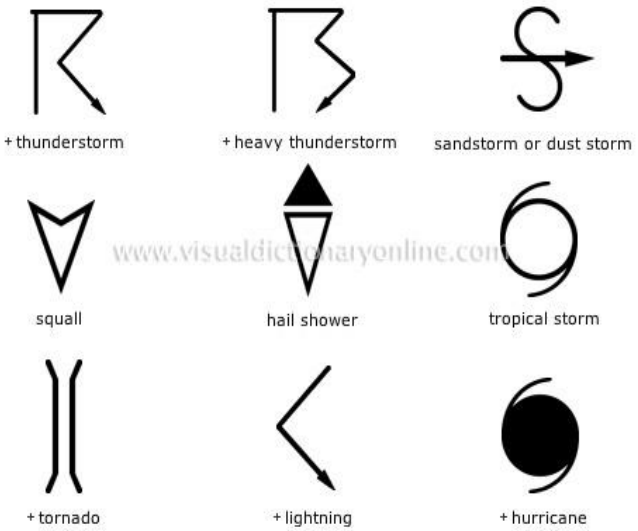
Patna	24-05-17	230300 - 230620	NIL	NIL	NIL	N/A	N/A
		230620 - 231300	Multiple Cell. Maximum Reflectivity : 54.0 dBZ Echo Top : 11.6 KM	Range: 90 km WEST from DWR Patna Movement- EASTERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	Thunderstorm with Rain and gusty wind.	BUXAR., BHOJPUR, SIWAN, SARAN, VAISHALI, PATNA, JEHANABAD, MUZAFFARPUR, SAMASTIPUR, NALANDA , NAWADA, BEGUSARAI, KHAGARIA, MUNGER, LAKHISARAI, SHEIKHPURA, JAMUI, BANKA, BHAGALPUR
		231300 - 240300	NIL	NIL	NIL	N/A	N/A
Kolkata	24-05-17	230301 – 230911	NIL	NIL	NO ECHO	NIL	NIL
		230921 – 231731	1.Multicelled system with maximum reflectivity of 65.5 dBz at 0931 UTC and maximum height of 17.8 km at 1121 UTC	1. NW (249 km) moving in E-ly/ SE-ly direction with a speed of 48 kmph.	1. Multicelled system coming from NW at a distance of 249 km from Radar at 0921 UTC. Cell no 2 merged at 1121 UTC. Matured and Dissipated at 1601 UTC in NNE	Hailstorm/Thunderstorm /Squall/ Rain	N/A
			2.Isolated single cell with maximum reflectivity of 67.0 dBz at 0941 UTC and maximum height of	2.WNW (249 km) moving in E-ly/ SE-ly direction with a speed of 50 kmph.	2. Isolated single cell coming from WNW at a distance of 249 km from Radar at 0931 UTC. Matured and merged	Hailstorm/Thunderstorm /Squall/ Rain	N/A

			14.5 km at 0941 UTC		with cell no. 1 at 1121 UTC.		
			3.Isolated single cells with maximum reflectivity of 64.0 dBz at 1111 UTC and maximum height more than 18 km at 1221 UTC	3.WNW (245.5 km) moving in E-ly/ SE-ly direction with a speed of 25 kmph.	3. Isolated single cells coming from WNW at a distance of 245.5 km from Radar at 1101 UTC. Merged and matured	Hailstorm/Thunderstorm /Squall/ Rain	N/A
		240000 – 240300	NIL	NIL	NO ECHO	NIL	NIL
Jaipur	24/05/17	230504-231922	multiple cells with average height of 6.0 km maximum reflectivity 57.0 dBZ	Cell develop 0504 to 1022 UTC of 23/07/17 towards NW of jaipur and movment SE at speed 20-35 km/hr	Cells continuous forming from 0504UTC NW of Jaipur and maximum refelectivity during 0952-1232 UTC and died down at 1922 UTC	Moderate Thunderstorm at a few plces and isolated places	Nagaur,jhunjhunu, sikar,jaipur,dausa, alawar,bharatpur,karauli tonk districts
		231922-232252	single cells with average height of 4.5 km maximum reflectivity 52.5 dBZ	Single Cell develop 1922 UTC towards North West of Jaipur and movment towards South at speed 30-45 km/hr.	Cell continuous forming from 1922 UTC North West of Jaipur and maximum refelectivity during 2022 to 2122 UTC and died down at 2252 UTC		Nagaur,Ajmer districts.
		232252-240302	Multiple cells with average height of 4.0 km and maximum refelecity 55.0 dbz	Multiple cells develop 2252 utc towards NW,ENE of jaipur and movement towards sw wards	Cell continuous forming from 2252 UTC North east of Jaipur and maximum refelectivity during 0022 to 0122 UTC and contin upto 0302 UTC(24/05/2017		Alawar,bharatpur,jhunjhunu,dholpur,tonk,swaimadhopur districts
Lucknow	24-05-17	230300-240300	Nil	--	--	--	--
Nagpur	24-05-17	230302-240252	Nil	--	--	--	--
Bhuj	24-05-17	230430-231200	Nil	--	--	--	--

Karaikal	24-05-17	230300-240300	--	--	--	DWR U/S	
Paradeep	24-05-17	230800-232200	First isolated cell formed at Lat 21.6 deg N and Lon 85.5 deg E having reflectivity 38 dBZ with an average height of 06 kms at 1430 IST and dissipated after 2200 IST . Then second isolated cell formed having maximum reflectivity 36 dBZ with an average height of 05 kms at Lat 20.5 deg N and Lon 84.8 deg E and dissipated after 1900 IST.	Both cells formed in radius of 190 kms from station and moved towards NW direction.	NIL	Thunderstorm And Rain	Deogarh, Keonjhar, Anugul, Dhenkanal
Machilipatnam	24-05-17	230921-231221	Multiple cells average height of 7 km with maximum reflectivity of 58 dBZ	NE (213km) initially stationary and moving SW ly direction with average speed of 24 kmph	Cell started forming at 0921UTC, at NE (233km) from Radar the maximum reflectivity during 1021 to 1051 UTC and died down at 1221UTC	Possibility of Thunder storm with rain and light wind.	East Godavari District
		231251-231421	Isolated single cell average height of 7.5 km with maximum reflectivity of 57 dBZ	NE (202km) and moving S ly direction with average speed of 6 kmph	Cell started forming at 1251UTC, at NE (211km) from Radar the maximum reflectivity during 1311 to 1341 UTC and died down at 1421UTC	Possibility of Thunder storm and rain with light winds	East Godavari District

230931-231151	Isolated Multiple cell average height of 5.7 km with maximum reflectivity of 57 dBZ	NW(157km) and moving S ly direction with average speed of 11 kmph	Cell started forming at 0931UTC, at NW (186km) from Radar the maximum reflectivity during 1011 to 1111 UTC and died down at 1151UTC	Possibility of Thunder storm and rain with light winds	Mahabubabad and Khammam Districts
231201-231421	Isolated single cell average height of 6.6 km with maximum reflectivity of 64 dBZ	N(152km) stationary	Cell started forming at 1201UTC, at N (152km) from Radar the maximum reflectivity during 1231 to 1251 UTC and died down at 1421UTC	Possibility of Thunder storm and Hail with rain and moderate winds	Bhadradri Kothagudem District
231121-231321	Isolated Multiple cell average height of 5.2 km with maximum reflectivity of 58 dBZ	NW(91km) stationary	Cell started forming at 1121UTC, at NW (72km) from Radar the maximum reflectivity during 1201 to 1301 UTC and died down at 1321UTC	Possibility of Thunder storm with rain and light winds	Khammam and Krishna Districts
231241-231431	Convective region average height of 8.1 km with maximum reflectivity of 62.5 dBZ	WNW(93km) stationary	Cell started forming at 1241UTC, at WNW (93km) from Radar the maximum reflectivity during 1301 to 1401 UTC and died down at 1431UTC	Possibility of Thunder storm with hail and rain with moderate winds	Guntur District
231401-231601	Isolated single cells average height of 7.5 km with maximum	WSW(158km) and moving S ly direction with average speed of	Cell started forming at 1401UTC, at W (135km) from Radar the	Possibility of Thunder storm with	Guntur District

			reflectivity of 61 dBZ	18 kmph	maximum reflectivity during 1431 to 1541 UTC and died down at 1601UTC	hail and rain with moderate winds	
		231041-231401	Isolated single cell average height of 7 km with maximum reflectivity of 60 dBZ	SW(233km) and moving SW ly direction with average speed of 5 kmph	Cell started forming at 1041UTC, at SW (212km) from Radar the maximum reflectivity during 1221 to 1341 UTC and died down at 1401UTC	Possibility of Thunder storm with hail and rain with moderate winds	Prakasam District



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