India Meteorological Department

FDP STORM Bulletin No. 30 (05-04-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

♦ The feeble Western Disturbance as an upper air cyclonic circulation over north Pakistan & neighbourhood at 3.1 km above mean sea level now lies over north Pakistan & adjoining Jammu & Kashmir.

♦ The cyclonic circulation extending upto 0.9 km above mean sea level over Punjab and adjoining north Pakistan now lies over northeast Rajasthan & adjoining areas of West Uttar Pradesh and Haryana.

♦ The trough at 0.9 km above mean sea level now runs from the above cyclonic circulation to south Madhya Maharashtra across West Madhya Pradesh, western parts of Vidarbha and Marathwada.

♦ A Cyclonic Circulation at 1.5 km above mean sea level lies over northwest Uttar Pradesh & neighbourhood.

♦ The cyclonic circulation over northeast Jharkhand and adjoining Gangetic West Bengal now lies over north Jharkhand & neighbourhood and extends upto 1.5 km above mean sea level.

♦ The remnant Western Disturbance as a trough in mid & upper tropospheric westerlies with its axis at 7.6 km above mean sea level from east Arunachal Pradesh to north Bay of Bengal across Assam and Bangladesh has become less marked.

♦ A trough in westerlies at 7.6 km above mean sea level runs roughly along Long .86.0°E to the north of Lat. 20.0°N.

♦ A Cyclonic Circulation extending upto 1.5 km above mean sea level lies over Equatorial Indian Ocean adjoining south Sri Lanka.

♦ The trough in easterlies from Comorin area to South Interior Karnataka now runs from above cyclonic circulation to south interior Karnataka across interior Tamilnadu at 0.9 km above mean sea level.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Western Disturbance (WD):
Scattered low/medium clouds seen over Caspian Sea, Iran, West Persian Gulf, & neighbourhood, North Pakistan, Tibet and China in association with WD over the area.

Clouds descriptions within India:
Scattered low/medium clouds with embedded moderate to intense convection seen over Jammu & Kashmir, North Uttarakhand, East Punjab, Jharkhand, North Gangetic West Bengal, Sub Himalayan West Bengal, Assam, North Karnataka, South Telangana, and Bay Islands. Scattered low/medium clouds with embedded weak to moderate convection seen over South Punjab. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over Chhattisgarh, South Odisha, Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Meghalaya, Rajasthan.

Arabian Sea:
Scattered low/medium clouds with embedded weak to moderate convection seen over Central adjoining Northeast Arabian Sea.
Bay of Bengal & Andaman Sea:
Scattered low/medium clouds with embedded weak to moderate convection seen over Southeast Bay and Andaman Sea.

Convective Activity

Cell No.	Date/Time (UTC)	Area/ Location	Minimum CTBT (Minus deg C)	Movement/ Remarks
1	05/0300	North Punjab adjoining Jammu & Kashmir	63	--
	0400	DO	55	--
	0500	DO	52	--
	0600	DO	52	-
	0900	Punjab	-	Weak
2	05/0900	Jharkhand	53	Developing
3	05/0900	North GWB, SHWB	51	Developing
4	05/0900	West Assam	53	Developing
5	05/0900	North Karnataka	49	-

Past Weather:

Convection (during last 24 hrs):
Moderate to Intense convection was observed over J & K Haryana north Rajasthan north east Uttar Pradesh Bihar north east Odisha, Chhattisgarh north east Andhra Pradesh, Karnataka and weak to moderate convection observed over Gujarat, Madhya Pradesh, North-East States, Kerala.

OLR:
Upto 230 wm^{-2} was observed over J & K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, north Rajasthan, north east Bihar, west Gujarat, Gangetic west Bengal Telangana, south Kerala, Sikkim, Arunachal Pradesh, Assam, Meghalaya, Nagaland, Manipur.

Synoptic features: Trough in Westerlies: roughly along Longitude 85.0E & north of Latitude 20.0N

Dynamic Features:
Up to 40 Knots wind shear is observed over Southern Peninsula, Chhattisgarh and Orissa.
No Shear tendency is observed over India.
A positive Vorticity field (about 100 $x10^{-5}/s$) at 850 hPa is observed over North West Gujarat and Rajasthan.
Negative Low Level Convergence (-5 $x10^{-5}/s$) observed over Gujarat north Rajasthan Andhra Pradesh and north Tamilnadu and Positive Low Level Convergence is observed over rest India.

Precipitation:
IMR:
Rainfall upto 10-20 mm observed over south J & K, North Punjab and
Rainfall upto 1-10 mm observed over north and south J & K, rest north Punjab, north Rajasthan north Bihar, north east Odisha, south Chhattisgarh, north east Andhra Pradesh, north interior Karnataka, East Assam

Rainfall upto 01-14 mm observed over North west J & K north Punjab, north Uttrakhand, north Himachal Pradesh, north Bihar, north east Odisha, South Chhattisgarh, North east Andhra Pradesh, north interior Karnataka .

Convection (during last 24 hrs):

CELL NO.	DATE/ TIME (UTC)	AREA/ LOCATION	MINIMUM CTBT (MINUS DEG C)	MOVEMENT/ REMARKS
1	04/1100	Northeast Odisha	62	STATIONARY
	1200	DO	52	
2	04/1100	EXT S Odisha adjoining Chhattisgarh & Coastal Andhra Pradesh	52	
	1200	DO	51	
	1300	DO-	48-	
	1400	DO	47	
	1500	DO	41	
	1600	DO	45	
	1700	-	-	DISSIPTED
3	04/1200	Central Karnataka	61	DEVELOPING
	1300	-	-	DISSIPTED
4	05/0100	North Punjab adjoining Jammu & Kashmir	59	STATIONARY
	05/0200	DO	61	
	05/0300	DO	63	
	05/0400	DO	55	
	05/0500	DO	52	
	05/0600	DO	52	

RADAR and RAPID RGB Observation:

Strong isolated/multiple echoes were seen on DWR Kolkata (dBZ > 50 and height > 10km) and Moderate to isolated/multiple echoes were seen on DWR Agartala, Nagpur and Hyderabad (dBZ around 50 and height around 10km) at around 1330 IST.

RAPID RGB RAPID RGB Satellite imagery at 1630IST indicates significant convection over Jammu & Kashmir, Himachal Pradesh, North Uttarakhand, Sub Himalayan West Bengal, North Odisha adjoining Jharkhand, West Assam, West Meghalaya, South Manipur, East Vidarbha, North Interior Karnataka and Telangana.

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

Higher Dust concentration was observed over Arab countries and western part of India. Dust concentration is expected to remain same over north-western part of India for next few days.

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

Delhi – SAFAR analysis & Forecast	05.04.2018	06.04.2018
PM10 (micro-g/m^3)	304	350
PM2.5 (micro-g/m^3)	122	140

2. NWP MODEL GUIDANCE:

NCMRWF (NCUM forecast based on 00UTC the day):

1. Weather Systems:

Low level CYCIRs, Troughs: 12 UTC of Day 0-1:

00 UTC of Day 1: Lower level trough from Central to Peninsular India
00 UTC of Day 1-4: at 700 hPa over East, NE & Bangladesh region

Confluence & Wind Discontinuity regions:
12 UTC of Day 0-4: 925 hPa wind discontinuity over interior peninsula extending over Chhattisgarh, Jharkhand and WB region

Synoptic Systems:.
12 UTC of Day 0-4: At 700 hPa an anticyclone over Gujarat expands and evolves in to an elongated E-W ridge near 20N covering west coast to east coast.
00 UTC of Day 4-5: Western Disturbance over J & K
00 UTC of Day 2-4: Strong easterlies over Indo Gangetic Plains. South easterlies from Bay of Bengal lead to moisture incursion over Indian land

2. Convergence at 850 hPa:

Day/Index: Subdivisions with Lower Level Convergence > 15 x 10^-5 /s
Day0: Jharkhand, West UP, East RJ, West MP, East MP, Madhya Maharashtra, Marathwada, Chhattisgarh, Tamilnadu Puducherry, NI Karnataka, SI Karnataka, Kerala,
Day1: Gangetic WB, Jharkhand, Odisha, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, NI Karnataka, SI Karnataka, Kerala,
Day2: Bihar, East UP, Odisha, Madhya Maharashtra, Marathwada, Coastal AP, Tamilnadu Puducherry, SI Karnataka, Kerala,
Day3: Gangetic WB, Jharkhand, Odisha, West MP, Tamilnadu Puducherry, SI Karnataka, Kerala,
Day4: West UP, Haryana, Chandigarh, Delhi, East RJ, West MP, East MP, Tamilnadu Puducherry, SI Karnataka,

3. Low level Vorticity:-Positive Vorticity:

Day/Index: Subdivisions with Lower Level Vorticity > 15 x 10^-5 /s
Day0: Jharkhand, East RJ,
Day1: Gangetic WB, Jharkhand,
Day2: East UP, West UP, Jammu Kashmir,
Day3: Assam Meghalaya, Gangetic WB, Jharkhand,
Day4: Arunachal Pradesh, Assam Meghalaya, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab,

4. 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, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Coastal AP, Telangana, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Tamilnadu Puducherry, Coastal Karnataka, SI Karnataka, Kerala,
Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

5. Spatial distribution of TTI:

Day/Index Subdivision with Total Totals Index > 52

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

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Bihar, Uttarakhand, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day1: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, West UP, Uttarakhand, Odisha, Chhattisgarh, Coastal AP, Rayalaseema, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Odisha, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,
Day4:Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, Tamilnadu Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala

7. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Bihar, Andaman Nicobar, Kerala,
Day2: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Gangetic WB, Odisha, Andaman Nicobar,
Day3: Gangetic WB, Jharkhand, Bihar, East UP, Telangana, NI Karnataka,
Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Jammu Kashmir, Odisha, Andaman Nicobar, NI Karnataka,
Day5: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, West UP, Punjab, Jammu Kashmir, Chhattisgarh, Tamilnadu Puducherry,

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

1. Synoptic Systems: The analysis based on 00 UTC indicates a cyclonic circulation in lower troposphere (925 hPa) over Haryana and adjoining west Uttar Pradesh region. The forecast shows it will move south eastward and lies over East Madhya Pradesh and adjoining Chhattisgarh on day3. The Analysis also indicates a trough from this cyclonic circulation extending up to North interior Karnataka across west Madhya Pradesh, West Vidarbha and Marathwada. The forecast shows eastward shift of the trough and it extends up to Kerala across East Madhya Pradesh, Vidarbha and Karnataka on day 2. The forecast also shows a cyclonic circulation over North Pakistan and adjoining Punjab on day4 and day5.

2. Location of Jet and Jet Core (>60kt) at 500hPa: Although the presence of strong westerlies is found over east and northeast India but no jet core over the Indian region for the next 3 days.

3. Low Level Vorticity {850hPa Positive Vorticity (>12 x 10^{-1}/s)}:

Mostly over Jharkhand, adjoining GWB, Orissa, Assam Tripura and adjoining areas on all 3 days. From Punjab up to North of Bihar region on day 1; Also found in the vicinity of the trough extending from Haryana and adjoining area up to North Interior Karnataka across west Madhya Pradesh, West Vidarbha and Marathwada

4. Spatial distribution of T-storm Initiation Index, Lifted Index, Total Total Index, CAPE, CIN and Sweat Index [High potential for thunderstorm]:

. **T-Storm Initiation Index (> 3):** Higher than a value 3 over coastal areas of Gangetic West Bengal and Kolkata, parts of Orissa, Bihar, Jharkhand, Uttar Pradesh, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Karnataka, Tamil Nadu, parts of Gujarat, coastal Maharashtra including Mumbai, Konkan & Goa, Vidarbha adjoining Chhattisgarh, coastal areas along the east coast and west coast, extreme south peninsular India, Tripura and adjoining area, Rajasthan, GWB and SHWB during all 3 days; over parts of Haryana and Uttarakhand, Assam and adjoining area on day 3; Maximum value of the index is seen over parts of Gujarat, northern parts of coastal areas along the west coast, Konkan and Goa, coastal Maharashtra, Orissa, Chhattisgarh, coastal Andhra Pradesh, GWB, Telangana and adjoining area on all 3 days; over parts of Bihar and Jharkhand on day 2 and 3; over parts of south west Rajasthan, Bihar, Jharkhand and East Uttar Pradesh on day 2 and 3; over parts of North East Madhya Pradesh on day 3.

Lifted Index (< -2): The threshold value of the index is below -2 over parts of Gujarat, Saurashtra region, Rajasthan, coastal Andhra Pradesh, coastal Karnataka, Telangana, Rayalaseema, Konkan and Goa, Kerala, Tamil Nadu, southern part of west coast, coastal areas along the east coast, Orissa, East Madhya Pradesh, Chhattisgarh, Vidarbha, GWB, Konkan and Goa, Bihar, Jharkhand, Assam, Tripura and adjoining areas on all 3 days; over parts of Haryana on day 1 and 3; over parts of Punjab on day 2; over parts of Uttarakhand on day 3; maximum negative value of the index less than -10 is seen over parts of Bihar and Jharkhand and GWB from day 2 onwards; over parts of Orissa on day 3.

Total Total Index (> 50): Above threshold value is seen over most of the parts of India except J&K, Himachal Pradesh, Uttarakhand, NE states, extreme southern peninsular India and coastal areas along the east coast and southern part of west coast, Orissa, Andhra Pradesh, Telangana, GWB and SHWB during all 3 days.

Sweat Index (> 300): Higher than threshold value of index over Parts of J&K, NE states, GWB, coastal areas along the east coast and west coast, Gujarat, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Foothills of Himalaya, Orissa, Andhra Pradesh, Kerala, Tamil Nadu, Konkan and Goa, Costal Maharashtra, Karnataka, Bihar and Jharkhand, Chhattisgarh, Vidarbha, Rajasthan, Punjab, Haryana and Delhi, East Madhya Pradesh during all three days; Maximum value of the index greater than 800 is seen over parts of Jharkhand, GWB and Orissa on day 2; over parts of Bihar, Jharkhand and GWB on day 3.

CAPE (> 1000): Mostly in areas of southern peninsular India, along west coast and east coast and coastal areas of GWB, Orissa, Andhra Pradesh, Telangana, Rayalaseema, Kerala, Tamilnadu, Karnataka, Konkan and Goa, Gujarat and coastal Maharashtra, Bihar, Jharkhand and Chhattisgarh during all 3 days; over parts of Tripura and adjoining areas on day 2 and 3; over parts of Uttar Pradesh and Rajasthan from day 2 onwards; Maximum value of the index greater than 2500 is seen mostly over parts of coastal Orissa, Gujarat on day 1; over parts of Andhra Pradesh, Orissa, Jharkhand GWB, Karnataka and coastal Gujarat on day 2; over parts of East Uttar Pradesh, Bihar, Jharkhand, GWB, Orissa, Andhra Pradesh and Gujarat on day 3.

CIN (50-150): Mostly over parts of Gujarat, South West Rajasthan, along east coast along west coast from Saurashtra & Kutch to coastal Karnataka and Kerala, Konkan and Goa, coastal Orissa, Telangana, Rayalaseema, Vidarbha, Andhra Pradesh and GWB, NE states, Bihar, Jharkhand, J&K, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, East Uttar Pradesh and adjoining Madhya Pradesh, West Uttar Pradesh region during all 3 days, over parts of, Himachal Pradesh, Uttarakhand on day 2 and 3.

5. Rainfall Activity:

70- 130 mm Rainfall: over parts of Jharkhand and GWB on day 3.

40- 70 mm Rainfall: over some parts of Orissa on day 1 and 3; over parts of GWB on day 2 and 3; over parts of Jharkhand, Assam and adjoining area on day 3.

10-40 mm Rainfall: over parts of Kerala, Karnataka, Uttarakhand, Sikkim, SHWB, Bihar, Jharkhand, GWB, NE states and Foothills of Himalaya on all 3 days; over parts of J&K on day 1 and 2; over parts of Himachal Pradesh on day 1; over parts of Orissa on day 1 and 3; over some parts of coastal Andhra Pradesh on day 2

Up to 10 mm rainfall: Over parts of Sikkim, NE states, Foothills of Himalaya, J&K, Uttarakhand, Punjab, Haryana, Delhi, Himachal Pradesh, Rajasthan, Uttar Pradesh, Orissa, Chhattisgarh, Madhya Pradesh, Vidarbha, Marathwada, Madhya Maharashtra, GWB, SHWB, Andhra Pradesh, Kerala, Karnataka, Tamil Nadu, Telangana and Rayalaseema on all 3 days; over parts of coastal Maharashtra on day 3; over parts of Gujarat on day 2 and 3.

IMD WRF (9km based on 00UTC of the day):

1. Model Reflectivity (Max.dBz):

> 25 dBZ Model Reflectivity: Over parts of Uttarakhand, Orissa, Bihar, Jharkhand, parts of Sikkim, SHWB, Assam, Arunachal Pradesh, Mizoram, Nagaland and adjoining areas on day1; over parts of Uttarakhand, Uttar Pradesh, adjoining North East Madhya Pradesh, Orissa, Jharkhand, GWB, SHWB, Arunachal Pradesh, Assam and adjoining areas on day 2; over parts of Uttar Pradesh, J&K, Himachal Pradesh, Uttarakhand, Orissa, Sikkim, Bihar, Jharkhand, SHWB, GWB, Vidarbha, Madhya Pradesh, Chhattisgarh, and NE states on day 3; maximum value of the Model reflectivity is seen over parts of Sikkim, Assam, Arunachal Pradesh Bihar, Jharkhand, GWB, SHWB and adjoining areas on day 1.

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

Total Total Index (> 50): Above threshold value is observed over most parts of the country except extreme south peninsular India, southern parts of west coast, and coastal areas along the east coast during all 3 days; below threshold value is seen over parts of Sikkim adjoining Bihar and NE states from day 1 onwards and over some parts of Bihar, Sikkim, Assam and adjoining area on day 1; maximum value of the index is seen over parts of J&K, Himachal Pradesh, Punjab, Haryana, Delhi and adjoining areas, Uttar Pradesh, Rajasthan, Madhya Pradesh, Vidarbha, Chhattisgarh, Karnataka, Telangana, Gujarat, Madhya Maharashtra and Marathwada region on all 3 days; over parts of Bihar and Jharkhand on day 1 and 2.
K-Index (> 35): Less than threshold value is observed over most of the part of the country during the next 3 days.
CAPE (> 1000): Greater than threshold value over parts of Gujarat, coastal areas of west coast, coastal Maharashtra, Konkan and Goa, coastal areas along the east coast, coastal Orissa, GWB, SHWB, Bihar, Jharkhand, parts of Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Chhattisgarh, Madhya Maharashtra, Marathwada, Konkan and Goa, Vidarbha, Telangana, Rayalaseema, Extreme south peninsular India and NE states during all 3 days; over some parts of Punjab, Haryana and Uttarakhand on day 1; over most of the parts of Punjab, Haryana, Delhi Himachal Pradesh, Uttarakhand, Uttar Pradesh on day 2 and 3; Maximum value of the index is seen over the parts of Kerala, Karnataka adjoining Konkan and Goa, Gujarat, and coastal Maharashtra on day 1; over parts of Coastal Gujarat, coastal Maharashtra, Orissa, Jharkhand, GWB and Karnataka on day 2; over parts of Karnataka, Orissa, Konkan and Goa on day 3.
CIN (50-150): Over coastal areas of east coast and west coast, GWB, parts of Orissa, Madhya Pradesh, Vidarbha, Chhattisgarh, Rajasthan, J&K, Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Bihar, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Coastal Maharashtra, Vidarbha, Konkan and Goa, Telangana, Rayalaseema and NE states on all 3 days; over parts of NE states on day 1 and 2.

3. Rainfall and thunderstorm activity:

70- 130 mm rainfall: over parts of Orissa, Tripura and adjoining areas on day 3; over parts of Assam and adjoining areas on day 1.
40-70 mm Rainfall: over parts of Orissa, GWB, Assam and adjoining areas on all 3 days; over parts of J&K, West Uttar Pradesh, Jharkhand, Tripura and adjoining areas on day3.
10- 40 mm Rainfall: over parts of Himachal Pradesh, Uttarakhand, NE states, Sikkim and adjoining areas, Kerala, Karnataka, Tamil Nadu, SHWB, GWB, Bihar, Jharkhand and Foothills of Himalaya on all 3 days; over parts of J&K on day 2 and 3; over parts of West Uttar Pradesh and adjoining areas and Chhattisgarh in day 3..
Up to10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, Chhattisgarh, Bihar, Jharkhand, Orissa, GWB, SHWB and NE states on all 3 days; over parts of Punjab, Haryana, Delhi, East and West Uttar Pradesh and Madhya Pradesh, Madhya Maharashtra and Vidarbha on day 2 and 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

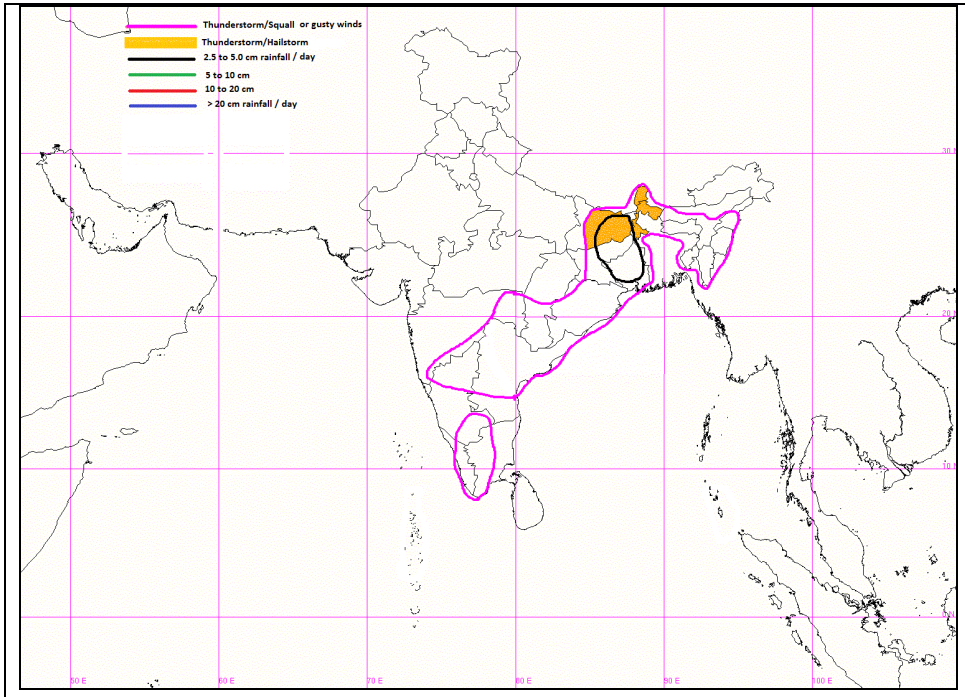
Day-1 & Day-2:

o Most thermodynamic indices (SWEAT, T-STORM Initiation Index, Lifted Index) indicate high probability of thunderstorm occurrence along the northwest, east, northeast and south peninsular coast of India. CAPE values are high all along the coast of peninsular India. However, TTI Index indicates high probability of thunderstorm occurrence also over Northwest and west Indian plains. Atmospheric Shear values (850-200 hPa) are very high over North India in the morning and over the southern peninsula in the afternoon on day 1.

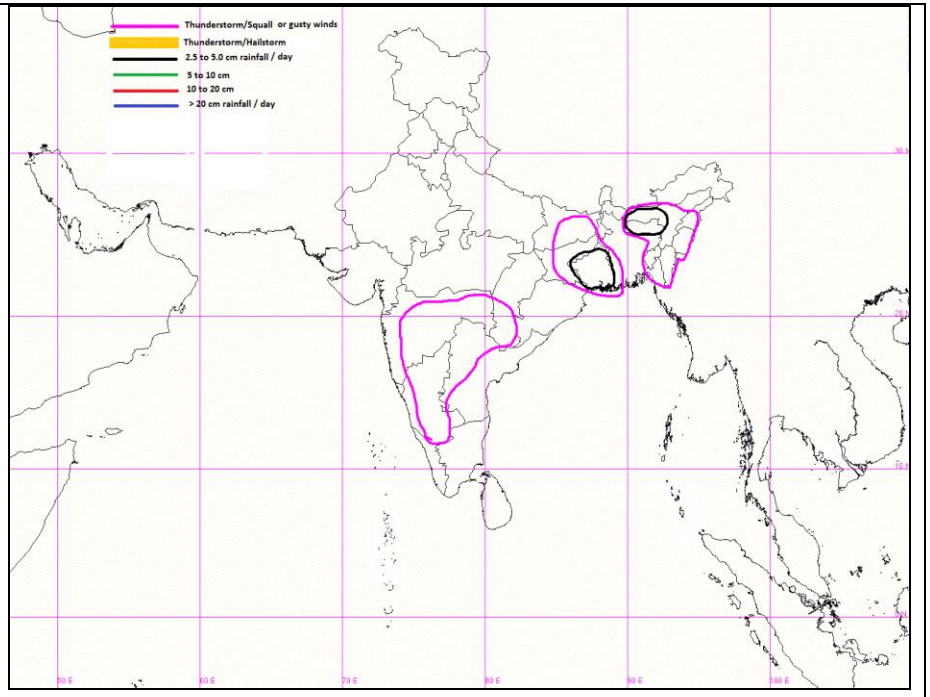
o Synoptic analysis indicates that there is a cyclonic circulation in the lower levels over northeast Rajasthan & adjoining areas of West Uttar Pradesh and Haryana, and a trough extends from this circulation to south Madhya Maharashtra. There is another cyclonic circulation at low levels over northwest Uttar Pradesh & neighbourhood. IMD GFS deterministic model analysis field is also indicating the existence of the circulations and trough. However, in view of the high shear over the region, only dry dust raising winds and dry thunderstorms are expected over the northern plains on day 1 and convection over Central India ahead of the trough.
o There is also a cyclonic circulation over north Jharkhand & neighbourhood in the lower levels. This is likely to intensify slightly on day 2. The convergence of moisture into the circulation which is also aided by the Bay anticyclone, is likely in widespread thunderstorm activity over East and North east India as well as east peninsular India on day 1.
o On day 2, the entire region affected by thunderstorms is likely to shift eastwards. Thunderstorms will also be initiated to the east of the north-south trough over peninsular India with confluence of the winds from the Bay anticyclone.

24 hour Advisory for IOP:	**48 hour Advisory for IOP:**
Rainfall: Bihar, Gangetic West Bengal, NE Jharkhand **Thunderstorm with squall or gusty winds:** Kerala, Interior Tamil Nadu, Interior Karnataka, Coastal Andhra Pradesh, Telangana, Vidarbha, Chhattisgarh, South Madhya Maharashtra, Marathwada, Odisha, Gangetic West Bengal, Jharkhand Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura **Thunderstorm with squall and hail** Sub Himalayan West Bengal, Bihar **Thunderstorm/dust storm:** Punjab, Haryana, Chandigarh, Delhi, West Uttar Pradesh, North Rajasthan,	**Rainfall:** Gangetic West Bengal, West Assam, Meghalaya **Thunderstorm with squall or gusty winds**: Interior Karnataka, Telangana, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Sub Himalayan West Bengal, Bihar, Gangetic West Bengal, Jharkhand Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura

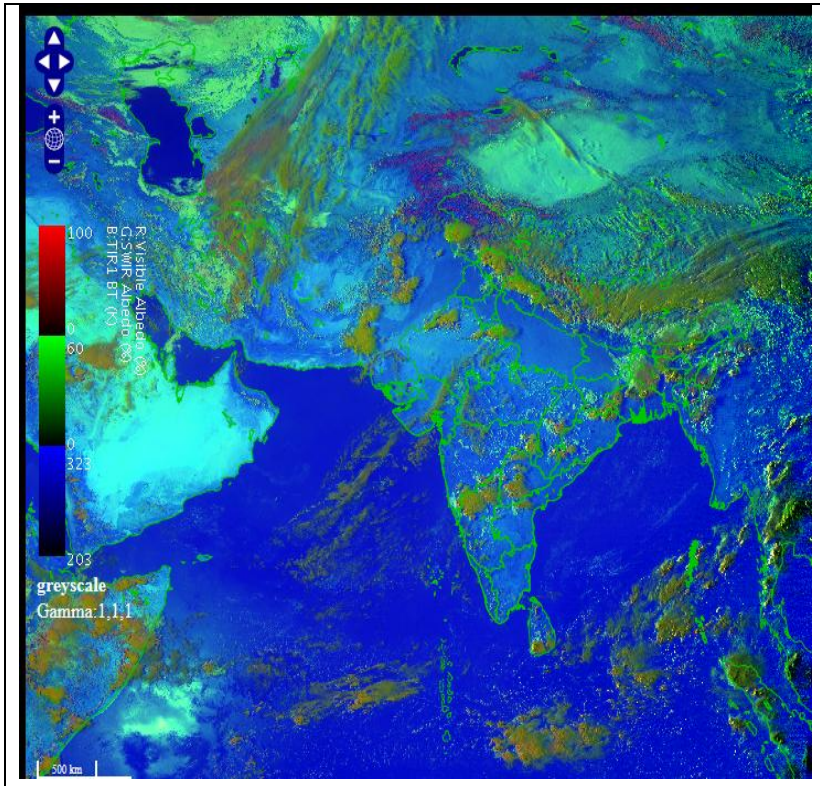
Graphical Presentation of Potential Areas for Severe Weather:



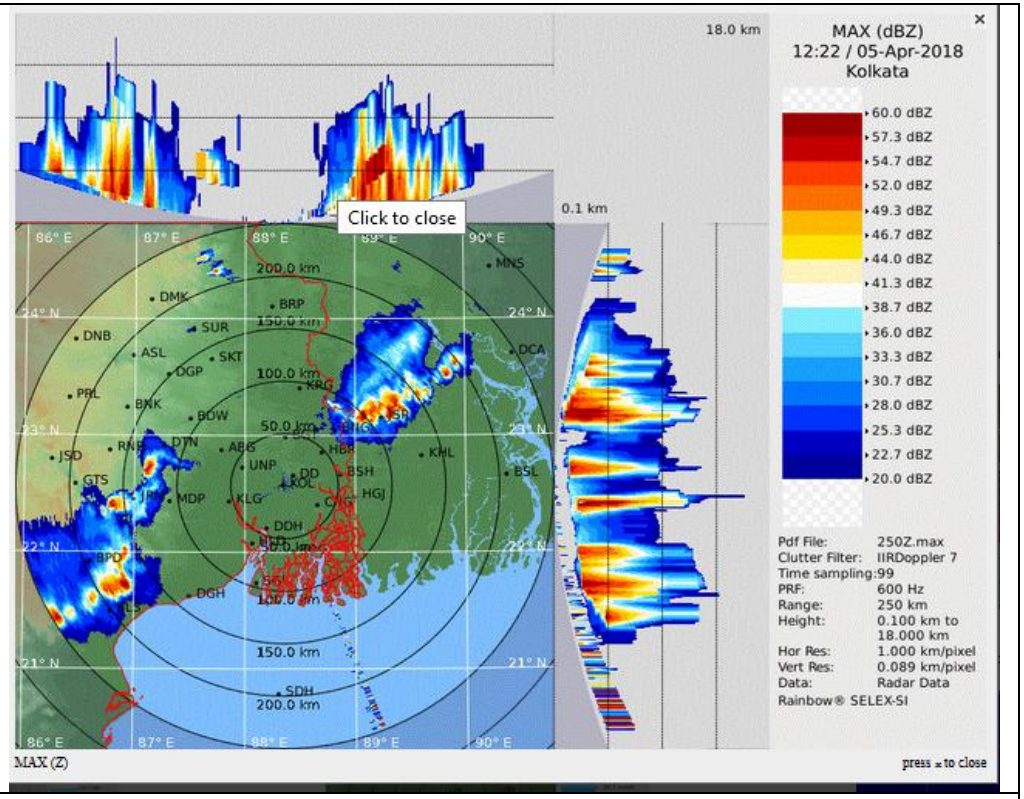
IOP Advisory for 24 hours



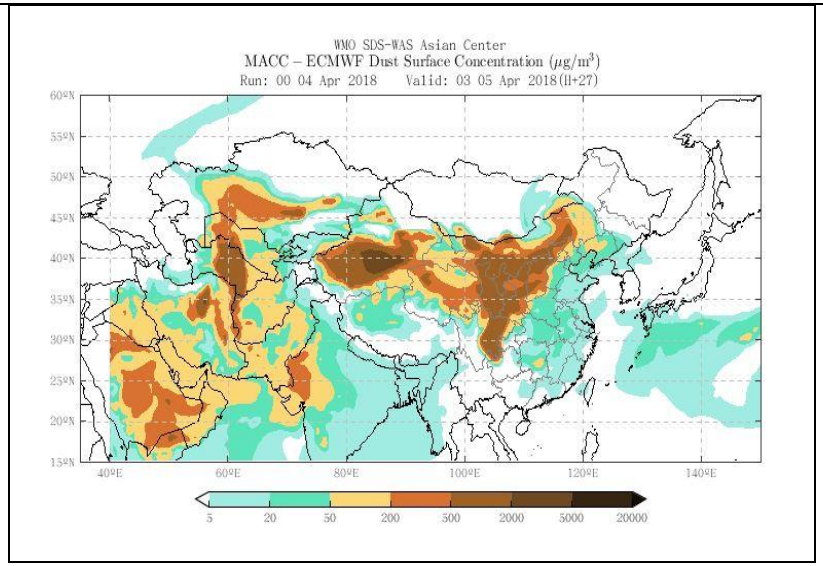
IOP Advisory for 48 hours



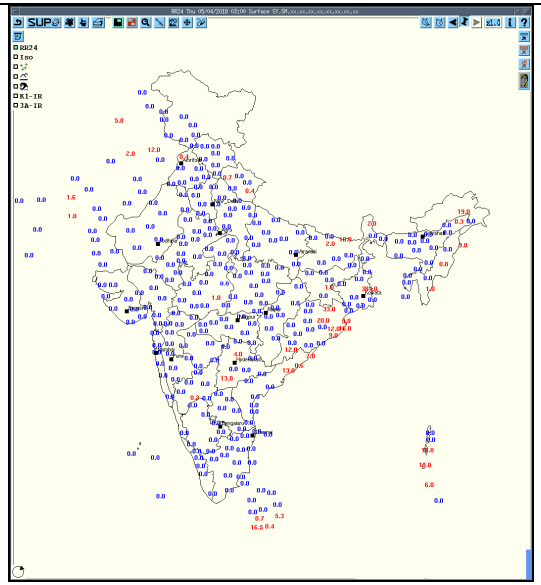
RAPID RGB Imagery at 1630 IST of the Day



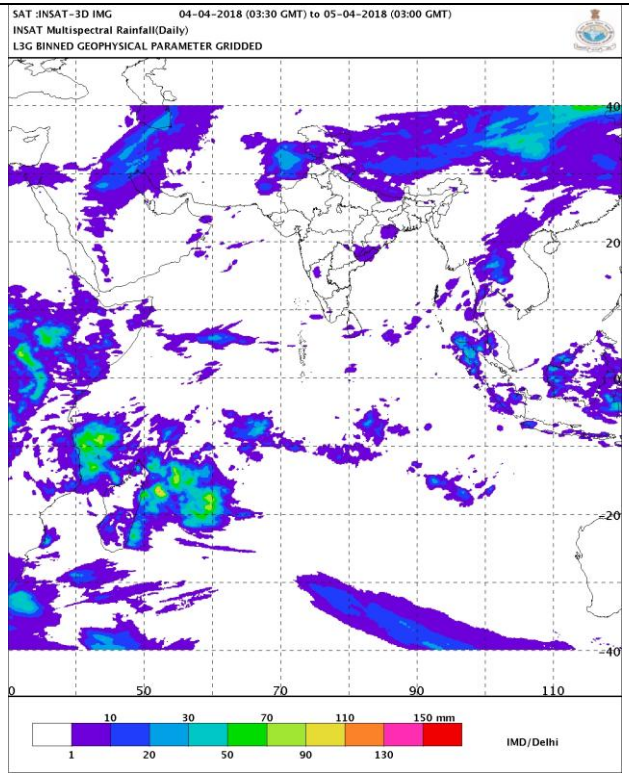
DWR Machilipatnam at 1752 IST of the Day



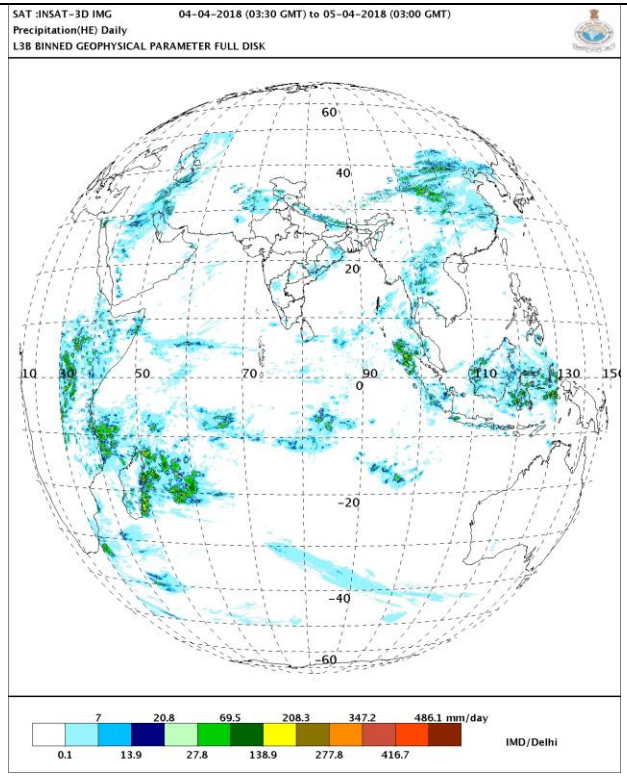
Dust Forecast



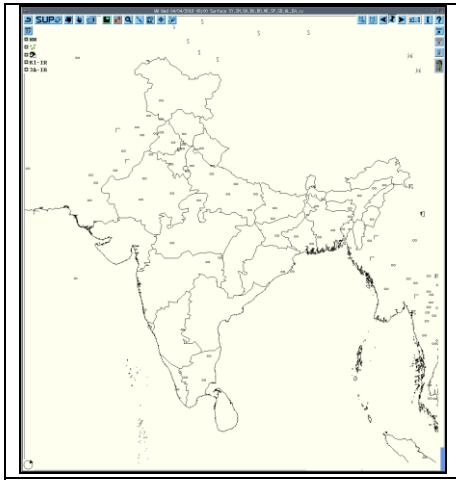
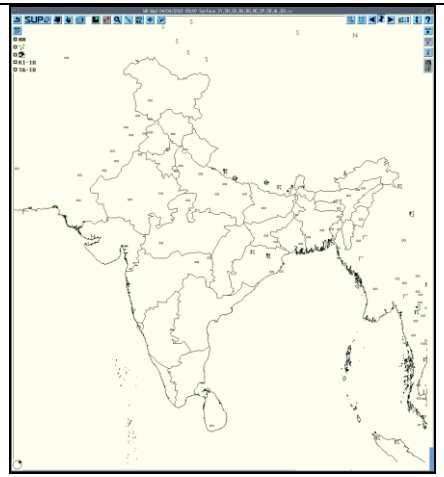
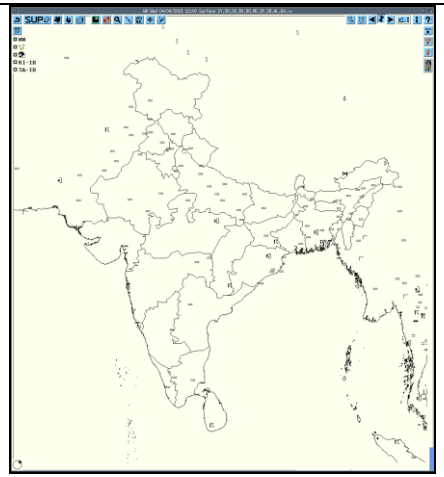
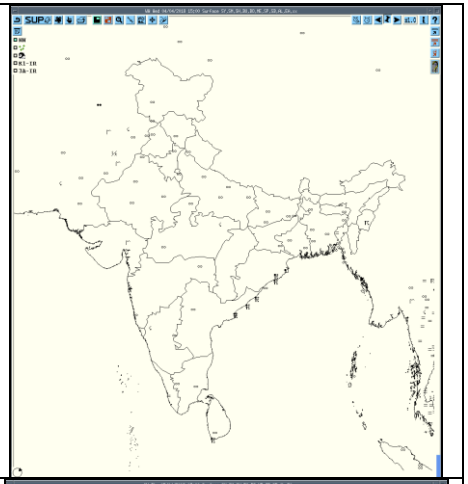
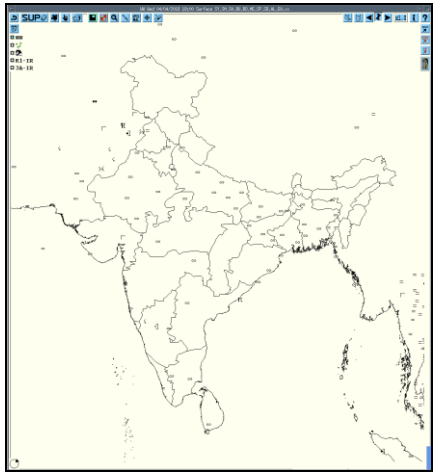
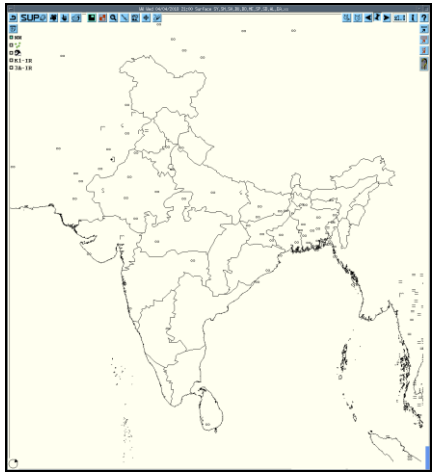
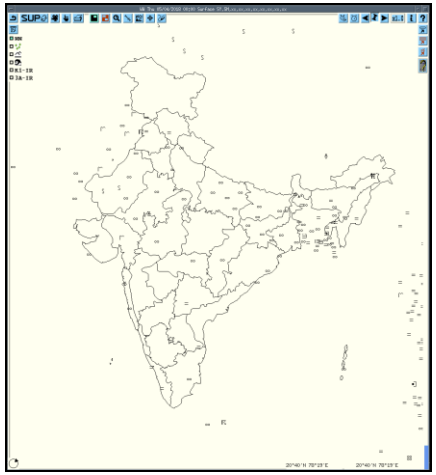
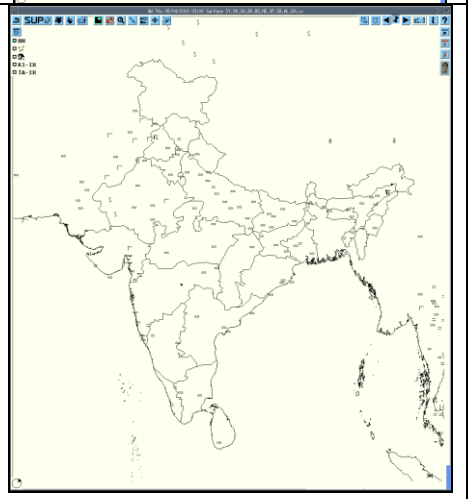
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



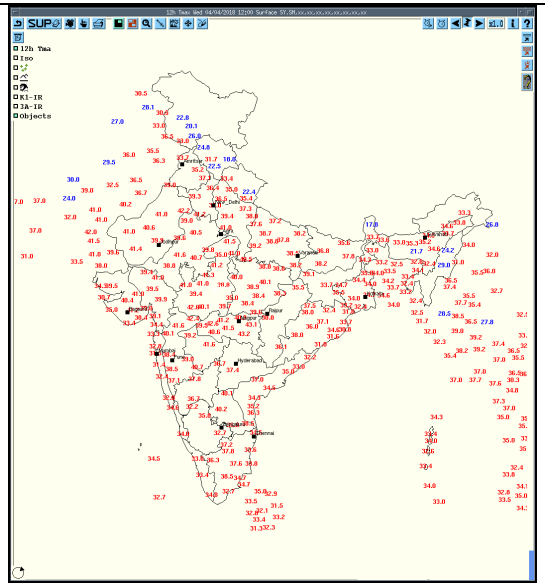
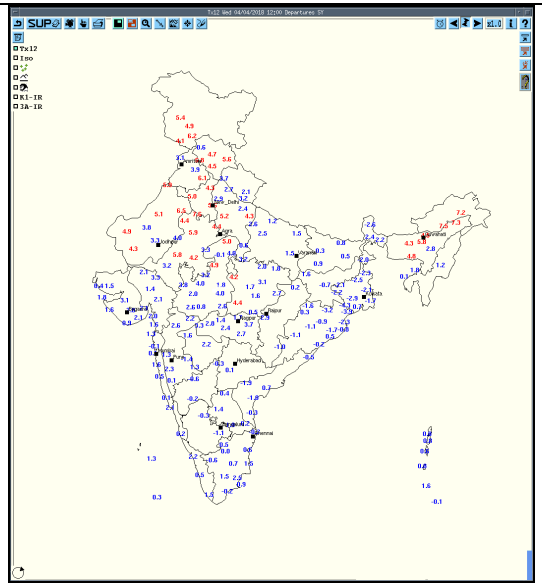
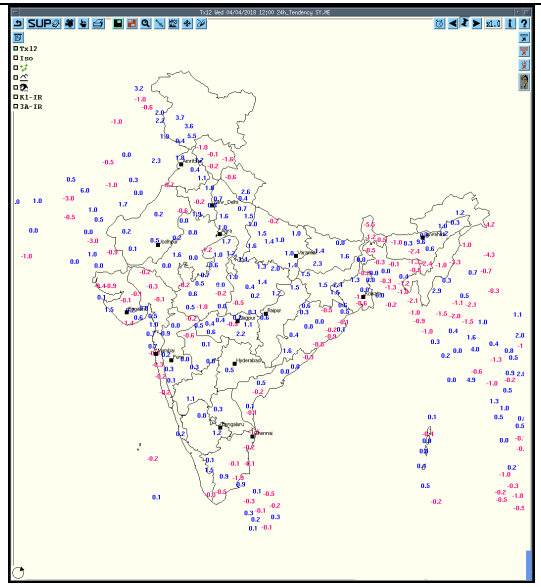
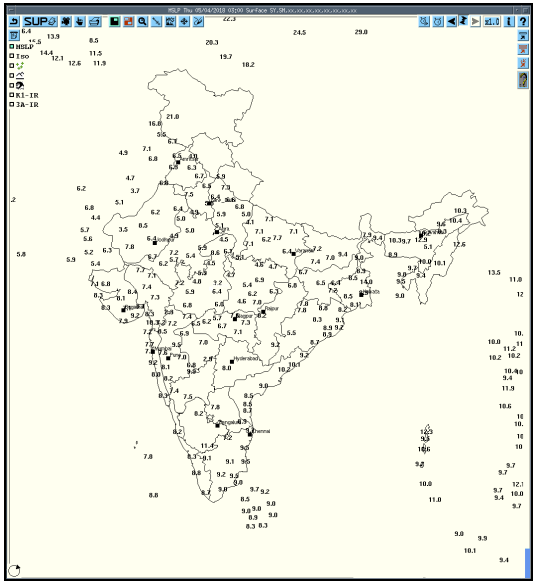
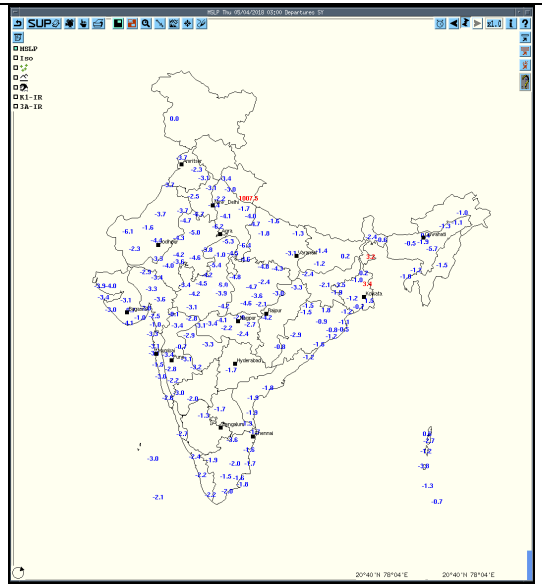
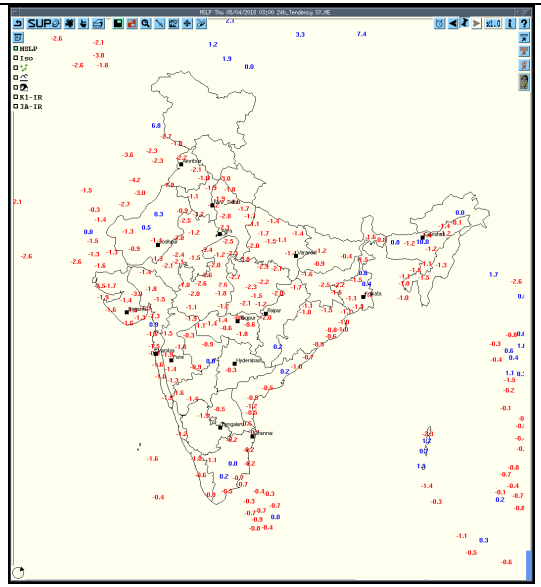
IMR

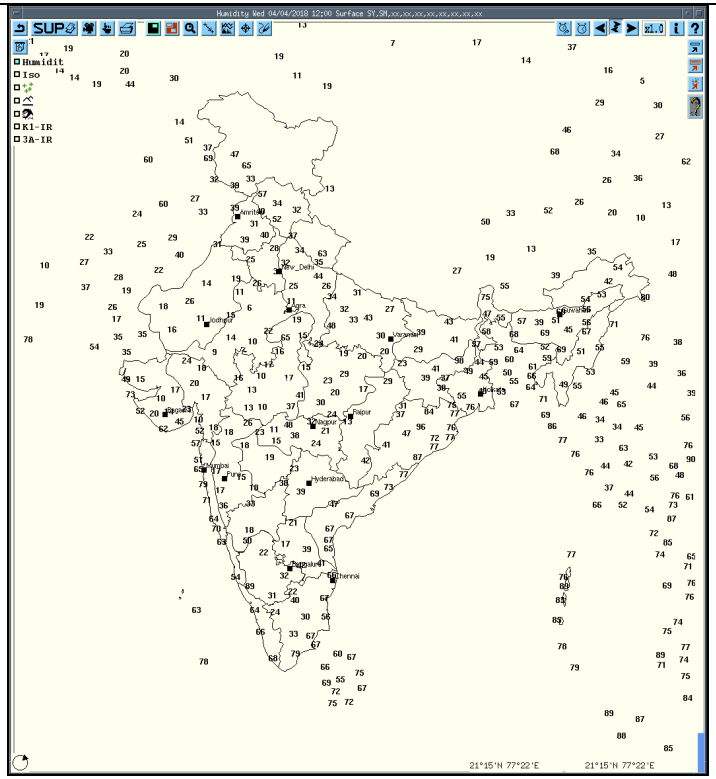


HEM

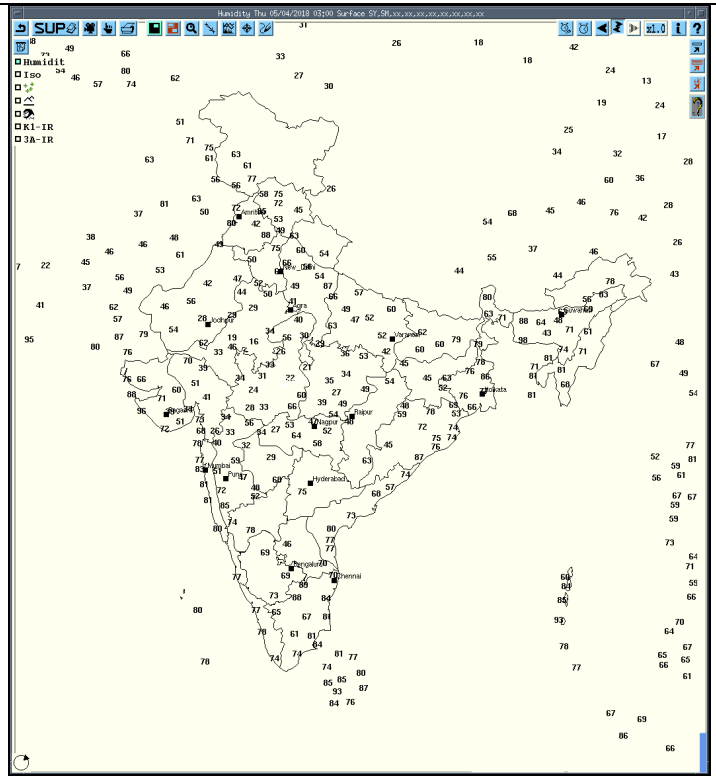









3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today

		
Tmax	**Departure Tmax**	**Tendency Tmax**
		
MSLP	**Departure MSLP**	**Tendency MSLP**



RH at 12UTC yesterday



RH at 03UTC today

Past 24 hours DWR Report:

DWR Station Name	Date of Report	Time Interval of Observation	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
Jaipur	05-04-18	040300-050300	Nil	Nil	Nil	Nil	Nil
Patiala	05-04-18	040300-040600	NO ECHO	--	--	--	--
		040600-040900	Multiple echoes dBz =52.5 ht.10-12 km	NE, Sectors .Movement towards E Direction		RA/TS	Mussoorie, Nahan, Kalsi
		040900-041200	Multiple echoes dBz =50.0 ht 10-12 km	NE, Sectors .Movement towards E Direction		RA/TS	Mussoorie, Nahan, Dehradun
		041200-050252	NO ECHO	--	--	--	--
Visakhapatnam	05-04-18	040900	Multiple CB cells from W TO NE where the max reflectivity is 58dbz WESTERLY with height 12kms	71kms(W) and moving SE-ly.	Formation at 0721UTC.	NIL	Malkangiri, puri and khurda
		041200	Multiple CB cells WNW to NE where the max reflectivity is 60dbz in the NW and height 12kms.	165KMS(NW) Moving S-ly	Formed at 1051 UTC	-	Malkangiri and Dantewada.
		041500	Multiple CB cells WSW to NE where the max reflectivity is 60dbz in the WSW and height 10kms.	35KMS(NW) Moving E-ly	Formed since last observation and started dissipating from 1451 UTC	Possibility of a rain	Visakhapatnam and East Godavari districts.
		041800	Convective region with maximum reflectivity 47 dBZ with maximum height of 6 kms CB cell formed at 1731 UTC maximum reflectivity of 53dbz with max. height of 6 kms	ENE (245 kms) SW(200kms) ENE-moving SW ly ,SW ly moving N ly	Cb formed at 1731 UTC	-	Ganjam district of Orissa
		050000	CB cell with maximum reflectivity of 47dbz with max. height of 5 kms	E (225 kms) moving W-ly	Cb formed at 1911 UTC and dissipated at 2041 UTC	-	Visakhapatnam district

DWR Station Name	Date of Report	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
Lucknow	05-04-18	040922-040852	Single cell with height of 9.0KM (20 dBZ echo top) with Maximum Reflectivity of 46.5 dBZ.	NNE(180KM) moving in SE'ly Direction at speed of 43.2 km/hr.	Cell dissipated at 11:32 UTC (200 km) ENE direction from radar station	NIL	NIL
		040912-041032	Multiple cells with height of 9.0 KM (20 dBZ echo top) with Maximum Reflectivity of 46 dBZ.	ENE(205 to 225 KM) moving in SE'ly Direction at speed of 43.2km/hr.	Cell dissipated at 10:52 UTC (240 km) ENE direction from radar station	NIL	NIL
		041032-041122	Single cell with height of 7.7 KM (20 dBZ echo top) with Maximum Reflectivity of 48 dBZ.	ENE(140KM) moving in ESE'ly Direction at speed of 32.4 km/hr.	Cell dissipated at 11:22 UTC (160km) ENE direction from radar station	NIL	NIL
		042002-042012	Single cell with height of 8.0 KM (20 dBZ echo top) with Maximum Reflectivity of 43 dBZ.	ENE(220KM) moving in SE'ly Direction at speed of 54 km/hr.	Cell dissipated at20:12 UTC (225km) ENE direction from radar station	NIL	NIL
		040922-040852	Single cell with height of 9.0KM (20 dBZ echo top) with Maximum Reflectivity of 46.5 dBZ.	NNE(180KM) moving in SE'ly Direction at speed of 43.2 km/hr.	Cell dissipated at 11:32 UTC (200 km) ENE direction from radar station	NIL	NIL

DWR Station Name	Date of Report	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
Patna	05-04-18	040300-041312	NIL	N/A	N/A	N/A	N/A
		041312-041532	Isolated Multiple Cells Lat-26.26N, Long-85.05E Maximum Reflectivity: 46.5 dBZ, Echo Top: 9 KM	Range: 76 KM from DWR Patna in N direction Movement: Easterly	N/A	Thunderstorm	EAST CHAMPARAN, GOPALGANJ, SIWAN, MUZZAFARPUR
		041532-041702	NIL	N/A	N/A	N/A	N/A
		041702-050300	Multiple Cells Lat-26.95N Long-85.44E Maximum Reflectivity: 47.5 dBZ, Echo Top: 9 KM Lat-26.78N Long-84.97E Maximum Reflectivity: 49 dBZ, Echo Top: 10 KM Lat-26.69N Long-85.39E Maximum Reflectivity: 50.5 dBZ, Echo Top: 7 KM Lat-26.56N Long-85.76E Maximum Reflectivity: 49.5 dBZ, Echo Top: 10 KM Lat-26.16N Long-85.25E Maximum Reflectivity: 46.5 dBZ Echo Top: 8 KM	Range: 156.9 KM from DWR Patna in NNE direction Movement: Easterly Range: 134.9 KM from DWR Patna in N direction Movement: Easterly Range: 127.5 KM from DWR Patna in NNE direction Movement: Easterly Range: 128.6 KM from DWR Patna in NNE direction Movement: Easterly Range: 67.5 KM from DWR Patna in NNE direction Movement: Easterly	N/A	Thunderstorm	WEST CHAMPARAN, EAST CHAMPARAN, SHEOHAR, SITAMADHI, MADHUBANI, DARBHANGA, MADHEPURA, SUPAUL, MUZZAFARPUR, VAISHALI, SHAMASTIPUR, SARAN, SHARSHA

DWR Station Name	Date of Report	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
Kolkata	05-04-18	040300-040621	NIL	NIL	NOSIG ECHO	NIL	NIL
		040631-040821	Isolated single cell with maximum height of 10.5 km at 0732 UTC and maximum reflectivity of 57.0 dBz at 0742 UTC.	SW (222.7 km) moving in NE-ward at a speed of 3.8 mps	Cell started forming at 0631 UTC in SW at distance of 222.7 km from Radar. Matured and dissipated at 0821 UTC at SW at a distance 200.5 km from radar.	Thunder storm/Rain	N/A
		040832-040841	NIL	NIL	NOSIG ECHO	NIL	NIL
		040852-041252	Isolated single cell with maximum height of 11.4 km at 0921 UTC and maximum reflectivity of 62.50 dBz at 0852 UTC. 2. Isolated single cell with maximum height of 15.4 km at 1041 UTC and maximum reflectivity of 63.00 dBz at 1031 UTC.	SSE (040.3 km) moving in N-ward at a speed of 10.1 mps SW (224.8 km) initially stationary then moving in SE-ward at a speed of 7.7 mps	Cell started forming at 0852 UTC in SSE at distance of 040.3 km from Radar. Not matured and dissipated at 1031 UTC at E at a distance 017.6 km from radar. Cell started forming at 0852 UTC in SW at distance of 224.8 km from Radar. Dissipated and regenerated Matured and merged with cell no. 4 to form cell no. 6.	Thunder storm/Rain Thunder storm/Rain / hail	N/A N/A
			1. Isolated single cell with maximum height of 12.7 km at 0951 UTC and maximum reflectivity of 62.0 dBz at 0951 UTC. 4. Isolated single cell with maximum height of 12.6 km at 1001 UTC and maximum reflectivity of 63.0 dBz at 1041 UTC. 5. Isolated single cell with maximum height of 10.7 km at 1131 UTC and maximum reflectivity of 56.5 dBz at 1121 UTC. 6. Multi celled system with maximum height of 12.1 km at 1151 UTC and maximum reflectivity of 58.5 dBz at 1131 UTC.	Coming from WSW moving in ESE-ward at a speed of 10.2 mps SW (220.2 km) moving in W-ward at a speed of 02.4 mps W (229.0 km) moving in E-ward at a speed of 09.6 mps SW (246.1 km) and almost stationary	Cell started coming from WSW at 0852 UTC. Matured and dissipated at 1211 UTC at WSW at a distance 187.2 km from radar. Cell started forming at 0921 UTC in SW at distance of 220.2 km from Radar. Matured and merged with cell no. 2 to form cell no. 6 Cell started forming at 1111 UTC in W at distance of 229.0 km from Radar. Not matured and dissipated at 1211 UTC in W at a distance of 211.4 km from radar. Multi celled system formed at 1131 UTC from SW (246.1 km) to SSW (226.9 km) by merging cell no 2 & 4. Not matured and dissipated at 1252 UTC at SSW at a distance 231.9 km from radar.	Thunder storm/Rain / hail Thunder storm/Rain / hail Thunder storm/Rain Thunder storm/Rain	N/A N/A N/A N/A
		041301-050300	NIL	NIL	NOSIG ECHO	NIL	NIL

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)**
Jagdalpur	Central India	Chhattisgarh	Thunderstorm	04-04-18	1510	1735
Dehradun	Northwest India	Uttarakhand	Thunderstorm	04-04-18	1505	1540
Amritsar	Northwest India	Punjab	Thunderstorm	05-04-18	0634	0830
Ganganagar	Northwest India	West Rajasthan	Thunderstorm	05-04-18	0550	0600
Passighat	Northeast India	Arunachal Pradesh	Thunderstorm	05-04-18	0430	0600
Dibrugarh	Northeast India	Assam	Thunderstorm	05-04-18	0605	0830
Barapani	Northeast India	Meghalaya	Thunderstorm	04-04-18	1405	1720
Shillong	Northeast India	Meghalaya	Thunderstorm	04-04-18	1210 1300	1245 1420
Imphal	Northeast India	Manipur	Thunderstorm	04-04-18	1935	2055
Ranchi	East India	Jharkhand	Thunderstorm	04-04-18	1450	1510
Jamshedpur	East India	Jharkhand	Thunderstorm	04-04-18	1700	1740
Bhubaneswar	East India	Odisha	Thunderstorm	04-04-18	1835	2120
Jharsuguda	East India	Odisha	Thunderstorm	04-04-18	1405	1530
Paradeep	East India	Odisha	Thunderstorm	04-04-18	1920	2220
Puri	East India	Odisha	Thunderstorm	04-04-18	1930	2205
Keonjhargarh	East India	Odisha	Thunderstorm	04-04-18	1345	1700
Keonjhargarh	East India	Odisha	Hailstorm (diameter	04-04-18	1415	1425
Port Blair	East India	Andaman & Nicobar Islands	Thunderstorm	04-04-18	1410	1630
Port Blair	East India	Andaman & Nicobar Islands	Thunderstorm	04-04-18	0810	0830
Port Blair	East India	Andaman & Nicobar Islands	Thunderstorm	05-04-18	0810	0830
Ramagundam	South India	Telangana	Thunderstorm	04/05-04-18	1630 0645	1700 0830
Kalingapatnam	South India	Coastal Andhra Pradesh	Thunderstorm	04-04-18	1900	2100
Tuni	South India	Coastal Andhra Pradesh	Thunderstorm	04-04-18	1940	2330
Visakhapatnam	South India	Coastal Andhra Pradesh	Thunderstorm	04-04-18	1950	2145
Belagavi AP	South India	North Interior Karnataka	Thunderstorm	04-04-18	1515	1550

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: