

India Meteorological Department FDP STORM Bulletin No.54(28-04-2017)

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

SYNOPTIC FEATURES:

The Western Disturbance as an upper air cyclonic circulation over eastern parts of Jammu & Kashmir and neighbourhood extending upto mid - tropospheric levels persists.

Another Western Disturbance as an upper air cyclonic circulation over west Afghanistan & neighbourhood, now lies over Afghanistan at 3.1 Km above mean sea level. The upper air cyclonic circulation over central Pakistan & neighbourhood extending upto 1.5 Km above mean sea level persists. An upper air cyclonic circulation lies over East Assam & neighbourhood and extends upto 0.9 km above mean sea level. A trough runs from southeast Rajasthan to northeast Arabian sea at 3.1 km above mean sea level.

The upper air cyclonic circulation over east Bihar & neighbourhood extending upto 0.9 Km above mean sea level has become less marked. However the trough from east Bihar to south interior Odisha now runs from east Bihar to South Chhattisgarh across Jharkhand and extends upto 0.9 km above mean sea level.

The trough from north Telangana to Comorin area now runs from south Madhya Maharashtra to Comorin area across Coastal Karnataka and interior Tamilnadu and extends upto 1.5 km above mean

sea level. The two embedded upper air cyclonic circulations, one over interior Karnataka & neighbourhood and another over Comorin area at 1.5 Km above mean sea level has become less marked.

The upper air cyclonic circulation over northwest Uttar Pradesh & neighbourhood extending upto 1.5 Km above mean sea level has become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Convective Activity and cloud description:

Cell No	Date/Time (UTC)	Area/Location	CTBT (- ⁰ C)	Movement	Remarks If any
8	27/2130 28/0000 0100 0200 0300	NW Rajasthan adjoining Pakistan -DO- -DO- NW Rajasthan ADJ SW Haryana NW Rajasthan ADJ SW Haryana	47 51 50 48 47	E-WARDS	Developing

Scattered low/medium clouds seen over Jammu & Kashmir, Himachal Pradesh, Punjab, North Uttarakhand, Delhi, Chhattisgarh, Odisha, Sikkim, Maharashtra, Karnataka and Andaman Islands. Scattered low/medium clouds with embedded isolate weak to moderate convection seen Haryana, Arunachal Pradesh, Assam, Nagaland and Manipur. Scattered low/medium clouds with embedded with embedded moderate to intense convection seen over NW Rajasthan adjoing Haryana, Nicobar Islands.

Arabian Sea:

No Significant clouds over the region.

Bay of Bengal & Andaman Sea:

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

Past Weather:

Convection: Moderate to Intense convection was observed over North Rajasthan Haryana Delhi North Uttar Pradesh West Bengal North-East states Andhra Pradesh Karnataka Kerala Tamil Nadu.

OLR: - Upto 250 wm⁻² was observed over J&K Himachal Pradesh Uttarakhand North Rajasthan south Haryana Delhi North-West Uttar Pradesh Sikkim North-East States West Bengal South Odisha Andhra Pradesh Karnataka Kerala South Tamilnadu.

Westerly Trough& Jet Stream: No Trough & Jet stream observed.

Dynamic Features:

Negative shear tendency observed over Telangana Chhattisgarh North-east States and Positive shear tendency observed over rest parts of India. Low Wind Shear is observed over North-West Madhya Pradesh & neighborhood and Medium to high wind shear over rest parts of India. A positive Vorticity field is observed over Uttarakhand Uttar Pradesh Bihar coastal Odisha Gujarat Coastal Karnataka . Negative low level convergence is observed over Himachal Uttarakhand Uttar Pradesh East Rajasthan Maharashtra South Interior Karnataka Kerala North coastal Odisha coastal west Bengal and Positive Low Level Convergence observed over rest parts of India.

Precipitation:

IMR: Rainfall upto 20 mm was observed over North-west Rajasthan North Coastal Andhra Pradesh & South Kerala.

Rainfall upto 10 mm was observed over J&K South Haryana Delhi North-West Uttar Pradesh North-East States Gangetic West Bengal South Odisha Rayalaseema South Interior Karnataka & West Tamilnadu.

HEM: Rainfall upto 70 mm was observed over North-west Rajasthan North Coastal Andhra Pradesh & South Kerala.

Rainfall upto 07 mm was observed over South-West J&K South Haryana Delhi North-West Uttar Pradesh North-East States Gangetic West Bengal Rayalaseema South Interior Karnataka & South Tamilnadu.

RADAR and RAPID observation:

No significant convection was observer in Radar Composite of 1200UTC & RAPID RGB Satellite imagery of 1130hrs IST. **Environmental condition (dust etc) and its forecast based on 00UTC of date:**

Dust concentration was observed over northern Africa and some parts of eastern Asia. Dust concentration is expected to decrease over western and northern India for next five days.

High PM10 concentration was observed over western and northern India. PM10 concentration is expected decrease over northern India for next five days.

2. NWP MODEL GUIDANCE: IMD GFS (T1534) based on 00UTC the day:-

1. Weather Systems: The analysis based on 00 UTC show a low level north-south trough over West Bengal extends to Odisha becomes CYCIR over Odisha and adjoining areas on day1 and persists upto day3. Another CYCIR over Punjab and adjoining areas moves eastward and lies over Delhi and adjoining areas on day3. Forecasts show a north-south trough over south peninsula would persists during next 5 days. Forecasts also show the feeble CYCIR over extreme NE parts of India will persist for the next 5 days. Contour at 500 hPa shows a feeble WD would affect the northern parts of the India during next two 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): Mostly along the trough at 850 hPa, along the foot hill of Himalaya and parts of central India during next 5 days.

4. Spatial distribution of T-Storm Initiation Index, Lifted Index, Total Total Index, CAPE, CINE and Sweat Index (High potential for thunderstorm):

T-Storm Initiation Index (> 4): 3-3.5 mostly along east coast, eastern part of the country, along west coast and over Gujarat and adjoining south Rajasthan but less than threshold value 4 all over the country during next 5 days.

Lifted Index (< -2): Less than threshold value mostly along east coast, south peninsula, west coast, Gujarat, Rajasthan, over Gangetic West Bengal and over Bihar, Jharkhand and parts of north eastern states during next 5 days.

Total Total Index (> 50): Above threshold value over the most parts of central and eastern parts of India at 06 UTC and 12 UTC during next 2 days and west and north-western parts of India during day3 to day5.

Sweat Index (> 300): Mostly along east coast, along west coast, Gujarat and adjoining areas of Rajasthan, eastern part of India and north eastern states during next 5 days.

CAPE (> 1000):): Mostly along east coast, west coast, Gujarat and adjoining areas of Rajasthan, over eastern part of India and parts of north eastern states during next 5 days.

CINE (50-150): Mostly along east coast, west coast, Gujarat and adjoining areas, parts of north eastern states and over eastern part of India during next 5 days.

5. Rainfall and Rainfall activity:

10-40 mm rainfall: over NE states during next five days.

10-40 mm rainfall: over J&K, HP and Uttarakhand during day2 and day3.

10-40 mm rainfall: over south peninsula during next five days.

10-70 mm rainfall: over Gangetic West Bengal during day3 to day4.

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

Not Received

NCMRWF (NCUM Forecasts based on 00UTC of the day): Not Received

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Presently, an upper air cyclonic circulation lies over East Assam & neighbourhood and extends upto 0.9 km above mean sea level. This system will give rise to heavy rainfall activity over Meghalaya and West Assam on Day-1. Thunder squall with gusty wind on Day-1 and Day-2 is also possible over Assam, Meghalaya and NMMT.

A trough runs from east Bihar to South Chhattisgarh across Jharkhand and extends upto 0.9 km above mean sea level. South Chhattisgarh, Vidarbha, Orissa may experience thunder squall with gusty wind on Day-1.

The trough from north Telangana to Comorin area now runs from south Madhya Maharashtra to Comorin area across Coastal Karnataka and interior Tamilnadu and extends upto 1.5 km above mean sea level. Due to this system, Kerala, South Karnataka, Coastal Andhra Pradesh, Rayalaseema will experience thunder squall with gusty wind on Day-1.

Day 1 & Day 2:

24 hour Advisory for IOP:

Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura and Arunachal Pradesh Kerala, Interior Tamilnadu, Interior Karnataka, Telangana, Rayalaseema Coastal Andhra Pradesh, GWB, Orissa Uttrakhand, Haryana, Delhi, North Rajasthan, West UP South Chhattisgarh and Vidarbha

48 hour Advisory for IOP:

Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura and Arunachal Pradesh Jammu and Kashmir, Uttrakhand, Himachal Pradesh, Punjab, Haryana, Delhi, North Rajasthan, West UP Kerala, Interior Tamilnadu, Interior Karnataka, Telangana, Rayalaseema Coastal Andhra Pradesh,

ForNCMRWFNWPproducts:(<u>http://www.ncmrwf.gov.in/HomePage/NEPS-prod-1.php</u>) ForIMDNWPproducts:(http://nwp.imd.gov.in/diagpro_new.php)
ForSynopticplotteddataandcharts
http://amssdelhi.gov.in/
http://www.amsskolkata.gov.in/
ForRAPIDtool:
http://rapid.imd.gov.in/
LowLevelWinds
http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/LLW/MAR 2017/?C=M;O=D
Upperlevelwinds
http://satellite.imd.gov.in/archive/INSAT-3D-IMAGER/3D-PRODUCTS/AMV/HLW/MAR 2017/?C=M;O=D
Past24hourHEMandIMRrainfall(upto03UTCoftoday)
IMR: <u>http://satellite.imd.gov.in/img/3Ddaily_imr.jpg</u>
HEM: <u>http://satellite.imd.gov.in/img/3Ddaily_he.jpg</u>
ForRadarimagesofthepast24hoursincludingmosaicofimages:
http://ddgmui.imd.gov.in/dwr img/
SatellitesounderbasedT-Phigram
http://satellite.imd.gov.in/map skm2.html













Realized weather past 24hours (Based on SYNERGIE Products)									
Date	Time of Reporting	Name of Station Reporting	Region	STATE	Weather Event				
27-04-17	0600 UTC	Mukteshwar	Northwest India	Uttarakhand	Thunderstorm				
07.04.47		Gangtok	East India	Sikkim	Thunderstorm				
27-04-17	0900 010	Chitradurga	South India	Karnataka	Thunderstorm				
		Pahalgam, Bhaderwah	Northwest India	J&K	Thunderstorm				
		Churu	Northwest India	Rajasthan	Thunderstorm				
		Gangtok	East India	Sikkim	Thunderstorm				
07 04 47	1200 LITC	Vishakhapatnam, Anantapur	South India	Andhra Pradesh	Thunderstorm				
27-04-17	1200 010	Chitradurga, Madikeri	South India	Karnataka	Thunderstorm				
		Shimoga	South India	Karnataka	Thunderstorm with hail				
		Thiruvananthapuram	South India	Kerala	Thunderstorm				
		Churu	Northwest India	Rajasthan	Thunderstorm				
		Churu	Northwest India	Rajasthan	Thunderstorm				
27-04-17	1500 UTC	Kurnool, Kakinada	South India	Andhra Pradesh	Thunderstorm				
		N/Lakhimpur, Dibrugarh	Northeast India	Assam	Thunderstorm				
		Churu	Northwest India	Rajasthan	Lightening				
27 04 17		N/Lakhimpur	Northeast India	Assam	Thunderstorm				
27-04-17	1800 010	Lucknow	Northwest India	Uttar Pradesh	Lightening				
		Gadag	South India	Karnataka	Lightening				
27-04-17	2100 UTC	Gadag	South India	Karnataka	Lightening				
28-04-17	0000 UTC	Bikaner	Northwest India	Rajasthan	Thunderstorm with hail				
28-04-17	0300 UTC	Guwahati	Northeast India	Assam	Thunderstorm				

Past 24 hours DWR Report:

Radar Station name	Date	Time interval of observa tion	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
		(UTC)	reflectivity				
Kolkata	28-04-17	27/0731 - 1201	Single cell with maximum reflectivity of 64.0 dBz and maximum height of more than 18 Km at 0932 UTC.	WNW (191 km) Moving E-ly/ SE-ly direction with a speed of 49.7 kmph.	Isolated single cell developed at 0731 UTC in WNW at a distance of 191 km from Radar. Matured. Dissipated at 1201 UTC in SSW, distance of 51 km	Hailstorm /Thunderstorm /Squall /Rain	N/A
		27/0742 - 1511	Single cell with maximum reflectivity of 66.5 dBz at 1051 UTC and maximum height of more than 18 km at 1121 UTC	NW (194 km) Moving ESE-ly direction with a speed of 48.7 kmph.	Isolated single cell developed at 0742 UTC in NW at a distance of 194 km from Radar. Matured. Dissipated at 1511 UTC in E, distance of 238 km	Hailstorm /Thunderstorm /Squall /Rain	N/A
		27/0851 - 0951	Single cell with maximum reflectivity of 64.0 dBz at 0932 UTC and maximum height of 14.2 Km at 0921 UTC.	WNW (147 km) Moving in E-ly direction with a speed of 45.0 kmph.	Isolated single cell developed at 0851 UTC in WNW at a distance of 147 km from Radar. Matured. Dissipated at 0951 UTC in NW, distance of 114 km	Hailstorm /Thunderstorm /Squall /Rain	N/A
		27/1521 – 28/0300	NIL	NIL	NO SIGNIFICANT ECHO	NIL	NIL
Paradeep	28-04-17	27/0300- 2300	Convective regions with average height of 5 kms. and average reflectivity of 20 dBZ and very small areas having reflectivity values of the order of 50 dBZ.	Position: SW sector of Radar (180-240 degrees) Range: 80- 250 kms from the RADAR. Movement: NWly	Mainly concentrated in SW sector in the sea.	TS with Rain	NIL
		27/2300- 28/0300	NIL	NIL	NIL	NIL	NIL
Patiala	28-04-17	27/0600- 0900	LOW CONVECTIVE CLOUD PATCHES MAX =40.0 DBZ	SE WARDS			Chandigarh Nahan
		27/0900- 1200	multiple cells 52.5 DBZ 9 KM	Formed in SW sector Direction of movement :SE wards			Loharu Mohndrgarh
		27/1200- 1500	multiple cells 51 DBZ 8-9 KM	Formed in SW sector Direction of movement :SE wards		TS/RA	Loharu Mohndrgarh
		27/1500 -2400	NO ECHO	NIL	NIL	NIL	NIL
		28/0000 -0300	NO ECHO	NIL	NIL	NIL	NIL

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Machilipatnam	28-04-17	27/0711 to 1251	Isolated Multiple cells with average height of 12.5 km with maximum reflectivity of 61 dBZ	W(241KM) and moving NE ly direction with average speed of 17.8kmph	Cells started forming at 0711UTC at W (241km) from radar. Maximum reflectivity during 0711 to1241 and died down at 1251UTC	Possibility of Thunder storm with Hail and moderate winds.	Prakasam and Guntur Districts
		27/1131 to 1441	Isolated Multiple cells average height of 9 km with maximum reflectivity of 63.5dBZ	NW(212KM) and moving E ly direction with average speed of 11.9 kmph	Cells started forming at 1131UTC at NW (212km) from radar. Maximum reflectivity during 1131 to 1431 and died down at 1441 UTC	Possibility of Thunder storm with hail and moderate winds.	Nalgonda Districts
		27/0901 to 1101	Isolated Multiple cells average height of 9.5 km with maximum reflectivity of 62dBZ	NNE(208KM) and moving E ly direction with average speed of 7 kmph	Cells started forming at 0901UTC at NNE (208km) from radar. Maximum reflectivity during 0901 to 1051 and died down at 1101 UTC	Possibility of Thunder storm with Hail and moderate winds.	Khammam District
		27/1021 to 1231	Isolated Multiple cells average height of 9.3 km with maximum reflectivity of 62dBZ	N(147KM) and moving SE ly direction with average speed of 15 kmph	Cells started forming at 1021UTC at N (147km) from radar. Maximum reflectivity during 1021 to 1221 and died down at 1231 UTC	Possibility of Thunder storm with Hail and moderate winds.	Khammam District
		27/0701 to 1501	Isolated Multiple cells average height of 12 km with maximum reflectivity of 65dBZ	NE(210KM) and moving SW ly direction with average speed of 12.6 kmph	Cells started forming at 0701UTC at NE (210km) from radar. Maximum reflectivity during 0701 to 1451 and died down at 1501 UTC	Possibility of Thunder storm with Hail and moderate winds.	Visakhapatnam, East Godavari and West Godavari Districts

Radar Station name	Date	Time interval of observati on (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	Associat ed severe weather if any	Districts affected
Agartala	28-04-17	270300 - 280300	Multiple Cells continuously formed one after another over the same area with Maximum Height 14 km and maximum reflectivity 49 dBZ (at 1740 UTC over Central parts of Meghalaya)	Started forming 170 km NNW of DWR AGT at 2000 UTC of 26.04.17 and moved ESE-wards at around 25 kmph	At 0300 UTC of 28.04.17, some cells still persist over SE Meghalaya and South Assam with max height <10km and reflectivity <35dBZ	1.TS with rain	East Khasi hills districts of Meghalaya,
		270850 - 271540	Multiple Cells with Maximum Height 12 km and maximum reflectivity 37 dBZ (at 1350 UTC over Bangladesh- 180 km WSW of DWR AGT)	Formed 410 km West of DWR AGT at 0850 UTC of 27.04.17 and moved ESE-wards at around 35 kmph	The cells dissipated at 1540 UTC of 27.04.17 over South Tripura	N/A	N/A
		270940 - 280240	Multiple Cells continuously formed one after another over the same area with Maximum Height 11 km and maximum reflectivity 47 dBZ (at 1540 UTC over West Assam-310 km NNW of DWR AGT)	Started forming 350 km NNW of DWR AGT at 0940 UTC of 27.04.17 and moved Eastwards at around 25 kmph	The cell dissipated at 0240 UTC of 28.04.17 over West Assam	N/A	N/A

Radar Station name	Date	Time interval of observation (UTC)	Organization of the cell (Isolated single cells/m cells/ convective regior squall lines) with heigh dBZ echo top and maxi reflectivity	s ultiple ns/ t of 20 mum	Formation radar static Direction c movement	w.r.t on and of	Rema	rks	Associa ted severe weather if any	Districts affected
Visakhapatnam	28-04-17	27/0300 - 0600	A cell at SW formed with reflectivity 53 dBZ at 176 height 4kms.	max kms with	Moving NE -		-	-		
		270600 - 0900	Multiple cells at with max reflectivity 56 dBZ at Max of 14kms.	k. Height	W(35 km) SV 150 km) NE(moving SEly	W (50 to (120 km)	Multiple cells formed directions and well of Maximum reflectivity shows at 0841UTC	d in SW, W, NE developed. y of 56dbz onwards.	-	-
		270900 - 1200	Multiple cells with max reflectivity 57 dBZ at Max of 18kms.	k. Height	W(32 km) SV 150 km) NE(moving SEly	W (46 to 115 km)	Multiple cells formed in SW,W, NE directions and well developed. Maximum reflectivity of 57 dBZ during the period from 0901UTC to 1131 UTC. After downpour cells start dissipating.			
		27/1200 - 1500	27/1200 - 1500Multiple cells with max reflectivity 54 dBZ with Max. Height of 14kms.NW(30 km) SW (30 to 200 km) NE(115 km) moving SElyMultiple cells are found to be forming and maturing quickly in succession in NW, W and SW directions within the range of 30 200kms from the Radar.27/1500 - 1800Multiple cells with max reflectivity 34 dBZ with Max. Height of 06kms.SW (74 to 170km)) moving SEly and dissipating completely		und to be ng quickly in N and SW range of 30 to adar.	-	-			
		27/1500 - 1800				-	-			
		27/1800 - 28/0000	Multiple cells with max reflectivity 43 dBZ with M height of 05kms.	lax.	Convective r SE 100 kms ht less than seen moving direction	egion in with max 6 kms is 1 in SEly	-		-	-
Lucknow	28-04-17	27/0300- 28/0300	DWR non operational du	e to Anten	na stuck prot	olem.				
Nagpur	28-04-17	27/0652- 1152	Multiple, coming from SW	250km S Moving N	SW, IE'ly	< 15 dBZ		-		-
		28/0002- 0302	Nil		Nil		Nil	Nil		Nil

Radar Station name	Date	Time interval of observatio n (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
Hyderabad	28-04-17	27/0712- 0902 UTC	Isolated cells with an average height of10 Km with a max reflectivity of 47 dBZ at 0832 and dissipated by 0912	SSE (127 Kms) moving in E- ly Direction at a speed of 10 Kmph.	Cells started forming at 0652 UTC at SSE (110 Kms) from radar, Matured a bit in size. Max reflectivity was between 0752 and 0842TC.	Light Thunderstorm with or without rain	Not known.
		27/ 0832- 1022 UTC	Isolated cells with an average height of10 Km with a max reflectivity of 51.5 dBZ at 0932 and dissipated by 1022	SSE (195 Kms) moving in E- ly Direction at a speed of 10 Kmph.	Cells started forming at 0812 UTC at SSE (195 Kms) from radar, matured between 0912 and 0942 UTC.	Moderate Thunderstorm with or without rain	Not known.
		27/ 1102 - 1232 UTC	Isolated cells with an average height of 10 Km with a max reflectivity of 55.5 dBZ at 1122 and dissipated by 1232	SE (212 Kms) moving in S- ly Direction at a speed of 10 Kmph.	Cells started forming 1042 UTC at SSE (200 Kms) from radar, Matured a bit in size. Max reflectivity was between 1052 and 1152UTC.	Light Thunderstorm with or without rain	Not known.
		27/ 1132 - 1332 UTC	Isolated cells with an average height of 11 Km with a max reflectivity of 56.5 dBZ at 1252 and dissipated by 1332	E (105 Kms) moving in ENE- ly Direction at a speed of 10 Kmph.	Cells started forming 1132 UTC at ENE (90 Kms from radar, Matured a bit in size. Max reflectivity was between 1232 and 1302 UTC.	Moderate Thunderstorm with or without rain	Not known.
		27/ 1232 - 1552 UTC	Isolated cell started forming at 1202 and became BKN by 1232 covering area more than 200 Sq Km with < 40dBz	SSW (140 Kms) E- ly Direction at a speed of 10 Kmph.	Cells started forming 1202 UTC at SSW (140 Kms from radar.	-	Not known.

