



India Meteorological Department
FDP STORM Bulletin No.102 (15-06-2017)

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

The Northern Limit of Monsoon (NLM) continues to pass through Lat. 20.5°N / Long. 60.0°E, Lat 20.5°N/Long 70.0°E, Valsad, Nasik, Parbhani, Adilabad, Jagdalpur, Bhawanipatna, Chandbali, Digha, Kolkata, Krishnanagar, Darjeeling and Lat 27.4°N/ Long 87.7°E.

Conditions are likely to become favourable for further advance of southwest monsoon into some more parts of Gujarat region, Madhya Maharashtra, remaining parts of Marathwada, some parts of Vidarbha, some more parts of Chhattisgarh, Odisha, remaining parts of West Bengal and some parts of Jharkhand and Bihar after 3-4 days.

The trough at mean sea level from Punjab to Assam now runs from Punjab to northwest Bay of Bengal across Haryana, Uttar Pradesh, Jharkhand & north Gangetic West Bengal. However, the embedded upper air cyclonic circulation over southwest Bihar & neighbourhood extending upto 1.5 km above mean sea level has become less marked. The upper air cyclonic circulation over central parts of Assam & neighbourhood extending upto 0.9 km above mean sea level also has become less marked.

The upper air cyclonic circulation over south coastal Odisha & neighbourhood now lies over northwest and adjoining west central Bay of Bengal off south Odisha and north Andhra Pradesh coast between 3.1 and 9.5 km above mean sea level. The trough from this cyclonic circulation to south Konkan now seen as an east west shear zone roughly along latitude 17.0° N.

The trough from eastern parts of Bihar to south coastal Odisha now runs from eastern parts of Bihar to northwest Bay of Bengal between 1.5 & 2.1 km above mean sea level.

An upper air cyclonic circulation lies over Southwest Bihar & neighbourhood and extends upto 0.9 km above mean sea level.

The off shore trough off Karnataka Kerala coast persists.

The upper air cyclonic circulation over central Pakistan & adjoining West Rajasthan has become less marked.

SATELLITE OBSERVATIONS during past 24hrs and current observation:

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

Low Level Circulation (LLC):

Broken low/medium clouds with embedded intense to very intense convection over North Bay in association with Low Level Circulation over the area.

WESTERN DISTURBANCE (WD):

Scattered multi-layered clouds were seen over J & K, Himachal Pradesh, East Punjab, Tibet adjoining China and area between Lat 37.0N to 46.0N, Long 70.0E to 90.0E in association with WD over the area.

Cloud Description:

Broken low/medium clouds with embedded intense to very intense convection were seen over South Marathwada.

Scattered low/medium clouds with embedded moderate to intense convection were seen over South Odisha adjoining South Chhattisgarh, East Jharkhand adjoining South Gangetic West Bengal, Bihar, Telangana and, Coastal Andhra Pradesh.

Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over Vidarbha, rest Marathwada, Madhya Maharashtra, South Konkan & Goa and Central Madhya Pradesh.

Scattered low/medium clouds were seen over Uttarakhand, Uttar Pradesh; rest Madhya Pradesh, Sub Himalayan West Bengal, Meghalaya, Nagaland, North Manipur, Tripura, Lakshadweep and Bay Islands.

Arabian Sea: Scattered low/medium clouds with embedded isolated weak to moderate convection were seen over EC Arabian Sea.

Bay of Bengal & Andaman Sea:

Broken low/medium clouds with embedded intense to very intense convection were seen over WC. Scattered low/medium clouds with embedded moderate to intense convection were seen over EC Bay & South Andaman Sea.

Past Weather:

Convection:-

Moderate to Intense convection was observed over J&K Himachal Pradesh Punjab South Haryana North-West Rajasthan North-East Uttar Pradesh Bihar Jharkhand West Bengal North East States Chhattisgarh Madhya Pradesh Maharashtra Telangana Andhra Pradesh Karnataka Kerala Tamilnadu.

OLR:-

Upto **200** wm^{-2} was observed over Central West Bengal Coastal Odisha Coastal Andhra Pradesh Kerala Tamilnadu.

Upto **230** wm^{-2} was observed over J&K Maharashtra North Karnataka Rest Andhra Pradesh Telangana East Bihar Meghalaya Arunachal Pradesh West Bengal South Jharkhand.

Upto **250** wm^{-2} was observed over Himachal Pradesh South Haryana Chhattisgarh South Madhya Pradesh Rest North East States.

Westerly Trough & Jet-Stream: No Westerly trough and No Jet Stream observed over India.

Dynamic Features:

Medium to High wind shear is observed over North & South India and Low wind shear is observed over Central India.

Negative shear tendency is observed over South India and Positive shear tendency is observed over rest India.

A Positive Vorticity field is observed over Uttarakhand Uttar Pradesh Bihar Jharkhand and North coastal Andhra Pradesh.

Negative low level convergence is observed over East Gujarat South West Madhya Pradesh Coastal Karnataka Kerala and Positive low level convergence observed over rest parts of India,

Precipitation:**IMR:**

Rainfall from **90** mm was observed over North-East Jharkhand North-East Odisha North Coastal Andhra Pradesh. Rainfall from **70** mm was observed over South-East Bihar South Odisha Central West Bengal. Rainfall Up to **30** mm was observed over North-East Uttar Pradesh East Meghalaya North Madhya Maharashtra Tamilnadu.

Rainfall Up to **10** mm was observed over J&K South Punjab North-West Rajasthan South Haryana Rest Bihar Rest West Bengal East Meghalaya North Assam Rest Jharkhand South Chhattisgarh South-West Madhya Pradesh Rest Maharashtra Karnataka Telangana Rest Andhra Pradesh Kerala .

HEM:

Rainfall Up to **70** mm was observed over North-East Jharkhand North-East Odisha North Coastal Andhra Pradesh.

Rainfall Up to **14** mm was observed over North-East Uttar Pradesh South-East Bihar North Madhya Maharashtra Kerala Tamilnadu..

Rainfall Up to **07** mm was observed over South-West J&K Punjab North-West Himachal Pradesh North-West Rajasthan South Haryana Rest Bihar Rest Jharkhand Rest West Bengal Meghalaya Assam Arunachal Pradesh Nagaland South Chhattisgarh South- Madhya Pradesh Rest Maharashtra Karnataka Telangana Rest Andhra Pradesh.

RADAR and RAPID Observation:

DWR Composite at 1710hrs IST indicated significant convection over Jharkhand, Odisha, East Maharashtra, Telangana and Tamilnadu.

RAPID RGB Satellite imagery at 16300hrs IST indicated significant convective clouds over Mizoram, Jharkhand, Odisha, East Maharashtra, Telangana, North coastal Andhra Pradesh and Tamilnadu.

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

Higher Dust concentration was observed over north Africa. Dust concentration is expected to increase over north India for next five days.

High PM10 concentration was observed over western part of the country and Pakistan; it is expected to increase over north India and IGP in the 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 heat low over NW India and adjoining Pakistan with MSLP values lower than 990hPa. In day 3-4 the area extends over Rajasthan to Bihar across Haryana, Uttar Pradesh.

12UTC charts on days from Day 0-1: show a zone of wind discontinuity at 925 hPa; SW-NE extending from Madhya Pradesh to Jharkhand/Bihar

12 UTC charts in Day 0-1: Feeble Western Disturbance is seen over eastern parts of J&K and Himachal Pradesh. System moves eastward and gets deeper in Day 2.

00UTC charts in Day 1-3: Offshore trough off Maharashtra/Karnataka coast moving towards off Gujarat coast in Day 4-5

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:

Day0: Punjab,

Day1: Assam Meghalaya,

Day2: Assam Meghalaya,

Day3: Assam Meghalaya, Day4: Nil

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

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

Day0: Arunachal Pradesh, Assam Meghalaya, Himachal Pradesh, TN Puducherry,

Day1: Assam Meghalaya, NE NMMT, TN Puducherry,

Day2: Assam Meghalaya, NE NMMT, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day3: Assam Meghalaya, Uttarakhand, Himachal Pradesh, TN Puducherry, Kerala,

Day4: Assam Meghalaya, Sub Himalayan WB, Bihar, Uttarakhand, Himachal Pradesh, TN Puducherry

5. Showalter Index: -3 to -4[Very unstable]: (Day/Index: Subdivisions with Showalter Index < -4):

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, TN Puducherry,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana,

Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Saurashtra Kutch, Vidarbha, Chhattisgarh, Coastal AP,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, Odisha, West MP, East MP, Saurashtra Kutch, Chhattisgarh, Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP,

Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Chhattisgarh, Coastal AP

6. K-Index > 35 [Very Unstable thunderstorm likely]: (Day/Index: Subdivisions with K Index > 40):

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 Rajasthan, East Rajasthan, Odisha, West MP, East MP, Gujarat region, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day1: 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 Rajasthan, East Rajasthan, Odisha, West MP, East MP, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Telangana, NI Karnataka,

Day2: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, East MP, Madhya Maharashtra, Vidarbha, Chhattisgarh,

Day3: 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, East Rajasthan, Odisha, West MP, East MP, Gujarat region, Marathwada, Vidarbha, Chhattisgarh, TN Puducherry,

Day4: 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, East Rajasthan, Odisha, West MP, East MP, Gujarat region, Saurashtra Kutch, Madhya Maharashtra, Marathwada, Vidarbha, 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, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, West MP, Gujarat region, Saurashtra Kutch,

Day1: Arunachal Pradesh, Sub Himalayan WB, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, West MP, Gujarat region, Saurashtra Kutch,

Day2: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan,

Day3: Arunachal Pradesh, Sub Himalayan WB, Uttarakhand, Punjab, Himachal Pradesh, Jammu Kashmir,

Day4: Arunachal Pradesh, Sub Himalayan WB, Jharkhand, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan

8. Rainfall and thunder storm activity: (Day/Index: Subdivisions with Precipitation > 2 cm):

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Bihar, Haryana, Chandigarh, Delhi, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Gangetic WB, West UP, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, West Rajasthan, East Rajasthan, Odisha, Konkan Goa, Madhya Maharashtra, Vidarbha, Chhattisgarh, Telangana, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Konkan Goa, Madhya Maharashtra, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, Punjab, Himachal Pradesh, Jammu Kashmir, Gujarat region, Konkan Goa, Madhya Maharashtra, Coastal Karnataka, NI Karnataka, SI Karnataka, Kerala,

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

1. Weather Systems:

The analysis based on 00 UTC shows a trough at mean sea level from Punjab to west Assam and adjoining areas. Forecasts show the persistence of the trough for all the 5 days and thereby extending along Bihar to GWB and adjoining areas.

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):

The high vorticity belts are mainly over Punjab, UP, Haryana, Gangetic plains, foot hills of Himalaya, parts of Central India, south peninsula along with isolated pockets over the east coast region.

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): Above threshold values are mostly over Gujarat and Rajasthan and over isolated pockets of Bihar, GWB and Odisha Coast during next 5 days.

Lifted Index (< -2): Less than threshold value over most parts of the country except J&K, HP, Uttarakhand, UP, parts of central India, NE states and over major parts of the south peninsula during next 5 days.

Total Total Index (> 50): Greater than threshold value over northwest India Delhi, parts of MP and adjoining central India during next 5 days.

Sweat Index (>300): Higher than threshold value almost all over the country except parts of NW India and isolated pockets over Delhi, UP, Bihar, MP and isolated pockets in the South peninsula.

CAPE (> 1000): Mostly over parts of Rajasthan, Gujarat, central parts of India, West Bengal, Bihar, isolated pockets of Odisha and regions bordering the east coast of the country.

CIN (50-150): Mostly all over the country except J&K, NE states and isolated pockets over the south peninsula region.

5. Rainfall and thunderstorm activity:

20-70 mm rainfall over major regions of Maharashtra, the east coast and west coast and over major regions of the NE states during the next 5 days. 20-70 mm rainfall over parts of Maharashtra, GWB, Odisha, Chhattisgarh and isolated pockets of coastal Andhra Pradesh during next 5 days.

40-70 mm rainfall and more over SHWB, NE states, GWB, Konkan coast, Vidarbha and along the foothills of the Himalayas during the next 5 days.

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

1. Model Reflectivity (Max. dBz):

15-35 dBZ Model reflectivity over AP, Odisha, GWB and over NE states during next 24 hours and over isolated pockets of SHWB, foothills of the Himalayas, Telangana and NE states on day2 and day3.

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

Total Total Index (> 50): Above threshold value over major regions of northwest and central parts of India, Gangetic plain and isolated pockets over the east coast during next 72 hours.

K-Index (> 35): Less than threshold value over the entire country during the next 72 hours.

CAPE (> 1000): Mostly over the foothills of the Himalayas, Gujarat, central India, east UP, Bihar, NE states and major regions bordering the east coast of the country during next 3 days.

CIN (50-150): Over north west parts of India, east UP, Bihar, parts of central India and south peninsula during next three days.

3. Rainfall and thunderstorm activity:

70-130 mm and more: over SHWB, NE states, Konkan Coast and isolated pockets of Maharashtra and adjoining areas for the next 72 hours.

20-70 mm: over the foothills of the Himalayas, NE states, west coast, Odisha coast, and parts of Central India for the next 72 hours.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

Day-1 & Day-2:

In association with the upper air cyclonic circulation off south Odisha and north Andhra Pradesh coast in middle troposphere, and the east-west shear zone extending from the system, west upto Konkan coast, thunderstorm activity accompanied by rainfall is expected over central India on day 1 and 2. There is also a trough from eastern parts of Bihar to northwest Bay of Bengal in lower troposphere as well as an upper air cyclonic circulation over Southwest Bihar & neighbourhood, and this is likely to keep the main rainfall zone over east and Northeast India on day 1 and 2. The off shore trough off Karnataka Kerala coast persists and the associated rainfall along the west coast is also likely to persist on day 1 and 2. Although the upper air cyclonic circulation over central Pakistan & adjoining West Rajasthan has become less marked, localized thunderstorm activity is likely to continue on day 1 over the Northwest Indian region.

24 hour Advisory for IOP:

Coastal Andhra Pradesh,
Telangana, Coastal Karnataka, Konkan and Goa
Assam, Meghalaya,
Nagaland, Manipur, Mizoram and Tripura
J & K, Himachal Pradesh, Uttarakhand
Uttar Pradesh,
Chhattisgarh, Marathwada, Vidarbha,
Madhya Maharashtra, Entire Madhya Pradesh,
Bihar, Jharkhand,
Odisha, West Gangetic West Bengal

48 hour Advisory for IOP:

Assam, Meghalaya,
Nagaland, Manipur, Mizoram and Tripura
North Interior Karnataka, Telangana, Vidarbha
Coastal Andhra Pradesh, Coastal Odisha
Marathwada, Madhya Maharashtra
Uttarakhand, Uttar Pradesh,

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

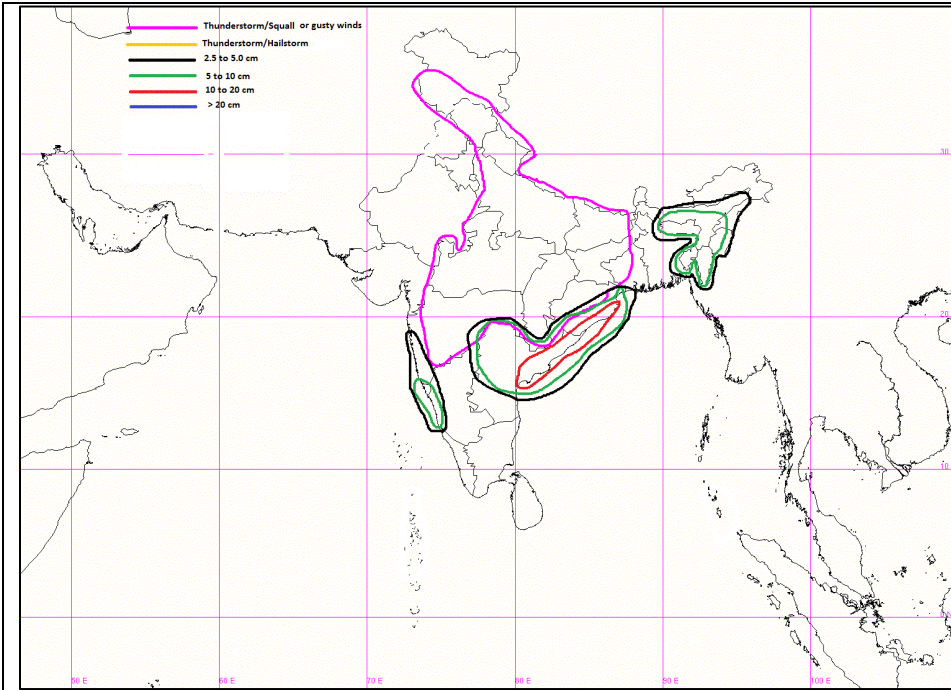
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ForRadarimagesofthepast24hoursincludingmosaicofimages:

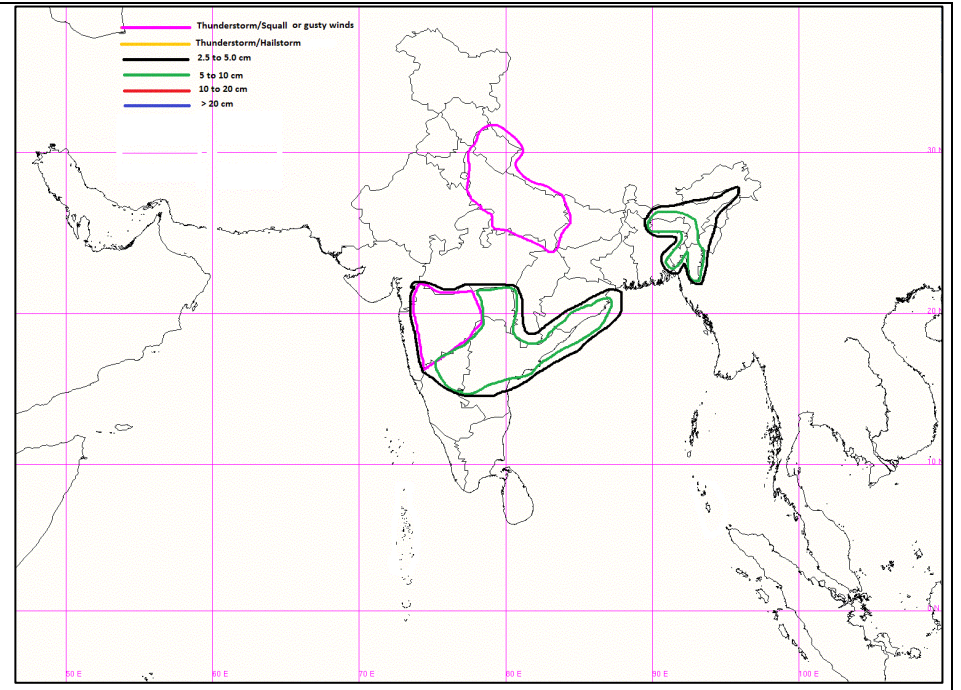
http://ddgmui.imd.gov.in/dwr_img/

Satellite sounder based T- Phigram

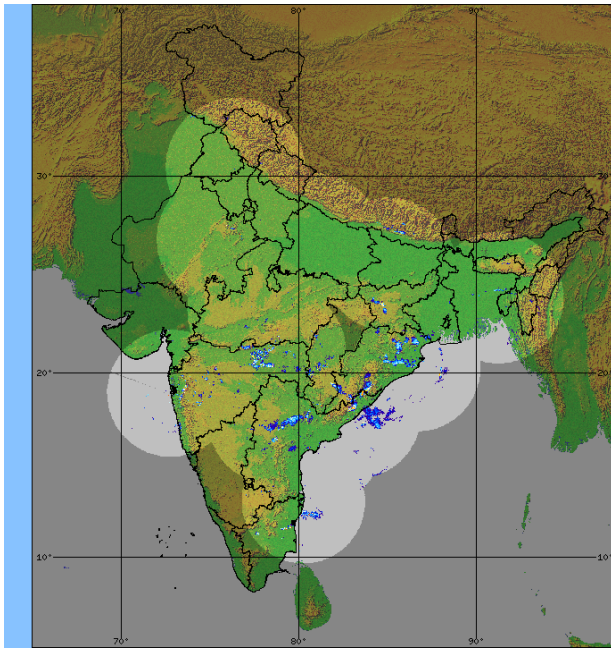
http://satellite.imd.gov.in/map_skm2.html



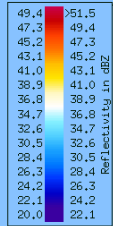
IOP Advisory for 24 hours



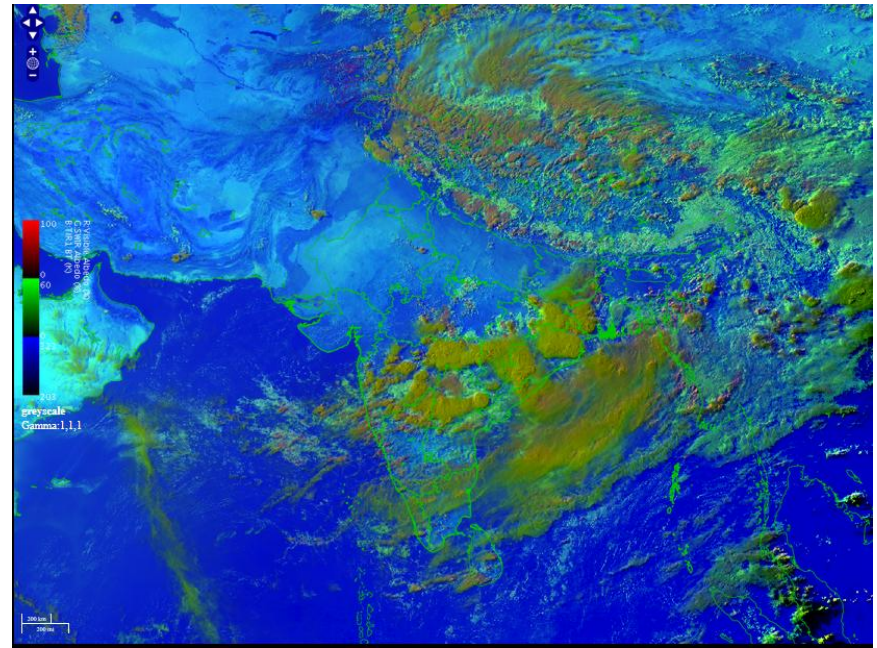
IOP Advisory for 48 hours



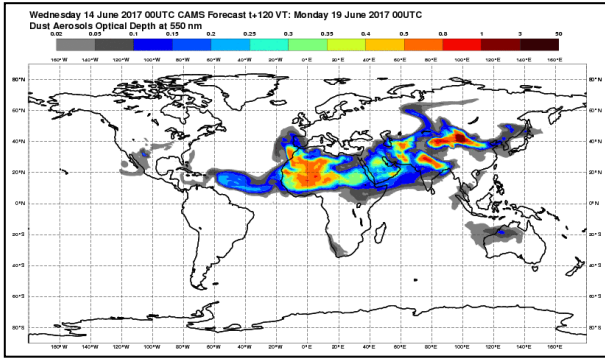
INDIA
 PPI
 COMP
 Task: IMD-C
 PRF: 300Hz
 Elevation: 0.2
 Max. Range: 1695 km
17:10:15
15 JUN 2017 IST



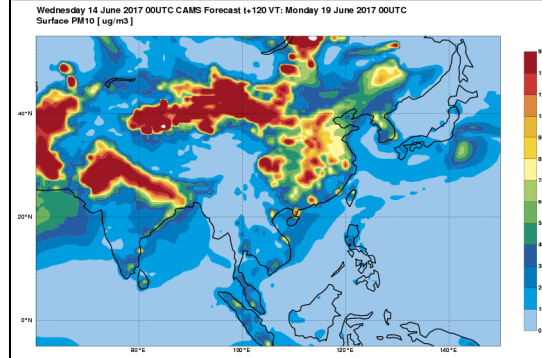
DWR composite at 1710 hrs IST



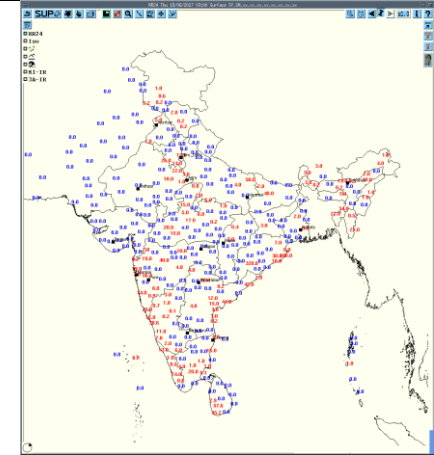
RAPID RGB Satellite Imagery at 1630 hrs IST of today



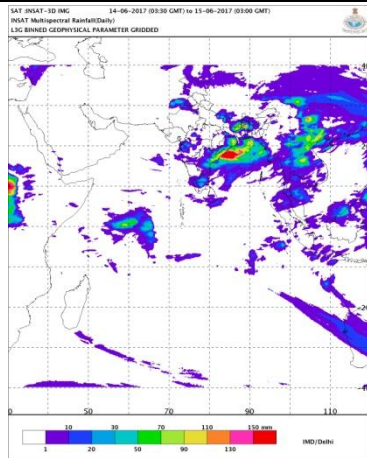
Forecast Dust Concentration for 00UTC of 18th June



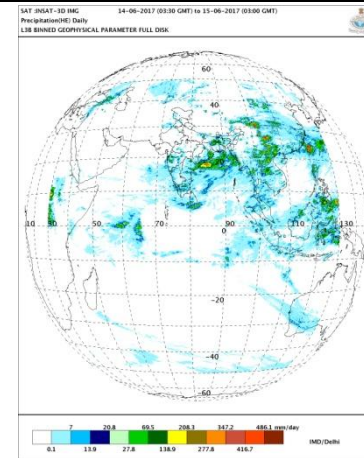
PM10 Forecast for 00UTC of 18th June



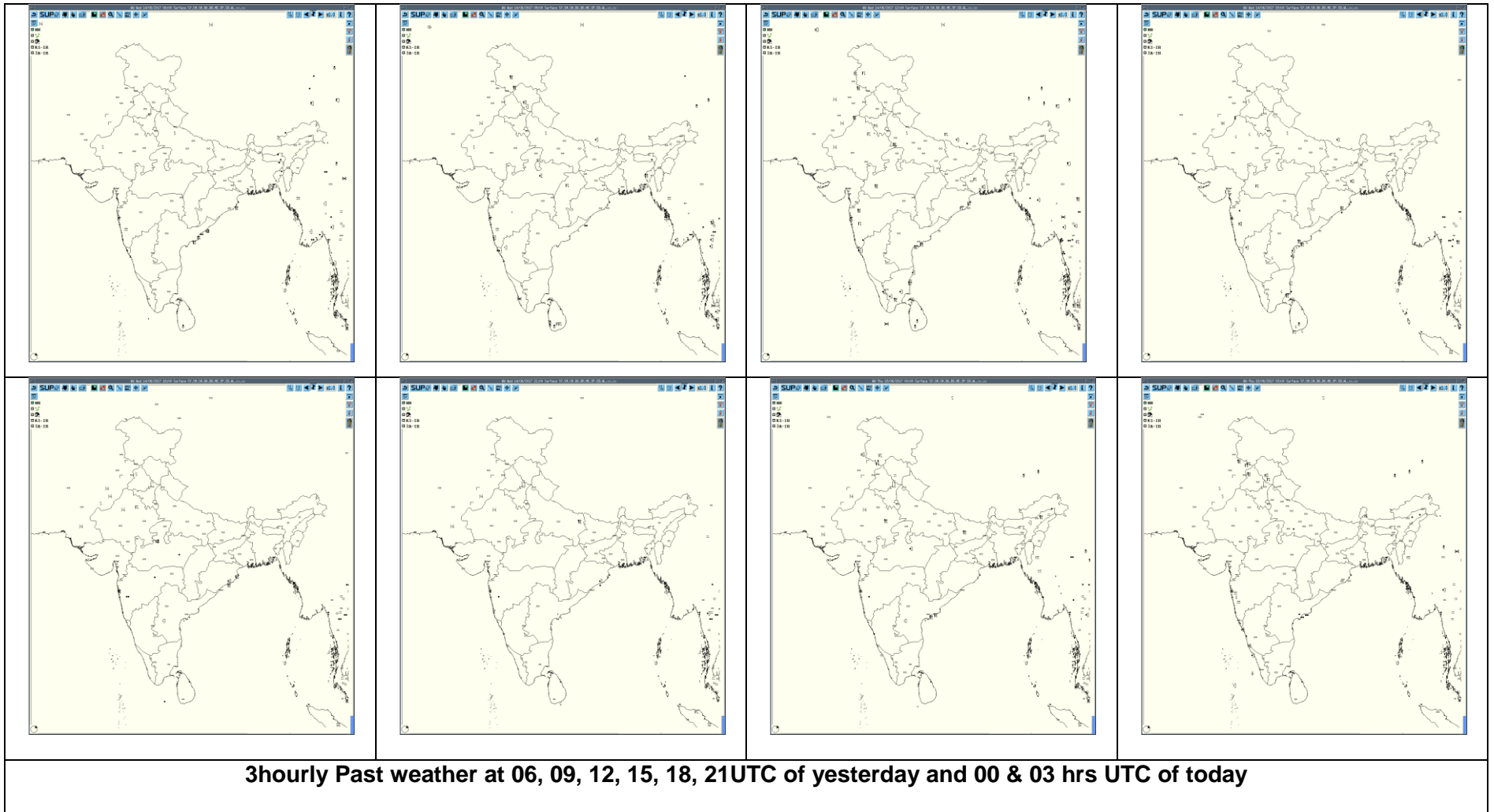
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

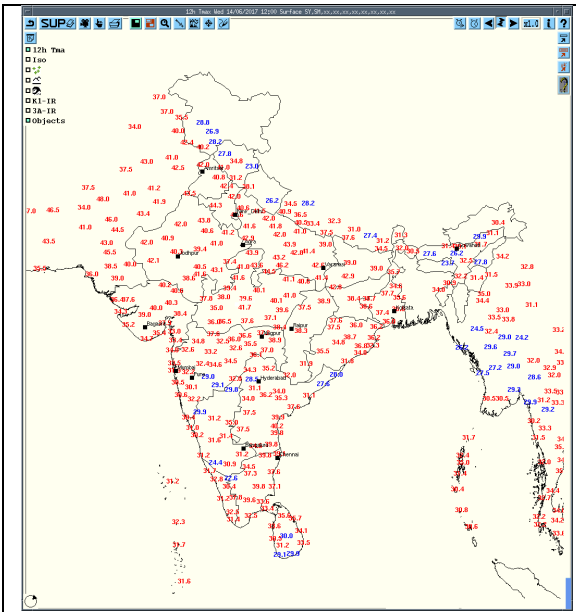


IMR Rainfall

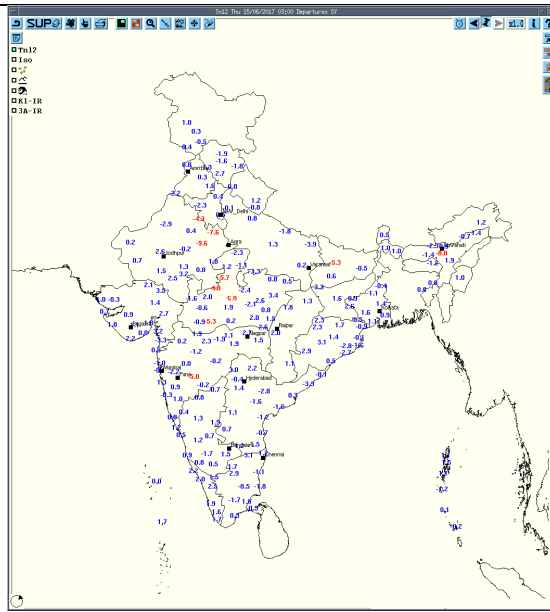


HEM Rainfall

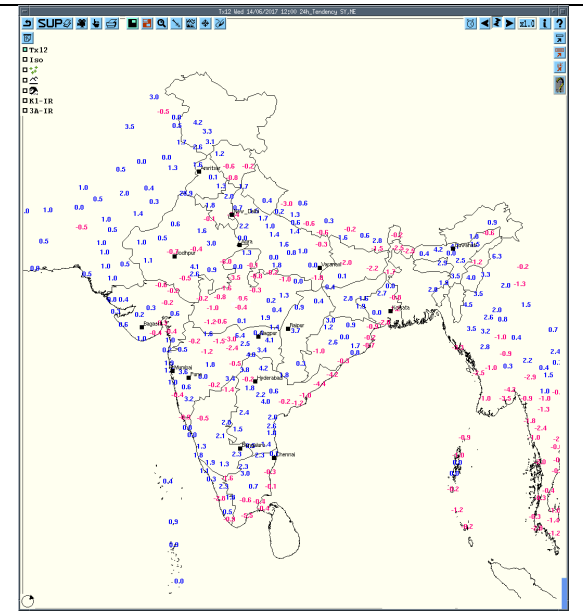




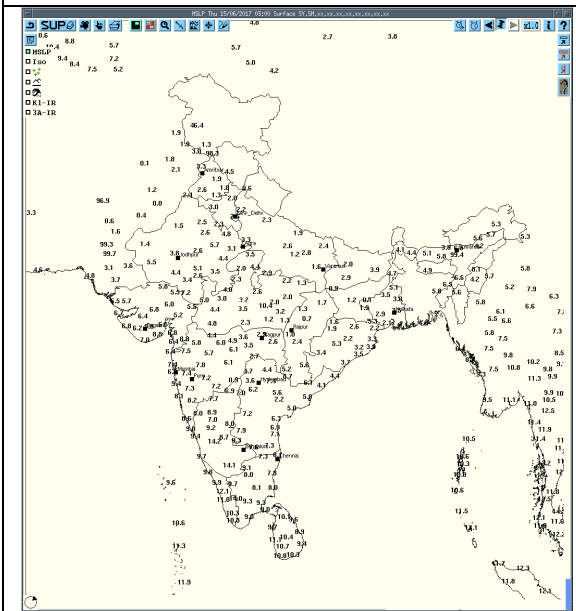
T_{max}



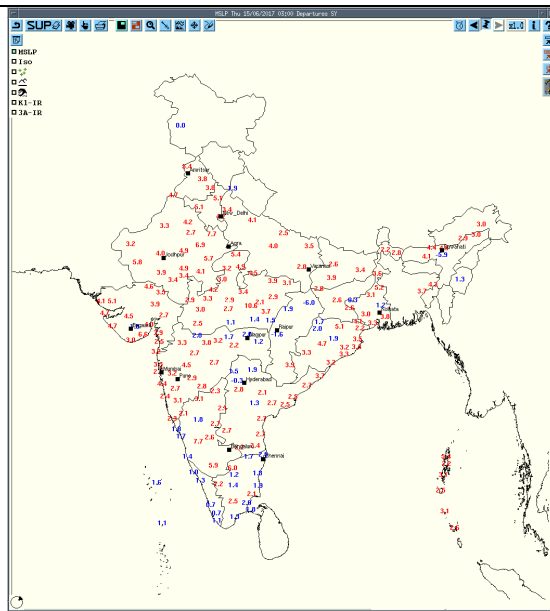
Departure T_{max}



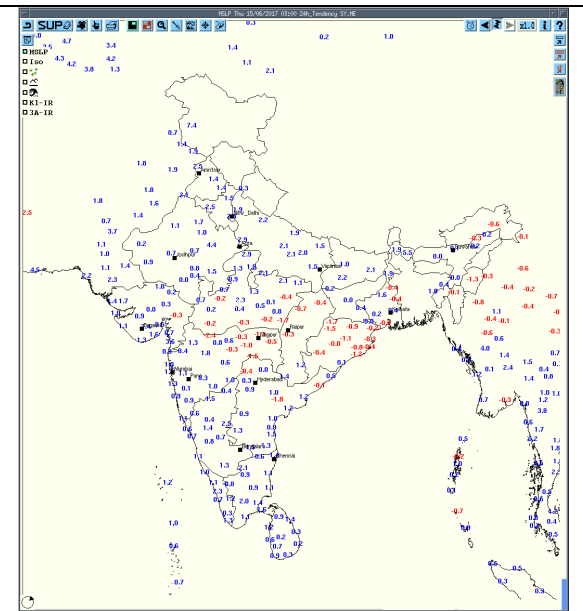
Tendency T_{max}



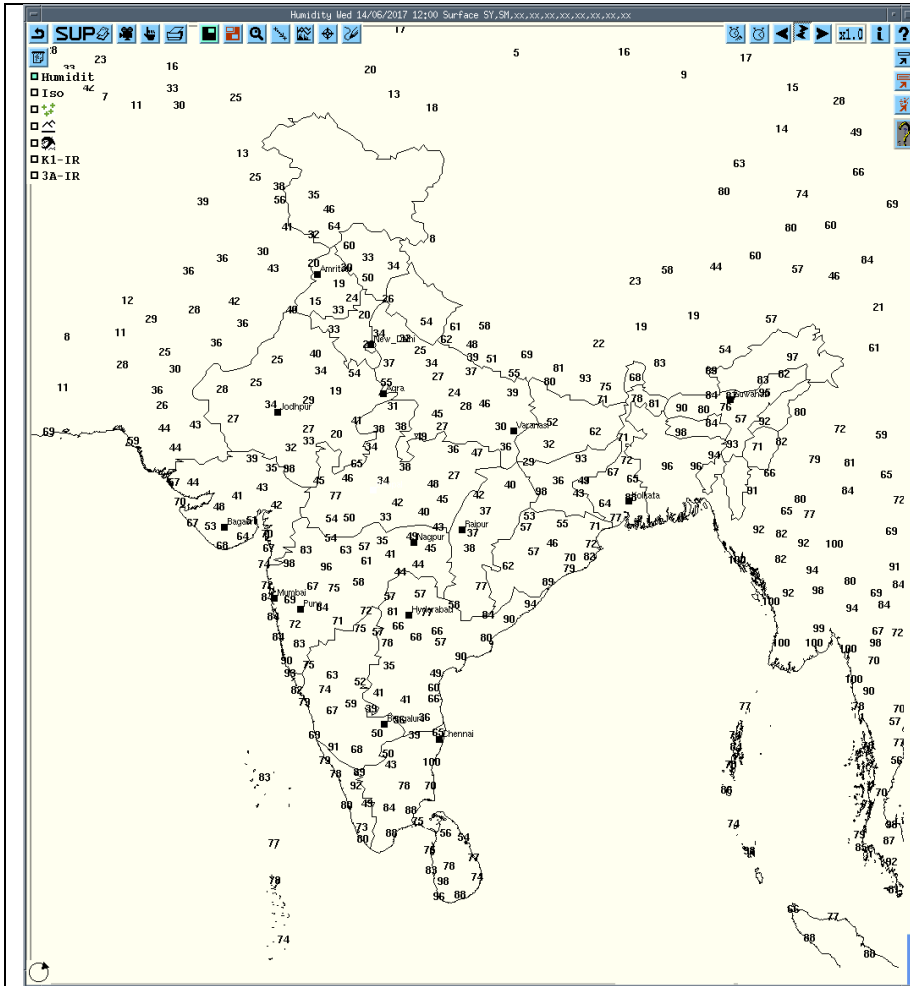
MSLP



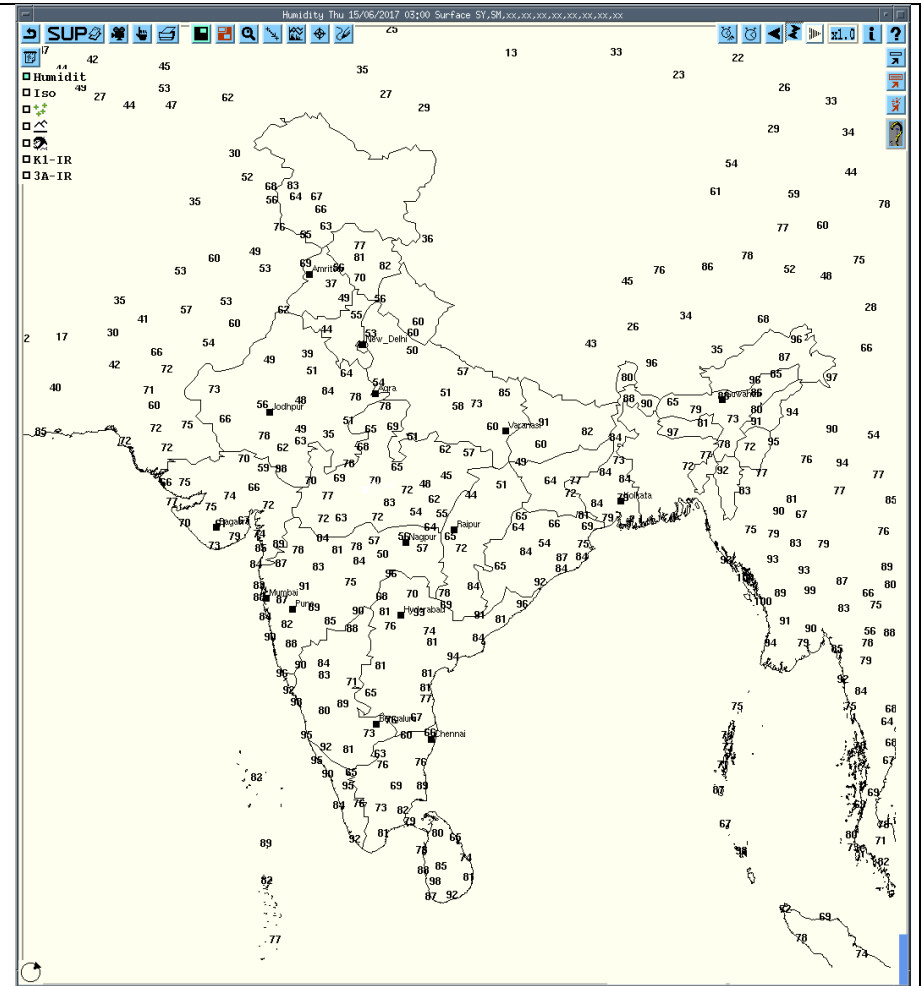
Departure MSLP



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
14-06-17	0600UTC	Nil	Nil	Nil	Nil
14-06-17	0900UTC	Bhaderwah, Pahalgam/ Sundernagar	NW India	J & K/ Himachal Pradesh	Thunderstorm
		Pendra Road	C India	Chhattisgarh	Thunderstorm
14-06-17	1200UTC	Kupwara/ Churu/ Agra	NW India	J & K/ Rajasthan/ Uttar Pradesh	Thunderstorm
		Panagarh, Kolkata	E India	West Bengal	Thunderstorm
		Chandbali, Bhubaneswar	E India	Odisha	Thunderstorm
		Indore	C India	Madhya Pradesh	Thunderstorm
		Nasik, Pune	W India	Maharashtra	Thunderstorm
		Machilipatnam, Bapatla	S India	Andhra Pradesh	Thunderstorm
		Cuddalore, Madurai	S India	Tamilnadu	Thunderstorm
14-06-17	1500UTC	Churu, Bikaner	NW India	Rajasthan	Lightening
		Bankura	E India	West Bengal	Thunderstorm
		Indore	C India	Madhya Pradesh	Thunderstorm
		Bhubaneswar	E India	Odisha	
		Pune	W India	Maharashtra	Thunderstorm
		Vijayawada, Machilipatnam	S India	Andhra Pradesh	Thunderstorm
		Adiramapatinam	S India	Tamilnadu	Thunderstorm
14-06-17	1800UTC	Churu	NW India	Rajasthan	Thunderstorm
		Guna	C India	Madhya Pradesh	Thunderstorm
		Chandbali, Bhubaneswar, Puri	E India	Odisha	Thunderstorm
14-06-17	2100UTC	Gorakhpur	NW India	Uttar Pradesh	Thunderstorm
15-06-17	0000UTC	Banihal, Jammu	NW India	J & K	Thunderstorm
		North Lakhimpur	NE India	Assam	Thunderstorm
		Jaipur	NW India	Rajasthan	Thunderstorm
		Patna	E India	Bihar	Thunderstorm
		Narsapur, Machilipatnam	S India	Andhra Pradesh	Thunderstorm
15-06-17	0300UTC	Jammu	NW India	J & K	Thunderstorm
		Amritsar	NW India	Punjab	Thunderstorm
		Sundernagar, Shimla	NW India	Himachal Pradesh	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)
Srinagar	Northwest India	J & K	Thunderstorm	14-06-17	1800	1810
Pahalgam	Northwest India	J & K	Thunderstorm	14-06-17	1345	1425
Kupwara	Northwest India	J & K	Thunderstorm	14-06-17	1540	1835
Jammu	Northwest India	J & K	Thunderstorm	15-06-17	0400	0830
Banihal	Northwest India	J & K	Thunderstorm	14-06-17	0530	0605
Bhaderwah	Northwest India	J & K	Thunderstorm	14-06-17	1340	1440
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	14-06-17	1520	1540
Jaipur	Northwest India	Rajasthan	Thunderstorm	15-06-17	0530	0830
Pilani	Northwest India	Rajasthan	Thunderstorm	14-06-17	1630	1645
Chittaurgarh	Northwest India	Rajasthan	Thunderstorm	14-06-17	2040	2110
Ganganagar	Northwest India	Rajasthan	Thunderstorm	14-06-17	1738	1950
Churu	Northwest India	Rajasthan	Thunderstorm	14-06-17	1630 2240	1730 2345
Gorakhpur	Northwest India	Uttar Pradesh	Thunderstorm	15-06-17	0100	0400
Sultanpur	Northwest India	Uttar Pradesh	Thunderstorm	14-06-17	2350	0020
Ballia	Northwest India	Uttar Pradesh	Thunderstorm	15-06-17	0315	0415
Jhansi	Northwest India	Uttar Pradesh	Thunderstorm	14-06-17	2045	2130
Akola	Central India	Vidarbha	Thunderstorm	14-06-17	2305	0025
Gwalior	Central India	Madhya Pradesh	Thunderstorm	14-06-17	2110 2240	2115 2245
Indore	Central India	Madhya Pradesh	Thunderstorm	14-06-17	1525 2020	1810 2145
Pendra Road	Central India	Chhattisgarh	Thunderstorm	14-06-17	1330	1600
DumDum	East India	West Bengal	Thunderstorm	14-06-17	1627	1705
Canning	East India	West Bengal	Thunderstorm	14-06-17	1240	1310
Haldia	East India	West Bengal	Thunderstorm	15-06-17	0530	0640
Asansol	East India	West Bengal	Thunderstorm	14-06-17	1630	2200
Bankura	East India	West Bengal	Thunderstorm	14-06-17	1900	2000
Patna	East India	Bihar	Thunderstorm	15-06-17	0500	0730
Bhubaneswar	East India	Odisha	Thunderstorm	14-06-17	1655	2310
Chandbali	East India	Odisha	Thunderstorm	14-06-17	1700 2200	1845 2300
Paradeep	East India	Odisha	Thunderstorm	14-06-17	1035 1920	1130 2100
Puri	East India	Odisha	Thunderstorm	14-06-17	2045	0115
North Lakhimpur	Northeast India	Assam	Thunderstorm	15-06-17	0500	0545
Cherrapunji	Northeast India	Meghalaya	Thunderstorm	14-06-17	0830	0910
Agartala	Northeast India	Tripura	Thunderstorm	14-06-17	1400	1720

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)
Calingapatnam	South India	Andhra Pradesh	Thunderstorm	14-06-17	1145	1245
Tuni	South India	Andhra Pradesh	Thunderstorm	14-06-17	0820	1040
Visakhapatnam	South India	Andhra Pradesh	Thunderstorm	14-06-17	0830	1530
Vijayawada AP	South India	Andhra Pradesh	Thunderstorm	14-06-17	1845	2050
Masulipatnam	South India	Andhra Pradesh	Thunderstorm	14-06-17	1635	2130
Masulipatnam	South India	Andhra Pradesh	Thunderstorm	15-06-17	0250	0530
Narsapur	South India	Andhra Pradesh	Thunderstorm	14-06-17	1100	1145,
Narsapur	South India	Andhra Pradesh	Thunderstorm	15-06-17	0315	0730
Kakinada	South India	Andhra Pradesh	Thunderstorm	14-06-17	0850 1040	0920 1210
Bapatla	South India	Andhra Pradesh	Thunderstorm	14-06-17	1540 2040	1930 2145
Ongole	South India	Andhra Pradesh	Thunderstorm	14-06-17	2120	2230

Past 24 hours DWR Report:

Radar Station Name	Date	Time Interval Of Observation (UTC)	Organisation Of The Cells(Isolated Single Cells/ Multiple Cells/ Convective Regions/ Squall Lines) With Height Of 20 dbZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Patna	15.06.17	140300 141400	NIL	NIL	N/A	N/A	N/A
		141400 141450	Single Cell. Maximum Reflectivity : 45 dBZ Echo Top : 13.8 KM	Range: 213 KM from DWR Patna in ESE direction. Movement- SOUTHERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	Bhagalpur & Banka.
		141450 141730	NIL	NIL	N/A	N/A	N/A
		141730 150300	Multiple Cell. Maximum Reflectivity : 51 dBZ Echo Top : 15 KM Multiple Cells. Maximum Reflectivity : 45.5 dBZ Echo Top : 14 KM	Range: 205 KM from DWR Patna in North-North West direction. Movement- South Easterly Range: 150 KM from DWR Patna in North West direction. Movement- South Easterly	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	West Champaran, East Champaran, Shivhar, Sitamarhi, Muzaffarpur, Dharbhanga, Madhubani, Samastipur, Gopalganj, Siwan, Saran, Buxar, Bhojpur, Patna, Vaishali, Jehanabad, Nalanda, Begusarai, Shekhpura, Lakhisarai, Jamui, Munger, Khagaria

Radar Station Name	Date	Time Interval of Observation (UTC)	Organisation of cells (Isolated single cells/multiple cells/convective regions /squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated Severe Weather if any	Districts affected
Karaikal	14.06.17	1.0730Z-1730Z	1) cluster of cells in NW direction 150 km range with max reflectivity of 95dBz and Average height of 12 km.	1.Moving in SEly direction	1.Cells started forming at 1312 IST and dissipated at 2312 IST	N/A	N/A
		2.0830Z-1802Z	2) cluster of cells in SW direction 200 km range with max reflectivity of 95dBz and Average height of 12 km.	2. Moving towards NEly Direction	2.Cells started forming at 1312 IST and dissipated at 2312 IST		
		3.1732Z-2030Z	3). Isolated cell at 150 km range in E direction with max reflectivity 75dBz average height of 8 km	3.moving in Ely direction	3. cell started forming at 2232 IST and dissipated at 0152 IST		
	1506.17			Nil			
Jaipur	14.06.17	0652-1352 UTC	Multiple cell with average height of 6.0 km & maximum reflectivity 53.0 dBZ	Multiple cell develop to before 0652 UTC of 14/06/2017 towards North-East of Jaipur and moved to East Wards at speed 25-30 km/hr	Cell starts forming from before to 0652 of 14/06/2017 at NE of Jaipur and reaches maximum reflectivity during 0932-1022 UTC.	Thunderstorm/ rain at isolate places	Alwar, Bharatpur, Dholpur, Dausa, Karauli
	14.06.17	0732-1132	Multiple cell with average height of 4.0 km & maximum reflectivity 50.0 dBZ	Multiple cell develop to 0732 UTC of 14/06/2017 towards South-East of Jaipur and moved to South- East Wards at speed 30-35 km/hr	Cell starts forming from before to 0732 of 14/06/2017 at South-East of Jaipur and reaches maximum reflectivity during 0922-1022 UTC.	Thunderstorm/ rain at isolate places	Baran, Jhalawar
	14.06.17	0942-1502	Multiple cell with average height of 5.0 km & maximum reflectivity 51.5 dBZ	Multiple cell develop to 0942 UTC of 14/06/2017 towards NNW &N of Jaipur and moved to E Wards at speed 20-25 km/hr	Cell starts forming from before to 0942 of 14/06/2017 at N NW &N of Jaipur and reaches maximum reflectivity during 1132-1142 UTC.	Thunderstorm/ rain at isolate places	Churu, Jhunjhunu Sikar, Alwar
	15.06.17	2102-0012	Multiple cell with average height of 6.0 km & maximum reflectivity 50.0 dBZ	Multiple cell develop to 2102 UTC of 15/06/2017 towards NW of Jaipur and moved to E,SE Wards at speed 30-35 km/hr	Cell starts forming from before to 2102-Continue of 15/06/2017 at E, SE of Jaipur and reaches maximum reflectivity during 0102-0252 UTC (continue).	Thunderstorm/ rain at isolate places	Sawaima dhopur Jaipur, Tonk, Sikar Dausa

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
Visakhapatnam	15.06.17	14/0300 14/0600	Squally line cb cells from SW to East with max reflectivity 50 dBZ and average height 11kms.	Squally line of cb cells are continued since last observation and moving Easterly.	Max reflectivity on the squally line of cb cells is reduced.	Thunderstorms.	-
		14/0900 14/1200	Convective region formed towards SE direction in the sea with max. Height 10 Km with 50 dBZ.	106 Km from the radar and moving Ely	Reflectivity in the region decreasing.	Thunderstorms.	-
		14/1200 14/1500	Convective region towards SE direction in the sea with max. Height 15 Km with 50 dBZ.	150 Km from the radar and moving Ely	Dissipating as they moves Ely.	-	-
		14/1800 15/0000	Cluster of single cells gradually developing into huge convective region with max reflectivity of 54 dBz and max ht of 17.5 kms	About 50 to 250 kms from radar in Ely and ESEly direction in the sea and moving Ely.	Gradually developing into a huge convective region.	-	-
		15/0000 15/0300	Cluster of single cells gradually developing into huge convective region with max reflectivity of 53 dBz and max ht of 14 kms	About 100 to 250 kms from radar in Ely and SEly direction in the sea and moving Ely.	Gradually developing into a huge convective region.	-	-
Lucknow	15.06.17	14/1242 - 14/2022	Isolated Cells with average height of 12 km and maximum reflectivity of 51.5dbZ	WNW(60km) moving in E'y direction at speed of 43.2kmph.	Cells started forming at 122UTC at WNW (90km) from Radar. Matured in size subsequently. Maximum reflectivity during 1522 UTC and 1602UTC.	TS	-

Radar Station Name	Date	Time Interval Of Observation (UTC)	Organisation Of The Cells(Isolated Single Cells/ Multiple Cells/ Convective Regions/ Squall Lines) With Height Of 20 dbZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Patna	15.06.17	140300 141400	NIL	NIL	N/A	N/A	N/A
		141400 141450	Single Cell. Maximum Reflectivity : 45 dBZ Echo Top : 13.8 KM	Range: 213 KM from DWR Patna in ESE direction. Movement- SOUTHERLY	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	Bhagalpur & Banka.
		141450 141730	NIL	NIL	N/A	N/A	N/A
		141730 150300	Multiple Cell. Maximum Reflectivity : 51 dBZ Echo Top : 15 KM Multiple Cells. Maximum Reflectivity : 45.5 dBZ Echo Top : 14 KM	Range: 205 KM from DWR Patna in North-North West direction. Movement- South Easterly Range: 150 KM from DWR Patna in North West direction. Movement- South Easterly	Warning E-mail and Fax sent to State Disaster management Authority and Concern DMs	N/A	West Champaran, East Champaran, Shivhar, Sitamarhi, Muzaffarpur, Dharbhanga, Madhubani, Samastipur Gopalganj, Siwan, Saran, Buxar, Bhojpur, Patna, Vaishali, Jehanabad, Nalanda, Begusarai, Shekhpura, Lakhisarai, Jamui, Munger, Khagaria

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
Paradeep	15.06.17	0300-2300 UTC	Isolated single/multiple cells seen in the NW & SW sector of the RADAR between 240-355 degrees (clockwise) and with highest Reflectivity values of the order of 40 dBZ and heights exceeding 14 km.	Position: NW sector of radar at a distance of 40-200 km approx. Movement: Nly initially and NWly in later stages in the sea.	Convective regions seen in the southern sector of the RADAR in late night and morning hours scattered from 100-250 kms in the sea area having SWly movement.	Rain with Thunder and lightning.	Bhadrak, Jajpur, Nayagarh, Keonjhar, Mayurbhanj, Khorda, Cuttack, Jagatsinghpur, Dhenkanal, Kendrapada, Baleshwar, Puri Ganjam.
Agartala	15.06.17	140300 - 140900	Multiple cells formed NW OF DWR Agartala with Maximum Height 16 km at 0522UTC and maximum reflectivity 41 dBZ at 0342 UTC	Formed 150 km NW of DWR and moves East wards with around 71 kmph. Squall line formed at about 0422 UTC.	Cells dissipated at 0900 UTC over Assam.	N/A	N/A
		140512 - 141212	Multiple Cells WWN of DWR Agartala with Maximum Height 16 km at 0712 UTC and maximum reflectivity 53 dBZ at 0722 UTC.	Formed 90 km WWN of DWR and moved East wards at around 31 kmph	Cells dissipated at 1212 UTC over Mizoram.	N/A	N/A
		141312 - 141512	Multiple cell formed with Maximum Height 16 km at 1212 UTC and maximum reflectivity 44 dBZ at 1212UTC	Formed 240 km NWW and around 70 km WWS of DWR Agartala. Movement was stationary.	Cells dissipated at 1512 over Bangladesh.	N/A	N/A

	Date	Time interval of observation (UTC)	Organization of the cells (Isolated single cells/multiple cells/ convective regions/ squall lines) with height of 20dBZ echo top and maximum reflectivity	Formation w.r.t radar station and Direction of movement	Remarks	Associated severe weather if any	Districts affected
Radar Station name DWR Machilipatnam	03Z of 14.06.20 17 to 03Z of 15.06.20 17	0300 to 1221 UTC	Isolated Multiple cells average height of 8.5km with maximum reflectivity of 54.0 dBZ.	NE(178KM) and moving E ly direction with average speed of 25.0kmph	Cell started forming at 0811 UTC, at NW(227 km) from Radar the maximum reflectivity during 0941 UTC to 0401 UTC and died down at 0511 UTC	Possibility of Thunder storm with rain and winds.	East Godavari, Visakhapatnam
	03Z of 14.06.20 17 to 03Z of 15.06.20 17	0411 to slowly dissipated later into the sea.	Isolated Multiple cells average height of 7.3 km with maximum reflectivity of 53.5dBZ.	NE-135Kmand moving E ly direction with average speed of 40.0kmph	Cell started forming at 0421UTC, at NE (62.1km) from Radar the maximum reflectivity during 0421UTC to 0611 UTC and moved in to the sea.	Possibility of Thunder storm with rain and winds.	East, West Godavari
	03Z of 14.06.20 17 to 03Z of 15.06.20 17	0921 to slowly dissipated into sea.	Isolated Multiple cells average height of 9.5 km with maximum reflectivity of 63.5dBZ.	WNW (36.7KM) and moving E ly direction with average speed of 35.0kmph	Cell started forming at 0921UTC, at NW (63.7km) from Radar the maximum reflectivity during 1011UTC to 1201 UTC and moved in to the sea.	Possibility of Thunder storm with hail and rain with moderate winds.	Guntur Krishna
	03Z of 14.06.20 17 to 03Z of 15.06.20 17	1021 to slowly dissipated into sea.	Isolated Multiple cells average height of 6.3 km with maximum reflectivity of 56.5dBZ.	NW (81KM) and moving E ly direction with average speed of 30.0kmph	Cell started forming at 1021UTC, at W (123km) from Radar the maximum reflectivity during 1231UTC to 1411 UTC and moved in to the sea.	Possibility of Thunder storm with rain and winds.	Guntur Krishna
	03Z of 14.06.20 17 to 03Z of 15.06.20 17	1641 to 11 UTC 2101	Isolated Multiple cells average height of 6.3 km with maximum reflectivity of 53.0dBZ.	SW (215KM) and moving NE ly direction with average speed of 32.0kmph	Cell started forming at 1641UTC, at SW (250km) from Radar the maximum reflectivity during 1811UTC to 1911 UTC and dissipated at 2101UTC.	Possibility of Thunder storm with rain and winds.	Prakasam Nellore.

Radar Station Name	Date	Time Interval of Observation (UTC)	Organisation of cells (Isolated single cells /multiple cells/ convective regions /squall lines) with height of 20 dBZ echo top and maximum reflectivity	Formation w.r.t. radar station and Direction of movement	Remarks	Associated Severe Weather if any	Districts affected
Kolkata	14.06.17	0941-1701	1. Single isolated cell developed into big cell system with maximum reflectivity of 60.0 dBz at 1151 UTC and maximum height 17.24 km at 1031 UTC.	1.NNW (179.7 km) moving towards S-ly	1.Single isolated cell developed at 0941 UTC towards NNW(179.7 km) from Radar developed into Big cell system Matured and Dissipated at 1701 UTC in NW at a distance of 173.2 km from radar.	Thunderstorm / Squall /Hail / Rain	N/A
		0952-1610 UTC	1. Single isolated cell developed into multi cells system with maximum reflectivity of 63.5 dBz at 1141 UTC and maximum height 14.78 km at 1141 UTC.	1.NW (238 km) moving towards S-ly	1. Single isolated cell developed at 0951 UTC towards NW(238 km) from Radar developed into multi cells system Matured and Dissipated at 1610 UTC in NW at a distance of 133.9 km from radar.	Thunderstorm / Squall /Hail / Rain	N/A
		1131-1552 UTC	1. Single isolated cell developed into big cell system with maximum reflectivity of 61.5 dBz at 1220 UTC and maximum height 18.0 km at 1220 UTC.	1.NNW (237.6 km) moving towards SSE-ly	1.Single isolated cell developed at 0941 UTC towards NNW(237.6 km) from Radar developed into Big cell system Matured and Dissipated at 1552 UTC in NNW at a distance of 123.6 km from radar.	Thunderstorm / Squall /Hail / Rain	N/A
		1711-2351 UTC	NIL	NIL	NO ECHO	NIL	NIL
	15.06.17	0001-0302 UTC	NIL	NIL	NO ECHO	NIL	NIL



+ thunderstorm



+ heavy thunderstorm



sandstorm or dust storm



squall



hail shower



tropical storm



+ tornado



+ lightning



+ hurricane

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haze



smoke



dust or sand storm



fog



drizzle



rain



snow



showers



hail



thunderstorm

Weather Symbols