



India Meteorological Department

FDP STORM Bulletin No. 91 (05-06-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC Inference (0300UTC of the day):

- ◆ The Northern Limit of Monsoon (NLM) continues to pass through Lat. 14°N/ Long. 60°E, Lat. 14°N/ Long. 70°E, Shirali, Chitradurga, Arogyavaram, Sriharikota, Lat. 14°N/ Long. 85°E, Lat. 19°N/ Long. 90°E, Agartala, Lumding, north Lakhimpur and Lat. 29°N/ Long. 95°E. Conditions are becoming favourable for further advance of Southwest Monsoon into some more parts of Central Arabian Sea, remaining parts of Karnataka and Rayalaseema, some parts of south Konkan & Goa, Telangana, some more parts of Coastal Andhra Pradesh and Central Bay of Bengal during next 48 hours. Conditions are very likely to become favourable for further advance of Southwest Monsoon into some more parts of Maharashtra, Telangana & Coastal Andhra Pradesh in subsequent 48 hours. Conditions are also likely to become favourable for further advance of Southwest Monsoon into most parts of Arabian Sea, remaining parts of Maharashtra, some parts of Gujarat, southern parts of Madhya Pradesh & Chhattisgarh, Odisha, West Bengal & Sikkim, remaining parts of Northeastern states and most parts of Bay of Bengal.
- ◆ The EastWest trough from Punjab to Gangetic West Bengal now runs from Punjab to Interior Odisha across Haryana, northeast Rajasthan, North Madhya Pradesh and north Chhattisgarh and extends upto 1.5 km above mean sea level.
- ◆ The cyclonic circulation over Haryana & neighbourhood now lies over northeast Rajasthan & neighbourhood at 1.5 km above mean sea level embedded in the above trough.
- ◆ A cyclonic circulation between 1.5 & 2.1 km above mean sea level lies over northeast Chhattisgarh & neighbourhood.
- ◆ The cyclonic circulation over southwest Uttar Pradesh & neighbourhood persists and now seen at 3.1km above mean sea level.
- ◆ A cyclonic circulation between 4.5 & 5.8 km above mean sea level lies over south Bihar & neighbourhood.
- ◆ The North-South trough at 1.5 km above mean sea level from the cyclonic circulation over southwest Uttar Pradesh to West Central Bay of Bengal off south Andhra Pradesh coast has become less marked.
- ◆ An off shore trough at mean sea level runs from south Maharashtra coast to north Kerala coast and extends upto 0.9 km above mean sea level.
- ◆ The cyclonic circulation over West Central Bay of Bengal off Andhra Pradesh coast now lies over northern parts of Westcentral Bay of Bengal & neighbourhood between at 3.1 & 4.5 km above mean sea level.
- ◆ A Low Pressure Area is very likely to develop over North Bay of Bengal around 08th June.

- ◆ The cyclonic circulation over Southeast Arabian Sea off Kerala-Karnataka coasts extending upto 0.9 km above mean sea level has merged with off shore trough.
- ◆ The eastwest shear zone now runs roughly along Lat. 13°N across south Peninsular India between 3.1 & 7.6 km above mean sea level.

Satellite Observations during past 24 hrs and current observation:

Current Observation (based on 0600UTC imagery of INSAT 3D):

Clouds descriptions within India:

North

Scattered low/medium clouds with embedded moderate to intense convection seen over South Himachal Pradesh. Scattered low/medium clouds with embedded isolated weak convection seen over Jammu & Kashmir, rest Himachal Pradesh, Uttarakhand and extreme southeast Uttar Pradesh.

East:

Scattered low/medium clouds with embedded moderate to intense convection seen over East-central Jharkhand, North Odisha, Gangetic West Bengal, south Sub-Himalayan West Bengal, North Manipur and South Nagaland. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over rest parts of the region.

West:

Scattered low/medium clouds with embedded moderate to intense convection seen over Marathwada adjoining Madhya Maharashtra, West Vidarbha, and isolated weak to moderate convection seen over North-central Madhya Pradesh and rest Maharashtra. Scattered low/medium clouds seen over extreme South Gujarat, and rest Madhya Pradesh.

South:

Scattered low/medium clouds with embedded moderate to intense convection seen over North Coastal Andhra Pradesh, Kerala, Lakshadweep, and Nicobar Islands. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over rest parts of the region.

Arabian Sea:

Scattered low/medium clouds with embedded moderate to intense convection seen over Arabian Sea between latitude 5.0N to 19.0N, east of long 60.0E & comorin.

Bay of Bengal & Andaman Sea:

Scattered low/medium clouds with embedded moderate to intense convection seen over South Bay and West –central Bay, South Andaman Sea and South Tenasserim Coast.

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over SE Bihar east Jharkhand Odisha Chhattisgarh south Gangetic West Bengal North-East States SE Madhya Pradesh Marthwada Madhya Maharashtra Goa Karnataka Telengana Rayalaseema Andhra Pradesh Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands (.)

OLR:-

Up to **230** wm^{-2} was observed over SE Bihar east Jharkhand Odisha Chhattisgarh south Gangetic West Bengal North-East States SE Madhya Pradesh Marthwada Madhya Maharashtra Goa Karnataka Telengana Rayalaseema Andhra Pradesh Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands.

Synoptic Features:

Westerly Trough & Jet-Stream -esterly Trough & Jet-Stream are not observed over Indian region.

Dynamic Features:

Wind Shear, Vorticity & Convergence: Wind shear up to 30-40 Kts is observed over Jammu & Kashmir NE states Peninsula India and 10-15 Kts over rest India (.)

Positive Shear tendency is observed over the country (.)

Vorticity (850 hPa) up to 250 is observed over Punjab Haryana Delhi central Uttar Pradesh central Madhya Pradesh north Vidarbha extreme south Tamilnadu(.)

Positive low level convergence (5-10 Kts) observed over most parts of India except south Tamilnadu.

Precipitation:

IMR: Rainfall Up to 150 mm was observed over south Mizoram Nicobar Islands.

Rainfall Up to 90 mm was observed over extreme South Tripura south Odisha north Andhra Pradesh north coastal Konkan adjoining Maharashtra(.)

Rainfall Up to 70 mm was observed over SE Assam south Manipur Tripura north Mizoram Gangetic West Bengal north Odisha south Chhattisgarh central Tamilnadu Lakshadweep(.)

Rainfall Up to 10 mm was observed over SE Bihar east Jharkhand Assam Meghalaya south Nagaland rest Manipur SE Vidarbha WC Chhattisgarh Rest Maharashtra Karnataka Telengana Rayalaseema adjoining Andhra Pradesh Rest Kerala rest Tamilnadu Andaman Islands.

DWR and RAPID Observations:

DWR Composite at 1520IST indicates significant echoes over Telangana, Coastal Andhra Pradesh, Odisha, North Tamilnadu, Madhya Pradesh, Uttarakhand, & Meghalaya. Moderate multiple echoes with DBZ around 50 and height 12-15km are seen on DWR Machilipatnam, Nagpur, Chennai, Hyderabad, Bhopal, Srinagar, Agartala and Kolkata domains at around 1600IST.

RAPID RGB Satellite imagery at 1500 IST indicates significant convection over Jammu & Kashmir, Madhya Pradesh adjoining Southeast Uttar Pradesh, Chhattisgarh, Gangetic West Bengal, East and South Jharkhand, Odisha, Meghalaya, Nagaland, Mizoram, South Konkan & Goa, Telangana, Coastal Andhra Pradesh, Coastal Karnataka, Kerala, Tamilnadu, and Andaman & Nicobar Islands.

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

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

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

Delhi – SAFAR analysis & Forecast	05.06.2018	06.06.2018
PM10 (micro-g/m ³)	173	156
PM2.5 (micro-g/m ³)	64	57

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs: 00 UTC Day0-4: Weak CYCIR over north BoB and intensifying in day 4-5 forecast at 850 hPa

Confluence & wind Discontinuity regions: 12 UTC of Day-0 to Day-2: N-S wind discontinuity over western UP adjoining Rajasthan extending to over Maharashtra

Synoptic systems: 00 & 12 UTC of Day-2 to Day-4 at 500 hPa: Weak CYCIR over Kerala and moving towards Mumbai at 500 hPa

00 & 12 UTC of Day-3 to Day-5 at 500 hPa: Weak CYCIR moving over coastal AP to WB.

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

3. Convergence at 850 hPa:

Day/Index: Subdivisions with Lower Level Convergence > 15 x 10⁻⁵ /s

Day0: TN_Puducherry,

Day1: TN_Puducherry,

Day2: East_MP,

Day3: Arunachal_Pradesh, Assam_Meghalaya, East_MP, Chhattisgarh,

Day4: Nil

4. Low level Vorticity:-Positive Vorticity:

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

Day0: TN_Puducherry,

Day1: Jammu_Kashmir, TN_Puducherry,

Day2: TN_Puducherry, Kerala,

Day3: West_UP, TN_Puducherry, Kerala,

Day4: Assam_Meghalaya, NE_NMMT, Hry_Chhd_Delhi, Punjab, Odisha, Chhattisgarh, TN_Puducherry, Kerala

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, Guj_Reg, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Marathwada, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka,

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, East_MP, Konkan_Goa, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, NI_Karnataka,

Day2: Arunachal_Pradesh, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, East_MP, Guj_Reg, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, NI_Karnataka,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, West_MP, East_MP, Guj_Reg, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, NI_Karnataka,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, TN_Puducherry

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

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal_Pradesh, Sub_Himalayan_WB, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir,

Day1: Arunachal_Pradesh, Sub_Himalayan_WB, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir,

Day2: Arunachal_Pradesh, Sub_Himalayan_WB, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir,

Day3: Arunachal_Pradesh, Sub_Himalayan_WB, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, West_MP, East_MP, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh,

Day4: Arunachal_Pradesh, Sub_Himalayan_WB, Uttarakhand, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, Odisha, East_MP, Saurashtra_Kutch, Vidarbha, Chhattisgarh, Coastal_AP

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Jharkhand, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka, SI_Karnataka,

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, West_RJ, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Konkan_Goa, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka, SI_Karnataka,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, West_MP, East_MP, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, Odisha, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Gangetic_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Hry_Chhd_Delhi, Punjab, Himachal_Pradesh, Jammu_Kashmir, East_RJ, Odisha, West_MP, East_MP, Guj_Reg, Saurashtra_Kutch, Madhya_Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal_AP, Telangana, Rayalseema, TN_Puducherry, NI_Karnataka

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Himachal_Pradesh, Madhya_Maharashtra, Andaman_Nicobar, Coastal_Karnataka, Kerala,

Day2: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Uttarakhand, Himachal_Pradesh, Konkan_Goa, Andaman_Nicobar, TN_Puducherry, Coastal_Karnataka, SI_Karnataka, Kerala,

Day3: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Sub_Himalayan_WB, Jharkhand, Bihar, East_UP, West_UP, Uttarakhand, Himachal_Pradesh, Odisha, Konkan_Goa, Chhattisgarh, Andaman_Nicobar, Telangana, TN_Puducherry, Coastal_Karnataka, SI_Karnataka, Kerala,

Day4: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, West_UP, Uttarakhand, Himachal_Pradesh, Odisha, Konkan_Goa, Madhya_Maharashtra, Chhattisgarh, Andaman_Nicobar, Coastal_AP, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

Day5: Arunachal_Pradesh, Assam_Meghalaya, NE_NMMT, Gangetic_WB, East_UP, West_UP, Uttarakhand, Himachal_Pradesh, Jammu_Kashmir, Odisha, Guj_Reg, Konkan_Goa, Madhya_Maharashtra, Chhattisgarh, Andaman_Nicobar, TN_Puducherry, Coastal_Karnataka, NI_Karnataka, SI_Karnataka, Kerala,

**** Heavy rainfall activity > 8cm at few places along west coast in Day 4-5 (includes Mumbai).**

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a cyclonic circulation over North East Rajasthan and adjoining area in lower Troposphere (850hPa). The forecast shows it will merge with Trough on day1. An East- West Oriented Trough extends from Punjab to Interior Orissa across Haryana, North East Rajasthan, North Madhya Pradesh and North Chhattisgarh. The forecast shows it will persist till day1. Analysis shows another cyclonic circulation over Northeast Chhattisgarh and adjoining area. The forecast shows it will persist till day2 and become less marked thereafter. The analysis shows an off shore Trough extends from South coastal Maharashtra to North Kerala at (925hPa). The forecast shows it will persist till day2.

2. Location of Jet and Jet Core (>60kt) at 500hPa:

Although the presence of strong westerlies is found over some Eastern parts of 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)}:850hPa Positive Vorticity (>12 x 10⁻¹/s):

4. Low level Positive Vorticity is seen mostly along the East-West Trough, around the cyclonic circulations, central parts of India, Punjab, Haryana, Northwest Rajasthan, Madhya Pradesh, Vidharbha and adjoining areas during next 3 days; Low level Positive Vorticity is also seen over parts Tamil Nadu and Kerala from day 2 onwards.

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): Over parts of Gujarat, Rajasthan, East Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidharbha, Chhattisgarh, East and west Madhya Pradesh, Andhra Pradesh, along east and west coast of India, Sikkim, Assam, Meghalaya, Arunachal Pradesh and adjoining areas during next 3 days; over parts of J&K, Haryana, Punjab on day 1; over parts of Punjab,

Haryana, Delhi, West Uttar Pradesh, Uttarakhand and West Uttar Pradesh on day 3; Significant zone lies over Gujarat, Southwest Rajasthan, Orissa, Madhya Pradesh, Madhya Maharashtra, Chhattisgarh, Marathwada, Vidharbha and Telangana.

Lifted Index (< -2): Similar to T-storm Index lies over Gujarat, Rajasthan, Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana, East Uttar Pradesh, West Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, Orissa, GWB, SHWB, Assam, Arunachal Pradesh, Meghalaya, Mizoram, Tripura, Nagaland and adjoining areas, Telangana, Vidharbha, Chhattisgarh, Andhra Pradesh, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Madhya Maharashtra and Marathwada during next 3 days; over parts of J&K, Punjab, Haryana, Himachal Pradesh, Uttarakhand and West Uttar Pradesh on day 1; on day 2 over parts of J&K, Himachal Pradesh, Punjab and West Uttar Pradesh; on day 3 over parts of West Uttar Pradesh, Haryana and Uttarakhand.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Gujarat, Rajasthan, Uttar Pradesh, Chhattisgarh, North Interior Karnataka, Madhya Pradesh, Madhya Maharashtra, Marathwada, Sikkim and Arunachal Pradesh on day 1; on day 2 it remains over same region but appears over Telangana, Chhattisgarh, Vidharbha and disappear over Haryana and adjoining areas; on day 3 also it remains over same region but appears over parts of Bihar, Jharkhand, Orissa, Chhattisgarh, Telangana, Vidharbha and adjoining areas.

Sweat Index (> 300): Is seen over the sub-divisions along east and west coast, areas along foothills of Himalayas, Central India, South Peninsular India, NE states and most parts of the country during next 3 days; significant zone lies over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Arunachal Pradesh and adjoining areas during next 3 days.

CAPE (> 1000): Mostly seen over parts of Gujarat, South Rajasthan, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, Andhra Pradesh, Rayalaseema, coastal Tamil Nadu, Karnataka, Konkan and Goa, Telangana, coastal Maharashtra including Mumbai, Madhya Maharashtra, Marathwada, Vidharbha, Chhattisgarh, East and West Madhya Pradesh, Sikkim, NE states and adjoining areas during next 3 days; over parts of J&K and adjoining Punjab on day 1; over parts of West Uttar Pradesh on day 3; maximum value of the index is seen over parts of Gujarat and coastal Orissa.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala, Tamil Nadu and south Peninsular India, central, North and Northwest India mainly the value of index lies in above range over most of the parts of the country on day 1 and 3; over most of the parts of the country except Northwest Rajasthan on day 2; significant zone with highest value of the index lies over parts of Gujarat and Rajasthan

5. Rainfall Activity:

Above 130 mm Rainfall: over parts of Telangana on day 2.

70-130 mm Rainfall: over parts of North Interior Karnataka, Telangana and Andhra Pradesh on day 2; over parts of North Bihar, Sikkim, South Madhya Maharashtra, coastal Karnataka, Konkan and Goa on day 3.

40-70 mm Rainfall: over parts of Meghalaya and coastal Karnataka on day 1; over parts of Sikkim, Meghalaya, Orissa, Andhra Pradesh, Telangana and North Interior Karnataka on day 2; over parts of Uttarakhand, Foothills of Himalaya, North Bihar, Sikkim, Assam, Meghalaya, Mizoram, Nagaland and adjoining area; Orissa, Chhattisgarh, Telangana, Madhya Maharashtra, Marathwada, Kerala and coastal Karnataka on day 3.

10-40 mm Rainfall: over parts of Uttarakhand, Foothills of Himalaya, Bihar, Jharkhand, Sikkim, NE states, GWB, SHWB Orissa, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, coastal Maharashtra, Konkan and Goa during next 3 days; over parts of J&K and Himachal Pradesh on day 1; over parts of Gujarat, coastal Maharashtra including Mumbai, East Uttar Pradesh and Vidharbha on day 3.

Up to 10 mm rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Madhya Pradesh, Foothills of Himalaya, GWB, SHWB, Sikkim, NE states, Bihar, Jharkhand, Orissa, Chhattisgarh, Kerala, Interior Karnataka, Konkan & Goa, coastal Maharashtra, South Madhya Maharashtra, Marathwada, Vidharbha, Tamil Nadu, Telangana, Rayalaseema, Andhra Pradesh and Gujarat during next 3 days; over parts of Haryana, Delhi and adjoining area on day 1; over parts of Haryana, Punjab and Rajasthan on day 1 and 2.

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

1. Model Reflectivity (Max. dBz):

>25 dBZ Model Reflectivity: On day 1, over parts of Himachal Pradesh, Uttarakhand, Kerala, Tamil Nadu, Karnataka, NE states, Orissa, North Bihar, Jharkhand, GWB, SHWB, Sikkim, Telangana, Rayalaseema, Andhra Pradesh, Madhya Maharashtra, Marathwada, Vidharbha, coastal Maharashtra including Mumbai, Konkan and Goa; On day 2 over parts of Kerala, Tamil Nadu, Orissa, Andhra Pradesh, Chhattisgarh, Telangana, Tripura, Mizoram, Meghalaya and adjoining area; On day 3 mostly over parts of Kerala, Tamil Nadu, Andhra Pradesh, GWB, Bihar, Jharkhand, Orissa, Sikkim, NE states, Madhya Maharashtra, Marathwada, Chhattisgarh, East Madhya Pradesh, Vidharbha, Karnataka, Telangana, Rayalaseema, Konkan and Goa, coastal Maharashtra, Uttarakhand, Himachal Pradesh and adjoining areas.

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

Total Index (> 50): Above threshold value is observed over most parts of the country except Gujarat, East and West Uttar Pradesh, coastal areas of west coast, coastal Maharashtra, Konkan & Goa, coastal areas along the east coast, SHWB, GWB, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Bihar, Jharkhand, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Chhattisgarh, Telangana, Madhya Pradesh, Vidharbha, Uttarakhand and NE states during next 3 days; below threshold value is also seen over parts of West Uttar Pradesh on day 2 and 3; over parts of Haryana and adjoining Himachal Pradesh on day 2.

K-Index (> 35): Less than threshold value is observed over most of the part of the country during the next 3 days. Prominent values are found over parts of Gujarat, Madhya Pradesh, Vidharbha, Interior Karnataka, Telangana, Chhattisgarh, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Bihar, Jharkhand, Uttar Pradesh, Himachal Pradesh, Uttarakhand, J&K, Punjab, Haryana, Delhi, Rajasthan, GWB, SHWB, South Madhya Maharashtra, Marathwada, Konkan and Goa, South coastal Maharashtra, Foothills of Himalaya, Sikkim and NE states.

CAPE (> 1500): Greater than threshold value over parts of Gujarat, East Uttar Pradesh, coastal areas of west coast, coastal Maharashtra, including Mumbai, Konkan & Goa, coastal areas along the east coast, SHWB, GWB, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Bihar, Jharkhand, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, East and West Madhya Pradesh, Chhattisgarh, Vidharbha and NE states during next 3 days; over parts of J&K, Punjab, Himachal Pradesh and Uttarakhand on day 1; over parts of West Uttar Pradesh, Punjab, Haryana, Delhi, Uttarakhand on day 2 and 3; over parts of Himachal Pradesh and J&K on day 3; over parts of West Rajasthan on day 2;

Maximum value of the index is seen over the parts of Gujarat, coastal Maharashtra including Mumbai, Chhattisgarh, Orissa, GWB, coastal and Interior Andhra Pradesh, Telangana, NE states.

CIN (50-150): The value of the index lies in above range over most of the parts of the country on day 1; over most of the parts of the country except some parts of North West Rajasthan on day 2; and over most of the parts of the country except Eastern parts of the country Bihar, Jharkhand, GWB, SHWB, Northwest Rajasthan and North Orissa on day 3; it has significant larger values over North-western and Central parts of country including J&K, Himachal Pradesh, Punjab, Haryana, Gujarat, Rajasthan, Madhya Pradesh, Andhra Pradesh, Vidharbha, Madhya Maharashtra and Marathwada.

3. Rainfall and thunderstorm activity:

Above 130 mm Rainfall: over parts of South Assam on day 2; over some parts of Coastal Karnataka on day 3.

70- 130 mm Rainfall: over parts of Assam, Meghalaya and Mizoram on day 2; over parts of Arunachal Pradesh, Meghalaya, Manipur, coastal Karnataka, Kerala, South Coastal Maharashtra, Konkan and Goa on day 3.

40- 70 mm Rainfall: over parts of Kerala, coastal Karnataka, coastal Maharashtra, South Tamil Nadu, Konkan and Goa during next 3 days; over parts of Assam, Meghalaya, Mizoram, GWB, Orissa and Andhra Pradesh on day 2; over parts of Uttarakhand, Orissa, Chhattisgarh, Andhra Pradesh and NE states on day 3.

10- 40 mm Rainfall: Over parts of Himachal Pradesh, Uttarakhand, Kerala, Tamil Nadu, Karnataka, Konkan and Goa, Andhra Pradesh, Sikkim, GWB, SHWB, Foothills of Himalaya, Bihar, Jharkhand, Orissa, coastal Maharashtra, Madhya Maharashtra, Telangana, Rayalaseema and NE states during next 3 days; over parts of J&K on day 1; over parts of East Uttar Pradesh, East Madhya Pradesh and Vidharbha on day 2 and 3; over parts of West Madhya Pradesh on day 3.

Up to 10 mm Rainfall: Over parts of J&K, Himachal Pradesh, Uttarakhand, Foothills of Himalaya, Kerala, Tamil Nadu, Karnataka, Konkan and Goa, Sikkim, GWB, SHWB, East Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, Orissa, Telangana, Rayalaseema, Madhya Maharashtra, coastal Maharashtra, Vidharbha, Marathwada, Madhya Pradesh, Andhra Pradesh, Gujarat and NE states during next 3 days; Over parts of Punjab, Haryana, Delhi and adjoining area on day 1 and 2; over parts of West Uttar Pradesh on day 3; over parts of East Rajasthan on day 2.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CAPE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over entire Indian region, excluding extreme Northwest Indian region and with maximum values over central India on day 1. On day 2, the pattern remains the same although the probability of thunderstorm occurrence increases over Gujarat region. SWEAT index, which accounts for the wind shear between 850 and 500 hPa levels in addition to thermodynamic parameters, also indicates a similar pattern, on day 1 and 2. The 850-200 hPa wind shear is weak over the Indian region excluding the Jammu region on day 1 and decreasing further over most regions on day 2, although increasing over the south peninsula. The reflectivity forecast values from IMD WRF model indicate highest probability of rainfall over south peninsular India on day 1 and over Odisha on day 2.

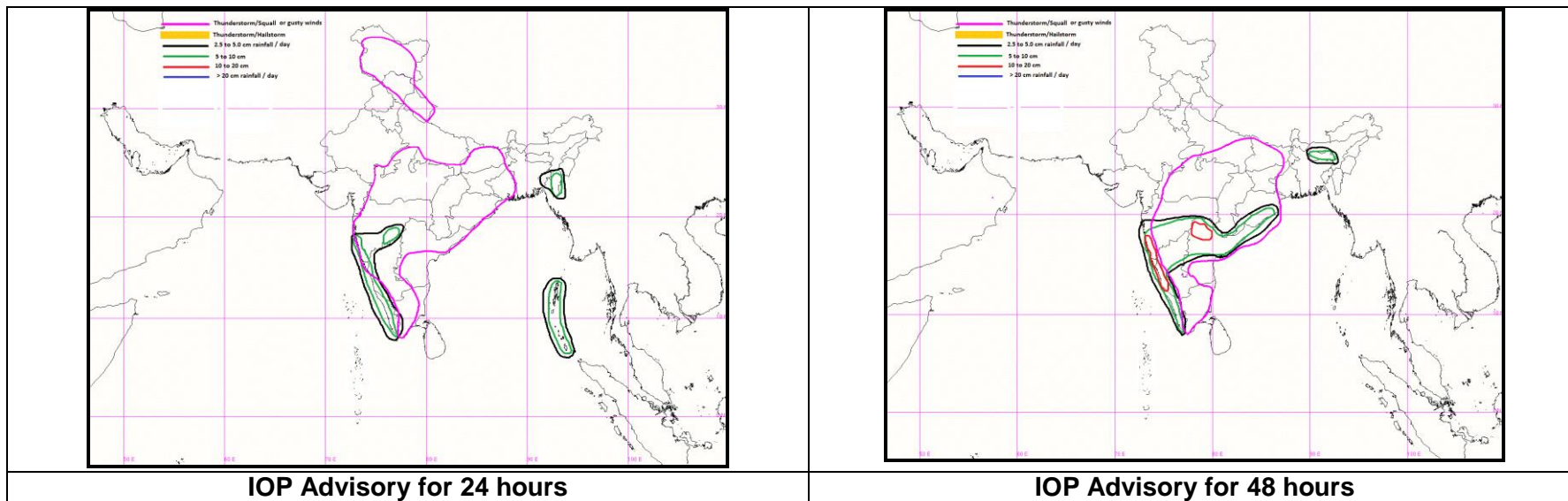
o Synoptic analysis indicates that an EastWest trough runs from Punjab to Interior Odisha. There are three cyclonic circulations in the low to mid levels over north India- (a) over northeast Rajasthan & neighbourhood (b) over northeast Chhattisgarh & neighbourhood and (c) over southwest Uttar Pradesh & neighbourhood. The IMD GFS deterministic model indicates that there is not much diurnal variation of the wind field between 00 UTC and 12 UTC and the circulation over northeast Chhattisgarh will dominate the wind field throughout the day 1 and 2. There is southeasterly wind flow into north India. However, as there is no wind discontinuity or troughline over north central India, there is less likelihood of convection over Northwest India on day 1. Convection is likely to be mostly along the east peninsular coast of India as well as the north Indian hills. On day 2, there is some probability of the region of convection spreading westwards into east Uttar Pradesh

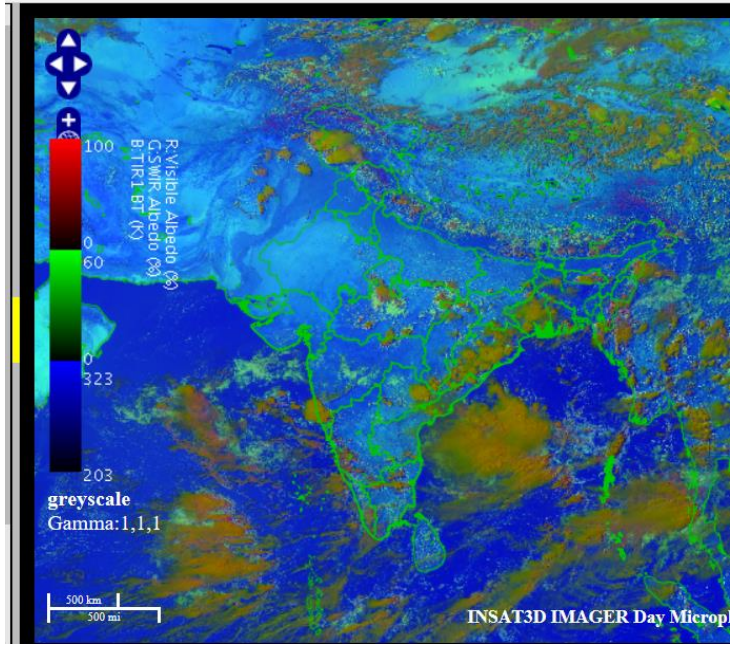
o Synoptic analysis also indicates that there is an off shore trough at mean sea level from south Maharashtra coast to north Kerala coast. There is a cyclonic circulation over northern parts of Westcentral Bay of Bengal & neighbourhood. An eastwest shear zone now runs roughly along Lat. 13°N across south Peninsular India in the middle levels. All these factors are likely to result in heavy to very heavy rainfall spells over south peninsular India on day 1 and 2, with the rainband shifting northwards, with the shift in the position of the shear zone.

IOP Area for Day-1 & Day-2:

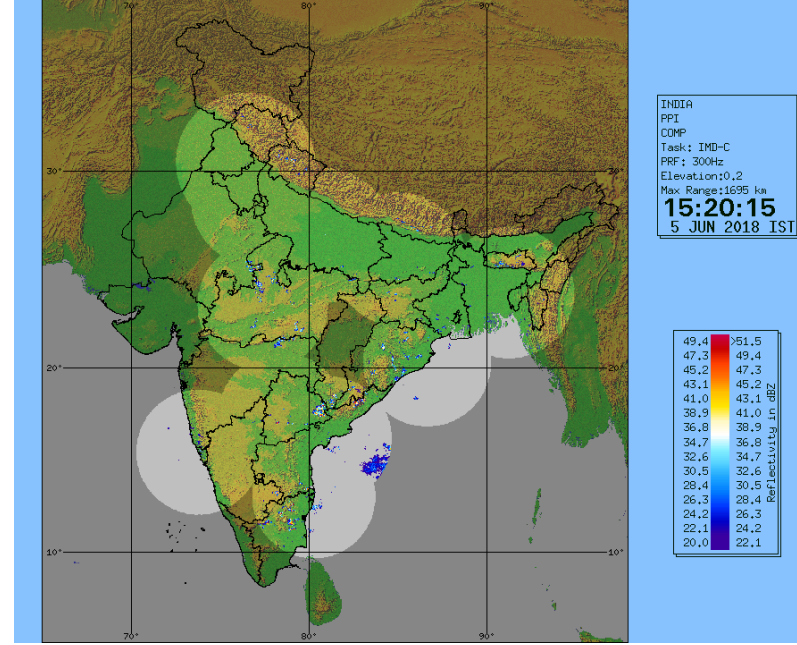
24 hour Advisory for IOP:	48 hour Advisory for IOP:
<p>Significant Rainfall: Kerala, Coastal Karnataka South Konkan and Goa, South Madhya Maharashtra, Marathwada Mizoram, Tripura Andaman and Nicobar Islands</p> <p>Thunderstorm with squall or gusty winds: Telengana, Karnataka, Coastal Andhra Pradesh, Tamil Nadu Konkan and Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Madhya Pradesh, Himachal Pradesh, Uttarakhand, Jammu & Kashmir Gangetic West Bengal, Jharkhand, Bihar, Odisha</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Nil</p>	<p>Significant Rainfall: Kerala, Coastal Karnataka, North Interior Karnataka, Telengana, North Coastal Andhra Pradesh South Konkan and Goa, South Madhya Maharashtra, Marathwada Odisha Meghalaya & adjoining Assam</p> <p>Thunderstorm with squall or gusty winds: East Uttar Pradesh, Bihar, Jharkhand, Odisha Madhya Pradesh, Vidarbha, Chhattisgarh, Coastal Andhra Pradesh, Telengana, Interior Karnataka, Tamil Nadu Madhya Maharashtra, Marathwada</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Nil</p>

Graphical Presentation of Potential Areas for Severe Weather:

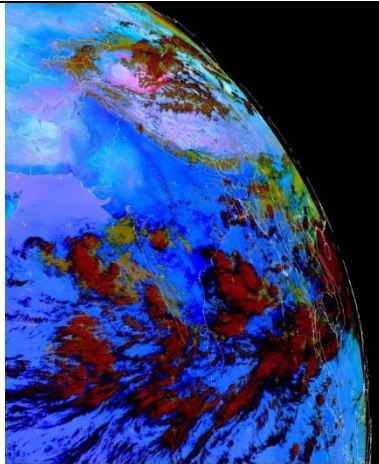




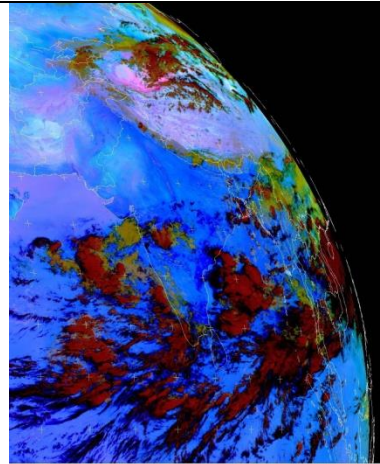
RAPID RGB Imagery at 1430 IST of the Day



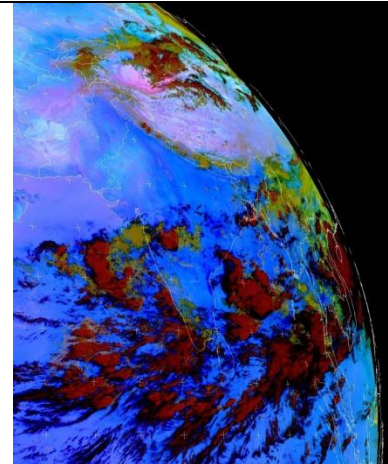
DWR Composite at 1520 IST



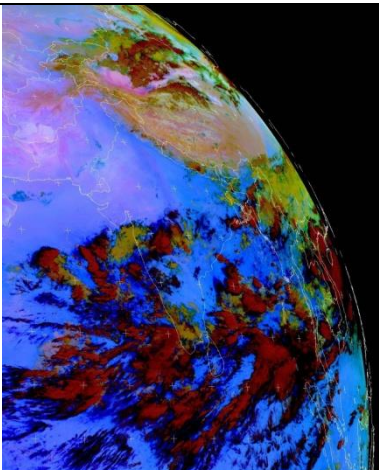
Meteosat IODC Dust, 2018-06-05 06:00:00



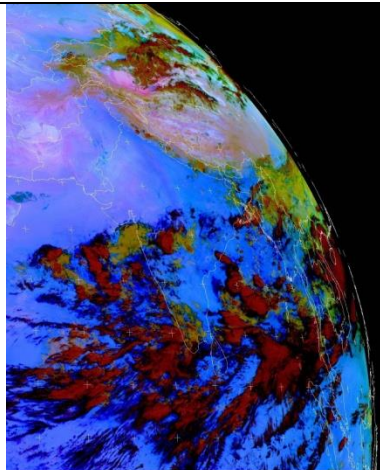
Meteosat IODC Dust, 2018-06-05 05:00:00



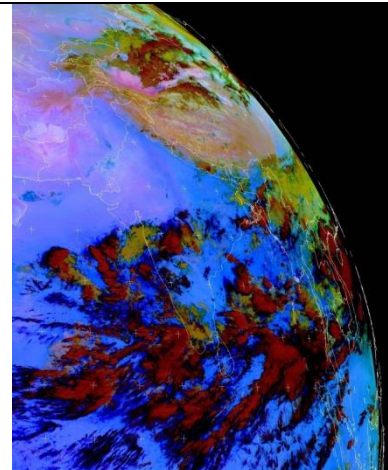
Meteosat IODC Dust, 2018-06-05 04:00:00



Meteosat IODC Dust, 2018-06-05 01:00:00



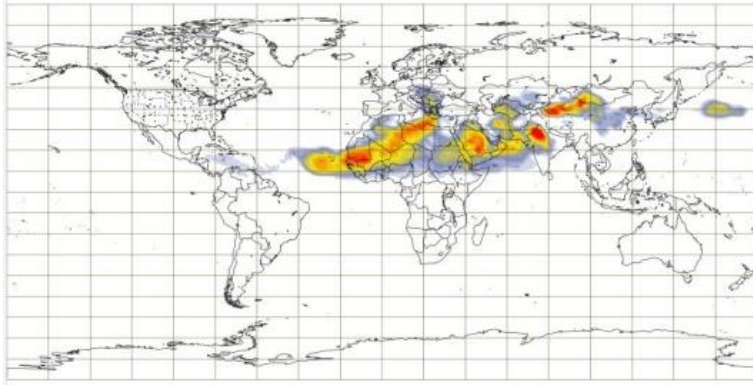
Meteosat IODC Dust, 2018-06-05 02:00:00



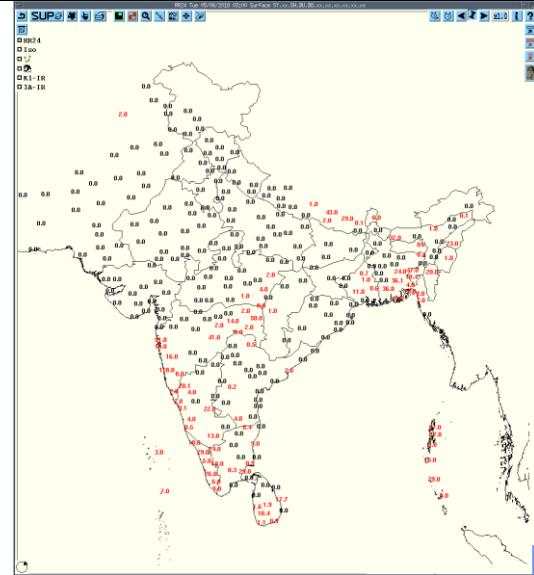
Meteosat IODC Dust, 2018-06-05 01:00:00

Observed Satellite Dust Images of today

Dust aerosol optical depth at 550 nm (provided by CAMS, the Copernicus Atmosphere Monitoring Service)
 Monday 4 Jun, 00 UTC T+120 Valid: Saturday 9 Jun, 00 UTC

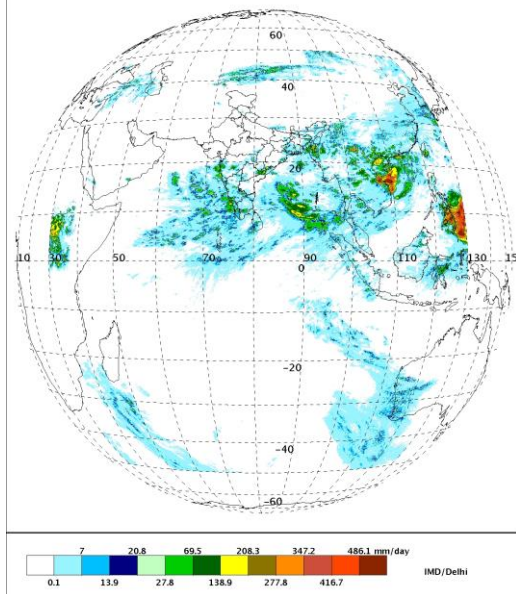


Dust Forecast



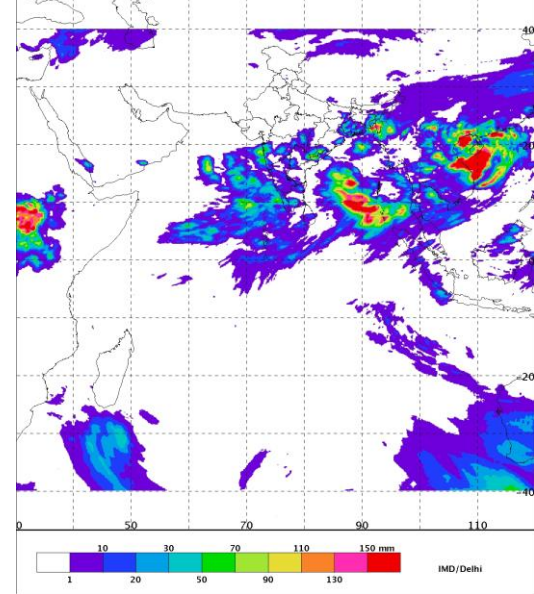
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today

SAT :INSAT-3D IMG 04-06-2018 (03:30 GMT) to 05-06-2018 (03:00 GMT)
 Precipitation(HE) Daily
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK

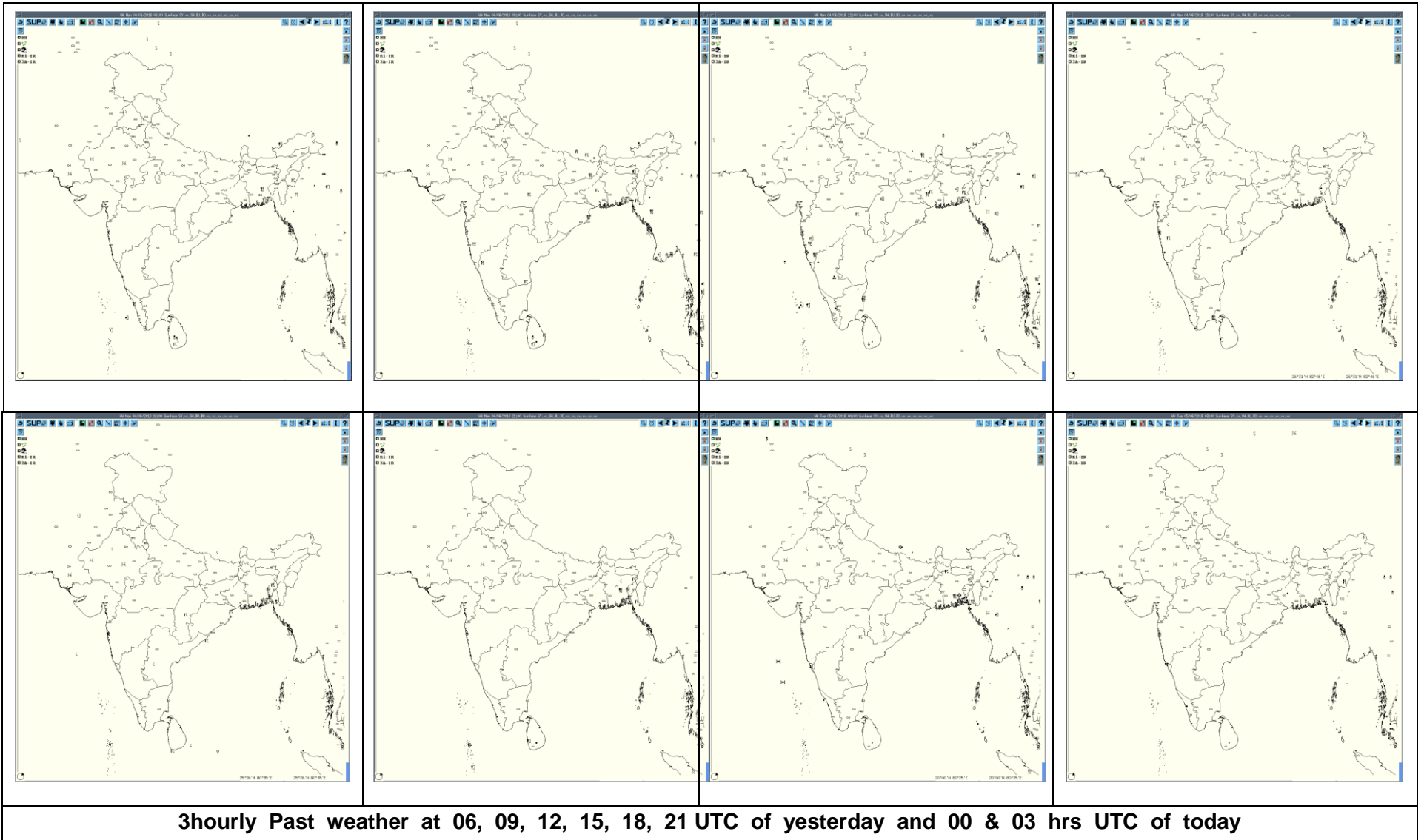


HEM

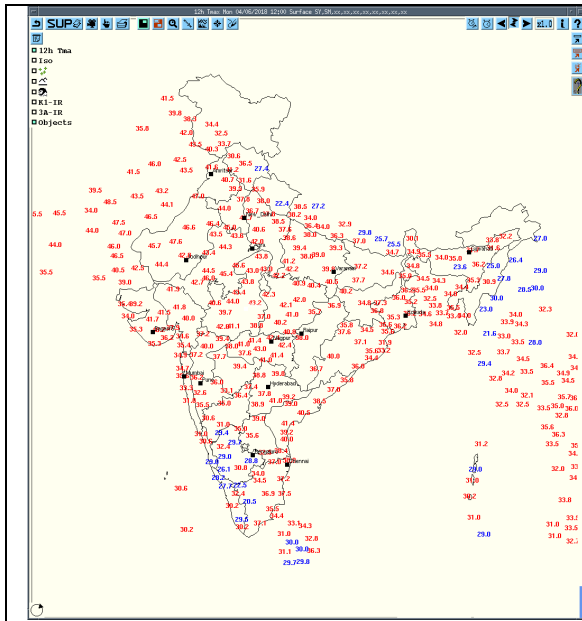
SAT :INSAT-3D IMG 04-06-2018 (03:30 GMT) to 05-06-2018 (03:00 GMT)
 INSAT Multispectral Rainfall(Daily)
 L3G BINNED GEOPHYSICAL PARAMETER GRIDDED



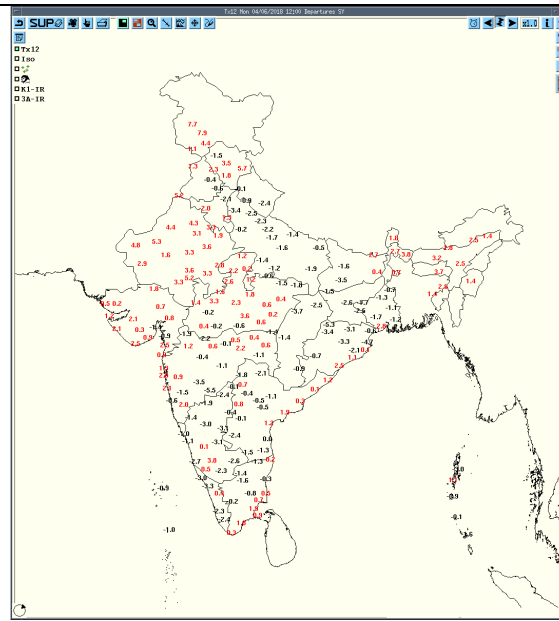
IMR



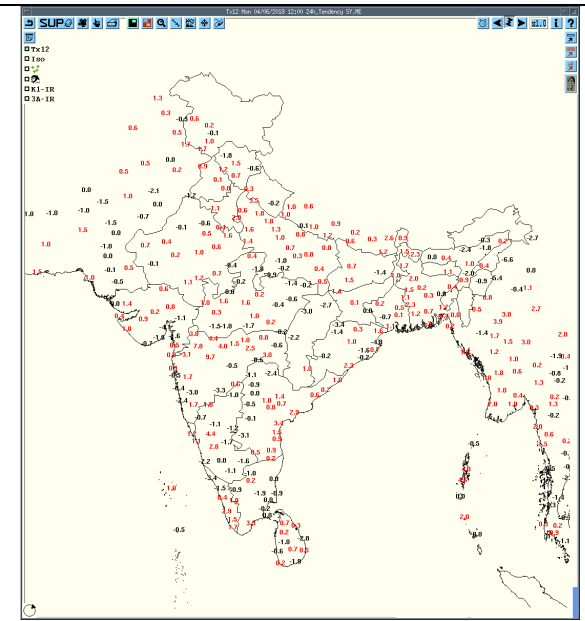
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



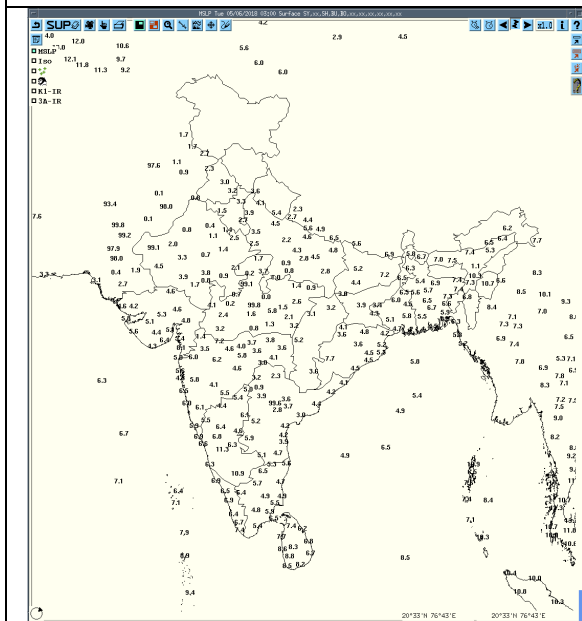
Tmax



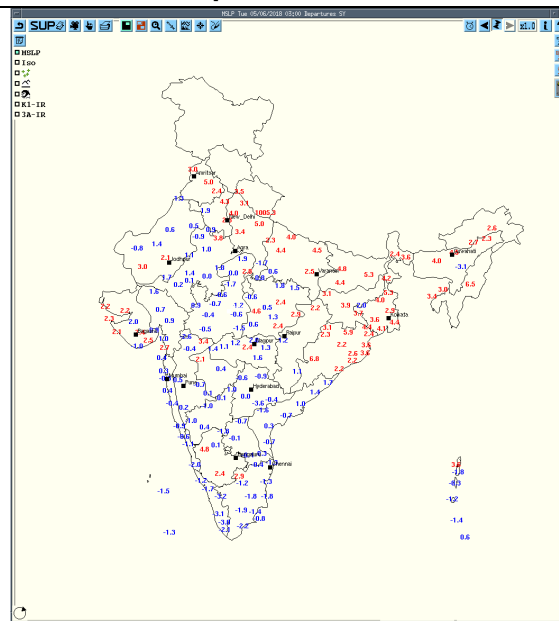
Departure Tmax



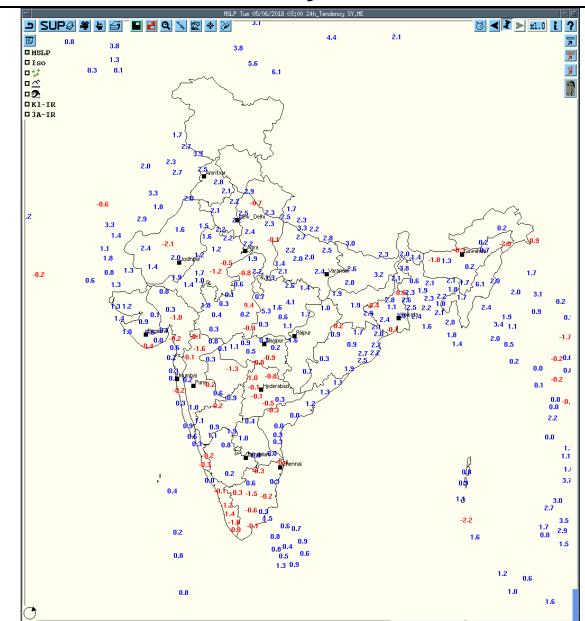
Tendency Tmax



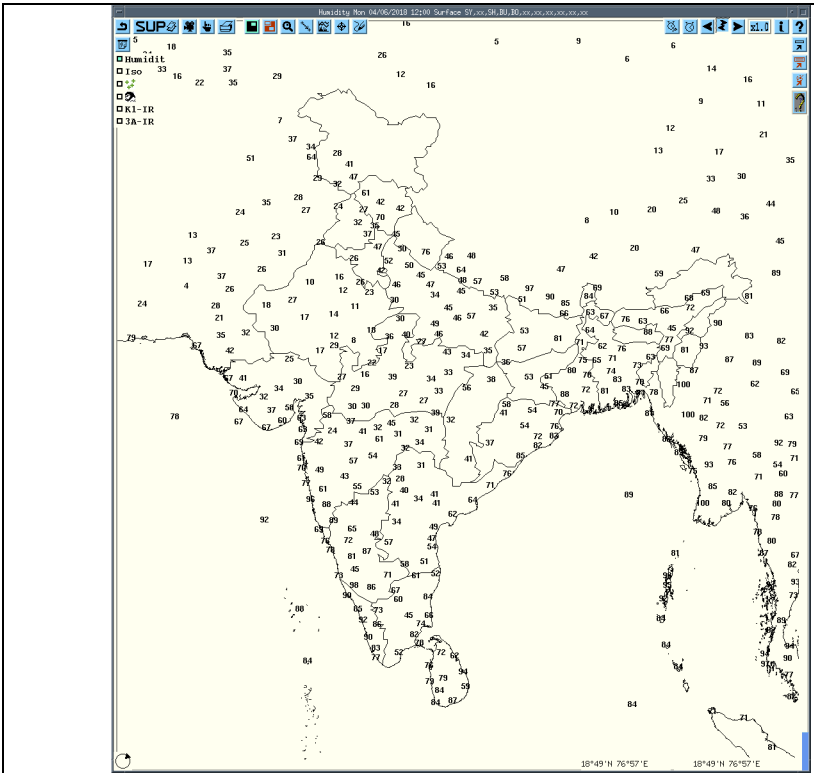
MSLP



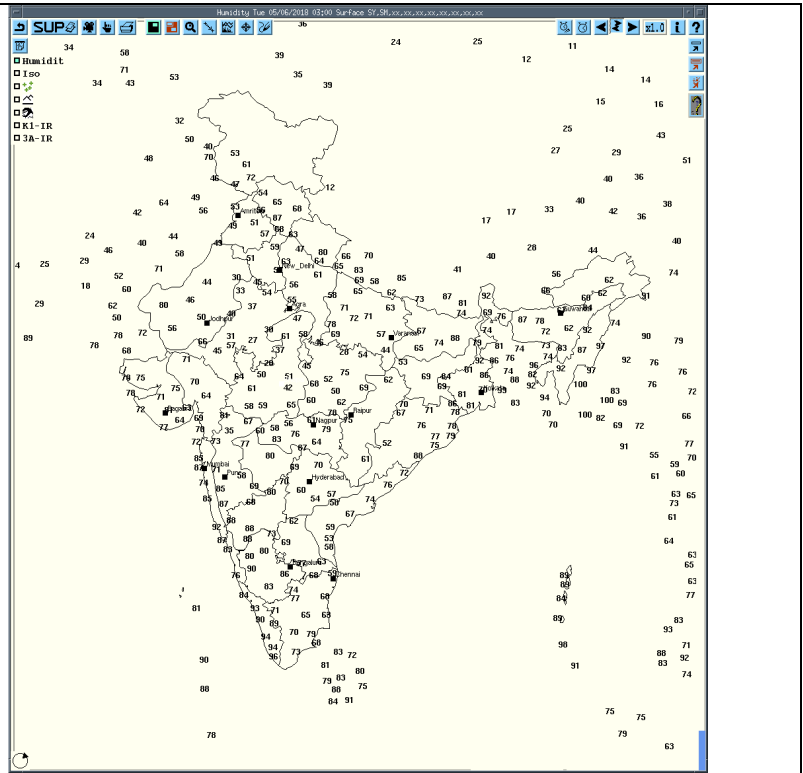
Departure MSLP



Tendency MSLP



RH at 1200UTC yesterday



RH at 0300UTC today

Past 24 hours DWR Report:

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	05-06-18	040600	Cb cell over the sea with max reflectivity 50dbz and height 6kms.	146kms(ESE) 05:01 UTC. And moving Easterly.	-	-	Over the sea.
		040900	Multiple Cb cells towards NE and WNW with max reflectivity 56dbz and height 10kms.	62kms(WNW) and 132 Km(NE) at 08:51 UTC. And moving	CB cells formed since last observation and developing	Thunderstorm with rain	Srikakulam, East Godavari(AP) and Malkangiri, Gajapathi(Odisha)
		041200	Multiple Cb cells from WSW to N with max reflectivity 58dbz and height 12kms.	78kms to 167 Km at 11:51 UTC. And moving SEly.	CB cells formed since last observation and well developed	Thunderstorm with rain	Srikakulam,Visakha patnam and East Godavari(AP) and Rayagada(Odisha)
		041500	Multiple Cb cells from WSW and N with max reflectivity 58dbz and height 12kms.	63kms to 168 Km at 11:51 UTC. And	CB cells formed since last observation, well developed and dissipating	Thunderstorm with rain	Srikakulam,Viziana garam and East Godavari(AP)
		041800	Isolated Cb cells formed in the Bay of Bengal near Srikakulam Dist. with max reflectivity 51dbz and height 10kms.	81kms (SE) moving S ly	CB cells formed at 1621 UTC and developing	-	-
		050000	Isolated Cb cells formed in the Bay of Bengal with max reflectivity 57 dbz and height	E(103 kms) moving SE ly	CB cells formed at 2011 UTC and developing maximum reflectivity of 57	-	Bay of bengal
		050300	Isolated Cb cells formed in the Bay of Bengal with max reflectivity 59dbz and height 10kms.	SE(233 kms) moving S ly	Since last observation maximum reflectivity of 59 dbz at 0231 UTC	-	Bay of bengal

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
Agartala	05-06-18	040300 to 050300* (*DWR operational from 0600 to 2000IST)	Squall line formation at 041200z over Mizoram & Manipur Hills;	16 kms;47dBZ;180-200 kms SE;30 Kmph NW'ly,cell persisted till 051400z		+TSRA	All districts of TRP.
Mohanbari	05-06-180	040500-041107	NIL	NIL	NIL	N/A	N/A

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	05-06-18	040301-040621	NIL	NIL	Radar kept off due to maintenance/fault	NIL	NIL
		040622-041201	1) Isolated Single cell developed with maximum reflectivity of 58.0 dBz 0721 UTC and maximum height of 13.88 Km at 0811 UTC 2) Isolated Single cell developed with maximum reflectivity of 58.0 dBz 0841 UTC and maximum height of 17.37 Km at 0841 UTC 3) Isolated Single cell developed with maximum reflectivity of 62.0 dBz 0952 UTC and maximum height of 16.21 Km at 0952 UTC	Coming from NW direction and) Moving in ESE-ward direction. Coming from NNE and Moving in WSW –ward direction Moving Slowly in SE –ward direction	Single cell coming from NW at 0631 UTC at a distance 211.1 Km) from radar. Matured, dissipated at 178.9 km NNW from radar. Single cell Formed in NNE, at a distance of 71.7km from Radar matured and dissipated at 1001UTC at distance of 078.4 KM from Radar. Single cell Formed in West, at a distance of 150.7 km from Radar matured and dissipated at 1201 UTC in WSW - at distance of 162.5 KM from Radar.	Thunderstorm /Rain/Hail/Squall line Thunderstorm /Rain/Hail/Squall line Thunderstorm /Rain/Hail/Squall line	N/A N/A N/A
		041201-050301	NIL	NIL	NOSIG ECHO	NIL	N/A

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
Patiala	05-06-18	040300 - 042100	NO SIGNIFICANT ECHO	-----	-----	-----	-----
		042100-050000	MULTIPLE CELLS DBZ 49.5 HEIGHT 9-10 KM	IN NE SECTORS MOVEMENT TOWARDS SE DIRECTION	-----	-----	SUNDER NAGAR ,SHIMLA
		050000-050252	MULTIPLE CELLS DBZ 52.5 HEIGHT 9-10 KM	IN NE SECTORS MOVEMENT TOWARDS SE DIRECTION	-----	-----	SUNDERNAGARSHIMLA,BHAKRADAM BILASPUR ,MUSSORIE
Jaipur	05-06-18	040300-050300	Nil	Nil	Nil	Nil	Nil
Patna	05-06-18	040300 - 040700	NIL	N/A	N/A	N/A	N/A
		040700 - 041000	Multiple Cell Maximum Reflectivity: 45 dBZ Echo Top: 9 KM	Range: 170 KM from DWR Patna in SSE direction Movement: towards North Westerly	Warning issued	N/A	BHAGALPUR, BANKA, JAMUI, MUNGER, BEGUSARAI, LAKHISARAI,NALANDA,SHEIKHPURA,SAMASTIPUR
		041000 - 050300	NIL	N/A	N/A	N/A	N/A

Realised past 24hrs TS/SQ/HS Data:

Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)						
	Region	State/Sub Division	Weather Event (TS/Hail/Squall)	Date	Time of Commencement (IST)	Time of end (IST)
Sundernagar	Northwest India	Himachal Pradesh	Thunderstorm	05-06-18	0722 0810	0757 0830
Nagpur	Central India	Vidarbha	Thunderstorm	04-06-18	1720	1932
Bramhapuri	Central India	Vidarbha	Thunderstorm	04/05-06-18	042220	050040
Wardha	Central India	Vidarbha	Thunderstorm	04-06-18	1825	1850
Yeotmal	Central India	Vidarbha	Thunderstorm	05-06-18	0220	0230
Jabalpur	Central India	East Madhya Pradesh	Thunderstorm	04-06-18	1640	1810
Sagar	Central India	East Madhya Pradesh	Thunderstorm	04-06-18	1550	1715
Chhindwada	Central India	East Madhya Pradesh	Thunderstorm	05-06-18	0515	0530
Raipur	Central India	Chhattisgarh	Thunderstorm	04/05-06-18	042215	050235
Ambikapur	Central India	Chhattisgarh	Thunderstorm	04-06-18	1900	2200
Pendra Rd	Central India	Chhattisgarh	Thunderstorm	04-06-18	1515	1645
Gangtok	East India	Sikkim	Thunderstorm	04-06-18	2130	2200
Alipore	East India	West Bengal (GWB)	Thunderstorm	04-06-18	1210	1325
Dum Dum	East India	West Bengal (GWB)	Thunderstorm	04-06-18	1240	1320
Canning	East India	West Bengal (GWB)	Thunderstorm	04-06-18	1200	1330
Haldia	East India	West Bengal (GWB)	Thunderstorm	04-06-18	1133	1245
Bankura	East India	West Bengal (GWB)	Thunderstorm	04-06-18	1635	1835
Sriniketan	East India	West Bengal (GWB)	Thunderstorm	04-06-18	1335	1540
Bhagalpur	East India	Bihar	Thunderstorm	04-06-18	1340	1437
Balasore	East India	Odisha	Thunderstorm	04-06-18	2300	2400
Chandbali	East India	Odisha	Thunderstorm	04-06-18	1335	1430
Paradeep	East India	Odisha	Thunderstorm	04-06-18	1250	1330
Port Blair	East India	Andaman & Nicobar	Squall from West with max speed 82kmph	04-06-18	1757	1758
Silchar	Northeast India	Assam	Thunderstorm	04-06-18	2110	2130
Dhubri	Northeast India	Assam	Thunderstorm	05-06-18	0520	0725
Barapani	Northeast India	Meghalaya	Thunderstorm	04-06-18	1301	1415
Cherrapunjee	Northeast India	Meghalaya	Thunderstorm	04-06-18	1220	1540
Imphal	Northeast India	Manipur	Thunderstorm	04-06-18	1045	1310
Lengpui	Northeast India	Mizoram	Thunderstorm	04-06-18	1945	2145
Agartala	Northeast India	Tripura	Thunderstorm	04/05-06-	042225	050320

				18		
Ramagundam	South India	Telangana	Thunderstorm	04-06-18	0400	0600
Tuni	South India	Coastal Andhra Pradesh	Thunderstorm	04-06-18	1800	2100
Mahabubnagar	South India	Telangana	Thunderstorm	04-06-18	2100	2125
Kakinada	South India	Coastal Andhra	Thunderstorm	04-06-18	1905	2020
Tirupati AP	South India	Rayalaseema	Thunderstorm	04-06-18	1340	1540
Panambur		Karnataka (CK)	Thunderstorm	04-06-18	0815	1205
Belagavi AP		Karnataka (NIK)	Thunderstorm	04-06-18	1245	1540
Chitradurga		Karnataka (SIK)	Thunderstorm	04-06-18	1745	1825
Panambur		Karnataka (CK)	Thunderstorm	04-06-18	0815	1205

IMPORTANT LINKS:

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

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

For Synoptic plotted data and charts

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

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

For RANDHRA PRADESHID tool:

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

Low Level Winds

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

Upper level winds

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

Past24hourHEMandIMRrainfall(upto03UTCoftoday)

IMR: http://satellite.imd.gov.in/img/3Ddaily_imr.jpg

HEM: http://satellite.imd.gov.in/img/3Ddaily_he.jpg

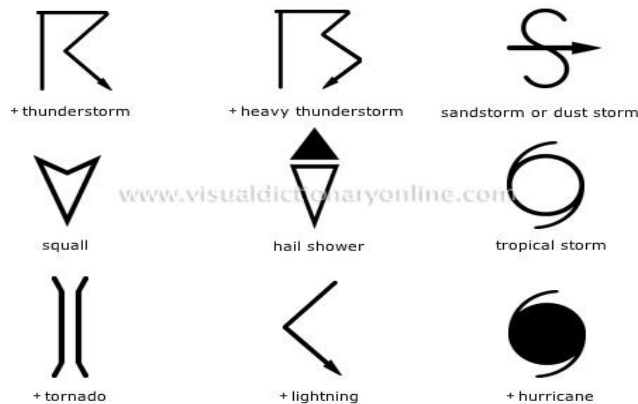
ForRadarimagesofthepast24hoursincludingmosaicofimages:

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

Satellite sounder based T- Phigram

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

WEATHER SYMBOLS:



∞	haze
☼	smoke
☼	dust or sand storm
≡	fog
☼	drizzle
•	rain
*	snow
▽	showers
△	hail
☼	thunderstorm
Weather Symbols	