



India Meteorological Department

FDP STORM Bulletin No. 83 (28-05-2018)

1. CURRENT SYNOPTIC SITUATION:

NWFC INFERENCE (0300UTC of the Day):

- ◆ Southwest Monsoon has further advanced into some more parts of Southeast Arabian Sea, Maldives Comorin area and southwest Bay of Bengal, most parts of southeast Bay of Bengal, remaining parts of Andaman Sea, Andaman & Nicobar Islands, many parts of east central Bay of Bengal and some parts of westcentral and northeast Bay of Bengal. The Northern Limit of Monsoon (NLM) passes through Lat 5°N/ Long 65°E, Lat 7°N / Long 70°E, Lat 8°N/ Long 80°E, Lat 11°N/ Long. 85°E, Lat. 17°N/ Long 90°E, and Lat.20°N/ Long. 93°E . Conditions are becoming favourable for further advance of Southwest Monsoon into some more parts of South Arabian Sea, remaining parts of Comorin Maldives area; some parts of Lakshadweep, Kerala and Tamilnadu, some more parts of Southwest, central and northeast Bay of Bengal during next 24 hours. Also, conditions are likely to become favourable for further advance of southwest monsoon into remaining parts of south Arabian Sea, some parts of central Arabian Sea, remaining parts of Kerala, some parts of coastal and interior Karnataka and some parts of Tamilnadu, southwest, central and northeast Bay of Bengal and some parts of northeastern states during next 23 days.
- ◆ The well marked low pressure area over southeast Arabian sea off KeralaKarnataka coasts and associated cyclonic circulation extending upto 7.6 km above mean sea level persists.
- ◆ The low pressure area over eastcentral Bay of Bengal & neighbourhood and associated cyclonic circulation extending upto mid tropospheric levels persists. The system is likely to become more marked during next 24 hours.
- ◆ An eastwest shear zone runs along Lat. 12 °N at 3.1 km above mean sea level over Indian Region.
- ◆ A cyclonic circulation lies over northwest Madhya Pradesh & neighbourhood and extends upto 1.5 km above mean sea level. A trough runs from this system to east Assam across southeast Uttar Pradesh, Bihar, SubHimalayan West Bengal and Meghalaya extending upto 0.9 km above mean sea level. Another trough runs from this circulation to Marathwada across west Vidarbha extending upto 1.5 km above mean sea level.
- ◆ The cyclonic circulation over west Madhya Pradesh & adjoining east Rajasthan has merged with the above system.
- ◆ The feeble Western Disturbance as an upper air cyclonic circulation over north Pakistan & neighbourhood between 3.1 and 5.8 km above mean sea level has moved away north eastwards.
- ◆ The cyclonic circulation over Punjab & neighbourhood persists and now extends upto 0.9 km above mean sea level.

SATELLITE OBSERVATIONS during past 24 hrs and current observation:

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

Vortex over Southeast Arabian Sea:

Vortex over SE Arabian Sea adjoining Lakshadweep off Karnataka, Kerala Coast centered within half degree of lat 11.2N/72.0E. Centre is not clear. Intensity T 1.0, Associated broken low/medium clouds with embedded intense to very intense convection over SE Arabian Sea adjoining Lakshadweep and area bet lat 10.0N to 15.0N east of long 66.0E (minimum CTT minus 93 deg C.

LOW LEVEL CIRCULATION (LLC) OVER East Central BAY:-

Broken low/medium clouds with embedded intense to very intense convection seen over East Central Bay in association with low level circulation over the area.

CLOUDS DESCRIPTIONS WITHIN INDIA :-

NORTH:-

Isolated low/medium clouds seen over Jammu & Kashmir, North Himachal Pradesh and North Uttarakhand.

EAST:-

Scattered low/medium clouds with embedded moderate to intense convection seen over South Coastal Odisha, East Assam Arunachal Pradesh, Nagaland and Manipur. Scattered low/medium clouds with embedded isolated weak convection seen over South Gangetic West Bengal. Scattered low/medium clouds over rest parts of the region.

WEST:-

Scattered low/medium clouds with embedded weak to moderate convection seen over South Madhya Maharashtra, Konkan & Goa. Scattered low/medium clouds over Northeast Madhya Pradesh.

SOUTH:-

Broken low/medium clouds with embedded intense to very intense convection seen over Lakshadweep and Nicobar Islands, moderate to intense convection North Coastal Andhra Pradesh, Coastal Karnataka, South Interior Karnataka, Kerala & Andaman Islands. Scattered low/medium clouds with embedded isolated weak to moderate convection seen over North Interior Karnataka and Tamilnadu. Scattered low/medium clouds over rest parts of the region.

ARABIAN SEA:-

Broken low/medium clouds with embedded moderate to intense convection rest Southeast Arabian Sea.

BAY OF BENGAL & ANDAMAN SEA:-

Broken low/medium clouds with embedded intense to very intense convection seen over South Bay & East Central Bay North Andaman Sea Gulf of Martaban & moderate to intense over rest Bay except Northeast Bay.

Past Weather:

Convection (during last 24 hrs):

Moderate to Intense convection was observed over south Bihar Jharkhand Chhattisgarh Gangetic West Bengal Sub-Himalayan West Bengal Sikkim Assam Meghalaya Nagaland Manipur South Konkan & Goa south Maharashtra Karnataka Kerala Tamilnadu Lakshadweep Andaman & Nicobar Islands.

OLR:-

Upto **230** wm^{-2} was observed over North J&K Himachal Pradesh north Uttarakhand Jharkhand south Chhattisgarh Gangetic West Bengal Sub-Himalayan West Bengal Sikkim North East States south Maharashtra Karnataka Kerala Tamilnadu

Synoptic features:

Jet-Stream - No Jet Stream is observed over India.

Dynamic Features:

Wind Shear, Vorticity & Convergence - Wind shear up to 30- 40 Kts is observed over Northern India. Wind shear upto 5-15 kts is observed over rest parts of India.

Positive low level convergence observed over the country.

Precipitation:**IMR:**

Rainfall Up to **150** mm was observed over Coastal Karnataka north Kerala Bay islands Lakshadweep.

Rainfall Up to 90 mm was observed over north-east Bihar Jharkhand Sub-Himalayan West Bengal South Konkan and Goa South Interior Karnataka.

Rainfall Up to **50** mm was observed over Gangetic West Bengal west Assam Meghalaya central Kerala.

DWR and RAPID Observations:

Isolated/multiple light to moderate echoes were also seen on DWR Chennai, Gopalpur, Hyderabad, Lucknow, Paradip, Patna, Machilipatnam, Vishakhapatnam, Srinagar and Thiruvananthapuram domains at around 1640 IST.

RAPID RGB Satellite imagery at 1530 IST indicated significant convection over Jammu & Kashmir, North Himachal Pradesh, North Uttarakhand, Central Uttar Pradesh, Nagaland, Jharkhand, North Chhattisgarh, Odisha, North Coastal Andhra Pradesh, South Madhya Maharashtra, Karnataka, Kerala, Tamilnadu, Lakshadweep 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 poor category for next 2 days in Delhi.

| Delhi – SAFAR analysis & Forecast | 28.05.2018 | 29.05.2018 |
|--|------------|------------|
| PM10 (micro-g/m ³) | 264 | 303 |
| PM2.5 (micro-g/m ³) | 90 | 103 |

2. NWP MODEL GUIDANCE:

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

1. Weather Systems:

Low level Cycirs, Troughs: 12UTC of Day 0-3:

12UTC of Day 0: A CYCIR at 850 hPa off Kerala coast. System weakens in Day 1-3 and is tracking northwards as a trough over coastal Karnataka and Goa.

00UTC on Day1-3: At 850 hPa Weak CYCIR over central BoB moving towards Myanmar /head BoB

00UTC of Day1-2: At 850 a weak CYCIR over Punjab

00UTC of Day 1-3: At 850hPa a trough from M.P to Maharashtra/Karnataka

Synoptic systems: 00&12UTC of Day-1-3: Feeble trough west of J & K region moving eastwards.

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

3. Convergence at 850 hPa:

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

Day0: Bihar, East RJ, Odisha, East MP, Madhya Maharashtra, Chhattisgarh, NI Karnataka,

Day1: Jharkhand, Jammu Kashmir, Odisha, Chhattisgarh, Telangana,

Day2: Arunachal Pradesh, Assam Meghalaya, Jharkhand, Uttarakhand, East RJ, East MP, Chhattisgarh,

Day3: Arunachal Pradesh, Jammu Kashmir, East RJ, Odisha, East MP, Chhattisgarh,

Day4: Haryana, Chandigarh, Delhi, Punjab, East RJ, West MP, Madhya Maharashtra

4. Low level Vorticity:-Positive Vorticity:

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

Day0: Jharkhand, Bihar, Himachal Pradesh, Chhattisgarh, TN Puducherry, SI Karnataka, Kerala,

Day1: Jharkhand, TN Puducherry, Coastal Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Jharkhand, TN Puducherry, Kerala,

Day3: Assam Meghalaya, TN Puducherry, Coastal Karnataka,

Day4: Assam Meghalaya, Bihar, Himachal Pradesh, Jammu Kashmir, TN Puducherry,

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

Day/Index: Subdivisions with Showalter Index < -4

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Chhattisgarh, Rayalaseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Gujarat Region, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, NI Karnataka,

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

Day/Index: Subdivision with Total Totals Index > 52

Day0: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, TN Puducherry, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, Jammu Kashmir, Odisha, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Konkan Goa, Madhya Maharashtra, Marathwada, Chhattisgarh, Rayalaseema, Coastal Karnataka, NI Karnataka, SI Karnataka,

Day4: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Punjab, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Gujarat Region, Konkan Goa, Madhya Maharashtra, Chhattisgarh, Coastal AP, Rayalaseema, NI Karnataka,

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

Day/Index: Subdivisions with K Index > 40

Day0: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, Gujarat Region, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day1: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Jammu Kashmir, Odisha, West MP, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, Saurashtra Kutch, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka,

Day3: Arunachal Pradesh, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Himachal Pradesh, Jammu Kashmir, Odisha, West MP, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka,

Day4: Arunachal Pradesh, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, East UP, West UP, Uttarakhand, Haryana, Chandigarh, Delhi, Himachal Pradesh, Jammu Kashmir, Odisha, East MP, Gujarat Region, Konkan Goa, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Coastal AP, Telangana, Rayalaseema, TN Puducherry, NI Karnataka, SI Karnataka,

8. Rainfall and thunder storm activity:

Day/Index: Subdivisions with Precipitation > 2 cm

Day1: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Jharkhand, Bihar, Jammu Kashmir, Konkan Goa, Andaman Nicobar, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day2: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Gangetic WB, Jharkhand, Bihar, Jammu Kashmir, Andaman Nicobar, TN Puducherry, Coastal Karnataka, SI Karnataka, Kerala,

Day3: Arunachal Pradesh, Assam Meghalaya, NE NMMT, Sub Himalayan WB, Bihar, Konkan Goa, Andaman Nicobar, TN Puducherry, Coastal Karnataka, Kerala,

Day4: Arunachal Pradesh, Assam Meghalaya, NE NMMT, East UP, Uttarakhand, Odisha, Konkan Goa, Andaman Nicobar, TN Puducherry, Coastal Karnataka, Kerala,

Day5: Arunachal Pradesh, Assam Meghalaya, Sub Himalayan WB, Bihar, East UP, West UP, Uttarakhand, Madhya Maharashtra, Andaman Nicobar, Coastal Karnataka, Kerala,

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

1. Synoptic Systems:

The analysis based on 00 UTC indicates a cyclonic circulation over North West Madhya Pradesh and adjoining area in lower Troposphere (925hPa). The forecast shows it will persist till day2. An East- West Trough is seen in the analysis extending from this cyclonic circulation to East Assam across South East Uttar Pradesh, SHWB and Meghalaya. The Trough persists in next 24 hour forecast. The analysis shows a North- South Trough extends from this circulation to Marathwada across West Vidarbha. The forecast shows the trough will persist till day 1. The analysis shows a cyclonic circulation over Punjab and adjoining area. The forecast shows it will persist till day 2. Another cyclonic circulation is seen in the analysis over South east Arabian sea off Kerala coast. The forecast shows it will persist till day1.

2. Location of Jet and Jet Core (>60kt) at 500hPa: Although the presence of strong westerlies is found over Eastern parts of the India, North and North western parts and NE states 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)}:

Low level Positive Vorticity is seen mostly from J&K up to Foothills of Himalaya, along the North- South and East-West Trough, around the cyclonic circulations, central parts of India, NE states, extreme south peninsular India and coastal and Interior Kerala and coastal Tamil Nadu during next 3 days; Low level Positive Vorticity is also seen over parts North west Rajasthan and adjoining Punjab region from day 1 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, Southern parts of East and west Rajasthan, East Uttar Pradesh, adjoining West Uttar Pradesh, Uttarakhand, Gangetic Plains, Bihar, Jharkhand, Gangetic West Bengal, SHWB, Orissa, coastal Maharashtra, Konkan & Goa, coastal and Interior Karnataka, Kerala, Tamil Nadu, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, East and west Madhya Pradesh, Andhra Pradesh, along east and west coast of India, Sikkim, Assam, Tripura and adjoining areas during next 3 days; over most parts of west Rajasthan on day 2; Significant zone lies over Gujarat, South Rajasthan, coastal areas along the east coast and west coast, SHWB, Bihar, Jharkhand, East Uttar Pradesh, parts of West Uttar Pradesh, Orissa, Andhra Pradesh, Telangana, coastal Maharashtra, Madhya Maharashtra, Vidarbha, Chhattisgarh, Interior Karnataka and West Madhya Pradesh.

Lifted Index (< -2): Similar to T-storm Index lies over Gujarat, South Rajasthan, Gangetic plains and along east and west coast of India with an extension over Interior Karnataka and Telangana, East Uttar Pradesh, and parts of West Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, Orissa, GWB, SHWB, Assam, Arunachal Pradesh, Meghalaya, Mizoram, Tripura and adjoining areas, Telangana, Vidarbha, 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 Uttarakhand on day 2 and 3; over parts of Haryana, Punjab and Himachal Pradesh on day 3; Significant zone with maximum negative value is found over East Uttar Pradesh, West Uttar Pradesh, Bihar, Jharkhand, GWB, Orissa, SHWB and coastal Andhra Pradesh.

Total Total Index (> 50): Higher than Threshold value of the Index is seen over parts of J&K, Himachal Pradesh, Uttarakhand, Chhattisgarh, Vidarbha, East Madhya Pradesh, Orissa, North Interior Karnataka, Madhya Maharashtra, Marathwada, Sikkim and Arunachal Pradesh on day 1; over most of the parts of the country except west and South Peninsular India including Gujarat, West Madhya Pradesh, Assam, Tripura, Meghalaya, Mizoram and adjoining areas, Kerala, South Interior Karnataka and Tamil Nadu on day 2 and 3; Significant zone with Maximum value of the index lies over East Uttar Pradesh, East Madhya Pradesh, Chhattisgarh, Uttarakhand, Bihar and Jharkhand.

Sweat Index (> 300): Is seen over the sub-divisions along east and west coast, areas along foothills of Himalayas, NE states, and most parts of the country except North West Rajasthan, Punjab, Haryana on day 1; and over most of the parts of the country on day 2 and 3; significant zone lies over parts of East Uttar Pradesh, West Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, East Madhya Pradesh, GWB, SHWB, Gujarat and west Rajasthan.

CAPE (> 1000): Mostly seen over parts of Gujarat, South Rajasthan, southern peninsular India, along west coast and east coast, GWB, Orissa, Bihar, Jharkhand, East and West Uttar Pradesh, Andhra Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan and Goa, Telangana, coastal Maharashtra including Mumbai, south Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, West Madhya Pradesh, Sikkim, Assam, Arunachal Pradesh, Meghalaya, Tripura and adjoining areas during next 3 days; over parts of Uttarakhand, Haryana and adjoining area on day 3; maximum value of the index is seen over parts of GWB, SHWB, Bihar, Jharkhand, Orissa, coastal and Interior Andhra Pradesh, coastal Tamil Nadu, coastal Maharashtra, South Madhya Maharashtra, Marathwada, coastal and North Interior Karnataka, East Uttar Pradesh and adjoining West Uttar Pradesh.

CIN (50-150): Over sub-divisions along east and west coast of India, extreme south over Kerala and Tamil Nadu and whole south Peninsular India; the value of the index lies in the above range over most of the parts of the country except Northern parts of west Madhya Pradesh, J&K, North West Rajasthan, Himachal Pradesh, Uttarakhand, Punjab, Haryana, North and North west India on day 1; and over most of parts of the country except J&K, Himachal Pradesh and Punjab on day 2; over most of the part of the country except J&K on day 3; significant zone with highest value of the index lies over parts of Gujarat adjoining South West Rajasthan, South Chhattisgarh adjoining Telangana, Vidarbha, East Uttar Pradesh and Orissa.

5. Rainfall Activity:

Above 130 mm Rainfall: over parts of coastal and South Interior Karnataka, Konkan and Goa on day 2.

70- 130 mm Rainfall: over parts of Kerala and Karnataka on day 1 and 2; over parts of Konkan and Goa on day 2; over parts of South coastal Maharashtra on day 3.

40-70 mm Rainfall: over parts of Kerala, Karnataka Konkan and Goa on day 1 and 2; over parts of Bihar, Jharkhand, GWB and Tamil Nadu on day 1; over parts of South coastal Maharashtra on day 2 and 3; during next 3 days; over parts of Arunachal Pradesh and Nagaland on day 2; over parts of Sikkim, Assam, Meghalaya, Tripura, Konkan and Goa on day 3.

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

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

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

1. Model Reflectivity (Max. dBz):

>25 dBZ Model Reflectivity: On day 1, over parts of J&K, Uttarakhand, Kerala, Karnataka, Tamil Nadu, NE states, Orissa, South Chhattisgarh, GWB, SHWB, Sikkim, Bihar, Jharkhand and Andhra Pradesh; On day 2 over parts of J&K, Kerala, Tamil Nadu, Karnataka, Konkan and Goa, GWB, SHWB, Jharkhand, Bihar adjoining East Uttar Pradesh, Sikkim and NE states; On day 3 mostly over parts of J&K, Kerala, Tamil Nadu, Karnataka, GWB, SHWB, East Uttar Pradesh, Bihar, Jharkhand, Vidarbha and NE states.

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 extreme south peninsular India, southern parts of west coast and the east coast, parts of Kerala, Karnataka, south coastal Maharashtra, South Madhya Maharashtra, Konkan and Goa, Gujarat, Kerala, Andhra Pradesh, Telangana, Tamil Nadu, GWB, SHWB, Bihar, Jharkhand, Chhattisgarh, Orissa, Sikkim and NE states during next 3 days; over some parts of East Uttar Pradesh from day 1 onwards.

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 Interior Karnataka, Telangana, Chhattisgarh, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Bihar, Jharkhand, East Uttar Pradesh, adjoining west Uttar Pradesh and Uttarakhand, GWB, SHWB, South Madhya Maharashtra, Vidarbha, Konkan and Goa, South coastal Maharashtra, Foothills of Himalaya, Sikkim and NE states.

CAPE (> 1500): Greater than threshold value over parts of Gujarat, South Rajasthan, East and West Uttar Pradesh, Uttarakhand, 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, coastal Maharashtra, Chhattisgarh, Vidarbha and NE states during next 3 days; over parts of North Haryana on day 2; over parts of J&K, Punjab, Himachal Pradesh, Haryana, Delhi and adjoining areas on day 3; Maximum value of the index is seen over the parts of Orissa, GWB, SHWB, coastal and Interior Andhra Pradesh, Karnataka, coastal Tamil Nadu, Kerala, Bihar, Jharkhand, East Uttar Pradesh, coastal Maharashtra including Mumbai, South Madhya Maharashtra, Marathwada, Konkan and Goa, Telangana, Chhattisgarh and Gujarat.

CIN (50-150): It covers most of the parts of the country except J&K, North west Rajasthan, Punjab, Haryana, Himachal Pradesh on day 1; on day 2 and 3 it remains over the same region but also appear over J&K, Punjab and Uttarakhand, Haryana, Delhi, Rajasthan and adjoining areas; it has significant larger values over parts of Eastern and Western parts of the country including Gujarat, coastal Maharashtra, Madhya Maharashtra, Marathwada, East and West Uttar Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Vidarbha, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh, Orissa, Telangana during next 3 days; on day 2 the value of index is also above threshold over parts Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand, some parts of J&K, North Rajasthan and West Uttar Pradesh.

3. Rainfall and thunderstorm activity:

Above 130 mm Rainfall: over parts of Kerala and South Interior Karnataka on day 1 and 2; over some parts of Arunachal Pradesh on day 2; over some parts of Assam, Meghalaya and adjoining area on day 3.

70- 130 mm Rainfall: over parts of Kerala, South Interior Karnataka during next 3 days; over parts of Sikkim, Konkan and Goa, Assam, Meghalaya and Arunachal Pradesh on day 1; over parts of Bihar and Arunachal Pradesh on day 2; over parts of Assam, Meghalaya, SHWB, Tripura and adjoining area on day 3.

40- 70 mm Rainfall: over parts of Sikkim, SHWB, Kerala, Karnataka, Tamil Nadu and NE states during next 3 days; over parts of SHWB on day 2; over parts of Bihar and Orissa on day 1; over parts of Bihar on day 2.

10- 40 mm Rainfall: Over parts of Kerala, Tamil Nadu, Karnataka, Sikkim, GWB, SHWB, Foothills of Himalaya, Bihar, Jharkhand, Orissa and NE states during next 3 days; over parts of J&K, Chhattisgarh, south coastal Maharashtra, Konkan and Goa on day 1; over parts of Konkan and Goa on day 2.

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, Orissa, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Andhra Pradesh and NE states during next 3 days. Over parts of Chhattisgarh on day 1 and 3; over parts of Vidarbha on day 3.

3. IOP ADVISORY FOR 24 and 48Hrs:

Summary and Conclusions:

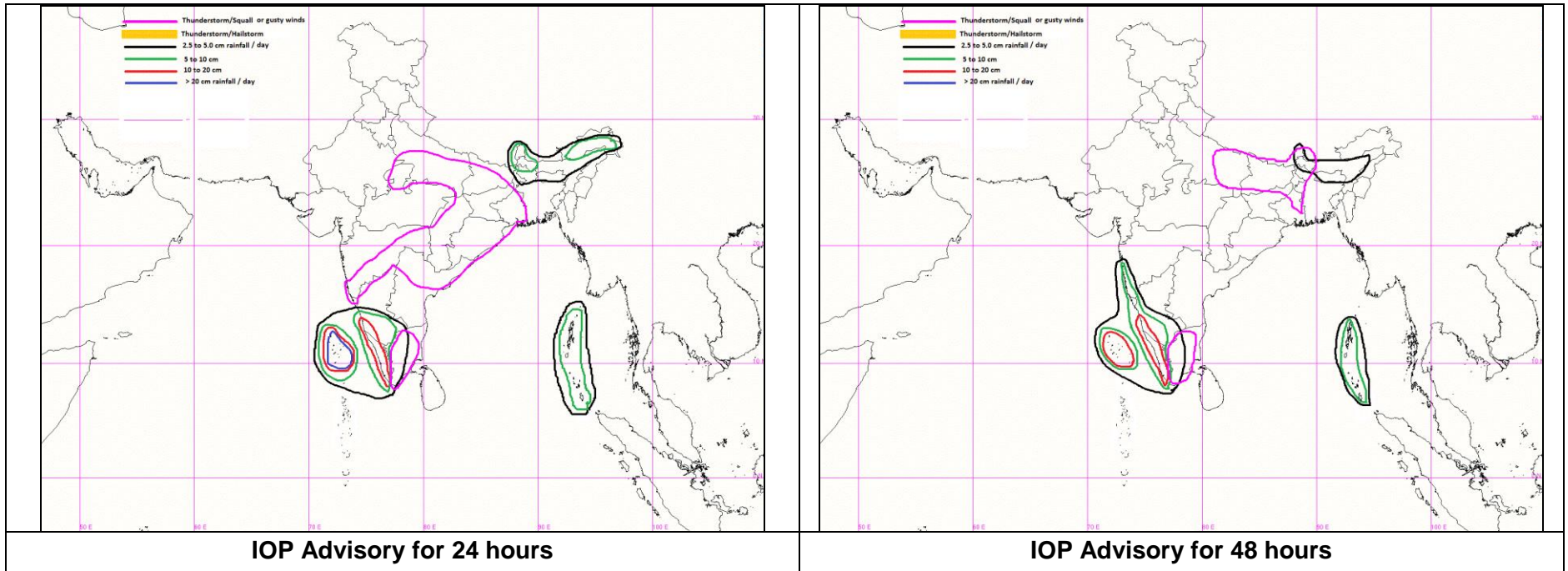
o Most thermodynamic indices (T-STORM Initiation Index, K-Index, Lifted Index, CAPE) from IMD GFS deterministic model indicate high probability of thunderstorm occurrence over entire Indian region, excluding Northwest and central Indian region, with maxima over Gujarat region on the west coast and Odisha and Gangetic West Bengal and Uttar Pradesh on day 1. On day 2, the pattern of probability of convection remains almost constant with probability increasing over the south east peninsular coast and decreasing over Uttar Pradesh. SWEAT index, which accounts for the wind shear between 850 and 500 hPa levels in addition to thermodynamic parameters, also indicates a similar pattern of high values on day 1, with probability of convection decreasing over Uttar Pradesh and increasing over Bihar on day 2. The 850-200 hPa wind shear is very high over North and northwest India on day 1 and increasing over Uttar Pradesh on day 2.

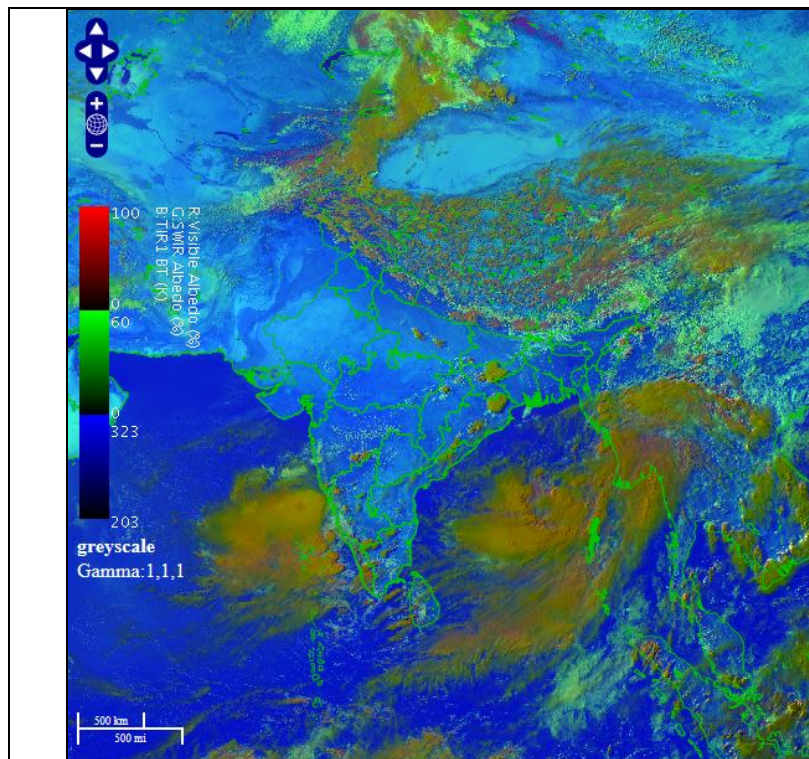
o Synoptic analysis indicates that a cyclonic circulation lies over northwest Madhya Pradesh & neighbourhood and extends upto 1.5 km above mean sea level. A trough runs from this system to east Assam in the lower levels. Another north-south trough runs from this circulation to Marathwada across west Vidarbha. There is also a well marked low pressure area over southeast Arabian sea off Kerala Karnataka coasts and associated cyclonic circulation extending upto 7.6 km above mean sea level. There is another low pressure area over east central Bay of Bengal & neighbourhood. The IMD GFS deterministic model indicates that in the afternoon, the north-south trough is likely to extend upto the cyclonic circulation off Kerala Karnataka coasts. The cyclonic circulation over northwest Madhya Pradesh is likely to shift slightly eastwards, and a northeast southwest oriented trough line, parallel to the east coast of India is likely to develop during the afternoon hours. Moisture will be fed to the east of the trough from the circulation over Bay of Bengal and afternoon convection is likely to develop along the east coast of India. On day 2, the Bay of Bengal system is likely to shift slightly northwards, and convection will be more widespread over the northeast coast of India.

IOP Area for Day-1 & Day-2:

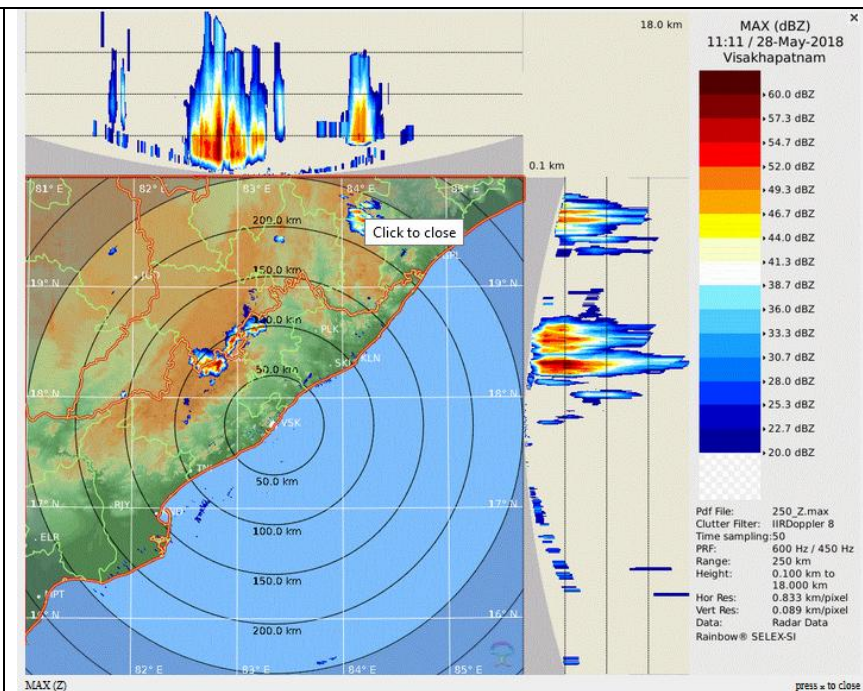
| 24 hour Advisory for IOP: | 48 hour Advisory for IOP: |
|---|--|
| <p>Significant Rainfall: Coastal Karnataka, Kerala, Lakshadweep Interior Tamil Nadu, South Interior Karnataka, Assam and Meghalaya, Arunachal Pradesh, Sub Himalayan West Bengal and Sikkim, Andaman and Nicobar Islands</p> <p>Thunderstorm with squall or gusty winds: Interior Tamil Nadu, Telangana, Andhra Pradesh South Konkan and Goa, South Madhya Maharashtra, South Marathwada Vidarbha, Chhattisgarh, Northwest Madhya Pradesh, Odisha Gangetic West Bengal, Jharkhand, Bihar, Uttar Pradesh</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: West Rajasthan</p> | <p>Significant Rainfall: Coastal Karnataka, Kerala, Lakshadweep Interior Tamil Nadu, South Interior Karnataka, South Konkan and Goa, Assam and Meghalaya, Andaman and Nicobar Islands</p> <p>Thunderstorm with squall or gusty winds: Interior Tamil Nadu, East Uttar Pradesh, Bihar, West Bengal and Sikkim,</p> <p>Thunderstorm with squall and hail Nil</p> <p>Duststorm: Rajasthan</p> |

Graphical Presentation of Potential Areas for Severe Weather:

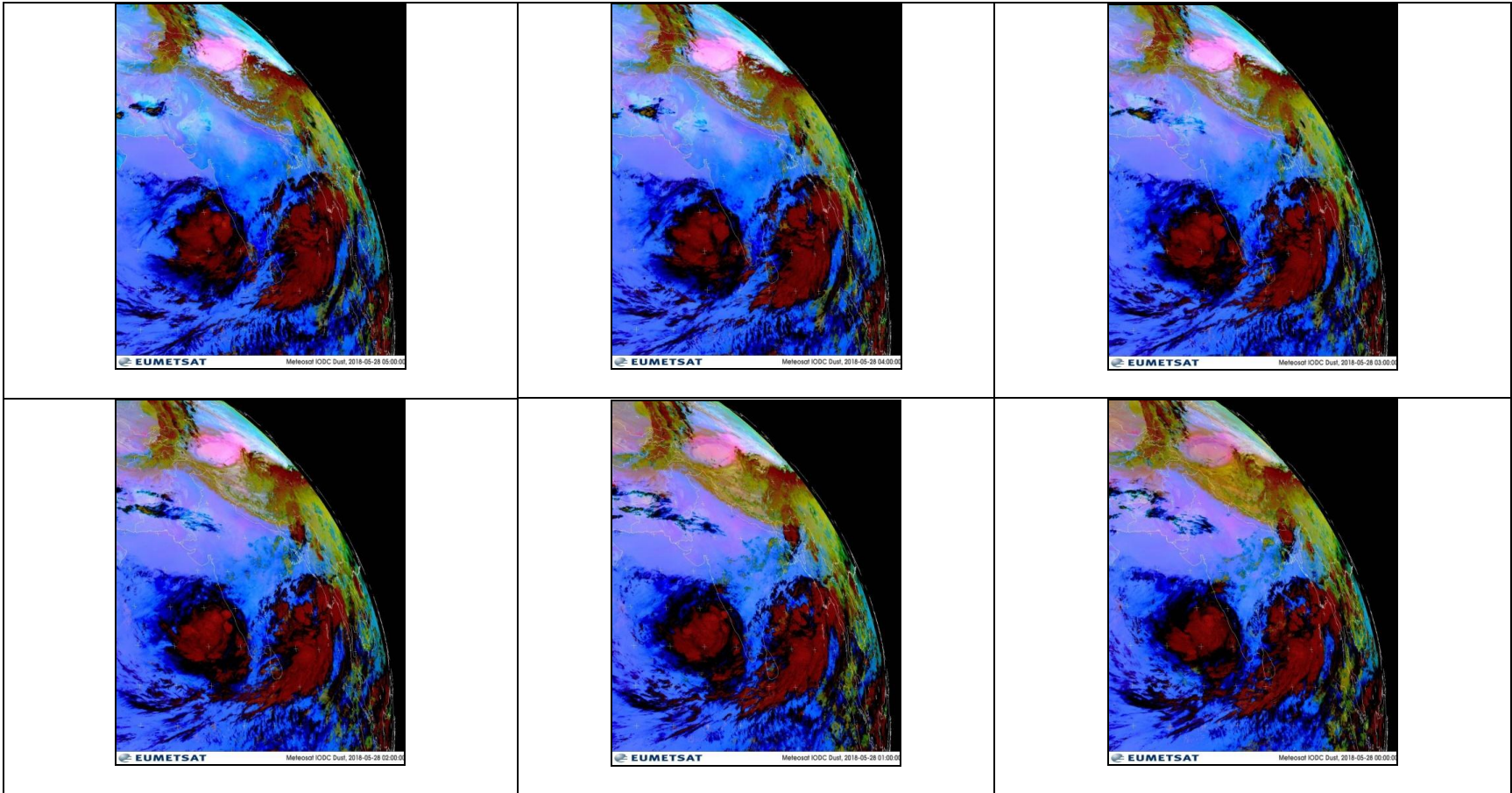




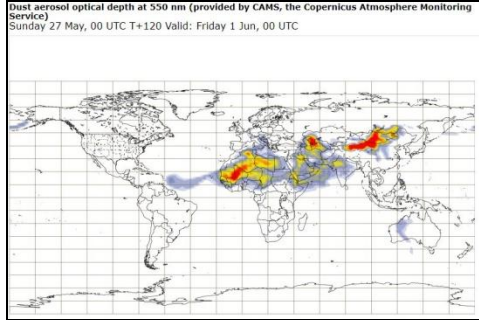
RAPID RGB Imagery at 1530 IST of the Day



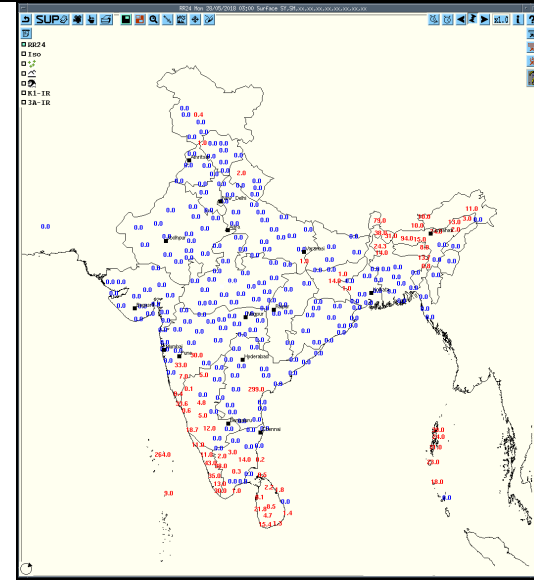
DWR Vishakhapatnam reflectivity image at 1641 IST



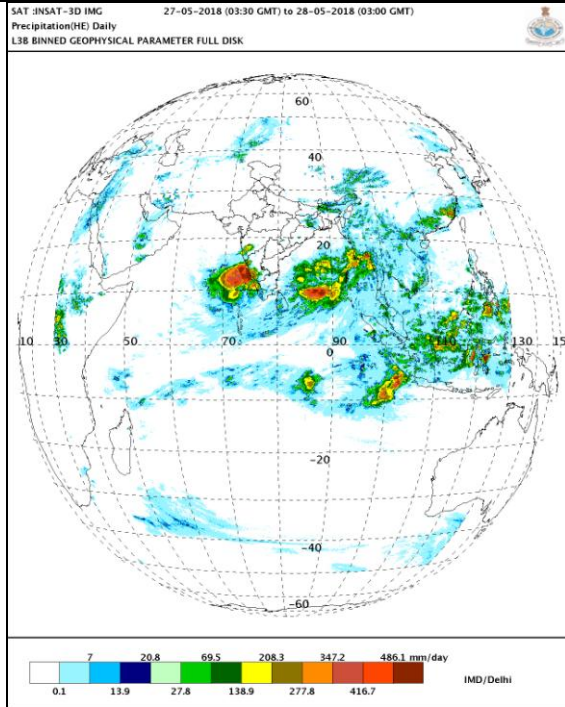
Observed Satellite Dust Images of today



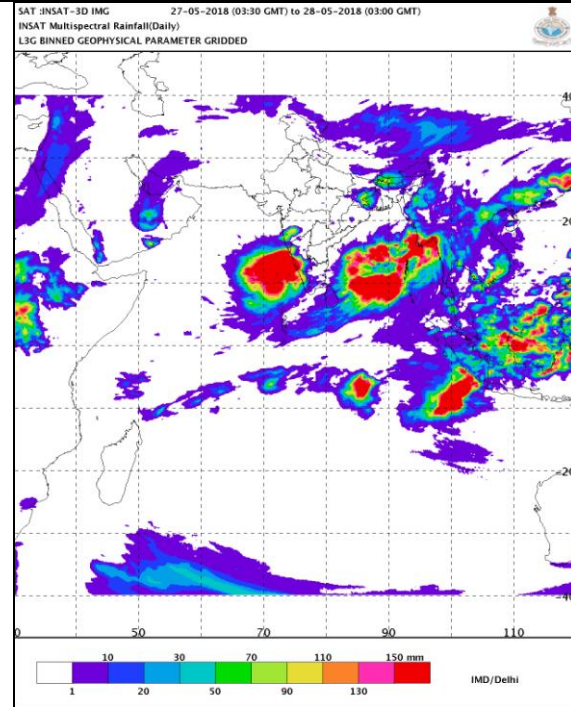
Dust Forecast



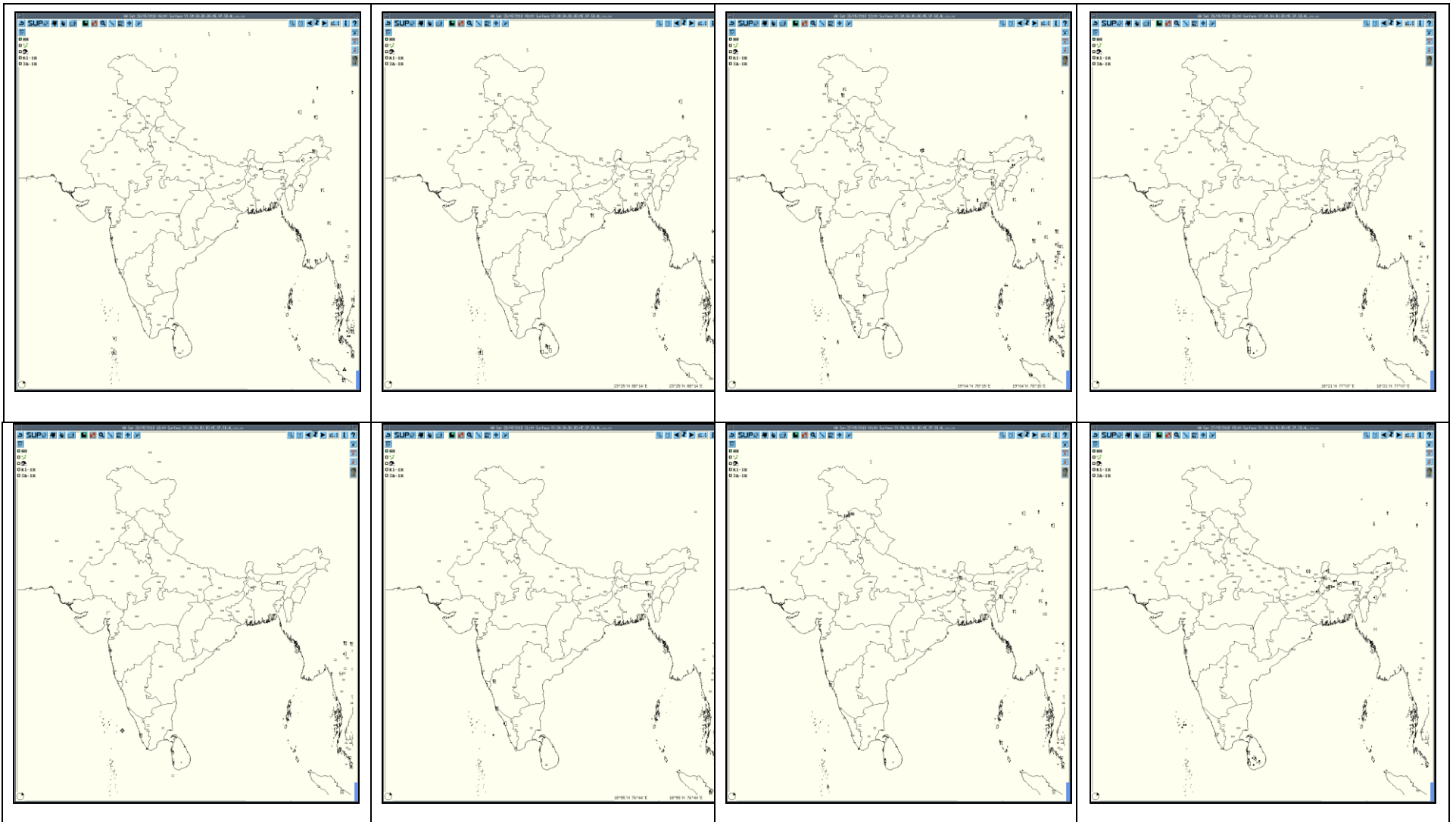
Accumulated 24 Hour rainfall (in red) recorded at 0300UTC of today



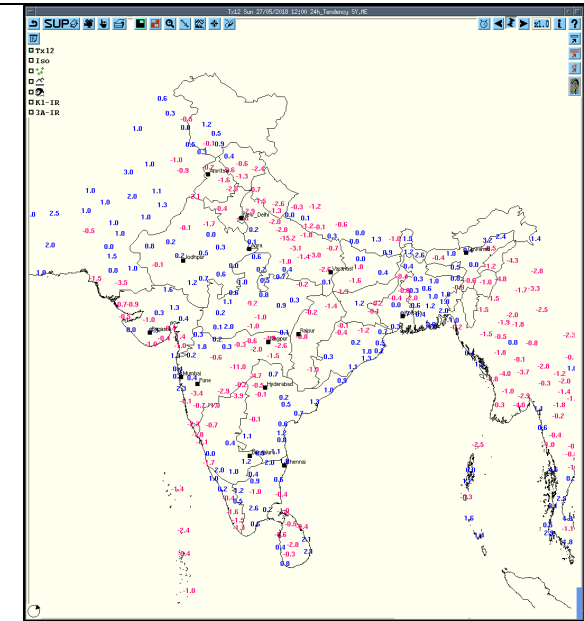
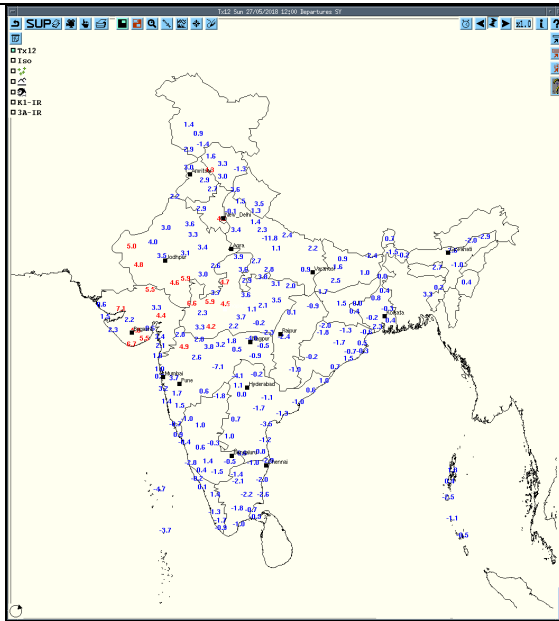
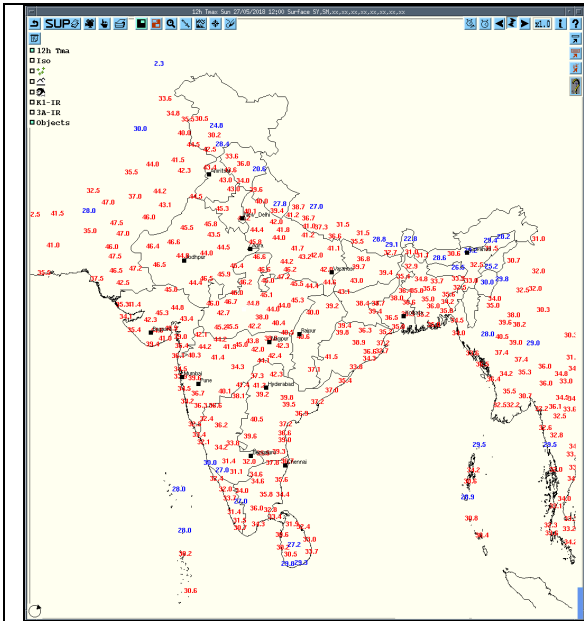
HEM



IMR



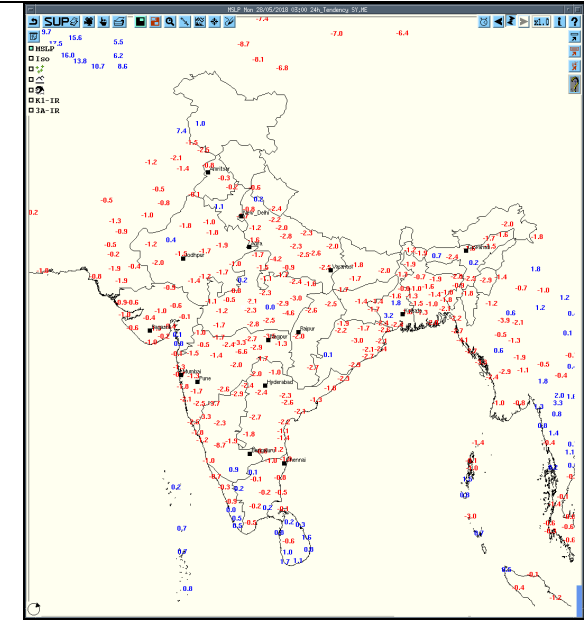
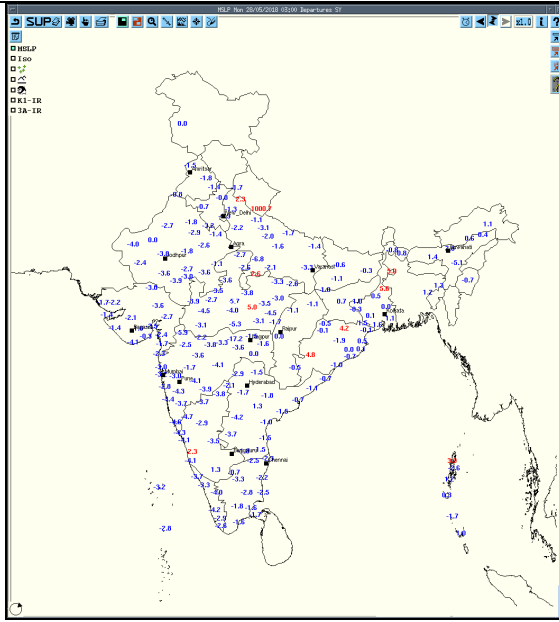
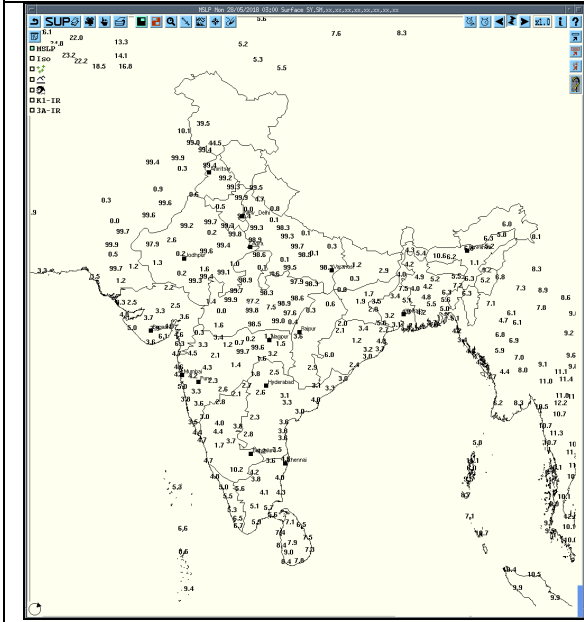
3hourly Past weather at 06, 09, 12, 15, 18, 21 UTC of yesterday and 00 & 03 hrs UTC of today



Tmax

Departure Tmax

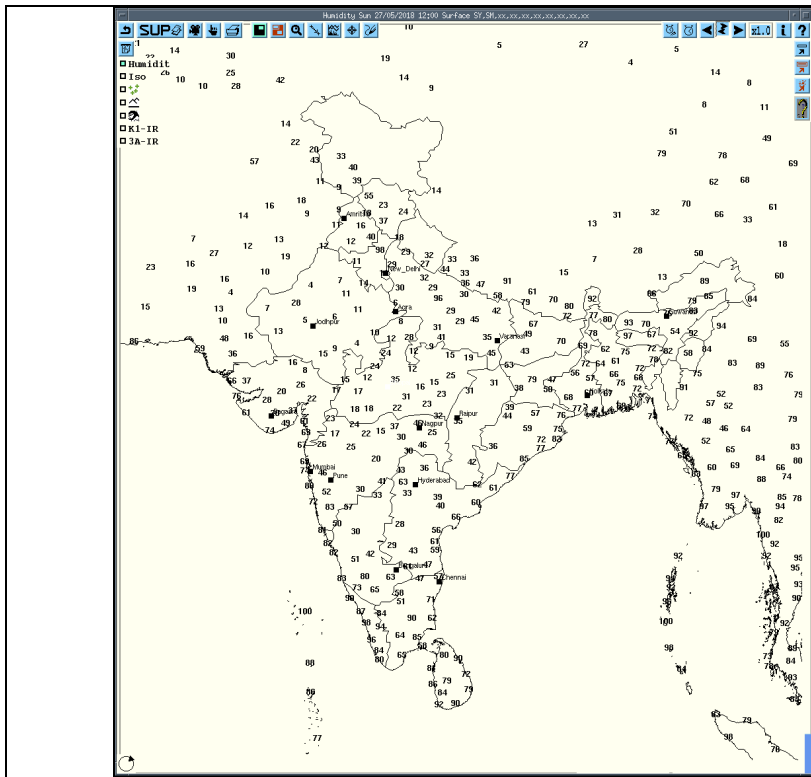
Tendency Tmax



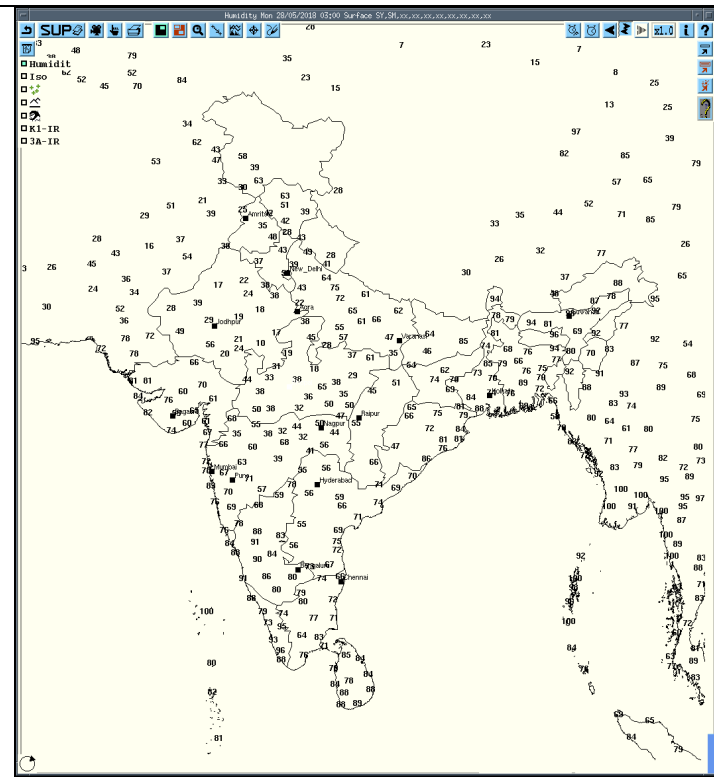
MSLP

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 | 28-05-18 | 271200 | Isolated single cb cell with maximum reflectivity of 51 dbz with height of | NNE (245 kms) moving Nly | Cb cell formed at 1041 UTC dissipated at 1121 UTC | NIL | NIL |
| Lucknow | 28-05-18 | 270300-270912 | NIL | NIL | NIL | NIL | NIL |
| | | 270912-271052 | A single cell formed at 0912UTC over 100km from radar station in NE with height 3km of 38dbz echo top and maximum reflectivity 49dbz. | A single cell moving towards in Northeast from station. | cells weakend and dissipated at 1052 UTC over 120KM In North east direction from station | RA/TS /DS | Gonda,Basti |
| | | 271052-280300 | NIL | NIL | NIL | NIL | NIL |
| Jaipur | 28-05-18 | 270300-280300 (DWR Shutdown from 271617-271655 due to power cut) | Nil | Nil | Nil | Nil | Nil |
| Patiala | 28-05-18 | 270300-280252 | No Significant Echo | -- | -- | -- | -- |

| 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 | 28-05-18 | 270300-270700 | NIL. | NIL. | NIL. | NIL. | NIL. |
| | | 270700-270900 | Isolated multiple Cells Maximum Reflectivity: 47.5 dBZ Echo Top: 13 KM | Range: 120 KM from DWR Patna in SSW direction Movement: towards EAST | Warning issued | N/A | AURANGABAD, GAYA, |
| | | 270900-281100 | NIL | NIL | NIL | NIL | NIL |
| | | 271100-271300 | Single Cell Maximum Reflectivity: 50.5 dBZ Echo Top: 12 KM | Range: 110 KM from DWR Patna in SSE direction Movement: towards NW | Warning issued | N/A | NAWADA |
| | | 271300-271330 | NIL | NIL | NIL | NIL | NIL |
| | | 271330-271900 | Isolated Multiple Cells Maximum Reflectivity: 47.50 dBZ Echo Top: 13 KM | Range: 239 KM from DWR Patna in NNW direction Movement: towards EAST | Warning issued | N/A | EAST CHAMPARAN, WEST CHAMPARAN, AURANGABAD, SASARAM, SUPAUL, MADHEPURA, SAHARSA, ARARIA, KISHANGANJ, PURNEA, KATI HAR |
| | | 271900-271930 | NIL | NIL | NIL | NIL | NIL |
| | | 271930-272300 | Isolated Multiple Cells Maximum Reflectivity: 50.50 dBZ Echo Top: 14 KM | Range: 140KM from DWR Patna in SW direction Movement: towards NW | Warning issued | N/A | ROHTAS, AURANGABAD, GAYA |
| | | 272330-280300 | NIL | NIL | NIL | NIL | NIL |

Realised past 24hrs TS/SQ/HS Data:**Realised TS/HS/SQ during past 24hours ending at 0300UTC of today (received from RMCs/MCs)**

| Name of Station Reporting | Region | State/Sub Division | Weather Event (TS/Hail/Squall) | Date | Time of Commencement (IST) | Time of end (IST) |
|----------------------------------|-----------------|---------------------------|---------------------------------------|-------------|-----------------------------------|--------------------------|
| Pahalgam | Northwest India | Jammu & Kashmir | Thunderstorm | 27-05-18 | 1805 | 1840 |
| Mukteshwar | Northwest India | Uttarakhand | Thunderstorm | 27-05-18 | 1332 | 1505 |
| Tehri | Northwest India | Uttarakhand | Thunderstorm | 27-05-18 | 1503 | 1754 |
| Churk | Northwest India | East Uttar Pradesh | Thunderstorm | 27-05-18 | 1620 | 1635 |
| Varanasi AP | Northwest India | East Uttar Pradesh | Thunderstorm | 27-05-18 | 1630 | 1730 |
| Passighat | Northeast India | Arunachal Pradesh | Thunderstorm | 28-05-18 | 0400 | 0800 |
| N/Lakhimpur | Northeast India | Assam | Thunderstorm | 27-05-18 | 2200 | 2315 |
| Tezpur | Northeast India | Assam | Thunderstorm | 27-05-18 | 1055, 2215 | 1130, 2300 |
| Guwahati | Northeast India | Assam | Thunderstorm | 27/28-05-18 | 270830, 280435 | 271015, 280620 |
| Dhubri | Northeast India | Assam | Thunderstorm | 27/28-05-18 | TS at night | |
| Barapani | Northeast India | Meghalaya | Thunderstorm | 27/28-05-18 | 27/1340, 28/0610 | 27/1425, 28/0720 |
| Cherrapunjee | Northeast India | Meghalaya | Thunderstorm | 28-05-18 | 0557 | 0735 |
| Shillong | Northeast India | Meghalaya | Thunderstorm | 28-05-18 | 0545 | 0625 |
| Kailasahar | Northeast India | Tripura | Thunderstorm | 27-05-18 | 1400 | 1500 |
| Gangtok | East India | Sikkim | Thunderstorm | 27-05-18 | 1605 | 1710 |
| Coochbehar | East India | West Bengal (SHWB) | Thunderstorm | 27-05-18 | 0915 | 1000 |
| Asansol | East India | West Bengal (GWB) | Thunderstorm | 27-05-18 | 1900- | 1950 |
| Gaya | East India | Bihar | Thunderstorm | 27/28-05-18 | 271350 280300 | 271920 280415 |
| Ranchi | East India | Jharkhand | Thunderstorm | 27-05-18 | 1432 | 2400 |
| Jamshedpur | East India | Jharkhand | Thunderstorm | 27-05-18 | 1650 | 1810 |
| Daltonganj | East India | Jharkhand | Thunderstorm | 27-05-18 | 1320 1730 | 1330 1735 |
| Port Blair | East India | Andaman & Nicobar | Squall from SW with max speed 63kmph | 28-05-18 | 0608 | 0609 |
| | | | Squall from SW with max speed 82kmph | 28-05-18 | 0805 | 0806 |
| Kodaikanal | South India | South interior Tamil Nadu | Thunderstorm | 27-05-18 | 1430 1530 | 1445 1730 |
| Coimbatore | South India | North interior Tamil Nadu | Thunderstorm | 27-05-18 | 1755 | 1930 |
| Karipur A P | South India | Kerala | Thunderstorm | 27-05-18 | 1621 | 2038 |
| Kozhikode | South India | Kerala | Thunderstorm | 27-05-18 | 1700 | 2100 |

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

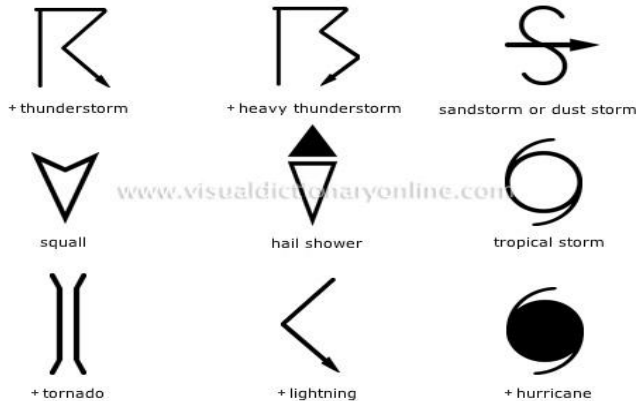
ForRadarimagesofthepast24hoursincludingmosaicofimages:

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 | |