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Country report K N Mohan

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INDIA METEOROLOGICAL DEPARTMENT

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Observation system over view

Auto Rain Gauge-1350
Automated Weather Station -701
Airport Instruments- 70airports (Indian make
Transmissometer-40nos,Laser Ceilometers- 8nos, current
Weather Instruments- 140nos)
Doppler Weather Radar- 24
Upper Air Network-42
Upper_Air Ozone -4
Full time manual Surface observatories- including Agro
205nos
Part time manual Surface Observatories -350nos
Radiation Observations : 45nos
INSAT -3D & 3DR Geostationary satellites



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Observation system

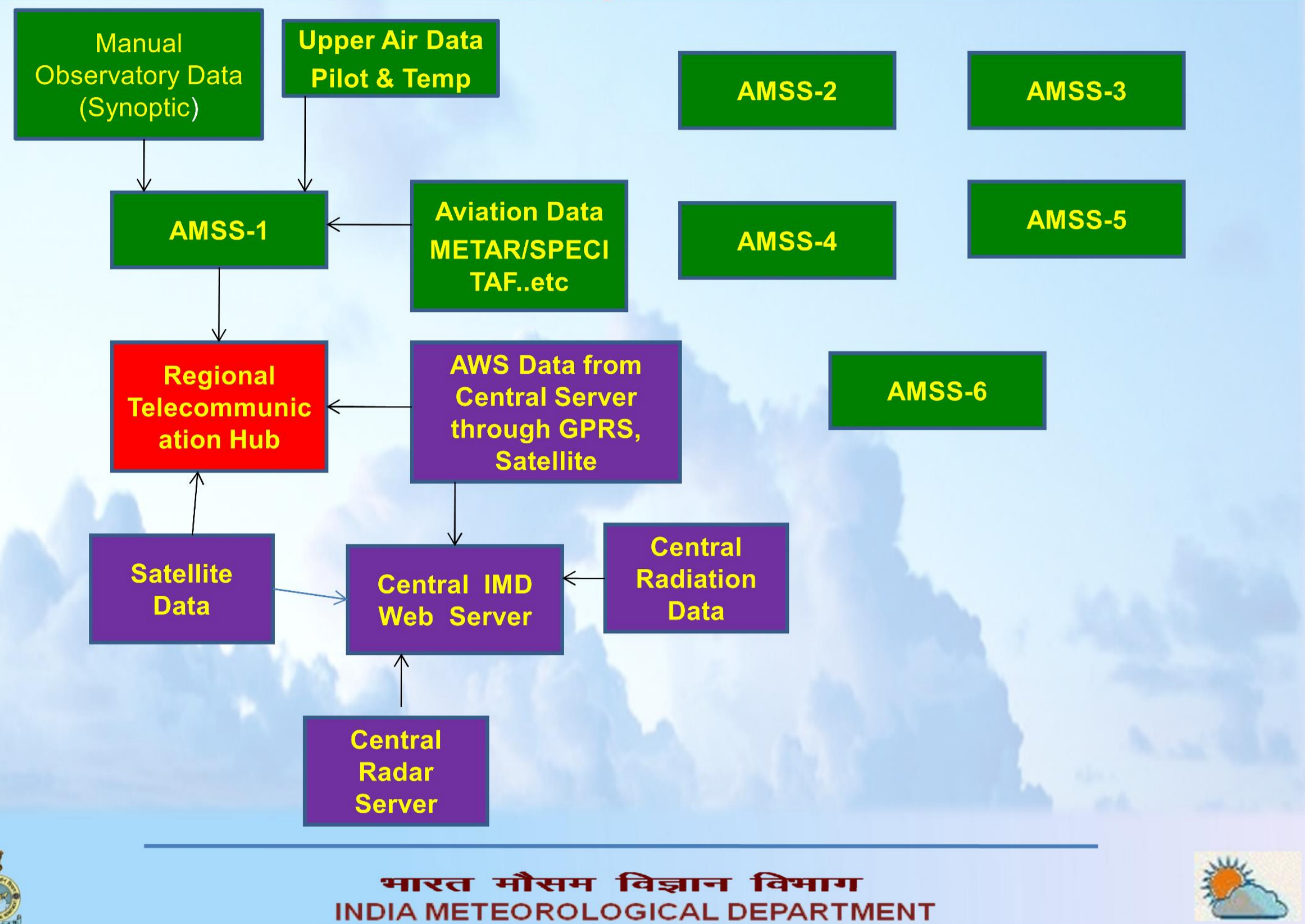
Additional 30nos of Doppler Weather Radars are being installed to have high resolution for cloud coverage, accurate estimation of Rainfall amount & Intensity , Thunderstorm activities etc over India.
LIDAR based wind shear systems are also being installed at 10 Airports .



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Observational Organization Structure



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Quality management of observation data At Observatory

- Choosing Meteorological site with good exposure conditions as per WMO standards
- Periodic comparison with traveling standards
- Periodic replacement sensors with Calibrated ones and re cycling.
- Applying Range, Temporal checks, Inter sensor dependability checks on AWS Data Logger before transmitting to Central AWS server.



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Quality management of observation data At Central server

Detection of Data Transmission error

Range Check

Air Temp >60°C or less then -30°C , Atm. Pressure>1100hPa and <500hPa are absurd and rejected)

Temporal check

Ex : Variation in Air Temp or Dew Point >4°C /hour, Variation in Pressure >3hPa/Hour, Variation in Humidity >50% /hour are Flagged)

Space Variation check

Ex: Air Temperature Variation >2°C /KM, Air Pressure>1hPa per KM are flagged

Inter sensor dependability:

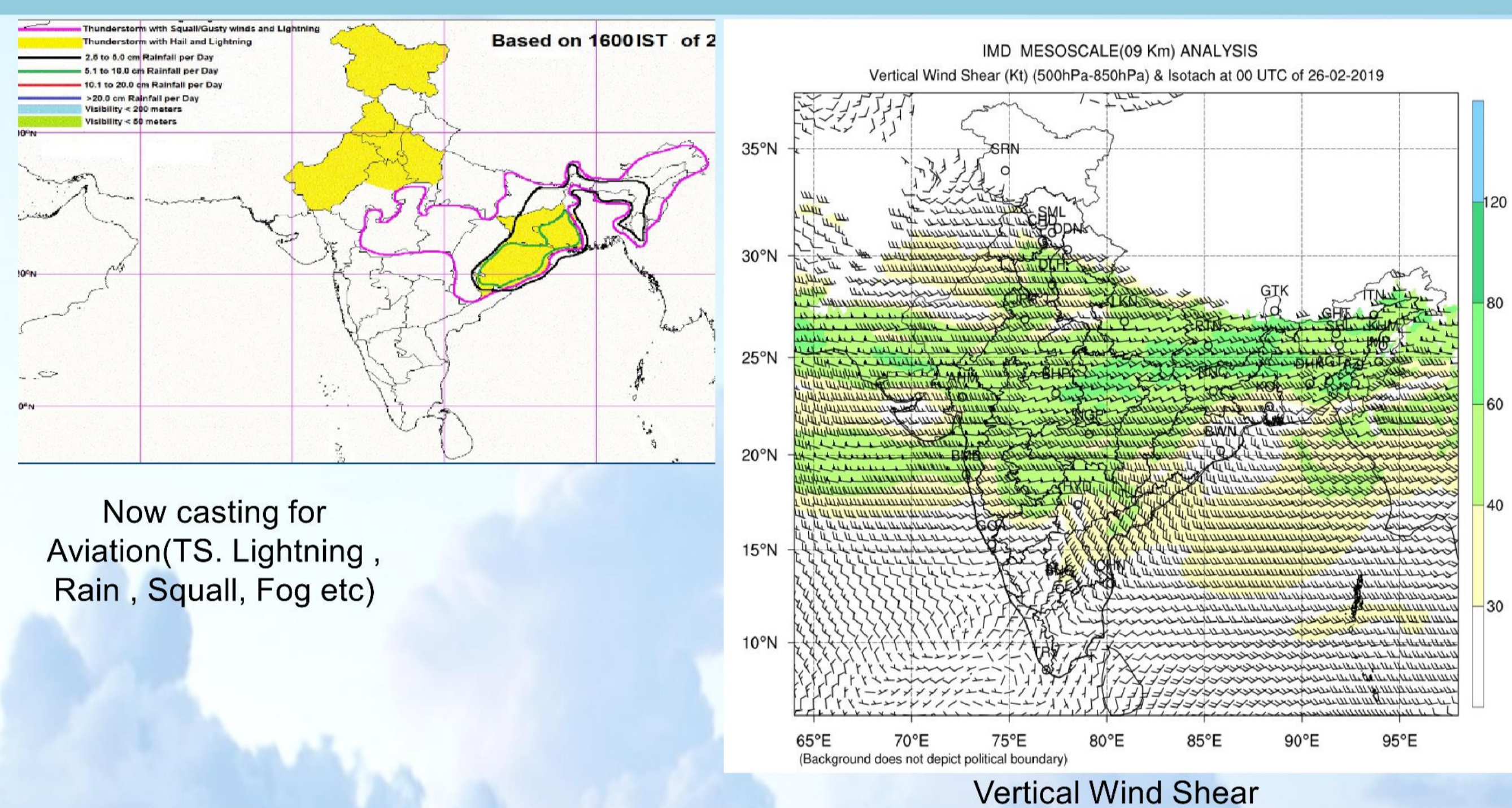
Ex: When Present weather is Fog RH <50% are Flagged, When Wind speed>10Knots Visibility <100mts is flagged, RH<30% during rains are flagged.



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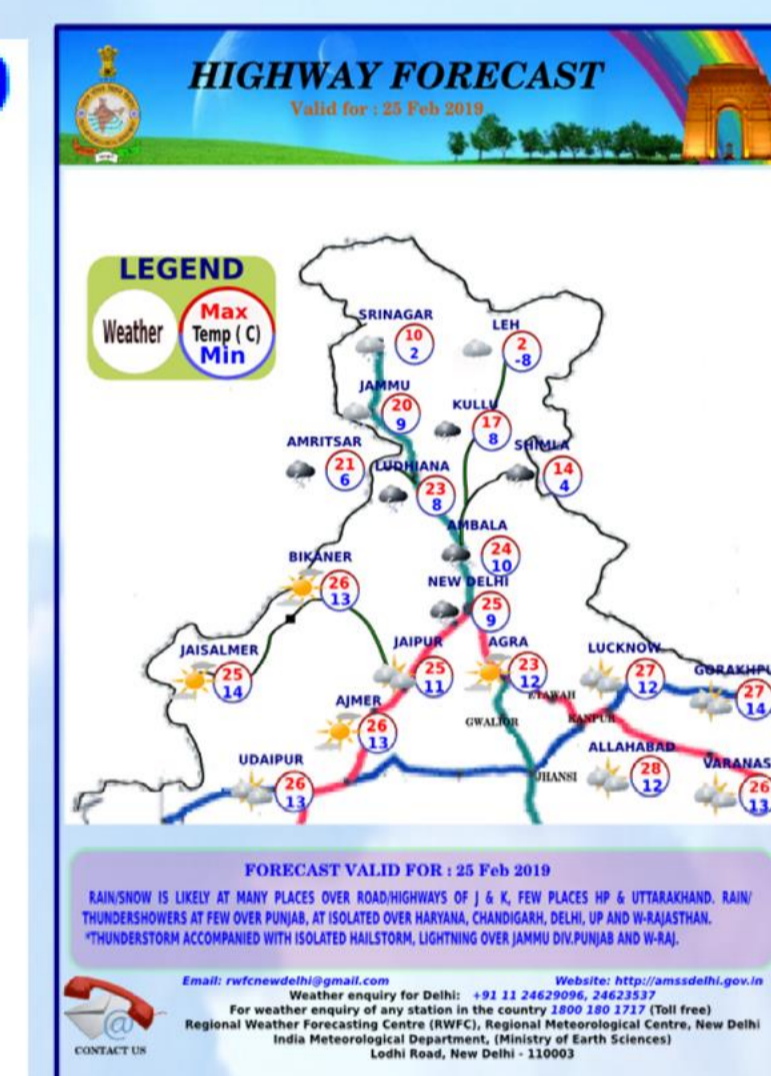
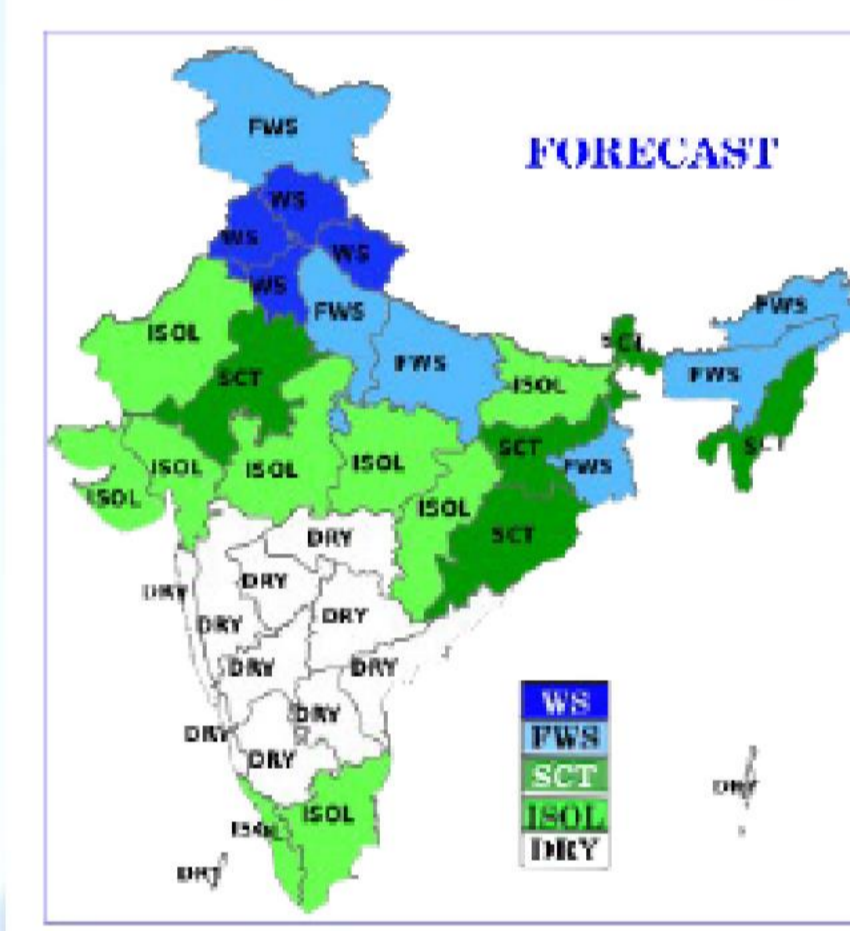
Integrated use of observation data



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Forecast for Aviation Agriculture Transport

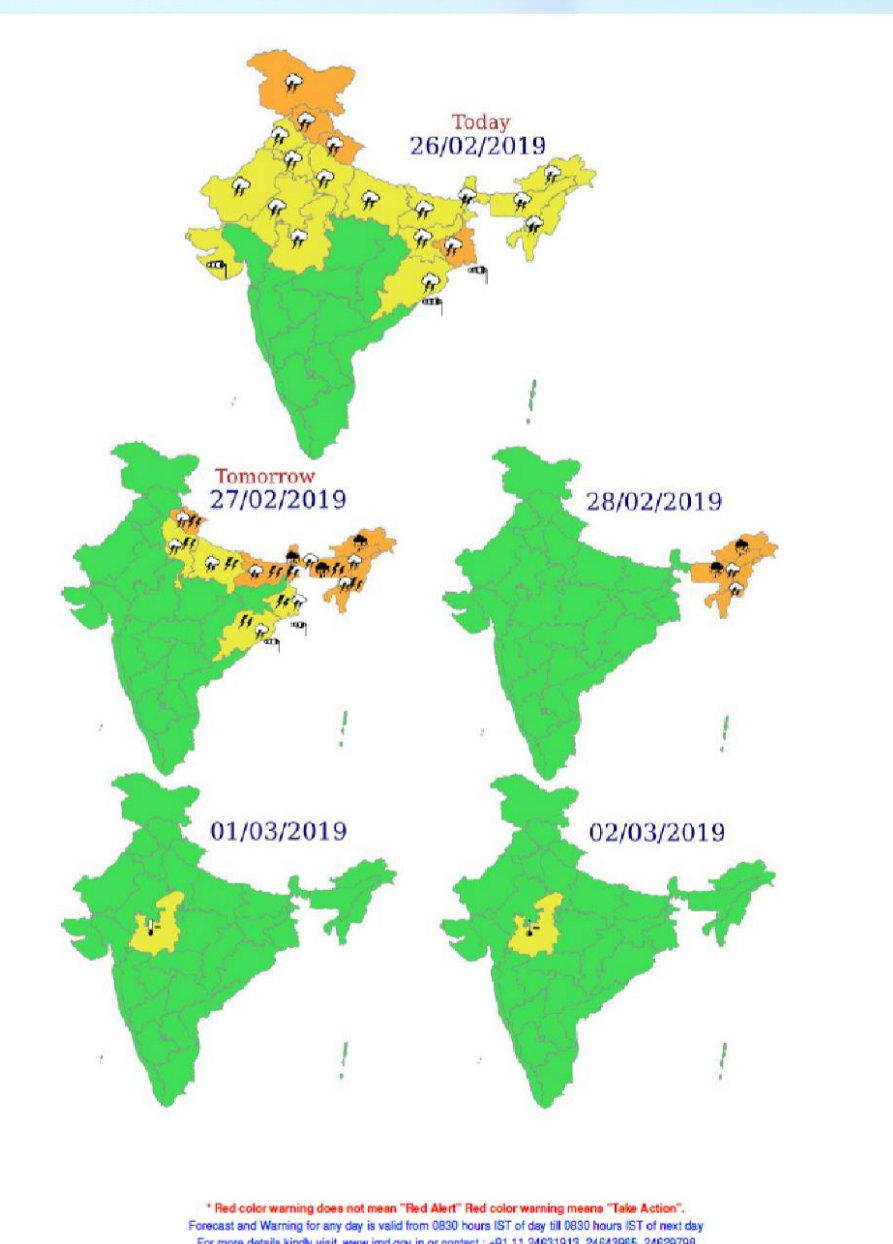
Tuesday 26 February 2019



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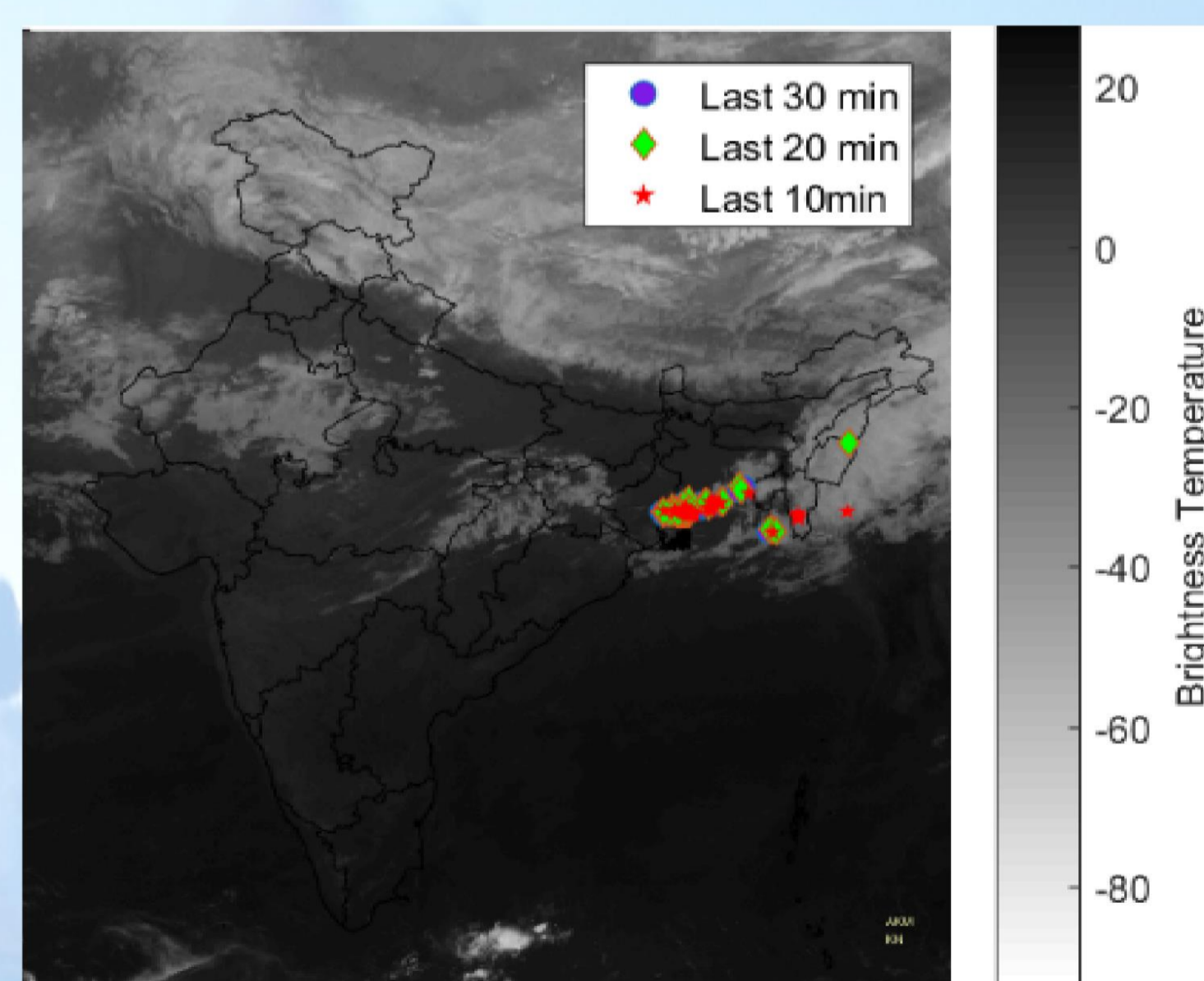
Numerical Modeling & predictions



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Warnings based on satellite Data



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Observer/expert training timeline

IMD conduct training in complete observational network including maintenance , Up keeping, Data utilization, Now casting, forecasting

- One Year duration and Once in a Year as a part of BIP-M
- Six months duration and Once in six months for IMD organization-BIP-M
- Four months duration and Once in four months for Meteorological Technicians – BIP-MT
- as & when required Elementary course for one month duration
- Refresher training course on Calibration & Maintenance of Meteorological Instruments (Radar, Satellite, Surface Instruments, AWS etc) (As & When Need arise)



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Plan for developing products

Numerical Weather Predictions are already developed for 9KM X9KM (7days)
We may like to reduce area to 2km X2km for seven days.



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Expectation for this workshop

To know the latest technology available
Adopting latest state of Art of Technology in India for better data quality and less maintenance.
Procedure for Maintenance of Data quality if low cost sensors are used at some places.



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New Initiatives & Challenges

Mercury phase-out (200replaced, 300more)
Mercury thermometer (PT-100).
Autographic instruments at Manual observatories are being digitised for auto SYNOP generation.
Computer Numeric Control Machine, Electric furnace are procured for manufacture of Highly accurate meteorological sensors at faster rate at IMD work shop. This will fulfil demand of surface observatories, airports, Agricultural; institutions and other government sectors.



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