

IMD commissions 4 new doppler radars in Leh, Delhi, Mumbai & Chennai

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On the 147th foundation day of the Indian Meteorological Department (IMD), IMD commissioned four doppler weather radars.

- Among these 4, X-band radar in Leh is installed at the **highest altitude anywhere in India.**

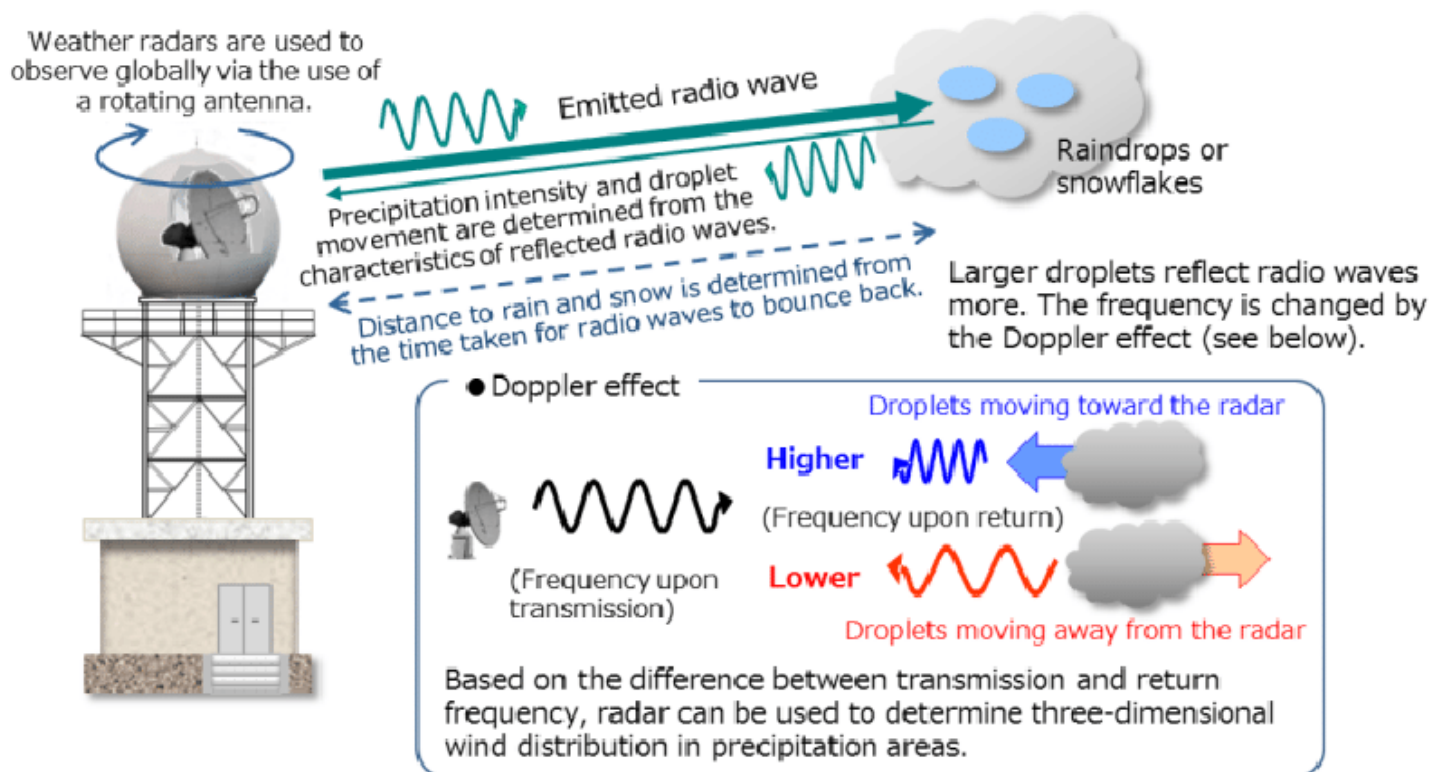


[ref: down to earth]

Doppler radar

- It is a specialized radar that uses the Doppler effect to produce **velocity data** about objects at a distance.
- It does this by bouncing a **microwave signal** off a desired target and analyzing how the object's motion has altered the frequency of the returned signal.
- This variation gives direct and highly accurate measurements of the **radial component** of a target's velocity relative to the radar.

Working



[ref: research gate]

- The basics of radars is that a beam of energy, called **radio waves**, is emitted from an antenna.
- As they strike objects in the **atmosphere**, the energy is scattered in all directions with some of the energy reflected directly back to the radar.
- The larger the object, the greater the amount of **energy** that is returned to the radar.
- That provides us with the ability to **"see"** rain drops in the atmosphere.
- In addition, the time it takes for the **beam of energy** to be transmitted and returned to the radar also provides is with the distance to that object.

Applications

Weather

- Partly because of its common use by television meteorologists in on-air weather reporting, the specific term **"Doppler Radar"** has erroneously become popularly synonymous with the type of radar used in meteorology.
- Most modern weather radars use the **pulse-Doppler technique** to examine the motion of precipitation, but it is only a part of the processing of their data.

Navigation

- Doppler radars were used as a navigation aid for **aircraft and spacecraft**.
- By directly measuring the movement of the ground with the radar, and then comparing this to the airspeed returned from the aircraft instruments, the wind speed could be accurately determined.

Locus-based navigation

- Location-based Doppler techniques were used in the **U.S. Navy's** historical Transit satellite navigation system.