RAMAN LIDAR

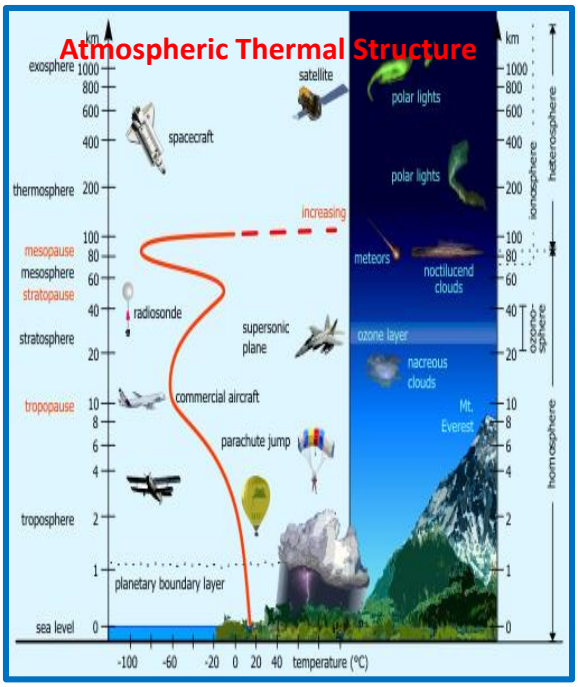
The Raman Lidar is a ground-based instrument that uses Lasers to study the atmosphere. It sends laser pulses upward to gather information about temperature, humidity, cloud, Dust etc.. LIDAR (uses light work on similar principle as RADAR (uses radio waves), to measure atmospheric processes/constituents.

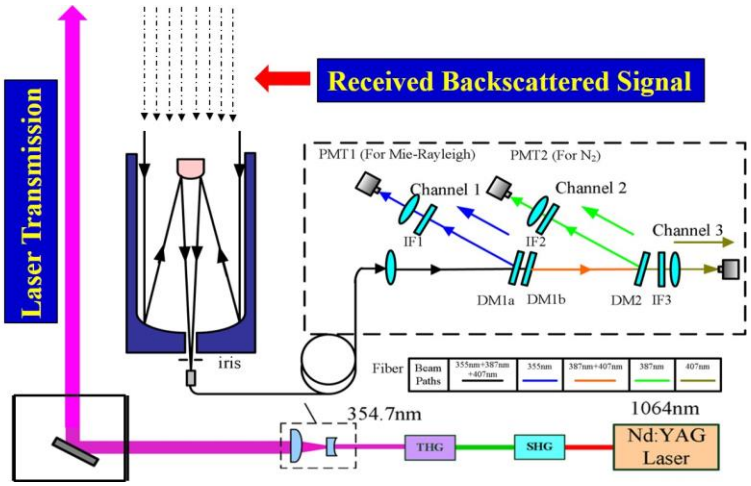
Laser Characteristics: Uses a Nd: YAG laser emitting light pulses in near-infrared (1064 nm), green (532 nm), and ultraviolet (355 nm) at 20 pulses per second, expanded three times for effectiveness.

Data Collection Channels: Collects data in seven channels: two for 532 nm, two for 355 nm, and three Raman channels (387 nm, 607 nm, 408 nm).

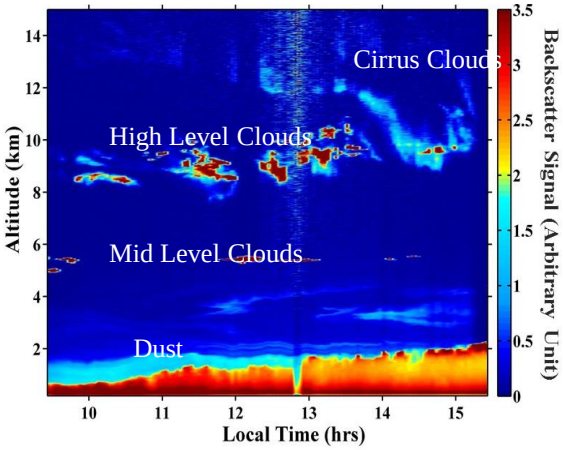
Detection Mechanism: Light is detected by photomultiplier tubes, converting it into electrical signals for system processing.

Detection Modes: Detects strong signals from 4-6 km using analog mode and weak signals above 6 km using photon counting mode, enabling detailed atmospheric data collection.



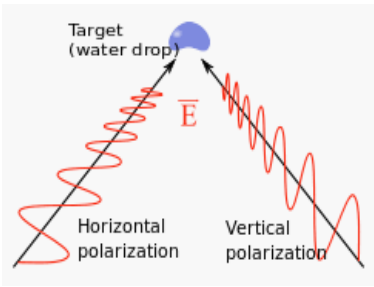


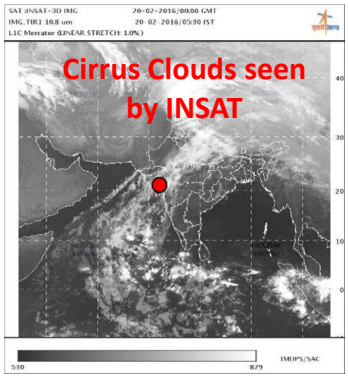
Troposphere: As seen by Raman Lidar over Ahmedabad @ 532 nm

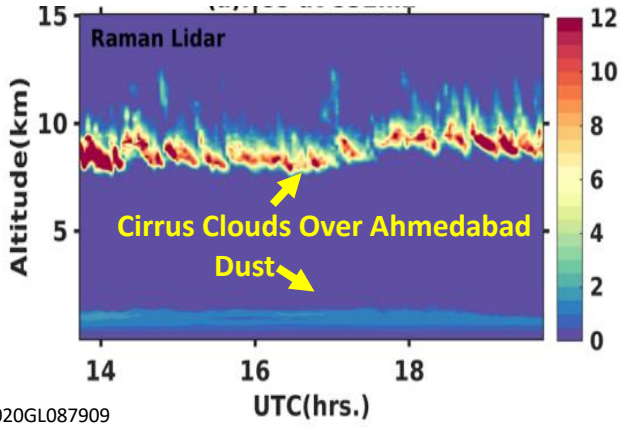


Raman Lidar based study of Water vapor, Clouds and Dust

Concept of Polarization due to Water drop







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