

Lower Atmospheric Wind Profiling (LAWP) Radar

The Lower Atmospheric Wind Profiling Radar (LAWP) developed by ISRO provides the data to study the dynamics of the lower atmosphere (up to 5 km). Radar Wind Profiler (RWP), a coherent-pulse-doppler-radar, is one of the most suitable remote sensing instruments for observing height profiles of three components of wind velocity vector, including the vertical velocity, with high time and height resolutions without influence of weather conditions.

Specifications	
Frequency: 1280 MHz	Array Size: 8 × 8 (1.4 m × 1.4 m)
Beam Width: 9°	Tx/RxType: Solid State
Peak Power: 0.8 kW	Detection: Direct IF Digital
Min. Height: 100 m	Max. Height: 3–5 km
Range Resolution: 75 m	

The salient features of LAWP include simplified active aperture, solid state transmit receive modules, calibration free passive BFN, direct IF digital receiver, pulse compression, continuous operation capability and easy transportability.

Configuration

LAWP Radar consists of a simplified active microstrip patch 8 × 8 array, solid state TR modules, a passive two dimensional beam forming network, which can generate 25 usable beams, a Direct-IF Digital receiver, a PC based Radar Controller. The wind profiler system is kept in an air conditioned shelter of 1.5 m × 1.9 m × 1.8 m size.

Applications

LAWP radar is a potential tool to carry out research studies such as Atmospheric boundary layer (ABL) Dynamics (Winds, Turbulence structure), Seasonal and inter annual variations, Interaction between the ABL and the free troposphere, Vertical profiles of precipitation, Bright band characterization, Monitoring the height of the melting layer and the vertical extent of hydrometeors, Rain/cloud drop size distribution, etc.

Operational applications include improved short-range forecasting, numerical weather prediction models, air pollution, civil aviation and flight planning, identification of atmospheric ducts, air pollution prediction, wind shear monitoring, temperature profiling in the radio acoustic sounding system (RASS) mode, rocket and missile launching, etc.



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