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### Lidar Studies on The Optical Characteristics of High Altitude Cirrus Clouds at A Low Latitude Station, Gadanki (13.5° N , 79.2° E ) India

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Abstract. Light Detection and Ranging (LIDAR) which is analogous to Radio Detection And Ranging (RADAR), has become an important and unique technology for atmospheric research and applications. The technology is widely used for the remote sensing of the Earth' s atmosphere, oceans, vegetation and the characteristics of Earth' s topography. Remote sensing of atmosphere, for its structure, composition and dynamics, is one of the proven applications of the lidar systems. More importantly the lidar technique is applied for the study of clouds, aerosols and minor constituents in the atmosphere. It provides the information on the above with good spatial and temporal resolutions and accuracy. The high altitude cirrus clouds which play an important role in the Earth' s radiative budget and global climate can be studied by using the LIDAR system. These clouds absorb long-wave outgoing radiation from Earth' s surface while reflecting part of the incoming short-wave solar radiation. Lidar measurements are useful in deriving the altitude, top height, bottom height and the optical properties of cirrus clouds, which are essential in understanding the cloud-radiation effects. The optical depth, the effective lidar ratio and the depolarization of the clouds are also derived by inverting the lidar signals from the cirrus clouds. In this paper we present the results on the lidar derived optical and microphysical properties of the cirrus clouds at a tropical station Gadanki (13.5° N, 79.2° E) India during two year period from 2009 to 2010. The seasonal variations of the cloud properties during the observation period are presented and discussed with reference to earlier period.

[Conference Paper](#) (PDF, 1086 KB)

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