OMICS Group Conferences
Accelerating Scientific Discovery
2nd International Conference on
Earth Science & Climate Change
July 22-24, 2013 Embassy Suites Las Vegas, NV, USA

CALIOP receiver transient response study

Xiaomei Lu, Yongxiang Hu, Shan Zeng and Charles Trepte
NASA Langley Research Center, USA

The Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP), an instrument on the Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO), operated as an atmospheric lidar system studying the climate impact of clouds and aerosols in the atmosphere. The photomultiplier tubes (PMT) of the 532 nm detector in the CALIOP receiver exhibit a non-ideal recovery of the lidar signal after striking a strongly backscattering target, such as water cloud or land/snow surface. This paper discusses the receiver transient response of the CALIOP instrument. A simple numerical model of the receiver transient response is presented, which predicts the relationship between surface peak signals at three range bins. The CALIOP transient response function in 30 m vertical resolution, which is used to remove any impacts on the attenuated backscatter profile of water clouds imparted by a non-ideal transient response of PMT, was obtained by using twelve adjacent lidar bins of land surface return. An analytical expression of the CALIOP transient response function in high vertical resolution, which is useful for the lidar altimetry study from the CALIOP lidar measurements, was calculated by the least square fitting of lidar measurements from land surfaces.

Biography

Xiaomei Lu received her Ph.D. in physical electronic from School of Electronics and Information Engineering, Beihang University, Beijing China, in 2011. She is currently a NASA Postdoctoral Program Fellow at the NASA Langley Research Center administered by Oak Ridge Associated University through a contract with NASA, Hampton, VA, United States.

xiaomeilu_1122@hotmail.com