

3<sup>rd</sup> International Conference on

# Oceanography

June 22-24, 2015 Philadelphia, USA

## Ocean subsurface studies with the CALIPSO spaceborne lidar

Xiaomei Lu<sup>1</sup> and Yongxiang Hu<sup>2</sup>

<sup>1</sup>Science Systems and Applications Inc., USA

<sup>2</sup>NASA Langley Research Center, USA

The primary objective of the Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO) mission is to study the climate impact of clouds and aerosols in the atmosphere. However, recent studies have demonstrated that CALIPSO also collects information about the ocean subsurface. The objective of this study is to estimate the ocean subsurface backscatter from CALIPSO lidar measurements. The effects of the lidar receiver's transient response on the attenuated backscatter were first removed in order to obtain the correct attenuated backscatter profile. The empirical relationship between sea surface lidar backscatter and wind speed was used to estimate the theoretical ocean surface backscatter. Then the two-way atmospheric transmittance was estimated as the ratio between the corrected ocean surface backscatter and the theoretical one. The ocean subsurface backscatter was finally derived from the subsurface attenuated backscatter divided by the two-way atmospheric transmittance. Significant relationships between integrated subsurface backscatter and chlorophyll-a concentration and between integrated subsurface backscatter and particulate organic carbon were found, which indicate a potential use of CALIPSO lidar to estimate global chlorophyll-a and particulate organic carbon concentrations. We will show the preliminary results of ocean subsurface backscatter and depolarization ratios.

### Biography

Xiaomei Lu has completed her PhD in physical electronic from School of Electronics and Information Engineering, Beihang University, Beijing China, in 2011. She is the scientific analyst of Science Systems and Applications Inc. (SSAI). She has published more than 20 papers in reputed journals and has been serving as reviewer for reputed journals.

[xiaomeilu\\_1122@hotmail.com](mailto:xiaomeilu_1122@hotmail.com), [yongxiang.hu-1@nasa.gov](mailto:yongxiang.hu-1@nasa.gov)

Notes: