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A New Method for Common Calibration of Sun-Sky-Lunar Photometer

Kaitao Li (1), Zhengqiang Li (1), Donghui Li (1), Hua Xu (1), Yisong Xie (1), Li Li (1), Xingfeng Chen (1), Yan Ma (1,2)

(1) State Environmental Protection Key Laboratory of Satellite Remote Sensing, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, Beijing, China, (2) University of Chinese Academy of Sciences, China

A new calibration method is introduced to transfer extraterrestrial calibration coefficients to the moon measurements for a new sun-sky-lunar photometer, trade name CE318-T from CIMEL. The new transfer method has no relationship with lunar phase, therefore, the precision of the results is improved, and error analysis suggests that the uncertainty of the transferred method is about 2.2-2.6%, smaller than the lunar Langley calibrations. At the same time, the calibration time is also saved.
The Sun-Sky-Lunar photometer numbered #1202 and located on the roof of Institute of remote sensing and digital earth (RADI) in Beijing was used in this study. The extraterrestrial calibration coefficients were got by using Langley calibration performed at Ali with a height of 5053 m above sea level in Tibet. The new lunar calibration coefficients were obtained with the new transfer method. And then the nocturnal AODs were calculated, which are well consistent with the daytime observations. The differences between two AODs obtained with transferred calibration coefficients and lunar Langley method were also compared in this paper.
In this study, Lidar observation results was also presented to compare with the lunar observations, the results show that the nocturnal AODs have the same variation tendency with the Lidar observations.