Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

ACG06-P07 Room:Poster Time:April 29 18:15-19:30

Optimal choice of surface reflectance and aerosol types for Multi-Spectral Imager on board EarthCARE

FUKUDA, Satoru[1*] ; NAKAJIMA, Teruyuki[2] ; TAKENAKA, Hideaki[2]

[1]Japan Aerospace Exploration Agency, [2]Atmosphere and Ocean Research Institute, The University of Tokyo

EarthCARE is a satellite which will be launched in 2016. EarhtCARE is a joint mission between Europe and Japan. Four instruments such as CPR, ATLID, MSI and BBR will be equipped. MSI is a multi-spectral imager, and the purpose of it is to get the horizontal structure of aerosol and cloud. We are developing the aerosol retrieval algorithm for MSI. MSI aerosol products are consists of optical thickness over land, optical thickness over ocean, and Angstrom Exponent over ocean. Over ocean we implement two channel method with 0.68 um and 0.86 um (Higurashi and Nakajima, 1999) and we retrieve optical thickness and Angstrom Exponent. Over land we estimate the surface reflectance at 0.68 um from longer wavelength. Kaufman et al (1997) used 2.2 um to estimate the surface reflectance at 0.68 um. In this study we tried to use 1.6 um to estimate the surface reflectance at 0.68 um. This is because there is a possibility to get better estimation than to use 2.2 um and we can use this method for sensors which don't equip 2.2 um such as GOSAT/TANSO-CAI or CAI2. We have made a scatter plot of the reflectance between 0.68 um and 1.6 um. As reflectance data set, we used AERONET data of 0.68 um and GOSAT/TANSO-CAI's reflectance data of 1.6 um. We found that there are some correlations between these two reflectances when we classified by NDVI. The correlation is larger when the NDVI is large. The error induced by this parameterization is calculated. The standard error is 0.009 when 0.5 <NDVI <0.7, and the standard error is 0.007 when 0.7 <NDVI. We also calculated the error as aerosol optical thickness. The error as aerosol optical thickness at 0.5 um is 0.18 when 0.5 <NDVI <0.7, and that is 0.14 when 0.7 <NDVI. We will also develop aerosol models for each area by use of cluster method and linear classifier method.

Keywords: aerosol, remote sensing, EarthCARE