

Radiometric Characteristics of Geostationary Ocean Color Imager(GOCI) for Land Applications

^{*a} Sung-Min Park and ^b Kyu-Sung Lee

^{*a} Graduate student, Dept. of Geoinformatic Eng., Inha university, Incheon, S.Korea;
Tel: +082-032-860-8805; E-mail: plase@inha.edu

^b Professor, Dept. of Geoinformatic Eng., Inha university, Incheon, S.Korea;
Tel: +082-032-860-7601; E-mail: ksung@inha.ac.kr

KEY WORDS: GOCI, 6S, cross-calibration, Radiance, vicarious calibration

Abstract: The GOCI imagery can be an effective alternative to monitor short-term changes such as crop phenology, forest fires, and heavy snow. This study aimed to assess the radiometric characteristics of the GOCI multispectral imagery for monitoring land cover and vegetation. As an initial approach, we have compared GOCI radiance values with MODIS data. Further, the at-sensor radiance values over various land targets were tested by vicarious calibration and cross-calibration methods. Surface reflectance values were directly measured in field using a portable spectrometer and indirectly derived from the atmospherically corrected MODIS data over relatively homogeneous sites of desert, tidal flat and fallow crop land. The GOCI radiance values were then simulated by radiative transfer model (6S). In overall, simulated radiances were very similar to the at-sensor radiances of GOCI data, although the simulated radiance values of band 1 and band 2 show lower. The relatively low radiances of GOCI data were also observed when we directly compared the MODIS and GOCI data obtained at the same time. In our preliminary study the GOCI imagery has shown the suitable radiometric quality to be used for various land applications. Further works are needed to derive surface reflectance over land area to reduce the environment attenuation by atmosphere and solar illumination angles.