Geophysical Research Abstracts
Vol. 16, EGU2014-4858, 2014
EGU General Assembly 2014

An empirical sun-glint index for GOME-2

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Sun-glint has high impact on several kinds of remote sensing applications over oceans, e.g. ocean color, detection of oil spills, retrieval of cloud and aerosol properties, or the retrieval of trace gas columns from spectral measurements.
Here we investigate to what extent information about sun-glint can be derived from spectrally resolved measurements from satellite, e.g. GOME-2, covering the UV/vis spectral range, but with rather coarse spatial resolution. Several different quantities are investigated, e.g. radiance, operational cloud products, a color index, polarization state (Stokes fraction), and the oxygen column density.
From the combination of color index and Stokes fraction, it is possible to differentiate between the occurrence of sun-glint and clouds, and an empirical sun-glint flag can be defined on the high spatial resolution of GOME-2 PMD measurements. This flag can be used to either exclude sun-glint situations, or to explicitly select them for their well-defined radiative transfer conditions and high reflectance.
Going beyond simple flagging, a float sun-glint index might allow for a gradual quantification or correction of sun-glint effects, with potential applications in various fields of research (work in progress).