Geophysical Research Abstracts
Vol. 19, EGU2017-6607, 2017
EGU General Assembly 2017

Dual view Geostationary Earth Radiation Budget from the Meteosat Second Generation satellites.

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The diurnal cycle of the radiation budget is a key component of the tropical climate. The geostationary Meteosat Second Generation (MSG) satellites carrying both the broadband Geostationary Earth Radiation Budget (GERB) instrument with nadir resolution of 50 km and the multispectral Spinning Enhanced VIsible and InfraRed Imager (SEVIRI) with nadir resolution of 3 km offer a unique opportunity to observe this diurnal cycle. The geostationary orbit has the advantage of good temporal sampling but the disadvantage of fixed viewing angles, which makes the measurements of the broadband Top Of Atmosphere (TOA) radiative fluxes more sensitive to angular dependent errors.

The Meteosat-10 (MSG-3) satellite observes the earth from the standard position at 0° longitude. From October 2016 onwards the Meteosat-8 (MSG-1) satellite makes observations from a new position at 41.5° East over the Indian Ocean. The dual view from Meteosat-8 and Meteosat-10 allows the assessment and correction of angular dependent systematic errors of the flux estimates. We demonstrate this capability with the validation of a new method for the estimation of the clear-sky TOA albedo from the SEVIRI instruments.