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EUMETSAT OSISAF IRRADIANCE PRODUCTS

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Within the context of the EUMETSAT Ocean and Sea Ice SAF surface incoming shortwave and longwave radiative fluxes are estimated using optical sensors. The current spatial resolution is 5 km and the temporal resolution is daily. The input data are AVHRR data from both NOAA POES and Eumetsat Polar System (EPS).

Currently data are delivered in a Polar Stereographic map projection, but work is ongoing to deliver in satellite projection. Although each satellite passage is processed, the official is a daily product which represents the mean daily irradiance received at the surface in Watt per square meter.

The shortwave irradiance is estimated from a number of satellite passages where the cloud reflectance is used to estimate a cloud factor that is related to the cloud transmittance. In order to estimate this narrowband to broadband as well as anisotropy corrections are a required. For these steps a cloud classification utilising the EUMETSAT NWCSAF Polar Platform System (PPS) is used along with estimates of the atmospheric ozone and water vapor content.

The longwave irradiance is estimated using a hybrid bulk parametrisation where during night time the NWC SAF PPS cloud classification is linked to cloud contribution coefficients. During day time the same cloud contribution coefficients are estimated using the shortwave estimates. In addition estimates of the surface temperature and atmospheric water vapor content is required.

The performance of the current algorithm under Arctic conditions is presented using validation data from the North Atlantic Ocean and in particular Bjørnøya, Hopen and Jan Mayen in combination with a station in the North Sea.