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Retrieval of aerosol climatology along the Norwegian coast

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The Norwegian coastline goes from 58 degrees North to almost 72 degrees North in latitude, and is highly variable in terms of water types and climatic conditions. Also in terms of aerosol climatology (chemical composition and loading) significant differences are expected. Here we present a method to compile a database on aerosol climatology based on radiance and irradiance measurements obtained as a part of the Norwegian Ferrybox program. The Ferrybox program has since 2005 collected data from TriOS Ramses radiance and irradiance sensors deployed on platforms installed in ships of opportunity covering the Norwegian coastline from 59 to 72 degrees North in addition to the eastern North Sea (Skagerrak and Kattegat). Radiances and irradiances are measured by the Ramses sensors in 190 channels covering the spectral range from 320 nm to 950 nm. Desired aerosol parameters are retrieved by comparing the radiances and irradiances measured on the ship with those produced by radiative transfer simulations in which the aerosol parameters are varied systematically until a best-fit combination of desired aerosol parameters is found.