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Relationships between heat flux components and mixed layer properties derived from OWS 'Mike' time series

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Meteorological and oceanographic measurements at OWS 'Mike' located in Norwegian Sea (66N, 2E) provide long-term uniform time series since 1949 to present. The data set was utilized to study air-sea interactions with state-of-the art algorithms applied to compute radiative (shortwave and longwave) and turbulent (sensitive and latent) components of the net heat flux. The net shortwave flux was calculated using satellite albedo dataset (MTW albedo climatology; Taskanen et al., 2004) and EPA (Environmental Protection Agency) model. The net longwave flux was estimated by Southampton Oceanography Centre (SOC) method. Turbulent fluxes at the air-sea interface were calculated using the bulk COARE 3.0 algorithm. The advection was calculated as a residual term. Comparison of the results with heat fluxes from SOC atlas has shown reasonable agreement. COARE algorithm accounts for the mixed layer depth (MLD). MLD and the mixed layer structure were extracted from hydrographic profiles obtained at OWS 'Mike'. Relations between meteorological variables and components of the heat fluxes in connection with the mixed layer state are discussed. The methodology is going to be used in spatial analysis of the net heat flux in the Nordic Seas.