Geophysical Research Abstracts
Vol. 19, EGU2017-16537, 2017
EGU General Assembly 2017

Long-term changes in cloud cover and short wave radiation over the Ocean

Marina Aleksandrova, Sergey Gulev, and Alexey Sinitsyn
P.P.Shirshov Institute of Oceanology, Moscow, Russian Federation (marina@sail.msk.ru)

We analyze cloud cover characteristics along with the computed short wave radiative fluxes over the Ocean for the last several decades. Characteristics of cloud cover were derived from the Voluntary Observing Ship (VOS) reports available from the ICOADS (International Comprehensive Ocean-Atmosphere Data Set). Frequency distribution of fractional cloud cover was approximated by 3-paramter PDF, accurately capturing most of variants of cloud cover probability density distribution. Interannual to decadal changes in characteristics of cloud cover (linear trends and shorter term variations) are analyzed in terms of the distribution parameters. Next, the changes in the cloud cover characteristics over the world ocean were associated with variability of short-wave radiation fluxes derived from VOS reports for the last 6 decades using a new parameterization, which accounts not only for the cloud amount but also for the cloud types. The latter is critically important for the conditions close to overcast and may strongly affect short-wave radiation fluxes. Computations demonstrate generally slightly decreasing over the last decades shortwave radiation flux in mid latitudes and also an evident interdecadal variability in the tropics. These changes are discussed in the context of variability of cloud cover characteristics and in conjunction with changes in turbulent heat fluxes.