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New global short-wave radiation climatology from VOS based on highly accurate parameterization: interannual variability and the impact of cloud cover

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The report describes the construction global climatology SW radiation at sea surface based on VOS observations and new parameterization of SW radiation. New parameterization of SW radiation at sea surface has been developed in Sea-Air Interaction Laboratory of P.P. Shirshov Institute of Oceanology based on 4 years of highly accurate in-situ observation in different parts of the Atlantic Ocean. The first advantage of the new parameterization is accounting for non-linear dependence of empirical coefficients on the altitude of the sun in the case of a clear sky. Also new parameterization takes into account different cloud type in case of conditions close to overcast. New parameterization was applied to the VOS meteorological observations on individual sample basis using special algorithms in order to avoid the spatial and temporal inhomogeneity of data. As a result we got global climatology of SW radiation covering the period from 1950 to 2011 which shows significant differences from the existing parameterization of shortwave radiation. On the poster, we also show the different regimes of clouds of different regions of the World Ocean and its influence on variability SW radiation. Finally using new climatology we analyzed climate variability in short wave radiation fluxes including estimates of long-term trends and oscillating shorter-term interannual modes.