Geophysical Research Abstracts
Vol. 20, EGU2018-15179, 2018
EGU General Assembly 2018

Lake climatological fields upgrade

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The surface heat, moisture and momentum [U+FB02]uxes depend not only on atmospheric conditions but also on the properties of the land cover, which in lake-rich areas are largely determined by inland water bodies (rivers, lakes).
Lakes influence the local weather conditions and local climate. For example, during freezing and melting the lake surface radiative and conductive properties as well as the latent and sensible heat released from lakes to the atmosphere change dramatically, leading to a completely different surface energy balance. By affecting the surface [U+FB02]uxes, lakes modify the structure of the atmospheric boundary layer. In addition, they can intensify winter snowstorms, increase precipitation or/and surface temperature. Also, lakes generate night convection and intensive thunderstorms, which on the lake Victoria for instance, lead to a death of thousands fisherman every year.
For the parametrization of lakes in NWP and climate models, the information about lakes characteristics as external model parameters is necessary. Lake cover and depth maps are the most important characteristics and are used by most global model. For this purpose the global database of lake depth GLDB was developed and updated.
The sensitivity of NWP model to a more precise lake cover and depth file is investigated using the ECMWF model (IFS) CY43R3 model at the TCO1279 horizontal resolution (approximately 9 km). Several experiments are performed using different sets of lake data: I) GLDBv1 + default depth of 25 m, ii) GLDBv3 + new in-situ lake measurements + new global ecosystem dataset. Results are verified against independent in-situ observations. Ways of how new lake cover and depth file are generated and benefits coming from the correct lake parameters will be presented.