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【236】 Numerical investigation of mid-latitude subgrid-lake effects using a coupled single-column model with an application to Lake Geneva, Switzerland

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This paper explores the potential of an atmospheric single-column model to analyse the nonlinear effects of a subgrid-scale mid-latitude open freshwater body. The are to propose a coupling technique between a combined land-open water surface and the atmosphere, to evaluate the nonlinear effects as the fractional areas of both surfaces increases incrementally from land to open water, and to evaluate the predictability of the atmosphere-surface system. Results showed that the mean surface fluxes and other relevant quantities may not be arithmetically averaged on the basis of the fractional area of the land and that of the open water surfaces, as simulated quantities evolve in a highly nonlinear manner as a function of the respective land and open water areal fraction.

Authors: Dr GOYETTE, Stephane (Nonlinearity and climate group, University of Geneva); Mr FONSECA, cedric (Group of Applied Physics & Institute for Environmental Sciences, University of Geneva); Mr TRUCELLO, Leonard (Group of Applied Physics & Institute for Environmental Sciences)

Presenter: Dr GOYETTE, Stephane (Nonlinearity and climate group, University of Geneva)

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