



Subglacial Lake Vostok, Antarctica: A model study based on new geophysical data

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During the last years a wealth of information about the physiography and the physical conditions of subglacial Lake Vostok has been gathered. According to these new findings, Lake Vostok is separated into two sub-basins by a shallow (about 200 m water depth) ridge. Based on this knowledge, we use an updated bathymetric and ice thickness data set as input to simulate Lake Vostok's circulation regime with an improved three dimensional fluid dynamics model. The model is a revised version of an ocean general circulation model that has been used for earlier studies on Lake Vostok. Various combinations of eddy viscosity and diffusivity, as well as Prandtl Numbers are applied to determine parameters suitable to model flow in such an extreme environment. Sensitivity studies with low salinities and different assumptions on the geothermal heat flux through the basement are performed to analyse their impact on the flow regime and the mass exchange with the overlying ice sheet. Virtual particles, injected in limited areas of the Lake show the propagation of tracers within the lake, indicating the flow and probable trace element exchange within the lake.