Geophysical Research Abstracts, Vol. 8, 09462, 2006
SRef-ID: 1607-7962/gra/EGU06-A-09462

Late Pleistocene evolution of the Black Sea watershed and fluctuations of the sea level

G. Georgievski (1) and E. V. Stanev (1)

(1) ICBM, Physical Oceanography (Theory), University of Oldenburg (goran@icbm.de Tel: +49-(0)441-798-4061, Fax: +49-(0)441-798-3404)

During the Pleistocene, due to glacio-eustatic sea level changes of $\sim$120 m Black Sea detached several times from the Mediterranean. On the glacial time scale ($\sim$120 ky) water balance of the Black Sea is controlled by (1) global climate change influencing regional variations of hydrological cycle, and (2) geomorphological changes, e.g. Eurasian Ice Sheet (EIS) extension. In order to have a drop of the Black Sea level as observed by geologists ($\sim$105 m at $\sim$11.4 ky BP), evaporation above the sea has to be increased and precipitation decreased. Available reconstructions of hydrological regime in the Black Sea watershed are used in our previous study to estimate the Black Sea level from the Lateglacial–Holocene transition ($\sim$15 ky BP) to the possible time of reconnection with Mediterranean ($\sim$8 ky BP). This Lateglacial–Holocene reconstruction, together with oxygen isotopes ratio ($\delta^{18}O$) oscillation as indicator of cold and dry periods are used in the present study to reconstruct Black Sea hydrological forcing for the past $\sim$120 ky. Periods of extreme glaciation, when EIS provided possibility to re-direct northern flowing rivers to the south are known from geological literature. Using hypsometric function and water balance equation, enabled us to compute the Black Sea sea level curve and the Bosphorus outflow for the last glacial cycle, during the periods when the Black Sea was isolated from Mediterranean.