



## **Late Quaternary history of the Black Sea: an overview with respect to the Flood Hypotheses**

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At present, two Great Flood hypotheses have been proposed for the Black Sea. (1) The Late Pleistocene Flood scenario suggests that the brackish Neoeuxinian lake, with its level at about –100 m below present at the Last Glacial Maximum, was relatively rapidly flooded by Caspian overflow via the Manych Spillway. Flooding peaked between 16-13 ky BP and reached –20 m at about 10 ky BP (Chepalyga, 2003). (2) The Early Holocene scenario proposes that an abrupt and catastrophic flood followed from Mediterranean inflow at 7.2 ky BP (initial hypothesis of Ryan et al., 1997) or 8.4 ky BP (modified hypothesis of Ryan et al., 2003), causing a rapid sea-level rise in the Black Sea from ca. –100 m to its present mark. Both hypotheses claim that massive inundations of the Black Sea basin and ensuing large-scale environmental changes profoundly impacted prehistoric human societies in the surrounding areas and formed the basis for the Great Flood legend of the Bible.

This paper summarizes the geological, paleontological, and archaeological records that have informed paleoenvironmental reconstructions of climate conditions, climate dynamics, sea-level changes, regional hydrological variations, active tectonics, coast-line migration, and geomorphology, all of which are important factors that have influenced human adaptation to the Black Sea region since the LGM. It also reviews the geological and archaeological evidence for Quaternary transformations in the Black Sea basin, with specific focus on above mentioned hypotheses.

Comprehensive analysis shows that the late glacial inundation in the Black Sea basin was probably more intense than the post-glacial one. From 16 to 13 ky BP, the Neoeux-

inian lake level increased rapidly from  $\sim -140$  m to  $-50$  m, then rose gradually to  $\sim -20$  m by about 11 ky BP. At 11-10 ky BP (the Younger Dryas), it dropped to  $\sim -50$  m, but by the time of the Black Sea's re-connection with the Sea of Marmara at about 9.5 ky BP, inflowing Mediterranean water increased the Black Sea level very gradually up to ca.  $-20$  m, while raising the salinity of the basin and bringing in the first wave of Mediterranean immigrants. These data leave no room for a major drawdown of the Black Sea after the Younger Dryas and do not sustain any catastrophic flooding of the Black Sea in the Early Holocene.

Also, available archaeological and paleoenvironmental evidence from the Pontic region reveal no recognizable changes in population dynamics between 14 and 6 ky BP that could be linked to a catastrophic flood (Yanko-Hombach et al., in press). No signs of sudden demographic movement are manifest in flint tool kits, subsistence economy, settlement types, or the creation of new technologies at any time between 7500 and 6000 calBC. Moreover, even if the Black Sea rose catastrophically and flooded the North Pontic plain following any of these scenarios, the steppes are presumed to have supported only a sparse population, forcing an evacuation on but a limited number of foraging groups. In fact, there was no horde of refugees carrying a legend of a Great Flood south to Mesopotamia.

Barring new and more supportive evidence, one must conclude that the Early Holocene Black Sea "Flood" represents a contemporary legend. The intriguing geological and archaeological history of the Pontic region deserves more research and will eventually reward exploration with new discoveries, but media portrayals of a catastrophic turning point in human history on the scale of the biblical deluge have diverted serious attention away from its real geographical and cultural importance. The public perception that "Noah's Flood" happened there is not acceptable.

#### References:

Yanko-Hombach, V., Gilbert, A.S., Panin, N., Dolukhanov, P.M. (Eds.), *The Black Sea Flood Question: Changes in Coastline, Climate, and Human Settlement*. NATO Science Series IV - Earth and Environmental Sciences, Springer, in press.