

Evolution of Holocene paleo-geomorphology in Taihu Lake- Re-discussion of the dispute between dammed lake and lagoon hypothesis

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The origin of Taihu Lake basin has attracted much attention. In the 1980s, there was a great debate about the lagoon and dammed lake hypothesis [1-5]. This paper re-examines the Taihu lagoon/dammed lake debate based on the latest stratigraphic borehole data, the newly discovered specific silt layer containing lots of iron-rich concretions, and the new Taihu Lake airburst hypothesis [6,7].

The Yangtze River delta area where Taihu Lake is located retreated to the Sea of Japan in the last glacial maximum epoch of the late Pleistocene (about 10,000 to 20,000 years ago), and the Taihu Lake area was a denudation terrace where a layer of Aeolian hard loess was deposited (see picture below)[8]. During the early Holocene transgression, the sea water could reach the vicinity of Huzhou from the Hangzhou Bay along the previously formed downcut valley. In addition, sea water goes up the Yangtze River to the vicinity of Zhenjiang. During the Holocene sea transgression and retreat, the Taicang-Maqiao line in the east of Taihu Lake Plain formed a Gangshen plateau (shell sand embankment), separating Taihu Lake from the East China Sea. Whether the sea water covered the Taihu Lake area during the Holocene high sea level is the key debate of the dammed and lagoon hypothesis. The stratigraphic borehole data can determine whether most areas of the eastern Taihu Lake plain with relatively high terrain are affected by the sea water. The newly discovered marked silty layer and its iron-rich concretions can provide new evidences too. More data will be available in the meeting.

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