

Holocene sea level change and its effect on Hemudu Culture in Yuyao Basin, eastern China

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The Yangtze Delta is one of the key areas for Neolithic culture and early rice domestication, of which the most typical is Hemudu Culture (7.0-5.0 ka) in Yuyao Basin, east China, which place was greatly affected by Holocene sea level changes. Thanks to the barrier of Cinan Mountains and Zhoushan Islands, sediment here was shielded from the direct scour of seawater during transgression and was preserved completely and continuously. It was inferred Yuyao Basin experienced geomorphic evolution during the Holocene which was governed by sea level changes, based on analyses of lithology, sedimentary facies, and elemental abundance from regionally retrieved drilling cores. In order to find out the delicate relationship between geomorphic evolution process and its influence on Hemudu ancestors, one sedimentary core from Hemudu site and three nature sedimentary cores around the site were applied to fine analyses. According to the results of datasets, including sedimentary facies, element abundance, particle size and microfossil assemblage et al, four stages were divided: Stage I, before 9.0 ka, Yuyao basin was still continent and covered with hard clay. Stage II, around 9.0 ka to 8.0 ka, transgression occurred, and the basin was largely submerged at about 8.5 ka. Stage III, sea level rose rapidly around 8.0 ka to 7.0 ka, and was close to present sea level. Stage IV, during 7.0-6.5 ka, the rising rate of sea level decelerated significantly, while sediment discharge to, and accumulation in, the combination of which led to land formation. As a result, the Hemudu ancestors started to settle down.