

Late Quaternary Sea-level and Climate Change of the Oujiang Chenier Plain in Zhejiang Province (Southeastern China)

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Core YQ0902, 41.9 m in length and 3.15 m in altitude, was retrieved from Wenrui Chenier Plain along the south flank of Oujiang delta in southern Zhejiang Province, China. Twelve depositional units and eight local pollen zones were identified. It is noteworthy that the first paleosol layer (FPL) is buried ~29.15 m deep, serving as a benchmark for regional stratigraphic comparison. Twenty-one AMS ¹⁴C dating results show that strata below and above the FPL were deposited in MIS 3 (marine isotope stage 3) and Holocene, respectively. Moreover, elemental compositions obtained by ICP-MS and XRF core scanner show similar variation trend in Ca, Fe and Ti except Al, and the ratio Si/Al exhibits similar trend with mean grain size.

The climate in MIS 3 was inferred to be relatively warm and humid with abundant pollens of subtropical broad-leaved forest and became gradually cold and dry with increasing coniferous forest and decreasing CIA values. The sea level in MIS 3, deduced from the lagoonal environment, could reach roughly 30 m below the present sea-level (not calibrated by tectonic movement and sediment compaction). Then, the study area was exposed to undergo pedogenesis with the FPL having highest CIA values in the core, owing to sea-level falling until it was flooded again by the post-Glacial sea-level rise.

Overlying the FPL, a transgression-regression sequence was formed in Holocene, having similar sedimentary facies assemblages with those of chenier plain at the south flank of Yangtze delta. The initial flooding surface was formed about 9.5 cal kyr BP in YQ0902, suggesting that the sea level at the time was approximately 25±5 m below the present sea-level. In the period 8.5-6 cal kyr BP, the study area was extremely warm and humid with high Fe/Ti ratios, low CIA values and widely distributed subtropical broad-leaved forest, known as Holocene Megathermal. The strength of East Asian Monsoon deduced from Fe/Ti ratios and evergreen *Quercus* content decreased since ~6 cal kyr BP and a remarkably low sedimentation rate happened in 5-2 cal kyr BP. Intensive human impact began ~1.8 cal kyr BP with increasing land reclamation and rice cultivation.