

## Late Pleistocene sedimentary evolution of the north Jiangsu coastal plain revealed by OSL dating based chronostratigraphy

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In the past decades, many Chinese geoscientists carried out numerous research works to investigate the sedimentary history of the Jiangsu coastal plain. However, we still have limited understanding of history prior to the Holocene because of the lack of reliable chronology. In this study, we applied quartz optically stimulated luminescence dating (OSL) techniques to determine the ages of 11 sediment samples from a 30-m-long core (EGWY02) drilled from the north Jiangsu coastal plain. The sedimentary facies of the core were identified based on observation, grain-size analysis, colors and textures of sediments. The stratigraphy of the core was then correlated to three cores collected in the adjacent area (Zhang et al., 2010; Xia and Zhang, 2018). In our core, we identified two marine transgressive events T1 and T2 at intervals of 3-5 and 21-27 m deep, respectively. The timing of T1 and T2 were dated as  $7.1 \pm 0.9$  ka and  $> 77 \pm 6$  ka, respectively. The interval of T1 is overlain by a littoral sedimentary facies deposited over the last 2 ka. Three layers of “stiff clay” (SC) were identified at depths of 1-2, 8-12 and 27-30 m and are interpreted terrestrial deposits. The first SC layer was dated about  $1.8 \pm 0.1$  ka while the second layer was between  $44 \pm 3$  ka and  $72 \pm 6$  ka. In addition, we recognized fluvial deposits at interval of 12-21 m deep, which was dated from 72 to 77 ka. A lacustrine layer was also identified at 5-8 m deep and dated as 41-44 ka. Our OSL dating application to the core EGWY02 thus clarified that the sedimentary succession represents two transgressive episodes in relation to the last interglacial (MIS 5) and post glacial periods (MIS 1), intervened by the terrestrial environments related to the MIS 4-2. Further application of the OSL dating to the subsurface sediment cores will unveil the pre-Holocene environmental changes in the Jiangsu coastal plain, which was possibly affected by the paleo-Yangtze River.

Keywords: OSL dating, Chronostratigraphy, The north Jiangsu coastal plain, Sedimentary evolution, Late Pleistocene