

bodies in Tropical Asia. This open lagoon is identified as one of the nationally important and internationally renowned ecosystem, which harbours a range of marine, brackish and fresh water biodiversity. Two sediment cores 360 cm (CHI-1) from north-eastern region dated back to  $12,960 \pm 130$  yrs. B.P. and 530 cm (CHI-51) from eastern region dated back to  $11,130 \pm 90$  yrs. B.P. of Chilika Lake have been studied through pollen analysis. The comparative analysis of palynodebris of two profiles from two different regimes of Chilika Lake showed difference in qualitative and quantitative abundance of palynodebris at different levels of sedimentation. Sedimentological and palynological investigations of CHI-1 revealed that mangroves flourished from 13,000 to 6,000 yrs. B.P. and then core mangroves started declining and almost disappeared at 3,000 yrs. B.P. The high freshwater input depressed salt intrusion in the upper reaches of Chilika and prevented the development of hypersalinity in the northern zone. Thus the deposition at the site has been influenced by fresh water environment which have been interrupted by a minor sea-level transgression. On the contrary, palynological investigations of CHI-51 exhibited absence of pollen at the base of the profile dated back to 11,000 yrs. B.P. Whereas, around 8000 yrs. B.P. extensive Rhizophora-dominated mangroves reached to their greatest extent and later on as sea-level rise slowed towards 6000 yrs. B.P. with a stillstand a brief return to terrestrial conditions at this site was registered. Gradually the mangroves were succeeded by freshwater swamp or swamp-forest. The difference in composition of palynodebris at two different regimes of Chilika Lake is mainly governed by the influx of fresh water discharge in Lake and intermittent sea level changes over the Late Quaternary.

### **Paleoflood investigations in the lower Changjiang valley using sedimentological and geochemical methods**

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The continuous samples were collected from two short cores (LGZ-1 and LGZ-2) taken from the lower Changjiang valley in Jiangsu Province for the measurements of sediment grain size, organic elements and calcium carbonate. The main

research purpose is to investigate the natural-anthropogenic impacts on the sediment compositions over the last two hundred years, especially the occurrence of Paleoflood in floodplain. The sediment grain size show regular variations in the core with several peak values occurring in the middle and lower parts. The concentrations of total nitrogen (TN) and total organic carbon (TOC) also have small downcore variations except for the sharp increase at top. The contents of CaCO<sub>3</sub> and the TOC/TN ratios, however, exhibit larger variations in the core sediments (Fig.1). The peak values of median grain size are essentially coincident with those of the TOC/TN ratios, especially in the middle and lower parts of the core. The grain size compositions and TOC/TN ratios in sediments can be controlled by different factors such as sediment sources, hydrodynamic sorting during transport and deposition, and postdepositional alteration. In the present study, we propose that the median grain size and the TOC/TN ratios can be regarded as the proxy of paleoflood in flood plain. Based on the sediment accumulation rates, the peak values in the core represent several paleoflood events happened in 1954, 1936, 1931, 1921, 1896 and 1870. It is interesting to note that the median grain size does not show peak values during the flood periods in 1998 and 2001, which may be related to the disturbance of sediment compositions by extensive dam constructions in the upper-middle Changjiang valley since 1950s. The sharp increase of organic elements at top also suggests the increasing human influence on natural environment over the last decades.

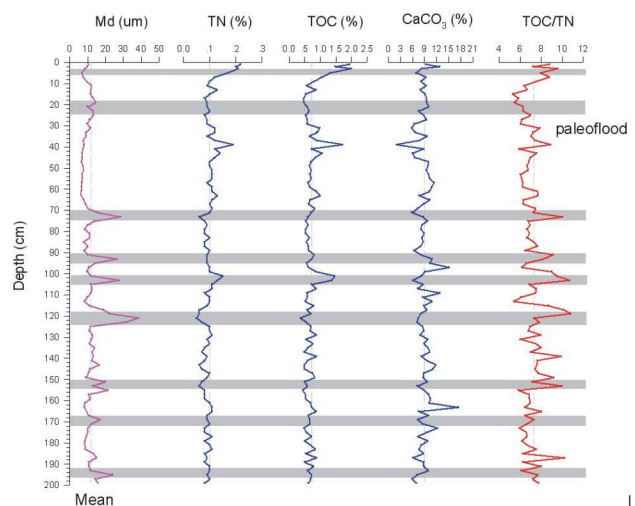


Fig.1 Depth profiles of sediment grain size, organic elements and CaCO<sub>3</sub> in the Core LGZ-2