proportion but unstable and reductive autogenetic minerals increased obviously, such as Amphibole, Pyrite, Barite and Carbonate, and few Metamorphic minerals occurred. All of these suggested the same provenance from west highlands as that during Pliocene but different depositional environment. By contrast, in the estuary region the input of Straurolite, Kyanite and Vesuvianite of metamorphic derivation, together with a few Tourmaline of andesitic-granitic origin in the sediments of Early Pleistocene represented the extension of sediment sources to the lower and middle Yangtze basin where was covered by old metamorphic and andesitic-granitic rocks as the study area subsided. Few heavy minerals remained in the sediments of Mid-Pleistocene, when mottled thicker stiff muds occurred as the lacustrine facies, suggesting a quasi-coastal floodplain with lower capability of sediment transport. Especially after Mid-Pleistocene diverse mineral types occurred continuously, such as Rutil and Sphene from andesitic-granitic origin, Hypersthene and Ilmenite from basaltic and Diopside, Kynite, Straurolite and Vesuvianite from metamorphic, which showed the region received more sediments from the middle-lower and upper Yangtze gradually with further subsidence of the delta region.

Pollen stratigraphy, vegetation and environment of the last deglaciation a record from North Yellow Sea

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Three sediment cores from the North Yellow Sea were analyzed for pollen assemblage and concentration. The pollen record revealed a detailed history of vegetation succession and climate changes in the Huanghe delta for the last 12.8ka BP. Fossil floras were dominated by the xerophytic herb *Artemisia* and *Chenopodiaceae* from 12.8 to 12.3ka BP, reflecting a short-term climate deterioration, it was possibly Younger Dryas. The period between 12.3 and 10.1ka BP, *Pinus* and spore predominated, with a minor increase of deciduous broadleaved forest, marking a cold and humid climate. In early Holocene (10.1-6.6ka BP), deciduous broadleaved forest and xerophytic herbs flourished, suggesting warm and arid conditions. The mid-Holocene climate optimum occurred between 6.6 and 5.0ka BP allowed evergreen and deciduous broadleaved forests thrived. During the period of 5.0-0.5ka BP, the deciduous broadleaved forests declined, implied the climate generally became cooler and more dried than the climate of preceding period. It was characterized by cold and humid from 5.0-4.0ka BP, but it was featured for a cold, dry episode during period of 4.0-0.5ka BP. Fluctuations of climate conditions in the Huanghe drainage area were not only related to changes in the seasonal distribution of solar insolation but also were closely linked to the intensity variation of the East Asian summer monsoon which was related to rain-front latitudinal migration.

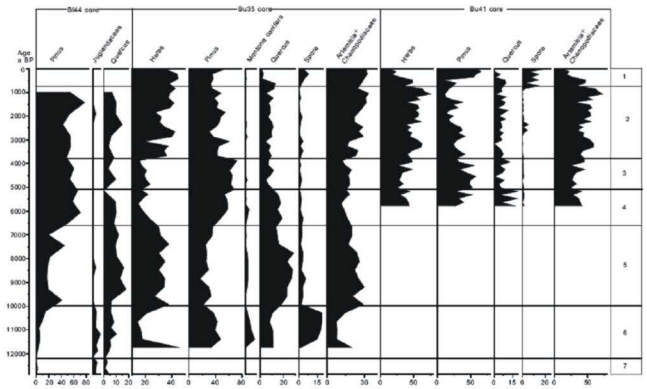

Fig.1 Pollen diagram of selected taxa for the B-L44, B-U35 and B-U41core.

Wave climatology around the Huanghe Delta estimated from a numerical model

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Wave characteristics in the Bohai Sea over the last ten years (1998-2007) have been estimated by combining a third-generation numerical wave model with NCEP/NOAA reanalysis wind dataset. The estimation was made for a spatial resolution of 1/12 degrees and a temporal resolution of three hours. The objective of this study was to provide basic information on the effect of waves on coastal environments around the Huanghe Delta. It was found that waves around the delta region develop mainly from January to February and from October to November each year, in response to the East-Asian monsoon climate. In addition to

the seasonal change, interannual variability was also observed. For example, developed wind-waves were observed for more than one day at most areas in the Bohai and Laizhou bays at October 2003, whereas bays were calm during October and November 2004.

Seasonal and annual geomorphologic changes of mesotidal beach at Ba Dong, Mekong River delta, Vietnam

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The Mekong River delta, South Vietnam, is located in the tropical monsoon area with distinctive two seasons: wet season due to southwest monsoon from May to October; and dry season due to northeast monsoon from November to April. The modern coast of the Mekong River delta, facing the South China Sea, is a mesotidal beach. There are a few studies of seasonal and annual changes in such a mesotidal beach affected by monsoon. We thus carried out a repeat survey of the beach profile and sediment eight times between Nov 2005 and Feb 2008 at Ba Dong, located in the central part of the Mekong River delta coast. During the survey, we had the procedure as follows: (1) to set up six survey lines (A, C, BN, BT, D and E from the south to north) normal to the shoreline, (2) to measure beach profiles using auto-level, (3) to describe bedforms and surface sediment, (4) to sample surface sediments for grain-size analysis and percussive cores 1 m long, and (5) to monitor current directions and velocities using the flow velocimeter. Here, we focus on geomorphologic features, especially seasonal and annual change of beach topography and sedimentation on the beach.
The Beach sediment consists of fine to very fine sand and beach gradient is 1/301/100. The beach is characterized by multiple bars which are asymmetrical and dip landward more steeper. Beach profiles of the southwestern part (lines A and C) and northeastern part (lines D and E) show erosional beach form (concave-upward), whereas the profiles of central part (lines BN, BT) show depositional beach form (convex-upward). The beach shows seasonal profile change which varies from place to place. Lines A and C showed erosional and depositional profile changes during wet and dry seasons, respectively. Sediment volume increased at lines BN and BT, and decreased at lines D and E consistently during the survey.
The spatial and seasonal variations of the beach profile suggest that beach sediment was mainly derived from Co Chien River, which discharges at the north of Ba Dong, due to strong northeast monsoon during the dry season. But there was negligible supply from this river. As a result, we could observe depositional tendency only in the central part and erosion tendency in the southern and the northern parts during the dry season. During the wet season, much sediment is considered to have been derived from the southern Hau Giang River, of which river mouth is locaed at the south of Ba Dong, due to southwest monsoon. Hence, we could observe depositional tendency in the southwestern part and the central part, but erosion tendency in the southern part. On the annual scale, the southern part showed a slight net erosional tendency, where the landward and seaward parts of the beach transect is erosional and depositional, respectively. The northeastern part also showed erosional tendency. But huge accumulation occurred about 1.5m (maximum) during last two years in the central part.

Distribution and assemblage of heavy minerals in the modern Yangtze River Delta and shelf of East China Sea

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Surface sediment samples were collected from the Yangtze River Delta (YRD) and shelf of the East China Sea (ECS). These samples were sieved, and sediments with mean grain size from 0.063 to 0.125mm were chosen for heavy mineral analysis.