

The potential sources and transport pathways of recent surface Sand Ridges sediments in the southern Yellow Sea

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Tidal sand ridges represent an important source of information on environmental changes and the flux of sediment from land to sea, they are distributed widely along the world coastlines. These environments represent important repositories for terrestrial particles entering marine dispersal systems, and their fate play an important role in global geochemical cycling.

The Sand ridges are a dominant morphologic feature on most of the Chinese continental shelf, particularly in the southern Yellow Sea off the Jiangsu coast. The sources of sediment for such a huge depositional system is one of the scientific focus and have attracted considerable speculation. In order to characteristic the predominant source regions of the Radial Sand Ridges (RSR), a total of 62 surface sediment samples were collected, including river samples from the mouths of Changjiang (Yangtze) River, Yellow River, and samples from Radial Sand Ridges areas. The mineralogical compositions of the samples were determined using quantitative X-ray diffraction (XRD) and factor analysis of diffuse spectral reflectance (DRS) data. Morphological features of the minerals was examined by scanning electron microscope (SEM).

This study indicates that quartz, muscovite, plagioclase, K-feldspar, amphibole, hematite, goethite, and clay minerals was main mineral phases of the sediments. The results show that coarse-grained sediment of RSR may be transported from the Yellow River, and fine-grained sediments from the Changjiang River.