

## Seafloor environmental changes resulting from nineteenth century reclamation in Mishou Bay, Ehime Prefecture, Southwest Japan

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Mishou Bay is a semi-enclosed bay located in the southwest of Ehime Prefecture, with a length of 6.0 km in an east-west direction and 2.5 km in a north-south direction and an area of 7.0 km<sup>2</sup>. Coastal sediments in semi-enclosed bay like Mishou Bay can be considered as environmental archives of both marine area and drainage basin. Therefore, this study reconstructed environmental changes to the seafloor associated with reclamation during nineteenth century in Mishou bay based on measurements of grain size, total organic carbon (TOC), total nitrogen, total sulfur (TS), ratio of total organic carbon to total nitrogen (C/N) and to total sulfur (C/S), kerogen-like material (KL) composition of surface sediments, and data from sediment cores. The grain size of surface sediments decreases toward the east from the mouth of Mishou Bay. This pattern suggests that the seafloor environment is mainly influenced by decreasing tidal current velocity toward the east. TOC content and C/N ratios are relatively high around the mouths of river that enter Mishou Bay. We interpret this to indicate that organic matter in surface sediment is mainly derived from river drainage areas, and is largely deposited around river mouths. Grain size within sediment cores from the middle of Mishou Bay decreased from the beginning of the 1800s to the 1900s. In contrast, a grain size profile from the mouth of the Sozu River, which flows into the eastern part of Mishou Bay, shows a gradual increase in grain size up through the sediment core. These changes in grain size indicate a decrease in tidal current velocity in the middle of the bay and that the delta system is gradually prograding from the river mouth. Records of TS content and C/S ratio indicate that the effect of freshwater became stronger from the beginning 1800s to 1900s. At the same time, KL composition indicates that terrestrial organic matters increased. These results suggest that the effect of the river on seafloor sedimentation became stronger. These changes on tidal current and river water are related to reclamation around the mouth of the Sozu River during the late 1700s and 1800s. The decrease in sea area resulting from reclamation probably led to a decrease in tidal prism and current velocity; as a result, grain size also decreased. It is likely that the increasing effect of river water on sedimentation is associated with reclamation-related progradation of the river delta system.