

Depositional environment change and the subsequent habitat relocation affect organic carbon accumulation rate in vegetated coastal ecosystems

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Vegetated coastal ecosystems store substantial amounts of organic carbon (C_{org}), and the conservation and restoration of these habitats are considered as important measures for mitigating climate change. Although various geophysical and biogeochemical factors control C_{org} storage in the sediment of these habitats, how spatiotemporal variations in the depositional environment (e.g., relative sea-level change, geological settings, habitat type) affect C_{org} accumulation rate is uncertain. In this study, we showed that depositional environment changes and the subsequent habitat relocation regulate C_{org} accumulation rate in boreal contiguous seagrass-saltmarsh habitats by using the historical depositional records. In particular, the C_{org} accumulation rate was accelerated with relative sea-level rise which would be driven by post-seismic land subsidence in this region. Our findings provide historical analogues for the future impact of sea-level change on C_{org} accumulation rate in vegetated coastal ecosystems.

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