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崇明东滩湿地植被类型和沉积特征对土壤碳、氮分布的影响

Influence of saltmarsh vegetation and sedimentation on the distribution of soil carbon and nitrogen in the Chongming Dongtan wetlands

关键词: [滨海湿地](#) [盐沼植被](#) [沉积物](#) [土壤有机碳](#) [总氮](#)

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摘要: 滨海湿地碳、氮储量的分布可能受盐沼植被和外源沉积物的综合影响. 本文以长江口典型滨海湿地为研究对象, 分别在崇明东滩湿地北部、中部和南部设置3条样线, 根据外源沉积物的区域特征研究了3种主要盐沼植被(芦苇(*Phragmites australis*)、互花米草(*Spartina alterniflora*)、海三棱藨草(*Scirpus mariqueter*))和土壤中的有机碳(TOC)、总氮(TN)的季节变化及空间特征. 结果显示, 崇明东滩湿地北、中部为淤积型滩涂, 南部呈侵蚀态势. 盐沼植被中芦苇和互花米草生物量TOC、TN累积量均显著高于海三棱藨草带. 北、中样线的相同植被类型中的土壤TOC、TN显著高于南样线. 高潮滩的芦苇带土壤TOC储量高于中潮滩的互花米草带, 而互花米草带土壤TN储量略高于芦苇带. 海三棱藨草带和光滩土壤TOC、TN储量最低. 盐沼植被类型显著影响土壤各层次TOC和TN储量的分布, 其中, 0~10 cm层次储量受植被类型和表层外源沉积物空间特征的交互作用影响.

Abstract. The distribution of carbon and nitrogen storage in coastal wetlands is hypothesized to be regulated by saltmarsh vegetation and sedimentation. In this study, the spatio-temporal changes of TOC and TN accumulation in the vegetation and soil were investigated for the three dominant saltmarsh vegetation (*Phragmites australis*, *Spartina alterniflora*, *Scirpus mariqueter*) along three sampling transects located in the northern, central and southern parts of the coastal wetlands of Chongming Dongtan in the Yangtze River Estuary. The results showed that the northern and central parts of the study area showed a sediment accretion, while the southern part showed an erosion. The TOC and TN accumulation in the zones of *Phragmites australis* and *Spartina alterniflora* was significantly higher than that of *Scirpus mariqueter*. The soil TOC and TN storage in the northern and central transects was significantly higher than that of the same vegetation types in the southern transect. The soil TOC storage of *Phragmites australis* in the higher intertidal zone was higher than that of *Spartina alterniflora* in the middle intertidal zone. While the soil TN storage in *Spartina alterniflora* zone was marginally higher than that of *Phragmites australis* zone. The soil TOC and TN storage in the zones of *Scirpus mariqueter* and mudflat was the lowest. The spatio-temporal changes of TOC and TN storage in soil profiles were affected by the interactions between saltmarsh vegetation types and sedimentation, especially in the 0~10 cm soil profile.

Key words. [coastal wetlands](#) [saltmarsh vegetation](#) [sedimentation](#) [soil organic carbon](#) [total nitrogen](#)

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