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## Spatio-temporal variation of transparent exopolymer particles (TEP) and their sinking flux in a temperate bay: Jiaozhou Bay, China

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This study investigates transparent exopolymer particles (TEP) distribution, seasonal variability and its sinking flux in a shallow coastal sea, Jiaozhou Bay, China. The TEP concentrations in the bay ranged from 75 to 553  $\mu\text{g}$  xanthum gum equivalents per liter ( $\text{Xeq. L}^{-1}$ ), which was within the range of values reported in other coastal seas. Spatially, high levels of TEP were always observed in the northern bay during all four seasons. In the southern and outer bay, TEP levels were relatively low. Significant positive correlations were observed between TEP and chlorophyll *a* during spring, summer and fall, suggesting that phytoplankton was the primary source of TEP during these three seasons. Seasonally, TEP concentrations were highest in summer (mean =  $275 \pm 142 \mu\text{g Xeq. L}^{-1}$ ), followed by winter (mean =  $209 \pm 53 \mu\text{g Xeq. L}^{-1}$ ), and lowest in spring (mean =  $142 \pm 43 \mu\text{g Xeq. L}^{-1}$ ) and fall (mean =  $180 \pm 49 \mu\text{g Xeq. L}^{-1}$ ). High phytoplankton biomass and temperature contributed to the high TEP levels in summer, while the relatively high amount of TEP in winter was most probably derived from re-suspension of sedimentary particles. For the whole year, TEP carbon (TEP-C) contributed to a mean of ~26% of POC in the bay, representing the second most important contributor to POC pool after phytoplankton (mean: 38%). Sinking flux of TEP was measured with sediment trap, and the results revealed that sinking TEP contributed to a mean of 20% of total POC flux for the four seasons in the bay. This study highlights the fact that TEP-C could represent a significant fraction of the POC pool in the coastal sea, and their sedimentation could play an important role in the carbon sedimentation in these areas.