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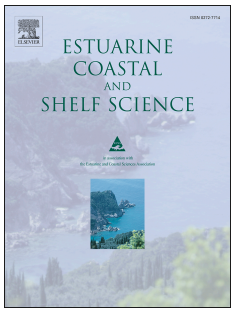

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ACCEPTED MANUSCRIPT

Hourly changes in sea surface salinity in coastal waters recorded by Geostationary Ocean Color Imager

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Abstract:

In this study, we monitored hourly changes in sea surface salinity (SSS) in turbid coastal waters from geostationary satellite ocean color images for the first time, using the Bohai Sea as a case study. We developed a simple multi-linear statistical regression model to retrieve SSS data from Geostationary Ocean Color Imager (GOCI) based on an *in situ* satellite matched-up dataset (R^2=0.795; N=41; Range: 26.4 to 31.9 psu). The model was then validated using independent continuous SSS measurements from buoys, with the average percentage difference of 0.65%. The model was applied to GOCI images from the dry season during an astronomical tide to characterize hourly changes in SSS in the Bohai Sea. We found that the model provided reasonable estimates of the hourly changes in SSS and that trends in the modeled and measured data were similar in magnitude and direction (0.43 vs 0.33 psu, R^2=0.51). There were clear diurnal variations in the SSS of the Bohai Sea, with a regional average of 0.455±0.079 psu (0.02~3.77 psu). The magnitude of the diurnal variations in SSS varied spatially, with large

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