



Analysis on the relationship between suspended sediments and relating factors using satellite data in coastal area

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Suspended Sediments (SS) in coastal waters have high concentrations due to terrestrial inputs and resuspension of the bottom sediment. For monitoring of dynamic variations in SS concentration, researchers have employed the ocean color satellite images such as MODIS, SeaWiFS and MERIS. However, the satellite images had difficulties in monitoring dynamic variation in SS due to the low temporal resolutions. GOCI, the world's first geostationary satellite ocean color sensor, was launched on June 27, 2010. It provides eight daytime images at hourly interval with 500 m of spatial resolution. On the other hand, Landsat ETM+ image, although it is not an ocean color image, has high spatial resolution, which can supplement the disadvantage of GOCI. In this study, we analyzed the variations in SS concentration in coastal waters using GOCI and Landsat ETM+ images in Gyeonggi-bay, Korea. We also analyzed the relationship between SS and environmental factors such as water depth, tidal cycle and river discharge.

As a result, GOCI could detect the diurnal variability of SS in coastal area according to the tide, and GOCI-derived SS concentration gradually increased after flood time. Landsat ETM+ images could observe the seasonal variations in SS, and SS concentration in summer season shows lower value than winter season. SS concentration in shallow waters had higher value than deep area and wind speed influences the seasonal variation in SS concentrations in the study area. Variations in SS concentration near the coast were strongly influenced by the tidal cycle. In the future, we need to analyse the relationship between SS concentration and tidal flat erosion/deposition based upon SS concentration movement and current velocity combined with numerical models and in situ measurements.