Suggested topics: 3. Remote Sensing Applications (Coastal Zone)

Enhancement methods for mapping the boundaries of submerged rocks in shallow waters with Worldview-2 images

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Keywords: Remote sensing, satellite images, coral reef mapping, bathymetry

Abstract: Manually delineation of the outer boundaries of submerged rocks of an offshore island is often required for practical use of understanding the extension of the island, coral reefs, shoals and banks in the shallow water. The mapping procedure is affected by optical properties of the water bodies such as water clarity, depth attenuation, bottom reflectance, and scattered suspended material. Since WorldView-2 image has more bands than other high resolution satellite imagery, it may provide more information for the mapping.

The purpose of this study is to make experiments of three selected enhancement methods for improving the contrast of the outer boundaries of submerged rocks of an offshore island with high spatial resolution imagery. The methods include GBC false color composite, Green Index, and Principal components. The study area is located in the southeast offshore isle of Taiwan know as Green Isle, a volcanic island. The results show that (1) Both GBC false color composite and images of green indices can give better interpretation than the original images or RGB images of any combinations of individual bands; (2) For various combinations of principal components, the false color composite with PC6, PC7 and PC8 performs best for visual interpretation of the boundaries.

Preference between oral and poster presentation: Oral