

**Categorizing the dispersal patterns of river-born substances in
the Kaoping River, Shelf and Canyon system from remotely
sensed ocean color data**

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Abstract

Mapping the water constituents from remotely sensed ocean color data enables us to gain a better understanding of the role that the Kaoping River, Shelf and Canyon (KPRSC) system plays in determining the dispersion of river-born materials. With the newly developed approach that integrates the semi-analytical algorithm and the genetic algorithm (Chang et al., 2007), we successfully derive twelve maps of chlorophyll-*a* concentration (*Chl-a*), color dissolved organic matter (CDOM) and non-algal particle/detritus/mineral (NAP) in KPRSC region with lower coverage of cloud from a total of 290 scenes of MODIS-Aqua images taken in 2005. With the information of averaged daily precipitation and typhoon events, we categorized the dispersal patterns near the sea surface as the southeastward, the northwestward, the river-canyon and the frontal transports. This is the first time that we observe the sudden increase of biomass at large scale from a pair of ocean color images taken over only a two-day interval. Another remarkable feature is the interaction between the northeasterly monsoon and the intrusion of the Kuroshio Branch, resulting in complicated patterns with various scales of vortex structure and front. The observed features and the proposed mechanism of this research might provide the guidance and validation for modeling the flow field of KPRSC system..

Keywords: chlorophyll-*a*, suspended particles, colored dissolved organic matter, dispersal pattern, plume, biooptical models, genetic algorithm, MODIS, ocean color, Kaoping River.