

## A summary of special section: regional environmental oceanography in the South China Sea and its adjacent areas (REO-SCS)

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The South China Sea (SCS) is an important marginal sea in the western Pacific Ocean, surrounded by 9 countries: Brunei, Cambodia, China, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. Since ancient times, the SCS has served as a convenient navigation waterway for the Southeast Asian nations to communicate with each other and with nations of the outside world. Up to now, the SCS has been one of the busiest waterways in the world because of the weight and high growth rate of the region in the world economy and trade (Zheng et al. 2006). It is an inexorable trend, therefore, for the oceanographers from surrounding countries to pay more and more attention to the research of regional environmental oceanography in the SCS and its adjacent areas.

The special section “Regional Environmental Oceanography in the South China Sea and Its Adjacent Areas (REO-SCS),” which aims to deliver the latest research results to the readers, appears in two issues, 4 and 6, Volume 67, *Journal of Oceanography*. The special section

includes 11 original papers and an introduction paper (Hu et al. 2011). The key points are summarized as follows.

For the mesoscale dynamics studies, Zheng et al. (2011) analyze the interaction of nonlinear Rossby eddies with the Kuroshio at the Luzon Strait using the satellite altimeter sea level data from 1993 to 2008, indicating that the eddies with a radius larger than 150 km are strong enough to significantly alter the Kuroshio path and are able to modify the local circulation pattern. Chen et al. (2011a) extend the Korteweg–de Vries equation to the Benjamin–Ono equation and determine the internal solitary wave amplitude in the SCS deep basin west of the Luzon Strait from satellite and in situ measurements.

There are two papers focused on studying near-inertial oscillation (NIO) in the SCS. Sun et al. (2011a) observe an NIO burst event in the western SCS by an upward-looking mooring acoustic Doppler current profiler (ADCP) in summer 2004 and reveal that typhoon “Chancho” is a major mechanism to trigger the NIO burst event. Sun et al. (2011b) detect strong NIO from observations of three ADCP moorings in the continental shelf of the northern SCS in July 2008 and find that the NIOs are characterized by red-shifted frequencies.

There are four papers related to the current, upwelling, or water mass in the Taiwan Strait and in the Beibu Gulf. Hong et al. (2011) analyze the observational data and numerical model results and confirm the two-pronged northward flow in the southern Taiwan Strait in summer. Qiu et al. (2011) analyze the near surface circulation in the Taiwan Strait using 110 satellite-tracked surface drifters from 1989 to 2007, showing that almost all winter drifters that enter the Taiwan Strait eventually move southward. Using a nested circulation model based on the Princeton Ocean Model, Jiang et al. (2011) investigate the characteristics and mechanisms of the Southwest upwelling and

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the Taiwan Bank upwelling (Hu et al. 2003) in the southern Taiwan Strait. Chen et al. (2011b) present the comprehensive analysis of water mass in the eastern Beibu Gulf after applying the hierarchical clustering method to the observations of temperature, salinity, dissolved oxygen, alkalinity, nitrite, reactive silicate, and chlorophyll *a*.

Satellite data are applied for the studies on thermal variability, the shallow water depth retrieval, and the coastal environment monitoring. Lin et al. (2011) investigate the thermal variability in the SCS and its relationship to the western Pacific warm pool using long-term sea surface temperature data derived from satellite and in situ measurements. Fan et al. (2011) develop a method for shallow water depth retrieval from satellite synthetic aperture radar (SAR) images. Zhao et al. (2011) apply satellite synthetic aperture radar interferometry (InSAR) for detecting ground deformation of a large size coastal engineering project, the International Airport of Hong Kong.

We believe, therefore, that the special section REO-SCS serves as a platform for the community to exchange and share their ideas and results, and plays an important role in promoting the research of regional environmental oceanography in the SCS.

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