## Physical Oceanographic Review of the Northern South China Sea Open Cruises of 2004-2009

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The Northern South China Sea Open Cruise (NSCSOC) was set up firstly by the South China Sea Institute of Oceanology, Chinese Academic of Science to assemble the advantage of multiple institutes' collaboration, strengthen the accumulation of long-term in situ data over the repeated transects at the research domain, and promote the long-term observed research of marine environment changes and its' ecological effect of the Northern South China Sea (NSCS) dynamic processes. For example, the vertical fine structure with the salinity front of Pear River plume is derived by a newly-developed towed method, i.e. moving vessel profiler (MVP). From these cruises, we survey the spatial distribution of marine Atmospheric Boundary Layer (ABL) in the NSCS. The observations also indicate some typical physical processes in the NSCS, such as the characteristics of water mass, the structure of seasonal thermocline, the formation of the barrier layer, are largely influenced by some other physical phenomena, some of them include the mass exchange between the northwestern Pacific and SCS by Luzon Strait, the topography wind around the basin, Pearl River discharge and precipitation. In general, the NSCSOC open up a new situation to shared oceanographic observation in this domain.

Keywords: South China Sea, Open Cruises, physical oceanography