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Title: Dynamics of South China Sea Circulation and Thermohaline Structure (for OA2)

Abstract: South China Sea (SCS), the largest marginal sea in the West Pacific Ocean, is separated from adjacent oceans by a chain of islands. It contains a broad shallow shelf on the south, extending along the Vietnamese-Chinese coast to the Taiwan Strait on the north, a deep basin in the center, and a dangerous ground near Nansha with numerous reef islands over the southeast. The Kuroshio, originating from the North Equatorial Currents, flows northward as a western boundary current east of Luzon and Taiwan. The Luzon Strait is the principal passage through which the Pacific water enters the SCS; therefore the mass transport through the Luzon Strait is critical in determining the characteristics of SCS waters. The SCS circulation and thermohaine structure are under influence of the monsoon winds, surface fluxes, and lateral transport especially the Kuroshio intrusion. The effects of forcing mechanisms on the SCS circulation and thermohaline structure are investigated observationally and numerically. In this talk we will discuss seasonal and interannual variability of themohaline structure, seasonal circulation at the isopycnal surface, Kuroshio intrusion, SCS response to typhoon, formation of multi-eddy structure, and formation of SCS thermal front. References [1] Chu, P.C., N.L. Edmons, and C.W. Fan, 1999: Dynamical mechanisms for the South China Sea seasonal circulation and thermohaline variabilities. Journal of Physical Oceanography, 29, 2971-2989. [2] Chu, P.C., and R.F. Li, 2000: South China Sea isopycnal surface circulations. Journal of Physical Oceanography, 30, 2419-2438. [3] Chu, P.C., J. M. Veneziano, and C.W. Fan, 2000: Response of the South China Sea to tropical cyclone Ernie 1996. Journal of Geophysical Research, 105, 13991-14009. [4] Chu, P.C., and C.W. Fan, 2001: A low salinity cool-core cyclonic eddy detected northwest of Luzon during the South China Sea Monsoon Experiment (SCSMEX) in July 1998. Journal of Oceanography, 57, 549-563. [5] Chu, P.C., and G.H. Wang, 2003: Seasonal variability of thermohaline front in the central South China Sea. Journal of Oceanology, 59, 65-78 [6] Liu, Q.,Y. Jia, P. Liu, Q. Wang, and P.C. Chu, 2001: Seasonal and intrasesonal thermocline variability in the central South China Sea. Geophysical Research Letters, 28, 4467-4470. [7] Wang, G.H., J.-L. Su, and P.C. Chu, 2003: Mesoscale eddies in the South China Sea observed with altimeter data. Geophysical Research Letters, 30 (21), doi: 10.1029/2003GL018532.

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