

Airborne Expandable Bathythermograph and Conductivity-Temperature-Depth (AXBT/AXCTD) Surveys for Upper Ocean Thermal Structure

P C Chu {Naval Postgraduate School, Monterey, CA93943; Tel: 831-656-3688; Fax: 831-656-3686; e-mail: chu@nps.navy.mil}

Airborne expendable bathythermograph and conductivity-temperature-depth (AXBT/AXCTD) surveys are conducted routinely by the Naval Oceanographic Office for detecting the upper ocean thermohaline structure. The AXBT/AXCTD data sets essentially provide snapshots of the thermohaline structure over a large portion of the area. During the international South China Sea Monsoon Experiment (SCSMEX) and Japan/East Sea Circulation Experiment, the Navy deployed many AXBT/AXCTD stations. The primary feature observed in the South China Sea was a multi-eddy structure. A three-dimensional estimate of the absolute velocity field was obtained from the observed temperature field and a climatological salinity field using the P-vector method. Striking circulation features were the existence of anticyclonic and cyclonic eddies. In the upper layer the tangential velocity of the anticyclonic warm-core eddies is around 30-40 cm/s and that of the cyclonic cool-core eddies varies from 10 cm/s to 40 cm/s. The tangential velocity of all the eddies decreased with depth. At 300 m depth, it became less than 5 cm/s for all the eddies. The effect of SCS multi-eddy structure on southwest monsoon onset is also discussed.