Geophysical Research Abstracts, Vol. 8, 04839, 2006
SRef-ID: 1607-7962/gra/EGU06-A-04839

Wind stress and currents variability in the central Ligurian Sea

P. Picco(1) , M. E. Schiano (2) , R. Bozzano (3), A. Cappelletti (4), S. Sparnocchia (5), M. Borghini (6)

(1) ENEA CRAM, La Spezia, Italy, (2) CNR ISMAR, Genova, Italy, (3) CNR ISSIA, Genova, Italy, (4) ENEA, Pisa, Italy, (5) CNR ISMAR, Trieste, Italy, (6) CNR ISMAR, La Spezia, Italy (paola.picco@santateresa.enea.it / Fax : +39 0187978273 / Phone: +39 0187978278)

The analysis of long time series of meteorological and oceanographic observations from a fixed platform located in the central Ligurian Sea allows to investigate the upper layer currents variability and its relation with the local wind stress.

A mooring equipped with an ADCP (Acoustic Doppler Current Profiler) RD&I Sentinel 300 khz and SBE temperature and salinity sensors was deployed in the central Ligurian Sea (43˚ 47.32 N; 9˚ 02.87 E) at about 1000 m depth, and operated for long periods from September 2003 to April 2005. The ADCP sampled the upper 50-75 m of water column with 8 m vertical resolution and 1h time interval. The meteorological and near surface sea temperature and salinity measurements come from ODAS ITALIA1, a meteo-oceanographic spare-buoy equipped for air-sea interaction measurements in the open sea. Although the mean current is mainly directed northwest, the data reveals an interesting mesoscale variability, alternating periods with an almost constant flow to periods characterised by strong variability and meandering. Rotary spectral analysis evidences the inertial frequency peak, while at lower frequencies a 28 days component is prevailing in the positive spectra along with some other mesoscale components. The vertical structure is characterized by highly correlated currents having the same pattern, with intensity decreasing with the depth. Kinetic energy of wind and surface currents are poorly correlated, while the effects of strong wind mixing events are well evidenced in the thermohaline data. The use of EOF (empirical orthogonal function) decomposition on currents vertical structure permits to better identify the effects of surface forcings, separating large scale circulation form the local variability.