Geophysical Research Abstracts
Vol. 21, EGU2019-11246, 2019
EGU General Assembly 2019

Multi-platform observations in the Ligurian Sea and Near-Inertial Waves (NIWs) signature during LOGMEC17

Elisa Cozzani, Paolo Oddo, Ines Borrione, Pierre-Marie Poulain, Andrea Storto, and Aniello Russo

NATO Science and Technology Organization - Centre for Maritime Research and Experimentation, Viale S. Bartolomeo 400, La Spezia, Italy

Understanding ocean features and their variability at different spatial and temporal scales by integrating multi-platform observation system is still one of the major scientific challenges. The LOng-term Glider Missions for Environmental Characterization 2017 (LOGMEC17) is a multi-platform, multi-scale, multi-disciplinary combined acoustical and oceanographic campaign, aimed at studying the variability and predictability of Ligurian Sea characteristics at different scales. LOGMEC17 took place in autumn 2017 and involved research vessels but also gliders, moorings, towed vehicles, satellites and HF coastal radar providing a variety of ocean measurements.
The two deep gliders have been programmed to follow the repeat cycle satellite tracks of Jason-3 and Sentinel-3, collecting about 50 days of data up to a depth of 1000m. The comparison between glider-derived Dynamic Height and altimeter Absolute Dynamic Topography was carried out using the co-located and near-contemporaneous remote and in-situ measurements. Furthermore combined analysis of remote sensing observations and glider data was useful to trace the path and variability of the most relevant water masses in the Ligurian Sea.
The ocean current time-series obtained by the upward-looking ADCPs mounted to the two moorings deployed in the Eastern part of the Ligurian Sea show periodic tilted stripes. The spectral analysis highlights a power peak in the near-inertial frequency band slightly higher than the theoretic inertial frequency f (blue shift). The velocity shear clearly identifies an upward phase velocity, implying downward energy propagation. In order to further investigate the NIWs characteristics, the rotary auto spectra of the currents observed at the two moorings was carried out. Results indicate that at the near-coastal mooring (43.87°N 9.83 °E, water depth 100m), the strongest power in the near-inertial band was found between 45 and 65m depth, while at the open-sea mooring (43.86°N 9.21 °E, water depth 250m) results indicate a more vertically uniform power spectra with a strong signal identified between 70 and 120 m depth.