



Evidence of an intermittent deep equatorward flow in the Peru upwelling system

Alice Pietri (1), Vincent Echevin (1), Pierre Testor (1), Alexis Chaigneau (2), Laurent Mortier (1), Carmen Grados (3), Aurelie Albert (1), Laurent Beguery (4), and Nagib Bhairy (4)

(1) LOCEAN - UPMC, Paris, France (alice.pietri@locean-ipsl.upmc.fr), (2) LEGOS - OMP, Toulouse, France, (3) Instituto del Mar del Peru, IMARPE, Chucuito-Callao, Peru., (4) DT INSU, La Seyne sur Mer, France

In April-May 2010, 6 consecutive repeated cross-shore sections of ~ 100 km were occupied by a Slocum glider off the coast of Pisco (14° S) in the southernmost Peruvian upwelling region. The collected temperature and salinity data, acquired from the surface to 1000m depth and the depth-integrated velocity, estimated from the glider drift between two dives, are used to estimate absolute geostrophic alongshore velocities and study the spatio-temporal variability of the near-coastal circulation during a 5-week time period. Besides providing interesting information on the surface frontal jet and surfacing poleward undercurrent trapped on the continental shelf and slope, the glider data reveal the presence of a subsurface deep equatorward current. The dynamics and origin of this current, which can transport up to ~ 2 Sv northward, are investigated using simulations from an eddy-resolving regional model (ROMS). This relatively strong equatorward subsurface current is associated with a poleward propagating coastal trapped wave of equatorial origin, with a strongly sheared vertical structure. A simple linear coastal wave model which successfully reproduces part of the observed vertical structure of the current, indicates that it corresponds to a third baroclinic mode of coastal wave.