The coastal ocean of the North Humboldt Current System (NHCS) is one of the most productive regions of the world oceans in terms of fisheries. This extremely rich fisheries is due to a permanent coastal upwelling which occur alongshore the Peru coast with four main upwelling cells of distinctive features.

In this work, the coastal upwelling dynamics and air-sea interactions of the active upwelling region off Pisco (14ºS)-San Juan (15º30´S) is analyzed based on a high resolution mesoscale survey and a climatological study.

The coastal VOCALS Peru cruise was realized in October 2008 in the frame of the VOCALS (VAMOS Ocean-Cloud-Atmosphere-Land Study) Regional Experiment. The wind-driven upwelling, the Peru-Chile Undercurrent, the surface mixed layer and the large-scale atmospheric disturbances are analyzed based on the performed observations and compared to a recently developed multiyear analysis of historical 50 year in situ data from NODC, IMARPE as well as ARGO buoy profiles. The later study was based on a four-dimensional ocean interpolation scheme using locally weighted least square fitting, as initially developed by Dunn and Ridgway [2001] and Ridgway et al. [2002], resulting in gridded fields of horizontal resolution of 0.1°x 0.1° and 55 levels on the 1000m upper vertical layer.

These studies allowed resolving mesoscale and submesoscale oceanic structures providing an updated view of the upwelling cell dynamics and water mass characteristics, which are important environmental metrics for the management of the fishery resources of this ecosystem-rich region.