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ADCP measurements in the South-western Black Sea during the Turkish Strait Systems (TSS) experiment.

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Within the framework of TSS experiment, (autumn 2008 - Winter 2009), several moorings equipped with current meters and T/C sensors were deployed in the south-western Black Sea to investigate the dynamic of the area. A meteo-buoy and a waive rider were also deployed nearby to support air-sea interaction studies and numerical predictions. Three moorings were located close to the Bosphorus Strait, while the others were deployed offshore, at a sea depth of about 1100 m, in the Rim Current. One mooring was also equipped with an upward-looking 300 kHz ADCP at a depth of 70 m, which was operating from 6 February 2009 to 2 March 2009. The ADCP was set-up with 5 min sampling interval and 4 m vertical resolution and was devoted to investigate the variability of the upper layer hydrodynamics.

Currents in the upper layer were directed southeast along the bathymetry and had a mean intensity of about 40 cm/s. Cross-shore meanderings lasting roughly 5-6 days and associated to stronger currents were observed in a few occasions. Starting from 20 February, currents intensity increased as a response to a change in meteorological conditions.

The vertical structure was almost uniform: currents at each level were highly correlated, had similar patterns but the intensity was decreasing with depth. EOF decomposition provided a more detailed insight on the vertical structure: the first mode was associated to the mean barotropic large-scale circulation while the second was associated to the surface variability in response to the atmospheric forcing. Despite the time series length did not allow for a high spectral resolution, energy in the inertial band was by far dominating in the rotary spectrum.