



Mesoscale variability observed in the Northern Adriatic in autumn 2016

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Quasi-synoptic measurements of hydrographic properties were performed in the Northern Adriatic along the transect extending from Rovinj to the Po River mouth in an approximately east-west direction. The depth along the transect slowly varies between 30 and 40 m. Three one-day cruises were conducted, the first on 12 Nov, the second on 18 Nov, and the third on 25 Nov 2016. During the first and the third cruise the sampling was done with a CTD probe lowered from the surface to the bottom, at eleven stations placed nearly equidistantly along the transect. Average distance between the stations was 6 km. The second cruise was conducted with a towed yo-yo profiler equipped with the CTD probe and continuously undulating between the surface and some 4 m above the bottom. With roughly three undulations per kilometer, horizontal resolution along the transect was about 200 m.

The data suggest that three processes occurred during the cruises: 1) surface cooling and related vertical mixing, 2) intrusion of high-salinity waters into the western part of the transect, and 3) propagation of a mesoscale formation in a westward direction. The existence and propagation of the mesoscale feature is supported by a simple analytical model of topographic Rossby waves. By assuming that the bottom varies linearly in the direction perpendicular to the transect, the propagation speed of $O(1 \text{ km/day})$ is obtained - in agreement with the observations.