



Surface current patterns in the Ibiza Channel with the use of High Frequency (HF) Radar system

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The Ibiza Channel located between the East Coast of the Iberian Peninsula, and the West Coast of Ibiza, at the Balearic Islands, is a well-known biodiversity hot spot. This area is relevant due to the interaction of water masses coming from the Atlantic Ocean – ascending through the Iberian Peninsula coast – with the older Atlantic waters descending from the Gulf of Lion. In 2012, the installation of Coastal HF Radar in the area provides valuable information for the study of the surface transport along the channel. The Coastal HF Radar operates since June 2012, and provides hourly surface current maps with a spatial resolution of approximately 3 km and a range reaching up to 70 km offshore. The instrument forms part of a monitoring multi-platform system, which is completed with satellite-derived data, gliders, modelling and fixed and lagrangian buoys. All HF Radar data are processed with standard quality control methods. Drifter velocity obtained from lagrangian buoys for two oceanographic campaigns, satellite-derived data and currentmeter data from a fixed buoy in the Ibiza Channel are used to validate the HF Radar data. All surface current data are used to perform a spectrum analysis in order to show the physical processes, at the main temporal periods. The contribution of the different temporal scales to the total Kinetic Energy has been analysed for the first time at different seasonal intervals. This served to evaluate the energetic importance of the different components of the surface currents. The inertial currents have a lower contribution to the total KE during winter, compared with the summer period. Besides, the spatial distribution of the inertial component to the total KE varies seasonally, and according to the bathymetry of the area. The low-pass (sub-inertial) filtered HF Radar currents show a predominant northern current during the summer months in the channel, and a mean southern current during the winter period. These results are discussed and related with the external forcing, and bathymetry distribution, according to coastal or open ocean data.