Geophysical Research Abstracts
Vol. 20, EGU2018-7956, 2018
EGU General Assembly 2018

Temporal and spatial variability of the Mallorca channel from underwater glider data

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Autonomous underwater gliders allow continued observations of the coastal ocean. Since 2011 underwater gliders have surveyed the Mallorca and Ibiza channels (Western Mediterranean Sea) in the framework of the Canales project at SOCIB (Mallorca, Spain). The 50-km wide Mallorca channel has been seasonally surveyed from the surface to a maximum depth of 958 m. A total of 54 transects have been collected during 7 years of continuous glider missions distributed equally by seasons and covering all months. Measured variables include pressure, temperature, salinity, and depth-average velocity. The freely available L2 products provide the glider data in vertical profiles with a resolution of 1 m. In the Mallorca channel there is a total of 5300 profiles with a horizontal resolution of the deepest profiles of the order of 2 km. The glider data are used to analyze the seasonal, interannual and mesoscale ocean circulation and hydrographic variabilities of the Mallorca channel on regular grids in depth and along-transect distance. This study contributes to the characterization of a region in the Western Mediterranean that will be sampled at high spatial and temporal resolution by the SWOT satellite mission during the fast phase after launch in 2021.