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Vertical structure and temporal evolution of an anticyclonic eddy in the Balearic Sea (Western Mediterranean)

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The evolution of an anticyclonic eddy in the Balearic Sea (Western Mediterranean) was described using data from a mooring line deployed at the northern slope of Mallorca Island at about 900m deep. Its surface signature was investigated using SSH and SST images. The eddy, which lasted around one month, modified the thermohaline characteristics and the currents of the entire water column. Levantine Intermediate Waters (LIW) usually resident in the region were displaced by colder and fresher Winter Intermediate Waters (WIW) associated with the the eddy. Along slope main currents (towards NE) were completely reversed at 500 m and significantly deviated at 900m. Interestingly, near bottom velocities were found to be systematically larger than those at intermediate depths. Furthermore during the eddy velocities reached values up to 25 cm/s at the bottom, five times larger than the average speed. The recurrence of the phenomenon was explored from satellite data indicating that eddies are common structures in the Balearic Current.