{rokbox title=|Location of the RADMED #88 deep station :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-thermohaline-evolution-western-mediterranean-deep-waters-since-2005-pineiro-et-al-2020-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-thermohaline-evolution-western-mediterranean-deep-waters-since-2005-pineiro-et-al-2020.jpg{/rokbox}

S. Piñeiro, C. González-Pola, J. M. Fernández-Díaz, **R. Balbin**, 2020. **Thermohaline Evolution of the Western Mediterranean Deep Waters Since 2005: Diffusive Stages and Interannual Renewal Injections.**
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Abstract: A large production of anomalous dense water in the northwestern Mediterranean Sea during winter 2005 led to a widespread abrupt shift in Western Mediterranean deep waters characteristics. This new configuration, the so-called Western Mediterranean Transition (WMT), involved a complex thermohaline structure that was tracked over time through a deep hydrographic station located NE of Minorca Island, sampled 37 times between 2004 and 2017. In this study, the thermohaline evolution of the WMT signal is analyzed in detail. Using a 1-D diffusion model sensitive to double-diffusive mixing phenomena, the contribution to the heat and salt budgets of the deep Western Mediterranean in terms of ventilation and diffusive transference from the intermediate layers above is disentangled. Results show distinct stages in the evolution of the deep waters, driven by background diffusion and intermittent injections of new waters. The progression of a multilayered structure in the deep ocean is well represented through existing parameterizations of salt fingering and diffusive layering processes and makes it possible to infer an independent estimate of regional background diffusivity consistent with current knowledge. Overall, the deep layers of the Western Mediterranean underwent substantial warming (0.059 °C) and salt increase (0.021) between 2004 and 2017, mostly dominated by injections of dense waters in the 2005–2006 and 2011–2013 periods. Thus, within the WMT period, heat uptake rate in the deep Western Mediterranean was substantially higher than that of the intermediate levels in the global ocean.

Keywords: