

Thermohaline, Chemical and Biological Characterisation of the poleward flowing slope current off the NW Iberian Upwelling System

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A high-salinity poleward-flowing compensation undercurrent, carrying subtropical Eastern North Atlantic Central Water (ENACW_T), is recurrently observed off NW Spain during the 'upwelling season' (April to September). The poleward flow surfaces during the transition from upwelling-favourable northerly winds to downwelling-favourable southerly winds by September-October. The poleward transport of ENACW_T in the upper ocean produces unexpectedly warm and salty waters off NW Spain during the autumn and winter compared to the surrounding subpolar waters of the NE Atlantic. NO₃⁻, HPO₄⁻ and Si(OH)₄ levels in ENACW_T—from south of 40°N, the latitude of Cape Mondego, Portugal—are much lower than in subpolar ENACW (ENACW_P)—from north of 43°N, the latitude of Cape Finisterre, Spain. Contrasting nutrient status affect the microplankton community structure and the distributions of the reduced forms of N-nutrients (NO₂⁻ and NH₄⁺).

Seasonal changes in the thermohaline, chemical and biological setting of the poleward flowing slope current are studied in response to the decreasing stratification from the middle summer to the middle winter. Data collected during cruises Be9815c (June 27– July 7, 1998; OMEX-II, MAST-III), Galicia XII (September 1991, MAST-I), MORENA II (December 1993, MORENA, MAST-II) and CD110b (10–16 January 1998, OMEX-II, MAST-III).