

Multiparametric Mixing Analysis of the Deep Waters in the Western Mediterranean Sea

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Abstract

The winters 2004-2005 and 2005-2006 were characterized by the formation in the Gulf of Lions (Western Mediterranean Sea) of dense water, which was significantly warmer and saltier than previously. The temperature-salinity diagrams show the presence of three different deep water types: a resident one and two newly formed ones.

In order to quantitatively evaluate the spreading of these three different water masses from their formation region, an extended optimum multiparametric analysis (OMP) has been performed, which permitted to estimate the mixing fractions of the deep water masses in the area. The extended analysis, which uses nutrients as tracers, takes these processes into account by introducing the Redfield ratio into the system.

In this study a comparison between the pattern of the three deep water types in 2005 and of 2006 are reported, in order to assess the spreading of the newly formed water from the formation region.

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