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Hydrological Structure, Circulation and Water Mass Transport in the Gulf of Cadiz

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ABSTRACT

Hydrological and LADCP data from four experiments at sea (Semane 1999, 2000/1 2000/3, 2001) are used to describe the structure and circulation of Mediterranean Water in the Gulf of Cadiz. These data were gathered on meridional sections along 8°20' W and 6°15' W and between these longitudes on a zonal section along 35°50' N. The mesoscale and the submesoscale structures (Mediterranean Water Undercurrents, meddies, cyclones) observed along these sections are characterized in terms of thermohaline properties and of velocity. The transports of mass and salt in each class of density (North Atlantic Central Water, Mediterranean Water, North Atlantic Deep Water) are computed with an inverse model. The model indicates a general eastward flux in the Central Water layer, and a westward flux in the Mediterranean Water layer, but there is also a horizontal recirculation and entrainment in these two layers, as well as strong transports associated with the meddy and cyclone found during Semane 1999.

KEYWORDS

Mediterranean Water, Gulf of Cadiz, Hydrology, Water Masses, Regional Scale Circulation, Inverse Model, Transport

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