



Monitoring deep convection in the Mediterranean Sea: a multi-sensor approach.

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Open-ocean deep convection occurs in the Western Mediterranean Sea when cold and dry northerly winds induce the densification of surface waters, resulting in the vertical mixing of the water column and in the formation of the Western Mediterranean Deep Water, one of the main water masses of the mediterranean thermohaline circulation. This process also plays a major role in the functioning of marine ecosystems: phytoplanktonic spring blooms intensity is related to the amount of nutrients transported from the bottom to the surface euphotic zone during winter convection episodes. Our goal is to investigate the feasibility of the monitoring of deep convection variability and long term evolution based on a multi-sensors approach. The signature of deep convection on sea surface elevation is examined by comparing tide-gauges data and an improved coastal multi-satellite altimetric dataset (MAP) with the results of numerical simulations performed with high resolution ocean model (SYMPHONIE). This allows to determine if there is a correlation between the variability of observed sea surface elevation and the variability of deep convection, in terms of volume and characteristics of deep water formed.