

## **Tyrrhenian Sea Circulation and water mass fluxes in Spring 2004: observations and model results**

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### **Abstract**

Hydrological and current measurements, collected in the Tyrrhenian Sea during May-June 2004, are analysed with an inverse box-model (IBM) to establish the mean circulation patterns of the basin during spring 2004. These patterns are compared with those provided by a high resolution, primitive equation model (POM) implemented over the area in order to simulate the mean basin circulation during the survey. The good agreement between the two circulation fields, despite the differences and the respective limitations of the employed methods, represents a solid evidence for the reliability of the estimated dynamical structures. Moreover, the POM reveals the short spatial variability of the basin not always resolved by IBM because of the low spatial resolution of the insitu measurements. The comparative study indicates the Tyrrhenian basin as a highly dynamically active region of the Mediterranean Sea, characterized by a rich mesoscale dynamics. This work provides, for the first time after more than 25 years, a novel qualitative assessment of the Tyrrhenian Sea spring circulation, together with a robust quantitative estimation of the water mass stream fluxes inside the basin and of the exchanges with the adjacent regions.

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