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Oscillating Adriatic temperature and salinity regimes mapped using the Self-Organizing

Maps method

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Abstract

This paper aims to document salinity and temperature regimes in the middle and south Adriatic Sea by applying the Self-Organizing Maps (SOM) method to the available long-term temperature and salinity series. The data were collected on a seasonal basis between 1963 and 2011 in two dense water collecting depressions, Jabuka Pit and Southern Adriatic Pit, and over the Palagruža Sill. Seasonality was removed prior to the analyses. Salinity regimes have been found to oscillate rapidly between low-salinity and high-salinity SOM solutions, ascribed to the advection of Western and Eastern Mediterranean waters, respectively. Transient salinity regimes normally lasted less than a season, while temperature transient regimes lasted longer. Salinity regimes prolonged their duration after the major basin-wide event, the Eastern Mediterranean Transient, in the early 1990s. A qualitative relationship between high-salinity regimes and dense water formation and dynamics has been documented. The SOM-based analyses have a large capacity for classifying the oscillating ocean regimes in a basin, which, in the case of the Adriatic Sea, beside climate forcing, is an

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