



## **On dynamics of Mediterranean eddies in the Atlantic Ocean**

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Long-living (up to 3–10 years) intrathermocline anticyclonic eddies with warm and salty waters of the Mediterranean Sea (meddies) are regularly observed at depths of 800 – 1400 m in the eastern part of the Northern Atlantic. They are lens-like ellipsoidal structure with horizontal axis from 40 to 100 km and the vertical ones – from 0.4 to 0.9 km, and reach the volume from 1000 to 3500 km<sup>3</sup>. At large distances from the generation area the lenses of very large volumes occur. This allows us to wait for the possibility of merging of two lenses with the same-sign and located at the same depth.

Here, in the frames of the three-layer quasigeostrophic model of ocean with constant densities in each layer the intrathermocline eddies are set as 2D vortex patches, located in the intermediate middle layer.

Numerical calculations on the basis of the contour surgery method provided qualitative criteria (depending on geometric parameters and the degree of fluid stratification) for the conditions of existence of the following dynamical regimes: (a) decay of a vortex being initially elliptical, (b) merging of two circular vortices, (c) formation of an intermediate quasiperiodic regime. These numerical experiments may be useful for explanation of some peculiarities in behaviour of meddies.

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