



## **Origin and dynamics of mesoscale anticyclonic eddies in the Catalan sea**

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Past observations and satellite SST imagery indicate the presence of mesoscale anticyclonic eddies drifting along the Catalan coast. We investigate the origin and dynamics of these eddies using a numerical circulation model of the Northwest Mediterranean at 3km resolution driven by high resolution atmospheric analyses, and compare model eddies with an anticyclonic eddy observed at the Catalan shelf break in September 2001 during an oceanographic cruise. We identify two zones of eddy formation in the Gulf of Lions, in front of the city of Marseilles and at the southeast of coast of Roussillon, from where the anticyclonic eddies are observed to drift towards the Catalan Sea. In addition, local eddy generation is observed in the Catalan sea linked to flow-topography interactions in the Palamos canyon. The hydrology and dynamics of the structures observed in the simulations are characterised and sensitivity experiments are performed which allow to identify the mechanisms associated to their generation. Properties of the eddy observed during the 2001 cruise at the Catalan shelf break are found to compare well with model eddies generated at the southeast of the Roussillon coast. The model allows to relate the origin of these eddies to intense downwelling taking place in front of the Roussillon coast when strong northwesterly winds events occur.