

**Large-scale oceanic features detected by airborne and spaceborne SAR
in the Mediterranean Sea**

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Airborne SAR DATA

During the MAC-Europe Campaign in June/July 1991, the NASA JPL synthetic aperture radar (SAR) carrying a polarimetric 3-frequency SAR operating at 440 MHz (P-Band), 1.25 GHz (L-Band) and 5.30 GHz (C-Band) flew several missions over the Gulf of Genoa and the Strait of Messina.

On 22 June 1991, SAR images were taken over the Gulf of Genoa showing an anti-cyclonic eddy south of Genoa with a diameter of approximately 15 km. Model calculations carried out by V. CASULLI (University of Trento) and G. MANSELLA (ENEA, La Spezia) show that this eddy is generated by the modification of the steady cyclonic circulation caused by wind forcing and the interaction with the coastline and the bathymetry. This model result is also substantiated by AVHRR images.

On 28 June 1991, SAR images were taken over the Strait of Messina showing a strong non-linear internal wave train south of the Strait of Messina. This wave train was imaged several times. By correlating successive SAR images, the propagation speed of the internal waves was determined.

During the passes over the Strait of Messina the JPL SAR was operated in an interferometric SAR-mode by using two antennas. Surface current velocities as well as correlation times are derived from these interferometric data (R. CARANDE, JPL)

Spaceborne (ERS-1) SAR Data

ERS-1 SAR images were obtained on several occasions in the period from 7 January to 22 March 1992, over the Strait of Gibraltar during spring tides. These images show non-linear internal wave patterns propagating eastward as well as long wavelength patterns in the western part of the strait which are very likely caused by atmospheric effects.

On May 17, 1992, an ERS-1 SAR image was obtained over the Strait of Messina during a spring tide. This image shows internal waves north of the Strait of Messina.

The ERS-1 SAR images obtained over these two Straits are interpreted oceanographically.