

Driving mechanisms of Upwelling in the Sicily Channel

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We present the results of the analysis of a long time series of NOAA-AVHRR data taken over the Sicily Channel. Sea Surface Temperature values were derived from cloud-free AVHRR data over one year (1986) by means of a split-window algorithm (Dalu et al., 1985).

The dynamics of the studied area is very complex, since it is a crucial point for the water mass exchanges between the Eastern and the Western Mediterranean Sea.

In particular, satellite images indicate the presence of two different surface water masses, which are separated by the strong "Maltese front".

Our first effort was the investigation of the seasonal variability of the front, which greatly influences the hydrographic characteristics of the studied area.

After that, our attention was focussed on upwelling events occurring on the Southern coast of Sicily.

Cold water patches extending southward are very frequently seen offshore Mazara del Vallo. These patches mirror the bottom topography suggesting that the upwelling is stronger in the shallower areas such as the Adventure Bank.

The transient characteristics of the observed upwelling events suggest that the meteorological forcing plays an important role in generating the upwelling in that area. On the other hand, the influence of an amphidromic point for the semidiurnal tidal component, located near the island of Pantelleria, which may well affect the interfacial depth pattern (Artale et al., 1989), was also investigated.

The results of our study, carried out by means of a statistical analysis performed on several parameters extracted from the images (upwelling indices), show the different role played by the various factors.

REFERENCES

V. Artale, A. Provenzale, R. Santoleri (1989): Analysis of Internal Temperature Oscillations of Tidal Period on the Sicilian Continental Shelf. *Cont. Shelf Res.*, 9, 10, 867-888.

G. Dalu, A. Viola, S. Marullo (1985): Sea Surface Temperature from AVHRR-2 Data. *Il Nuovo Cimento*, 8C, 1, 6, 793-804.