Remote sensing of dynamic patterns in the Adriatic Sea

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The intention of the present work is not to review the overall remote sensing contribution to our understanding of the physical oceanography of the Adriatic Sea in the last decade. While remote sensing technology enables detection of the sea surface temperature, colour, roughness and distance from the sensor, we limit our attention here to colour/derived pigment (Coastal Zone Colour Scanner - CZCS) and temperature (CZCS infrared channel and Advanced Very High Resolution Radiometer - AVHRR). Majority of remote-sensing related publications on the Adriatic justifies such a choice. Furthermore, we make distinction among works dealing with *in situ* calibration of pigment and temperature derivation algorithms, those dealing with direct interpretation of pigment and/or temperature fields, and finally investigations that make use of pigment or temperature data to corroborate *in situ* measurement and/or mathematical modelling results or to derive current field information. We pay particular attention to the last group and focus on remote sensing contribution to currents and circulation studies of the Adriatic.

To this end we have first briefly reviewed a decade of classical oceanographic work (data analysis and mathematical modelling) following ORLIC *et al.*, (1992). The review demonstrates researchers' bias towards general-circulation and wind-induced current related themes, over the subjects of tidal currents, inertia-period oscillations and eddies. A similar review of remote sensing papers shows predominant use of pigment and temperature fields to corroborate empirical and/or modelling findings regarding surface dynamics (often general-circulation related features), and a somewhat surprising lack of interest in pigment or temperature fields *per se*. However, it must be remembered that direct use of pigment and temperature requires reliable derivation of those fields from noisy remotely detected scenes. Consequently, the need for, and interest, in pigment fields seems to be reflected in a number of papers that have been devoted to retrieving algorithms calibration.

Within the framework of auxiliary use of pigment and temperature data we consider in more detail studies that relate remotely observed patterns to the influence of the Po river discharge. BARALE *et al.* (1984) were among the first to use the CZCS visible radiation and apparent temperature to trace motions in the surface layer. Most recently STURM et al. (1992) explored Po-affected pigment patterns on the Adriatic shelf. The two works span a series of papers that consider the extent to which remotely observed patterns correspond to a particular, more conventionally studied, aspect of the Adriatic Sea circulation.

In conclusion we project the most immediate future for the remote sensing research of the Adriatic Sea.

REFERENCES

BARALE V., MALANOTTE-RIZZOLI P., HENDERSHOTT M.C., 1984.- Remotely sensing the surface dynamics of the Adriatic Sea. *Deep Sea Research*, 31, 1433-1459.

ORLIC M., GACIC M., LA VIOLETTE P. E., 1992. - The currents and circulation of the Adriatic Sea. *Oceanologica Acta*, 15, 109-124.

STURM B., KUZMIC M., ORLIC M., 1992. - An evaluation and interpretation of CZCS-derived patterns on the Adriatic shelf. *Oceanologica Acta*, 15, 13-23.