

Mediterranean Coastal Features From Satellite Observations

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Abstract

The use of remote sensing to monitor coastal features has become common practice both for scientific research and for the development of specific applications. In the Mediterranean Sea, the annual mean pigment concentration, surface temperature and wind speed, derived from the CZCS (78-86), AVHRR (82-91), GEOSAT (86-89), ERS-1 (92-95) and TOPEX (93-97) historical archives, differentiate between geographical provinces shaped by dynamical and bio-geo-chemical patterns. These are (i) areas under the direct influence of coastal interactions; (ii) regions of enhanced characteristics (i.e. Ligurian/Provençal/Balearic sub-basin, Adriatic Sea, Aegean Sea), linked to the impact of the (northern) continental margins and to the prevailing winds (i.e. Mistral, Bora, Etesians); and finally (iii) open sea areas, characterised by frontal structures and, in the eastern basin, by a permanent mesoscale eddy field. The main trends in these provinces indicate two main seasons, with extreme conditions in winter and summer, and transition periods in spring and autumn. The general pigment cycle is similar to that of a subtropical basin, where light is never a limiting factor, but nutrients always are. The main "coastal" provinces have a distinct seasonality, e.g. that of a subpolar basin in the northwest, with enhanced spring and fall blooms. This view, originally developed on the basis of the historical archives alone, is supported by the analysis of current data by the SeaWiFS (1998). Coastal features such as river plumes, filaments and permanent gyres are recurrent and maintain their characteristics over the medium to long term.