



New circulation features in the Gulf of Lion, Western Mediterranean Sea.

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The circulation of the Gulf of Lion, a large continental shelf north of the Western Mediterranean Sea, is complex and highly variable. As explained by Millot (Continental Shelf Research, 10 (9-11), 885-894, 1990), it is influenced by the mesoscale circulation, the wind forcing, the fresh water inputs, the stratification and the potential formation of dense water in winter. The present study compiles horizontal currents measured throughout the gulf during more than 25 oceanographic cruises (for example: Moogli, Sarhygol and Golts) done over the last 6 years. Some new circulation features are highlighted. During stratified conditions, an unexpected strong eastern current can be detected crossing the whole gulf. Its speed can reach 40 cm.s^{-1} . Intrusions of the mesoscale circulation (the Mediterranean Northern Current) are also observed not only at the eastern side of the gulf but at other locations along the continental slope. The primitive-equation free-surface model Symphonie is used to investigate the effect of the different processes which can generate and influence these observed features of the coastal circulation.