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Coastal ecosystems management

Optimization And Comparison Of Different Methods Of Underwater Mapping

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The mapping of assemblages and bottom-types occurring from the surface to a depth of 100 m has been carried out around Cap Corse (western Mediterranean, France). Several sensors (optical and acoustic) are compared on the same sites in order (i) to optimize the conditions of use and (ii) to assess their respective interest and limitations. From the experiments, it appears that the pixel size used in aerial photographs makes it possible to adapt the accuracy of the images and better distinguish the different assemblages. In contrast, reducing the range of the side-scan sonar, which provides a more accurate image, does not necessarily offer better discrimination of the assemblages. If the optical sensors are increasingly efficient for the shallow waters (0 to -15 m), the acoustic sensors provide highly relevant complementary information. Beyond these depths, only the acoustic data can be used effectively. The side scan sonar is more efficient because it allows complete coverage of the bottom and its positioning relative to the bottom may remain constant regardless of the depth. In contrast, the acquisition by multibeam echosounder provides point data requiring interpolation in order to achieve full coverage; furthermore, its accuracy decreases with increasing depth. The availability of the latest multibeam echosounders which can provide more information for a given area, is likely to make this kind of sensor more efficient especially as its geo-positioning system is more accurate. However, apart from the respective merits of mapping techniques, the strategy adopted must take into account the objectives of the study (area covered, accuracy) and also the available resources.