Integration of nautical charts and satellite images in Marine GIS of the Gulf of Naples

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In the last decades Marine Geographic Information Systems (MGISs) have had an increasing diffusion because of their ability to store, manage and analyze a great amount of heterogeneous data concerning sea and ocean environments. To build a MGIS, nautical charts are fundamental: they provides useful information such as shoreline configuration, seafloor morphology, water depths, anchorages, and other features that are suitable not only for navigation, but for marine science applications, i.e. aquatic biology and ecology. Satellite images contribute to bring more information in MGIS concerning many aspects of the sea and ocean environment, so remotely sensed data in high quality, large quantity and multitemporal acquisition can be introduced in the database. For their correct usage, satellite images require pre-elaboration to overlay them to nautical charts: usually they are supplied in different cartographic projection that the modern nautical charts as well as in different geodetic datum that the historical nautical charts, so re-projection and datum transformation are necessary and not banal. This paper aims to describe the approach adopted in MGIS of the Gulf of Naples to harmonize heterogeneous data concerning nautical charts and satellite images. Both large and medium scale maps are considered as well as remotely sensed images with high and medium resolution. The experiments demonstrate that adequate positional accuracy can be achieved for all layers compatibly with the scale of the representation.

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