



## Geophysical characterization in areas of dredge sediment disposals on Rio de Janeiro continental shelf, Brazil

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### Abstract

Disposal of dredged sediments from port areas is often carried out without previous characterization and diagnosis of the benthic system and its relationships with the geological environment. Geohabitats studies contribute to this characterization, showing how geological and geomorphological features are associated. To investigate these relationships, integrated acoustic geophysical methods and direct observation methods (underwater video and geological sampling) were used in two distinct areas on the Rio de Janeiro continental shelf: Area I (degraded with dredging disposal) and Area II (control, without disposal). After the acquisition, processing, and integrated data interpretation, it was possible to determine 5 (five) classes of geohabitats, namely: Class I, areas with high acoustic reflectivity, with few or any presence of benthic organisms, under the direct influence of disposed material; Class II, areas of high acoustic reflectivity, with quartzose sand mixed with calcareous shells, with abundance and diversity of organisms; Class III, areas of very high acoustic reflectivity, with high abundance and diversity of organisms, indicative of semi-consolidated seabed; Class IV, areas with high acoustic backscattering, with strong presence of bed forms (mega ripples), associated with the quartzose sand; and Class V, areas of low acoustic reflectivity, with sand-muddy, low abundance, and relative diversity of benthic organisms. It was concluded that the use of these noninvasive GEOHAB techniques had a good correlation between the geophysical and benthic data and proved to be an important strategy for the characterization of Geohabitats in areas of dredge sediment disposals on Rio de Janeiro continental shelf, Brazil. It is concluded, therefore, that the studies of Geohabitats constitute an essential tool for prior environmental characterization of areas to be used as discarded dredged sediment sites from harbors.