Magnetic field characterization for object detection – study case of Ocean Revival Park in Portimão, South Portugal

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Abstract:

A characterization of a local magnetic field will show not just the Earth magnetic field itself but can also detect objects in the seabed or even buried (e.g. ship wrecks, pipelines, harbor and archeological artifacts among others), which are made of magnetic materials.

The magnetic signal of an object appears with a small amplitude and wavelength, normally not important in a regional magnetic characterization of an area. The work scale and the magnitude of this kind of anomalies leads to the necessity of implementing a workflow from survey plan to data analysis, in order to find better operational solutions.

A detection and inspection survey took place in November 2013 at Ocean Revival Park, a near coast tourism diving area in Portimão (South Portugal), which included a magnetic field characterization. This presentation shows a workflow used for this characterization, which the main goal was to detect four sinking Portuguese navy vessels, on a 1300 per 600 meters, and 30 to 20 meters depth area.

After acquisition a data processing was made in Matlab software (The Math Works Inc.) and the results showed that the workflow used was important to produce a magnetic anomaly chart of this area (Figure 1).

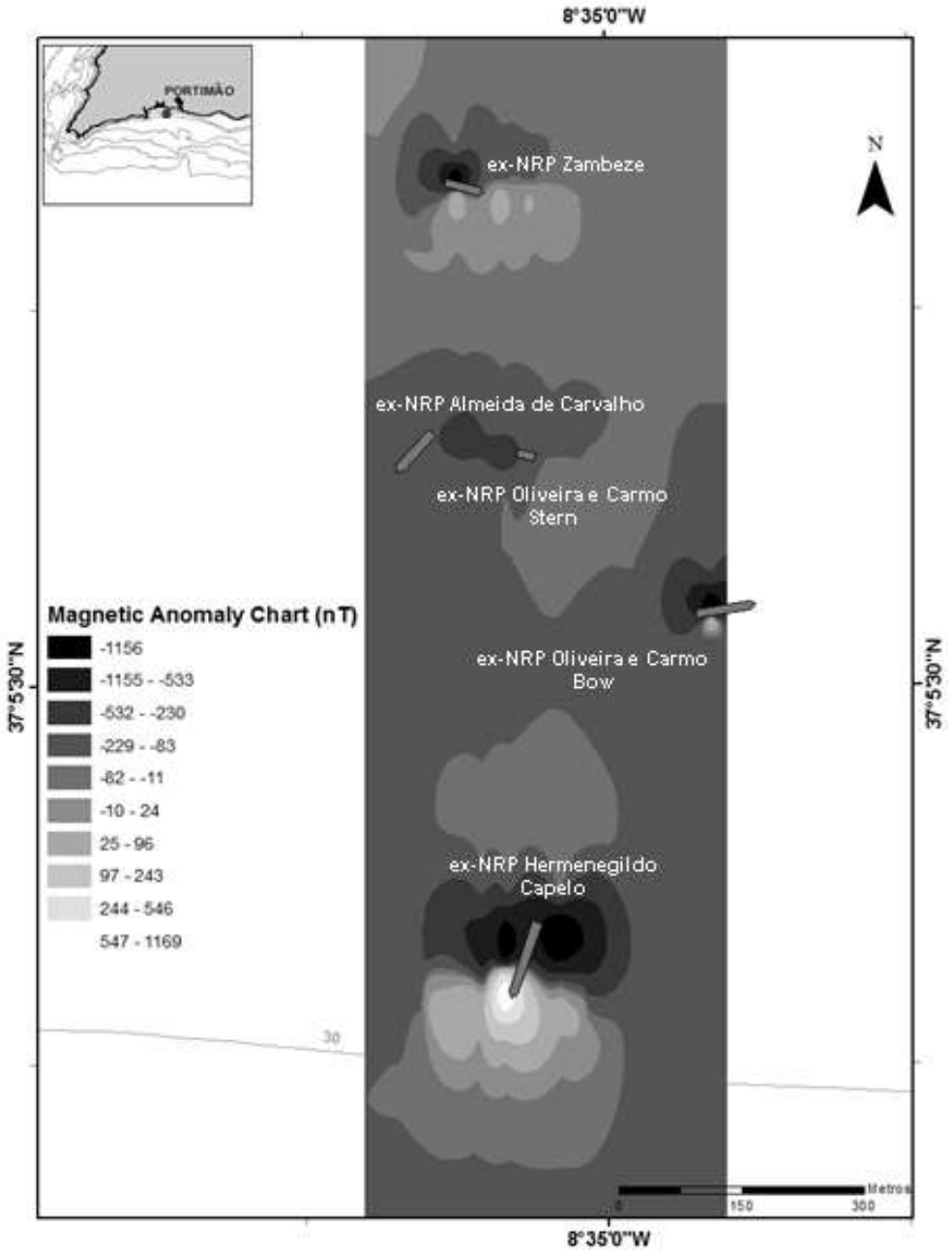

Figure 1: Magnetic anomaly chart from Ocean Revival Park obtain after data processing (datum WGS84).

Keywords: magnetic detection, wrecks, workflow

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