



Processing of the marine magnetic anomalies of the Caribbean region and the Gulf of Mexico (GOM)

Andreina Garcia (1), Jérôme Dyment (1), and Erwan Thébault (2)

(1) Institut de Physique du Globe de Paris, Paris Sorbonne Cité, UMR CNRS 7154, (2) Laboratoire de Planétologie et de Géodynamique de Nantes, UMR CNRS 6112

Marine magnetic anomalies are useful to better understand the structure and age of the seafloor and constrain its nature and formation. In this work, we applied a dedicated processing of the NGDC marine magnetic measurements over the Caribbean region. The number of available surveys amounts to 516 representing 2.612.994 data points between epochs 1958 and 2012. The pre-processing was done by survey. First, data associated to velocities lesser than 5 knots were rejected. Then, the data were corrected for the main internal field using the CM4 model for epochs ranging between 1960 and 2002,5 and the IGRF-11 model outside the time range of the CM4 model. A visual inspection of the anomalies allowed us to identify, to remove evident outliers and to define a priority order for each survey.

We evaluated the magnetic heading effect and corrected the data for it although statistics analysis suggested that this correction brings only a marginal improvement. The cross-overs differences were estimated using the x2sys package (Wessel, 2010) and then corrected using a Matlab code. The statistics confirmed the importance of this processing and improved the internal crossovers, with in particular a clear reduction of extreme values. This processing allows us to present a marine magnetic anomaly map of the Caribbean region and the Gulf of Mexico to 0.18 degree spatial resolution and to discuss the magnetic signature of some of the striking structures of the area.