Global Continental Margins Magnetic Study

Prepared by GETECH

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GETECH Kitson House Elmete Hall Leeds LS8 2LJ UK
Phone +44 113 322 2200 Fax +44 113 273 5236 E-mail info@getech.com
www.getech.com

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1. Summary

The new dataset incorporates re-processed ship-track, non-confidential datasets and the marine component of GETECH's major continental magnetic compilations. The various datasets, described in more detail below, have been edited, re-processed, and re-levelled to generate a unified 1km grid of total magnetic intensity (TMI) data.

Magnetic data are one of the key geophysical datasets that can help understand basement character, structure and depth.

The study covers only those areas in yellow and red in figure 1. The yellow polygons indicate regions where we have re-processed public domain ship-track data, and the red areas are GETECH's major continental magnetic compilation data. A more detailed figure showing the track coverage is shown in figure 2 overleaf.

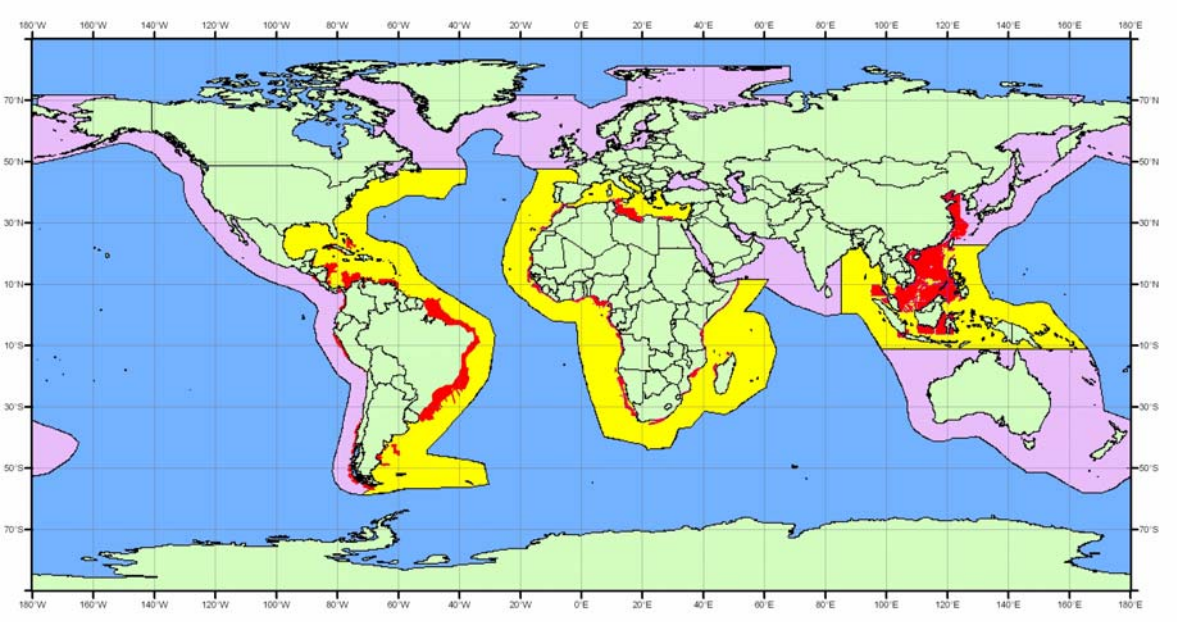

Figure1 - The study area; the final products cover the yellow and red areas only.

Appendix 1 compares an example of the new dataset, over the Caribbean region, with two un-processed pubic domain datasets. If you wish to review further comparisons please let us know.

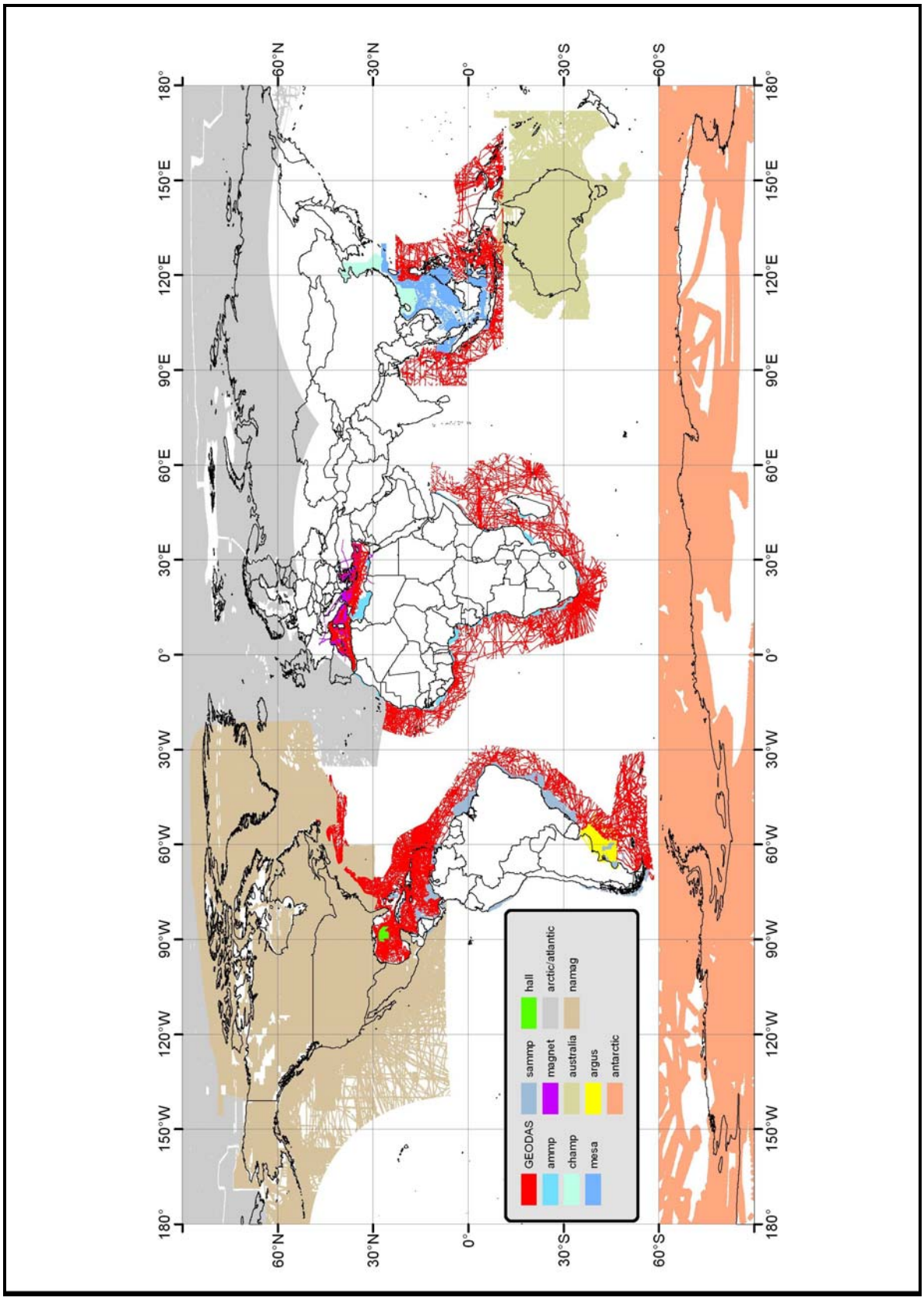

Figure 2 – Detailed data coverage (excluding GETECH's major onshore compilations)

2. Data used in the study

Category 1 (yellow areas in figure 1) – Public domain non-confidential data which includes Geodas ship-track line data and aeromagnetic profile data

Category 2 (red data in figure 1) – Marine data from GETECH's major compilation studies (e.g. Africa (AMMP), South America (SAMMP), Brazil (former Petrobras data) , South and East Asia (MESA) and China (CHAMP)

Meta data relating to known third party surveys will be incorporated in the ArcGIS Survey Atlas.

3. Technical work programme

The principal technical work that was undertaken during the study was the re-processing of over 5 million line kms of ship track profile data from the Category 1 surveys using a consistent set of parameters.

This involved:

- Reformatting, editing, and visualizing the data
- checking the continuity of the profile data by joining and splitting lines and gross cross- over analysis
- Removing the International Geomagnetic Reference field at the time of acquisition
- Removing the noon-time electrojet phenomena often seen in magnetic data close to the magnetic equator
- Converting individual surveys to a common elevation of probably 500m above sea level
- Cross-over levelling of individual tracks
- micro-levelling of individual surveys using GETECH proprietary technique that,
  - retains all high frequency data originally in the line data
  - handles line data with a mixture of line azimuths
- Integrating the processed ship track data with GETECH's compilation gridded datasets (Category 2 data) to create a unified 1km grid of TMI over the study area

An ArcGIS Survey Atlas containing technical details of all the surveys

A Technical Report describes the processing methodology with details of all correction parameters used and a description of all final digital products

The final digital data products are supplied in un-projected latitude/longitude coordinates in standard digital profile and grid formats.

4. Deliverable Products

The Final Products comprise:

- Fully processed and unified 1km grid of TMI
- Fully processed line profile TMI data over the Continental Margin study area
- Individual grid datasets
- ArcGIS Survey Atlas: containing meta data descriptions of all surveys used or referenced in the compilation
- Public domain onshore compilation datasets
- Technical Report

APPENDIX 1

Example from the Caribbean region

Figure A1 shows the gridded magnetic data in the Eastern Caribbean from two different public domain compilations. Ship track noise is clearly apparent. Figure A2 shows the result of our re-processing of the line profile data, to create new grids and images of the magnetic field that have eliminated the track noise and various bulls-eye anomalies seen in figure A1. Also clear in fig A2 are the oceanic transforms, the N-S magnetic stripes and coherent signal from geological sources.

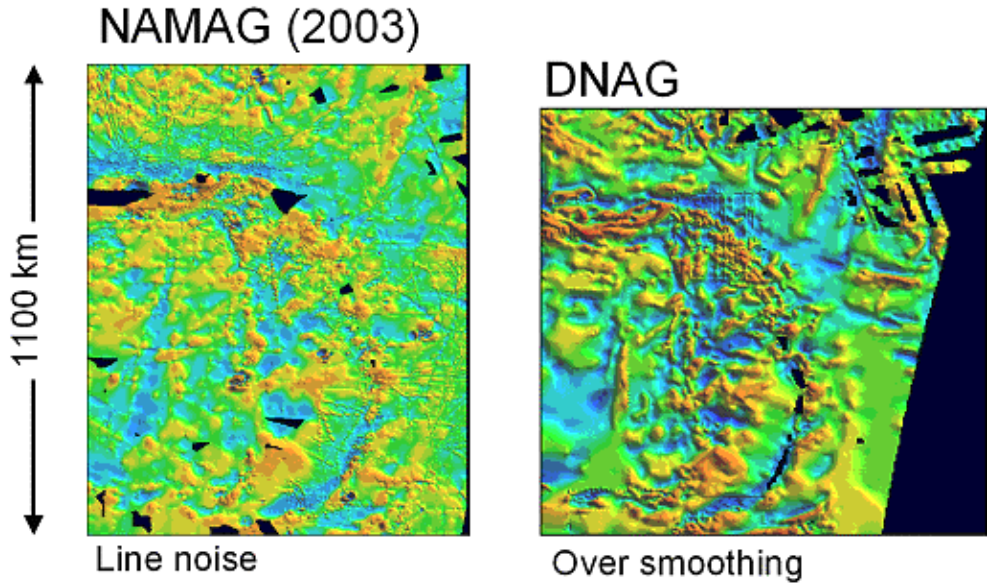

Figure A1- Public –domain 'un-levelled' datasets

Re-processed Line Data **Final Grid Data**

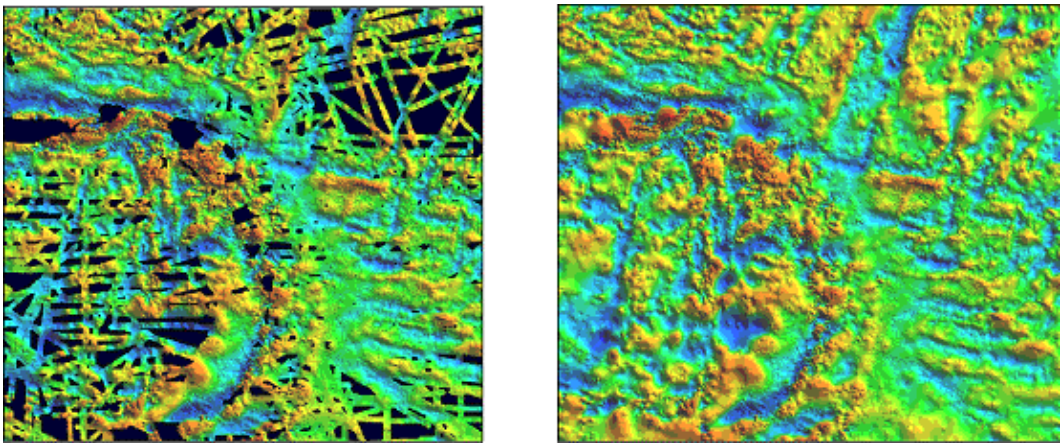

Figure A2 – Re-processed data from the GCMMS study