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## Global Multi-Resolution Topography (GMRT) Synthesis – Tools and Workflows for Processing, Integrating and Accessing Multibeam Sonar Data

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The Global Multi-Resolution Topography (GMRT) Synthesis is a multi-resolution Digital Elevation Model (DEM) developed at the Lamont-Doherty Earth Observatory of Columbia University. The data synthesis is maintained in three projections and is managed with a scalable global architecture and tiling scheme. Primary content assembled into GMRT includes a curated multibeam bathymetry component that is derived from processed swath files and is gridded at ~100m resolution or better. These data are seamlessly assembled with other publicly available gridded data sets, including bathymetry and topography data at a variety of resolutions. GMRT delivers the best resolution data that have been curated for a particular area of interest, and allows users to extract custom grids, images, points and profiles.

Most data processing and curation effort for GMRT is focused on cleaning and reviewing ship-based multibeam sonar data to facilitate gridding at their full spatial resolution. In addition to performing standard data cleaning and applying necessary corrections to data, GMRT tools are used to review and assess swath data in the context of the existing data synthesis. This approach ensures that data are fit for purpose and will integrate well with existing content, and is especially well-suited for ensuring the quality of data acquired during transits. GMRT tools and workflows used for data cleaning and assessment have recently been adapted for distributed use to enable the broader community to leverage this approach, streamlining the data pipeline and ensuring high quality processed swath data can be delivered to public archives. This presentation will include a summary of GMRT tools, opportunities, and lessons learned.