MAGMAP Filtering

Oasis montaj Extension developed by Geosoft

The montaj™ MAGMAP Filtering extension provides a 2D FFT filter library to allow the application of common Fourier domain filters to gridded data in Oasis montaj. MAGMAP rapidly processes and enhances gridded datasets by applying a wide range of robust geophysical and mathematical filters. The extension lets you define your own filters, modify the filter specific parameters and apply any number of filters together in a single operation. An Interactive Spectral filter builder provides an interactive method to modify the filter parameters and to instantly see the effect of the filter on the radially averaged power spectrum.

2D FFT Filter Library

MAGMAP provides a library of 2D FFT Filters for gridded data, including:

Potential Field Filters

- Reduction of magnetic data to the magnetic pole or equator,
- First/second/nth vertical derivatives, including fractional derivatives,
- Upward/downward continuations to any horizontal surface,
- Apparent magnetic susceptibility maps from magnetic field,
- Apparent density maps from residual gravity field,
- Optimum Weiner depth filter,
- Conversion between different directional components of the field.

Use MAGMAP Filtering to:

- Process and enhance gridded datasets by applying a wide range of two dimensional Fast Fourier Domain filters (FFT filters),
- Apply multiple filters together (and in any order). For instance, you can run any combination of geophysical filters, and/or mathematical filters,
- Modify selected filter parameters, using the Interactive Spectral Filter Builder, and instantly see the effect of the filter on the radially averaged power spectrum,
- Define and apply custom filters,
- Control the filtering process by applying either fast (one-step) or expanded (multi-step) filtering,
- Interpret grids using spectral analysis products (2D and radially averaged power spectra)models or other sources.
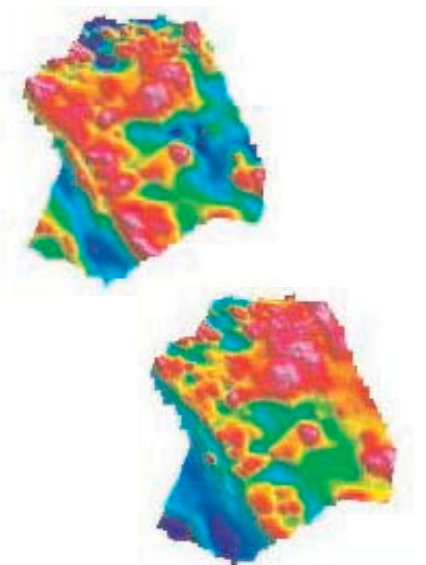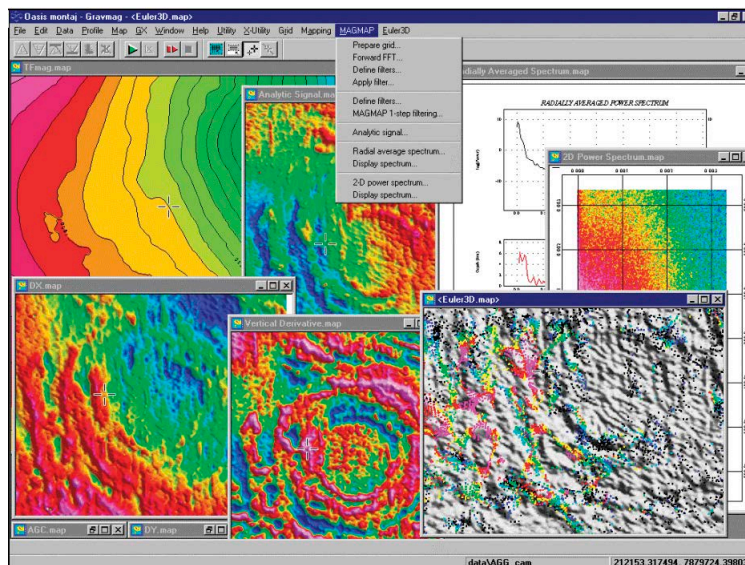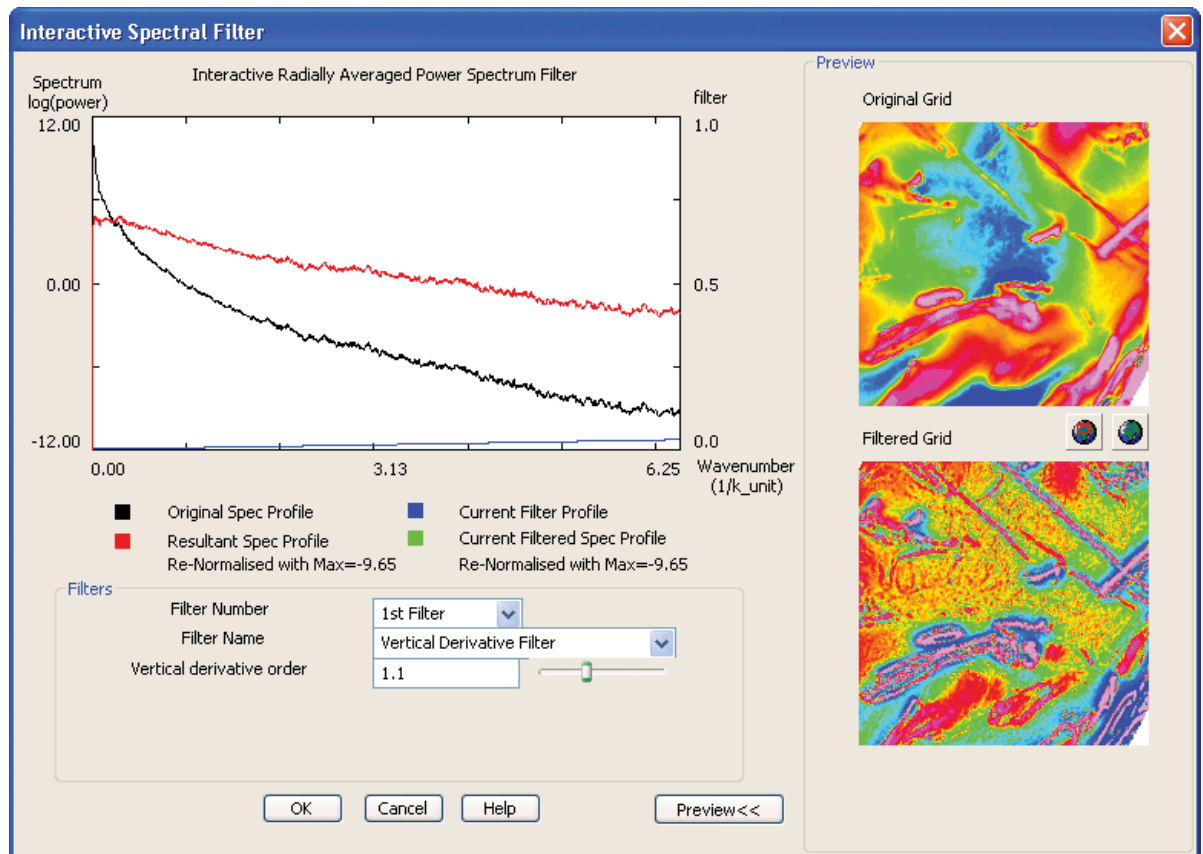
General Purpose Filters

- Six different regional/residual separation filters,
- De-corrugation and directional filters,
- First/second/nth horizontal derivatives.

Spectral Filter Builder

An Interactive Spectral Filter Builder enables users to interactively modify selected filter parameters to obtain the best results for their data and instantly see the effect of the filter on the radially averaged power spectrum.

Interactive spectrum filtering can be used when working with the following filters; Bandpass, Butterworth, Cosine Roll-off, Gaussian Regional/Residual, Upward Continuation, Downward Continuation, Vertical Derivative and Vertical Integration filters.

The initial power spectrum, the final power spectrum, the filter coefficients due to the currently selected filter and the filter coefficients of the combined filter are displayed, and are continuously updated as the varied, either using slider controls or specifying numeric values directly.

Fractional Derivatives

MAGMAP includes support for fractional horizontal derivatives for the 2D FFT. The user can produce fractional differentials of grids.

Key Functionality

- 2D FFT Filters for processing and enhancing gridded data,
- Spectral Filter Builder to interactively modify selected filter parameters,
- Support for fractional horizontal derivatives for the 2D FFT.

*The montaj MAGMAP Filtering extension requires Geosoft's Oasis montaj.

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