

Synthetic Imagery



Rationale:

This creates what a sidescan sonar system should see if run over the given bathymetry. It uses a navigation line or points to orientate the theoretical acoustic response from the seafloor. It assumes that all the standard processing techniques for removing systematic characteristics have been applied – such as beam pattern and TVG. If the navigation point file has altitude values these can be used to show the theoretical returns and can be compared with actual sidescan imagery.

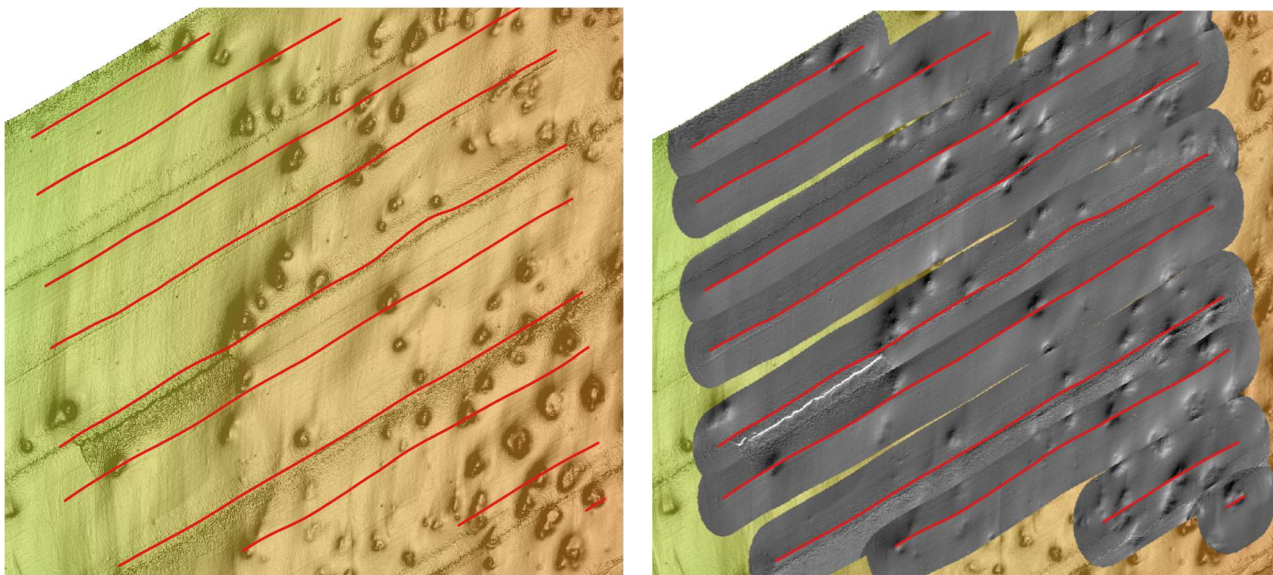
Usage:

There are four parameters required for this tool:

- A bathymetry grid file. Depths can be positive or negative but must be in metres. This will produce the synthetic sidescan imagery where data exists.
- A trackline for prediction (or comparison). This can be a line or series of points. If it is a series of points the depth of the AUV can be in a field to be selected (as it is likely to be previously collected variable?).
- There are 3 ways to describe the possible ways the synthetic imagery can be created. This describes the effective depth of the sidescan transducers.
 1. A variable depth of the vehicle (already known)
 2. A predicted constant altitude of the vehicle above the seafloor
 3. A constant depth value of the vehicle below the sea surface (hull mounted or underwater vehicle).
- A range parameter in metres. This is the maximum slant range distance that the imagery is seeing.

Output is a raster file and has default filename of “_synthetic_” plus the range.

Example:



High resolution AUV bathymetry and red tracklines - Synthetic Sidescan Imagery