



Feature Detection (Test Version)

By Mike Kalmbach

This is the first try at feature detection in MBMAX64 (the 64-bit HYSWEEP® EDITOR). It's a start! After loading files to Stage 2, select TOOLS-FEATURE DETECTION in the menu.

Some options when starting out:

- **Use MBMAX64 Filters:** The idea here is to use MBMAX64 Search and Filter to locate features. This is not implemented yet.
- **Height Above Bottom:** Minimum height above bottom for detection.
- **Border:** You may load a BRD file to limit detections to inside or outside a border. This avoids multiple detections on quay walls, etc.

FIGURE 1. Feature Detection Options

Feature Detection (Test Version) - FeatureDetect.CSV

Filter

Use MBMAX64 Filters

Height Above Bottom: 1.00

Border: D:\MB-SS Projects\R2Sonic Newcastle Pier\mike west.brd

Search Inside Search Outside

Save / Next

Feature Information

Object ID: 3

Survey Depth: 1.14

Survey Date: 20120204

Longitude: -70.7109250

Least Depth Acquired: Y

Latitude: 43.0717450

Comment:

```
1,"OBSTRUCTION",0.53,"Y",20120204,43.0717528,-70.7109240,""  
2,"OBSTRUCTION",0.74,"Y",20120204,43.0717805,-70.7108593,""
```

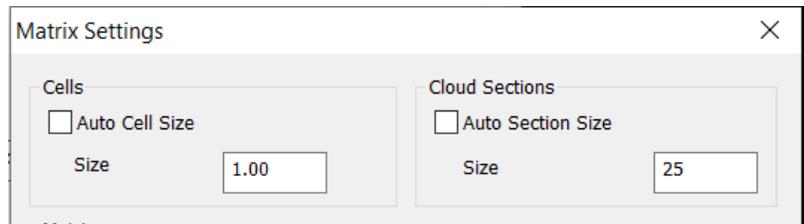
Tool	Function
	Begins the feature search. Click this first!
	Saves what was detected.
	Continues the feature search.
	Simply combines  and  .

SETUP

It's important to start out with clean, calibrated multibeam data. That's the only way this can work.

Cell Size for statistics is entered in the Read Parameters, Matrix. Likewise, Cloud Section size for the preview.

FIGURE 2. Set Sizes for Matrix Cell and Cloud Sections in the Read Parameters



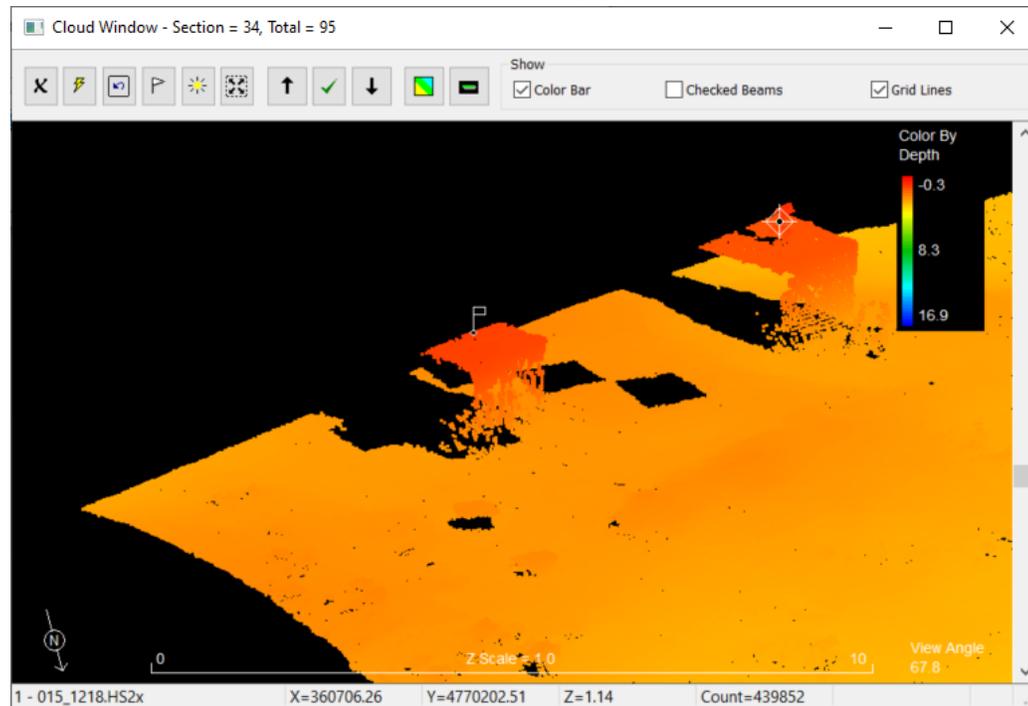
HOW IT WORKS

On detection the cloud window pops up with the cursor at the detection point. It's useful to look closer (zoom, rotate) to determine if it's a real object and if so, to find the minimum depth point. Feature information (depth, date and position) is automatically updated as cloud points are clicked.

Now you have a choice, save or skip. If you chose to save—meaning you've determined this is a noteworthy feature and the minimum depth point has been selected— enter the type and optional comment then save. If you choose to skip, click next to keep searching.

Something subtle happens when you click next; all visible points in the cloud (except those saved) are flagged as 'non-feature'. This avoids annoying multiple hits on the same feature, but if it turns out there are multiple features in the visible cloud, you need to save them separately.

FIGURE 3. Save Multiple Objects in One Cloud Section Individually



SAVING

Feature information is as shown and also saved to a CSV (Comma Separated Value) file that is suitable for submission to eHydro. There is one file per project; FeatureDetection.CSV. That may change in the future.



Saved features may also be exported to the HYPACK® target database.

DETECTION METHOD

Feature detection is strictly statistical. Making the assumption that cell maximum is the bottom point, the routine compares cell vertical range to your Height Above Bottom. If the range is greater, we consider a potential feature. Nothing fancier than that at first, and it might take a lot of work to improve upon it.

Graphically, cells showing up in red are the candidates for feature detection.

FIGURE 4. Feature Detection Candidates

