New in This Version:

Partial Acoustic Source Validation

The user-feedback section of an Acoustic Source validatior is in place. If an analysis point is placed that contains a mode whose transmission loss radials fall outside the boundary of the currently extracted environmental data, two things happen.

1. The analysis point settings dialog box shows each invalid mode in red text, with a tooltip explaining each reason for invalidation.:
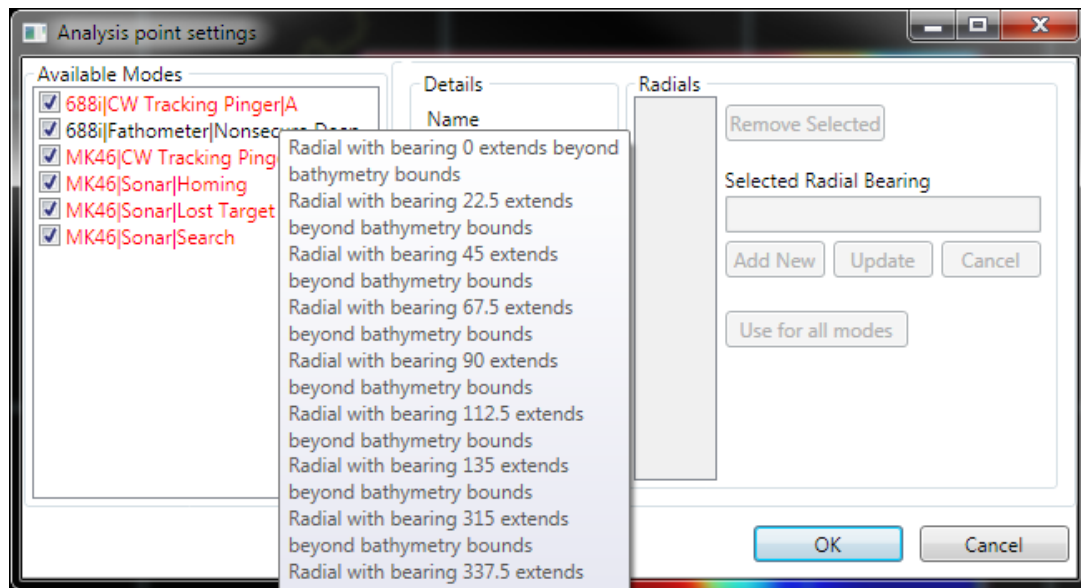
2. The map list display for that analysis point turns red. Hovering the mouse over the invalid analysis point label displays a tooltip that contains a list of all problems with that analysis point that need to be fixed:
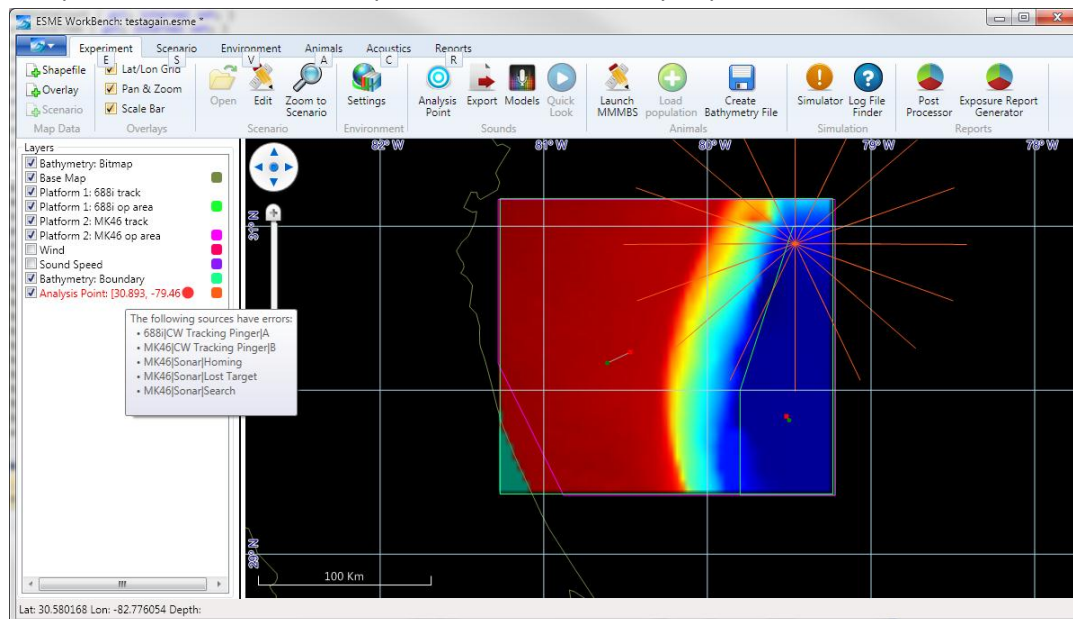
At present, the user is not prevented from proceeding further in the experiment. Enforced validation will be supported imminently.

Earth Model Changes

ESME now internally uses the earth model from OpenMap. Elements of the core classes Geo, GeoPath, GeoPoint, BoundingCircle, GeoRegion, GeoSegment, GeoExtent, Intersection, Length, Planet and Rotation were ported from the OpenMap java source.

Additionally, NAEMO's TrackPoint and Limits classes were partially ported to C#. Further NAEMO and OpenMap ports may follow, particularly NAEMO's SimArea and possibly other NAEMO classes relating to scenarios are under consideration.

The net result of this is that ESME and NAEMO now should be using the same earth model, and our lat/lon and distance calculations should now be close to identical.

Bugs Fixed

15 bugs were closed on the bugzilla bug tracker in this release period. Notable bugs include:

- Bug 83: Display artifacts. This issue was resolved by removing a race condition found on map refresh when loading analysis points that caused display ghosting.
- Bug 84: NUWC tool inclusion. The user is now responsible only for configuration of a NUWC tool directory, which allows new versions of NUWC tools to be accessed more robustly.
- Bug 89: App logging crashes. Application crashes are now properly logged to the user's Documents folder.
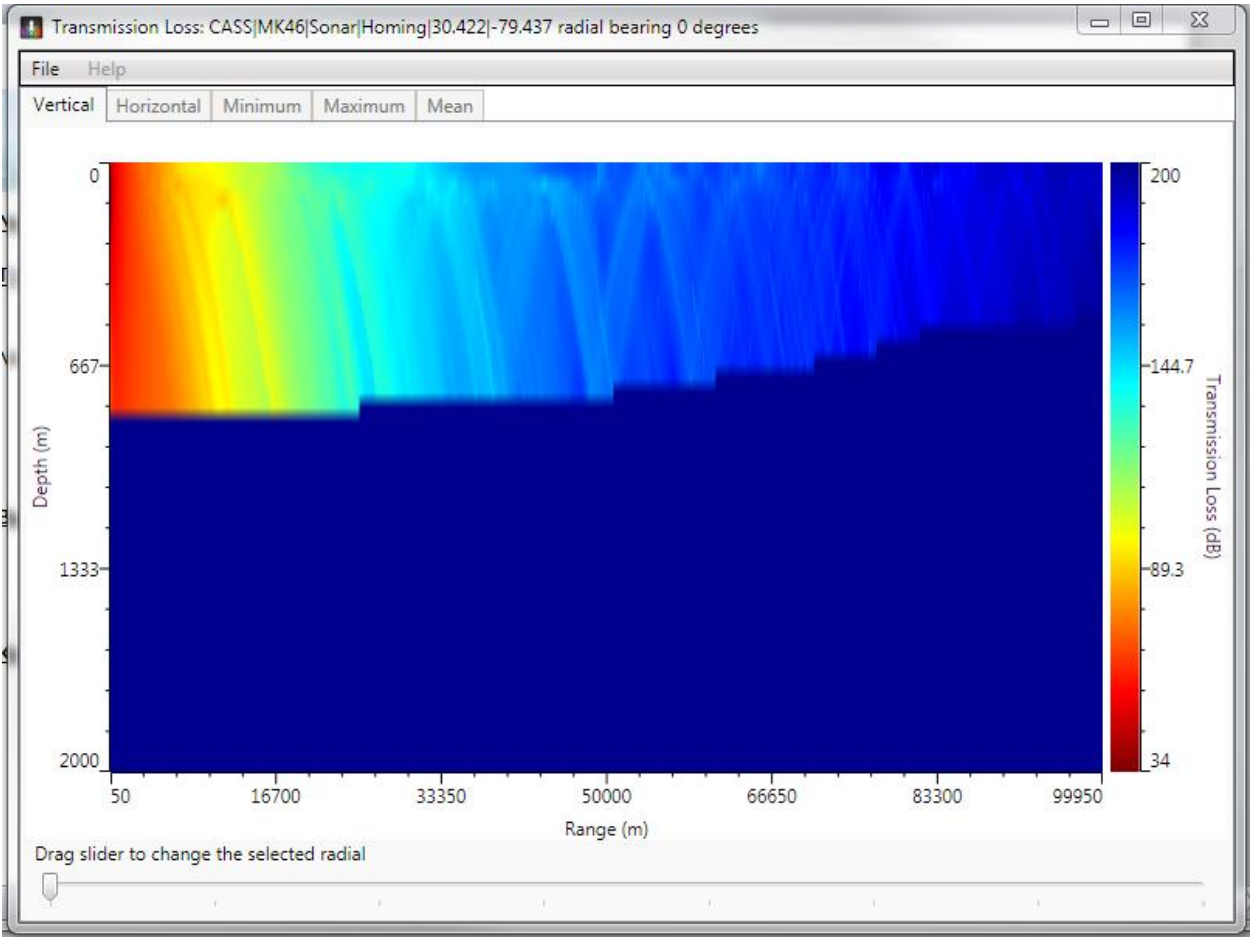
Known Bugs

Transmission Loss Viewer

The ability to visualize and export CASS transmission loss output in ESME Workbench is now present. The Start Menu program group containing ESME Workbench now also contains Transmission Loss Viewer:


All valid CASS output can now be visualized, saved as PNG, JPG, or BMP, or exported as CSV.

Tight Integration of NUWC Scenario Builder

The Edit scenario button now launches the currently-open .nemo file. Changes to the scenario (number of platforms, scenario duration, etc.) are immediately reflected in the Workbench map .

RAM Settings dialog

RAM settings can now be configured in the Options menu:
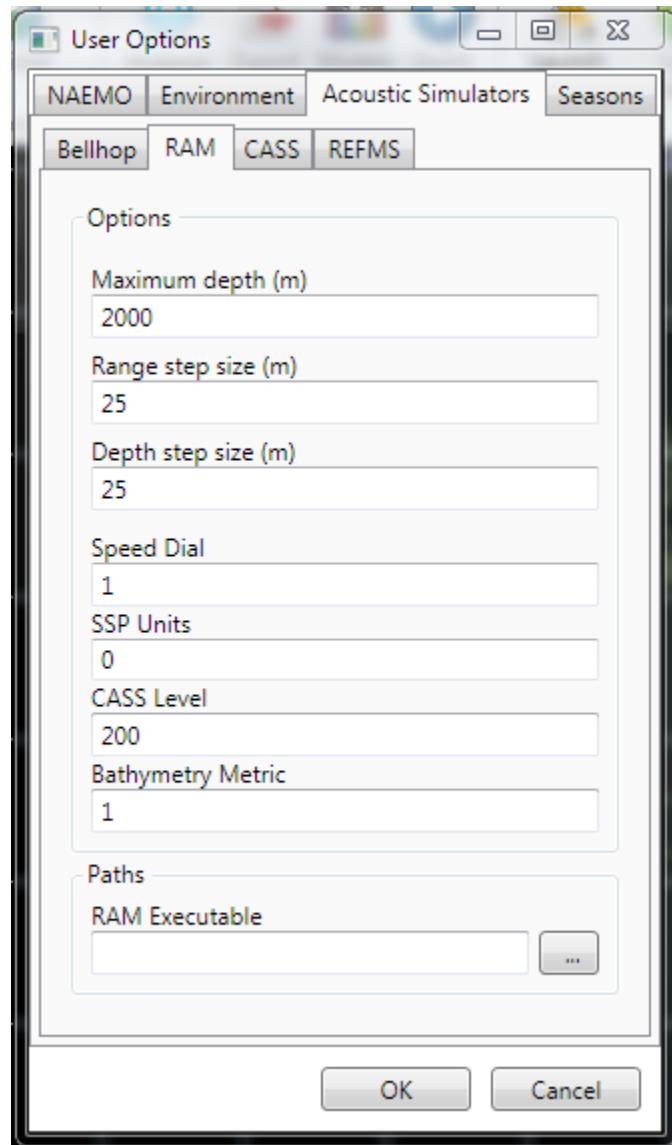

Bug Reporting Aids

The ESME Workbench "Info" menu item, in the main dropdown menu, now includes detailed version information useful for debugging:
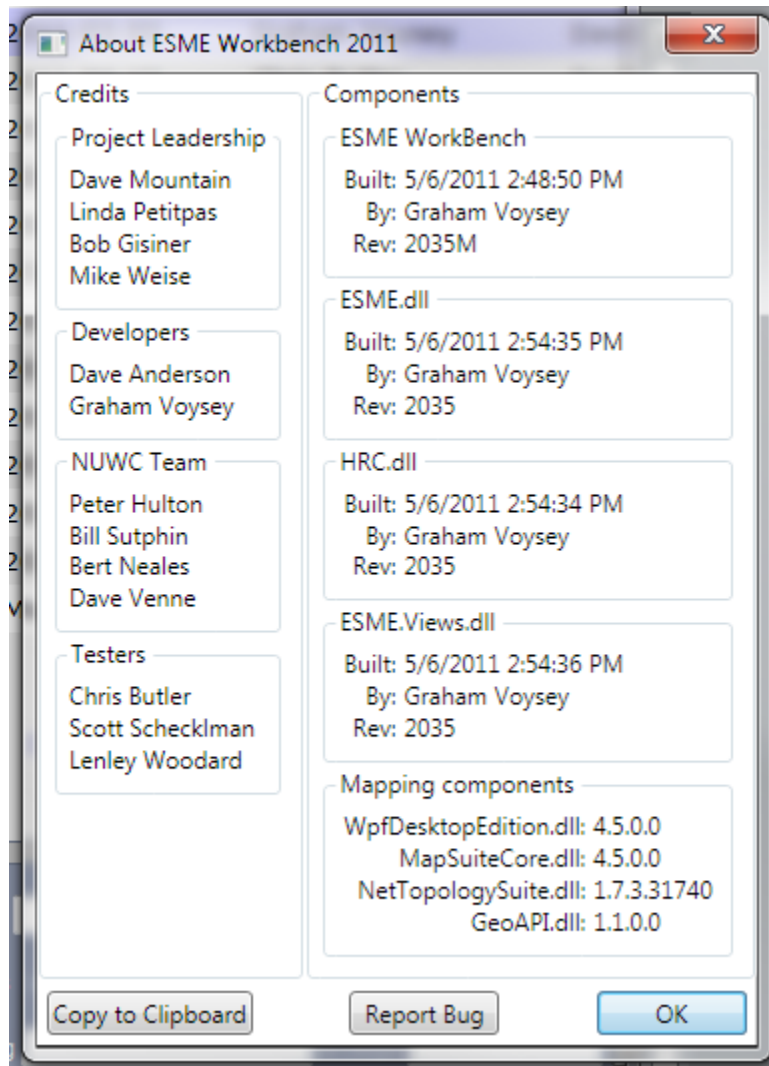
Selecting "Copy to Clipboard" will copy a preformatted version of relevant information to the clipboard. Selecting "Report Bug" will open the ESME Workbench Bugzilla webpage in the user's default web browser. The copied text, which summarizes the build version of each major Workbench component, should be included in the main text field of each filed bug; this will greatly speed localization of errors.
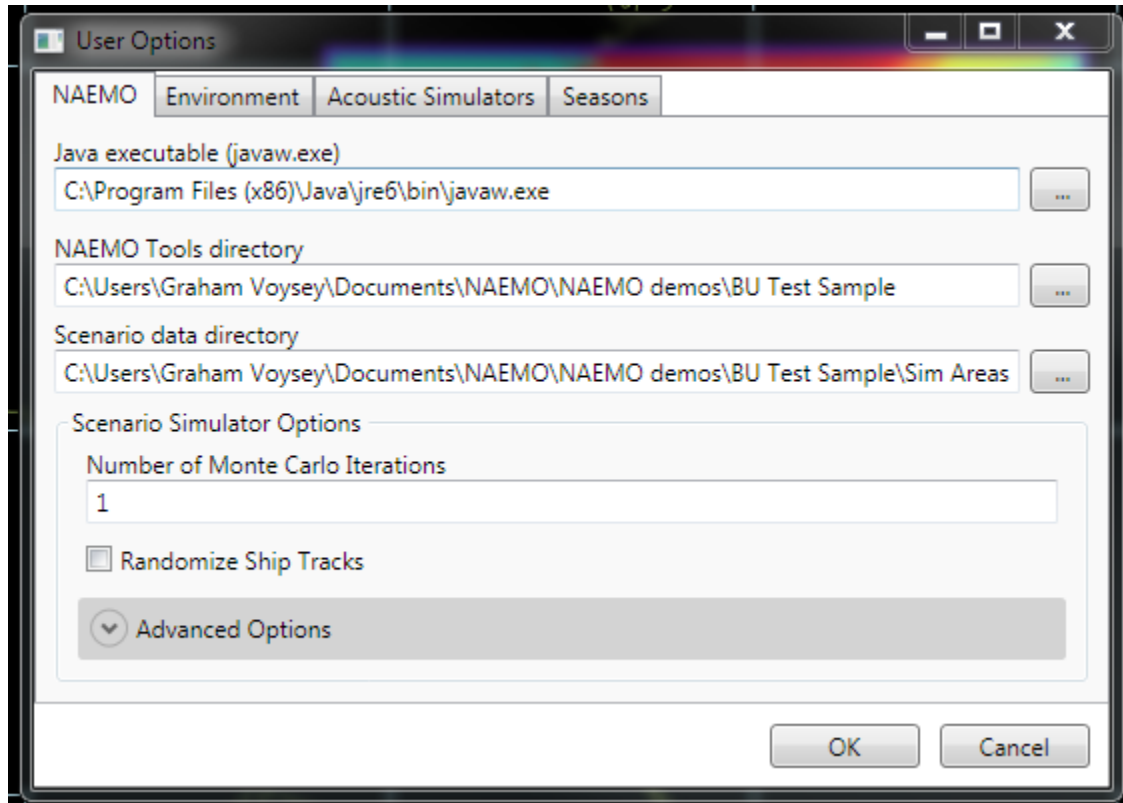
Environmental Data Export Dialog

The Export dialog has changed to reflect a tighter integration with time period specifications.
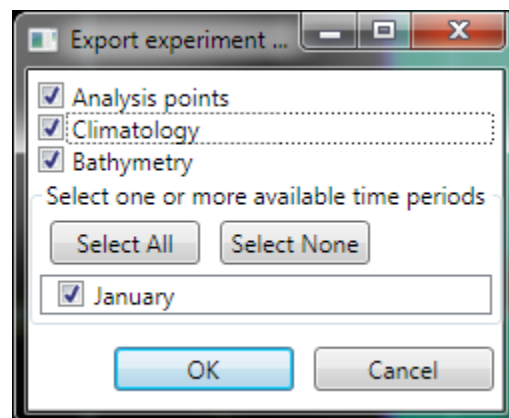
NUWC Tool Configuration

The method by which the user specifies the location of the NUWC tools (Scenario Builder, Simulator, etc.) is now directory-based:

If the required .jar files are not found within the specified directory, the buttons that launch them from Workbench will be disabled until the .jars are present.

Bugs Fixed:

- *Bathymetry extraction discrepancies are now understood and resolved.*
- *Analysis Point button now stays engaged until an analysis point is placed (Bug 86)*
- *CASS Range and Depth increments will now never exceed maximum count for CASS or RAM. (Bug 87)*
- *Should the workbench crash, a dump file will be created in the My Documents folder (Bug 89)*
- *All map layers are now assigned bright, cheery colors. (Bug 91)*
- *Environmental buffers are now specified in integer meters (Bug 96)*
- *Map control tools now persist appropriately (Bug 97)*
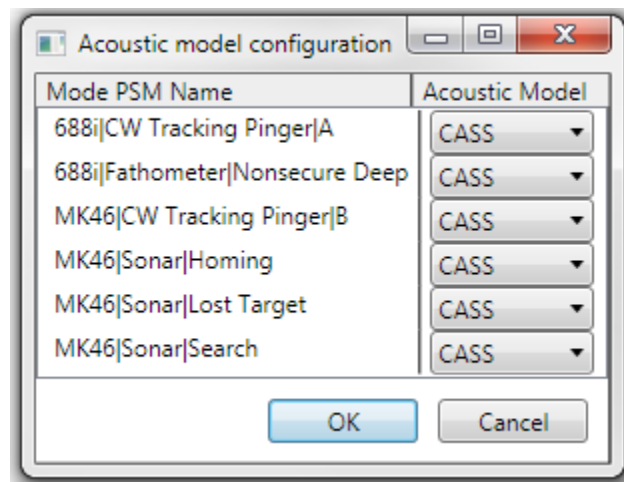
Known Bugs:

- *It is still possible to create phantom analysis point displays on the map by rapidly switching between two valid experiments. This is an issue with the map control itself. (Bug 83).*

Previous Release Notes

22 APR 2011

Environmental Data Export Management:

Exporting acoustic and environmental data is now managed through a consolidated user control. When the Export button on the Map Control is pressed, a dialog box appears that allows fine-grained control of exported data.
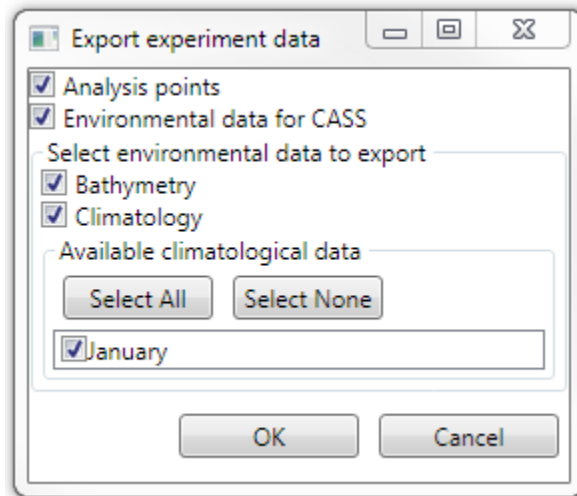
Mode-Specific Transmission Loss Calculator Selection

The user can now select, on a per-mode basis, the transmission loss calculator to be used when calculating that mode's analysis point. Clicking on the Models button on the Ribbon Control launches the following dialog box:

Bugs Fixed:

- *Scenario Simulator Options have been reconfigured to properly reflect command line option effects.*
- *Further refinement of CASS input file generation methods.*

Known Bugs:

The default configuration location for the scenario simulator may function improperly. Ensure that the configured location is the jar file in the same file structure as the nemo file.

08 APR 2011:

Advanced Simulator Settings

The NUWC scenario simulator now prompts the user for advanced and default options before each run.

Scenario Simulator Options
Number of Monte Carlo Iterations
3
☐ Randomize Ship Tracks

⌃ Advanced Options

Java Configuration File
[   ] [...]

Cutoff Value (dB SPL)
0
Log Output Level
0
Number of Parallel Simulations
0
Largest Species File Size (bytes)
0
Largest CASS File Size (bytes)
0
☑ Cache all animats into memory?
☑ Clip animats outside footprint?
☐ Compute optimum output file buffer size?
    Output file buffer size (Mb)
    0

[Run]   [Cancel]

If advanced options are not set or left as 0, they are not specified in the launching options.

Bugs fixed:

- *Batch files for nonexistent CASS runs are no longer created accidentally*
- *DBDB extracted data file format changed; CASS now receives raw OAML output as it should.*
- *CASS input files are now more properly specified and populated.*
- *Map display issue on rendering scale bars fixed*

Known Bugs:

- *On a clean install of ESME Workbench 2011 onto a machine that has never been used before, it is <u>necessary</u> to fully populate the user options dialog with valid options before attempting to load a scenario file or perform any other major action.   In future releases, this will be made explicitly mandatory though a "first-run" configuration wizard.*

25 MAR 2011:

3MB Integration

3MB is included with ESME Workbench 2011 and used for seeding, populating, and distributing animats. This release implements minimal functionality.

Installer updates

The installer now provides a direct download link to OAML data sources, as well as redistributing all necessary extraction and NUWC tools.

Bugs fixed:

- *CASS output now complies with LAND/SAND redesignations.*
- *"Save Experiment As" instabilities fixed.*
- *Bathymetric Extraction now defaults to a 0-m buffer.*
- *CASS output correctly reflects Analysis Point mode settings.*
- *CASS input files no longer include Eigenray references.*

Known Bugs:

- *On a clean install of ESME Workbench 2011 onto a machine that has never been used before, it is <u>necessary</u> to fully populate the user options dialog with valid options before attempting to load a scenario file or perform any other major action.   In future releases, this will be made explicitly mandatory though a "first-run" configuration wizard.*

21 MAR 2011:

NUWC Scenario Simulator Integration

Support for the NUWC Scenario Simulator, with a properly configured data directory structure, is now present.

Given a properly configured NUWC directory structure as in this example:

Jacksonville	Monday, 07 March 2011 19:01	File folder	
lib	Monday, 07 March 2011 18:59	File folder	
logs	Monday, 07 March 2011 19:01	File folder	
msmt	Monday, 07 March 2011 18:59	File folder	
Sim Areas	Monday, 07 March 2011 18:59	File folder	
post-processor.jar	Wednesday, 01 December 2010 16:28	Executable Jar File	200 KB
scenario-builder.jar	Wednesday, 01 December 2010 16:28	Executable Jar File	377 KB
scene-sim.jar	Wednesday, 02 February 2011 11:03	Executable Jar File	155 KB

The steps to run a full scenario are as follows:

1. *Launch ESME Workbench and configure the NAEMO Options Dialog:*
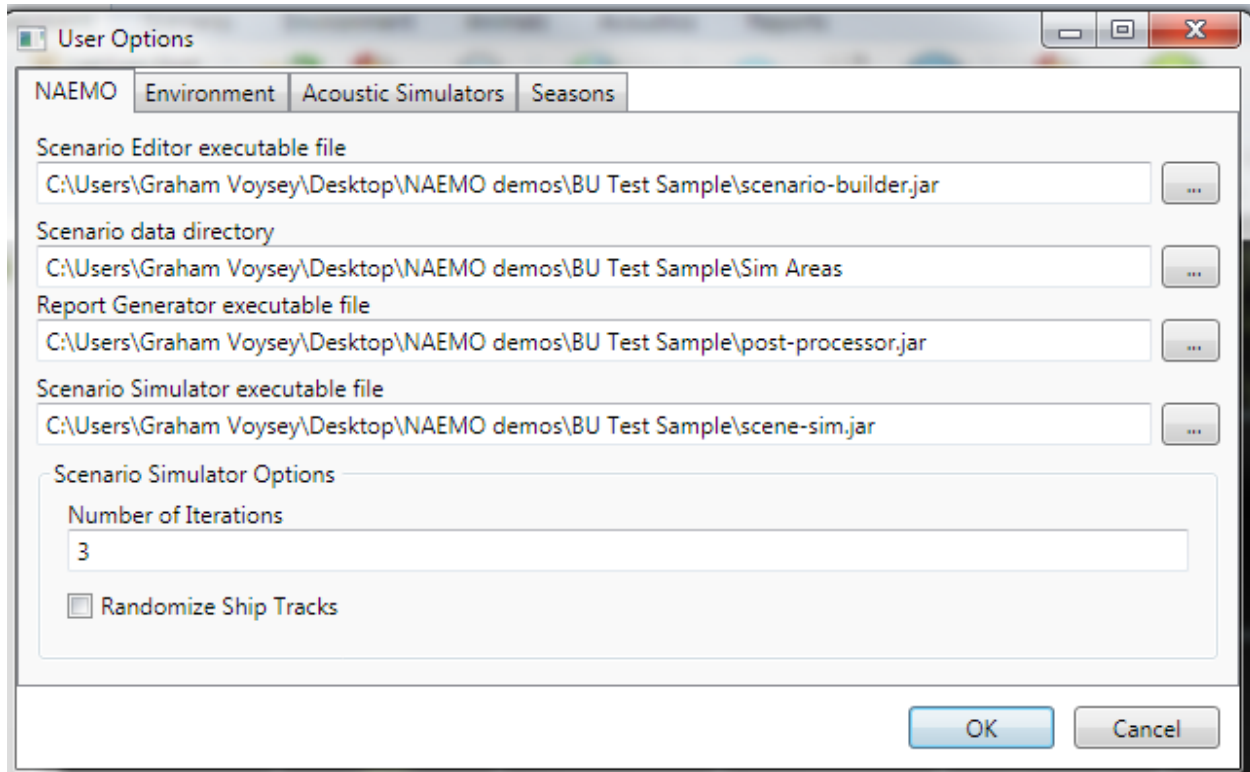
   a. *The Scenario Editor file should point to scenario-builder.jar*
   b. *The Data Directory is the Sim Areas directory*
   c. *The Report Generator and Scenario Simulator executables are set as well.*
2. *Open a preexisting .nemo file, or create one using the scenario builder, and locate it in Jacksonville/*.nemo. At the time of this writing, Animat positions are set within the NUWC Scenario Builder.*

3. *Open this .nemo file in ESME Workbench 2011.*
4. *Extract relevant environmental data inside ESME Workbench in the usual manner.*
5. *Populate Analysis Points as desired.*
6. *Click the Export button in the Sound subgroup to export CASS run files.*
7. *(complete a CASS run that populates the correct subdirectories with computed transmission losses)*
8. *Click Simulate in ESME Workbench. A dialog will launch allowing the number of iterations and randomization state to be changed from their default values for the given simulation.*
9. *Click OK.*
10. *The Scenario Simulator will launch in the system tray and queue the correct number of simulations*
11. *When complete, launch the Report Generator from the ESME Workbench.*

Bugs fixed:

- *Multiple scenarios cannot be simultaneously loaded.*

Known Bugs:

- *On a clean install of ESME Workbench 2011 onto a machine that has never been used before, it is <u>necessary</u> to fully populate the user options dialog with valid options before attempting to load a scenario file or perform any other major action.   In future releases, this will be made explicitly mandatory though a "first-run" configuration wizard.*

<u>08 MAR 2011:</u>

Acoustic Builder Support

Analysis Points: *Analysis point placement is now governed by a new UI, the Analysis Point Settings dialog.   In the context of ESME Workbench, an Analysis Point is a collection of user-selectable unique sound sources at a given location.*

Each unique Mode has individually customized settings. Radial directions and number can be modified per-mode, and if a particular configuration should be used for all modes, it can easily be applied uniformly.

Once the Analysis Point is placed by clicking OK on the Analysis Point Settings dialog, a map icon appears with vectors for each radial:
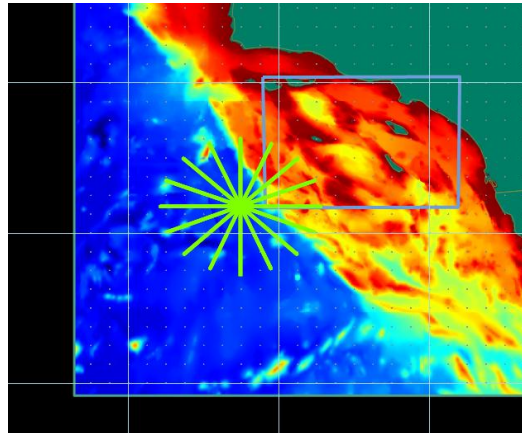
A new layer appears in the layer list on the map display for each unique Analysis Point. Right clicking on the color indicator in the layer allows the line width and color to be changed, and right clicking on the analysis point name allows the already-placed analysis point to be edited. Changes – for example, deleting a number of radials – are updated in real time on the map. Here, 1/3 of the radials have been removed:
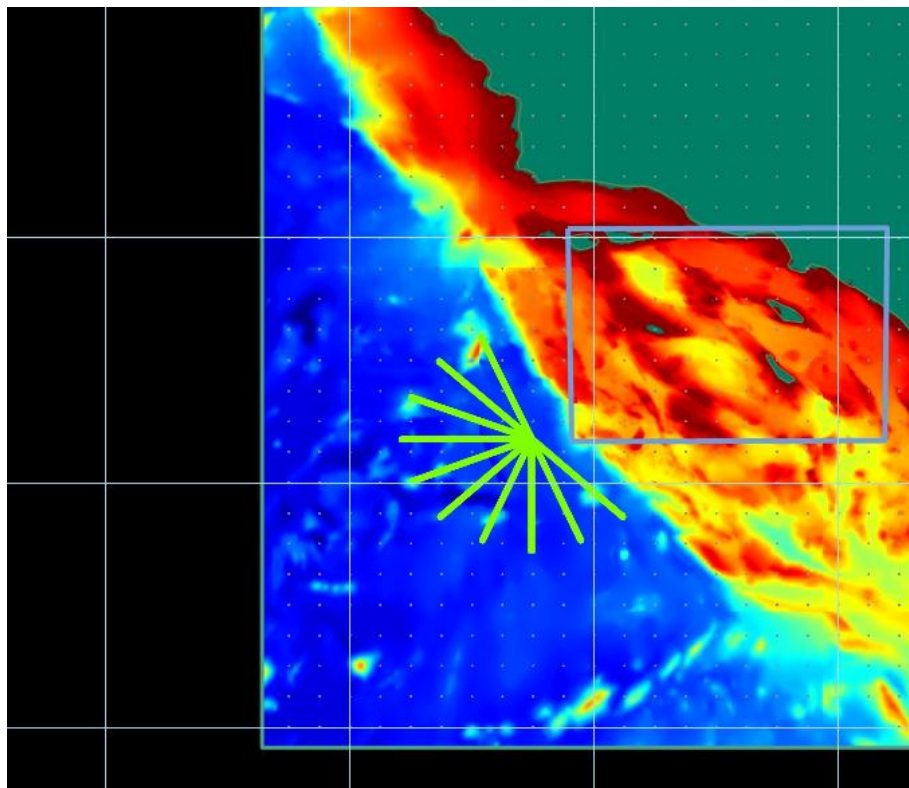
CASSomatic output:

CASSomatic friendly acoustic outputs (INF files) are generated when the Export button on the main ribbon control is pressed. They are placed in the expected locations, along with extracted Environmental .dat files.

Bugs fixed:

- *Recent Experiments now cleaned up.*
- *A new release of the Ribbon Control, which should greatly reduce or eliminate a transient error where parts of the UI appeared black until the mouse was swept over them.*

Known Bugs:

- *It is possible to load two .nemo files simultaneously. This will cause a great deal of environmental database confusion, and will be disabled in a future release.*

08 FEB 2011:

NUWC Environment Builder Support

*Environmental data for a given Simulation Area is now extractable directly from available OAML databases:*

- *Bottom Sediment Type Database (BST)*
- *Digital Bathymetric Database – Variable Resolution (DBDB)*
- *Generalized Digital Environmental Model – Variable Resolution (GDEM-V)*
- *Surface Marine Gridded Climatology Database (SMGC)*

Where available, the database-native extraction tools are used by ESME Workbench.

Several additional configuration options are now available in the ESME Main Options dialog for configuration of OAML Database and Extraction Tool locations.
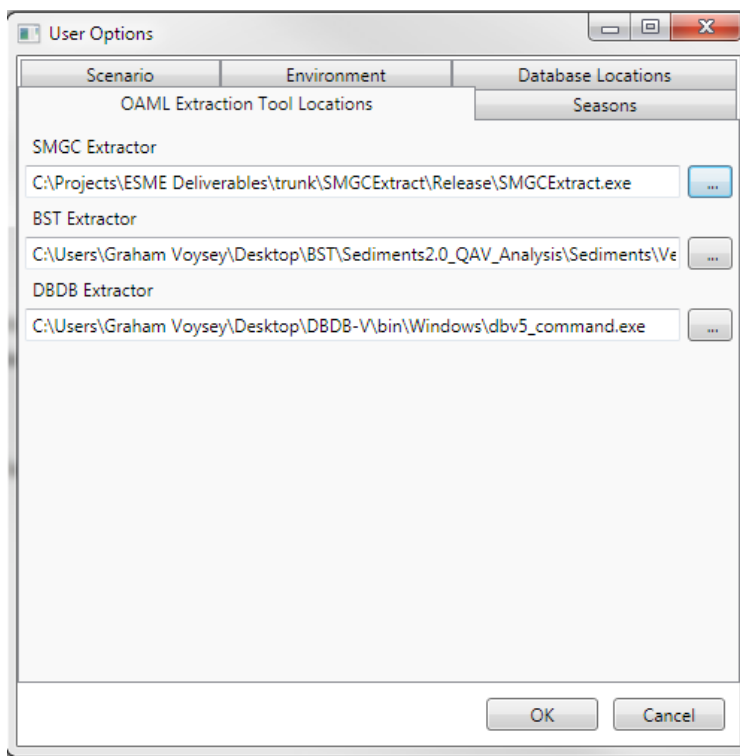
When OAML sources are to be used, the Environment Settings button on the main ribbon control allows the user to select appropriate database resolutions and time periods for extraction:
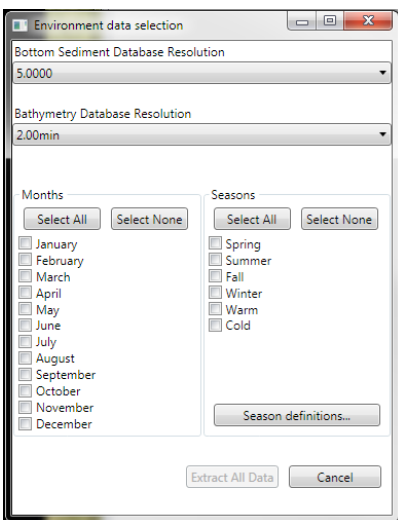
Extracted data is stored for off-line validation and verification in the Experiment Data directory in native format (BST, DBDB: CHRTR Binary; SMGC: ASCII; GDEM-V: XML)

On successful extraction, map layers corresponding to each data type extracted are loaded into the main display, and can be reordered, recolored, and otherwise manipulated like any other map layer.
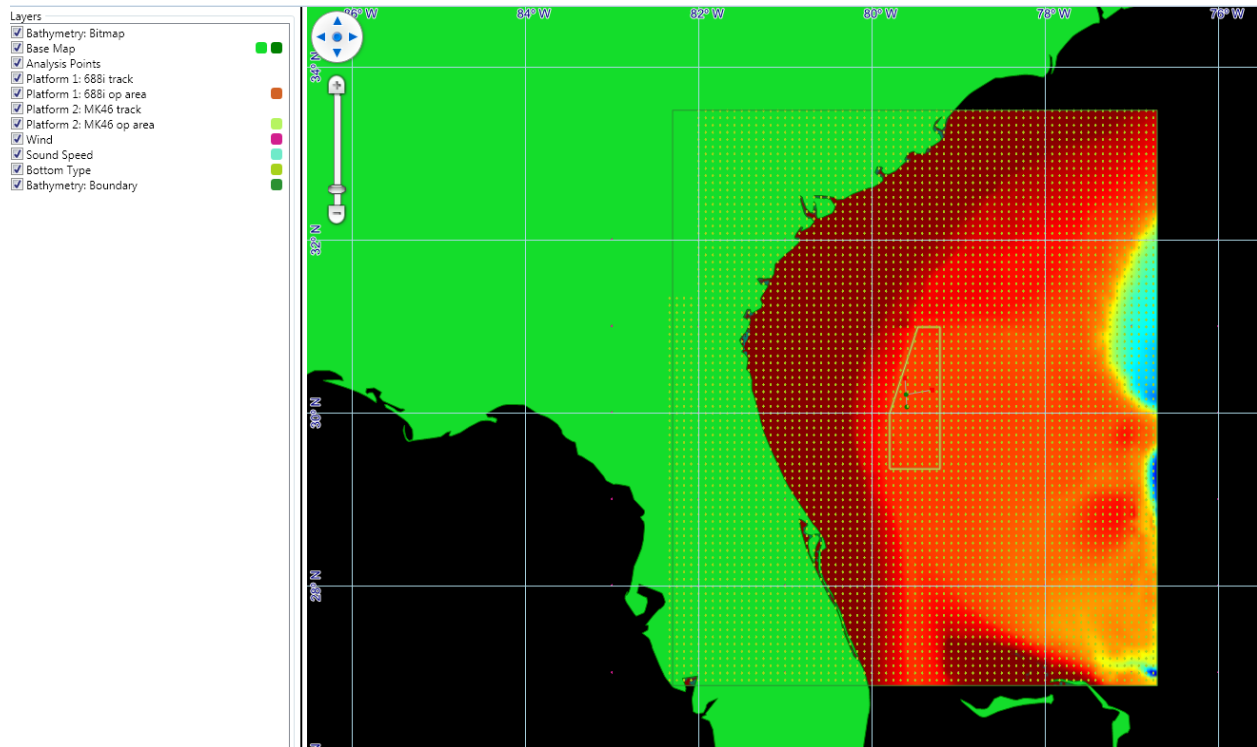

CASSomatic output:

Currently, CASSomatic-friendly versions of the environment data (of the form 'env_timeperiod.dat') are generated and placed in the appropriate subdirectory of the directory specified as the Scenario Data Directory in the main options dialog.   This will become fully user-configurable by the next release.

Additional Features:

- *Bathymetric bitmap map layer support.*
- *Recent Experiments are now listed in the main ribbon dropdown menu*
- *Save As: the user can now save a current experiment with a new filename with preservation of all data.*

Bugs fixed:

- *Fixed inversion of CSV Transmission Loss output*
- *Fixed transmission loss color-bar display*

Known Bugs:

- *Reordering the Analysis Point layer will cause ESME to crash.*

29 NOV 2010:

Full Simulation Support

When a simulation area has been defined and specified to have an operational area containing sound sources, environmental data, animal populations, and acoustic analysis points, the exposure of each static animal to all relevant PSM can be computed and output to CSV.

Animat Location Files:

Animat Location Files (.sce) now populate animats only in the geographical area specified by the ESME Scenario File (*.nemo), and are bounded by a Bathymetry Boundary layer.*
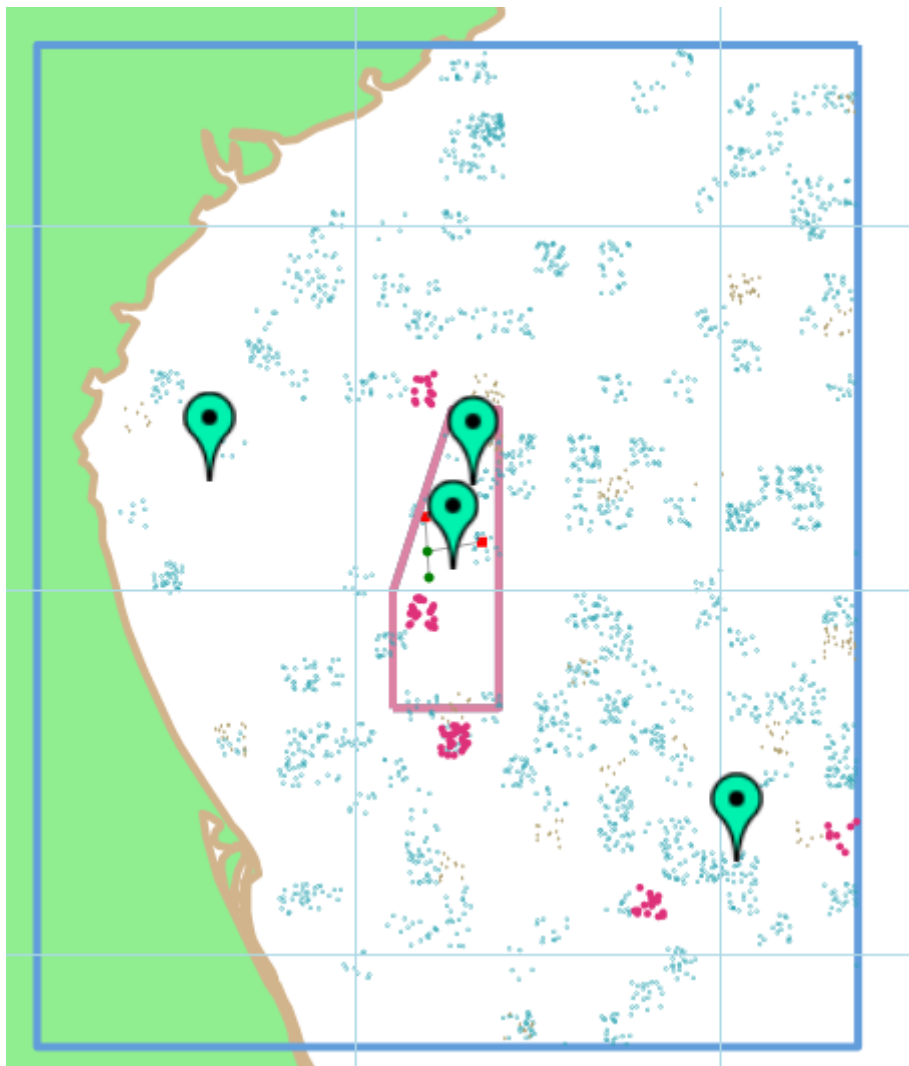
Animats distributed within a Bathymetry Boundary

Transmission Loss View:

Analysis Points now have a more informative transmission loss viewer, in which the acoustic parameters of all modes are visible for each transmission loss field. Additionally, the bottom profile and bathymetric data are overlaid on each transmission loss field.
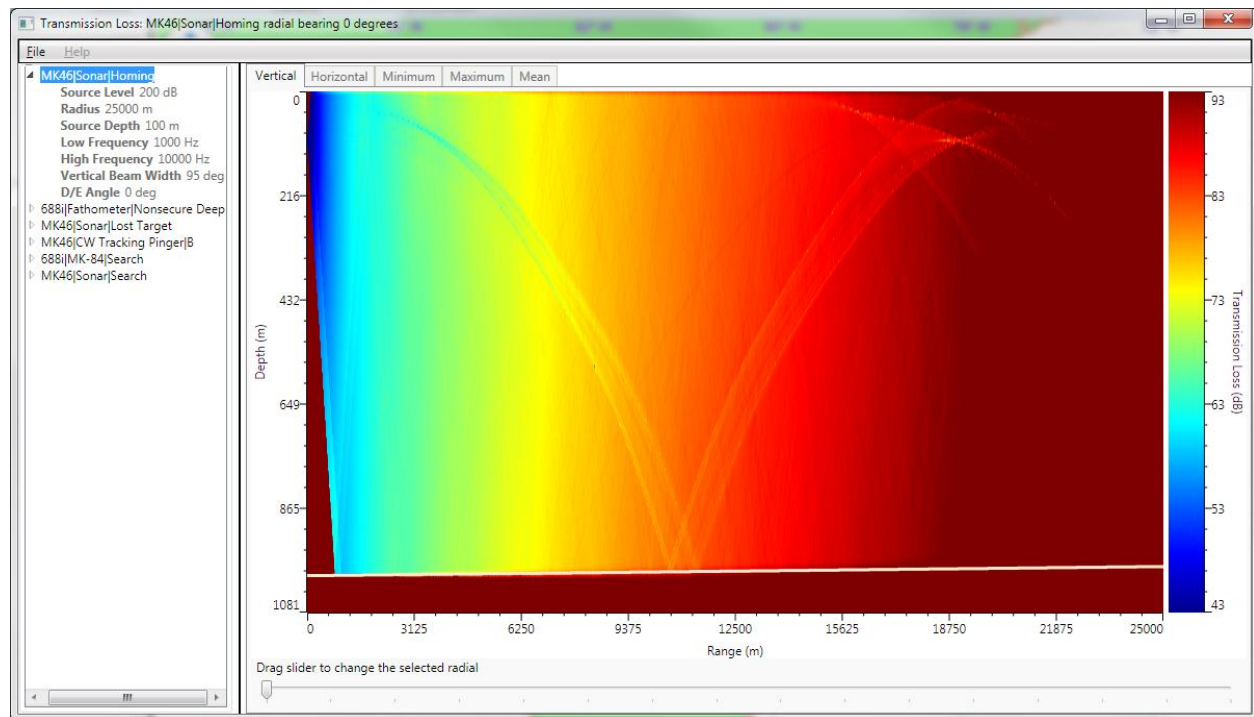

User Interface

Numerous small changes in icons and menu layout for a more consistent look and feel were made.   User convenience features, such as a "Zoom to Scenario" capability, and a list of Recent Experiments, were added. The list of map layers now include two colorized icons that represent the current color of each layer and allow it to be changed through context menus.
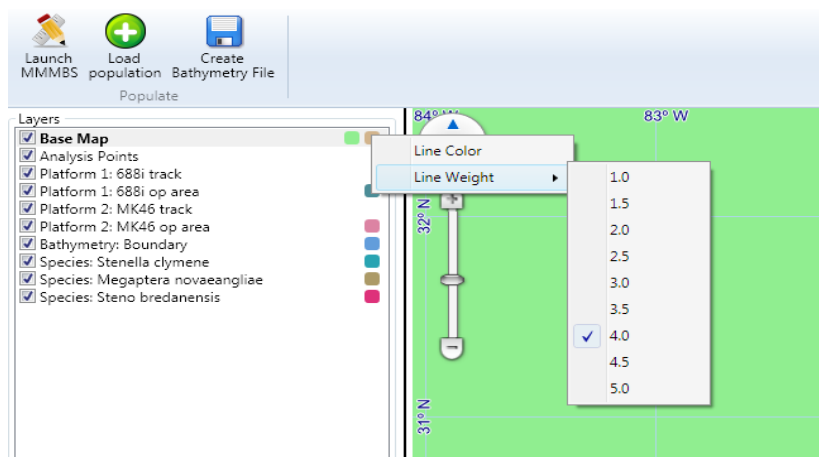
Context menus allow the Line and Area colors to be changed. For Animat layers, the Symbol size, shape, and color can be modified.

Acoustic Simulators

In addition to Bellhop, users can select RAM for use as an Acoustic Simulator. All Simulators have default options that can be changed through the Acoustic Model Parameters Options dialog.
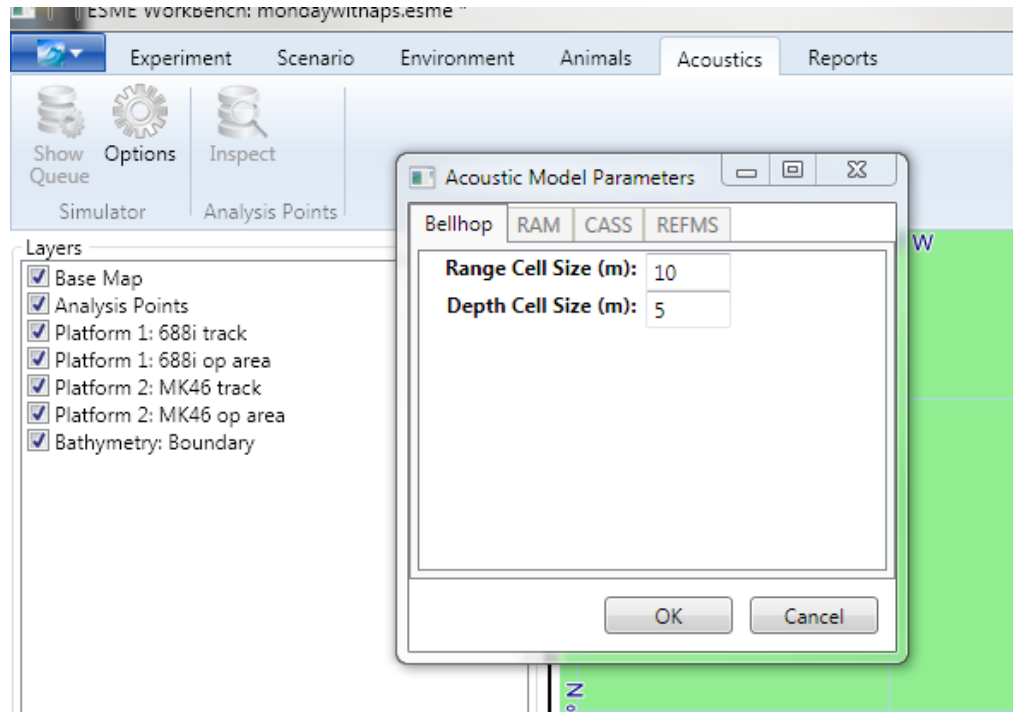
The Options dialog for the Acoustic Simulators is located on the Acoustics Tab.

User Documentation

A User Guide, more thorough than these Release Notes and including step-by-step instructions for common operations, is now included with every release and is accessible in the Start Menu program group after ESME Workbench 2010 has been installed.

Bugs fixed:

- *Plentiful stability and error-checking fixes.*
- *Fixed intermittent display refresh errors with transmission loss fields.*

Known Bugs:

- *Reordering the Analysis Point layer will cause ESME to crash.*

29 OCT 2010:

Full Simulation Support

    When a simulation area has been defined and specified to have an operational area containing sound sources, environmental data, animal populations, and acoustic analysis points, the exposure of each static animal to all relevant PSM can be computed and output to CSV.

Animat Location Files:

    Animat Location Files (*.sce) contain animat populations seeded according to Business Rule specifications for probabilistic distribution of individuals. These files are generated by MMMBS, and can be loaded into ESME Workbench on the Animals ribbon tab. Once loaded, each species' population is loaded onto the display as a separate layer:
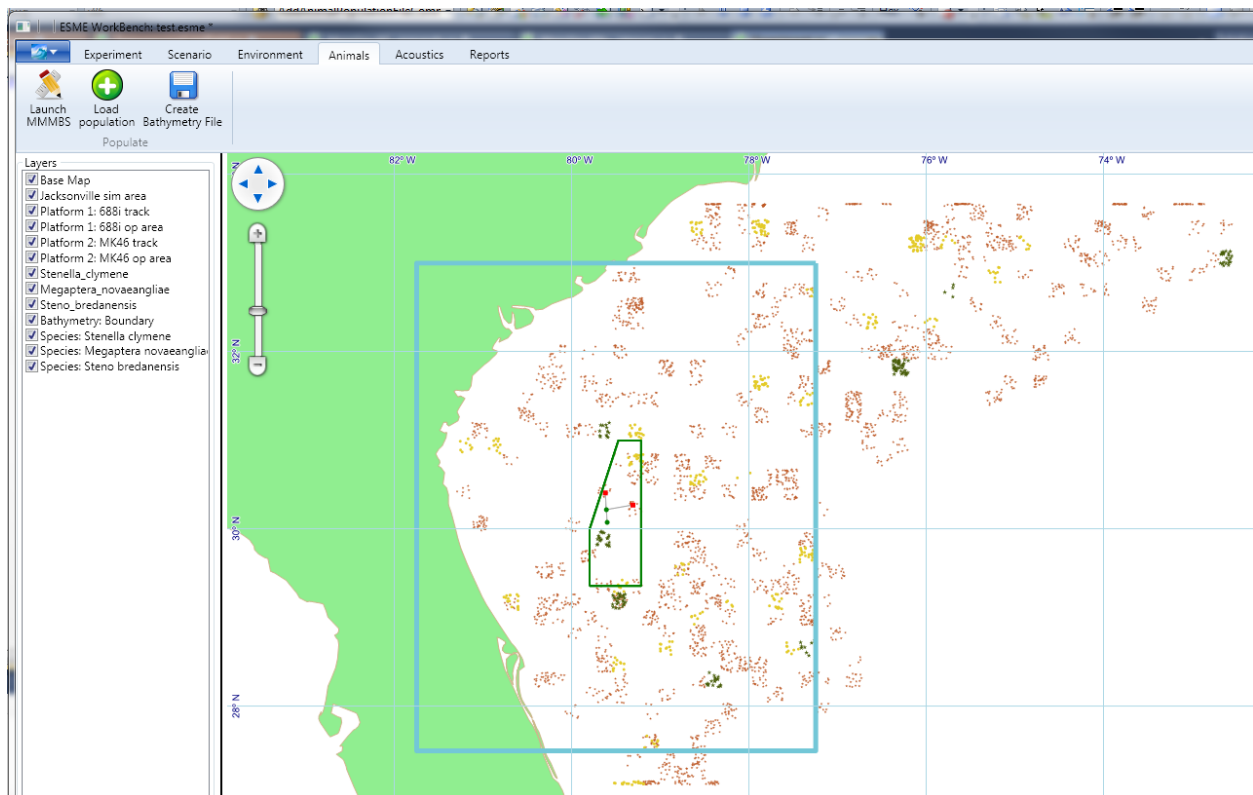
An ESME file named test.esme that contains the Scenario File JAX Small.nemo and animats from three atlantic species.

Quick Look Capability:

> *Quick Look is now more full featured and calculates transmission losses for all platforms, sources, and modes (PSM) that are operationally relevant and present. Calculations are displayed in a tree view for each unique PSM:*

The Progress Bar display for current quick look calculations

User Interface

Numerous small changes in icons and menu layout for a more consistent look and feel were made.

Bugs fixed:

- Multiple stability and error-checking fixes.

Known Bugs:

- Transmission Loss Fields are currently not viewable by the user after a Quick Look or Analysis Point has finished computing.

*- Map artifacts on zoom persist occasionally.*

08 OCT 2010:

Scenario File Support:

> *Scenario files (*.nemo) are now loadable. Further, they are required to be present before running a Quick Look is possible. In contrast to Iteration 2, presence of bathymetric and other data is implicitly known through the scenario file, rather than having to be explicitly specified by the user.*

Experiment Files:

> *Experiment files (*.esme) can now be saved and opened, so that experiments can be resumed at a later date. File associations are performed at installation such that double-clicking on a previously saved .esme file will open ESME Workbench and load that experiment.*
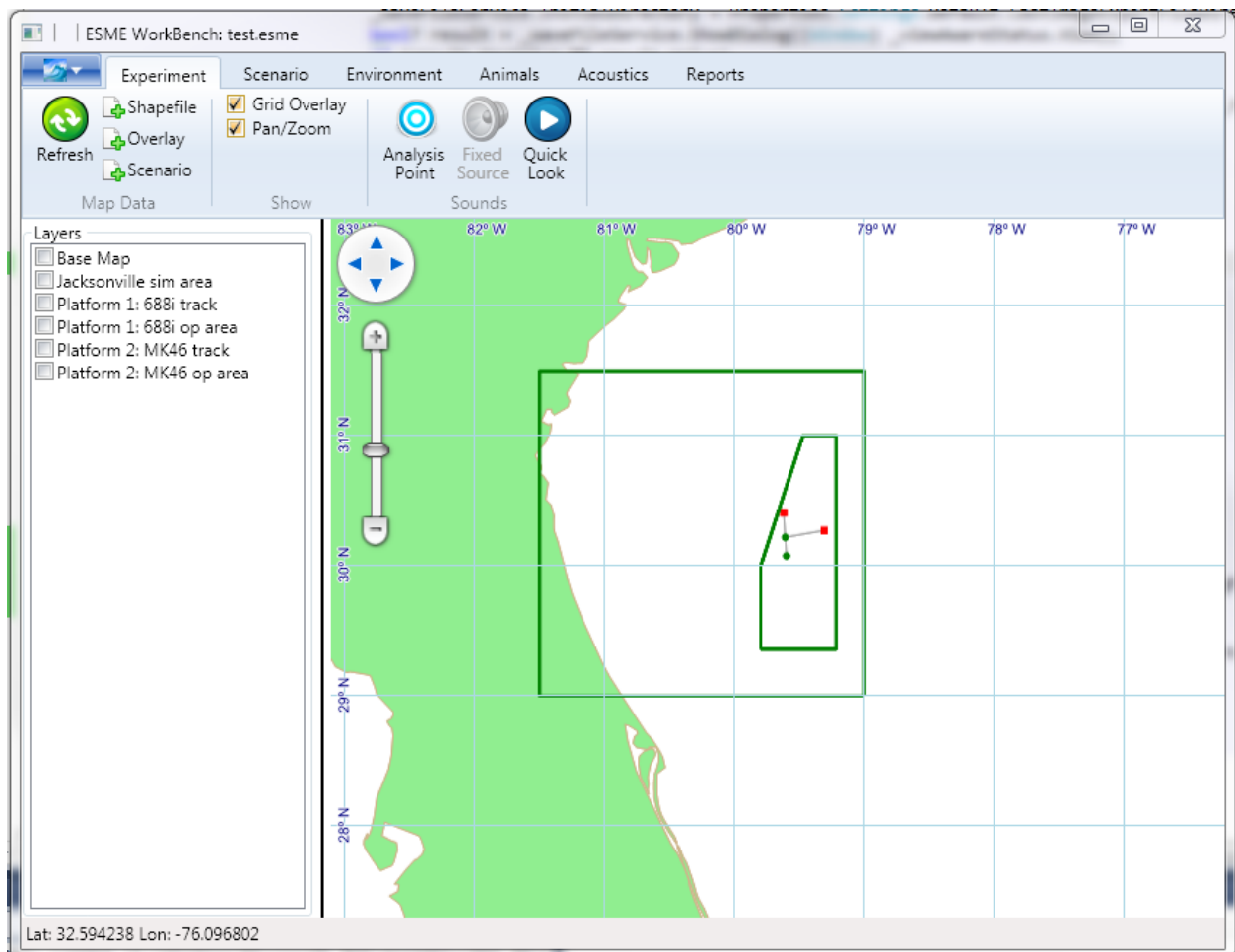

An ESME file named test.esme that contains the Scenario File JAX Small.nemo.
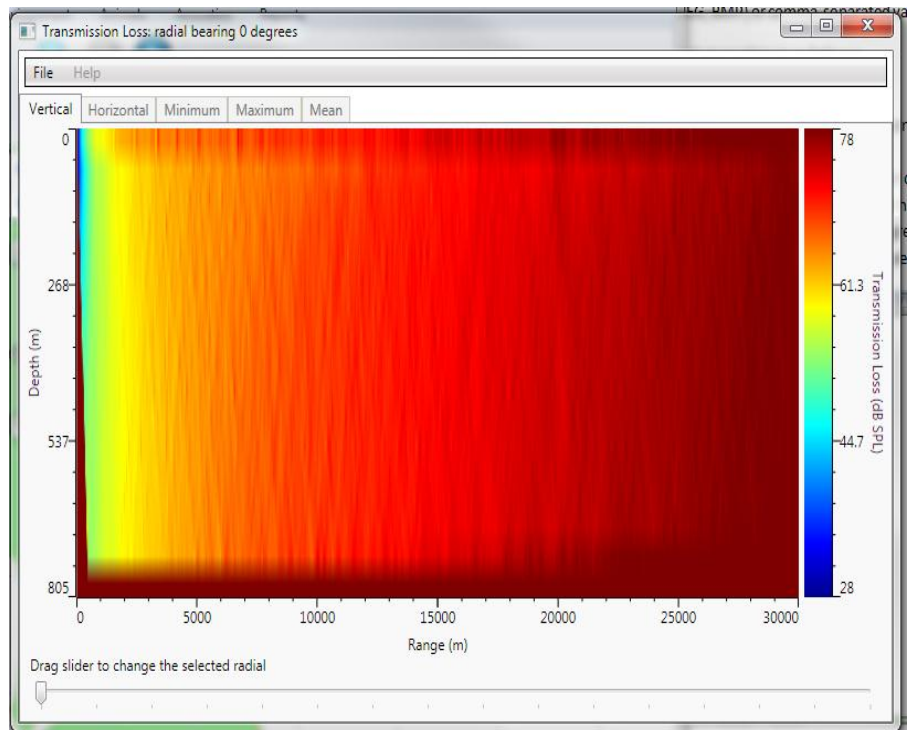
Quick Look Capability:

> *Quick Look now has a more full-featured Transmission Loss Field viewer. Vertical fields can be viewed for all radials with a dynamically adjustable color bar, and the field data can be exported to one of three image formats (PNG, JPEG, BMP) or comma-separated value files (CSV).*
>
> *Quick Look invocation is as follows:*
>
>> - *Load a scenario file*
>> - *Select the Environment ribbon control, and click on Settings to verify that the extracted data is correct. Press OK.*
>> - *Select the Experiment ribbon control, and run a Quick Look by clicking the Quick Look button, and then clicking anywhere within the simulation area.*
>> - *A dialog will display the progress of the radial calculator, and will close and launch the transmission loss field viewer when complete.*
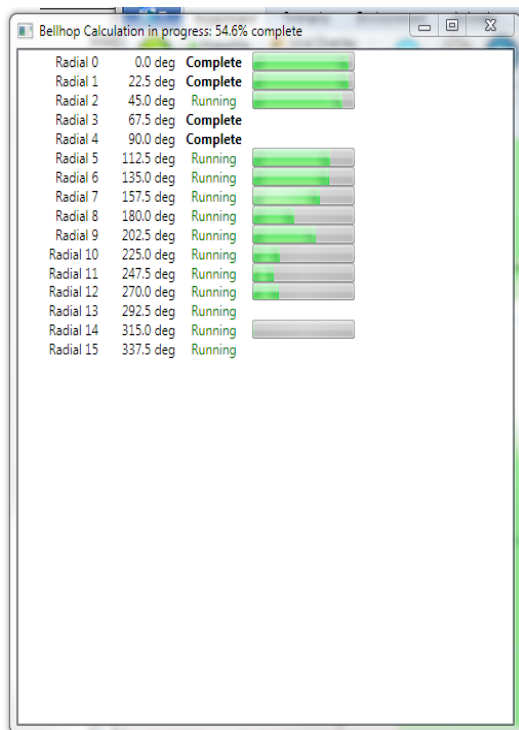
The Progress Bar display for current quick look calculations

The Transmission Loss Viewer displaying a vertical field.

Bugs fixed:

- Multiple stability and error-checking fixes.

- Quick Looks cannot be run in areas for which there is no bathymetric data (eg, outside the sim area).

Known Bugs:

- The layer side panel incorrectly reports the checkbox status of individual layers.

- The recent experiments view in Workbench Options is not populated with recent experiments.

-   Very many (25+) layers open for prolonged periods may cause text to display on the map control; "The projection is not open…", which is a known issue with the Map Control.

20 SEP 2010:

User Configuration Options:

Default directories and paths to the Environment Builder and associated files can now be set in the File tab on the ESME Workbench Ribbon Control.

Environment File Parsing:

Environment (*.eeb) files can now be read, and are required to be loaded before a Quick Look can be performed.

Quick Look Capability (rudimentary):

Once an Environment File has been loaded, the Quick Look button on the Experiment Tab can be used to perform a quick look within a Simulation Area for which bathymetry data is known.

When the Quick Look button is pressed, the mouse cursor changes to a crosshair to indicate that ESME Workbench is now in Quick Look Mode. Left-clicking within a loaded Simulation Area will cause a transmission loss field to be calculated for latitude and longitude at the point which is clicked, and a contextual pop-up detailing the parameters that are being used will display. During the time when the transmission loss field calculator (Bellhop) is running, the cursor changes to a spinning wait icon.

The resulting transmission loss fields are displayed as heat maps in a pop-up after the simulation is complete.

Quick Look mode can be exited by pressing the Esc key.

Scenario Builder and Environment Builder:

The Builders can be launched once its location is specified via the User Configuration Options.

Ribbon Control

The Ribbon Control is now more populated with representative option icons for features required in upcoming iterations.

Installer

A more detailed installation package is now included, including a step-by-step installation wizard and uninstaller.

Layer Selectivity and Reordering:

Shape layers are now displayed in a tree-view on the left hand side of the main map display. Their display order can be changed with the arrow buttons at the bottom of the tree display, and their visibility states can be toggled via a checkbox.

Bugs fixed:

- The Latitude and Longitudes of the cursor are now displayed on the bottom of the map.

- Complex shape files (eg, a shape file containing coastal outlines of all of Hawaii) now load faster.

Known Bugs:

- The installer prompts for an installation directory, which defaults to c:\ Depending on UI interaction choices of non-default path, it may or may not display some formatting error messages. Regardless of the directory selected in this point in the wizard, ESME Workbench 2010 is installed into C:\Program Files\ESME Workbench\.

- The installer's "click here to view README.TXT" button is currently inoperable.

- If a NEMO file fails to load because it contains inconsistent data, the resulting ESME Workbench error file is unclear.

- ESME Workbench will crash if the user attempts to edit or modify Scenario and Environment files if the User Configuration Options are improperly set.