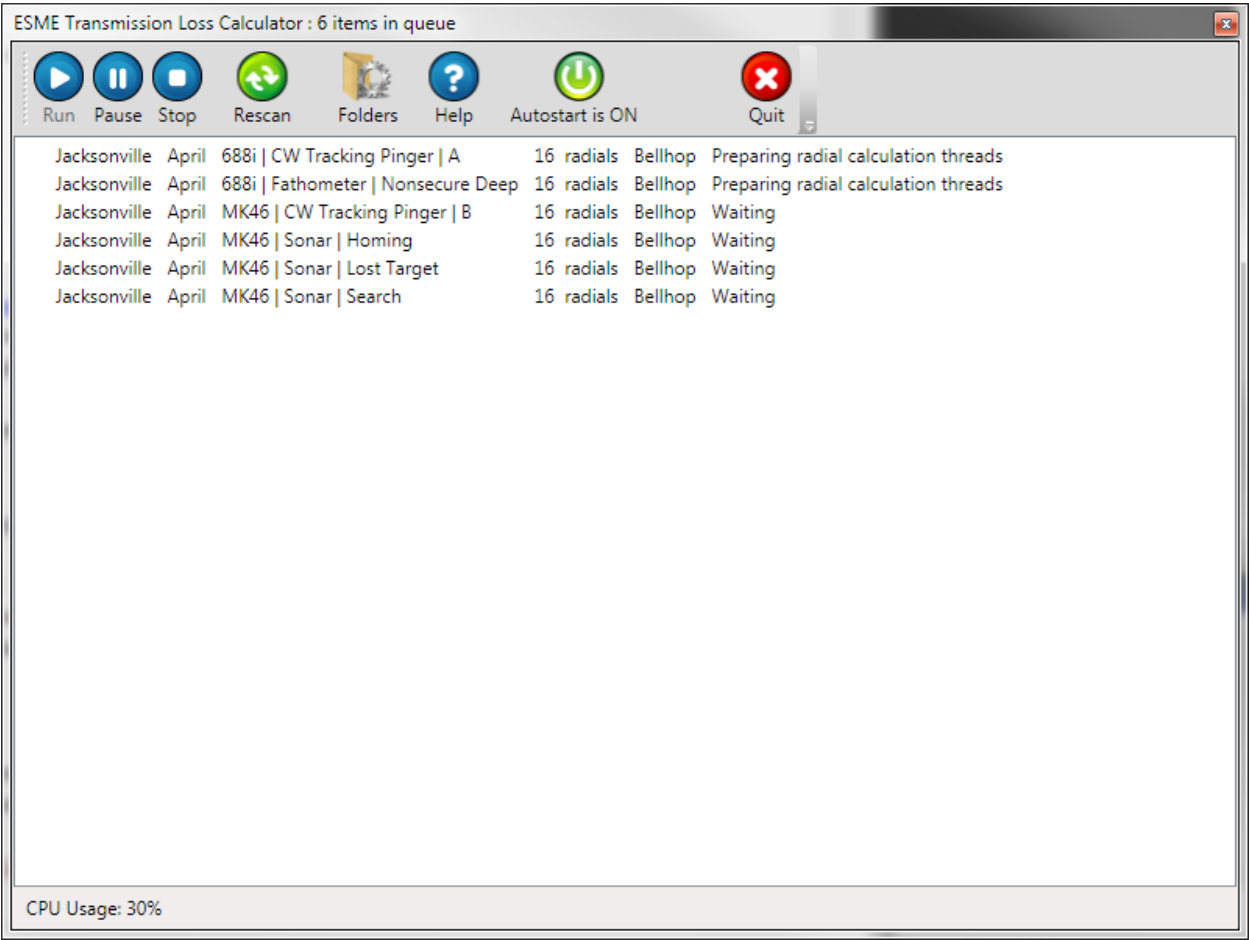




New In This Version:

Transmission Loss Calculator

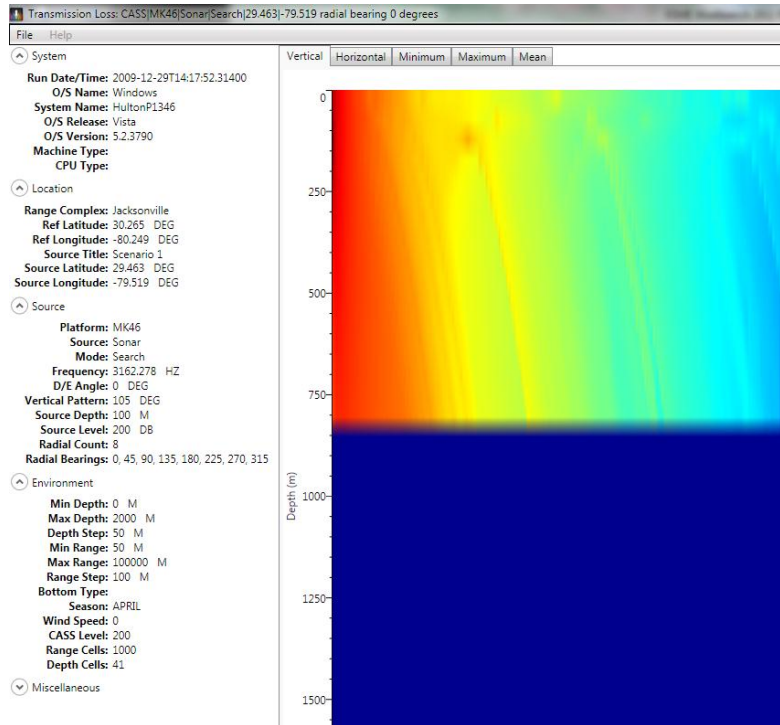
Transmission losses are now mediated and calculated through a standalone interface, launchable from within ESME Workbench. To launch, first configure which mode is to be calculated with which algorithm using the Models button on the Acoustics Ribbon Group, then Export all required files, then Run the calculator.





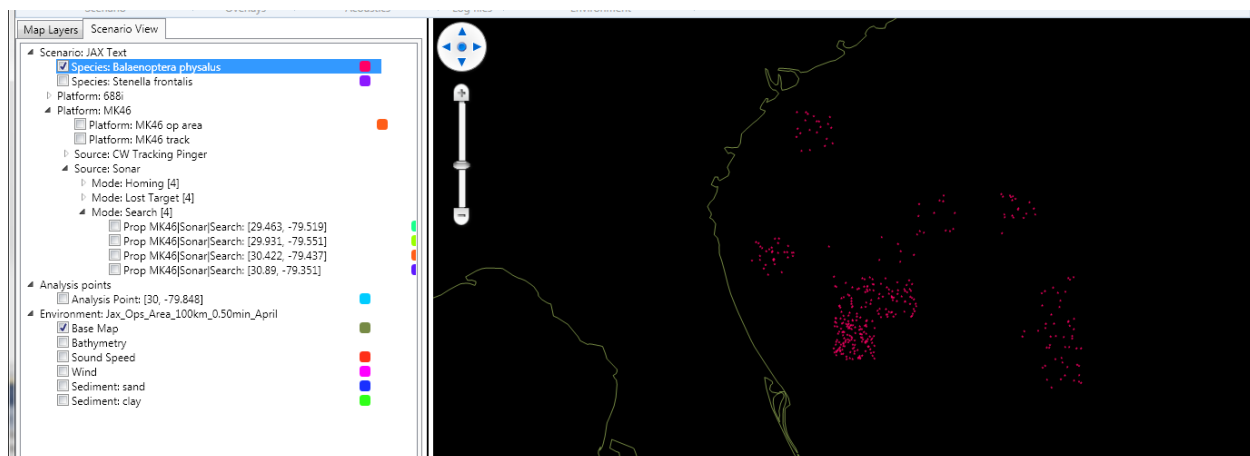
Transmission Loss Viewer

The transmission loss viewer now displays comprehensive information about each displayed TL.



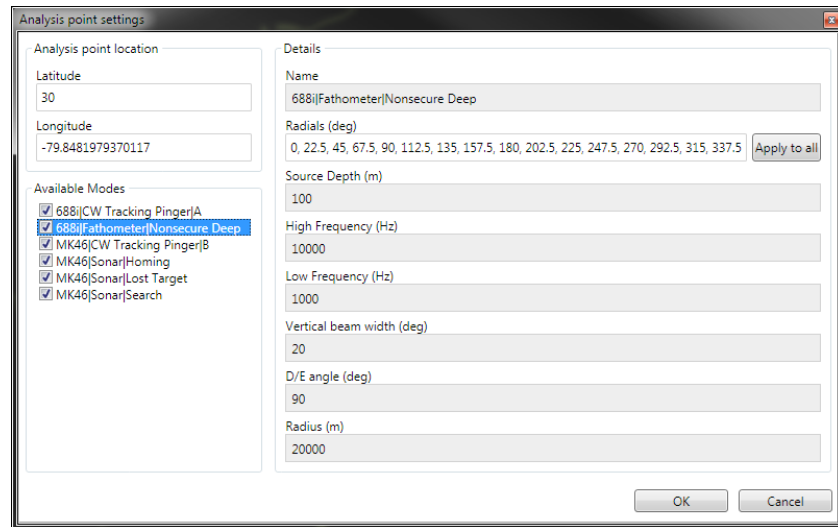
3MB Animat Support

ESME Workbench now supports creation, display, and integration of animats generated with 3MB version 9.00 that follow the NUWC seeding rules.



Analysis Point Options

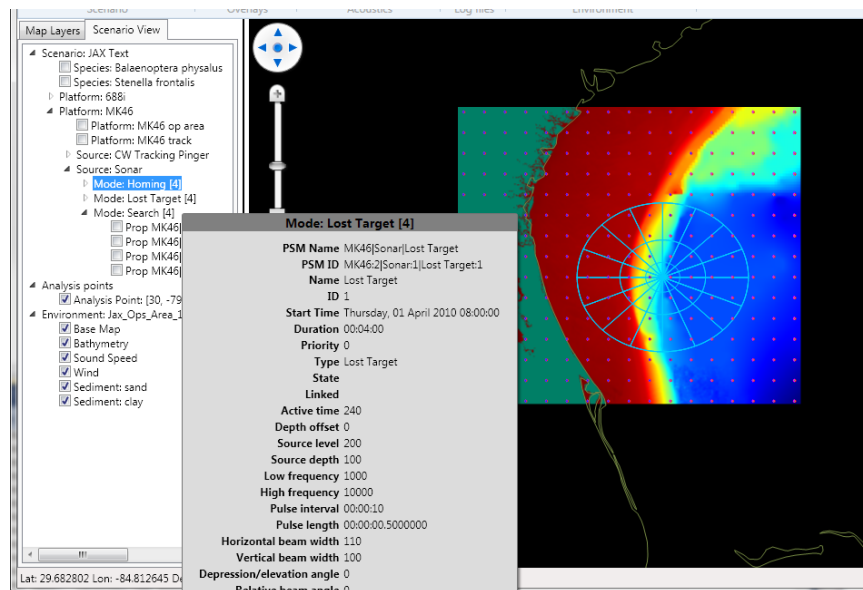
The Analysis Point configuration dialog has been substantially reworked to simplify the configuration of Analysis Points. Fine-tuning the center location by manually entering a latitude and longitude is now possible. This dialog is accessed by right-clicking an analysis point in the Scenario View or Map Layers list and selecting “Settings ...”



The 'Analysis point settings' dialog box is divided into two main sections: 'Analysis point location' and 'Details'. The 'Analysis point location' section contains input fields for 'Latitude' (set to 30) and 'Longitude' (set to -79.8481979370117). Below these is a list of 'Available Modes' with checkboxes: ☒ 688i|CW Tracking Pinger|A, ☒ 688i|Fathometer|Nonsecure Deep, ☒ MK46|CW Tracking Pinger|B, ☒ MK46|Sonar|Homing, ☒ MK46|Sonar|Lost Target, and ☒ MK46|Sonar|Search. The 'Details' section contains several input fields: 'Name' (688i|Fathometer|Nonsecure Deep), 'Radials (deg)' (a list of values from 0 to 337.5 with an 'Apply to all' button), 'Source Depth (m)' (100), 'High Frequency (Hz)' (10000), 'Low Frequency (Hz)' (1000), 'Vertical beam width (deg)' (20), 'D/E angle (deg)' (90), and 'Radius (m)' (20000). At the bottom right are 'OK' and 'Cancel' buttons.

Scenario Tree View

The Map Layer List view is now part of a tabbed control on the Home tab. The other tab displays the same information grouped into a tree view that associates platforms, sources, and modes' computed transmission losses, loaded species, analysis points, and environment data with logical groups that correspond to the structure of the .nemo file. Tooltips are present for every node in the tree view, and provide detailed information about each layer.

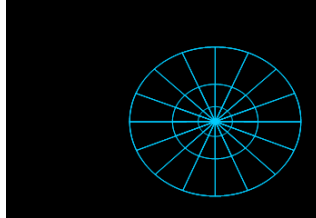


The image shows the 'Scenario Tree View' on the left, which is a hierarchical tree structure. The tree has a root node 'Scenario: JAX Text' with several children: 'Species: Balanoptera physalus', 'Species: Stenella frontalis', 'Platform: 688i', 'Platform: MK46' (which has sub-nodes for 'Platform: MK46 op area', 'Platform: MK46 track', and 'Source: CW Tracking Pinger'), 'Source: Sonar' (with sub-nodes for 'Mode: Homing [4]', 'Mode: Lost Target [4]', and 'Mode: Search [4]'), 'Analysis points' (with sub-nodes for 'Analysis Point: [30, -79]' and 'Environment: Jax_Ops_Area_1'), and 'Environment: Jax_Ops_Area_1'. The 'Mode: Lost Target [4]' node is selected. A tooltip is displayed over this node, showing detailed information: 'PSM Name: MK46|Sonar|Lost Target', 'PSM ID: MK46|2|Sonar|1|Lost Target:1', 'Name: Lost Target', 'ID: 1', 'Start Time: Thursday, 01 April 2010 08:00:00', 'Duration: 00:04:00', 'Priority: 0', 'Type: Lost Target', 'State: Linked', 'Active time: 240', 'Depth offset: 0', 'Source level: 200', 'Source depth: 100', 'Low frequency: 1000', 'High frequency: 10000', 'Pulse interval: 00:00:10', 'Pulse length: 00:00:00.5000000', 'Horizontal beam width: 110', 'Vertical beam width: 100', 'Depression/elevation angle: 0', and 'Relative beam angle: 0'. The background of the image shows a map with a color-coded sonar scan area.



Analysis Point and Calculated Transmission Losses Map Display

Analysis points now have a more distinctive display on the map.



The circles circumscribed over the center point of each analysis point demarcate the maximum radii of the analysis point's associated modes.

Fully computed transmission loss files for a given mode at a given location are now selectable in the Scenario View, and display on the map. A circle marks the maximum radius at which the mode's sound level remains above the significance cutoff value of 120 dB. A smoothed polygon inscribed inside the circle represents this information for each associated radial. A tooltip displays detailed metadata about each mode on mouse-over in the Scenario View list.

The screenshot displays the ESME Workbench interface. On the left, the 'Scenario View' panel shows a hierarchical tree of map layers. The 'Map Layers' section includes 'Species: 3-view', 'Platform: 688', 'Source: CW Tra', 'Mode: A [4]', 'Source: Fathom', 'Mode: Non', 'Platform: MK46', 'Platform: MK', 'Source: CW Tra', 'Mode: B [4]', 'Source: Sonar', 'Mode: Homing [4]', 'Prop MK46[Sonar]', 'Prop MK46[Sonar]', 'Prop MK46[Sonar]', 'Prop MK46[Sonar]', 'Mode: Lost Target [4]', and 'Mode: Lost Target [4]'. The 'Mode: Homing [4]' entry is selected. A tooltip window titled 'Mode: Homing [4]' is open, displaying the following metadata:

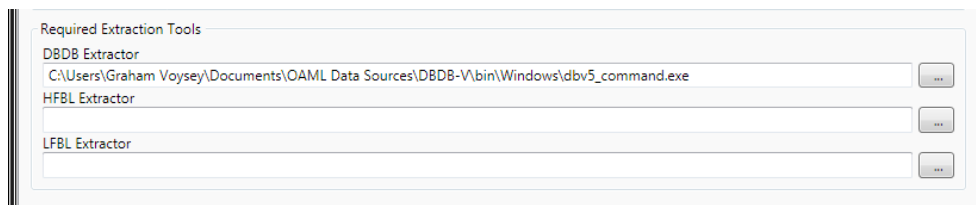
- PSM Name: MK46[Sonar]Homing
- PSM ID: MK46:2[Sonar:1]Homing:1
- Name: Homing
- ID: 1
- Start Time: Thursday, 01 April 2010 08:00:00
- Duration: 00:08:00
- Priority: 0
- Type: Homing
- State: Linked
- Active time: 480
- Depth offset: 0
- Source level: 200
- Source depth: 100
- Low frequency: 1000
- High frequency: 10000
- Pulse interval: 00:00:10
- Pulse length: 00:00:00.5000000
- Horizontal beam width: 105
- Vertical beam width: 95
- Depression/elevation angle: 0
- Relative beam angle: 0
- Radius: 100000

On the right, a map display shows a black background with a blue circle and eight radial lines with arrows pointing outwards, representing the maximum radii of the analysis point's associated modes.

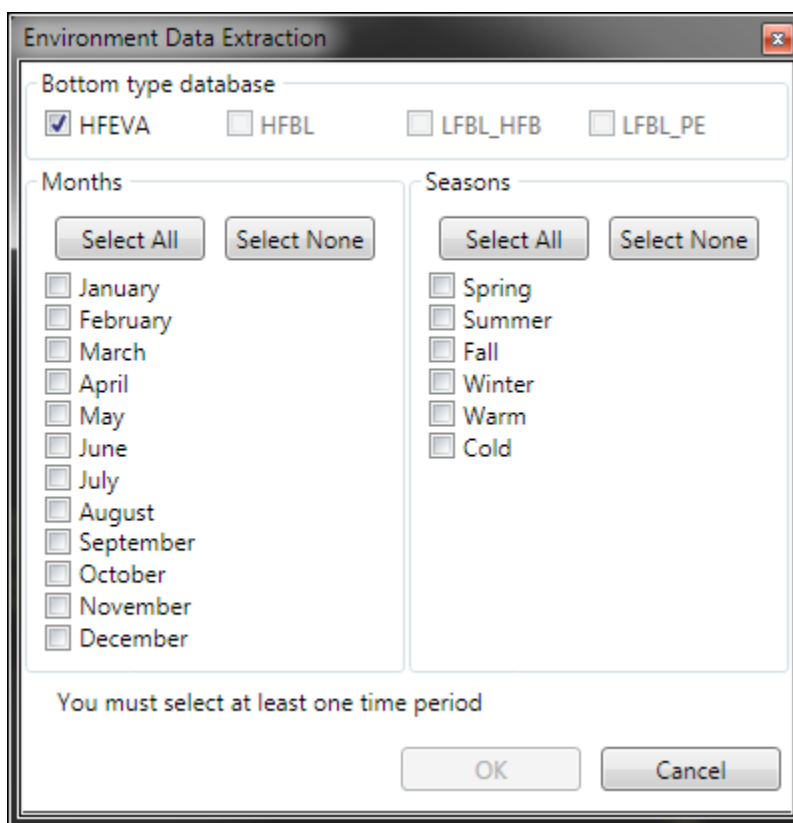


Classified Sediment Database Support

HFBL and LFBL databases are now supported for sediment data. Database extractor locations are configured in the Application Options :



When extracting new environment data in the Environment tab, new options are present to reflect database variability:



Scenario Simulator batch and interactive mode support

Both batch-mode and interactive access to the scenario simulator are supported.



Bugs Fixed:

105: Resolves conflicts between batch and serial operation mode and candidacy for NUWC use. With this release ESME Workbench regains the capability to do end-to-end simulations while also being able to generate many simulation environments in parallel.

118: GUI crashes on zoom no longer occur in this manner.

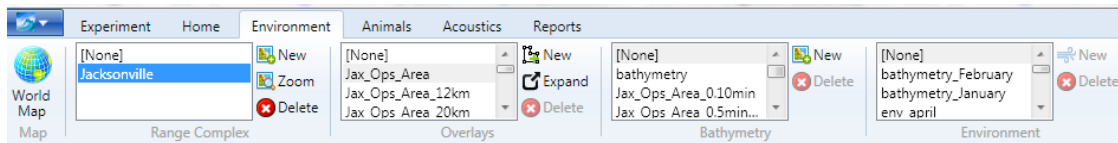
Known Issues:



29 July 2011

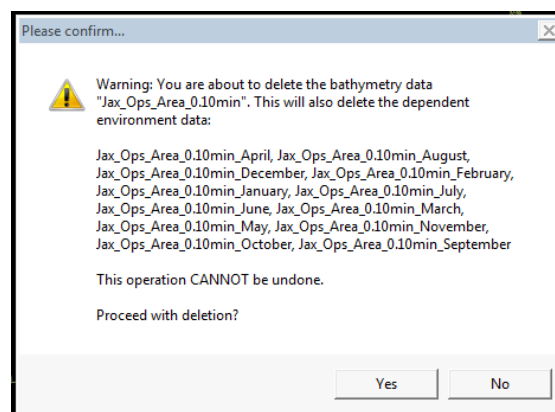
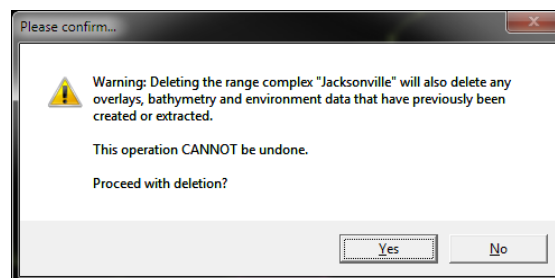
Environment Builder (fulfills punchlist 2.1 – 2.7, 2.11)

- The Environment Tab has been modified to provide a simpler view of all available Range Complexes, Overlay Files, Bathymetric, and Environmental data.



A "World Map" button now provides the ability to zoom to the world map; the Zoom button available for a selected Range Complex zooms to that area.

- Range Complexes, Overlays, Bathymetric and Environmental data can now be deleted safely. Deleting a range complex prompts the user to confirm the deletion and notes which affected files and entries in the PSM.csv file will be affected. Delete functionality is present for all data types, with forward dependencies: Environment data depends on nothing, Bathymetries depend on Environment data, Overlays depend on Bathymetries, Range Complexes depend on Overlays.



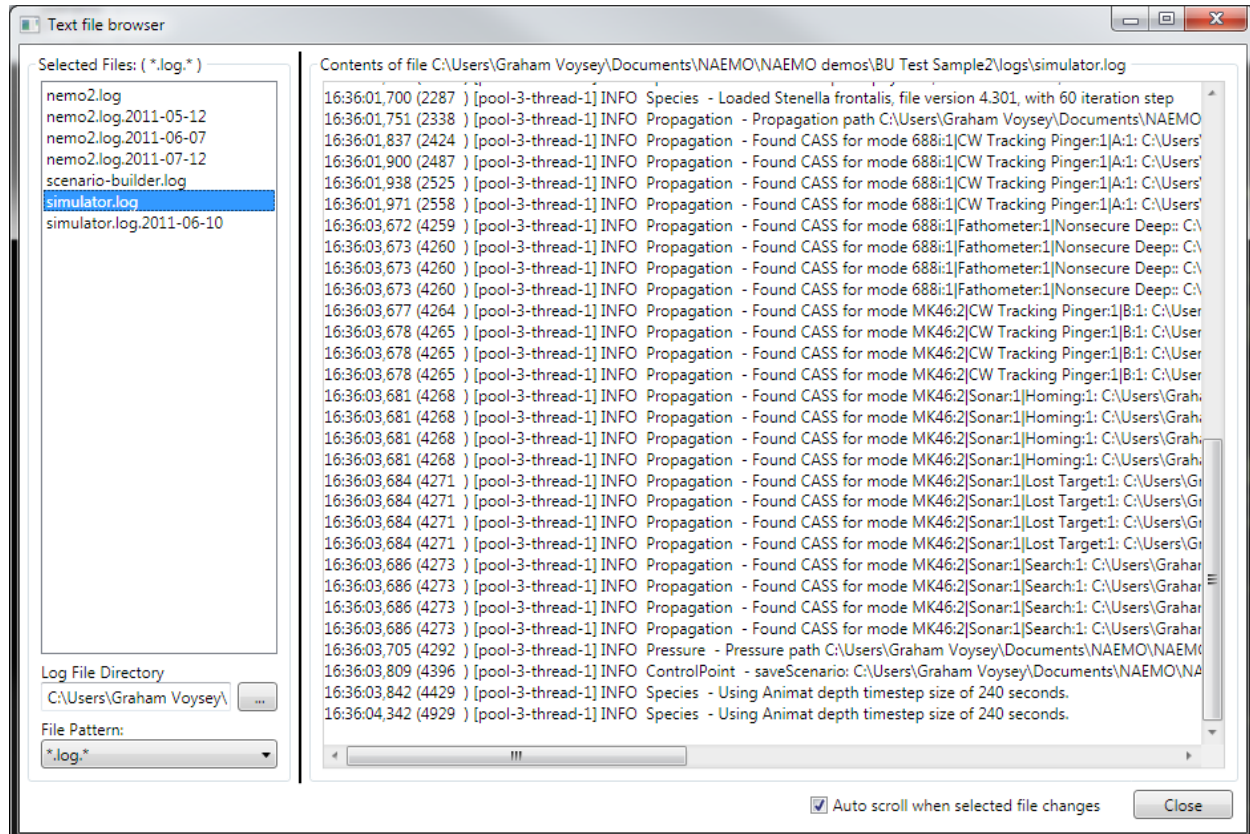
- Primary Op Area overlays cannot be deleted except by deleting their range complex.
- Selection of a given Overlay, Bathymetry, or Environment data highlights the associated data files also associated with it.
- Bathymetry and Environment tooltips now display pointcount.
- The Properties buttons were removed; all required metadata is now displayed on the tooltip.
-

Acoustic Propagation (fulfills punchlist items 4.1a, 4.3 , 4.7, 4.8)

- User input for CASS/RAM settings are validated before being entered.
- All required non-impulsive configuration files and input files are generated.
- Radial modifications implemented.

Scenario Simulator (fulfills punchlist 5.1 , partially fulfills 5.2)

- A log file viewer provides a detailed live view of simulator status:

Known Issues

-

Bugs Fixed:

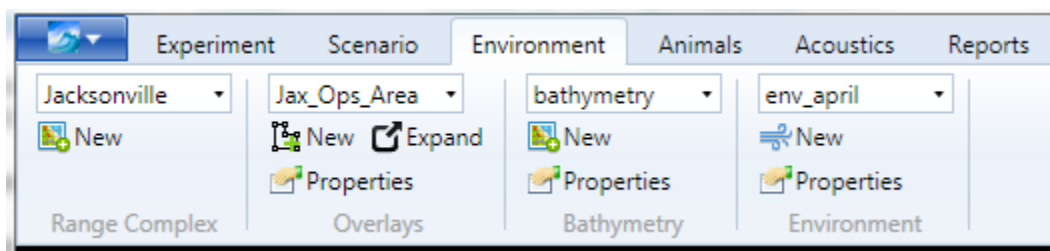
- 80. Point Counts now displayed; no point count limit should be enforced because RAM does not have a 512,000 limit.
- 113: Expand Overlay dialog rewritten for clarity.
- 114: New Range Complex dialog rewritten for clarity.
- 115: Dropdown consistency resolved.
- 116: Map redisplay issues fixed.
- 117: Environmental data handling significantly reworked; very large speed improvements now present.

ESME Workbench Environment Builder

This version of ESME Workbench introduces the complete reworking of the Environment ribbon tab, with the aim of facilitating the batch-processing workflow preferred by the Naval Underseas Warfare Center.

As this is a significant shift away from the experiment-driven approach used in ESME Workbench through the life of its development cycle, there are certain to be look-and-feel differences and errors – but the core functionality of batch-capable data extraction and display is now present, if somewhat unrefined.

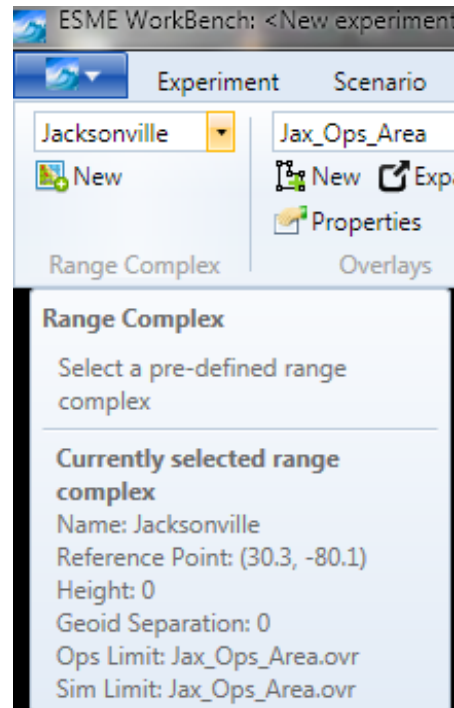
For the purposes of this release, the familiar Experiment tab of the ribbon control has been hidden, but not removed. It is inaccessible to the user; however, the functionalities it allows are still present within ESME and will be re-exposed shortly.



The new Environment tab is pictured above. With appropriately configured NAEMO User Options for the Scenario Data Directory parameter, the ribbon tab will automatically populate itself with preexisting Range Complex, Overlay, Bathymetry, and Environment data. Changing the selected item in any of the four dropdown menus will cause the display to refresh to display those areas, overlays, or environmental/bathymetric data.

The purpose of this tab in Workbench is to create multiple environmental areas and extract environmental data to be later associated with scenarios. Consequently, the map layer list displayed in the Experiment tab has been hidden in the Environment display.

Each ribbon tab group is explained in detail below.

Range Complex Group

A tooltip displays a) the function of the tab group and b) the metadata associated with the currently selected range complex -- in this case, Jacksonville.

The New button launches the New Range Complex dialog box:



New Range Complex

Name:

Reference point latitude: longitude:

Height (m):

Geoid separation (m):

Operational limits (choose one)

Existing overlay file

OR

Coordinates for new overlay (lat, lon)

Simulation limits (choose one)

Existing overlay file

OR

Coordinates for new overlay (lat, lon)

Location will be created inside simulation area folder:
C:\Users\Graham Voysey\Documents\NAEMO\NAEMO demos\BU Test Sample2\Sim Areas

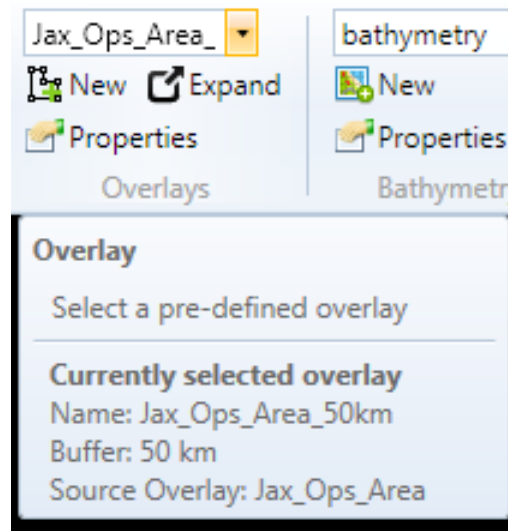
Error(s):

- New location name must be specified
- Baseline operational area must be defined
- Baseline simulation area must be defined



The New Range Complex dialog provides a sanitized way for a user to create a new range complex, associated file structure on disc, and entry in the SimAreas.CSV file. All known metadata fields are settable. An Error field at the bottom of the dialog box displays current errors in the entries. Until all errors are resolved, the user cannot proceed.

Overlays Group



A tooltip displays a) the function of the tab group and b) the metadata associated with the currently selected overlay -- in this case, Jax Op Area with a 50km buffer.



The New button launches the New Overlay Dialog:

New Overlay File

Overlay Name:

Coordinates for new overlay (lat, lon)

Clear

Error(s):

The Overlay file must have a name
No Overlay Coordinates have been entered

OK Cancel

Similarly to the New Range Complex dialog, the user's inputs are sanitized.

The Expand button launches a dialog box that allows the user to expand the bounds of the currently selected overlay file by a given distance in kilometers. A new overlay file will be created for this expanded area.

Expand Ove...

Expand Limits by (km)

200

OK Cancel

The Properties button launches a dialog box that allows the user to view and edit the metadata associated with each overlay.

Overlay Properties

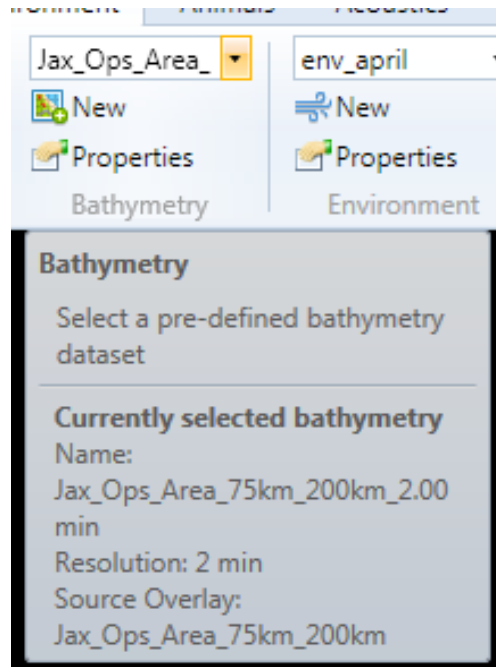
Data set: Jax_Ops_Area

Source overlay

Buffer Zone size

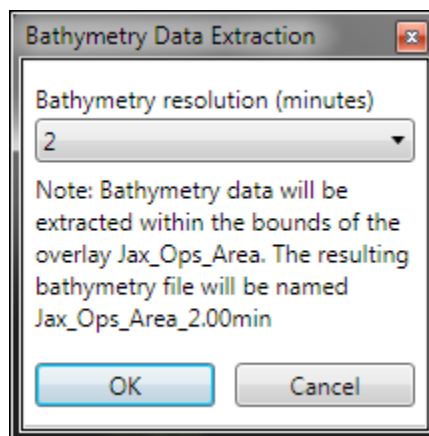
0

OK Cancel

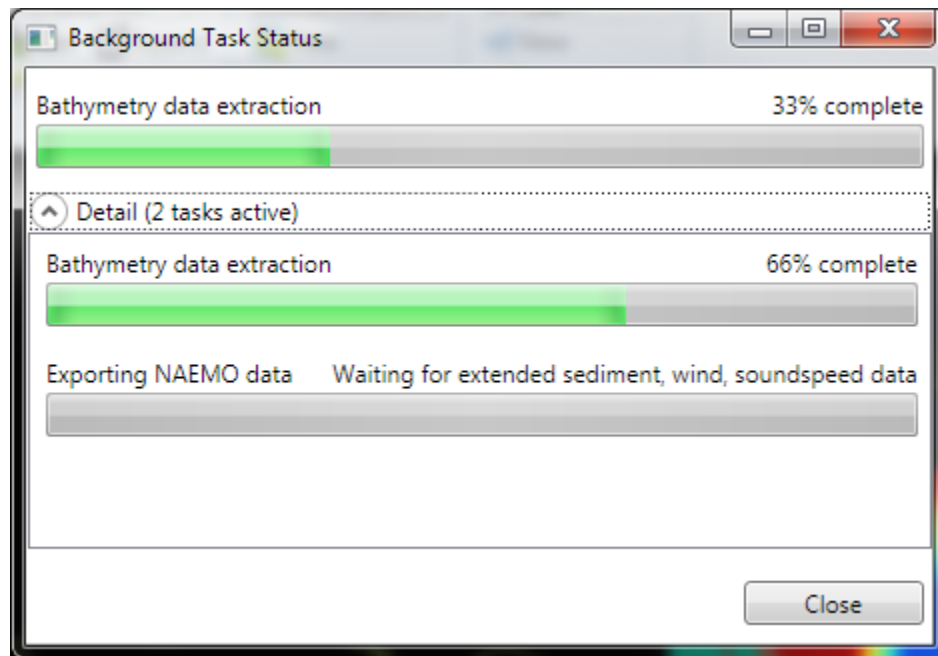
Bathymetry Group

A tooltip displays a) the function of the tab group and b) the metadata associated with the currently selected bathymetry.

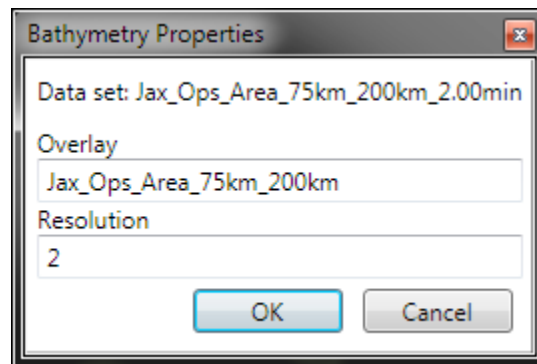
The New button launches the Bathymetry data extraction tool



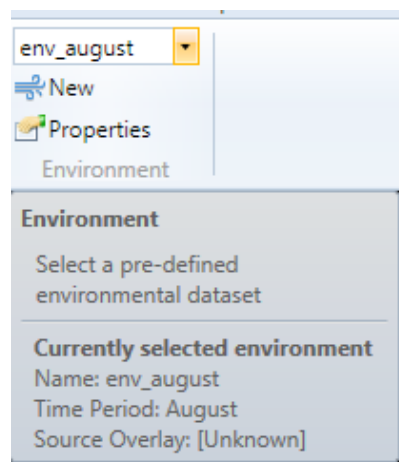
While data extraction is underway, a progress bar appears in the lower right hand corner of Workbench. A more detailed progress indicator, similar to what is now present in the Experiment-based extraction dialog box, is displayed when the user right-clicks on the progress bar and selects the "Show detailed extraction" option:



The Properties button launches a control to view or change the associated metadata:



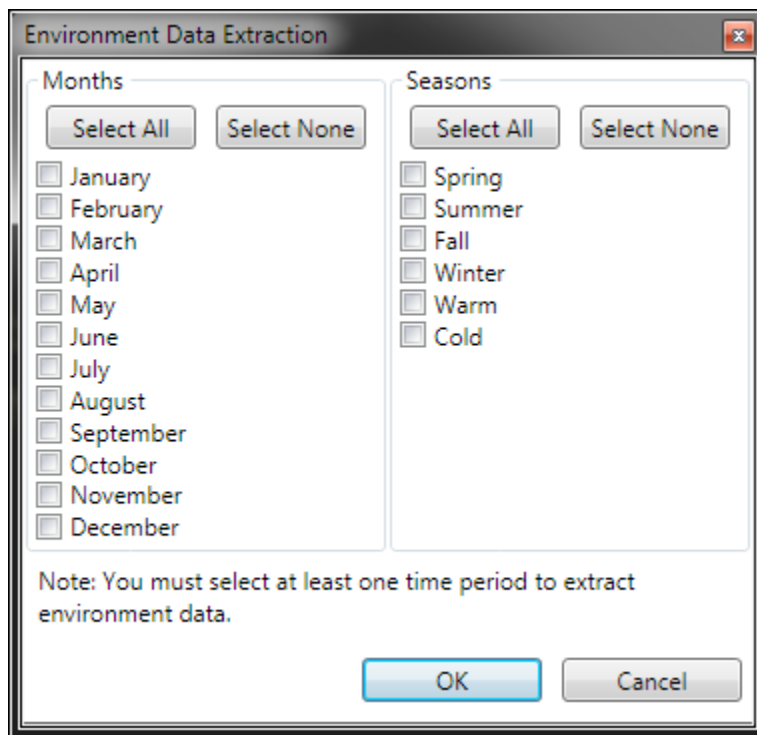
Environment Group





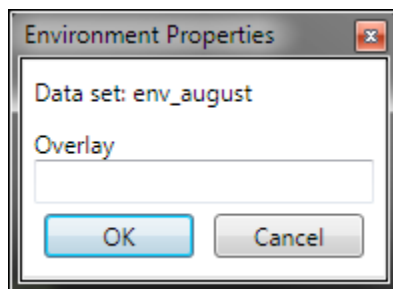
A tooltip displays a) the function of the tab group and b) the metadata associated with the currently selected CASS-friendly collated environment data.

The New button launches the Environmental Data Extraction dialog:



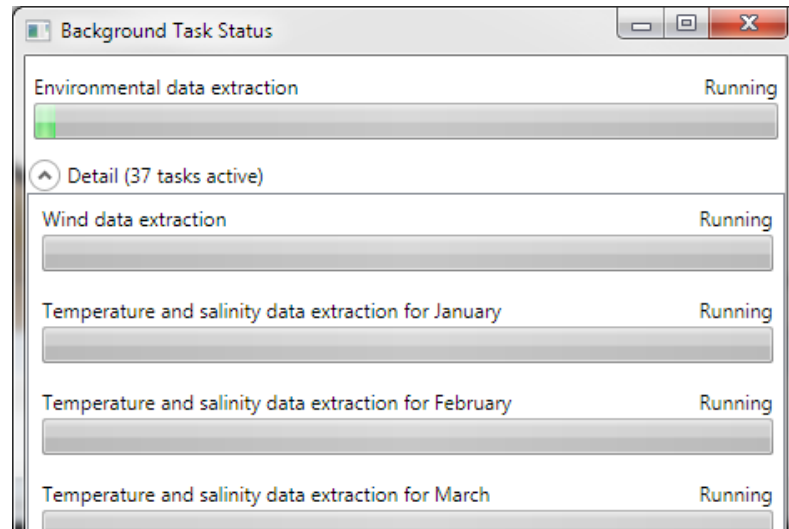
This tool combines the extraction and export buttons present on the Experiment tab, and populates the given Range Complex's file structure with the appropriate data files.

The Properties button displays and edits associated metadata.





An environmental progress bar is also displayed in a like manner to the bathymetry extraction:



Known Issues

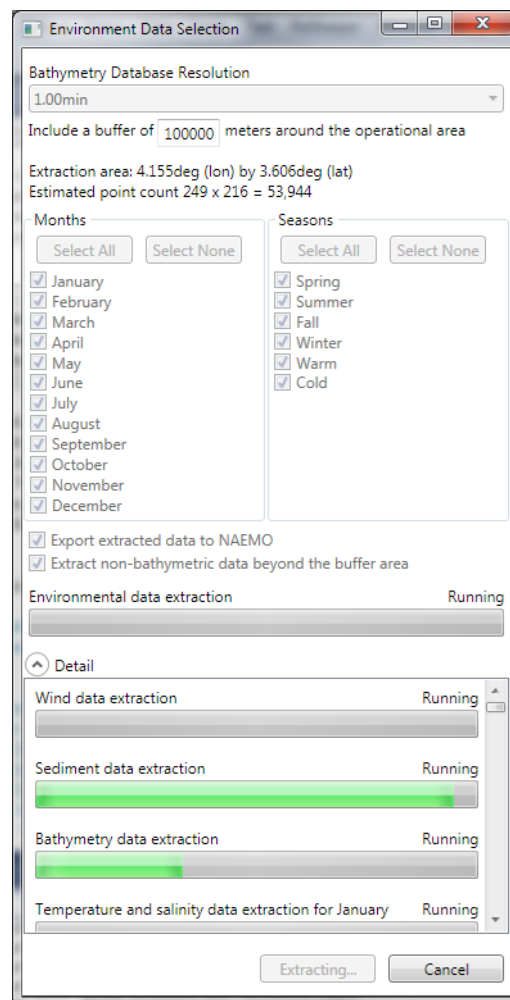
- Dropdown menus on the environment tab may not correctly display without selecting them multiple times.
- The map control may hesitate or blink while switching display of overlays or bathymetries.
- Misconfiguration of the application options such that the Scenario Data Directory contains invalid or missing *.csv files will almost certainly result in application instability.
- A transient issue with selecting Range Complexes, Overlays, Bathymetries, and Environments occasionally manifests when using the mouse to select items from dropdown menus. Repeated selection, or use of the keyboard arrow keys, is a temporary solution while the cause is investigated.
- Toggling layer visibility on the map layer list is almost certainly a bad idea.



24 Jun 2011

Asynchronous Multithreaded Environmental Extraction

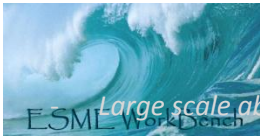
Approaching the goals of batch process-friendly scenario creation and overall extraction speed, the environmental extraction is now multithreaded and parallelizable. The extraction progress bar now shows the progress on each individual task, and distributes extraction tasks across cores in multicore systems. A tooltip for each extraction task provides more detail on each job as desired.



Infrastructure and Architecture Updates

Many architectural improvements that are not directly tied to the user interface are included in this release and provide overall speed and reliability improvements.

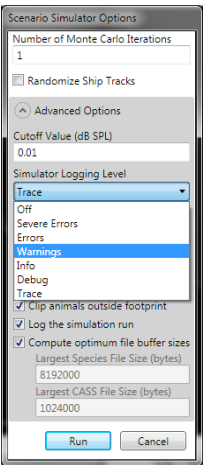
- *Environmental data extraction is substantially faster than in previous releases as 3 database access routines are now able to take full advantage of 64-bit processors.*
- *The Ribbon control was updated to the latest stable version in preparation for bringing the control layout in line with best practices in future releases.*



Large scale abstraction of internal data handling.

Combined with bugfixes and general refactoring and cleanup, this release is intended to prepare for a substantial subsequent release, which will directly address data visualization of transmission losses and the reworking of environmental data extraction routines for batch processing/NUWC compatibility.

Simulator launch options

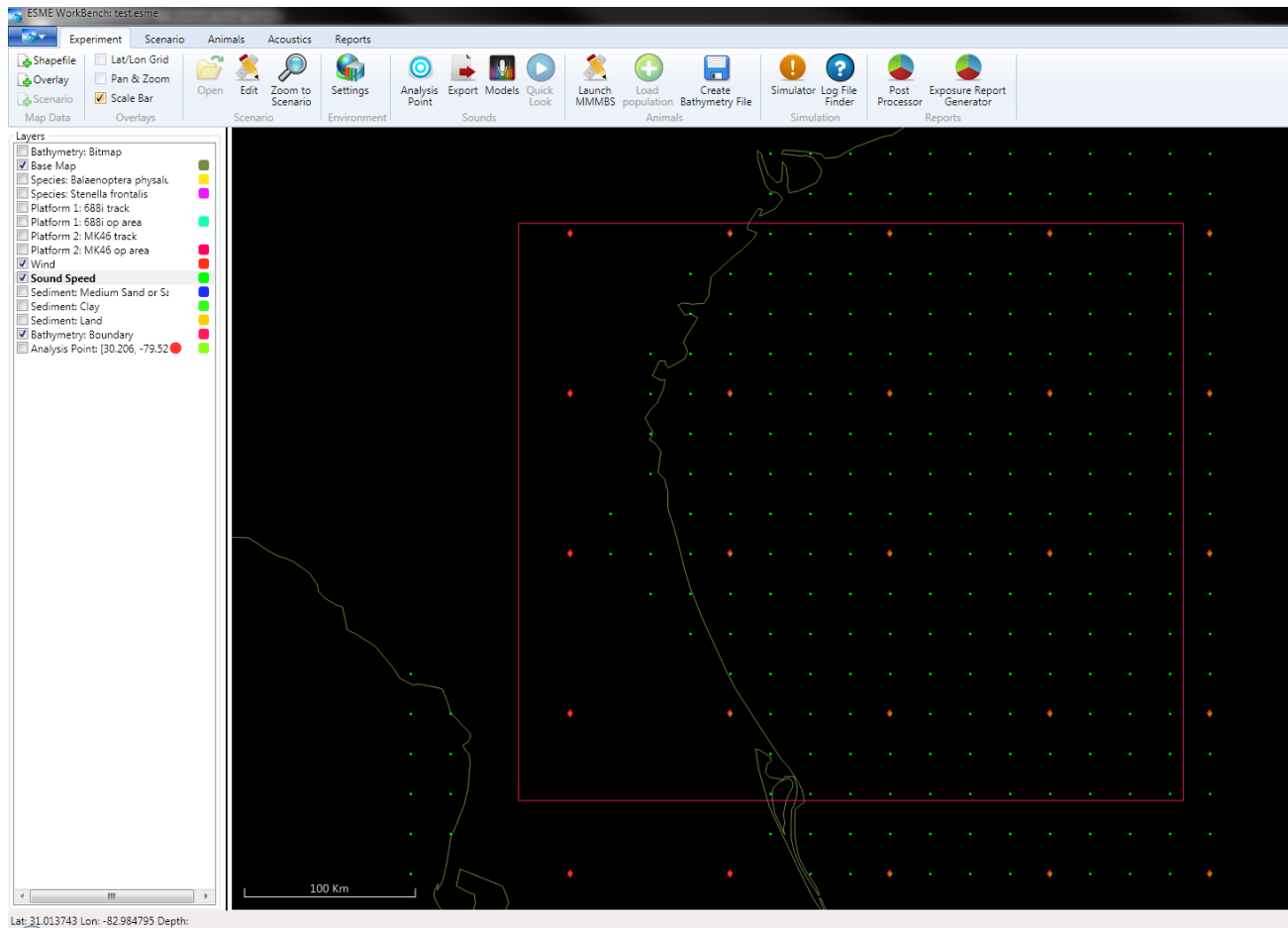


The simulator advanced options now reflect logging levels properly. A text dropdown menu allows the user to select the desired logging level.



Visualization of Discrete Environmental Data Points

Wind speed and sound speed join previously visualized animal species and unique sediment types on the layer list. A point is displayed on the map at the location of each calculated or extracted environmental data type. In a future release, each point of environmental data may have an associated tooltip with useful metadata.



Bugs Fixed:

104, 111: Overlay Display Issues. Resolved; verified ability to load overlay files with complicated bounding paths.

104 – Bathymetric Extraction Limits. Resolved; ESME Workbench and NEMO now extract and extend identical bathymetry.

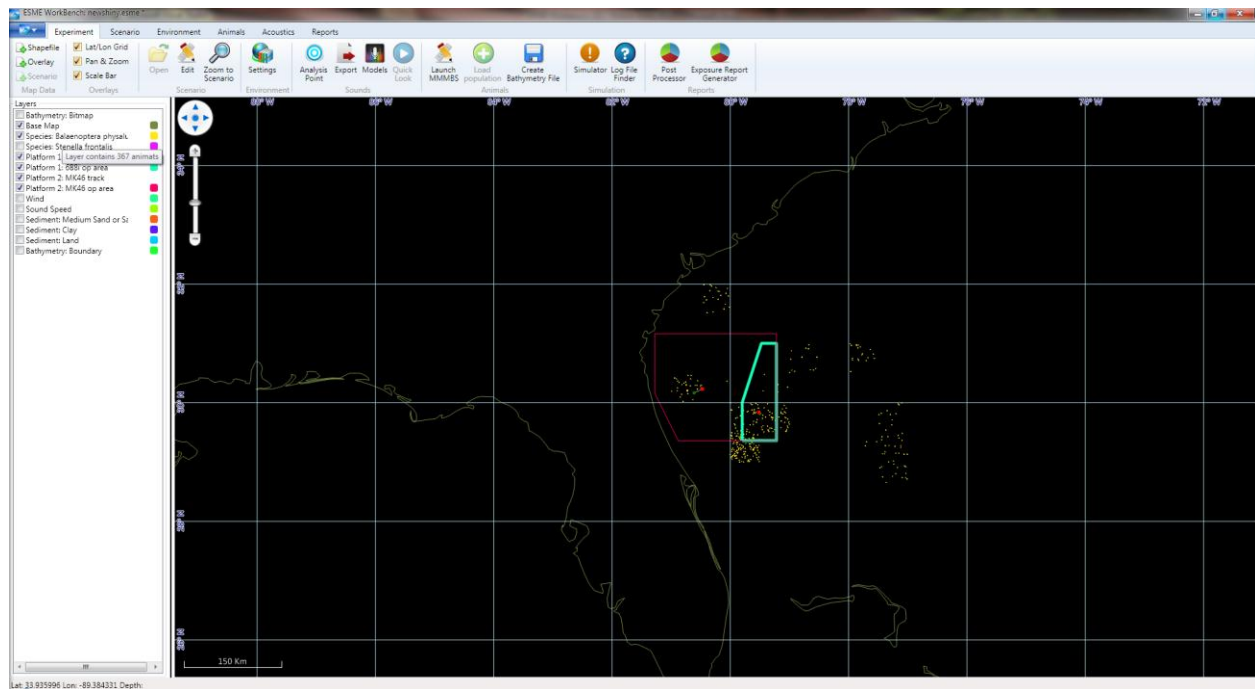
107 – Sediment Extraction: Resolved. Following discovery of a NEMO bug, ESME was shown to properly extract sediments.



Animat Map Display

NEMO files reference .ddb files, which contain location data for members of animal species. These location data are originally generated by 3MB (as well as NUWC's animat seeding algorithms), based on seeding rules and a collection of shapefiles containing observational data of actual species population distributions.

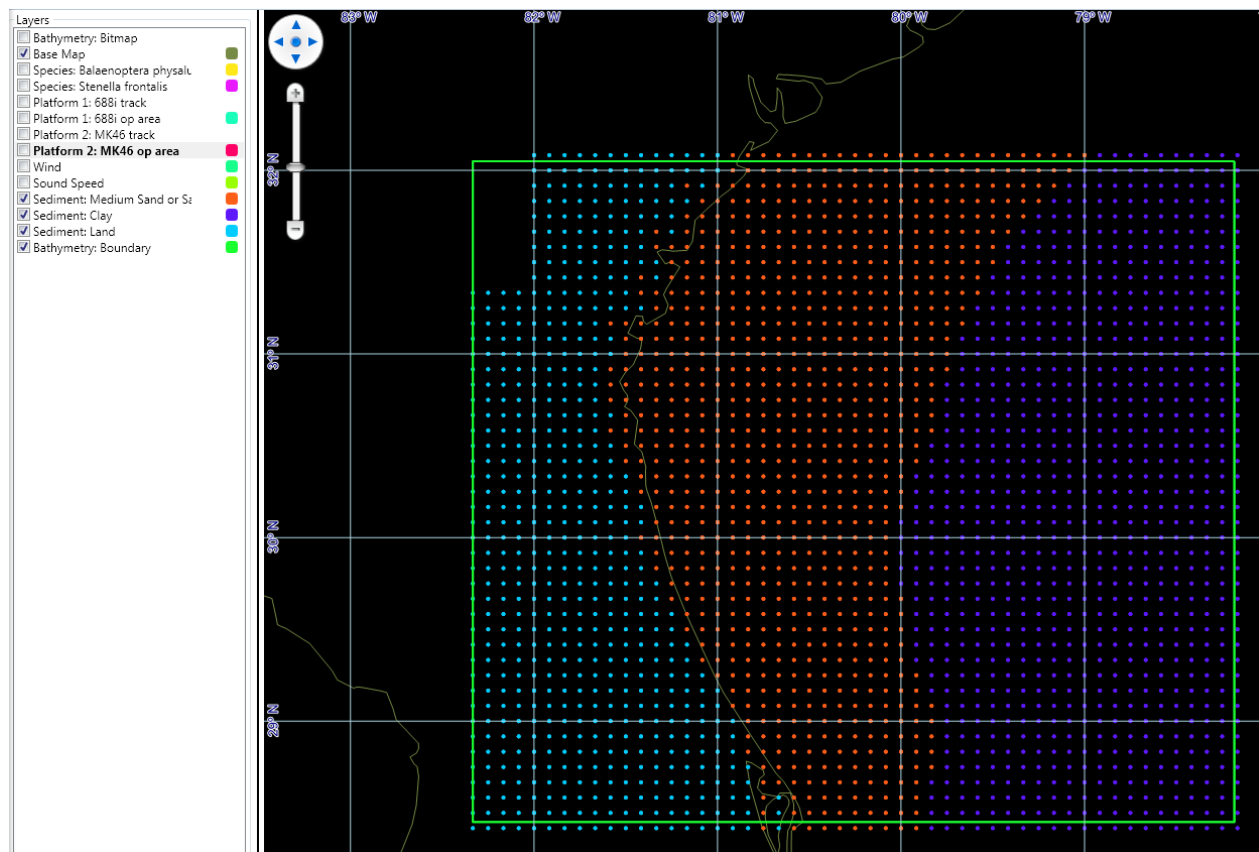
When a .nemo scenario file containing associated species is loaded, a layer on the map display is generated that contains the initial positions of every member of that species. When a user modifies the .nemo file using Scenario Builder, ESME Workbench updates these layers to reflect any changes in species populations that may have occurred.





Meaningful Environmental Data Display

In this release, Bottom Sediment Type is colored per sediment type value, and one layer per sediment type is added to the layer list.



Bugs Fixed

- 104: Changing bathymetric extraction limits now match NUWC extraction routines.
- 103: Map control overlays (pan/zoom, etc) now properly obey their visibility checkbox states.

Known Bugs

- 107: Bottom Sediment Type database incongruencies.

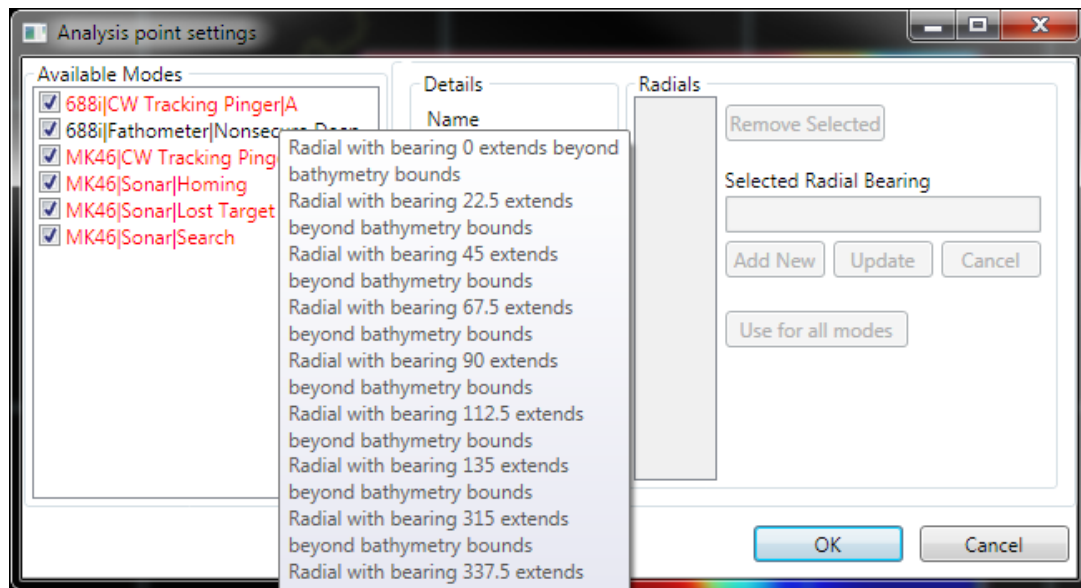


20 May 2011

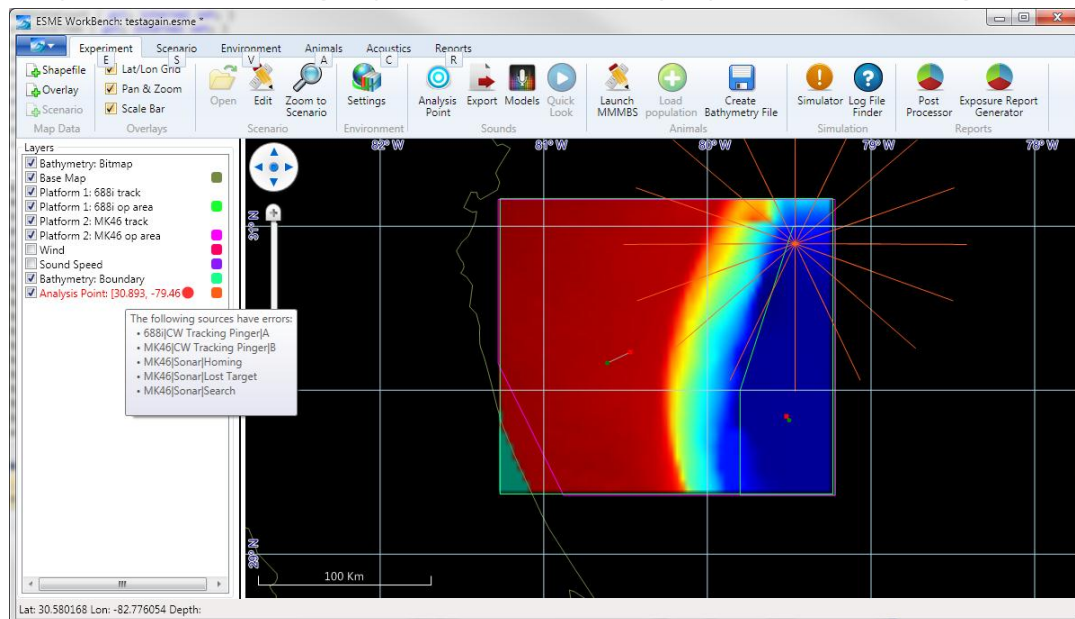
Partial Acoustic Source Validation

The user-feedback section of an Acoustic Source validator 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.*

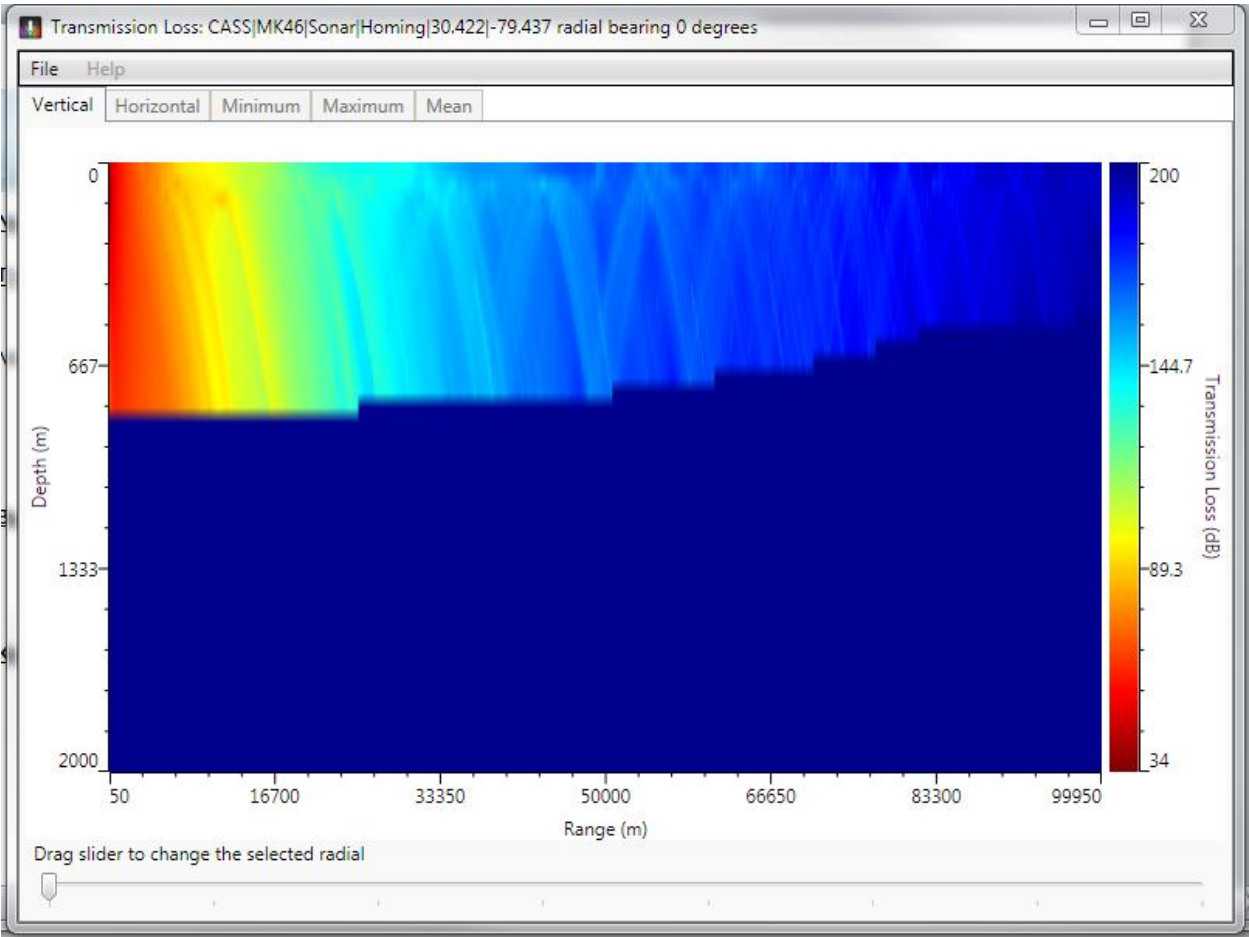
Known Bugs



6 MAY 2011

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:

User Options

NAEMO Environment Acoustic Simulators Seasons

Bellhop RAM CASS REFMS

Options

Maximum depth (m)
2000

Range step size (m)
25

Depth step size (m)
25

Speed Dial
1

SSP Units
0

CASS Level
200

Bathymetry Metric
1

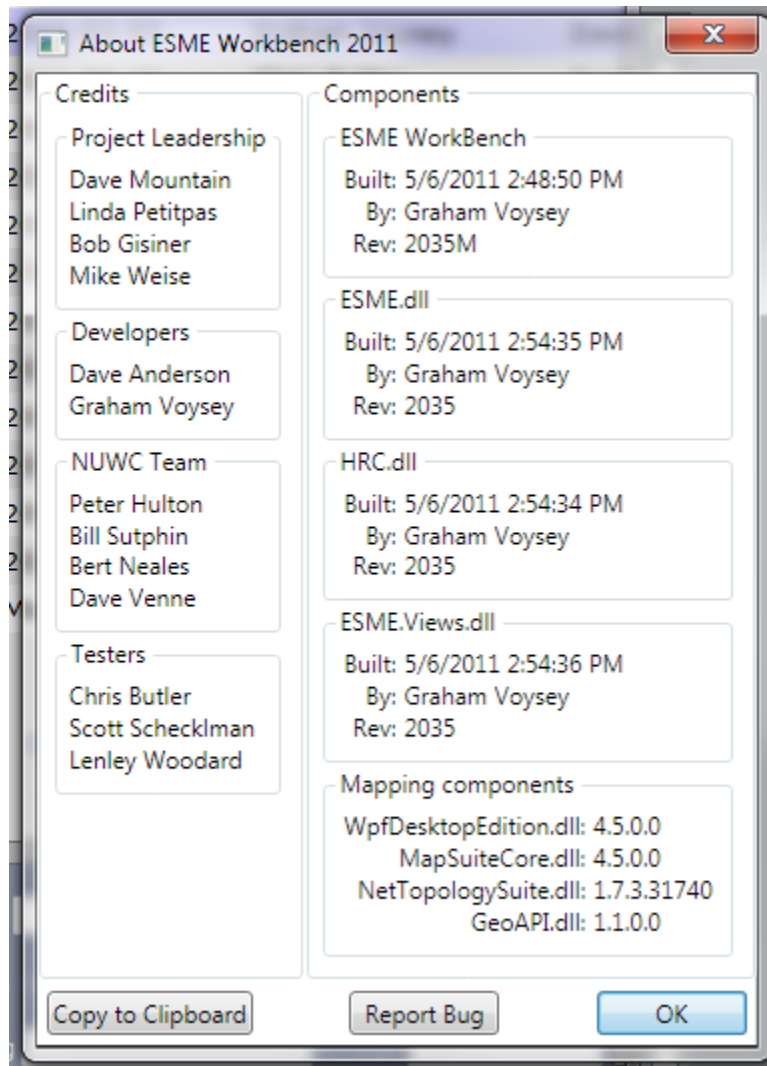
Paths

RAM Executable
...

OK Cancel

Bug Reporting Aids

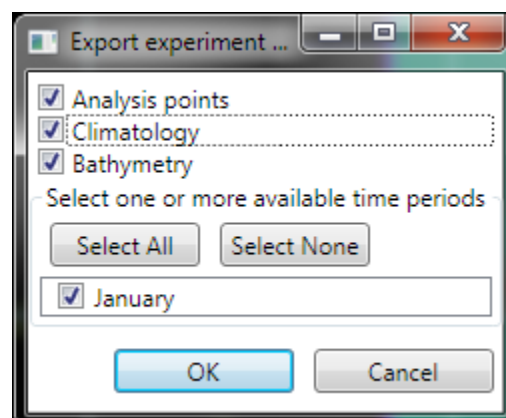
The ESME Workbench "Info" menu item, in the main dropdown menu, now includes detailed version information useful for debugging:



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

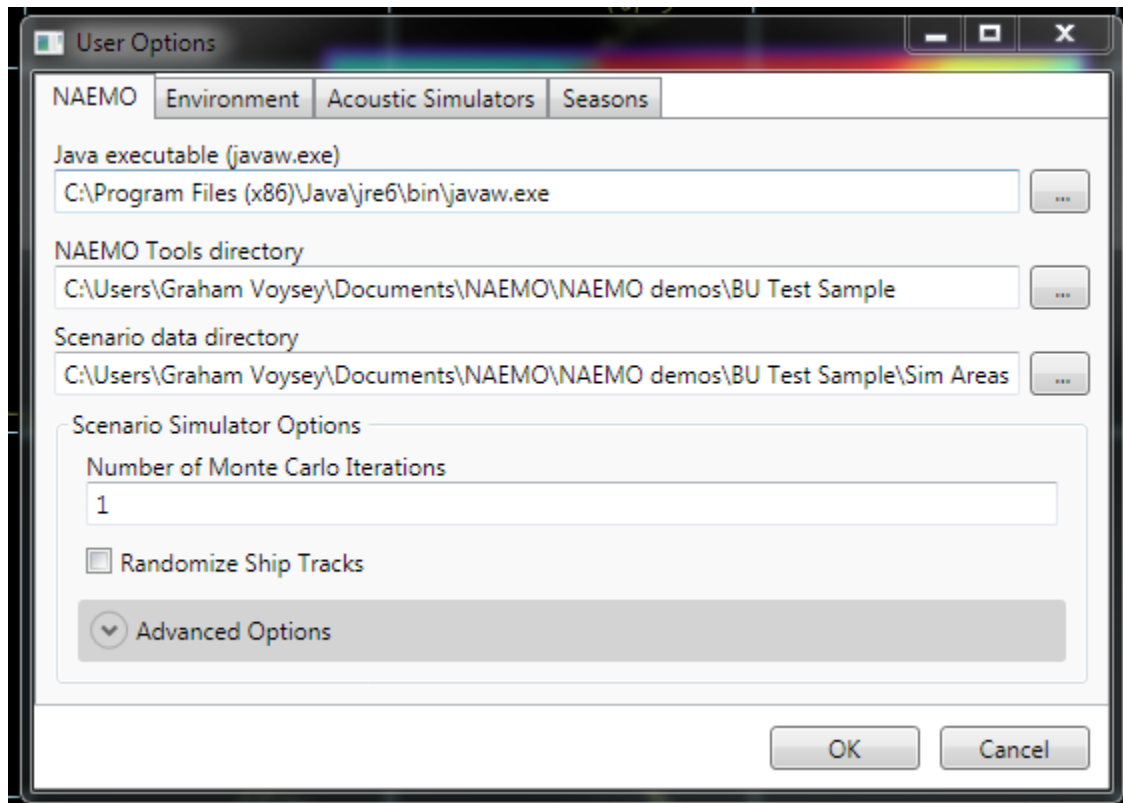
The Export dialog has changed to reflect a tighter integration with time period specifications.





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:

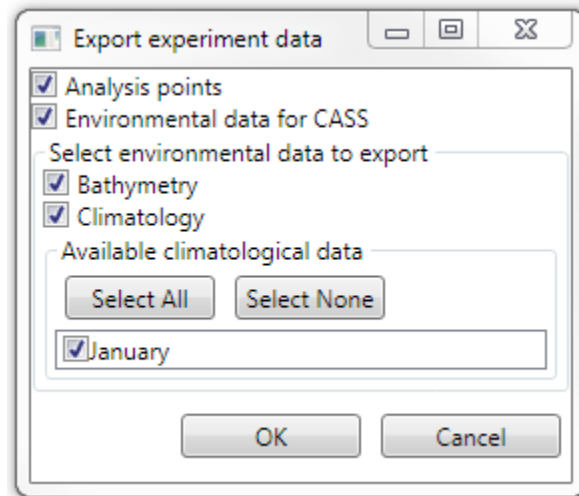
- Bathymetry extraction discrepancies are now understood and resolved.
- Analysis Point button now stays engaged until an analysis point is placed (Bug 86)
- CASS Range and Depth increments will now never exceed maximum count for CASS or RAM. (Bug 87)
- Should the workbench crash, a dump file will be 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:

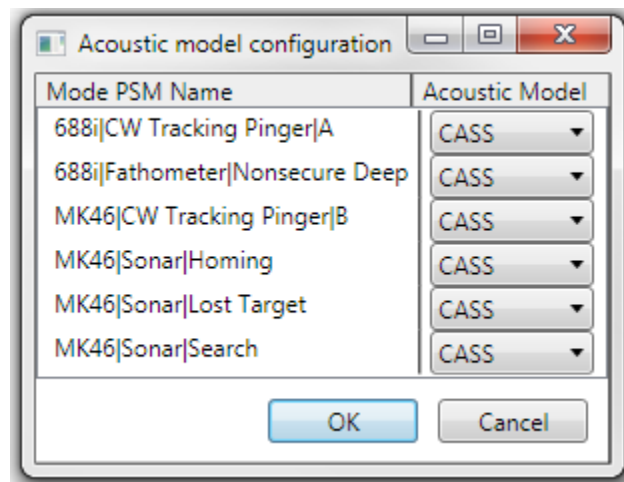
- It is still possible to create phantom analysis point displays on the map by rapidly switching between two valid experiments. This is an issue with the map control itself. (Bug 83).

Previous Release Notes22 APR 2011Environmental 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 necessary 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 through 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 necessary 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 through 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:



ESME Workbench 2011

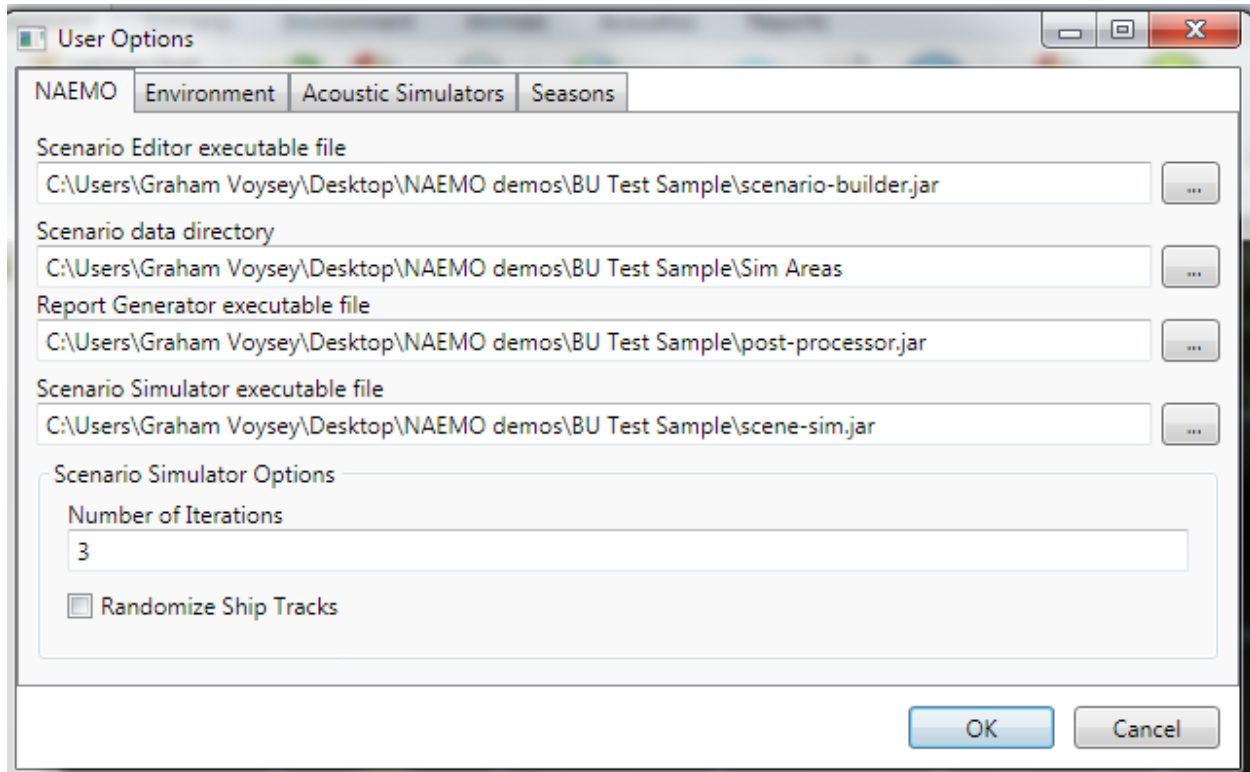
19 August 2011

 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 necessary 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 through a “first-run” configuration wizard.

08 MAR 2011:**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.

Analysis point settings

Available Modes

- ☒ ADC MK-1|ADC MK-1|Broadband
- ☒ ADC MK-1|ADC MK-1|Tri-Random

ADC MK-1|ADC MK-1|Broadband

Details

Name: ADC MK-1|ADC MK-1|Broadband

Source Depth: 50

High Frequency: 5000

Low Frequency: 1000

Vertical beam width: 180

D/E angle: 0

Radius: 100000

Radials

0
22.5
45
67.5
90
112.5
135
157.5
180
202.5
225
247.5
270
292.5
315
337.5

Remove Selected

Selected Radial Bearing: 52

Add New Update Cancel

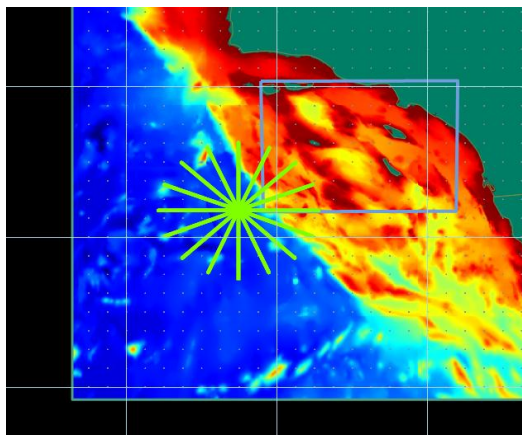
Use for all modes

OK Cancel

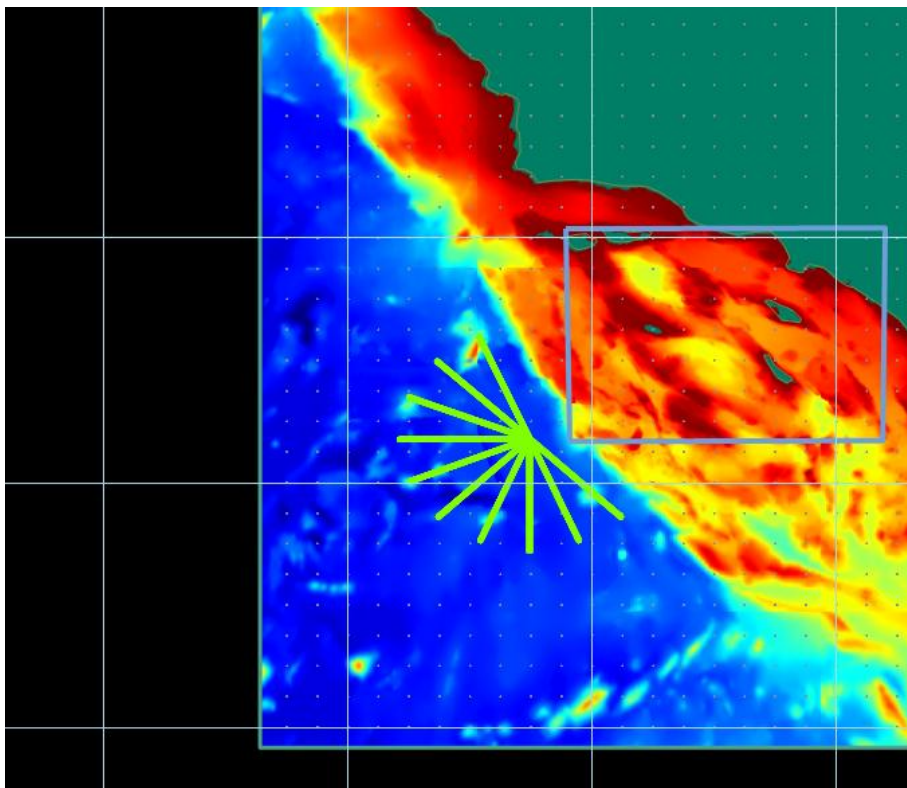
Each unique Mode has individually customized settings. Radial directions and number can be modified per-mode, and if a particular configuration should be used for all modes, it can easily be applied uniformly.



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

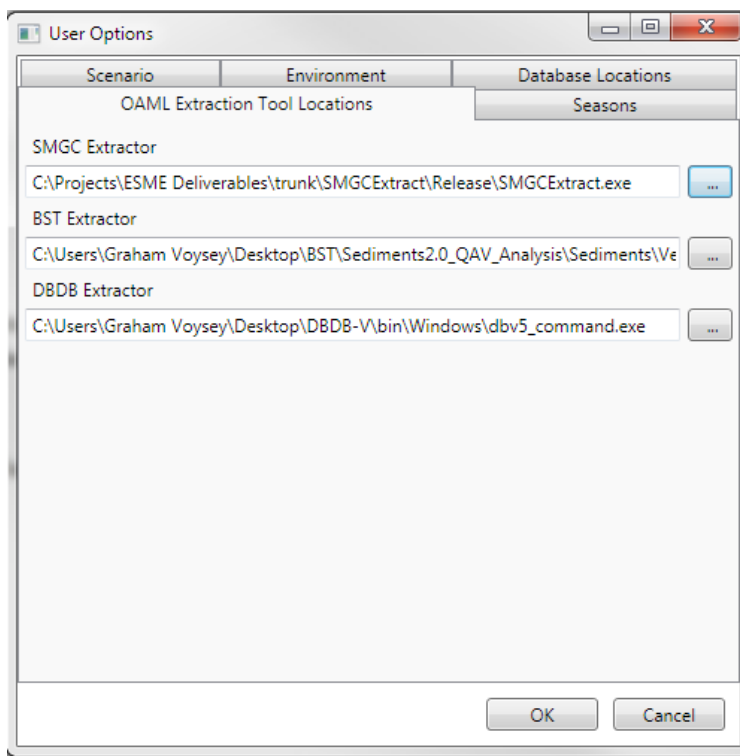
Environmental data for a given Simulation Area is now extractable directly from available OAML databases:

- *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)*

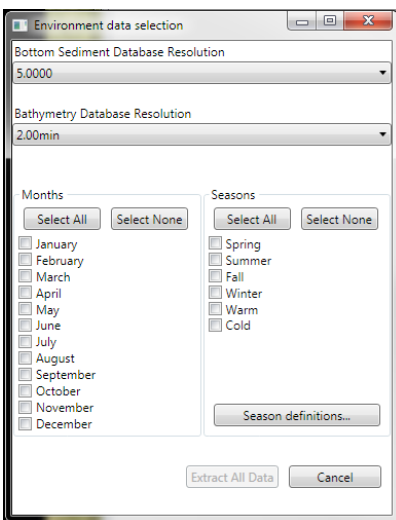
Where available, the database-native extraction tools are used by ESME Workbench.



Several additional configuration options are now available in the ESME Main Options dialog for configuration of OAML Database and Extraction Tool locations.



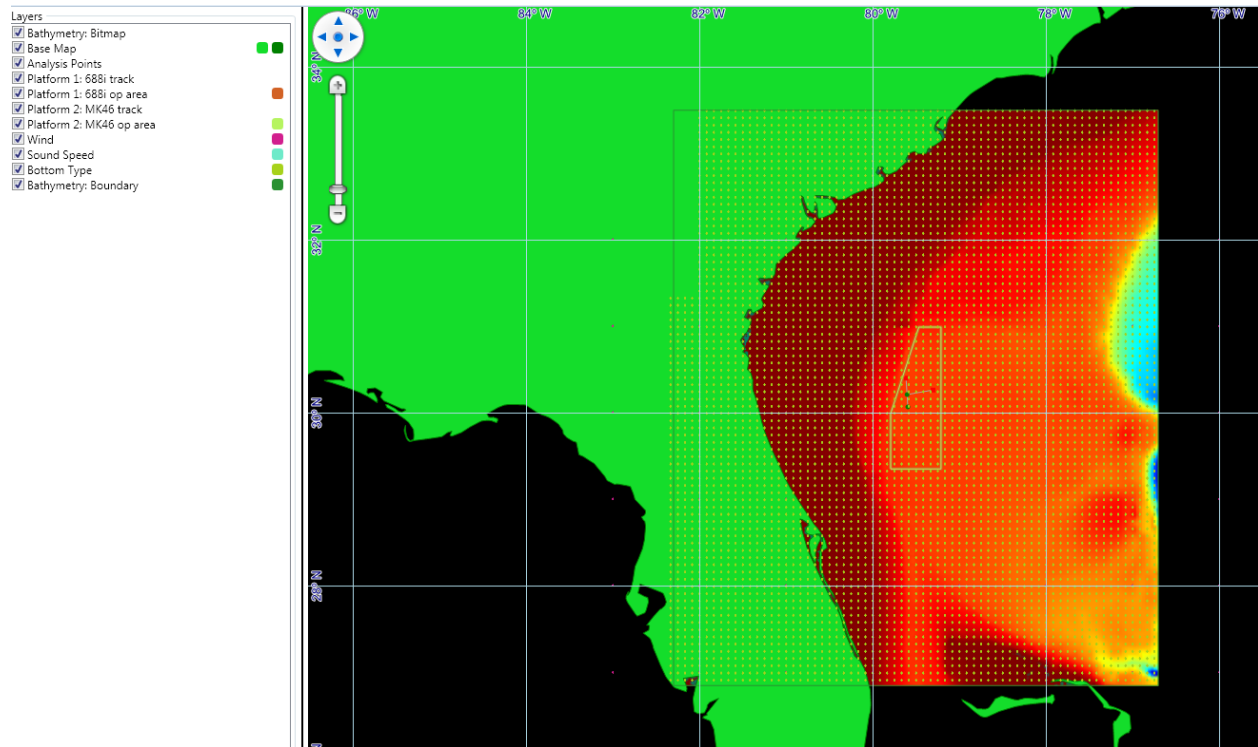
When OAML sources are to be used, the Environment Settings button on the main ribbon control allows the user to select appropriate database resolutions and time periods for extraction:



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.



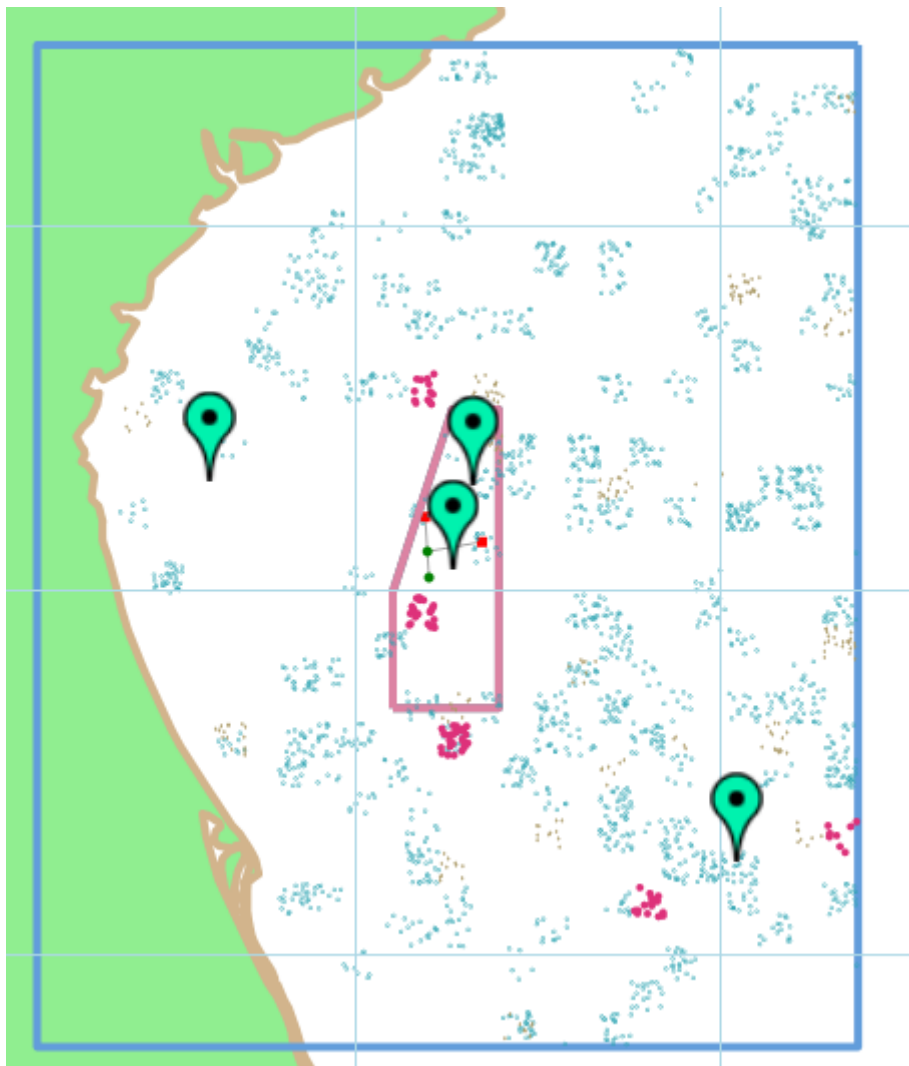
29 NOV 2010:

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:

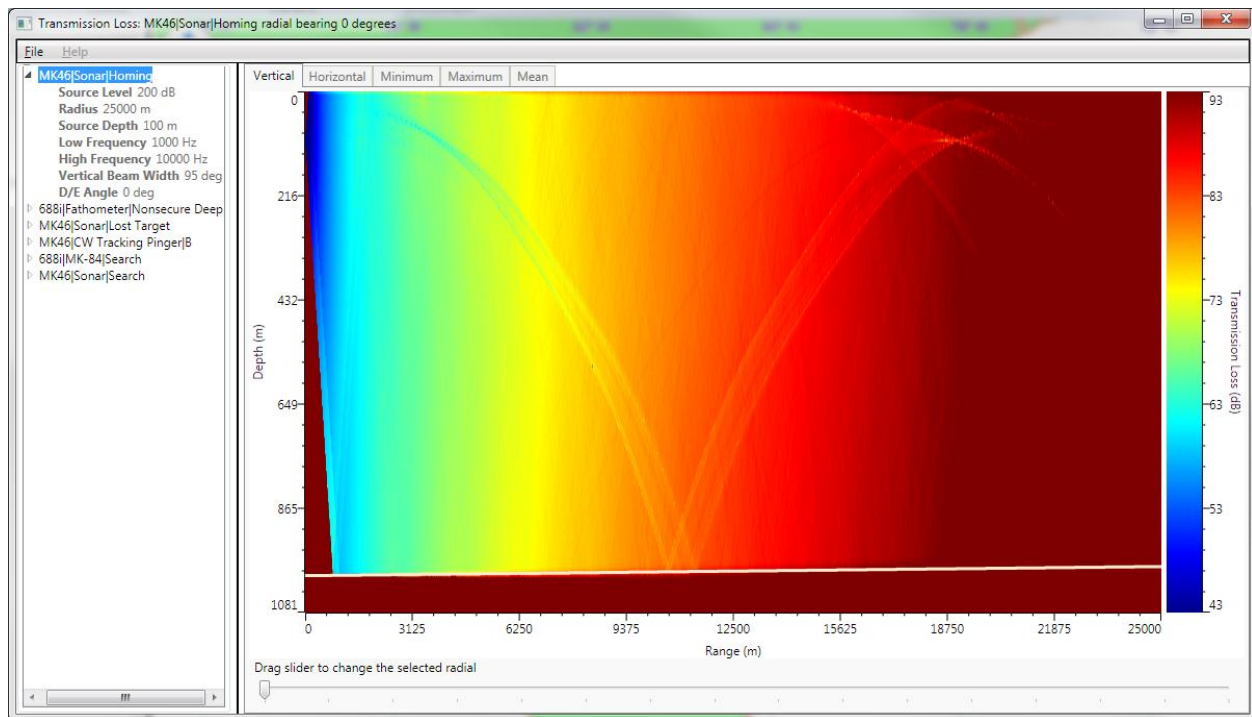
Animat Location Files (.sce) now populate animats only in the geographical area specified by the ESME Scenario File (*.nemo), and are bounded by a Bathymetry Boundary layer.*



Animats distributed within a Bathymetry Boundary

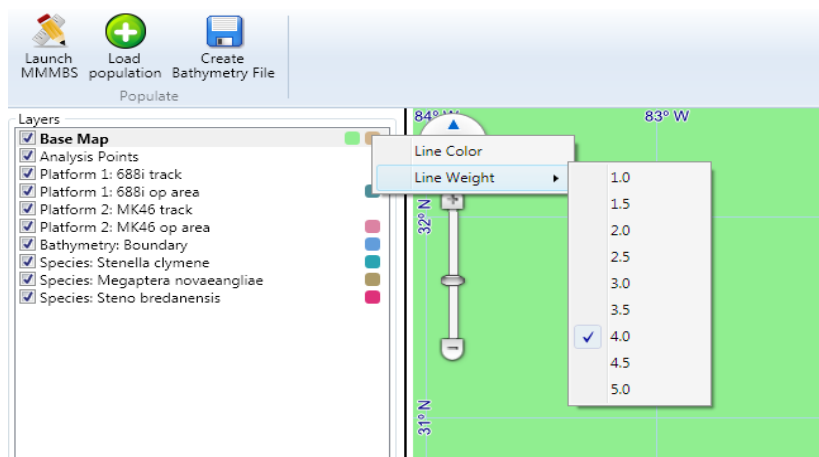
Transmission Loss View:

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.

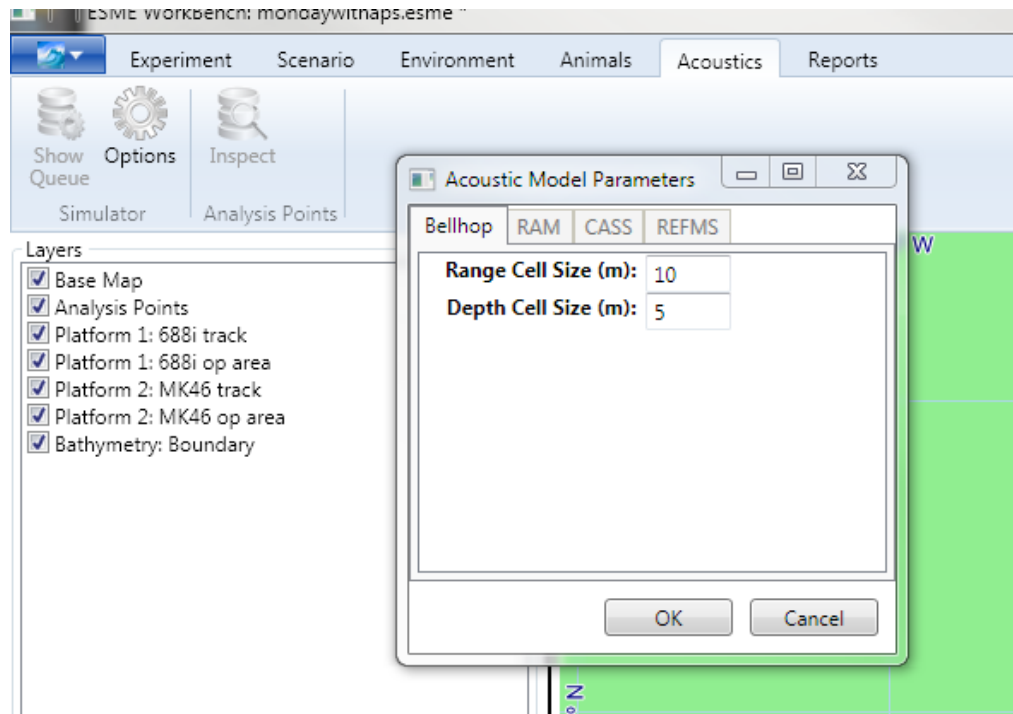


Context menus allow the Line and Area colors to be changed. For Animat layers, the Symbol size, shape, and color can be modified.



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.



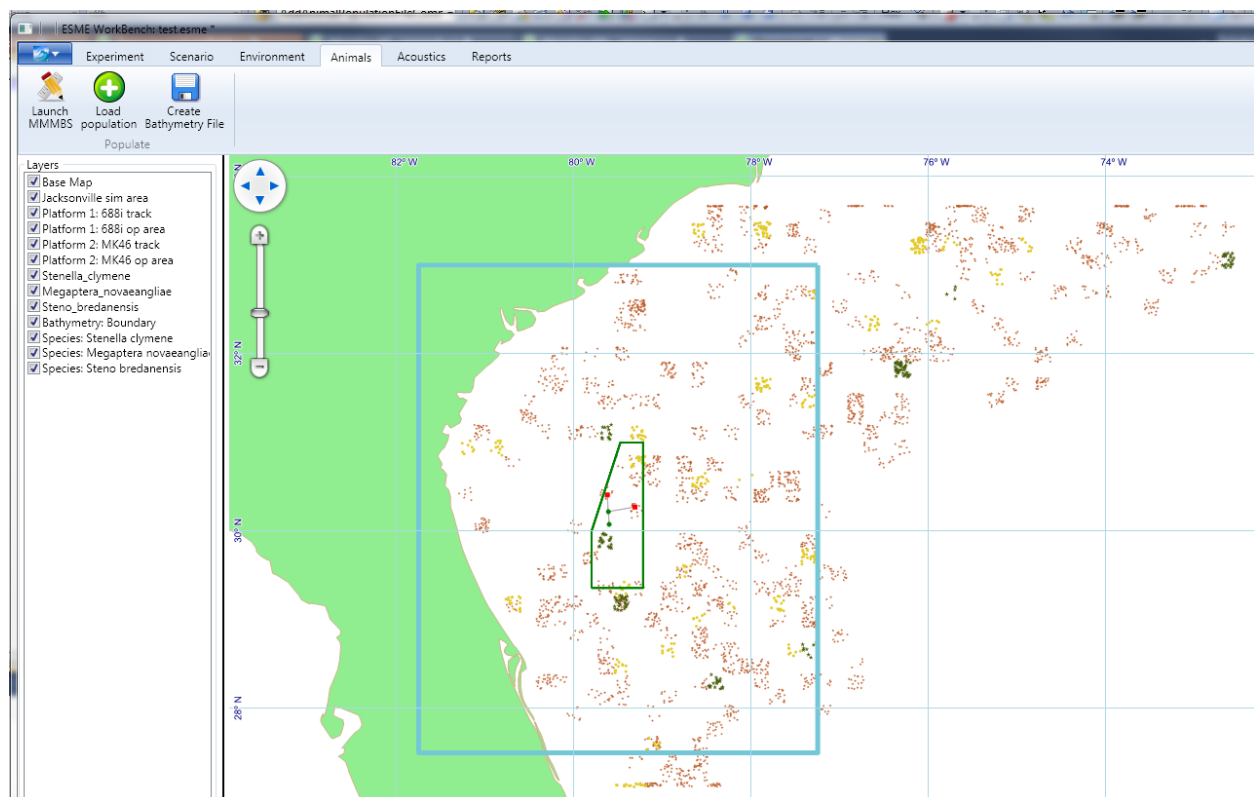
29 OCT 2010:

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:*

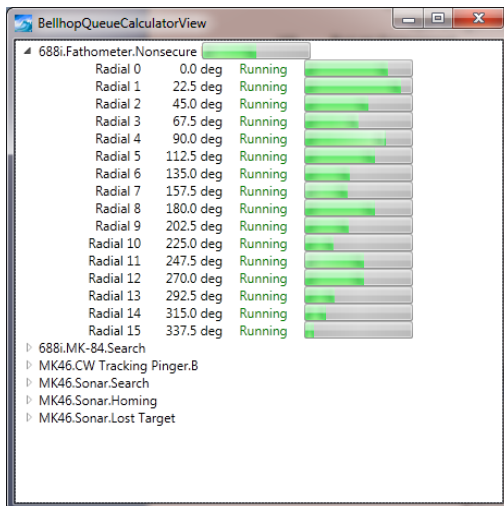


An ESME file named test.esme that contains the Scenario File JAX Small.nemo and animats from three atlantic species.



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.



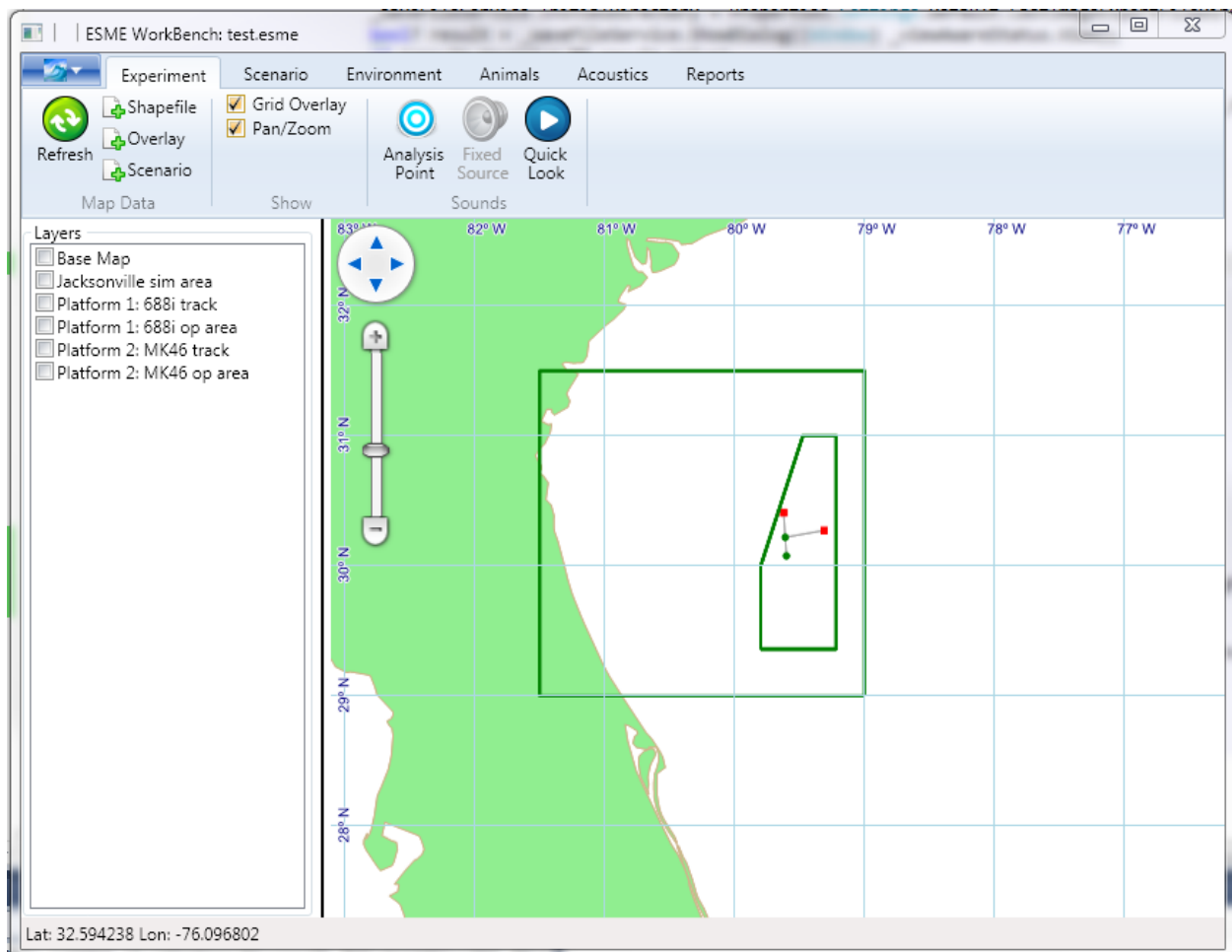
08 OCT 2010:

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.*



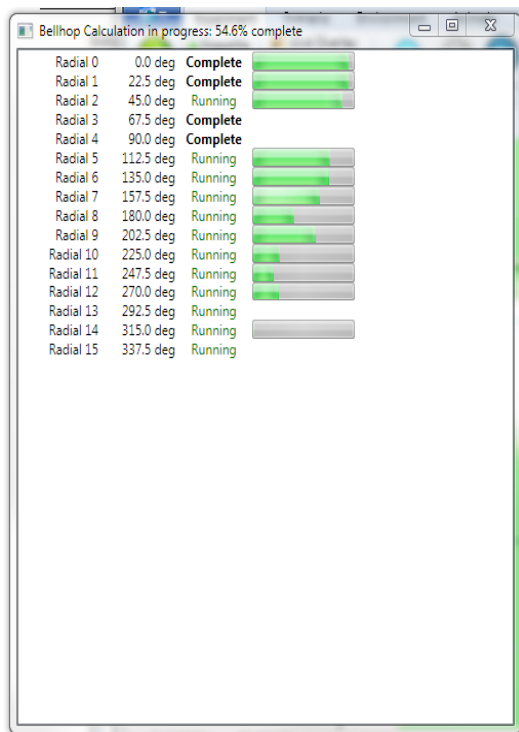
An ESME file named test.esme that contains the Scenario File JAX Small.nemo.

Quick Look Capability:

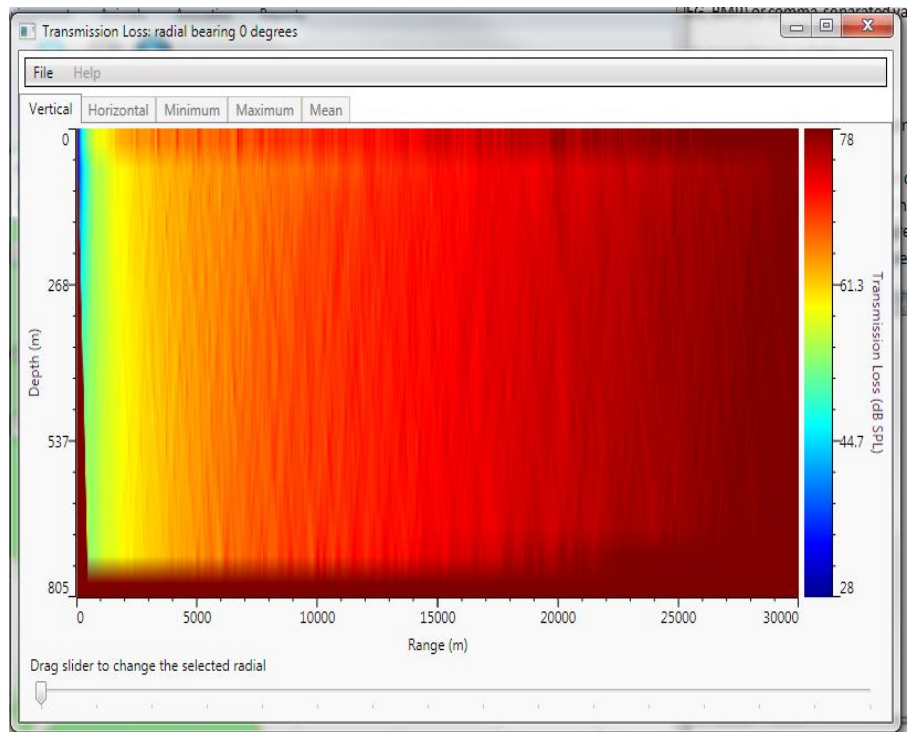
Quick Look now has a more full-featured Transmission Loss Field viewer. Vertical fields can be viewed for all radials with a dynamically adjustable color bar, and the field data can be exported to one of three image formats (PNG, JPEG, BMP) or comma-separated value files (CSV).

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.*