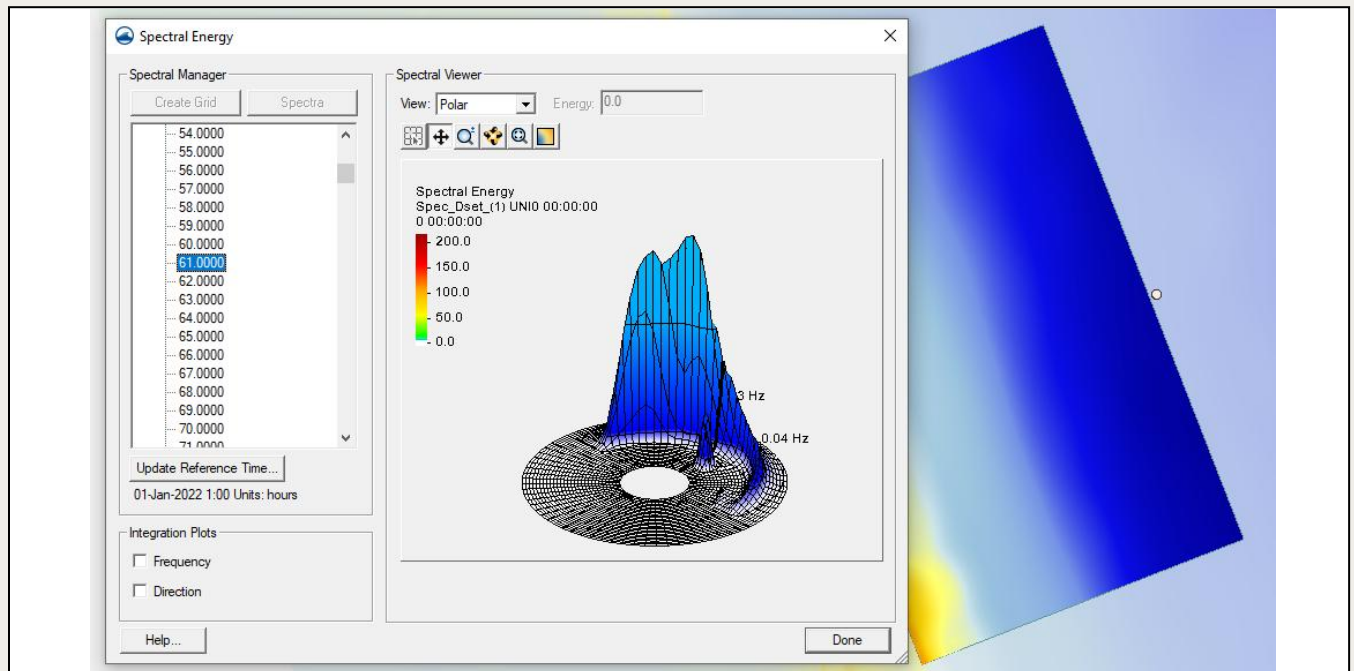




SMS 14.0 Tutorial

Retrieve Data from the WIS Portal

Download and import WIS data



Objectives

This tutorial demonstrates retrieving and importing wave data from the WIS Data Portal.

Prerequisite Tutorials

- Overview
- Map Module

Required Components

- SMS Core

Time

- 10–15 minutes

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1 Introduction

This tutorial demonstrates using data from the WIS Data Portal. It will go over the following:

- Getting wave data from the WIS Data Portal for use with CMS-Wave or STWAVE
- Loading data from the WIS Data Portal into a SMS project
- Viewing wave data in SMS

The tutorial will make use of a location around the Currituck Sound, North Carolina in the United States.

2 Accessing the WIS Data Portal

This section will require an internet connection. The WIS Data Portal allows access to OceansMap. OceansMap is a web-based metocean data visualization and analysis platform that supports exploration of observation and model data. To access the WIS Data Portal, do one of the following:

1. Open a web browser outside of SMS.
2. Use a search engine to search for “WIS Data Portal”.
3. Select the option that goes to wisportal.erdc.dren.mil.

or

4. Use the following link to access the site: <https://wisportal.erdc.dren.mil/>

Once at the WIS Data Portal site, locate the area for this tutorial by doing the following:

5. Select the *Stations* tab.
6. Enter “63218” so that “Atlantic – Station ST63218” is showing.
7. Click “Atlantic – Station ST63218” to zoom to the station location.

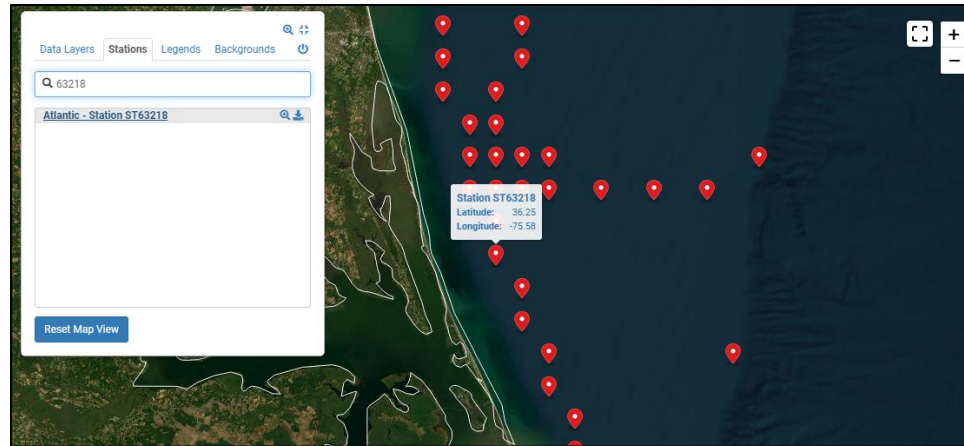


Figure 1 Station location

8. Click the “63218” station marker to open the station data window.
9. In the data window, select the *CMS-Wave* option from the list on the left.
10. For the *Preset Dates*, change *Select* to “2022” and “January”.
11. Turn on *gridOrientation* and enter “201.3”.
12. Turn on *gridBoundaryDepth* and enter “15”.
13. Click **Download**.

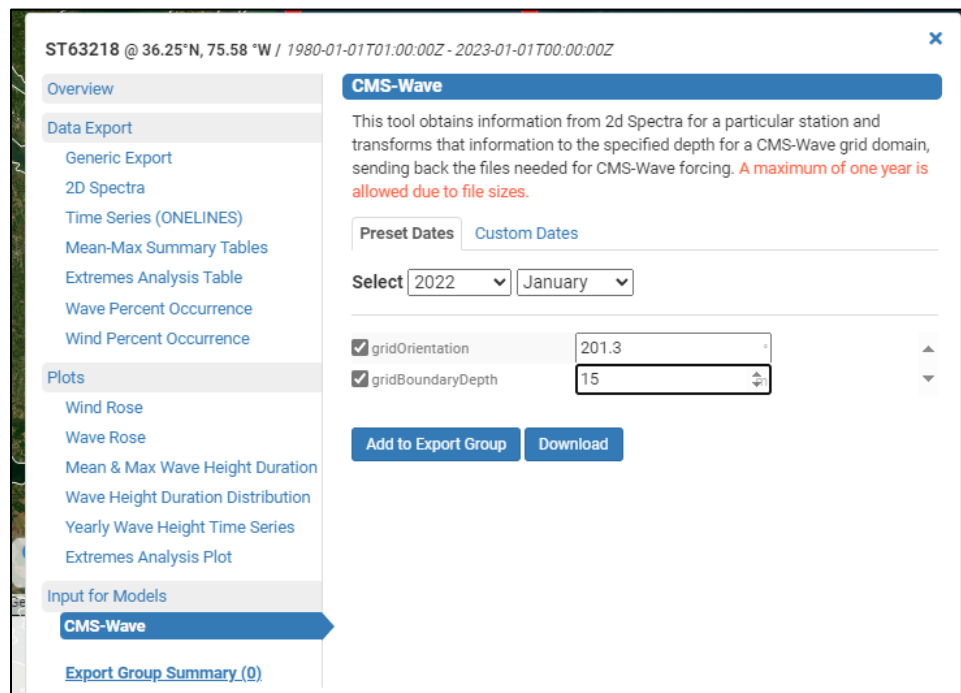


Figure 2 Station CMS-Wave model inputs

The file will download to the designated download folder.

14. Locate the downloaded file on the local machine.
15. Unzip the downloaded file using any desired method.

16. Move or copy the following files to the *data files* folder for this tutorial:

- “63218_2022_01_01_2022_01_31.eng”
- “63218_2022_01_01_2022_01_31.txt”

17. If desired, close the browser for the WIS Data Portal.

It is important to note that the downloaded data is not at the buoy location anymore. The data has been transformed based on angle and depth. Other data included in the download will not be discussed at this time.

3 Import WIS Data

The WIS data can now be imported into an SMS project. A project containing an unstructured grid (UGrid) of the same area as the downloaded WIS data has been previously generated. To see how this grid was created, refer to the “CMS-Wave Grid Generation” tutorial.

To open the project, do the following:

1. Select *File* | **Open...** to bring up the *Open* dialog.
2. Browse to the *data files* folder for this tutorial and select “start.sms”.
3. Click **Open** to import the project and exit the *Open* dialog.

The project should appear similar to Figure 3.

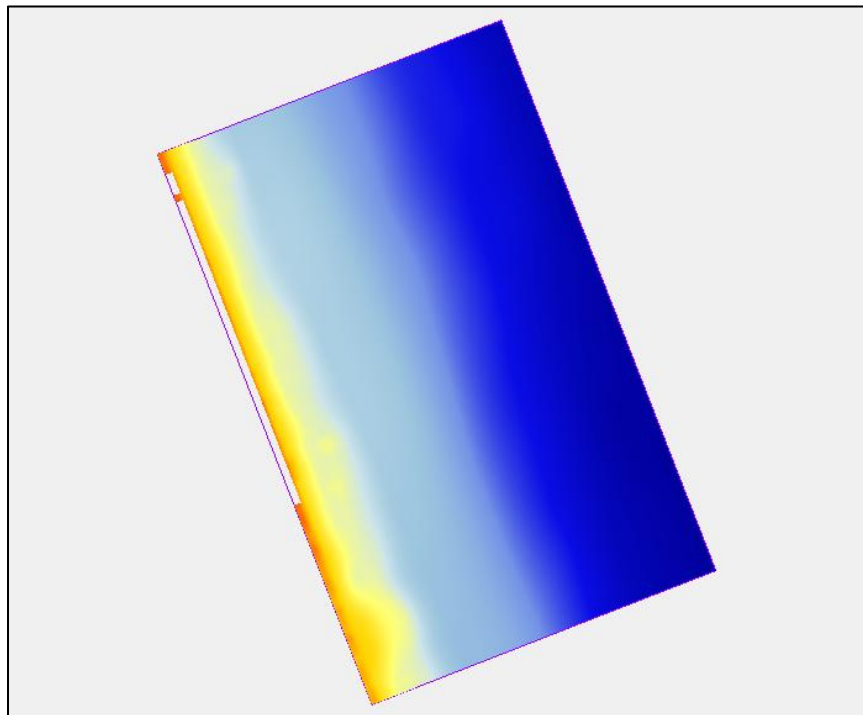


Figure 3 Initial project appearance

4 Importing Spectral Data

This part will show how to import the CMS-Wave spectral data that was downloaded from the WIS Data Portal. If the data was retrieved from the WIS Data Portal, then a copy of the data has been included in the *WIS Data* folder in the data files for this tutorial. This section will show how to directly import the data by doing the following:

1. Select **File | Open...** to bring up the *Open* dialog.
2. Browse to the *data files* folder for this tutorial and select "63218_2022_01_01_2022_01_31.eng".
3. Click **Open** to bring up the *Open File As* dialog.
4. Select "CMS-Wave Files (*.eng)" from the drop-down then click **OK** to bring up the *Spectra Grid Info* dialog.
5. Enter the following values:
 - a. *Spectra Location x*: "904240.0"
 - b. *Spectra Location y*: "275405.0"
 - c. *Grid Orientation Angle (CCW from East)*: "201.3":
6. Click **OK** to close the *Spectra Grid Info* dialog.

A new coverage will appear in the Project Explorer. The coverage contains a single point containing the spectral data.

4.1 Reviewing the Spectral Data

With the spectral data imported, it can now be examined by doing the following:

1. Select " 63218_2022-01-01_2022-01-31 - ENG" to make it active.
2. Using the **Select Feature Point**  tool, double-click on the point in the coverage to open the *Spectral Energy* dialog.

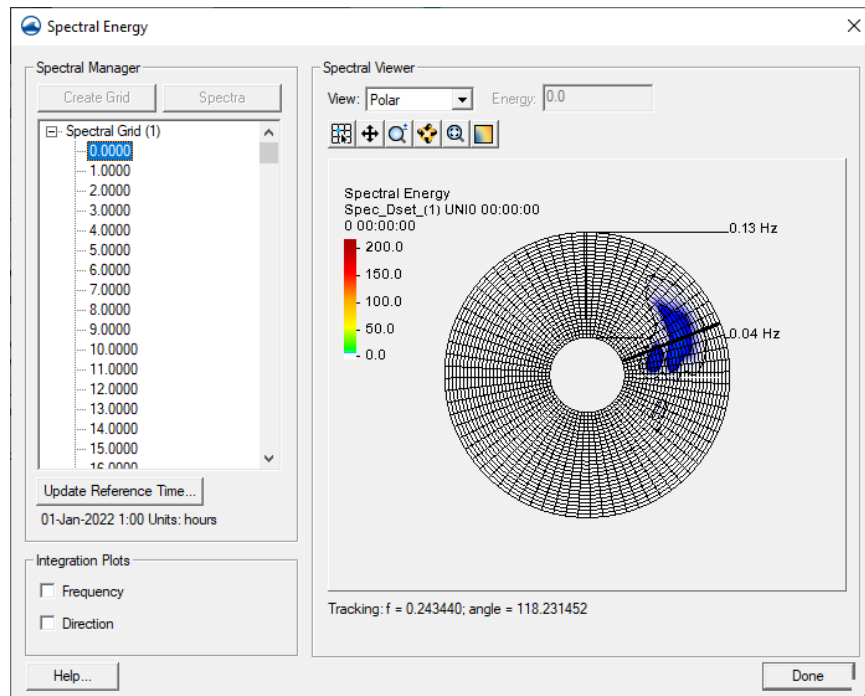


Figure 4 Imported spectral data

3. Click the **Contour Option**  macro to open the *Dataset Contour Options – Spectral Energy* dialog.

Notice the contours are "fixed" showing energy densities up to 200. Several contours are clustered at the low end of the scale. The low end captures calmer sea states while the upper end captures the biggest waves.

4. Click **OK** to close the *Dataset Contour Options – Spectral Energy* dialog.

Continue to explore the spectral data. Start with noticing that the reference time is the same as what was specified during the download: Jan 1, 2022. Now:

5. Select a time step
6. Cycle through time steps using the up and down arrows on keyboard.

Notice this is a "from" direction. The waves can be thought of as moving to the center of the circle. The energy has been clipped to only include onshore waves.

7. If necessary, make the dialog bigger.
8. Use the **Rotate**  tool to rotate the view into an oblique (3D) view then cycle through time steps.
9. Under *Integration Plots*, turn on the *Frequency* and *Direction* options to open two plot dialogs.
10. Cycle through the time steps again noting that both plots update to match the time steps.
11. When finished, click **Done** to close the *Spectral Energy* dialog.

5 Create a Spectral Grid

Another method can be used to import the WIS wave data. This method involves first creating a spectral grid in SMS, then adding the WIS data to the spectral grid.

5.1 Creating the Spectral Coverage

To create a spectral coverage and add a point to apply the spectral data to, do the following:

1. Right-click on “ Map Data” in the Project Explorer and select **New Coverage** to open the *New Coverage* dialog.
2. Under *Coverage Type*, select **Spectral**.
3. Accept the default name and click **OK** to close the *New Coverage* dialog.
4. Select “ Spectral” to make it active.
5. Click the **Display Options**  macro to open the *Display Options* dialog.
6. Turn on the *Inactive coverage* option.
7. Click **OK** to close the *Display Options* dialog.
8. Using the **Create Feature Point**  tool, create a new point in the same location as the point on the other coverage.

5.2 Generate the Spectral Data

To import and generate the spectral data, do the following:

1. Using the **Select Feature Point**  tool, double-click on the point in the coverage to open the *Spectral Energy* dialog.
2. Click the **Create Grid** button to open the *Spectral Grid Attributes* dialog.

The default values here have already been set to match the grid.

3. Click **OK** to close the *Spectral Grid Attributes* dialog and open the *Create Spectral Energy Grid* dialog.
4. Again accept the default values and click **OK** to close the *Create Spectral Energy Grid* dialog.
5. Click the **Update Reference Time** button to open the *Time Settings* dialog.
6. For the *Reference time*, enter “1/1/2022 12:00 AM”.
7. Click **OK** to close the *Time Settings* dialog.
8. Click to **Spectra** button to open the *Generate Spectra* dialog.
9. Under *Seaward Boundary Depth*, set the *Specify once for all spectra* option to be “15.0”.
10. Click the **Import** button to bring up the *Open* dialog.
11. Navigate to the data files for this tutorial and select “63218_2022-01-01_2022_01-31.txt”.
12. Click **Open** to close the *Open* dialog.

The spectral data from the WIS Data Portal has now been loaded into SMS and can be added to the project.

13. Click **Generate** to close the *Generate Spectra* dialog.

14. Review the data as demonstrated in section 4.1.

The spectral data will be slightly different than the first set that was imported.

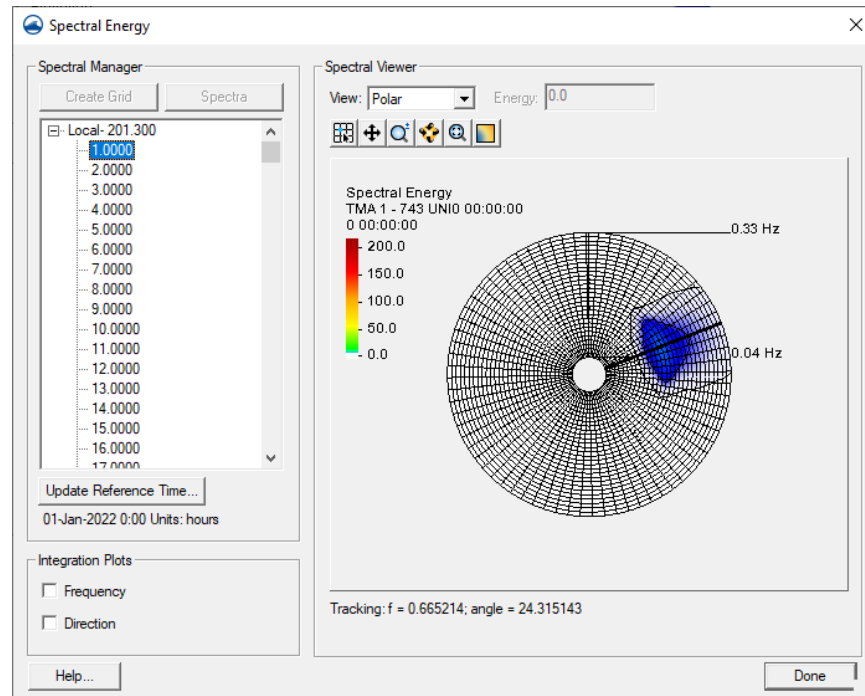


Figure 5 Generated spectral data

6 Conclusion

This concludes the “Retrieving Data from the WIS Portal” tutorial, which showed how to download and import wave data accessed at the WIS Portal. The data can be used with coastal numeric models such as CMS-Wave and STWAVE.