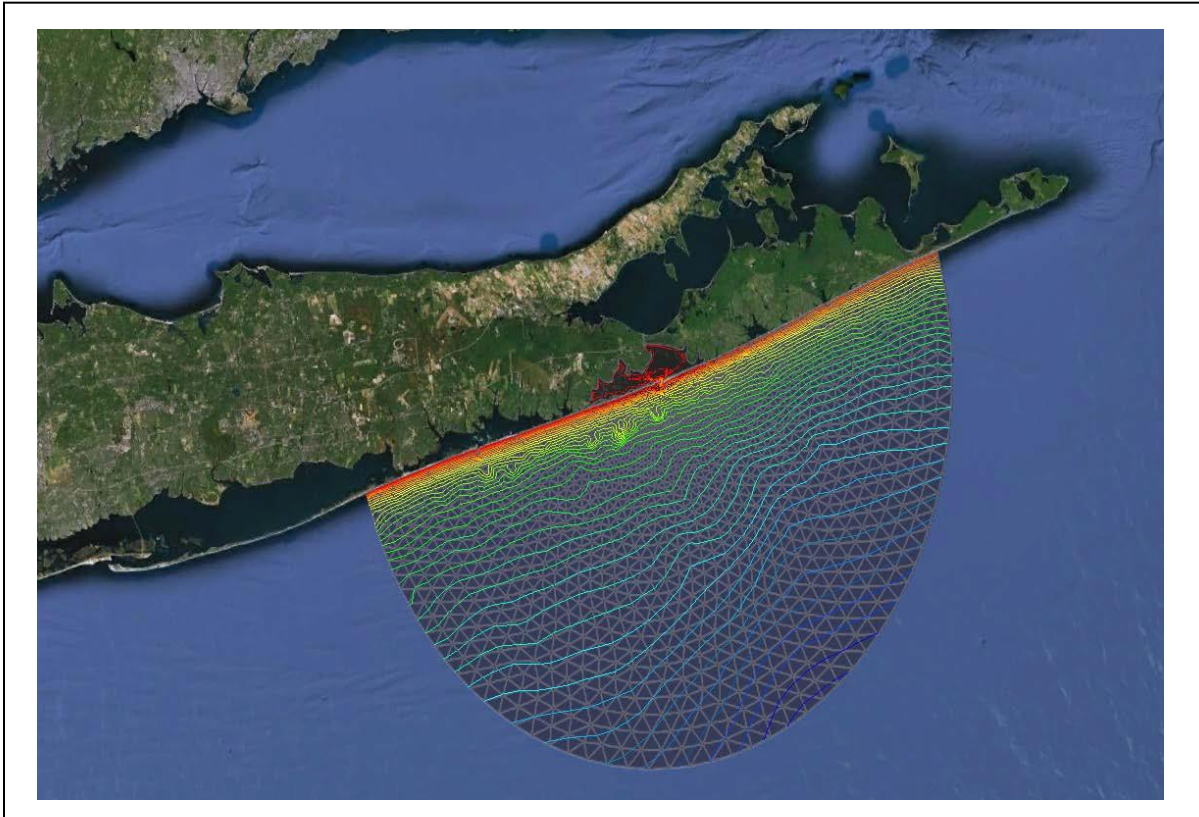


## SMS 12.2 Tutorial

### Google Earth<sup>®</sup> Files



#### Objectives

This lesson is designed to help understand how to save SMS data to a KMZ file format. KMZ files are Google Earth<sup>®</sup> files and will allow viewing SMS data in Google Earth<sup>®</sup>. SMS can save any georeferenced data into a KMZ format. This tutorial will go through the steps necessary to do this. This tutorial requires that Google Earth<sup>®</sup> be installed and available.

#### Prerequisites

- None

#### Requirements

- Mesh Module
- Google Earth<sup>®</sup>

#### Time

- 15-30 minutes

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## 1 Open an Existing Georeferenced File

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Any type of SMS data can be saved as a KMZ file if the data has been georeferenced and has a specific coordinate system. To make this tutorial easier, the example project will be working with previously georeferenced data. To know more about georeferencing, complete the “Overview” tutorial.

1. Open a new project in SMS. Select *File* | **Delete All** to make sure all other data has been erased.
2. Select *File* | **Open**, which will bring up the *Open* dialog, and find the “shinfinal.2dm” file in the data files folder for this tutorial.
3. Click **Open** to read the file into SMS.
4. Repeat steps 2 and 3 for the “dataset.h5” file in the same folder.

## 2 Editing Display Options

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The first KMZ file will be of the mesh of Shinnecock Bay. Whatever options are turned on in SMS will be shown in Google Earth<sup>®</sup> when loading in the KMZ file.

1. Select *Display* | **Display Options...** to open the *Display Options* dialog.
2. Select *2D Mesh*, if not already selected, from the list of available display types in the list box on the left side of the dialog.
3. Click off the *Nodestrings* option to turn off the blue ocean nodestring and the brown land boundary specified on the mesh. Also, turn off the *Mesh Boundary* and *Contours* options in the dialog.
4. Click **OK** to close the *Display Options* dialog.

The display should be showing a plain mesh once all of the options above have been turned off.

5. Click the **Frame** button from the Display Toolbar near the top of SMS to center the mesh on the screen.
6. Toggle off the “Map Data” items in the Project Explorer on the left side of the screen.

### 3 Editing Projection

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In order to save data as a Google Earth® KMZ file, the file has to be in global projection or the file will not be saved.

1. Select *Display* | **Projection** to bring up the *Display Projection* dialog.
2. Change the *Horizontal* coordinates to *Global projection*. The *Select Projection* dialog should appear automatically. If not, click on the **Set Projection** button.
3. In the *Select Projection* dialog, change the *Projection* to “Geographic (Latitude/Longitude)”, the *Datum* to “NAD27,” and the *Planar Units* to “ARC DEGREES”. Click **OK**.
4. In the *Display Projection* dialog, change the *Vertical Units* to “Meters”. Click **OK** to make the conversion.

### 4 Saving a KMZ File

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There are two different ways to save a Google Earth® KMZ file. Files can be saved as raster files or vector files. The following sections will show the differences between the two methods. Make sure that the dataset to be saved out to a KMZ file is selected before saving.

#### 4.1 Raster KMZ file

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1. In order to save a raster KMZ file, select *File* | **Save As...**
2. Near the bottom of the *Save As...* dialog, change *Save as type* to “Google Earth© Raster KMZ File (\*.kmz)”.
3. Enter “Raster” as the *File name* and then click the **Save** button. In this case the file should save fairly quickly. However, if working with another file that is extensively larger than the file provided for this tutorial, this step might take a little while.
4. To open the “Raster.kmz” file into Google Earth©, double-click on the file. Remember to first download and install Google Earth® prior to opening the KMZ file.
5. When Google Earth® opens it should automatically zoom in to the desired location. If this does not happen, zoom in to the location and the result should look something like Figure 1.

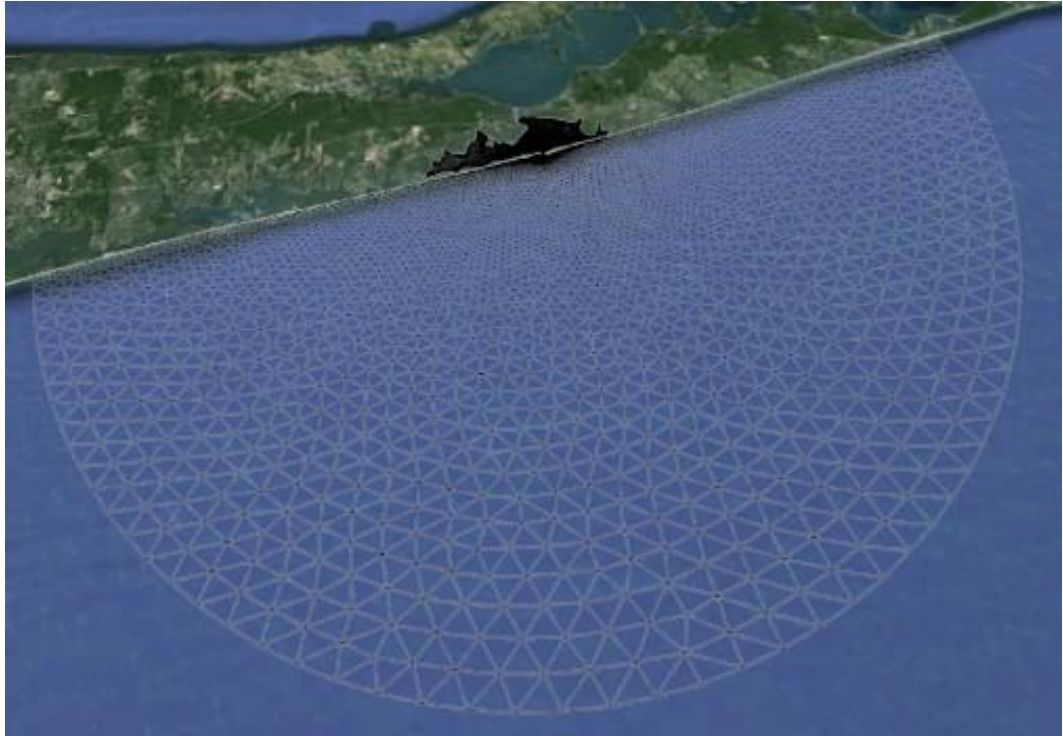


Figure 1 Raster file as shown in Google Earth®

Some options in Google Earth® may cause slight differences in how the KMZ file is displayed. These options can be turned on or off.

## 4.2 Vector KMZ file

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It is also possible to save a vector KMZ file in SMS. To do this:

1. Select *File* | **Save As...**
2. Near the bottom of the *Save As...* dialog, change *Save as type* to “Google Earth© Vector KMZ File (\*.kmz)”.
3. Enter “Vector” as the *File name* and then click the **Save** button. It may take a little time to save, so wait for SMS to completely finish saving.
4. To open the “Vector.kmz” file into Google Earth© just double-click on the file. Remember to first download and install Google Earth© prior to opening the KMZ file.

When Google Earth® opens it should automatically zoom in to the desired location. If this does not happen, zoom in to the location and the result should look something like Figure 2.

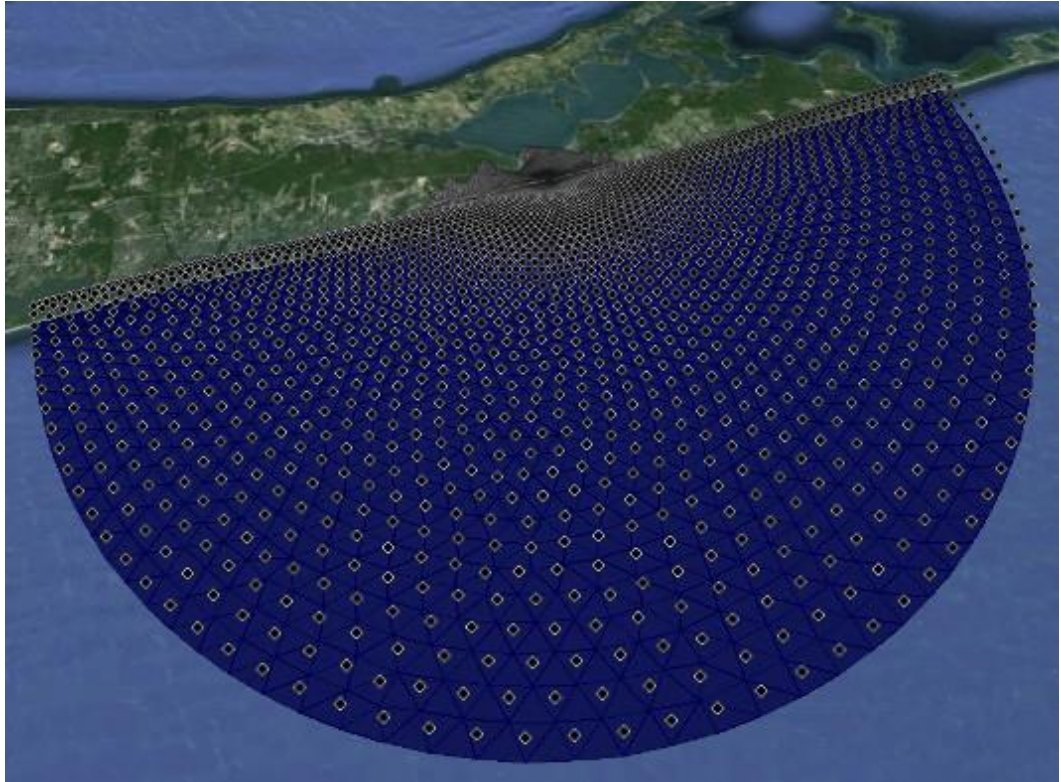


Figure 2 Vector KMZ file as shown in Google Earth®

## 5 Differences Between Raster and Vector KMZ Files

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In order to better show the differences between raster files and vector files, it is important to zoom in to a closer section of the mesh in Google Earth®.

Figure 3 shows the Raster.kmz file as seen in Google Earth® when zoomed in near the inlet. Notice how the mesh is very pixilated and the image is not very clear. Figure 4 shows the Vector.kmz file as seen in Google Earth® when zoomed in. Notice how the image is clear and the mesh can clearly be seen.

The Vector.kmz file is of course better in terms of pixilation and for viewing the mesh on small areas. However, a raster file does not take as much time to save as a vector file.



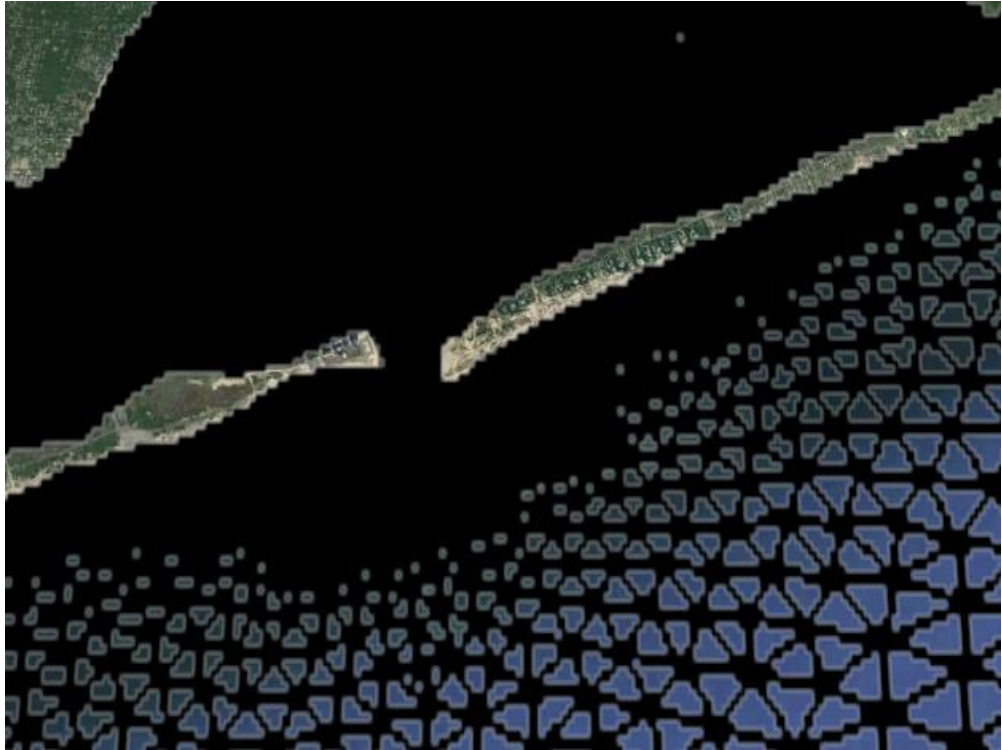


Figure 3 Zoom in of the Raster KMZ file

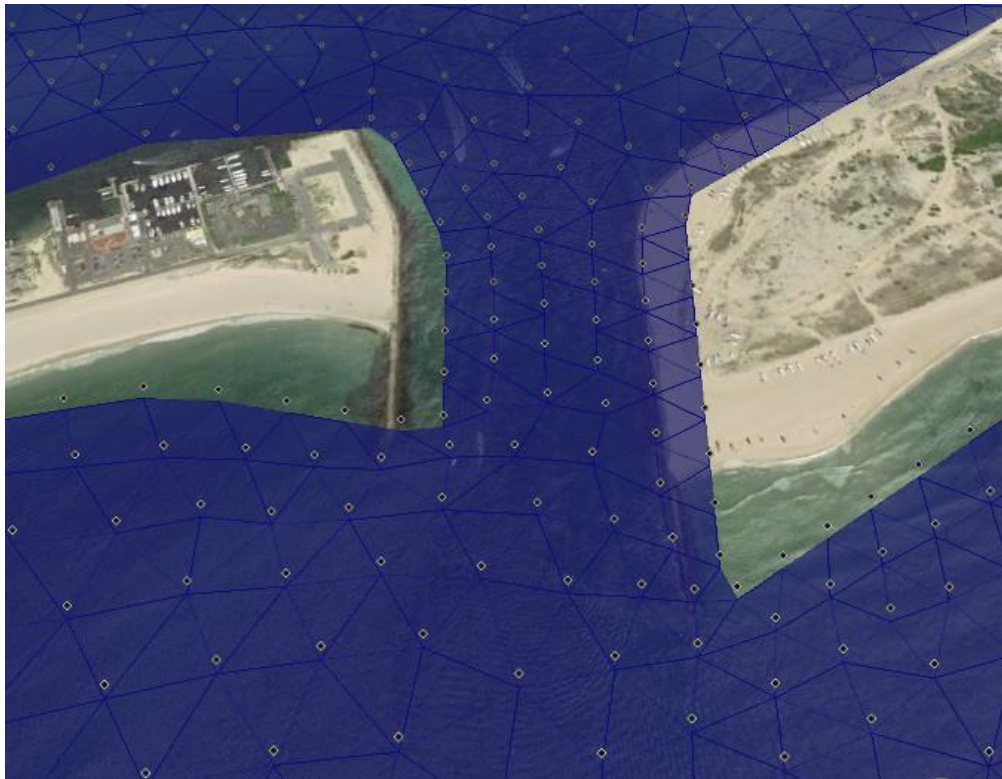


Figure 4 Zoom in of the Vector KMZ file

## 6 Saving the File with Contours Enabled

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To show other available views of data, the file can be saved with contours enabled. However, it is important to know that contour with the color fill method cannot be used to save a vector KMZ file.

1. Return to SMS, and select *Display* | **Display Options...** to reopen the *Display Options* dialog.
2. Select *2D Mesh* from the list on the left side of the dialog. Turn all options off, except the *Contours* option.
3. Click on *Contour* tab at the top of the dialog. Change the *Contour Method* to “Linear” and change the *Number of Contours* to “40” then click **OK** to close the *Display Options* dialog.
4. Save the file as a vector file once again as shown previously in section 4.2. Name the file “Contours”. The file shown in Google Earth© should appear similar to Figure 5

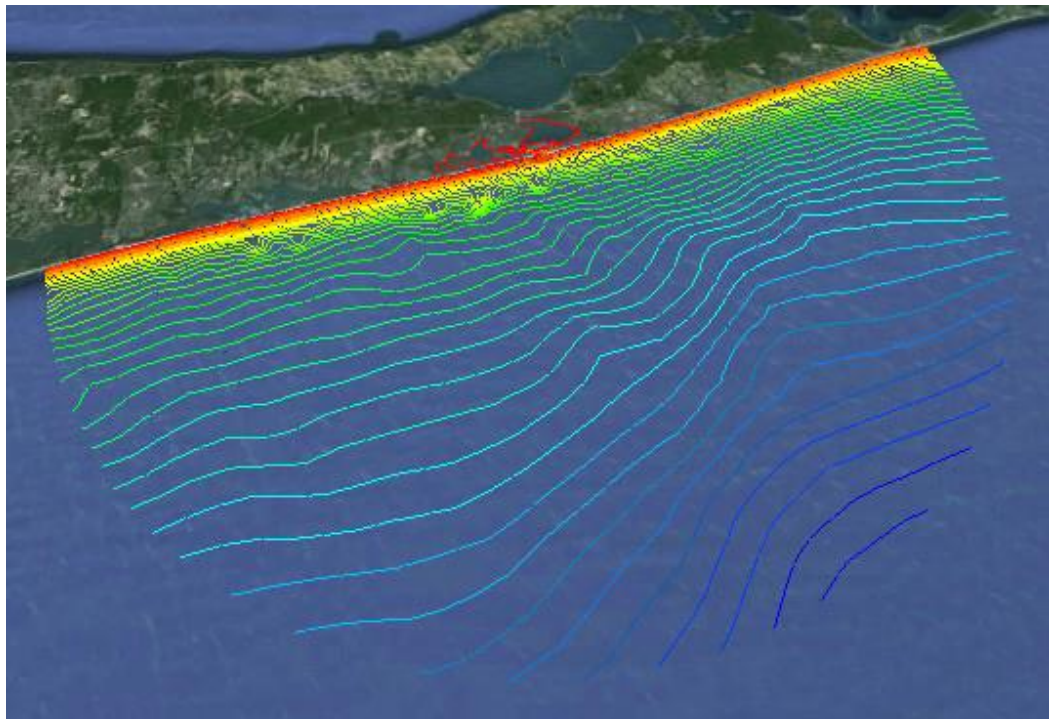


Figure 5 Vector KMZ file shown in Google Earth® with Contours active

It's also possible to save the file as a raster file with *Contour Method* as “Color Fill”.

## 7 Exporting KMZ Transient Data Animation

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It is also possible to export a KMZ transient data animation using the *Film Loop Wizard*. This will export a series of raster images which can be animated in Google Earth®. The

background color can be specified in the *Film Loop Wizard*. It is recommended that the option for no background be used so the Earth can be seen through the overlaid image in Google Earth®. SMS requires being in plan view to export a KMZ transient data animation.

First, change the *Display Options* of the dataset in order to better view animation in Google Earth®. To do so:

1. Select *Display* | **Display Options** to open the *Display Options* dialog.
2. Make sure *2D Mesh* is selected from the menu on the left. Turn on *Contours* and *Vectors* only and make sure that all other options are off.
3. Select the *Contours* tab and change *Contour Method* to “Color Fill” and *Transparency* to “80%”.
4. Select *Vectors* tab and under *Arrow Options* change the *Maximum* to “60”.
5. Select **OK** to close *Display Options* dialog.

To export a KMZ animation:

1. Select *Data* | **Film Loop**. This will open up the *Film Loop Setup – General Options* dialog.
2. Under *Film Loop Files*, select *Create Google Earth® KMZ File* and make sure that the file will be saved in the appropriate folder.
3. Make sure that *Transient Data Animation* is selected under *Film Loop Type* then click **Next**.

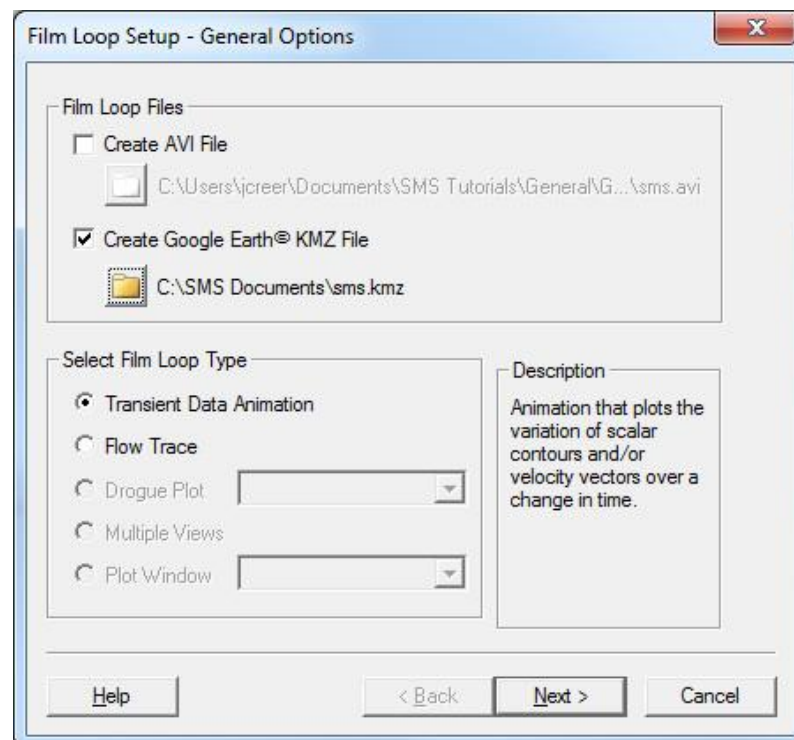


Figure 6 Example of the *Film Loop Setup – General Options* dialog



- In *Time Zone*, check on *Change Time Zone* and change to “(GMT-05:00:00) America / New\_York (Eastern Standard Time)”.
- Change the *Zero Time* to August 1<sup>st</sup> of 2000 (8/1/2000) at 8 AM. Click **Next**.

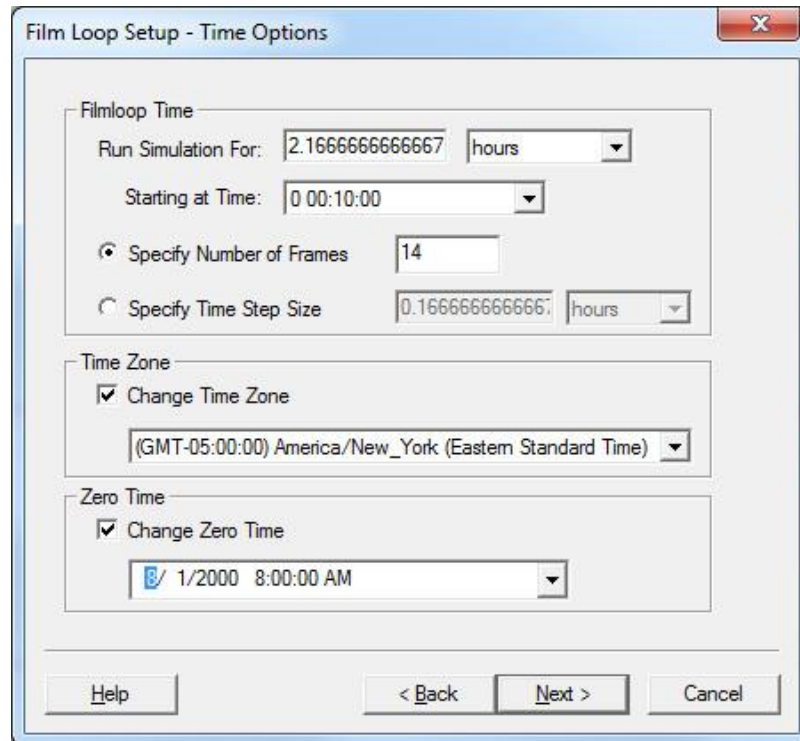


Figure 7 Example of the Film Loop Setup – Time Options dialog

- Click **Finish** to start animation. Once completed, the animation file will open automatically in Google Earth®.

## 8 Conclusion

This concludes the Google Earth® Files tutorial. Continue to experiment creating KMZ files in SMS or move on to the next tutorial.