Creating a RAS Terrain

Workshop

1 Objective

In this workshop, you will learn how to create how to create a RAS Terrain from a raster representing ground surface elevations.

2 Background

You will be working with a section of the White River at Muncie, IN.

3 Creating a RAS Terrain

- 1. Start HEC-RAS.
- 2. Save the project using **File | New Project** and providing a project name.
- 3. Launch **RAS Mapper** 🛸.
- Select Project | Set Projection for Project and navigate to the "projection.prj" provided in the "GISData" folder. This sets the coordinate system for all the data you will view in RAS.

🚟 RAS Mapper Options

Project Settings	Coordinate Reference System
Projection	Projection File: C:\Temp_RAS 2D Class\W - Creating a RAS Terrain\GISData\proj
General	Definition:
Render Mode	PROJCS["NAD_1983_StatePlane_Indiana_East_FIPS_1301_Feet",GEOGCS ["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID
Mesh Tolerances	["'GRS_1980'',6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT ["Degree",0.0174532925199433]],PROJECTION["Transverse_Mercator"],PARAMETER
Global Settings	["False_Easting",328083.33333333333],PARAMETER ["False_Northing",820208.333333333],PARAMETER["Central_Meridian",-
General	85.66666666666666667],PARAMETER["Scale_Factor",0.9999666666666666666667],PARAMETER ["Latitude_Of_Origin",37.5],UNIT["Foot_US",0.3048006096012192],AUTHORITY
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- 5. Press **OK** to accept the file.
- 6. Select the **Project | Create New RAS Terrain** menu item (or **right-click Terrains** and choose the **Create a New RAS Terrain** menu item) to import the terrain model.
- Click the "+" button to add files and navigate to the "Terrain" folder. Select the "base.tif" file.

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Set SRS Input Terrain Files (1					
+ Filename		Projection	Cell Size	Rounding	Info
Base tif		PROJCS["NAD83 / Indiana East (ftUS)",GEO	iC 5	1/32	i
<u>+</u> +					
Output Terrain File	1/32	▼ Create Stitches □	lerge Inputs to Si	ngle Raster	
Output Terrain File Rounding (Precision) Vertical Conversion:	1/32 Use Input File (Default)	Create Stitches	lerge Inputs to Si	ngle Raster	_

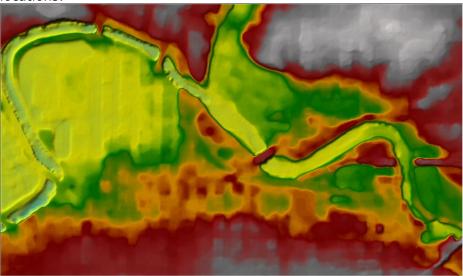
8. Press the **Create** button.

As the Terrain is created, a computation window will inform you of progress.

Computation Task	hh:mm:ss	^
Importing 1 of 1: Base.tif -> Terrain.Base.tif		
Step 1 of 1: File detected as valid RAS GeoTiff. Copying	0	
Base.tif Import Complete.	0	
Final Processing: Terrain.hdf		
Step 1 of 3: Creating Terrain.vrt	0	
Step 2 of 3: Creating Terrain.hdf	0	
Step 3 of 3: Creating Stitch-TIN for merging rasters	2	
Terrain Complete	3	
		\sim

- 9. **Double-click** on the **Terrain** Layer to access its Properties.
- 10. Click on the **Plot Hillshade** option. Play with the **Z Factor** to find a value you prefer.
- 11. Click on the **Plot Contours** option. Play with the **Interval**. Experiment with the option until the terrain looks good to you.

12. Note the presence of high ground in the middle of the channel at bridge locations.



4 Creating a RAS Terrain from Multiple Datasets

This task will take you through the process of creating a RAS Terrain from 2 different terrain models: channel data and overbank terrain, in order to capture the channel geometry where there is currently high ground at the bridge locations.

4.1 Create Grid of Channel Data

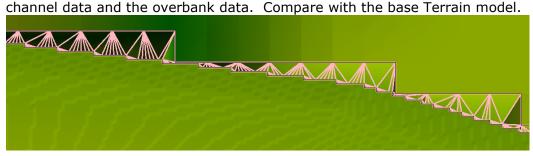
- 1. Open RAS Mapper
- 2. Select the **Project | Create New RAS Terrain** menu item
- 3. You will have to add to 2 different files. Make sure that the "priority" is set properly. The top layer should be the channel geometry, followed by the overbank. If you add them in the wrong order, you can reprioritize them by highlighting on of them, and clicking the up or down arrows on the left-hand side of the menu.
 - a. Add the "Channel.tif"
 - b. Add the "Base.tif"

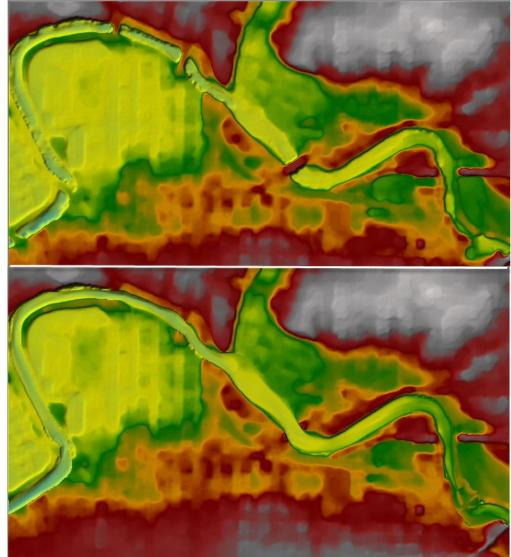
Set SRS Input Terrain Files (2 f	iles)				
+ Filename		Projection	Cell Size	Rounding	Info
× Channel.tif		PROJCS["NAD_1983_StatePlane_Indiana_East	5	(na)	i
Base.tif		PROJCS["NAD83 / Indiana East (ftUS)",GEOGC	5	1/32	i
+ ↓					
+	1/32	✓ Create Stitches	e Inputs to Si	ingle Raster	
◆ Output Terrain File	1/32 Use Input File (Default)	▼ Create Stitches	e Inputs to Si	ingle Raster	

- 4. Change the output filename to "**WithChannel**" by clicking the open folder icon in the bottom right corner of the menu. Enter the new name, and click save.
- 5. Press the **Create** button.

Creating Terrain 'WithChannel'			
Computation Task	1	hh:mm:ss	^
<pre>Importing 1 of 2: Channel.tif -> WithChannel.Channel.tif Step 1 of 1: File detected as valid RAS GeoTiff. Copying Channel.tif Import Complete.</pre>		0 0	
<pre>Importing 2 of 2: Base.tif -> WithChannel.Base.tif Step 1 of 1: File detected as valid RAS GeoTiff. Copying Base.tif Import Complete.</pre>		0 0	
Final Processing: WithChannel.hdf Step 1 of 3: Creating WithChannel.vrt Step 2 of 3: Creating WithChannel.hdf Step 3 of 3: Creating Stitch-TIN for merging rasters		0 1 0	
Terrain Complete	I	2	~
		Close	e //

- 6. Change the **Layer Properties** for the "WithChannel" Terrain.
- 7. Turn on the **Plot stitch TIN edges** for the "WithChannel" Terrain.
- 8. Investigate the stitching a TIN which is the interpolation between the inchannel data and the overbank data. Compare with the base Terrain model.





9. Compare the two terrain models (with and without bridge elevations).