



SkylineXLGIS Tool

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Version 5.0

Changes

Version 4.0 Updates to Arc 10.1

Version 4.1 Corrected conversion errors.

Version 5.0 Added fields to save Excel files to a specified folder with a specified name. Updates to 10.3. Saves the point coordinates to a separate sheet to allow ground verification of points.

Introduction

This tool uses an ArcMap10.3 line layer representing skyline profile(s) and a raster layer representing elevations on the ground to input profiles into the SkylineXL application for analysis.

Installation

This is a button Add In that can be installed to any ArcMap10 toolbar. It does not require administrator privileges. Save the file, SkylineXLGIS.esriAddIn somewhere on your computer. Double click on the file and the Add-In installation utility will run to install it on your computer. When you open ArcMap10, click on the toolbar, Customize->Add In Manager. Select the Add-In and click on Customize. Select the Commands Tab, and in the Categories column select Add-In Controls. You will see SkylineXLGIS on the right side, drag that onto the toolbar of your choice and you're ready to go.

This Addin is not currently installed on the Citrix server. To run this in Citrix, save the AddIn to the T drive and install it using the Customize interface.

Required Data

This tool requires a line feature layer representing the skyline profiles, a raster layer containing elevation data. The profiles should be in the same units as the elevation data. If the elevation data is in meters, then the line data should be recorded in meters.

The data layers must have the same geographic coordinate system. If they do not, use the Project Tool in the Data Management Toolbox to project the line layer to the coordinate system of the elevation layer. You will receive an error message if the coordinate systems are not the same.



Description



Interface

After opening the profile and terrain data into ArcMap, the user clicks on the SkylineGIS Analysis button to run the application. The tool presents the user with a simple dialog where they identify the profile line layer and the raster elevation layer. The user selects whether the elevation data is in meters or feet. The user also selects the type of algorithm they would like used to locate terrain points.

The newest feature allows the user to designation a location to save the output files and the naming convention of the output files. The name of each output file is the name provided by the user with the line ID appended to it.

Once the user enters the information, they can click on the Run Analysis button.

Algorithm Options

The program uses one of two algorithms to locate terrain points, Fixed Distance and Slope Breaks. The fixed distance algorithm gives a smoother output, but it may miss terrain features. The slope breaks algorithm provides a lot of detail where there are distinct terrain features, but it also skips over large areas of little change. The terrain greatly affects the results of either algorithm.

Slope Break

The tool loops through the profiles in the profile layer. For each profile, points are located along the profile at the resolution of the raster elevation data. If the raster elevation resolution is 10 meters, then points are located every 10 meters. If the raster resolution is less than 5 meters, such as LIDAR data, points are located at a minimum of every 5 meters. At each increment the tool analyzes the slope and slope distance between points. If the slope changes by more than 10%, then a point is created for input into SkylineXL.

If no point breaks of 10% or greater are located, then the slope break is decreased by 1/10 of a percent. If the slope is continuous, then 10 points are located at equal intervals on the profile.

Fixed Distance

The fixed distance locates points at a fixed distance along the profile. Points are located 1/45 the length of the line along the line. This algorithm always outputs the same number of terrain points regardless of profile length.

Performing SkylineXL Analysis

Once all of the points have been identified, SkylineXL is opened and the profile is entered into the profile input screen. The user should navigate to the profile view page and refresh the view. Then the user can analyze the profile as they would normally, selecting a yarder, carriage and entering analysis variables in the normal fashion.



The application will open as many versions of the spreadsheet application, SkylineXL, as there are profiles. Wait until all profiles are loaded before you start analyzing.

Once the user is finished analyzing the profile they can either minimize or close SkylineXL. The tool does not save any of the data. If the user would like to save the data, they must use the tools provided by the SkylineXL workbook. Use SaveAs to save the spreadsheets to a new location.