

Zonal Statistics Python Toolbox for ArcMap 10.1+

User's Manual

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PURPOSE

This toolset was designed to support landing site suitability analyses by automating the mosaicking, clipping, and statistical reporting of slope rasters created at different baselines. The toolset has been expanded to include data preparation tools also available in the [Planetary Geologic Mapping \(PGM\) Python Toolbox](#), and may be applied to different use cases.

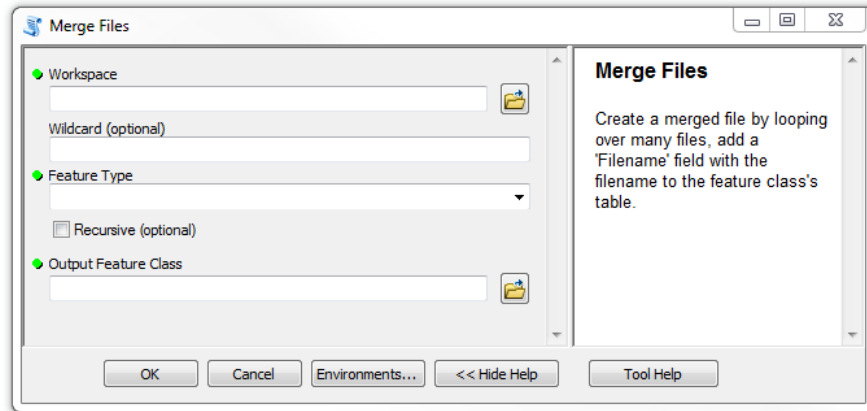
These tools are in the public domain, and as such, are freely available for download and modification. To edit the source code, open the *.pyt file in any Python code editor and navigate to the tool class. For more information on working with Python Toolboxes see [Esri's documentation](#).

Required systems/software

ArcGIS Desktop 10.1 or higher Advanced License

Merge Files

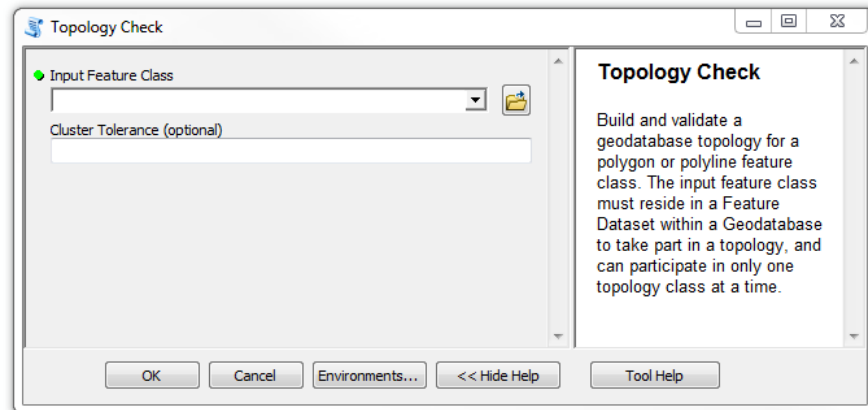
Duplicated from the PGM toolbox, this tool merges all files in a workspace (directory or geodatabase) into one, adding a 'Filename' field which is populated by the input file name. Files must be of the same geometry type, and may be restricted by keyword or file extension. The 'recursive' optional allows the tool to search through subdirectories. For the tool to execute properly all input files must have the same schema (i.e., all field names and properties must match).



Merge Files tool GUI.

Topology Check

Also imported from the PGM toolbox, the Topology Check tool is useful for identifying common topological errors found in geological data. The input data must reside in a geodatabase, and output topology class will identify any errors as 'dirty areas' marked in red. **It must be noted that this tool only identifies potential errors and does not make any corrections to data.** After saving any edits the feature class may be checked again by right-clicking the new topology class in the Catalog window and selecting 'Validate'.

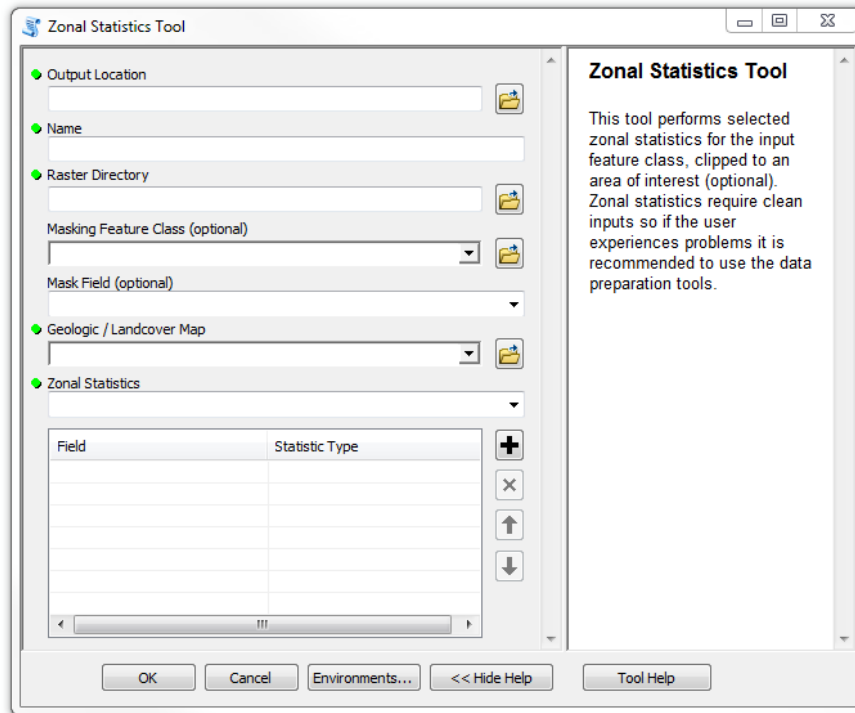


Topology Check tool GUI.

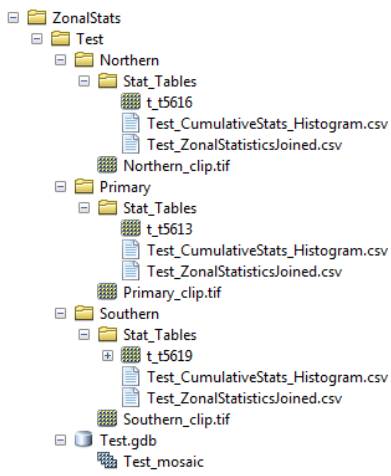
Zonal Statistics Tool

Though this tool was written for a specific use case it may be applied to any raster data that require [zonal statistics](#) for one or more areas of interest. Even if no masking is required, this tool may be useful for large areas covered by more than one image/raster as it creates a virtual mosaic on the fly.

When the tool is executed, a new project directory is created with a geodatabase and subdirectories for each masking feature. In each subdirectory a copy of the clipped mosaic is saved along with a subdirectory named 'Stat_Tables' where a *.csv for each statistic is saved.



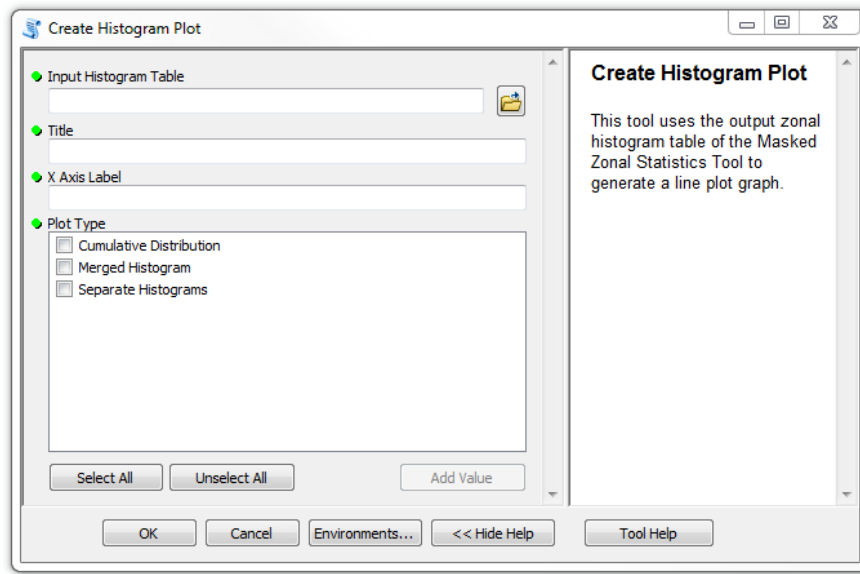
Zonal Statistics tool GUI.



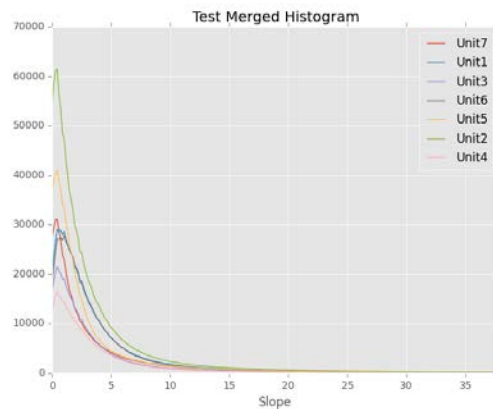
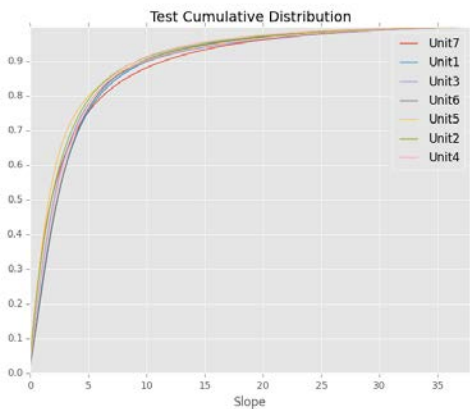
Output file structure from test data with three landing ellipses used for masking.

Create Histogram Plot

Using the tables output by the Zonal Statistics tool, Create Histogram Plot allows users to create simple plots of either the cumulative distribution (normalized from 0 – 1.0) or histogram of the zonal statistics layer. Parameters for the plot title and x-axis label are applied to all plots, which are exported in *.png format.



Create Histogram Plot tool GUI.



Output plots of test data; cumulative distribution and merged histogram of all geological units.



Please direct any questions, comments or improvements to:

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