

Version 2.0-0 -- Release Notes

Updated the "READ ME.pdf" with expanded tool descriptions, equations and citations.

All Tools

- 1) Remove optional extent setting from all tools. Now all tools use extent setting from the environmental settings.
- 2) Added default selections for all tools requiring the user to make a selection.
- 3) Remove bug requiring users to reset Spatial Analysis checkout within ArcGIS when not using Geomorphometric Tools.
- 4) Allow for all tools to use data with a geographic coordinate system. Previous version required a projected coordinate system be used.
- 5) Require users identify Z units (i.e. meter or feet) of input DEM data. Allows for calculation of Z factor in cases of Z units not matching xy units (e.g. data using a geographic coordinate system).
- 6) Created new toolset, "Directionality" and moved the Classify Aspect, Linear Aspect, Mean Slope tools from the Temperature and Moisture toolset.
- 7) Better labeling of data inputs with dialogs.

Individual Tool Modifications

- 1) Moments now includes: "mad" (median absolute deviation from median), "skewness", "kurtosis", and "coefficient of variation"
- 2) Fixed CTI bug to allow for accurate results using varying DEM resolutions. Ver 1 assumed DEMs were only 30m resolution.
- 3) Created optional Flow Direction input parameter for CTI tool.
- 4) Automatically calculate Central Latitude for Heat Load Index.
- 5) Change Covariance tool name to Correlation and now allow users to use this tool to calculate either covariance or correlation of two raster datasets.
- 6) Fixed Sieve tool bug to produce desired results. Old tool returned input raster.
- 7) Heat Load Index tool code modified to more accurately return results.
- 8) Modified constant within Slope/Aspect Transformation tool to more accurately return results.

New Tools

- 1) Added correlation option to covariance tool
- 2) Local Deviation from Global mean or median
- 3) Local Deviation from trend - Indicates the local (window) deviation from a specified Nth order Deviation from trendLagrange polynomial trend. A 1st through 12th order trend can be specified to capture 1st (global) or 2nd (nonstationarity) order spatial effects in y. The “trend” option subtracts the observed values (y) from the trend (x) and the “detrend” option subtracts the trend (x) from the observed (y) thus, partialling-out the Nth order trend of x from y.
- 4) Guassian Smoothing - Applies an NxN Gaussian convolution kernel to a raster. This is a 2D convolution smoothing function that is useful for spatial smoothing and scale decomposition.
- 5) Sobel Gradient - Applies a Sobel Isotropic Gradient kernel. Returns either an “intensity” or “gradient” raster. This index represents a discrete differentiation operator, based on an approximation of the gradient of the image intensity function. The operator utilizes 3x3 convolution kernels to calculate approximations of the derivatives - one for horizontal changes, and one for vertical.
- 6) Normal – creates a normal random raster with a specified mean (default=0) and standard deviation (default=1)
- 7) Integrated Moisture Index
- 8) Site Exposure Index
- 9) Hierarchical Slope Position - Identifies exposure (ridge, slope, toe slope, etc) at a range of defined spatial scales and hierarchically integrate these features into a single raster.