List of Algorithms in Sextante

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3D

- 3D interpolation
- 3D line from Table
- 3D profile
- 3D raster layer from function

Basic hydrological analysis

- Channel network.
- Creature Exclusion Area
- Flow accumulation.
- River burning
- Sink filling.
- Time to outlet.
- Upslope area from a sinle point
- Upslope area from outlet zone.
- Watersheds.
- Watersheds by area

Basic tools for raster layers

- Aggregate.
- Basic statistics.
- Change data type.
- Change no-data value
- Clip grid with bbox
- Complete grid.
- Correlation between layers.

- Create grid bounding box
- Crop grid with polygon layer.
- Crop to valid data cells.
- Gradient lines.
- Histogram.
- Invert mask.
- Locate max value
- Merge grids.
- Mirror/flip.
- Normalize.
- Sort.
- User-defined 3 X 3 filter.
- Void filling.
- Void filling (nearest neighbour).
- Volume calculation. .
- Volumen between two layers.

Analysis tools for raster layers

- Analytical Hierarchy Process (AHP).
- Change Vector Analysis.
- Ordered Weighted Average (OWA).
- Predictive models.
- ROC Curve.
- Soft classification
- Supervised Classification
- Unsupervised classification (clustering).

Buffers

- Fixed distance buffer.
- Multiple buffer.
- Raster buffer.
- Threshold buffer.
- Variable distance buffer.

Calculus tools for raster layer

- -
- !=
- /
- *
- +
- <
- ==
- >
- abs()
- AND
- cell()
- CombineMask
- floor()
- ln()
- log10()
- Mod
- OR
- Raster Calculator
- sqt()
- XOR

Cost, distances and routes

- Accumulated cost (anisotropic).
- Accumulated cost (anisotropic) (B).
- Accumulated cost (combined).
- Accumulated cost (isotropic).
- Cartesian to polar
- Cost in predefined routes.
- Cost in predefined routes (anisotropic).
- Cost in predefined routes (anisotropic) (B).
- Direction to closest point
- Euclidean distance
- Generate alternative routes.
- Least cost path.
- Polar to Cartesian
- Sum of cost to all points.

Development

- Brenchmarking

Fire modeling

- Fire simulationt.

Focal statistics

- Equal values count (neighbourhood).
- Kurtosis (neighbourhood).
- Larger values count (neighbourhood).
- Lower values count (neighbourhood).
- Maximum (neighbourhood)
- Mayority (neighbourhood)

- Mean (neighbourhood)
- Median (neighbourhood).
- Minimum (neighbourhood).
- Minority (neighbourhood).
- Range (neighbourhood).
- Skeweness (neighbourhood).
- Variance (neighbourhood).

Fuzzy logic

- Fuzzify.

Geomorphometry and terrain analysis

- Anisotropic coefficient of variation.
- Aspect.
- Convergence index.
- Curvatures.
- Elevation-relief ratio.
- Hypsometry.
- Landform classification.
- Protection index.
- Real area.
- Slope.

Geosocial

- Search_Twitter

Geostatistics

- Radius of variance.
- Slemivariance (raster)

Image processing

- Calibrate an image.
- Calibrate an image (regression).
- Contrast stretching.
- Detect and vectorize individual trees.
- Equalize.
- Erosion/Dilation.
- HIS -> RGB.
- Quantization (4 bits)
- RGB -> HIS.
- Texture analysis (ASM)
- Texture analysis (Contrast)
- Texture analysis (Dissimilarity)
- Texture analysis (Entropy)
- Texture analysis (Homogeneity)
- Thinning.

Indices and other hydrological parameters

- A simple hydrological model
- C factor from NDVI
- Create sybtethic hyetograph
- Distance to channel network.
- Edge contamination.
- Elevation over channel network.
- Max. value uphill.
- Mean value uphill.
- Net Balance.
- Slope length.

- Strahler Order.
- Topographic indices.

Localiza

Localiza

Local statistics

- Equal values count.
- Kurtosis.
- Larger values count.
- Lower values count.
- Majority
- Maximum.
- Maximum value layer.
- Mayority.
- Mean.
- Median.
- Minimum.
- Minimum value layer.
- Minority.
- Range.
- Skewness.
- Variance.

Location/allocation

- Location/allocation.
- Location/allocation(with distance table).

Non-spatial

- Calculator.

Pattern analysis

- Diversity.
- Dominace.
- Fragmentation. .
- Number of different classes.

Profiles

- Cross sections.
- Flow line profile.
- Profile.

Raster creation tools

- Aggregation Index.
- Class Statistics
- Combine grids
- Cross checking (Kappa index)
- Filter clumps
- Fragstats (area/density/edge meytrics)
- Fragstats (diversity metrics)
- Grids form table and classified grid
- Lacunarity
- Tabulate area

Raster creation tools

- Constant grid.
- Grid from function.
- Random DEM.
- Random grid (Bernoulli).
- Random grid (normal).

- Random grid (uniform).

Rasterizacion and interpolation

- Density.
- Density (kernel).
- Inverse Distance Weighting (IDW).
- Kriging.
- Linear decrease.
- Nearest neighbour.
- Rasterize vector layer (from mask).
- Rasterize vector layer (multiband).
- Universal Kriging.

Raster layer analysis

- Analytic Hierarchy Process (AHS)
- Change Vector Analysis
- Ordered Weigted Analysis
- Predictive models
- ROC curve
- Supervised classification
- Supervised classification (B)
- Unsupervised classification (clustering)

Reclassify raster layers

- Divide in n classes of equal amplitude.
- Divide in n classes of equal area.
- Reclassify.
- Reclassify in disjoint classes.
- Reclassify in ordered classes.

Statistical methods

- Bernoulli probability distribution.

  Chi squared probability distribution.
- Covariance matrix.
- Exponencial probability distribution.
- Multiple regression.
- Normal probability distribution.
- Principal Components Analysis.
- Regression.
- Student's probability distribution.

Table tools

- Basic statistics.
- Correlation between fields.

TIN

- Create TIN with breaklines
- Extract isolines
- Smooth using Bezier interpolation

Tools for line layers

- Average slope of lines.
- Change line direction.
- Check line direction coerence
- Directional mean.
- Fill elevation values
- Geometric properties of lines
- Geometric properties of lines/extended
- Join adjacent lines

- Lines to equispaced points.
- Place points on line at given distance
- Polygonize
- Polylines to polygons.
- Polylines to sinle segments
- Sample extreme poits of lines
- Simplify lines
- Smooth lines
- Split lines with points layer.
- Split polylines at nodes.

Tools for point layers

- Add coordinates to points
- Clean points layer
- Constrained Delaunay triangulation
- Delaunay triangulation
- Distance matrix.
- Distance to closest geometry
- Mean center and standard distance.
- Median center.
- Nearest neighbour analysis.
- Pertubate points layer
- Points layer from table.
- Points to line
- Quadrant analysis.
- Ripley's K.
- Sample raster layers.

- Snap points to layer.
- Spatial autocorrelation.
- Spatial cluster.
- Vorovoi tesellation.

Tools for polygon layers

- Adjust n point polygon.
- Difference
- Geometric properties of polygons.
- Grid statistics in polygons.
- In-polygon spatial join
- In-polygon spatial join (B)
- Intersection
- Medial axis
- Polygon to polylines
- Remove holes
- Resolve polygon holes
- Symplify polygon
- Symmetric difference
- Union

Tools for vector layers

- Add field
- Autoincrement value.
- Basic statistics.
- Bounfing box
- Centroids
- Clean vector layer

- Clip
- Clip by rectangle
- Cluster.
- Correlation between fields.
- Create equivalent numerical classes
- Create graticule.
- Create random vector layer
- Delete fiels
- Dissolve
- Dissolve [multiple fields]
- Export vector layer
- Field calculator.
- Filter vector layer
- Geometries to point
- Group near features
- Histogram
- Merge
- Minimum enclosing shape
- Normality test
- Remove duplicate geometries.
- Rename field
- Save geometries as WKY
- Separate multi-part features
- Spatial join (nearest neighbour)
- Transform.

Topology

- Extract endpoints of lines.
- Extract nodes
- Node lines.

Vectorization

- Contour lines.
- Raster layer to points layer. T
- Vectorize raster layer (lines).
- Vectorize raster layer (polygons).
- Vectorize raster layer (polygons) (B).

Vegatation indices

- CTVI.
- NDVI.
- NRVI.
- PVI(Perry and Lautenschlager).
- PVI(Qi et al).
- PVI(Richardson and Wiegand).
- PVI(Walther and Shabaani).
- TTVI.
- TVI.

Visibility and lighting

- Approximate viewshed.
- Horizon blockage
- Line of sight.
- R2 viewshed
- Shaded relief.
- Solar radiation buildings.

- Solar radiation
- Visibility.
- Visual exposure.