Surface Interpolation in ArcGIS

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What are surfaces?

- Raster
- TIN
- Terrain
- LAS
Where are they commonly created?

- Spatial Analyst
- 3D Analyst
- Geostatistical Analyst
Continuous data

Dove count

0 - 0.1
0.2 - 0.3
0.4 - 0.6
0.7 - 1.1
1.2 - 1.7
1.8 - 2.6
2.7 - 4.3
4.4 - 7.2
7.3 - 12.9

Lightning strikes
Tree diameters
Soil type
Rainfall
Temperature
Elevation
Types of input

- **Points**
  - Continuous values
  - Discrete values (e.g. Counts)

- **Raster**
  - Fill in missing values
  - resample

- **Polygon**
  - Centriod
  - Areal Interpolation
  - Dasymetric mapping

- **Polylines**
  - Contours
Types of input

- **Points**
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- **Polylines**
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ESDA

- Where is the data located?
- What are the values at the data points?
- How does the location of a point relate to its value?
What method to use?

Rainfall?
Natural Neighbor Demo
Natural Neighbor
Kriging

- Stationary
- Normally distributed
- Standard error of prediction
Kriging

...in the Wizard Demo
What is geostatistics?

The statistics of spatially correlated data
Interpolation with Barriers

- IDW
- Spline with Barriers
- Kernel Interpolation with Barriers
- Diffusion Interpolation with Barriers
Interpolation with Barriers
Topo To Raster

- Topogrid
- Anudem (4.6.3 -> 5.3)
- Input
  - Spot heights
  - Contours
  - Streams
  - Sinks
  - Lakes
  - Cliffs
  - Coast
  - Exclusion
- New output diagnostics
Large input data

- **Point To Raster**
  - Most frequent
  - Sum, mean std. deviation
  - Minimum, maximum, range, count

- **Smaller input extent**

- **Subset Features**
Goodness of fit / Model acceptance

- Subset Features
- Cross Validation
Coincident points
Exact interpolator?

Input points have a min of 1395

However, raster has a min of 1613
EBK Regression Prediction