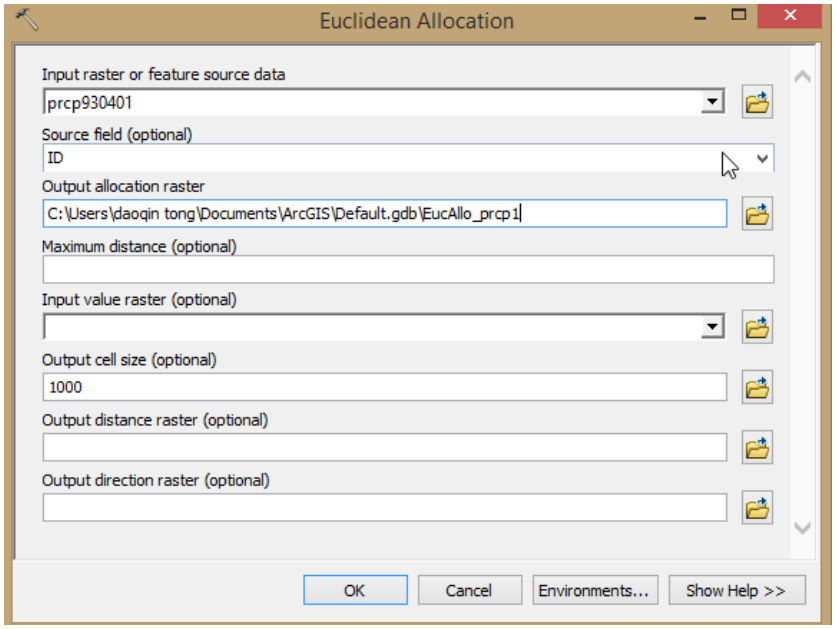
Lab 4 Spatial Interpolation

Due Oct 2nd, 2014

1. Start ArcGIS Geostatistical analyst
   Start → Programs → ArcGIS to launch ArcGIS
   Check Custommize→Extensions→Spatial Analyst to load Spatial Analyst extension
   Right click on the tool bar and check Spatial Analyst
   In ArcGIS, open PAInterpolation.mxd file by choosing File→Open.
   Click ArcToolbox to activate the tool box
2. Allocation to the nearest target based on the Euclidean distance measure
   Before interpolation, assign values to surface considering the nearest target.
   (a) In the ArcToolbox Choose Spatial Analyst→Distance→ Euclidean Allocation
   (b) Set the appropriate output file name



Assignment I

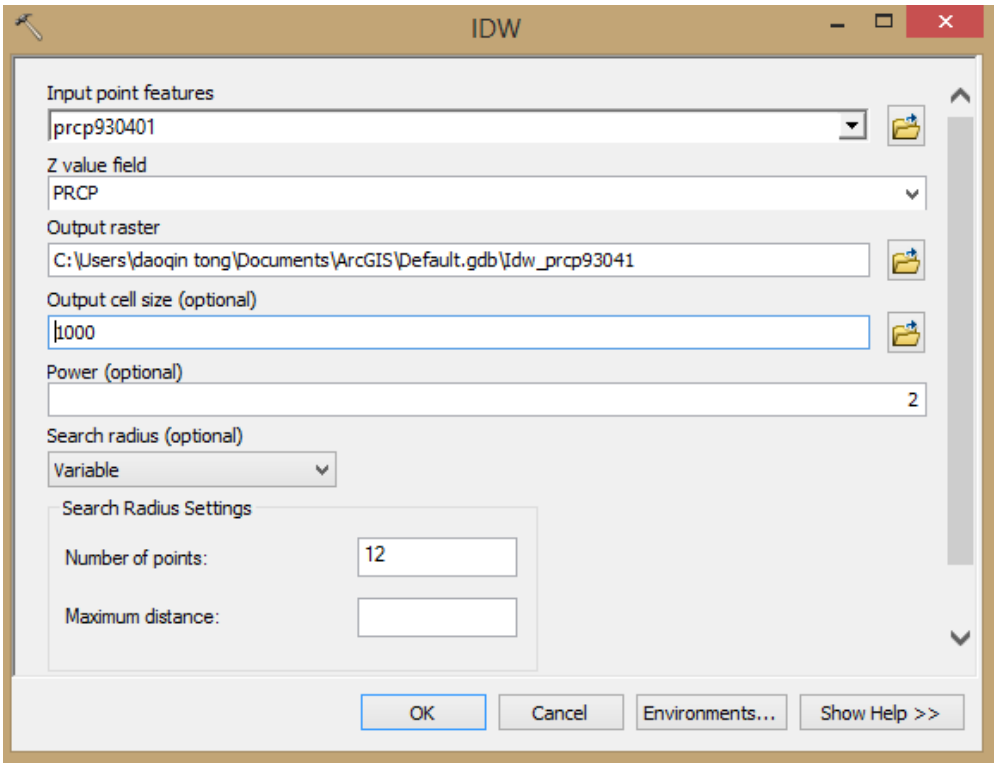
(a) Include a map of allocation (please include map body as well as map elements such as north arrow, scale bar, legend and title)
(b) Conduct allocation analysis for max temperature (tmax930401layer has TMAX column for the data) and min temperature (tmin 930401 layer has TMIN column for the data)
(c) Discuss a potential problem of allocation analysis in generating interpolation estimates

3. Inverse distance weighted (IDW) interpolation

Let's conduct interpolation using inverse distance weight with ArcGIS Spatial Analyst

(a) Choose Spatial Analyst → Interpolation →IDW…

(b) Set options as following



Carry out IDW interpolation again with a different power

(c) Set **1** as power for IDW

Assignment II

(a) Include maps of IDW with other map elements

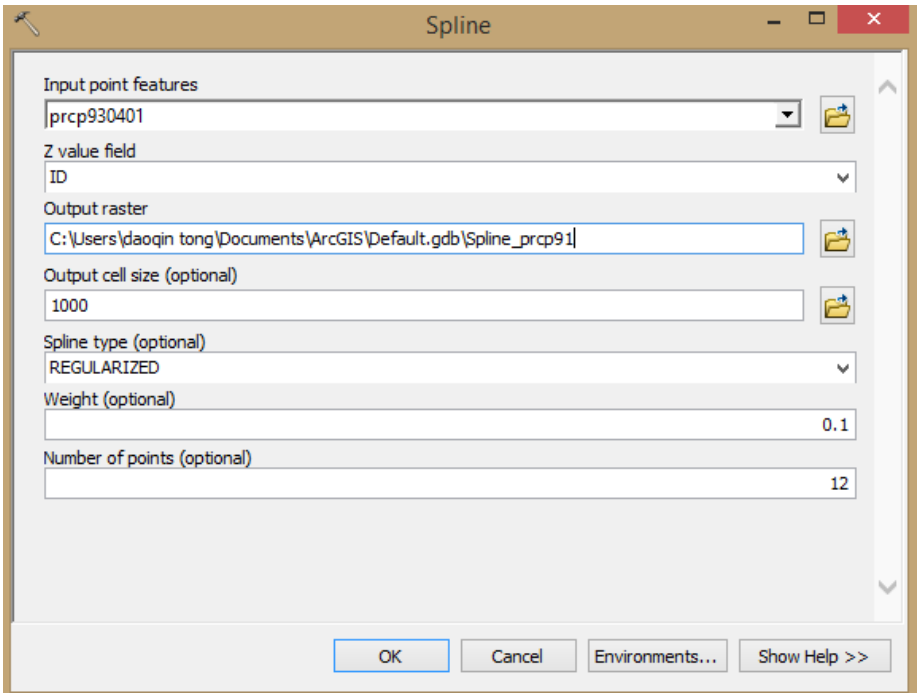
(b) Compare the two IDW interpolation results with different power values.

(c) Conduct IDW interpolation for max temperature and mix temperature. Decide the appropriate power setting and provide reasons for your choice. Include maps in your report.

4. Spline interpolation

(a) Choose Spatial Analyst →Interpolation→Spline…

(b) Set options as following



Assignment III

(a) Include a map of spline analysis with other map elements

(b) Compare the result of spline with the results of IDW

(c) Conduct spline analysis for max&min temperature and provide maps for the results. Briefly explain the results.

5. Trend analysis for the precipitation data in Pennsylvania

   Test if there is a trend in the precipitation data

   (a) Choose Spatial Analyst Tools→Interpolation → Trend

   (b) Select prcp930401 for input features and PRCP for z value field

Assignment IV

(a) Include the output graph of the trend analysis

(b) Discuss whether the precipitation data show a trend or not. Can you find any relationship between precipitation and topology?