

## POSTER #4

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### **Spatial Interpolation for Temperature and Precipitation in Oklahoma Weather, Society and Government Survey**

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Spatial interpolation is the procedure of generating the continuous surface from the sampled point values. To predict the unknown values of temperature and precipitation at our respondents' locations in Oklahoma Weather, Society and Government Survey, we took the observations from the Mesonet stations to create the estimates by using the deterministic and geostatistical interpolation methods in ArcGIS Desktop 10.2. Deterministic methods include inverse distance weighting (IDW), global polynomial interpolation (GPI) and local polynomial interpolation (LPI). In geostatistical methods, we use Universal Kriging and Ordinary Kriging with 3 different kernel functions. To evaluate the interpolated results, Cross Validation is applied by using a dataset that was not involved in creating the prediction model. The fewer the error mean is, the less the difference between the predicted value and the observed value. After examining these interpolation methods with cross validation, "Universal Kriging with Polynomial5 Kernel Function" has the lowest "Mean Error", "Root-Mean-Square Error" and "Mean Standardized Error" values. Also, "Ordinary Kriging with Gaussian Kernel Function" has the lowest "Root-Mean-Square Standardized Error" value. Because "Universal Kriging with Polynomial5 Kernel Function" has better results in cross validated estimation, we chose it as our spatial interpolation method for temperature and precipitation in Oklahoma Weather, Society and Government Survey.