Predictive Model for Archaeological Sites of the Hopi Reservation of Northeastern Arizona

Project Summary:
Archaeologists are confronted with the problem of having to locate archaeological sites in extremely large study areas. Since the 1970s, developing predictive archaeological site type models has become a common strategy among many archaeologists to increase the likelihood of locating sites. For this reason, a predictive model was built based on three environmental variable types: Topography, Vegetation, and Water Resources. This was done to help focus survey efforts to locate three archaeological site types in the 1,619,936 acre Hopi Reservation. These site types were: Rock Art, Habitation, and Scatter.

Theory Behind the Model:

Model Variables:

- Cost Distance Springs
- Cost Distance Water Bodies
- Cost Distance Streams
- Cost Distance Major Streams
- Cost Surface
- Terrain Texture
- Relief
- Vegetation Richness

The Solution:

1. Original Data
2. Scrubbed and Prepared for Analysis
3. ArcGIS 10.2 for Variable Development
4. Variable Import
5. ArcGIS 10.2 for Logistic Regression Coefficients Brought into ArcGIS 10.2
6. SPSS for Logistic Regression Analysis
7. Probability Surface Output

Project Background:
Dr. Wesley Bernardini, Associate Professor in the Department of Sociology and Anthropology at the University of Redlands, is highly involved in the Hopi Archaeology Project. Much of his career has been dedicated to the preservation of cultural resources in the Hopi Reservation. For the past several years he has led students on collaborative projects with the Hopi Cultural Preservation Office. He has already located 1,580 archaeological sites and plans to use the predictive model to locate many more.

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