

Spatial Data Analysis in Archaeology
Anthropology 589b

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Problem Set 3: House Size Variation at AR5

The Problem

Liz Arkush has provided is with an extraordinary set of data on the sizes of houses and their locations on within a fortified, hilltop settlement site AR5 in Peru. What can spatial variation in house size tell us about the social lives of their inhabitants? Some specific questions to ponder include: Was there social inequality in this community? How was inequality distributed in space? Was the settlement comprised of a single social hierarchy, or is there evidence for multiple groups? ¹

The tools you have to answer this question include trend-surface analysis, loess, and correlograms. And don't forget looking at the raw data – a site plan from ArcGIS with house size variation shown.

To make your lives easier, I have written SAS code that fits the trend and loess surfaces, computes residuals, maps the trends and residuals, and computes correlograms for the residuals – as well as the raw diameter values. There are two code files: AR5TrendSurface.sas and AR5Loess.sas on the class website. Experiment with them and compare results. How do the trend surfaces compare with the loess fits? Which explains more variation – remember our friend "r-squared" from the last class? What do the residuals do? Which lag size allows you so see pattering in autocorrelation the best?

In thinking about the results, a critical question is: to what extent does decomposing the spatial variation in house diameter into a large-scale trend and local, spatially-dependent variation in the residuals help us understand the site and its inhabitants?

What to Turn In

A short (< 1 page single spaced) description of the problem, the methods you used to address it, your results, and your conclusions. Come to class prepared to describe your results. Due date: 02.19.07.

¹ This is a real research question . I sure don't know the answer – but I'm hoping I will, once I hear what you have to say about it in class.