Aliasing: Avoiding Misrepresentation of Spatial Patterns. (S03-gorres074509-Oral)

Authors:

- J.H.Gorres - *University of Rhode Island*
- J.A.Amador - *University of Rhode Island*

Abstract:

Soil, properties vary over a wide range of scales. For many investigations, mean and variance are sufficient to satisfy the objectives. For these investigations, there are many valid random sampling procedures. However, when spatial patterns are investigated, second order statistics like semivariance of a property need to be measured. Because soil sampling is usually discontinuous, patterns may be misrepresented, or aliased, if too few samples are taken. The nugget effect in semivariance analysis is thought to provide a measure of the error associated with undersampling a pattern. However, this may not always be true. To investigate the propensity of different sampling schemes to cause aliasing of soil properties we measured soil moisture content (TDR) along a field and a forest transect. Sampling intervals were equidistant and short enough to avoid aliasing. We then simulated various sampling patterns and frequencies on our data set to evaluate how well each sampling scheme represented the original pattern and semivariogram. Semivariograms varied depending on sampling intensity and type of sampling. Range values increased and nugget values considerably decreased from the estimates for entire records as sampling became less frequent.

Corresponding Author Information:

Josef Gorres
University of Rhode Island
Coastal Institute Kingston
Kingston, RI 02881

phone: 401 874 7022
fax: 401 874 4561
e-mail: josef@uri.edu

Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 4:15 pm

Keywords:

Spatial patterns, Aliasing, Sampling