Geographic Information Systems (GIS) in Planning and Resource Management

ENVS 6189 3.0 - lecture 5

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Session Purpose:

To define and discuss the role of spatial description, spatial analysis and spatial modeling as they are typically used to support processes of geographic inquiry.
Geographic Inquiry:

…to examine the relationship between geographic features collectively and use those relationships to describe real world phenomena.

Techniques used to facilitate the process of geographic inquiry:

Spatial Description  Spatial Analysis  Spatial Modeling

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Spatial Description:

..the simultaneous description of two spatially referenced measurements..

- typically employs simple descriptive statistics (indicators of central tendency, std. distance - ellipse); or,

- more sophisticated quantitative indicators (RMSE, nearest neighbor, shape indices) can also be generated.
Spatial Analysis:

...the process of sorting, visualizing and testing spatial data to explore possible patterns or relationships.

- various integrated analysis procedures for attribute and spatial data are used;
- new data layers may be derived or transformed from spatial analysis procedures;
- factors for consideration generally include: size, distribution, pattern, contiguity, neighborhood, shape, scale and orientation.

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Spatial Modeling:

..representing selected features within a system for the primary purpose of simulating possible interactions and/or estimating response behaviour.

Four (4) basic categories of models in GIS to be covered:

- Binary
- Index
- Regression
- Process

See handout!

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