Statistics 506 – Statistical Methods for Spatial Data
Spring 2006

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References:

- Course Notes, available on course web page.


**Computing**: Plan on using R and Splus as our primary software tools. Splus has a spatial module called S-Plus SpatialStats, and there is a fairly nice manual that goes with it. There are also some R packages that contain spatial data analysis functions (I recently counted 34 such packages) on the R CRAN site.
<table>
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<tr>
<th>Planned Time</th>
<th>Topics</th>
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| 1 week       | **Introduction**  
Geo-referenced data  
Stochastic Processes and Random Fields  
Data concerns |
| 3 weeks      | **Part I - Geostatistical Analysis**  
Spatial dependence  
Stationarity and isotropy  
Variograms and Covariograms  
Kriging |
| 4 weeks      | **Part II - Analysis on a Lattice**  
Neighbors, neighborhoods, and cliques  
Negpotential functions  
Conditional model specification  
Estimation and Inference |
| 3 weeks      | **Part III - Spatial Point Processes**  
Locations of events versus counts of events  
Quadrat and nearest neighbor methods  
K-functions and L-functions  
Point process models  
Estimation and Inference |
| 3 weeks      | **Special Topics in Spatial Modeling**  
Spatio-temporal models  
Hierarchical models  
Aggregation and spatial scale  
More on stationarity |