Stat 547L- Topics in Statistics
Spatial Statistics
2017/2018, Term 1
Instructors: Peter Guttorp (University of Washington), Jim Zidek

Time and Place: T/TR, 2:30-4:00 pm, September 28- December 9, ESB 4192

Prerequisites: Regression and some understanding of likelihood. If in doubt, please contact instructor, or attend the first lecture

Tentative list of topics to be covered:

1. Kriging

2. Spatial covariance
   The key concept needed for spatial estimation. Classes of spatial covariance functions.

3. Nonstationary structures I: deformations

4. Nonstationary structures II: linear combinations etc.
   Process convolution. Basis function approaches.

5. Space-time models
   Singular value decomposition. Space-time covariance. Dynamic linear models.

6. Markov random fields

7. Misalignment and use of deterministic models

8. Air quality standards
   (Re)design of monitoring networks. Interaction between geostatistical and health effects models.

9. Wavelet tools

10. Statistical climatology
    Space-time trends in regional climate models: means and extremes.