**Spatiotemporal Models for Ecologists**

**Homework #4 – Project ideas, data sets, and initial approaches**

Goal: Individual projects provide an opportunity to develop models that are specific to your area of study. Typically through the process of developing a project idea, obtaining the data, and developing the model, one gains a greater understanding of the modelling framework.

So, far we have covered mixed-effects models (varying intercepts) and time-series models (linear, nonlinear, and multivariate state-space models). Over the next few weeks, we will be presenting models that have spatial and temporal dynamics as well as spatial autocorrelation in the random effects. These will provide the framework by which you will be able to address your question of interest for your project.

We would like each student to identify their project idea now, so that we can provide some guidance on it and hopefully ensure that it is a reasonable project for the class.

Files to turn in:

1-2 page written description of class project listing at a minimum:

(a) the data set to be used,

(b) the question to be addressed, and

(c) the structure of the spatial and/or temporal processes. How are spatial or temporal dynamics hypothesized to affect the state portion of the model? How is spatial or temporal autocorrelation hypothesized to affect the random effects portion of the model?

Appropriate project:

Pretty open, includes concepts from class (spatially-referenced data with spatial variation, a process model, changes over time)