Remote Sensing Chapter: Outline

# General Intro Structure

1. **General conceptual focal area of paper**:
2. **What is known?**
3. **What is not known and why is it important to fill the gaps?**
4. **What will this study do specifically to fill the void?**
5. **Experimental system/model**
6. **Explicit purpose statement followed by questions or hypotheses**

# Information

## Phenology:

* **Trends in spring phenology have changed markedly over the past few decades as global temperatures rise.**
  + Start of season (SOS) is earlier
  + Growing season is longer
  + “phenology is one of the simplest and most effective indicators of climate change (IPCC 2007)” -Zhang et al 2014

## Maps/Remote sensing

* Land Surface Phenology (LSP) is a good proxy for plant phenology.
* Satellite SOS estimates are often mismatched with ground observations (i.e., trends found in satellite data but not observed on the ground). A spatially limited validation network determined that estimates of global phenology are realistic estimates of true phenology (SOS). “it remains difficult to show that the phenological changes detected from satellite data are real changes”. There is also a “point vs. pixel” problem as with all remote sensing.
* “Satellite SOS estimates, in our context, are approximations of time (in days) when NDVI has reached 50% of its maximum during the growing season.”

## Specific Problem

* Spatial and temporal autocorrelation are not appropriately accounted for in most analyses of phenology – or any trend
* Estimating the effects of a spatio-temporal predictor on a spatio-temporal response.

## Model description

* remotePARTS accounts for spatio-temporal autocorrelation appropriately.

# Intro Outline

# References to look into

* White, M.A.; de Beurs, K.M.; Didan, K.; Inouye, D.W.; Richardson, A.D.; Jensen, O.P.; John O’keefe, J.; Zhang, G.; Nemani, R.R.; van Leeuwen, W.J.D.; et al. **Intercomparison, interpretation, and assessment of spring phenology in North America estimated from remote sensing** for 1982–2006. Glob. Chang. Biol. 2009, 15, 2335−2359.