Paper Outline

**Why point estimates are almost always wrong: scale-dependency issues with validation of biomass and fuels mapping**

Alternative title: The folly of validation: …, or the folly of using point estimates to validate models of fuel loadings

Purpose: Use a multi-scaled analysis of three evaluation datasets to address mapping accuracy and validation of biomass, carbon and wildland fuels. This paper will answer the question of why point estimates are often used to evaluate mapping accuracy, but interval estimations are generally better.

(Note also: These are models of fuels, not estimates of fuels. Model validation literature applies to this.

Comparing continuous single realizations to discretized summaries, where continuous measures have infinitely many possible values, the fuel models have only N possible values. Bring in literature on why validation in general is problematic)

Rigorous but realistic

General applications, e.g., fire, emissions, C accounting, place-related

Small abstracted simulated data and sampling, which will be more thoroughly expanded for Don’s paper.

Small point: In particular poor match not surprising given the R-skewed nature of these data. To compare apples to apples compare median values to discretized values.

What I would do (referencing Keane paper). Figs 3-5, put a point at the value given by the discrete model (within the boxplot). Where is it? Is it in the middle?

Figs 6-8, compare median plot loading to fuel model loading. Obviously R-skewed in their data

(Another note: can’t we get their data? Or do we have it? They actually start here (unintentionally) our proposed project. For a given \_\_\_\_ they give distributions of fuel loads. They just didn’t harness the information)

Introduction

Review major fuel and biomass mapping efforts (brief I think—here we might want to focus on characteristics of fuel loading models and mapping efforts).

* Local to regional biomass and C gridded estimates
* Wildland fuels mapping for fire hazard assessment and emissions inventories
* Global biomass estimates (coarse grid)

Validation techniques (and the philosophical debate around validation in general. Emphasize that these are models, not estimates—discretized abstractions of a continuous reality. This does not discount their utility, only recognizes the reality and limitations)

Identify issues with past validation (e.g., Keane et al. 2013)

Methods

Use 3 datasets to evaluate regional vs. local estimations of wildland fuels

* Savannah River Site (FCCS point vs regional)
* Sage Steppe
* Boreal

Demonstrate differences in point estimation, interval estimation and regional estimates (scaling from a point to a mean-field pixel)

Results/Discussion

Suggest approach to future evaluations of fuels, carbon and biomass mapping. Not just approach, but also representation of fuels maps. Motivate/resonate with database paper.

Bring in validation of models literature (philosophy of science) starting with Oreskes

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