October 12, 2021 Joint Methods & CI Working Group Call

Attendees: Libby Mohr, Matt Brousil, Chris Jones, Jody Peters, Kelly Heilman, Cee Nell, Jake Zwart, Rob Kooper
Regrets: Josh Cullen, Mike Dietze

Agenda/Notes:

1. Visualization/Decision Support Tools, User Interface Task View
   a. Section 4 (feedback from Libby)
      i. Focused on adding static resources
      ii. Started to become overwhelmed because there are all different kinds of plots and different tools to make those plots
      iii. Are there going to be any data or code examples?
          1. Show different types of visualizations
          2. Chris was planning on this for the interactive piece
          3. Data viz component - within types of plots section. Is the goal to explain when to use scatterplot vs when to use histogram/density plots
      iv. Want to say what the different types of plots are used for - give people a common ground
      v. Assume doing this with an eye towards forecasting. Yes want to focus on forecasting applications otherwise it could be easy for this to balloon out
      vi. Why would you use a scatterplot in forecasting? Then the how - what tools you use in R and then have an example
      vii. Have a paragraph or two as overview, then provide list of resources
      viii. The Task View will be hosted in Bookdown, so we can point to repo that has that example
      ix. Maybe don’t need to provide examples for every tool. Could link to plots/code that has already been used. Or if there aren’t good examples, then
      x. If we wanted to create some examples - Matt is happy to write up something to harmonize
     xi. Do people have databases?
        1. Could use something from NEON Challenge
        2. Quinn has file with database of all forecasts submitted
           a. read_csv("https://data.ecoforecast.org/analysis/combined_forecasts_scores.csv.gz")
     xii. Is there anyone who is good at plotting in Python or Julia?
        1. Libby has plotted in Julia.
       b. Chris - doing Interactive Spatial Viz - point 10
       c. Cee will think about the Gif/Video section - They work with Gifs in R so the focus/tools will be R-centric. This is okay since it is a living document and we can always add more non-R tools later if people have suggestions.
d. Point 8 - Uncertainty Visualization - really want to highlight this since this is key for forecasting.
   i. Can do uncertainty in 1-dimensional sense or 2-dimensional - error bars and CI, and could go up to 3-dimensional so could add time or space
   ii. Think this section is really important - but wonder about making it different from other sections about plots.
   iii. For example, - these are plots that show how to make uncertainty. To make it less repetitive.
   iv. Show static charts and show a forecasting specific example. Because some charts are suited to uncertainty.
   v. 1st section was originally called - Exploratory Data - so was broken down by what you use to visualize forecast vs what you use to look at data to do exploratory analysis.
   vi. But since the focus is on forecasting then want to merge so there isn't redundancy.
   vii. For animation section - use ensemble plot and animate through time
   viii. Last week on Standards call - talked about uncertainty in forecasting and where it comes from. So important to highlight the importance of conveying uncertainty for forecasting.
   ix. Want to show different ways to show uncertainty.
   x. Show where the model comes from - stochastic vs process uncertainties. How can we visualize them. This gets into more interesting problem - uncertainty comes from multiple sources and how can we show that. For example, can use 3-D visualization to show the different types of uncertainty.
   xi. This will be a good way to link to the Forecasting Standards

e. Decision Support - how do we want to incorporate?
   i. Right now we have section 12 - linking visualization to science and policy
   ii. A lot of things in Section 12 is repeating tools that are listed above.
   iii. More effective to incorporate decision support throughout

f. There is value in having separate section on Uncertainty and User Interfaces
   i. But could be useful to hint to it in previous sections and link to it in earlier sections.

g. Section 13 - Environmental Decision Support - could be moved to Section 1 to talk about best practices and connects well with IDEA 3.

h. Section 12 - Is this supposed to be tools or best practices? If best practices - should be moved to section 1

i. Section 14 - Chris offered to lead, but not sure if this is meant to be how you call a model from a dashboard or something like the Phenology dashboard from the
   i. Want to highlight both

j. Section 6 - is this different from the Interactive Spatial Visualization Section 10?

k. Libby to reorganize Section 4

l. Think about keeping the outline and text as separate documents. Start with bookdown. Jody to work on setting this up.
i. Follow up - In a side conversation with Jake and Mike, decided to continue to edit in the Google doc and then can either move text to Rmd or can use some package like `trackdown` to integrate Google doc and Rmd

2. Uncertainty Quantification & Propagation, Modeling & Stats and Workflow Task Views to use as Reference: [https://projects.ecoforecast.org/taskviews/](https://projects.ecoforecast.org/taskviews/)

3. Data Ingest, Cleaning, Management
   a. Placeholder until we are further along with the other Task Views or have an identified leader for this

4. [NEON Ecological Forecast Challenge](https://neon-ecological-forecast-challenge.github.io/) CI Update