

## July 10, 2019 Methods & Tools Working Group Call

### Agenda

- Introductions / record attendance
- What are the short term goals for this working group -- what could be accomplished (or balls that could get rolling) this year and how do we get there?
- What are the longer term goals we are working toward
- Are there goals where a small amount of seed funding from EFI (<\$5K) would help move us forward
- Leave with a plan for a next call (either exact date or data range to poll) and hopefully some discrete, assigned next steps.
- Links to EFI2019 Conference Notes  
First Breakout Notes: [LINK REMOVED]

### Notes From the July 10 Call

#### Introductions/Attendance

Mike Dietze

Justin Millar: disease; postdoc on malaria(Univ. Florida → Oxford MAP)

Rich Fulford: at DC conference; EPA office in FL; modeling of LULC and N loading

Leah Johnson - Virginia Tech

Mevin Hooten - Colorado State

#### Tool awareness

- Listing of common tools or packages folks are using / find useful
- Core R packages may be an easier intro to Bayesian tools (e.g. **BRMS** -> STAN)
- DRAKE package -> workflow package for R; could help with continual data integration and model updating.
- Blog
  - Short tutorial on different packages
  - Ways to implement methods and models
  - **Poll folk ideas / sign up list**

#### Best practices

#### Statistical challenges (longer term?)

- Where are current tools not meeting our needs?
- Fisheries management decision criteria
  - Present a suite of scenarios for policy people; decide what represents their level of risk
  - Compared to EFI, most of that work is very mechanistic in nature (popn dynamics, water quality); not the same sort of data driven statistical modeling

- Where is the divide (or does it even exist) between fundamental rel'n & mech vs. pattern recognition time series analysis
- Availability of information is key
- Within EPA, strong tradition of statistical work in risk assessment, less in mechanistic modeling; run up against resistance
- Short-term: characterize when those approaches are useful
- Longer-term: ID their differences, limitations, and some guidance
- Data sets are often indices, not as informative as they need to be, but used as optimization drivers for mech models; method for turning/optimizing models
  - Patterns difficult to tease out even with 15-20 yr because of so many shifts in the env. over that period
  - How much agreement?
- Difference in cultures between subcommunities in approaches
- EPA would like to see more short-term forecasts; could be more useful than existing indicators of risk?
- How do we convince the powers that be??
- Linking big data and big models
- Short term -- best practices and awareness of tools accessing through the website. Can be hard to find the tools, how can we make it easier to get folks started and connected with tools that folks are currently using
  - Lists of R packages
  - Vignettes + blog post
  - Version control and other tools in addition to stats tools (data management and that sort of thing with CI).
- Case studies/scenarios to classify and present some of the tools and opportunities -- entry point to tools and applications. Including how and why approaches were taken and whether they worked well, and what are the gaps
- Gaps are often application specific
- General improvements in computing/distributed computing
- More efficient sequential computing/stats updating
- Breaking down the barriers between mechanistic vs phenomenological modeling and fuse them together.
- Terminology in how we describe the methods/tools is important -- long term working towards clarifying the language that we use for the different approaches along the spectrum.

#### Seed funding Possibilities

- Improvements to the website, add to materials on the site
- Student travel support -- maybe for ESA?
- Forecasting award?
- Student/postdoc go learn a tool with someone they apply and then in return afterwards they'd write a tutorial/blog post

Next Meeting -- Doodle poll for week of August 19

Poll/Survey for what folks want out of the working group -- goals?

- Interest in short term goals: tool awareness and best practices, etc?
- Willingness to contribute blogs posts and similar
- Top 5 long term challenges/wish list
- Identify a tool they can share/want to see (or a case study)