May 20, 2024 Theory Working Group Call

Attendees: Caleb Robbins, Mike Dietze, Alyssa Willson, Jody Peters
Regrets: Abby Lewis, Cole Brookson, Freya Olsson, Shubhi Sharma

Agenda:

1. Schedule for calls in June - August
    a. Use the same time? Meet June 3 - probably skip June but check on Slack, Maybe July 1 or July 8, and August 12?
    b. Try to have a big group call early in July and then a smaller group call in late July to give Caleb feedback on poster for ESA

2. Marcus - machine learning forecasts and NEON Forecasting Challenge. Any other things to check in about?
    a. Going to L&O meeting in June and presenting work there so will get feedback

3. Check in with Caleb - Using the NEON Forecasting Challenge to explore predictability across variables and scales
    a. Updates - there were errors in the chl data from NEON - so have to go back and retrain the models for that.
        i. For tidy models/ML - just need to be refit and then the forecasts will need to be submitted
        ii. Have to resubmit the forecast and will work closely with Quinn/Carl to resubmit to the buckets
        iii. Using GAM to look at forecast decline across forecast horizon at sites
        iv. Using forecasts for all of 2023
    b. Feel free to add to existing or create additional discussion or methodological points as issues in the Github Repo https://github.com/robbinscalebj/NeonPredictability/issues
    c. Google Drive folder set up where any drafting/rationale can happen as this moves forward

4. Model complexity paper by the EFI Student Association just came out!
    a. The term “model complexity” has been used often, but it means a lot of different things
    b. Hope is to adopt more specific type of complexity descriptions to allow for better intercomparison and to better understanding how complexity influences ecology
    c. It is published in MetS - it is special issue that was organized by the British Ecological Society

   d. A challenge was to appeal to the meteorology sciences rather than just ecology since it is in MetS

5. For the Next Call: Check in with Cole and Shubhi - simulations, weighted permutation entropy and handling data gaps.
   a. Using simulations and NEON data - can we pull info from time series using weighted permutation entropy and realized permutation entropy - use it to look at how predictable the time series are
   b. 2 things -
      i. Simulate from models and permutation entropy
      ii. Looking at the NEON data
   c. How does data gaps affect understanding of predictability

6. Blog post idea for code review materials (Jody)
   a. On January call the group talked about Jody drafting the blog post and running it by the group. There is no definite timeline for this, but hopefully within the next month or two
      i. SORTEE group has a lot of energy between code review and seems like there is overlap with EFI
      ii. SORTEE: https://www.sortee.org/
      iii. Has Slack channel - here is the link to join https://join.slack.com/t/sortee/shared_invite/zt-2fnqytett-AND1mTuXBKQWYyWUXKn6YA
      iv. Library of code mistakes: https://docs.google.com/presentation/d/12QN3WUc5v1Df7OArEox2U7l_N_qnHHuwzjCYil4idC8/edit#slide=id.p
         1. Can add anonymously issues that people have found when their code has been reviewed
         2. E.g., day/time errors, misunderstanding of function
         3. It is structured with the same headings that were in the paper on code review