October 17, 2024 Joint Methods & CI Working Group Call

Attendees: John Smith, Will Hammond, Jody Peters, Dave Durden, Quinn
Regrets: Jake Zwart, Carl Boettiger, Brittany Barker

1. How is setting up the GitHub actions for the spatial forecast going? (Will)
   a. https://github.com/eco4cast/modis-lai-forecast/

2. Any additional thoughts since the last call about other LAI products to replace MODIS
   a. Options from Sept call
      i. https://github.com/yanghuikang/Landsat-LAI/tree/main
         1. Think this is the easiest to work with. GEDI passes over at different times and may be harder to deal with
      ii. Ecostress vs Landsat. Getting semi regular coverage from Landsat was really useful compared to Ecostress
      iii. GEDI - https://gedi.umd.edu/instrument/specifications/
   b. Next steps from Sept call - decide if there are one or two products to try out and then see if Will could help
      i. From an implementation standpoint - Landsat will be easier than GEDI. But if we want to go with the NASA ROSES proposal which calls out GEDI then maybe go with that
      ii. NEON collects LAI - airborne and ground measurements of LAI. Airborne only over 10x10 grid of NEON site
         1. If we go with the NEON fire sites that Brittany identified, then may be worth furthering considering the NEON LAI
         2. Spatial resolution of remote sensing = 1m
         3. Ground based takes photos across 20m transect - get avg LAI over 20x20 box
         4. Only yearly though - temporal component is the issue with using NEON airborne platform
         5. If we found the right fire that could provide interesting spatial component on yearly recovery rate
         6. Could do something interesting, but doesn't fit into the same mold as what has been doing
      iii. Sentinel2 on planetary computer is also an interesting option - Dave is looking into incorporating the functions we have
         1. Prefers to stay with planetary setup rather than dealing with different STAC
         2. It is LandSat - but harmonized with Sentinel2
         3. https://planetarycomputer.microsoft.com/dataset/storage/hls
         4. Could lead to interesting syntheses later
         5. Getting the data into the function is straightforward - there will still be the step to calculate the LAI

        a. This is just the raw bands
        b. But there are code packages available that calculate LAI from Landsat

3. May 2025 EFI Conference - make sure to keep it on the groups radar
   a. Travel funding available to support particularly people involved in RCN activities
   b. Could be time during the meeting to work on things and give posters
   c. If this helps motivate work, then great!
   d. Dave only gets 1-2 conferences a year that aren't invitations or covering for someone

4. Canadian EFI also thinking about spatial forecasting - Eliot McIntire - thinking about null models and baselines and how to deal with scoring to build on spatial evaluation done in weather community
   a. Predicting thunderstorm in weather model example: I predict thunderstorm will occur with the right amount of rain at the right time but one grid over. CRPS will say you suck, but in reality you were off slightly. You would have the same score as someone who said there was no storm
   b. Spatial forecast evaluation could be workshop or discussion at EFI2025 meeting
   c. Want to get something mature enough for the group to be able to evaluate
   d. The baseline is well developed for the spatial forecast for this group - have a null with some itelligence. The evaluation is important, but we haven't worked out the spatial coherence of the evaluation
      i. John has some ideas

5. Special Collection at AGU - Ecoforecasting in the Earth System - open for the next 2 years. You submit to AGU/ESA journal that is most appropriate and it gets included in the Special Collection
   a. This could be an outlet for materials related to the spatial forecast

6. Any additional thoughts since the last call about options for additional fire sites and how the site history can inform hypotheses to test with the challenge
   a. For the Sept call Brittany downloaded the USGS wildland fire dataset and extracted for NEON locations to see fire histories at those sites
   b. For hindcasting - might be good to pick a site with multiple burns to see if the model can correctly hindcast
   c. In the past NEON sites were selected because of the opportunity to have additional data (AOP, etc) was useful.
   d. Brittany wasn't able to come to the October call, so we'll check in about this in November.

7. Proposal Options

    a. John wasn't available for the September call, so we can check with him on the Oct call. Anything needed from the group for his EPSCoR proposal
        i. Internal MSU deadline - end of Dec
        ii. Has lunch and learn next week
        iii. John and Carl connected and UCB can be host for John!
    b. Brittany - NASA A.60 Earth Action Ecological Conservation and Forecasting Funding
        i. **NASA is seeking proposals for projects that apply a combination of three components: NASA Earth observations (defined in Section 3.2.1), *in situ* biological observations (see Section 3.2.2 for examples), and ecological models to develop decision-support tools in ecological conservation and management.**
        ii. More details on the specific scope and call are available here.
        iii. Full details available on NASA NSPIRES here.
        iv. Notices of intent are requested by February 14, 2025, and proposals are due March 14, 2025.
        v. Note that there are virtual meetings for potential proposers on Friday, November 15th (13 PM Eastern Time) and Monday, January 13th (1-3 PM Eastern Time) so these will be good to keep in mind as well.

8. Carl posted on Slack: if there's time it might be interesting to take a look a this discussion regarding forecast-specific metadata in STAC. https://github.com/stac-extensions/forecast/pull/12 EFI folks were a key input in the creation of this extension and of course in forecasting metadata and STAC is becoming an increasingly influential standard, especially in spatial metadata.
    a. Need more boot up time to discuss this
    b. This is proposing column columns names - need to have standardized names that hopefully match with our names
    c. STAC has multiple levels of entry
        i. Browser - this is linked from the Forecast Challenge sites
        ii. Interface
        iii. Actual JSON files
    d. Quinn walked through STAC resources - showed Forecast Challenge example
    e. Working through spatial forecast will provide a use case for how to include models into STAC - particularly focused on how we have the time component down but not space

9. Update from Dave - Quinn had requested parquet format for NEON - there are a subset of SAE data visualization products available now but are at a month latency (would like to get published daily but not yet) - will be moved to portal in the next few months
    a. The move to pachiderm - everything behind the scenes is done in parquet
    b. But for portal still allowing csv
    c. Big challenge is to reorganize data to handle hierarhchical structure. Right now input has multiple data sets which doesn't work well for reading the tables

      i.   Need to redo at the table at high level, then sites, then time - this would be big rehaul on NEON side