

## September 19, 2024 Joint Methods & CI Working Group Call

Attendees: David Durden, Jody Peters, Carl Boettiger, Brittany Barker, Jake Zwart, Will Hammond

Regrets: John Smith

Agenda/Notes:

1. Follow up from CI workshop held April 2024
  - a. There is a Quarto website (<https://projects.ecoforecast.org/efi-ci-workshop-2024/>) with a summary of the workshop materials and recommendations. The workshop organizing committee is in the process of creating an ecological forecasting CI handbook as part of this website (still under development). We encourage contributions and feedback from workshop participants and the broader ecological forecasting community and the CI/Methods working group, especially on a CI handbook.
    - i. The handbook will provide CI design principles and best practices to serve as a comprehensive guide, suitable for both beginners and experienced forecasters
    - ii. There will be more targeted opportunities to add to the CI Handbook once there is an outline and text for people to suggest updates
    - iii. Expect the handbook will be a collection of markdown files that people can make suggestions to via GitHub
    - iv. There is a new feature where you can add comments to webpage. Powered by Utterances. People still need to have GitHub account to add the comment, but it may provide a slightly easier way for people less familiar with GitHub to add comments
  - b. Work in progress: There will be a short, bulletin-style article to a journal that will document the workshop and invite community contributions to the website / CI handbook.
  
2. Think about an option for replacing MODIS to get another LAI product.
  - a. Spatial resolution
  - b. Pro and cons
  - c. Ideally would be something from LandSat or Sentinel - not sure about API to access locations and not sure if algorithms to convert to LAI are as good as MODIS
    - i.
  - d. Planet products could be an option
  - e. <https://github.com/yanghuikang/Landsat-LAI/tree/main>
    - i. Seems like there are ready to go functions to take advantage of Earth Engine

- ii. Don't think it can be done on Planet because they only do RGB and we need infrared as well
    - iii. Dave working with Ankur on Planet was able to get a derived product from using Sentinel
    - iv. Burn index from RGB instead of infrared bands - but there is a trade off in getting good resolution with less useful part of the spectrum
  - f. PACE - NASA's new platform looks promising. Note: Jody looked at PACE after the call and it looks like it is for understanding how climate change affects ocean phytoplankton blooms
  - g. Also consider a good land surface temp - Ecostress vs Landsat. Getting semi regular coverage from Landsat was really useful compared to Ecostress
  - h. GEDI - looks like it has more 3D structure of the vegetation. Is it just for a certain area of the US or is it widespread. Not sure what the temporal resolution is
    - i. Brittany will look into this further
    - ii. <https://gedi.umd.edu/instrument/specifications/>
    - iii. Think it might be a global product from 51.1N to 51.6S, but don't know how you predict where it will be at any time. Looks like it might have uneven coverage
  - i. Do we want near real time data? For the projections we would like this. But want to balance that with the spatial resolution
  - j. Next steps - decide if there are one or two products to try out and then see if Will could help
  - k. From an implementation standpoint - Landsat will be easier than GEDI. But if we want to go with the NASA ROSES proposal (point 5b below) which calls out GEDI then maybe go with that
    - i. NASA ROSES - wants specific information about the end users and sustainable transition plan
    - ii. USFS would be a good partner
      - 1. Building infrastructure to them to build their models
    - iii. Brittany has local partners with USFS opportunities related to forecasting risk and forest health. Something like the prototype would be of interest.
      - 1. Brittany can reach out and see if this would be a good decision support tool and if FS would use the tool
    - iv. Need end users included in the proposal at the beginning
    - v. For the transition plan - NASA wants to know that there will be a plan and funding to continue the forecast by a non-NASA operating group
3. Brittany will look into options for additional fire sites and their histories to help inform hypotheses to test with the challenge
- a. Looked at the histories - downloaded the USGS wildland fire dataset. 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

- i. Looks like a lot of them are prescribed burns - so expect fire severity would be lower
    - ii. It could provide a nice training set for people
    - iii. Think there would need to be model evaluation and calibration based on the hindcasts
    - iv. Have fire start year, acres burned, fired ID code, dates for prescribed burns, if available notes on how the fire data were collected
    - v. The fire data is available for the entire US
    - vi. It includes all forest lands in different ecosystems
    - vii. The wildland fire dataset was published in 2021. But goes back to 1890.
  - c. Brittany's suggestion is to pick areas with multiple burns
  - d. In the past NEON sites were selected because of the opportunity to have additional data (AOP, etc) was useful.
4. Think about how to get the protocol working to put into a grant
- a. Will Hammond, who is working with John at Montana is interested in helping to get the challenge running.
  - b. John will have Will go through the GitHub issues to identify if there are things he wants to work on or needs further guidance about.
  - c. Will checked the GitHub Action workflows - scoring and submissions. Some of these have been built out but not with GitHub Actions. Will would like to focus on that.
  - d. Jake suggests following examples in the neon4cast-ci and starting with targets and then building on drivers and then a baseline model
  - e. There is a targets GitHub actions yaml in the repo that was running successfully - but may not be now. So good to check there.
  - f. Quinn or Carl may need to give access to keys
5. Proposal Options
- a. John wasn't available for the September call, so we can check with him on the next call. Check with John about anything needed from the group for his EPSCoR proposal
    - i. Update from John - he is planning to apply for EPSCoR. He says, "The one big consideration for the fellowship is that I will need to collaborate with a "host" institution, like we discussed briefly during the last call. Here is the pdf that I was looking through that has some discussion about eligibility etc: <https://nsf-gov-resources.nsf.gov/solicitations/pubs/2024/nsf24528/nsf24528.pdf?VersionId=fsg5Yjd0Gr9LekNvzwTQqnG99Z23gQ9E>
    - ii. Note from the pdf about the host institute: As stated in the overview, this opportunity is intended to provide support for PIs to collaborate with facilities of national prominence that would not otherwise be possible without the fellowship. For this reason, the project description should

include narrative text that explains why the interactions could not occur without the large injection of fellowship funding intended to support the collaboration. An extended visit/relocation or a number of short periodic visits of the PI to the host institution is considered a primary feature of this fellowship activity. A host site located within the PI's current institutional system is not allowed. It is expected that the PI will complete, at minimum, a one month extended visit to the host institution, or the equivalent of several periodic visits totaling one month over the duration of the award.

- b. See notes about this discussion above in point 2. Discuss the potential to apply to the NASA A.60 Earth Action Ecological Conservation and Forecasting Funding Opp is posted
  - 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.** Any area of ecological conservation is welcome (e.g., invasive species, protected area management, fisheries or wildlife management, habitat restoration, ecosystem services, rewilding, biodiversity protection). Projects must not only facilitate the transition of project products to public- and/or private-sector organization(s) but also ensure that these products are adopted for sustained use in their decision-making process(es).
  - ii. Examples of *in situ* biological observations include, but are not limited to, survey and census results, tracks of animal movement or other behavioral data from Global Positioning System tags or other biologging and biotelemetry devices, camera trap imagery, information from acoustic sensors, various types of citizen science collections, and outputs from environmental DNA (eDNA) or other “-omics” approaches.
  - iii. More details on the specific scope and call are available [here](#).
  - iv. Full details available on NASA NSPIRES [here](#).
  - v. Notices of intent are requested by February 14, 2025, and proposals are due March 14, 2025.
  - vi. 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.