

November 21, 2024 Joint Methods & CI Working Group Call

Attendees: John Smith, Will Hammond, Dave Durden, Brittany Barker, Jody Peters

Regrets: Carl Boettiger, Jake Zwart

1. EFI2025 (19. May - 22. May, 2025) Conference Updates:
 - a. The conference webpage is live <https://bit.ly/efi2025>
 - b. Now accepting submissions for abstracts, working group and workshop activities, travel scholarships/visa requests
 - i. Deadline to apply: January 22, 2025
 - ii. Registration opens: February 14, 2025
 - c. See the Conference handbook in the "About the Conference" section of the conference website for more information
 - d. Working group activities - think the interviews will be done or launched or could use the conference as a way to give us a date for launching it.
 - e. Would like to have enough of a working example to introduce the spatial forecast challenge and let people know it is open to accept forecasts - could be a talk or a workshop to walk people through it
 - f. Focal project right now is post fire recovery. But other spatial data of interest Would be good to discuss what things to extend this to in addition to LAI post burn and starting to think about code and data (sentinel, climate data, soil moisture datasets)
 - i. Example of how we could extend the forecast challenge to other aspects of recovery. For example, Brittany and colleagues submitted USFS grant - proposed to develop decision support tool to model risk of tree mortality induced by beetles (western pine beetle focus to start with) - would like to use the infrastructure for this to provide framework
 - g. Future ideas of implementing spatial forecast - GPP/NEE are also prime candidates for data sets. Would be useful for carbon credits and management implementation
 - h. Dave got internal Batelle funds to create transfer functions from typical MRV practices to what is measured with Eddie covariance (NEE). Will be working on it over the next year. Will reach out to John.
 - i. Could the funding be part of the spatial forecast? Can be tricky - part of it will be IP with Batelle but think there will be opportunities for public uses - will need to map that out beforehand
2. How is setting up the GitHub actions for the spatial forecast going? (Will H)
 - a. <https://github.com/eco4cast/modis-lai-forecast/>
 - b. John has 2 parametric models - one is Gaussian and one is an independent grid model
 - c. We are getting close to having a working challenge!
 - d. For GitHub actions - need a parametric model. Will start with auto ARIMA (base level) and a spatialtemporal GP model as well

- e. Problem Will H has run into is that there is a Action built with current example that hasn't able to run for a year.
 - i. Seems like there are issues with the R packages. See if the packages are autogenerated.
 - ii. Rmlock file - shouldn't be autogenerated. Should just be based on what is in the repo.
 - 1. Will H is running in GitHub Actions - it is in one of the steps of docker when loading packages.
 - 2. Think Will H will need to update the packages
 - 3. Dave will send example script or may update the packages and test out - but can't get to it until AGU. Will H will use Dave's example script and then
 - f. Models -
 - i. The 2 parametric models haven't been added to repo yet.
 - ii. Have 2 baseline models - climatology (density based approach) and spatial intrinsic autoregressive model (random walk in space and time) - that is a fully bayes model. Neither are parametric so they get scored as ensembles
 - iii. spaclimatology - built qmd file and know that works. But if we want to be demonstrative to show people how to do both ensemble and parametric examples, need the parametric models as well
 - iv. One that fits parametric model in each grid cell and one that fits parametric model across all the grid cells
 - v. John is hoping to get all the models pushed next week
3. Any updates about incorporating other LAI products to replace MODIS
- a. Landsat harmonized with Sentinel-2 option - Dave was going to work on getting the data into the function already in the repo - this is as raw bands. Still need to calculate LAI from Landsat
 - i. <https://planetarycomputer.microsoft.com/dataset/storage/hls>
 - ii. Still on Dave's list to do before AGU
 - iii. Dave added some functions in the flavor of grabbing the data functions already in - but using NEON sites as shapefiles which will be transferable to the spatial challenge
4. 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. What ideal locations would be or long term data sets? Brittany can pull this info if she has more input
 - i. Having the fire severity maps is important for people wanting to use that to initiate their models
 - ii. Had been focused on forested systems. But could pull in other types of ecosystems, e.g., sage brush systems
 - 1. Wildfire sites from Justin primarily from the Great Basin
 - iii. NEON sites are nice because it adds allows for additional data that have been collected
 - iv. Would be nice to have additional ecosystems represented
 - 1. But one thing to keep in mind is if the LAI is too small, may not be able to see recovery
 - 2. Or if site is consistently burned, then may not be able to see recovery
 - 3. In sage brush ecosystems - takes a long time to grow back or it wont' grow back if it isn't managed
 - a. Would require land cover component datasets using Landsat - (annual time scale or every 6 months?) - so can see what proportion is annual, perennial
 - b. Do want to keep in mind what we mean by recovery - invasives vs natives
 - c. Would be harder with MODIS, but if we move to Landsat then it opens to additional analysis in that area because of higher resolution
 - v. Brittany will look at the dataset and focus on sites with long term monitoring so we have a good fire history
 - e. Brittany is PI on SERDP grant - wonder if DOD lands may have additional datasets that are relevant to what we are modeling
5. Proposal Options
- a. John - EPSCoR
 - 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.