

December 19, 2024 Joint Methods & CI Working Group Call

Attendees: Dave Durden, Mike Dietze, Brittany Barker, Jody Peters, John Smith, Chris Jones

1. Poll for January to May calls
2. 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. 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
 - e. 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
 - f. Future ideas of implementing spatial forecast - GPP/NEE are also prime candidates for data sets. Would be useful for carbon credits and management implementation
 - g. John planning to submit an abstract - not sure if we want to do an abstract for a talk or a workshop
 - i. John to keep thinking about what will work best for the conference
 - ii. If workshop it would be to get people up and running to submit their own forecasts
 - iii. Think this would be more useful and would get people to jump into the spatial forecast
 - iv. Chris would be willing to help run the workshop
3. How is setting up the GitHub actions and adding the 2 parametric models for the spatial forecast going? (Will H/John)
 - a. <https://github.com/eco4cast/modis-lai-forecast/>
 - b. What to still think about to get it up and running
 - i. What format do we want to archive submissions - having a spatial component may make it differently then the current standards

1. Mike thinks the geotiff should fit with the EFI standard, but if it doesn't that will be good feedback
 - ii. For null and parametric functions - John needs to write some intermediate data processing functions to get the data pulled from NASA without his computer timing out.
 - iii. For scoring - think we are good there.
 - iv. Mainly need to work on storing results from null models
- c. Will and Dave had connected on the GitHub actions. Figured out the dependency docker issues. Now working on the workflow. Also had some issues with timing out. John shared some code that Will can try out to see if it will work.
 - i. Does GitHub actions have hard limits on ingest planetary data function?
 1. Chris said - there is a 6 hour time limit
 2. It loses connections and then will just enter NANS
4. 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. Dave - how did this go as you were prepping for AGU?
 1. Hasn't incorporated it into the function yet.
 2. Previously tried to add Sentinel-2 in hdfm format, but the other hdf5 format should be easier
 3. Brittany is also working with the SMAP in the hdf5 format. Was an issue with the installation of gdal not being recognized.
 4. Dave will give it a shot to resolve the issue in the new year.
5. 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. Brittany, did you find any additional sites with long term fire histories?
 - i. Yes. Did GIS analyses to look at fire histories at NEON sites and other long term sites (see Table on next page)
 - ii. Did spatial join of Justin's wildfire and NEON's sites - tallied the sites per year and by size and earliest
 - iii. Talladega National Forest had most fires, other top sites are Disney Wilderness, Santa Rita, LBJ Grasslands
 - iv. All the locations have recent fires
 - v. Additional places to consider adding: Several locations in Colorado, Wyoming, and New Mexico have recently had very large fires, such as Pike National Forest (e.g., Hayman and Waldo Canyon Fires), near Grand Junction (Pine Gulch Fire), Medicine Bow NF in WY (Mullen Fire), and the Gila NF in NM (e.g., Silver, Black, Whitewater-Baldy). These are also relatively dry forest ecosystems.

- b. Side note from SERDP meeting in DC - has some ongoing awards that are specifically on wildfires

siteID	siteName	state	n_fire_yrs	av_fire_km2	earliest_yr	latest_yr	field_dominant_nlcd_classes
TALL	Talladega National Forest	AL	18	52.342968	1999	2020	Deciduous Forest Evergreen Forest Mixed Forest
DSNY	Disney Wilderness Preserve	FL	14	48.504342	1984	2012	Pasture/Hay Woody Wetlands
SRER	Santa Rita Experimental Range	AZ	12	214.897271	1960	2018	Shrub/Scrub
CLBJ	LBJ National Grasslands	TX	11	41.883456	1996	2019	Deciduous Forest Grassland/Herbaceous
GRSM	Great Smoky Mountain National Park, Twin Creeks	TN	11	32.72719	1920	2016	Deciduous Forest Evergreen Forest
SJER	San Joaquin	CA	11	18.222906	1950	2020	Evergreen Forest Grassland/Herbaceous Shrub/Scrub
SOAP	Soaproot Saddle	CA	9	5.822705	1932	2020	Evergreen Forest Shrub/Scrub
ONAQ	Onaqui	UT	8	67.774086	1986	2020	Evergreen Forest Shrub/Scrub
KONZ	Konza Prairie Biological Station	KS	6	34.868609	2013	2018	Deciduous Forest Grassland/Herbaceous
MLBS	Mountain Lake Biological Station Additional TOS Boundary	VA	5	8.898438	2007	2017	Deciduous Forest
KONA	Konza Prairie Biological Station	KS	3	2.749077	2014	2018	Cultivated Crops
BONA	Caribou-Poker Creeks Research Watershed	AK	2	24.0199769	2004	2016	Deciduous Forest Evergreen Forest Mixed Forest Woody Wetlands
DEJU	Delta Junction	AK	2	29.903834	1999	2006	Evergreen Forest Shrub/Scrub Woody Wetlands

6. Proposal Options

- a. John - submitted preproposal for EPSCoR RII (research infrastructure improvement) to Montana State!
 - i. NSF deadline is April 8
- 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.
 - vi. Brittany is thinking about submitting a proposal about invasive species and SMAP - still considering what biological datasets to use

7. Spatial Forecast Info for Reference - ***the following information is for reference, it doesn't need to be discussed during the call***

- a. Background of the project - the goal is to develop a spatially explicit forecast that could be used with the NEON Forecast Challenge cyberinfrastructure. This project was started at the EFI Unconference (summer 2023).
 - i. GitHub repo: <https://github.com/eco4cast/modis-lai-forecast/>
 - ii. This is a prototype for working with spatial data and for managing large datasets in geotiff format instead of the csv/netcdf format that had already been developed for the Forecast Challenge

- iii. Here is the example of the standard Forecast Challenge CI:
<https://github.com/eco4cast/neon4cast-ci> wanted to replicate this and apply to a spatial example for this project. This repo has workflows with GitHub actions that do tasks automatically - it gives a modular way to see what actions need to take place which we can use to check off what is done for the modis-lai spatial forecast example
 - iv. We are using the [STAC](#) framework - spatial temporal assets catalog - this allows for the Challenges to be discoverable
 - v. TERN example to use as reference:
<https://projects.ecoforecast.org/tern4cast/>
 - b. For reference here is the list of Tasks to set up GitHub Action Workflow
<https://github.com/eco4cast/modis-lai-forecast/issues/10>
 - i. Targets generation
 - ii. Benchmark forecast generation
 - iii. Scores
 - iv. Submissions/validation
 - 1. Jody is leaving in a placeholder that Brittany is willing to look at the fire dataset from Justin Welty to find other fires to add to the targets
 - v. Generate Dashboard/visualizations
 - vi. Generate STAC collections for forecasts, targets, scores tifs
8. **This is for reference, not necessarily needed for today's call:** Resources from Justin Welty's visit on the November call (see full list of notes from the call in the link to the Nov calls above)
- a. Databases and tools mentioned
 - i. [Geodatabase of wildfires](#)
 - ii. [Wildfire Fire Trends Tool](#)
 - iii. [Land Treatment Exploration Tool](#)
 - 1. [Geodatabase with land treatment data](#)
 - iv. [RAD framework](#)