

April 26, 2024 Joint Methods & CI Working Group Call

Attendees: Emma Mendelsohn, Brittany Barker, Carl Boettiger, John Smith, Dave Durden, Jody Peters, Will Hammond, Saeed Shafiei Sabet

Regrets: Chris Jones, Jake Zwart

Agenda/Notes:

1. The May call is schedule for May 10 (2 weeks from now...) What do people think about moving that to 17 or 24. Or if we want to submit for the Ecological Conservation CFP, then perhaps keep it for a subgroup call and move the larger call to the 17th or 24th?
2. Jake Zwart can provide an update on the May call about the recent EFI CI Workshop held at NERACCOOS
3. NASA Proposal updates - explore the potential to put in an [Ecological Conservation and Biodiversity](#) proposal. Here is the [Solicitation Document](#) with additional details.
 - a. Seeking proposals that will answer questions such as the following: *“How do we practically integrate observations from different platforms observing at different spatial extents and grain sizes to address biodiversity questions?”* And, *“ how can satellite remote sensing further theoretical understanding of how life scales spatially?”*
 - b. Notices of Intent are requested by May 13, 2024 and proposals are due by June 13, 2024.
 - c. The NASA Earth Science Division (ESD) seeks proposals that advance the science and apply the principle of scaling satellite remote sensing products in the context of biological diversity and ecological conservation.
 - d. These proposals require: **NASA Earth observations** (Section 5.1) and **in-situ biological observations** (Section 5.2), both of which must be essential to the proposed activity.
 - e. Applications proposals additionally require:
 - i. End User Participation (see Section 5.5.1.1) as a member of the project team with clearly defined roles and a schedule for engagement.
 - ii. Statement of End User Decision-Making Need (see Section 5.5.1.2) which clearly describes how the project products will be used for decision-making within the end user organization(s), the authority of the end users to implement conservation action, and the projected benefit of the proposed decision support activity to their work.
 - iii. Sustainable Transfer Plan (see Section 5.5.1.3) which clearly defines where the project products will be hosted during and after the project award period, barriers to use of the product(s), means to track product use, and a transition plan.

- iv. Applications Readiness Level (ARL) Assessment (Section 5.5.2) of the current decision support system and expected project ARL advances.
- f. This program seeks proposals that address either **basic research** (see Section 4.1) or **applications proposals** (see Section 4.2), but not both in a single proposal. All proposals must combine satellite remote sensing (see Section 5.1) and in-situ biodiversity observations (see Section 5.2).
 - i. For **basic research proposals**, the goal is to further understanding of the operational and/or the theoretical implications of combining observations at different spatial scales to further understanding of the composition of life on Earth and how it changes over time.
 - ii. For **applications proposals**, the goal is to increase the scale of existing NASA Earth observation-derived biodiversity conservation decision support capabilities, in concert with actual end users. Scaling in this latter sense includes an increase in the geography of use, the breadth of the user community, and/or the thematic areas of use.
- g. This Researching Scale subelement solicits proposals that address one or both of the following objectives:
 - i. 1) **To enhance our operational or technological ability to combine observations from satellite remote sensing (see Section 5.1) with in-situ observations of biodiversity on the ground, in the water, and in the air (see Section 5.2) for the purpose of advancing understanding of the composition of life on Earth and how it changes over time.** The goal of this first objective is practical: to improve our ability to integrate observations made by different platforms covering different spatial extents at different grain sizes. NASA seeks to develop and enhance observational and model-based techniques that will allow us to use cross-scale information to advance understanding of the composition of life on Earth and how it changes over time. This includes documenting and identifying factors that determine the distribution, abundance, movement, demographics, physical or genetic characteristics, behavior, and/or physiology of organisms on Earth.
 - ii. 2) **To advance our theoretical understanding with regard to how life scales spatially through the mechanism of combining satellite remote sensing with in-situ observations on the ground, in the water, and in the air.** This work should build upon the rich literature over the past century from D'Arcy Wentworth Thompson to Geoffrey West, along with a number of others, regarding scaling rules for life. Efforts proposed may range from molecules to organisms to biomes. Whatever their inspiration and purpose, proposals must employ a combination of both satellite remote sensing (see Section 5.1) and in-situ biodiversity observations (see Section 5.2). The goal of this

second objective is to increase theoretical knowledge of patterns and processes, which underpin our ability to advance understanding of the composition of life on Earth and how it changes over time, which also includes documenting and identifying factors that determine the distribution, abundance, movement, demographics, physical or genetic characteristics, behavior, and/or physiology of organisms on Earth. NASA seeks refinement and further elaboration of the scaling rules of life: why life scales as it appears to scale.

h. Notes:

- i. It is a big application
- ii. Emma has a template from a co-worker who submitted a ROSES proposal that we can use
- iii. End users - Brittany has collaborators with NPN
- iv. Think NASA is more serious about the partner use of the product than the broader impacts
- v. Carl thinks the A47 on wildfire would be better than the A7 Biodiversity - both would need partners
- vi. A7 language - partner organization has to have highest application readiness level. Need to have a current decision maker who is ready to use your product
- vii. Think A47 is a lower bar - partner needs to be involved. "Demonstrate tangible benefits to partners" "Encourage to consider PI/CoPI from the end user organization"
- viii. Both deadlines are really soon. So if it is too heavy of a lift, then perhaps look for other funding opportunities
- ix. Wildfire looks like it has more funding \$350K vs \$250K
- x. A7 and A47 both require letters from partners and readiness level requirement is much higher in terms of being ready
- xi. Could pivot to getting further down the road or pivot to looking for funding
- xii. Funding we need for immediate work could be small grant or volunteer time which can set the foundation for more application later
- xiii. Seed Grant options
 1. \$50K, rolling basis: <https://www.bwfund.org/funding-opportunities/climate-change-and-human-health/climate-change-and-human-health-seed-grants/>
 2. Could be worth pinging NSF - EAGER opportunity where NSF officer can sign off on small grant. NSF program officer like to use that to give an early career researcher funds. They are for projects that don't fit in any current call

- a. <https://new.nsf.gov/funding/early-career-researchers#early-concept-grants-for-exploratory-research-eager-c8f>
 - b. Could start with Matt Kane who is the EFI RCN Program Officer
 3. ACED: <https://new.nsf.gov/funding/opportunities/aced-accelerating-computing-enabled-scientific>
 - a. Calls specifically someone from CISE and someone from bio or mathematics. We have bio covered, so potentially a good fit
 4. If we think our application would fall under the umbrella of [Computational and Data-Enabled Science and Engineering \(CDS&E\)](#)
 - a. John can reach out to a program officer that he knows at NSF and can check in about EAGER as well
 - b. This has more breathing room. So it isn't due in June
 - c. Can use the email Brittany drafted as well
 5. Next step - aim for seed level funding to move the project forward
 - a. Pitch something in the \$50K-100K. It will keep us motivated and won't be as big of a lift for NSF PO
 6. NPN - Brittany has grant with them currently. So anything related to phenology. They are more outreach and education rather than development. They operationalize the models
4. Project Overview and resources: Forecasting Wildfire Recovery Using MODIS Leaf Area Index (LAI)
 - 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. Updates
- i. Will finished the parametric scoring today - he will push the update to the GitHub repo
 - ii. John is almost done with the random walk - he plans to get this done next week