Fire & Ice

Navigating Variability in Boreal Wildfire Regimes and Subarctic Coastal Ecosystems

"Fire & Ice" is a 5-year (2018-23), $20 million effort to investigate changes to fire behavior and risk in **Alaska's boreal forest**, and changes to physical and chemical conditions impacting ecosystems and marine life in the nearshore **Gulf of Alaska**. More than 150 faculty, staff and students across the University of Alaska system are studying these climate-driven changes through remote sensing, fieldwork, lab experiments, surveys and models.

Grad student Chris Smith and undergrad Colleen Haan.

A **Boreal Fires** team uses hyperspectral remote sensing, computer modeling, fieldwork and surveys to study all aspects of fire in the boreal forest: from the climactic conditions that foster fires, to how fires spread, to how severely fire impacts the landscape. They're also studying the economics of fire management in settled areas and the ways fires impact subsistence resources. Products of their research will include new techniques for evaluating fire risk, better methods of processing remote sensing data, improved fire spread models, and online forecast tools for fire managers.

Undergrads Emily Williamson and Brian Zhang.

A **Coastal Margins** team is collecting detailed data in Lynn Canal and Kachemak Bay on how glacial retreat and other climate-related changes impact physical and chemical characteristics and marine life. "Stream Teams" collect data in 10 different watersheds, while intertidal researchers study conditions and organisms at river mouths. Laboratory experiments on key species help indicate how they will respond to anticipated changes in climate, and surveys of fishers and managers will provide information on how Alaskans respond to changes in marine resources.

A **Diversity, Education and Workforce Development** (DEW) team involves more than 1,500 Alaskans in Fire and Ice activities, including K-12 afterschool programs grounded in Fire & Ice science; scientific expeditions for high-school girls; and mentoring, courses and training for UA students. DEW is also conducting research into formation of a science identity in first-generation UA students, who are a focus of our diversity efforts, along with women and Alaska Natives.

Fire & Ice is a project of **Alaska NSF EPSCoR** (National Science Foundation Established Program to Stimulate Competitive Research). EPSCoR builds research capacity in states and territories that have historically received below-average amounts of NSF funding, a list which currently includes 28 states and territories. for more information visit us at **www.alaska.edu/epscor**.

Your Output Needed

Fire & Ice Social media

As we all know, if it didn't show up on Facebook/Twitter/Instagram, it didn't happen. Which is why we're encouraging all of you to help us share your doings through social media.

Who: You! We welcome content from anyone associated with the project - undergrads, grad students, faculty, staff, techs, educators. If it has to do with EPSCoR and you want the world to know about it, send it our way. In fact, if you did something amazing that has nothing to do with EPSCoR, let us know about that too.

What: Photos and videos, especially of people doing research and outreach. Brief descriptions of your research and findings. Links: to blog posts, websites, news coverage, articles, research posters, anything related to the project.

When: Anytime!

Where: EPSCoR currently has a website, Facebook page, Twitter feed, YouTube page, and Instagram account.

Why: We're publicly funded, so it's important the public knows we're doing good work. But also, our research is important and this is a great way to let people know about our process and our discoveries. And the more we can show people the meticulous and important work we're doing in their backyards, the more credit they'll give research in general.

How: When you have material to share with us, send it to tmoran3@alaska.edu. If you have questions about formats, just email. If you want to contribute *en masse* let us know and we can discuss sharing straight to our feeds.

Thanks, and we look forward to working with you!

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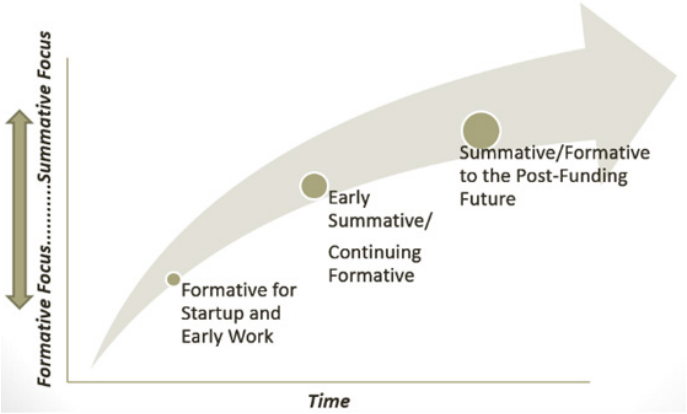
Your Input Needed

Fire & Ice Evaluations and Reporting

It's likely that you'll be asked to provide information and input for Fire and Ice's **external evaluation** and **annual reporting**. Collecting accurate, timely and thorough data for both is critical to our success.



The external evaluation has two major functions (see figure to left). Early work is **formative**: data will support annual recommendations for improvements. As Fire & Ice develops, the evaluation becomes **summative**, capturing data to gauge success and to plan for future research.

Evaluators will track development of project leadership, research growth, collaborations on research and in publishing, and other benchmarks. Some data we'll request for the evaluation (and for NSF reporting) will be basic information like demographics. But the evaluation also depends heavily on data about the nature of your participation, which is important to study team dynamics. We will gather this data in several ways:

We'll use **annual surveys** of students and/or faculty to collect data on team structure and change over time, team expectations and professional goals, student interactions, interactions with project partners, and productivity. We'll also ask social network questions to track team development and interactions.

We'll **interview** selected participants to gather critical qualitative data and gain rich detail on project activities and outcomes.

And we will gather **publication data** from participants to analyze articles for co-authorship, subject and journal placement, impacts, and overall productivity.

Answers the evaluation will address include:

- How integrated is the project team within and across components, disciplines, ranks, and institutions? Is this strengthening over time?
- How well are researchers and teams integrating knowledge?
- How productive are the research components? What role do early-career faculty and students have?
- How have students benefited from participating in the project? Are they integrated in meaningful ways?
- How are workforce development activities building capacity and providing other benefits?
- Is the project developing strong collaboration teams for long-term sustainable research?
- Has the project helped trigger institutional changes that may support ongoing workforce development and cross-institutional research?

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UAA Student Resources

We at EPSCoR want to make sure our students receive the help and support they need to succeed. We've put together this list of UAA campus resources and services, with a focus on academic and research support and support for diverse students.

Academics and research

- The Office of Undergraduate Research and Scholarship offers undergraduate research grants and funding as well as an annual symposium.
- The Learning Commons includes tutoring and support from the Writing Center, Math Lab, Communication Center and more.
- The Honors College advances, coordinates, and administers active learning and undergraduate research opportunities for students across the campus.
- The Graduate Student Association works to maintain a living wage, adequate health insurance, sufficient resources and administrative support for teaching and research assistants.
- The Alaska Federation of Collegiate Science at UAA is a social organization for science majors.

Services for specific groups

- Student Support Services supports first-generation students, low-income students, and students with disabilities through mentoring, assessment testing, assistance with degree planning, and more.
- ANSEP (The Alaska Native Science and Engineering Program) improves academic outcomes and increases retention among Native students in STEM fields.
- Native Student Services helps Alaska Native students find support, access resources, connect with community representatives, study with classmates, and meet new friends.
- The Native Student Council offers cultural education programs, community engagement, collaboration, and volunteerism; while providing students a cohort of support and leadership development.
- The American Indian Science & Engineering Society incorporates the cultural traditions and values of Alaska Natives and American Indians into the pursuit of STEM degrees.
- The Black Student Union exists to unite, advance, encourage and inform students of the African Diaspora.
- The Multicultural Center promotes academic and personal growth of traditionally underserved students, including programs for African American, Hispanic, Asian, International, and Native American (AHAINA) students.
- The International Student Organization hosts student presentations, cultural video screenings, potlucks, conversation tables and mother language lessons.
- Disability Support Services empowers, supports, and advocates for students with disabilities.
- Military and Veterans Services provides support for military and veterans and their dependents.

Other services

- Career Services offers students and alumni assistance with resumes and cover letters, mock interviews, internship orientations, and career exploration.
- The Emerging Leaders Program develops and enhances leadership skills and competencies of all students across campus through self-assessment, learning, and practice opportunities.
- The Student Health and Counseling Center provides various medical services, counseling, health education, and assistance with student health insurance.

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