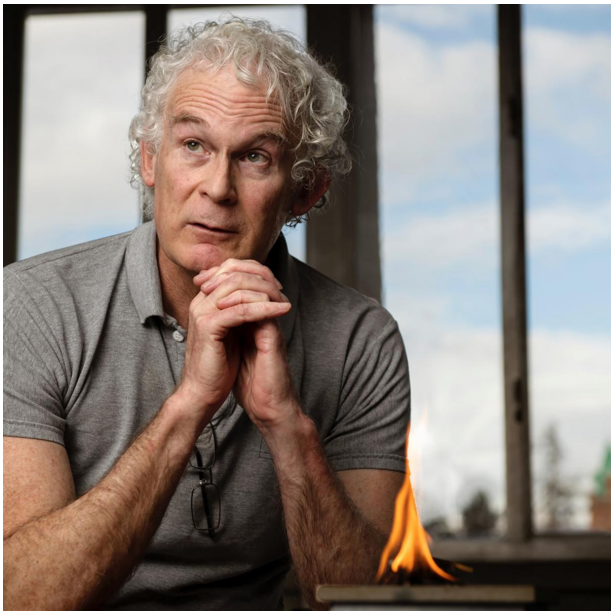
MONTANA NSF EPSCoR

SMART FIRES

SMART FIRES Spring 2024 Newsletter

SMART FIRES News

UM Smoke Researcher Honored by Major Science Organization



Bob Yokelson, an accomplished University of Montana researcher who studies biomass burning and is a member of the SMART FIRES research team, was recently named a Fellow of the American Geophysical Union. AGU is the world's largest Earth and space sciences association, with nearly 60,000 members in 137 countries. This marks at least the third time a UM faculty member has earned this rare distinction.

"I was surprised and happy that our work was nominated by other scientists – without my knowledge – and then selected by the AGU. I've been fortunate to have great students, postdocs, and collaborators," Yokelson said. "Fires have a huge influence on the atmosphere, and a quarter century ago we started deploying advanced technology around the globe to study the chemistry of fresh smoke and how it changes over time."

Yokelson is a faculty member in the Department of Chemistry and Biochemistry of UM's College of Humanities and Sciences. He primarily studies biomass burning and its role in air quality, atmospheric chemistry, and climate. Yokelson was one of 53 selected worldwide in the 2023 Fellows class.

AGU offered this in its Fellows announcement: "Bob Yokelson was selected because of his outstanding scientific achievements, contributions to furthering scientific advancement, and exemplary leadership. He also embodies AGU's vision of a thriving, sustainable, and equitable future powered by discovery, innovation, and action."

Read the Full Article Here

Rob Walker Gives Distinguished Professor Lecture on Optical Spectroscopy

Rob Walker, a professor in Montana State University's Department of Chemistry and Biochemistry since 2009, has been appointed Distinguished Professor for 2024 in the university's College of Letters and Science. It is the highest honor the college bestows upon a member of its faculty in recognition of contributions to the college, MSU, and the scholarly community.

Walker is an expert in employing optical spectroscopy – the use of light to probe the electronic, vibrational, and rotational properties of molecules and materials – to determine chemical structure and reactivity. As part of the College of Letters and Science Distinguished Professor Lecture Series, Walker presented a lecture titled "Tackling Scientific Challenges with Optical Spectroscopy" on April 18 in Bozeman.

During the lecture, Walker explained how scientists can apply their findings to answer practical problems, such as converting chemical bonds into electricity; determining which properties drive molecules to bioaccumulate in organisms; and figuring out why chemistry on the surface of an object differs from chemistry in a bulk material.

Walker was selected as this year's Distinguished Professor not only for his outstanding scientific achievements and service to the college but also for his long-term participation in sizable, multi-institutional grants. One of those is the multidisciplinary statewide SMART FIRES project funded by a National Science Foundation EPSCoR grant, for which Walker serves as the Montana University System project director. The project focuses on the dynamics of prescribed fire and the practice's impact on Montanans and Montana communities.

Read the Full Article Here

SMART FIRES Researchers Build Mobile Smoke Laboratory

The 'Supervan' is a rapidly deployable mobile laboratory with enough space and power to house scientific instruments. These instruments will measure comprehensive gas and aerosol in situ and through remote sensing to track and

sample prescribed and wildfire smoke. The van can be used to sample smoke while off-grid or driving.

To create the Supervan, researchers at the University of Montana (UM) are converting a 2023 AWD Ford transit van into a mobile laboratory capable of taking air quality measurements near prescribed burns, wildfires, and other remote pollution sources. The van will be capable of powering over 5 kW of science equipment along with two air conditioning units to manage the heat from the instrumentation, fires, sun, and more. All scientific instruments will be mounted to the floor and wall for security.

Ultimately, the Supervan is a valuable piece of research equipment that will help the SMART FIRES Fire and Smoke Science (FSS) team better understand the production of remotely detectable fire radiative energy, prescribed fire emissions, and air quality impacts at local to regional scales.

Project Highlights

SMART FIRES Smoke Vulnerability GIS Mapping Project

Kristen Intemann, Professor of Philosophy and Director for the Center for Science, Technology, Ethics, and Society (C-STES) at Montana State University (MSU), is working with graduate students in Land Resources and Environmental Sciences (LRES) at MSU to construct maps to analyze which communities and Tribal Nations are particularly impacted by both wildfire smoke and smoke from prescribed burns in Montana and across the U.S. This project is a product of the Social Psychology, Economics, and Ethics (SPEE) thrust of the SMART FIRES project. Richard Schoenberg and Reilly Tunby are both Masters students in LRES with expertise that intersects geospatial mapping, wildfire science, and environmental health. Richard (Rich) Schoenberg is a Graduate Research Assistant for the SMART FIRES project, and Reilly is working on the project as part of a course.

Read About the Project Here

Women in STEM Feature: Libby Metcalf

Libby Metcalf is a professor at the University of Montana in Missoula. She is in the W.A. Franke College of Forestry and Conservation, in the Department of Society and Conservation. Her official title is the Joel Meier Distinguished Professor of Wildland Management, and she is also an Associate Dean of the college. A lot of her work is focused on humans and how they interact with the natural environment, and most of her research is largely in that area.

What do you do for your research and studies?
Libby's involvement in the SMART FIRES project is focused on the prescribed fire component of wildfire. She is interested in the leaders and decision-makers who think about prescribed fire. Her team wants to know how communities and decision-makers decide when to have prescribed fire on the landscape. One thing she finds neat about this project is that there are a bunch of different levels where decisions are being made and she wants to understand that process. Libby's team is also thinking about the best ways to work with partners across the state to ensure that the work they're doing and the data they're collecting are getting into the hands of end users so decision-makers can use it.

Who were some of the role models, mentors, or other adults who influenced you as a young person?
Libby had a teacher in high school who believed in her. Even when she was struggling with her grades or figuring out what concepts meant, that teacher would sit with her and tell her, "You can do this." Having someone tell her repeatedly she belonged, and that she could make it to the next level was helpful. Libby also had a string of coaches that were influential in her life. These coaches believed in her, challenged her, pushed her, and wouldn't let her give up. That was life-changing.

What advice would you give a Montana young person interested in a career like yours?
Be persistent and be tenacious. Those are the two most beneficial skills. Know what your goal is and keep persisting. If something knocks you down, get back up and try again.

Persistence is the thing that keeps you moving towards your goal.

Read the Full Feature Here

Education and Outreach

spectrUM Hosts Day of Smoke and Fire Science

Students from Polson and Ronan High Schools on the Flathead Reservation visited the University of Montana on January 29, 2024, for a day of smoke and fire science with SMART FIRES. During a morning field trip to spectrUM Discovery Area, UM's hands-on science center, the students explored the concept of the fire triangle and experienced a matchstick "forest" simulation, activities from the USFS's FireWorks curriculum.

Read More

SMRC Staff Facilitate SMART FIRES Activities at MSU Family Science Day

On February 13, staff from the Science Math Resource Center (SMRC) facilitated SMART FIRES activities at MSU's Family Science Day. Over 200 fifth-grade students from local schools came to campus to engage in hands-on activities centered around STEM research at MSU.

Read More

Calling all Teachers!

Educator Needs Assessment Open Until June 10

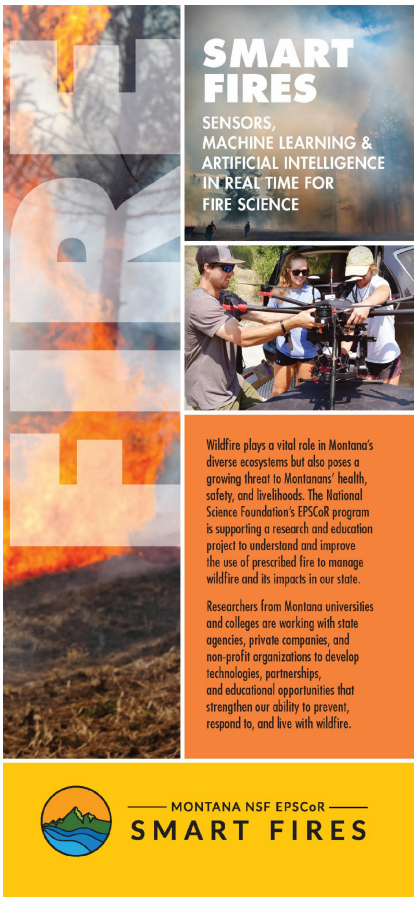
Are you a Montana K-12 teacher? Do you know or work with Montana K-12 teachers? The

Science Math Resource Center has released the Educator Needs Assessment survey, which asks educators what they need in terms of professional development, classroom equipment, and other resources that will help them and their students. The survey is designed to gather actionable data about teachers' professional learning needs, preferences, and barriers. Take the survey at the link below, or forward to any teachers that you know!

Take the Educator Needs Assessment Survey Here

SMART FIRES Rack Card Now Available

The SMART FIRES rack card is now available for distribution. The rack card contains an overview of SMART FIRES and can be easily passed out at events, to partners, and other opportunities where you would like to share information about the project. If you or any of your students would like printed rack cards please reach out to Madison Boone (madison.boone@montana.edu) or Erika Hildner (erika.hildner@mso.umt.edu).



Upcoming Events and Opportunites

Montana STEM Ecosystem Statewide Call

SMART FIRES Year 2 All Hands Meeting

May 15, 2024 at 11 a.m.

Hear from leaders in other states that have created a STEM learning ecosystem and contribute your voice to how Montana can move forward with forming its own.

Register Here

September 16 - 17, 2024
Missoula, MT

Save the date for the Year 2 All Hands meeting in Missoula. A meeting agenda and detailed communications will be shared as they develop.

Visit Event Page

28th NSF EPSCoR National Conference

October 13 - 16, 2024
Omaha, NE

The theme for the 28th NSF EPSCoR National Conference is "Connect and Collaborate to Keep Science Flowing." Learn more and register below.

Visit Event Page

Visit the Montana NSF EPSCoR events page for more upcoming events and opportunities!

Visit the Website