

# TRANSDISCIPLINARY RESEARCH: IMPACT THAT TRANSCENDS ACADEMIA

Pathways to Impact Seminar Series

October 23, 2024



THE UNIVERSITY OF ARIZONA  
RESEARCH, INNOVATION & IMPACT  
**Societal Impact**



HOME ABOUT US EVENTS & WORKSHOPS PARTNERS ▾



**Mission:** To work collaboratively with University of Arizona's faculty, researchers, scholars, and practitioners, and in partnership with our communities, to ensure that **equitable participation and the greatest possible societal impact of University of Arizona research is realized.**

<https://impact.arizona.edu>

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# Today's Agenda

- Transdisciplinary and engaged research
  - What is it?
  - How does it work?
  - Why do it?
- Panel discussion
- Audience Q&A

# Engaged Research



Photo credit: Gigi Owen

An approach to research in which non-academic partners and their lived experience, expertise, and knowledges are meaningfully involved as equal participants in the research process.

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The goal of engaged research is to generate useful research and solutions to problems too complex for traditional disciplinary approaches.

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Related terms: community-based participatory research (CBPR), co-production of knowledge, knowledge exchange, ***transdisciplinary research***

Transdisciplinary approaches seek to integrate multiple types of knowledge and actors in the research partnership. Transdisciplinary methods are action-oriented approaches to solving “wicked” socio-ecological problems, or the complex, uncertain challenges that include competing values and where no “finish line” appears in sight.

Wilmer, H., Meadow, A. M., Brymer, A. B., Carroll, S. R., Ferguson, D. B., Garba, I., Greene, C., Owen, G., & Peck, D. E. (2021). Expanded Ethical Principles for Research Partnership and Transdisciplinary Natural Resource Management Science. *Environmental Management*, 68(4), 453-467. <https://doi.org/10.1007/s00267-021-01508-4>

# Transdisciplinary Research



# MODES OF RESEARCH

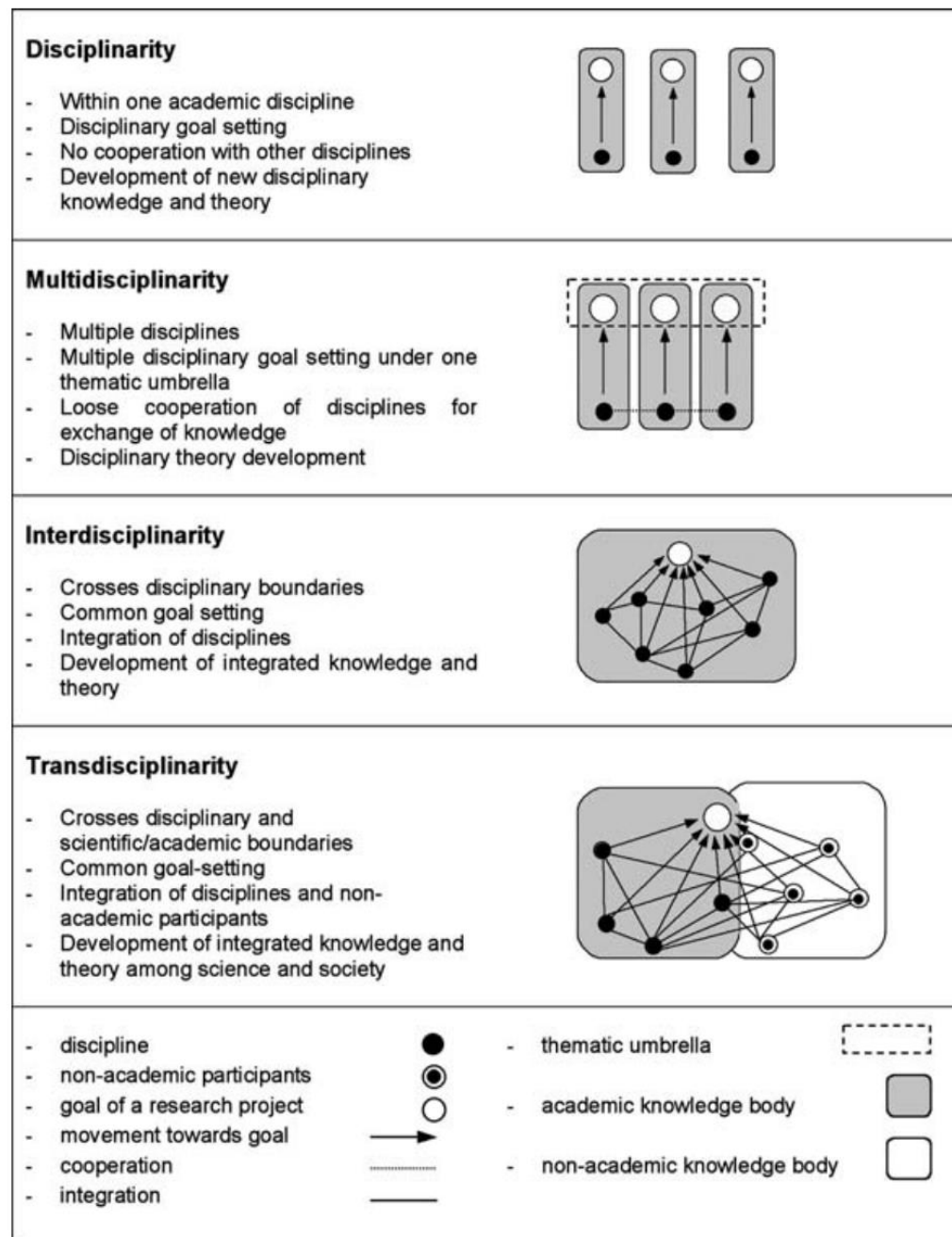


Figure 1. Overview of research concepts: disciplinary, multidisciplinary, interdisciplinarity and transdisciplinarity.

Why does engaged and transdisciplinary research work?

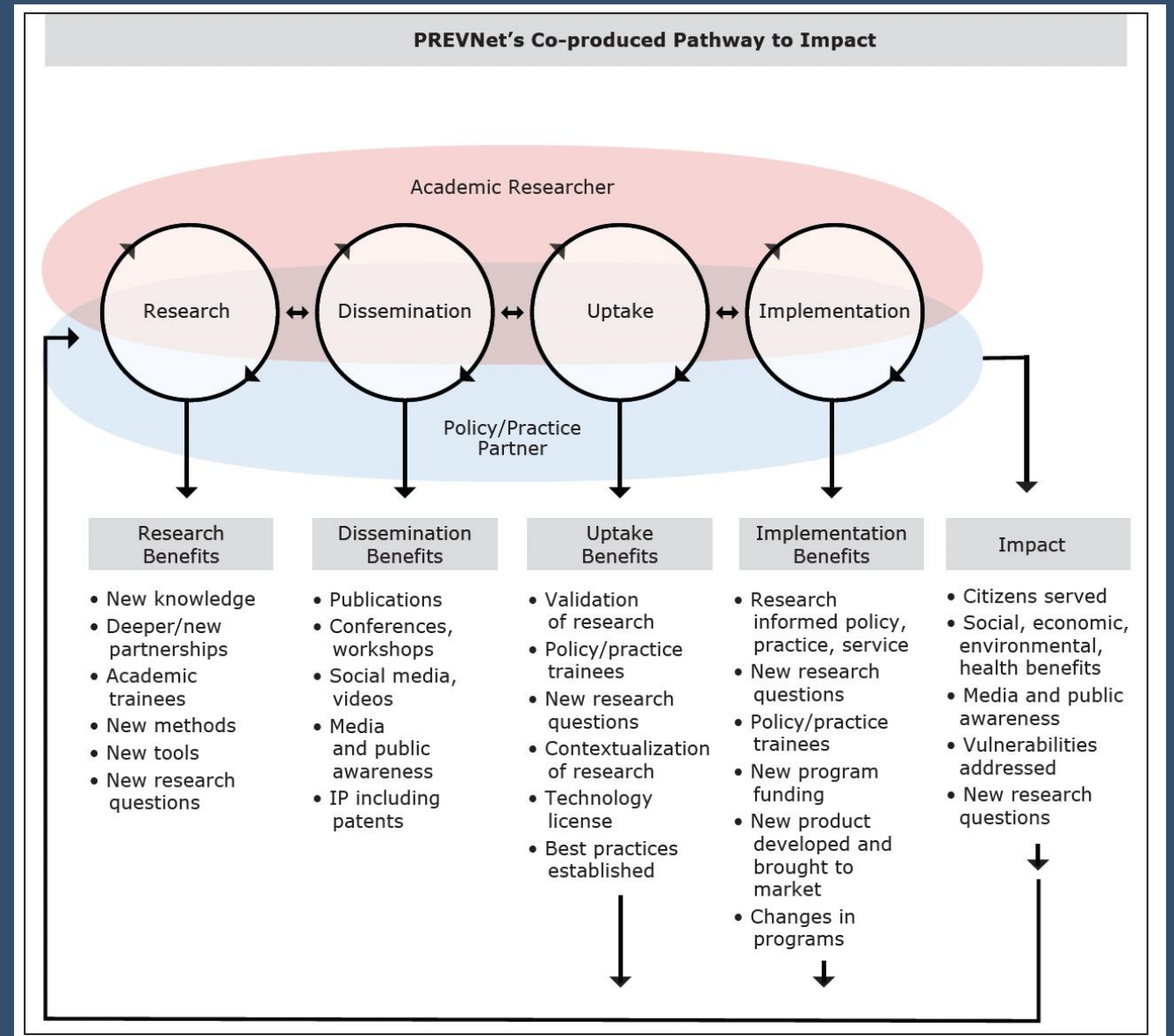
# INVOLVES THE PEOPLE WHO KNOW THE ISSUES

Multiple academic disciplines  
Lived experience  
Practical/professional expertise  
Policy expertise  
Local knowledge





INVOLVES THE  
PEOPLE WHO  
CAN ENACT  
CHANGE



Phipps, David, Joanne Cummins, Debra J Pepler, Wendy Craig, and Shelley Cardinal. "The Co-Produced Pathway to Impact Describes Knowledge Mobilization Processes." *Journal of Community Engagement and Scholarship* 9, no. 1 (2016): 5. <https://digitalcommons.northgeorgia.edu/jces/vol9/iss1/5>.

# MAKES THE RESEARCH SALIENT AND ACCESSIBLE

Addresses questions, concerns, priorities of those who need to make decisions.

Topic, language, physical access.

Fits the environment in which the information will be used.

# BUILDS TRUST

People must trust the science and the people developing it before they will use it.

Takes the science out of the “black box.”



“They don’t care how much you know  
until they know how much you care.”  
– Coach Pat Summitt



Why practice engaged research?

# Social Contract

“Society currently expects two outcomes from its investment in science. The first is the production of the best possible science regardless of area; the second is the *production of something useful.*”

—Jane Lubchenco, 1998





# Land grant mission

“Our universities were founded specifically to benefit the public, and the research that public and land-grant universities produce serves this need . . . We also need to emphasize the value of ***collaborative research with communities—not just about communities.***”

# Scholarship of Engagement

“[Our] outstanding universities and colleges remain, in my opinion, one of the greatest hopes for intellectual and civic progress in this country. I’m convinced that for this hope to be fulfilled, the academy must become a more vigorous partner in the search for answers to our most pressing social, civic, economic and moral problems, and must reaffirm its historic commitment to what I call the scholarship of engagement.”

- Ernest Boyer, 1996

# It's good for science

## UNESCO Recommendation on Open Science

Open science has the potential of making the scientific process more transparent, inclusive and democratic. Open science:

- ***increases scientific collaborations and sharing of information*** for the benefits of science and society;
- makes multilingual scientific knowledge openly available, accessible and reusable for everyone;
- ***opens the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.***

Funders are Recognizing the Benefits

# USDA-NIFA

## Sustainable Agricultural Systems Program

... approaches must ***demonstrate current needs and anticipate future social, cultural, behavioral, economic, health, and environmental impacts.***  
Additionally, the outcomes of the work being proposed ***should result in societal benefits...***



# Department of Energy

**Community Benefits Plans** are based on a set of four core policy priorities... [that] will help ensure broadly ***shared prosperity in the clean energy transition.***”

- investing in America's ***workforce***
- ***engaging communities*** and labor
- advancing ***diversity, equity, inclusion, and accessibility***
- implementing ***Justice 40***

# NOAA

## Climate Adaptation Partnerships

“the work is accomplished by teams of research institutions, nonprofit organizations, and state/local/Tribal governments in multi-state regions. ***CAP teams engage in a variety of applied and co-developed research and partnerships with communities.*** A central tenet of the CAP program is that learning about climate adaptation and resilience is facilitated by and sustained across a ***wide range of experts, practitioners, and the public.*** Learning about and doing adaptation happens within social contexts. As such, the CAP ***program supports networks of people working together to plan for and adjust to change using science and local knowledge.***”

# NIH

## Build Up Trust Program

*Including community engagement during planning and recruitment phases can increase participation in research from marginalized communities.* Perceived discrimination leads to high rates of medical mistrust in Black and Hispanic populations. Medical mistrust had a harmful impact on health outcomes or behaviors among women who are people of color, have low socioeconomic status, live with disabilities, or are LGBTQ.

# USGS

## Climate Adaptation Science Centers

The CASC Network seeks to fund projects that create “actionable science.” Development of actionable science requires that scientists explore what types of information products end users are seeking and the institutional or organizational structures that they are working within. . . . ***Knowing what information products interested parties are seeking requires their engagement in the research process.***



Engaged and Transdisciplinary  
Research at University of Arizona

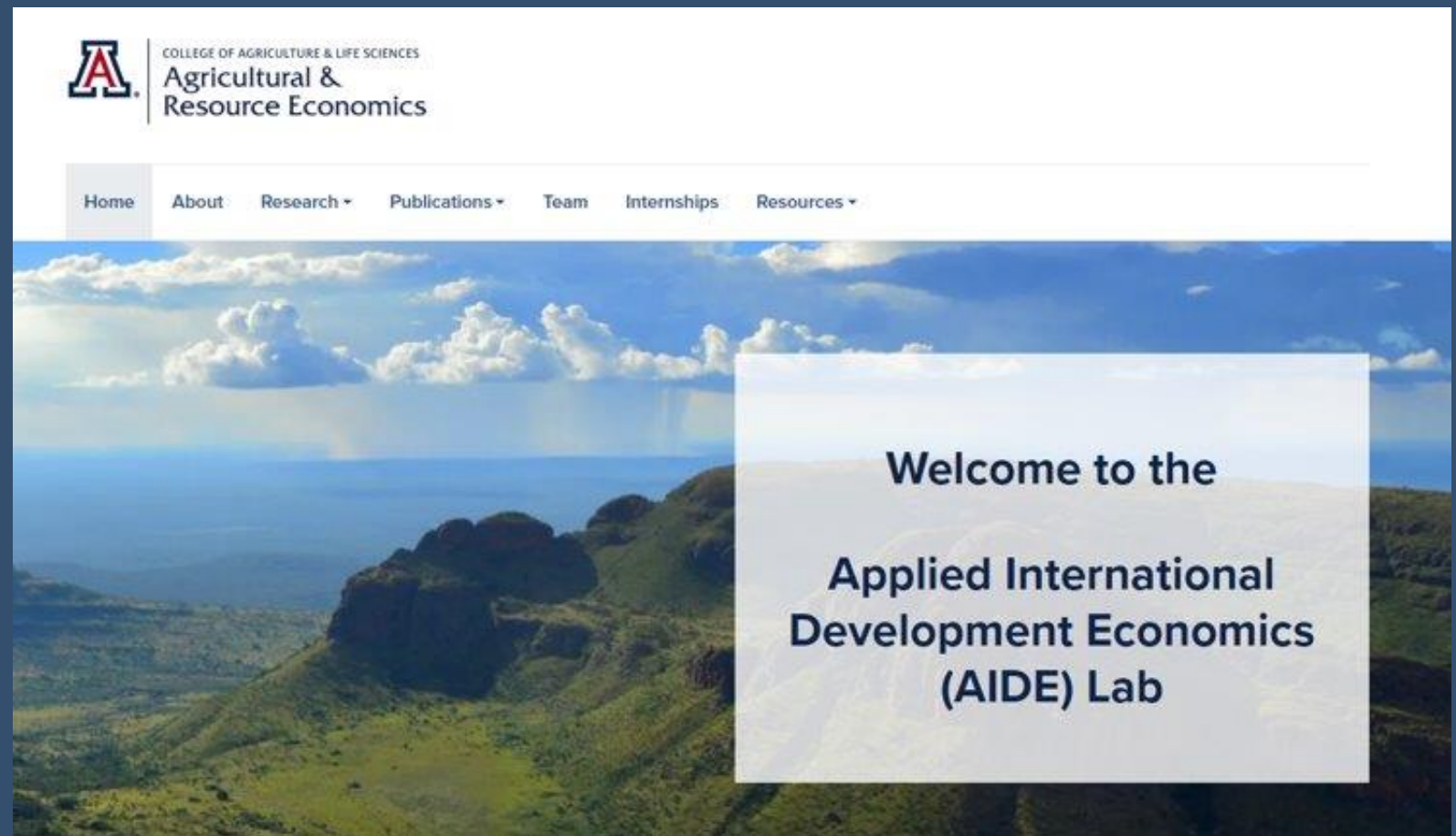


# Applied International Development Economics (AIDE) Lab



## Our Team:




- *Two PIs:* Anna Josephson & Jeffrey Michler
- *Two MSc RAs:* Reece Branham & Rodrigo Guerra Su
- *Five UGRAs:* Kieran Douglas, Garrett Hanson, Shayan Khan, Ted Melitas, Aurora Seekins
- *Five UG interns:* Seraj Al Haji, Jacob Breitweiser, Amalia Jimenez, Anastasia Seckers, Christien Stevany



## Our Work

- More than a billion people live on less than \$2.50 per day.
- More than two billion people are hungry.
- 500 million households (two billion people) work as subsistence farmers, feeding themselves and their families.
- 200 million people are facing forced migration due to climate change.

## Our Partners

- World Bank 
  - Institution that seeks to end extreme poverty and boost shared prosperity on a livable planet.
- CGIAR 
  - Global partnership of research centers that study agriculture, forestry, and fisheries.
- SPIA: Standing Panel on Impact Assessment 
  - Organization that is an external, impartial evaluator of programs and products from the CGIAR system

# Center for Digital Humanities



## Principal Investigators

- Dr. Mahmoud Azaz
- Dr. Jonathan Crisman
- Gaidi Finnie
- Dr. Kim Gallon
- Dr. Jennie Gubner
- Amy Hartman-Gordon
- Porfirio Gutiérrez
- Dr. Janine Hinton
- Dr. Annette Kim
- Dr. Sonja Lanehart
- Dr. Jacqueline Maximillion
- Tyler Meier
- David Turpie
- Dr. Omar Youssef
- Joseph Farbrook
- Cynthia Stokes
- Jon Kevan
- Lisa Falk
- Dr. Michael Engs

The center for digital humanities is a research and innovation incubator for the computational study of the human condition. Through the organizational, analytical and visualization power of digital technologies, cdh provides creative, scholarly and educational support for researchers, teachers and community members seeking to more fully understand the world's enduring and emerging needs. Computational tools make it possible for humanities researchers to respond to the world's enduring and emerging needs in ways that complement conventional scholarship, even as such tools invite inquiries that are scaled to capture and analyze the densest possible contexts and data sets. Projects involving voices from the margins and inclusive excellence are especially encouraged by the center, along with other digital humanities initiatives that leverage the sorting, calculating, analyzing, and visualization power of computational tools and techniques. Such tools and methods include: textual/data analysis, application creation, data visualization, gis/mapping, augmented reality, virtual reality, immersive technology, digital storytelling, social networks, cultural informatics, 3-D scanning and motion capture.



THE UNIVERSITY OF ARIZONA  
COLLEGE OF MEDICINE TUCSON

Sonoran Center for  
Excellence in Disabilities



**DISCAPAZ**

DISABILITY  
EXPERIENCES IN  
THE BORDERLANDS

- Highlight and amplify the voices and experiences of people with disabilities living along the AZ-Sonora border through digital storytelling
- Create a living web-based platform to share stories and experiences
- Launch a sustainable interdisciplinary experiential learning program that facilitates authentic engagement with border communities to address community identified needs



# Community Partners



<p><b>Mariposa Community Health Center</b></p> <p>Nogales, AZ</p> <p>Federally Qualified Health Center</p>	<p><b>Arizona Sonora Border Projects for Inclusion</b></p> <p>Nogales, Sonora</p> <p>binational non-profit organization</p> <p>Provides low-cost durable medical equipment, hearing health and therapeutic services</p>	<p><b>Southern Arizona Autism Association</b></p> <p>Nogales, AZ</p> <p>supports individuals and families living with Autism</p>
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**Project Outreach  
FAMILIA**

[www.familia.coe.arizona.edu](http://www.familia.coe.arizona.edu)

# Project Outreach FAMILIA Offers:



01.

Student  
Support

1:1 College Support  
Youth Summit



02.

Parent  
Partnership

Academy for FAMILIA's  
Parent Workshops



03.

School  
Partnership

UArizona tours  
Supporting college mission



04.

Increasing student  
preparedness in  
mathematics

Dual Enrollment Pre-Calculus  
Course

# Burn Period Tracker

<https://cales.arizona.edu/climate/SWBurnPeriod/>

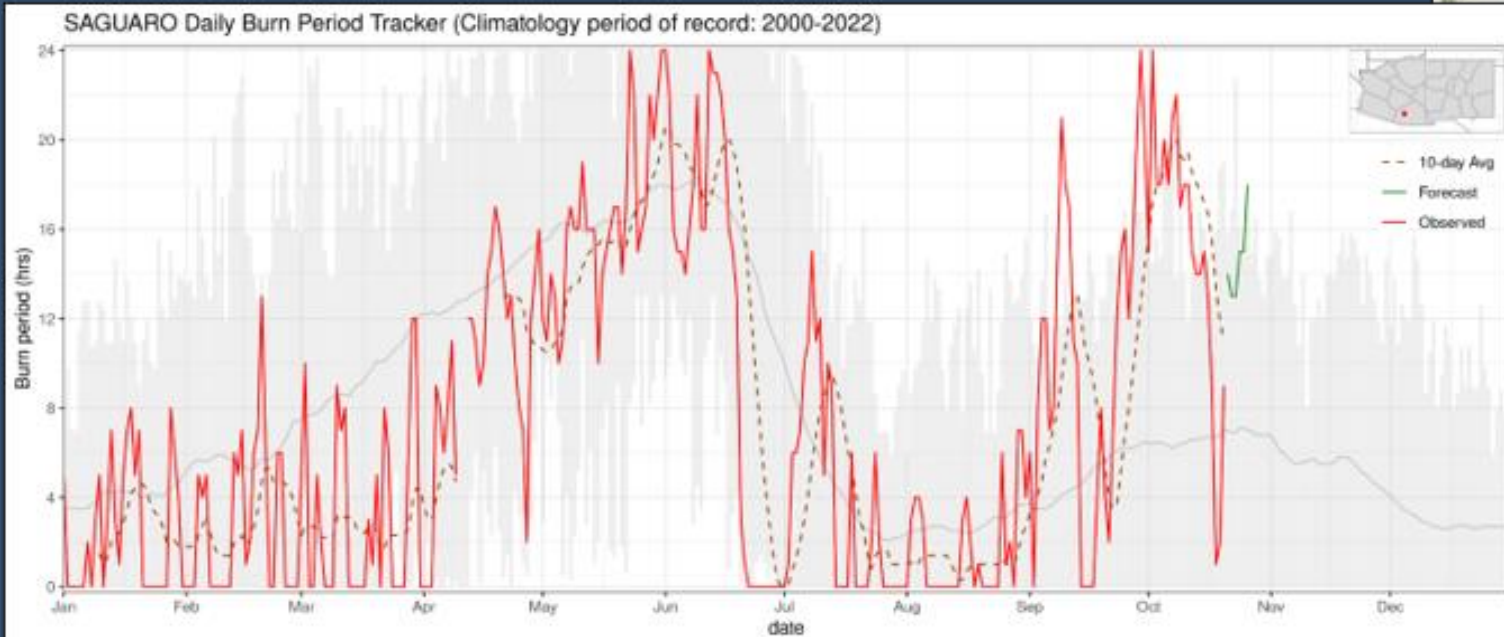
## Southwest U.S. Burn Period Tracker

Updated: 2024-10-21

This page provides access to an experimental fire weather monitoring product called the Burn Period Tracker. Burn period is defined as the number of hours per day where the hourly average relative humidity is less than or equal to 20% and is calculated at Remote Automatic Weather Stations with real-time data and several years of historical data. Values range from 0 to 24 hours per day with higher values associated with increased fire danger.

Click on markers on the map below to access Burn Period Tracker plots and recent observations at available RAWS sites (Click on marker to bring up plot and observation links; click again to access either product). Active and recent fires are shown in red polygons on the map. Burn Tracker Plots and recent observations are also available through the table below the map.

RAWS Sites   Past 7-days   7-day Forecast



Updated: 2024-10-21 (current through 10-20)  
Burn Period is total hours/day with RH<=20%  
10-day moving avg(dashed line); 7-day NOAA NDFD forecast(green line)  
Climatology represents daily smoothed mean and range of values between 5th and 95th percentiles  
RAWS Data Source: famprod.nwog.gov & cefa.dri.edu



# SAVE THE DATE: November 14th, 2024, 1:00-2:30pm

Join us for our next Pathways to Impact: Institutionally Coordinated Resources to Support Faculty and Staff Engaged in Undergraduate Research

Undergraduate research (UR) experiences can be transformative for students and are a vital component of preparing students for graduate programs and careers. The University of Arizona has institutionally coordinated resources to support new and existing UR programs. Hear from faculty and staff who offer support and resources including CUREs, VIPs, culturally inclusive mentor training, UR Ambassadors, internships, proposal support and funding opportunities, and more. Learn about utilizing these resources to start and grow accessible and equitable UR programs.

Register here:



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