



Post-Fire Science Needs for Emergency Response, Hazards & Rehabilitation

*An online opportunity to discuss
the state of post-fire science
and identify future needs.*

The session will begin shortly.

Thank you for your
participation.

Welcome to 2020 After the Flames

Virtual Science Symposium

Mentimeter



Planning and Organizing Committee

Katherine Rowden, NOAA/NWS

Nina Oakley, UCSD/SIO/CW3E

Jason Kean, USGS

Cara Farr, USFS

Richard Schwab, NPS

Anne Bradley, TNC

Jane Mannon, COCO



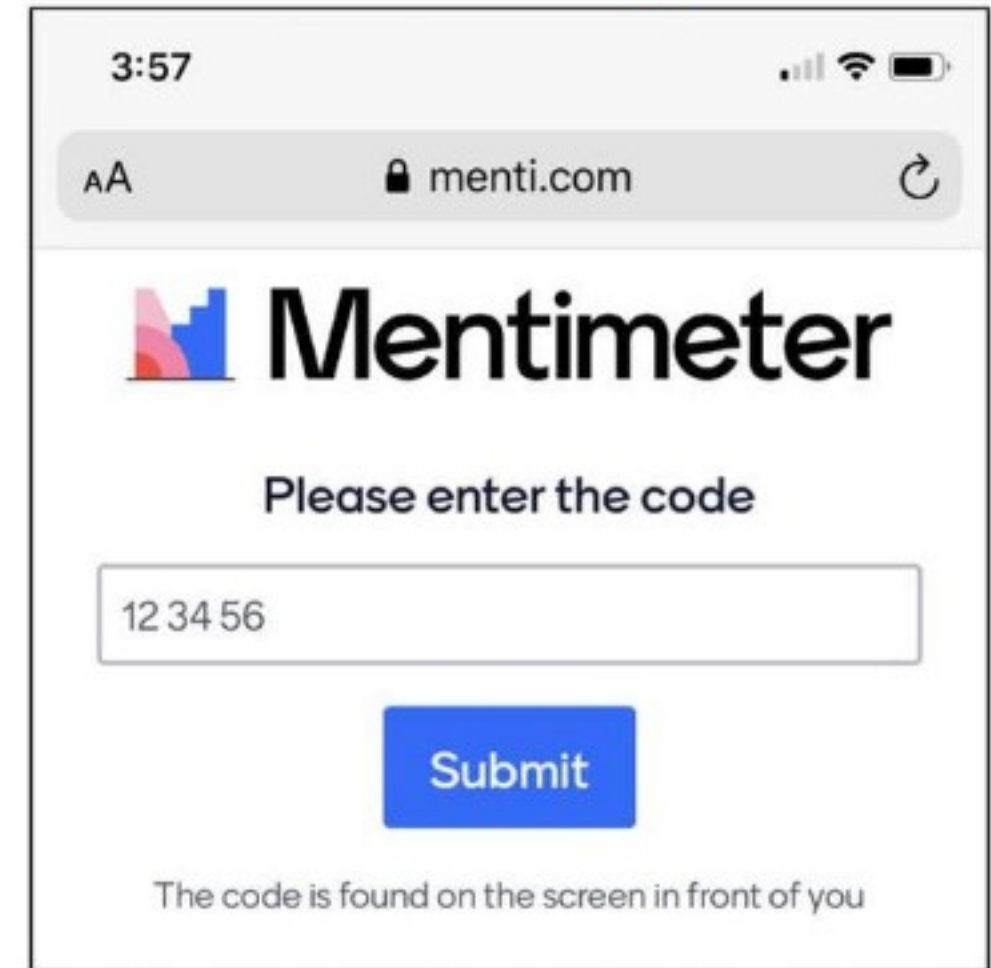
Goals of this symposium:

- Assess science needs and barriers to communication of post-fire science
- Determine communication strategies for post-fire science
- Develop pathways forward for working together in post-fire response




A few things before we begin...

- Your mic will be **muted** and camera **turned off** throughout conference.
- If you have any **technical issues** please **enter them in chat** so our tech team can assist you.
- We will be using Mentimeter for polling and Q&A. We recommend having a **cell phone or browser window handy** for this.
- When prompted by moderator, all you need to do to participate is go to menti.com in browser and enter code! Click **submit** to answer questions.
- **Chat:** GoToWebinar chat only goes to organizers/presenters. If you would like to make a comment in chat please do, we will do our best to incorporate it in the conversation.



3:57

AA menti.com

 **Mentimeter**

Please enter the code

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Submit

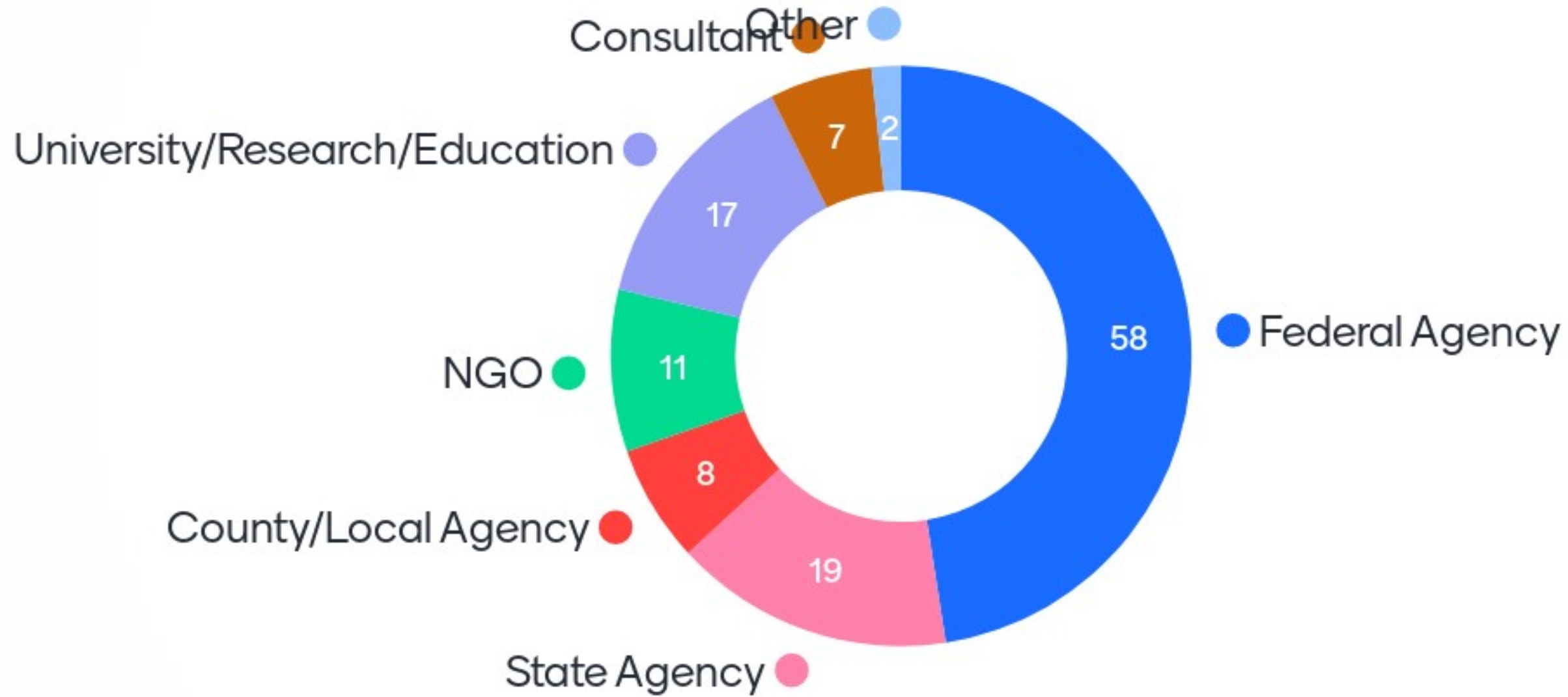
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Panel Discussions, Q&A, and Polling

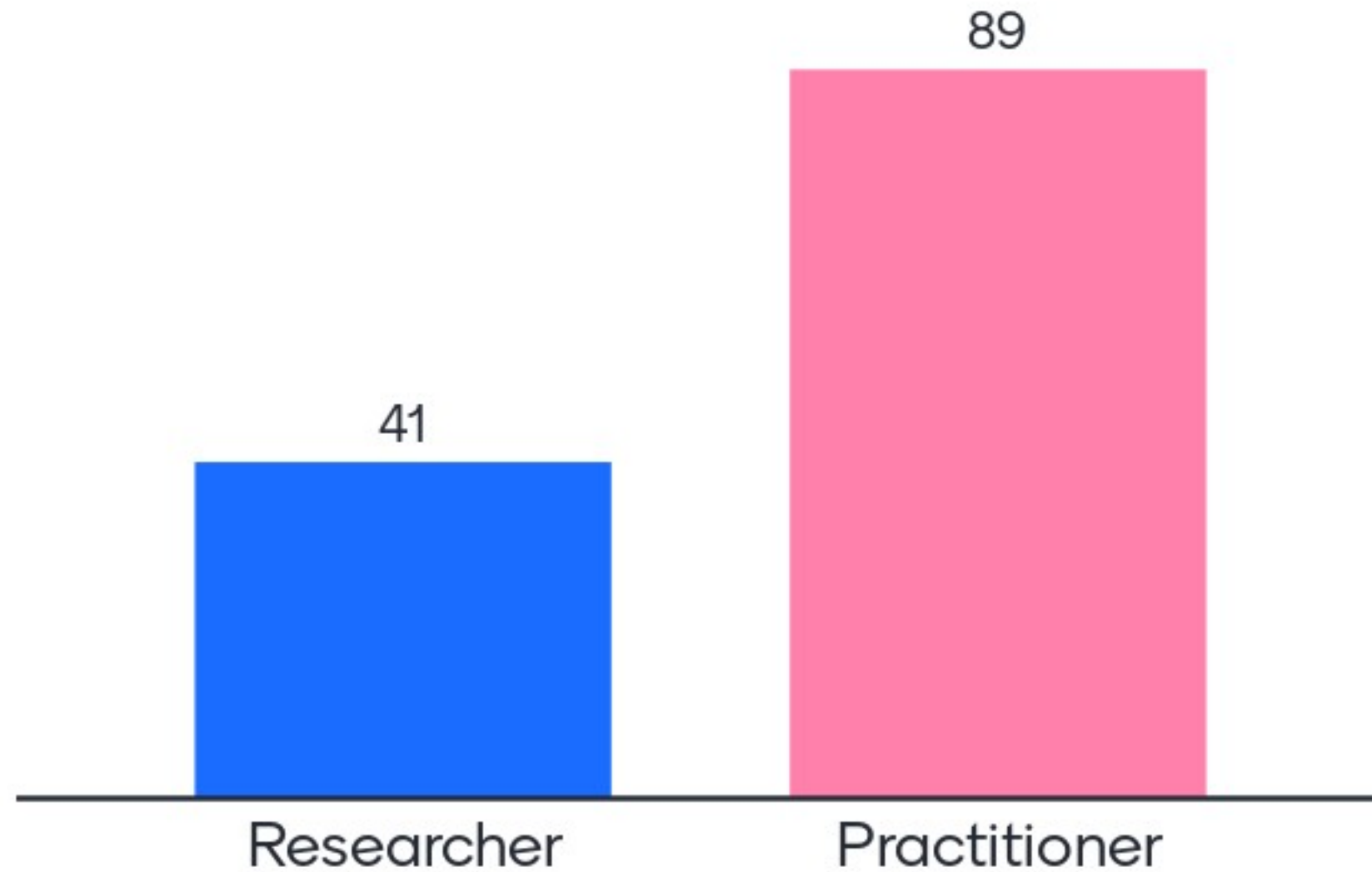
- All **polling is anonymous**. For open-ended questions, respond freely but be **conscientious and professional**.
- **Panel member bios** are available at: <https://aftertheflames.com/science-speakers/>, link posted in the chat box.
- Conference summary and attendee list will be sent to all in weeks following conference.
- We have many attendees and fixed time for questions. We will work to have unanswered questions addressed in conference report, or reach out to speaker directly.



What sector best represents you?



Do you consider yourself to be more of a researcher (creator) or practitioner (user) of post-fire science?



A watercolor illustration of a forest scene. On the left, a waterfall flows down a rocky ledge. The background features tall, thin trees with green foliage. The overall style is soft and artistic, with blended colors and visible brushstrokes.

Recap of Day 1:

- Where we have been
- Where we still need to go
- Communication is key!



Science Research Panel Discussion

- Q&A Session to follow; questions asked through Mentimeter
- Panelist bios on After the Flames website, link posted in chat



Science Research Panel

Panelists

Cara Farr, Moderator

- **Pete Robichaud**, *Research Engineer, USFS Rocky Mountain Research Station*
- **Paul Steblein**, *Wildland Fire Science Coordinator, USGS*
- **Laura Myers**, *Senior Research Scientist, University of Alabama*
- **Sheila Murphy**, *Research Hydrologist, USGS*
- **Brendan Murphy**, *Research Scientist, University of Utah*
- **Jason Kean**, *Research Hydrologist, USGS Landslide Hazards Program*
- **Nina Oakley**, *Research Scientist, CW3E/UCSD/SIO*

Prompting Questions

1. What is the "cutting edge" in your area of post-fire science?
2. Where are you making the greatest progress and what are limitations to progression?
3. How do you share information with practitioners?
4. What opportunities do you see for interdisciplinary work?

Questions for Science Research panel?

For Pete Robichaud: what are some of the trade-offs in using higher-resolution data for burn severity estimation?

For Laura Myers: if people want clear and direction instructions because options confuse them, what are the legal implications of providing specific, directed instructions?

Shelia/Brendan: How do post-wildfire sediment basins affect water quality?

For Brendan Murphy: on size of grains for parameterizing pre-fire risk models... can citizen scientists be deployed to help

For Jason Kean: is there a programmatic, formal way in place to transfer the knowledge gained from research models to operational models?

Laura: Do you have a step by step guide for messages and times for messages that we can have access to?

For Pete Robichaud: how can we gather data for use in the ash modeling?

Brendan: When you say watershed scale, what size watershed are you looking at?

Pete Robichaud mentioned links to documents he mentioned would be posted in the chat - particularly interested in those referencing buffer widths. thank you.



Questions for Science Research panel?

social science is so important, but I've only heard of this one example of research focused on post-fire. is there a larger social science community that is looking at this, or is the research very limited at this time?

How can we effectively communicate model uncertainty to not only emergency responders, but local homeowners?

It helps with insurance estimations.

For Laura Myers, what is the best way to keep a community engaged in the flood risk 2,3,4 years after a fire?

For Pete. As a practitioner I keep hearing seeding is no benefits To the watershed. The agency that denies sites your research

What do you think is a good DEM resolution to model debris flow inundation areas?

With model creation and development, what efforts are going in to making these models easily usable for practitioners? Will workshops, courses, and user guides e available?

Brendan. What data source do you recommend for soils data?

If there is messaging re: debris flow risks and damage does actually occur, are there best practices to tactfully say "we told you so"?

Questions for Science Research panel?

To Laura: can the sheriff's department help set the level of announcement to evacuation orders? Science to information is an art, and how to deliver a message to the public is a challenge?

For Jason: Is work is being done to predict how debris flow erosion/sedimentation is distributed in different channel reaches?

Many agencies and universities are working on sediment or hydrologic models. What type of coordination/collaboration is occurring amongst agencies and Universities to minimize duplication?

What are the parameters in a Synthetic Burn Scenario?

Could UAS drones be incorporated as a Situational Awareness (SA) tool for the inventory of burned areas as well as performing post-fire mapping efforts?

Incomplete information is better than no information. How can we get access to the information and understanding that the research community has but is not fully vetted or ready for peer review? In warning ops something is better than nothing.

What kind of information is helpful for us practitioners to provide for researchers / model development?

How useful are predictions for next-season wildfires, based on, e.g., satellite soil moisture data from the current year.

What's the current state-of-the-knowledge regarding importance of precipitation relative to other factors contributing to post-wildfire DFs?

Questions for Science Research panel?

Does Joint Fire Science fund the transition from research to operational models? Getting the models into the management paradigm is a critical step.

How has society and policy makers' on science affected funding and use of science for postfire challenges? E.g. science deniers

Jason, is there progress being made on modeling debris flow runout? Your modeling typically ends at the "built environment". Montecito running out to the ocean was a big surprise.

Shouldn't models be designed with temporal purpose? An immediate treatment design doesn't always need anything more than risk. Therefore, shouldn't there be a separation between identification of emergency needs verses longer term mitigation designs.

Recommendation for inundation maps for hard boundaries is to embed them into fluvial hazard zone maps. This requires a methodology - states that have it are Washington, Colorado, Vermont...

How can we break the silo mentality that is a barrier to information dissemination?

What are the barriers to making erosion and debris flow models transferrable across climate/ecoregions?

What is a good way of defining a flash flood or impactful flood?

Sheila: can you expand more regarding how you would use chemistry to assess recovery?



Questions for Science Research panel?

Many of us in the field have observations from past events and would love to contribute. How can we submit this information? Where do we go? I have lots of pictures I shared with Sue Cannon in the past - is there a place we can share these with you?

What's the relationship between fire intensity and post-fire DF susceptibility?

Sheila/Brendan: how well developed is research on the impacts of wildfire vs Rx fire on water quality, not just on sedimentation but also DBPs?

Laura, how do you get to the "sweet spot" you mentioned? How do you get past normalcy bias?

Reporting DF occurrences is important. But it seems cataloguing non-events with significant precip is also important. Where do we report either?

Are there any financial impacts that can be predicted as a result of post fire conditions

Enjoy a 5 minute break!

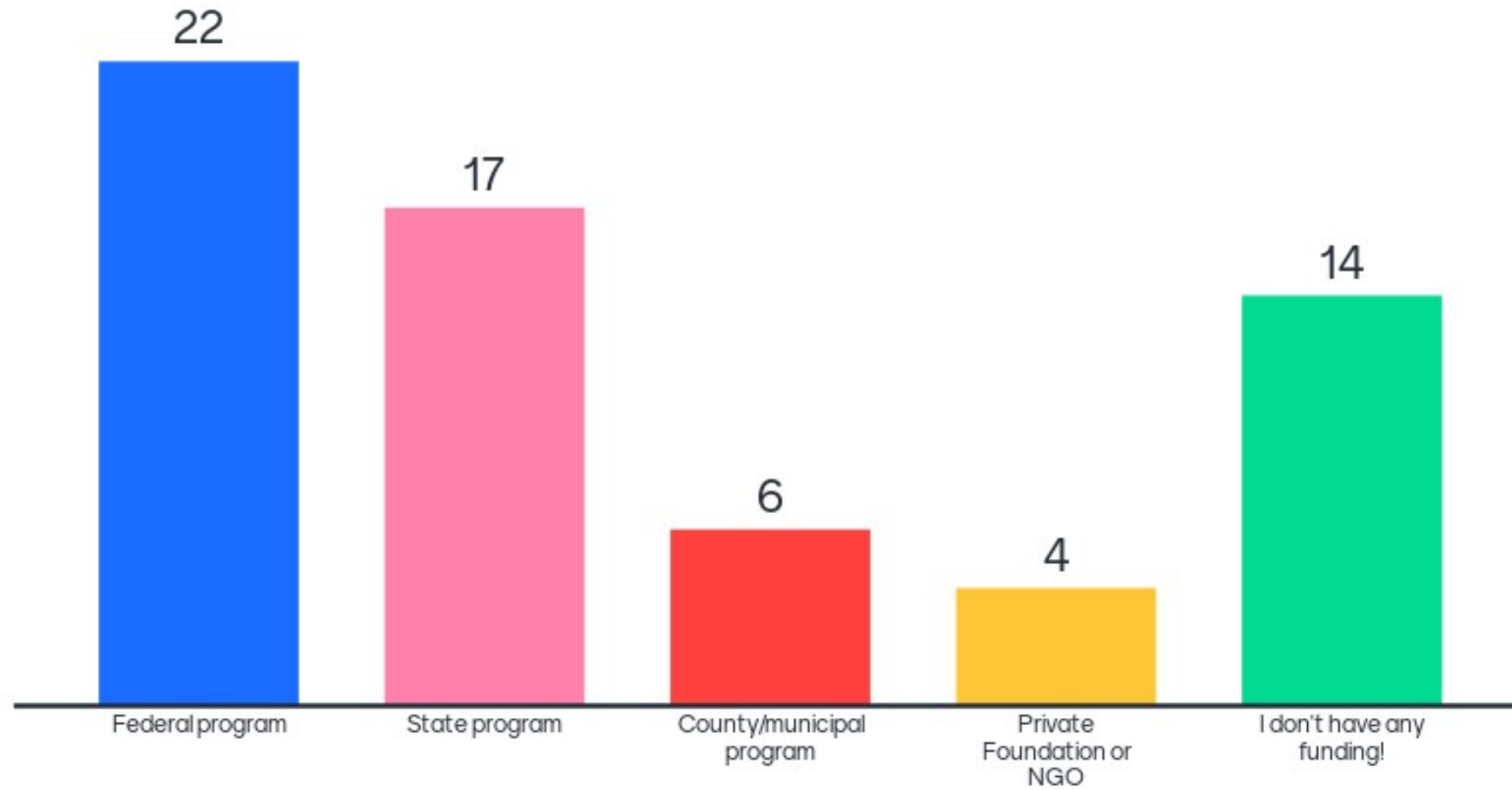




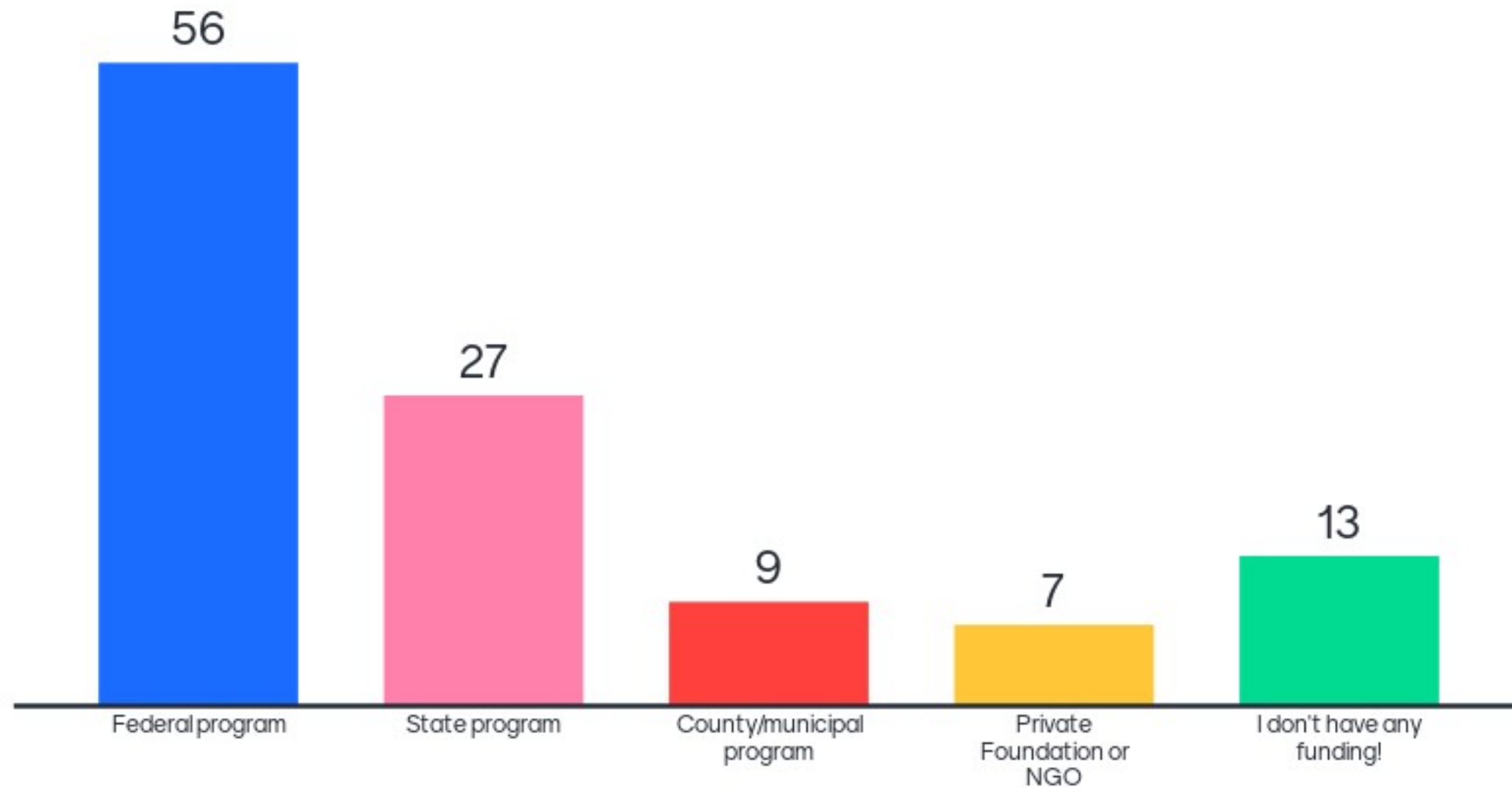
Polling: Science Research

- Follow along using Mentimeter
- Panelists will discuss results

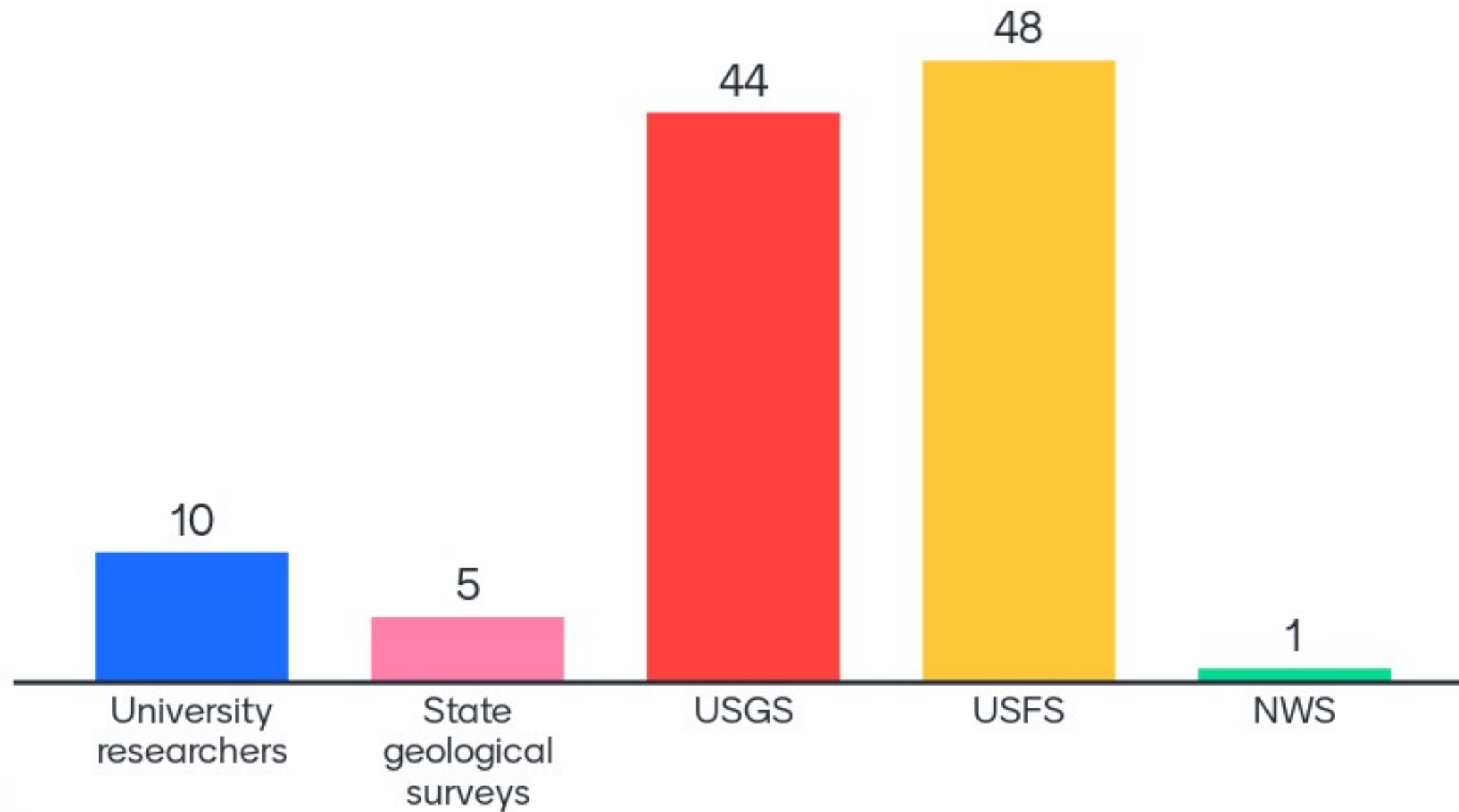
RESEARCHERS ONLY: My funding for post-fire research comes from (choose all that apply):



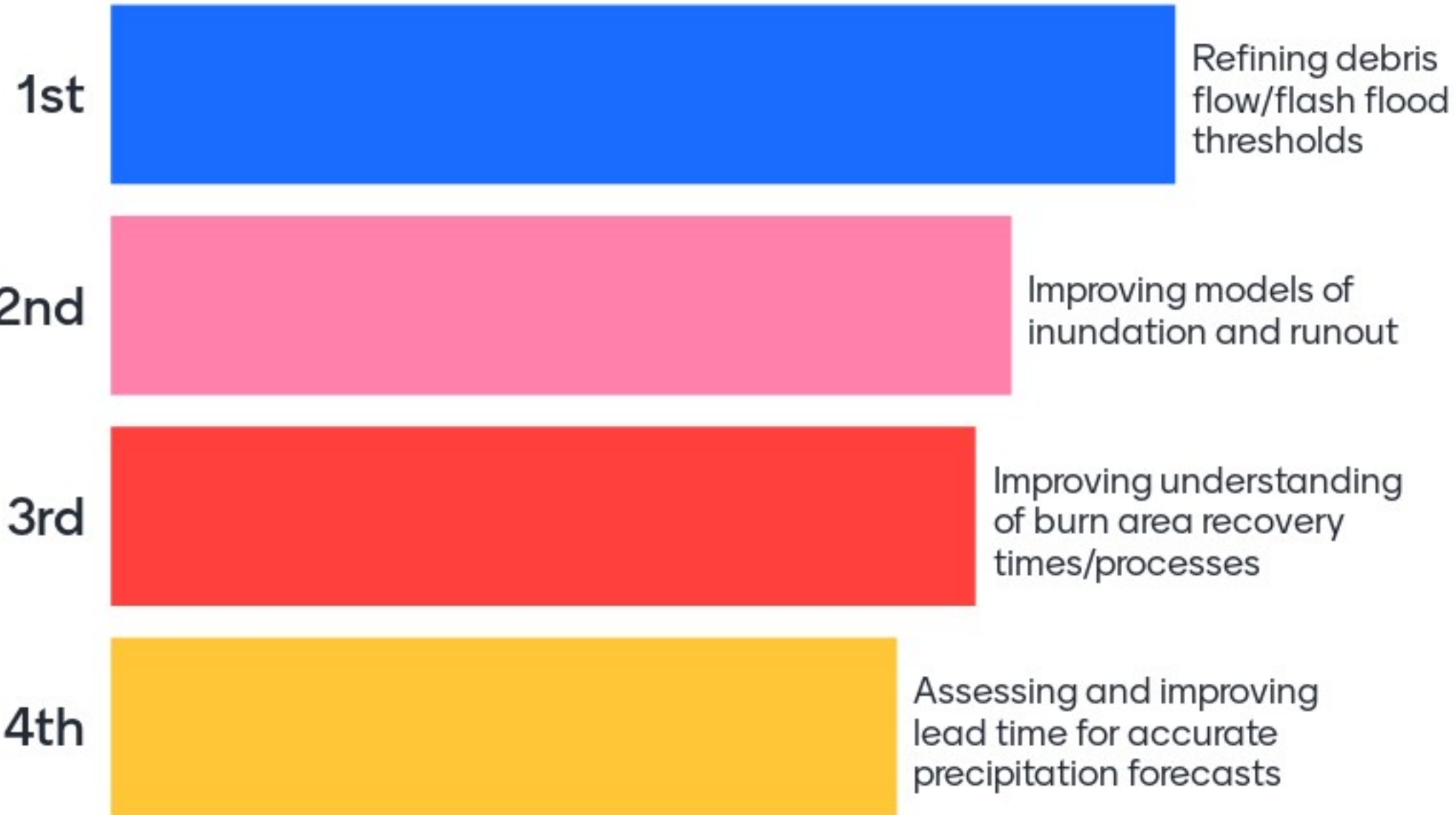
PRACTITIONERS ONLY: My funding for post-fire response comes from (choose all that apply):



What agency/group do you typically look to first for post-fire science?



How would you prioritize these post-fire research areas?



What other aspects of post-fire science would you like to see researchers address?

Native seeding.

Riparian area protections and recovery

Bulking rates and model

Sediment bulking

How to collect information that can be fed upward?

Wind erosion effect on vegetation recovery and health impact on air and water

Messaging content and dissemination

More messaging/communication studies with practical use

Climate-adapted reforestation



What other aspects of post-fire science would you like to see researchers address?

RAINFALL THRESHOLDS

Bulking of flood flows

Effectiveness of fuel treatments

political / social science around changing local regulations / zoning to get people out of the high risk areas

How does drought impact recovery

Communication with local long term recovery groups.

soil functional and productivity recovery

Post-fire ecosystem recovery

Rapid risk assessment procedures that can be implemented by broader disciplines



What other aspects of post-fire science would you like to see researchers address?

Sediment bulking and routing

Practitioner information sharing

Communication tools

Development in high- and medium-risk zones (social science and geography?)

More on effectiveness of practices in reducing flood/DF and in speeding recovery of ecosystem services

Improving post fire hydrology prediction

Bulking factors for runoff

guidance on evaluating recovery in the field

Importance of soil disaggregation depth on debris flow initiation

What other aspects of post-fire science would you like to see researchers address?

increased open source easy models for lower level technician types... not every district has "academics"

Updates to effectiveness of post fire treatments

Bulking rates

Mapping of pre fire tendency toward debris flow

How best to monitor invasive and noxious weed infestations post-fire and how different species respond to different fire conditions in different parts of the country.

Pre-fire planning and prep for post-fire response

!#*&!\$

Model refinements for geographic areas

Native seeding



What other aspects of post-fire science would you like to see researchers address?

Supporting locals after the BAER teams leave. Tools to help managers make calls post fire, second year, third year, etc. most are guessing at best... this leads to many not leaving their homes after multiple calls to evacuate....

Pre-fire assessments that can provide potential risk ahead of time.

Changes in hydrology - streamflows that are not necessarily going to be a flash flood/debris flow issue, but may affect runoff characteristics that could still impact river flooding and modeling.

Better science delivery to the practitioners

More meaningful engagement with practitioners throughout the research process - not just as stakeholders but as meaningful partners

Density of rain and stream gages is very low in many Forests.

How do these events occur and/or repeat over longer time periods.

Additional research on reburn effects on soil properties and water quality/availability.

In-channel erosion-transport-deposition processes incorporated in erosion models

What other aspects of post-fire science would you like to see researchers address?

How microbial recovery impacts soil and vegetation recovery

If there are preemitive mitigation efforts that can be out into place to lessen post fire impacts.

Cost/ benefit comparisons of suppression vs. rehabilitation.

How climate and invasive spp affect post fire effects and vegetation recovery

AI methods to harvest information (i.e. human-readable text that is not necessarily immediately "understandable" by machines) and to integrate that information for fire science research

Bulking

Better forecast modeling in light of climate change and modified likelihood of debris-flow initiating precipitation events

More refined infiltration adjustment guidance for post-fire conditions.

Post fire ground cover and infiltration database

What other aspects of post-fire science would you like to see researchers address?

Post fire flood flow estimation improvement

Better burn severity data developed by fire ecologists

Interpreting the input and output accuracies in the results

cost savings/economic benefits of fuels treatment

How to better utilize local agencies and organizations in post fire planning, burn assessment, and implementation.

Easy mitigations for private property

Normalized schema for aggregate modeling.

Seeding with fast growing non native sterile species.

Pre-fire risk assessments using publicly available geodata and GIS tools.



What other aspects of post-fire science would you like to see researchers address?

Pre-fire analysis, including proactive management of invasive species, and analysis of the efficacy of that management in light of fire/post-fire information.

Modeling post fire response in more humid climates

Effects to cultural resources, particularly different types

Fire Monitoring Handbook FMH update/revision

Rainfall thresholds and identifying recovery differences across California

impacts of heavy equipment usage in post-fire zones - both for harvesting, debris removal, and restoration/reforestation activities

Thresholds

Debris and sediment flow rates and impacts on downstream coastal areas and waters

Effectiveness of inexpensive treatments at stream crossings



What other aspects of post-fire science would you like to see researchers address?

Outreach education for the public

How can we set up a reporting system for event and non-events? Something similar to the CMOR citizen drought impact reporting.

Regional variations in post fire debris flow initiation.

2nd + year precip thresholds

Effectiveness of post fire erosion mitigation measures

inventory of storms of record for Forests, inventory of damaging storm that trigger post-fire events

Separating rapid risk assessment from longer term modeling and design

Simple post fire risk mapping for use before fires

Interaction of post fire landscapes and insect and disease susceptibility and spread in the lo big term, and how that intersects with recovery

What other aspects of post-fire science would you like to see researchers address?

Getting the observation data (gauge, radar, stream) to the NWS into the AWIPS warning computer system.

Use of lightning strike data to map probability of summer thunderstorms

changes in vegetation type w/ changes in climate

Impacts/consequences to human and other bio systems. How can those systems affect the science (e.g., development that does/not plan for wildfire and Post-fire vulnerabilities)

Hawaii and Pacific-specific post fire science.

Mapping post fire recovery across broad areas

Bulking factor criteria

Scalability of projects, upland treatment effectiveness in different ecotypes, and how to collaborate better in such a tough hierarchical structure with few voices

Does text onboarding help with dissemination?

What other aspects of post-fire science would you like to see researchers address?

Pete can never retire!

Pre fire impact assessment

Studying pre-fire dry soil repellency compared to post-fire repellency, therefore a better understanding of how the soil conditions changed.

More work expanding on simulating burn severity for use in pre-fire assessments

Mapping for Pre-Fire debris flow levels so you have a benchmark.

Engaging citizen scientists

+1 to supporting locals after Baer leaves

flash flood thresholds in combination with debris flow thresholds

Turn research into a product for BAER Teams



What other aspects of post-fire science would you like to see researchers address?

Relationship between fire intensity and post-fire DF susceptibility.

+1 to comment on pre fire engagement

Types of monitoring methods in post-fire recovery environments.

Potential integration of postfire science with JFSP Fire Science Exchange Network

Research on soil effects from reburn.

I'd like to see researchers on the BAER Teams often to see/help the rapid assessment process

Monetizing values at risk

Catalogue of storm events that trigger a debris flow event

Trainings or user friendly models to predict erosion rates and downslope sedimentation vulnerabilities in steep coastal slopes



What other aspects of post-fire science would you like to see researchers address?

What can firefighters do/avoid doing while they're out there there on the fire and just after?

How to balance High Tech with High Touch?

Values at risk decision support tools

A complete comparison of modelling accuracy from pre to post fire impacts.

Regional climate influence such as NA monsoon

USACE involvement in BAER team deployments.

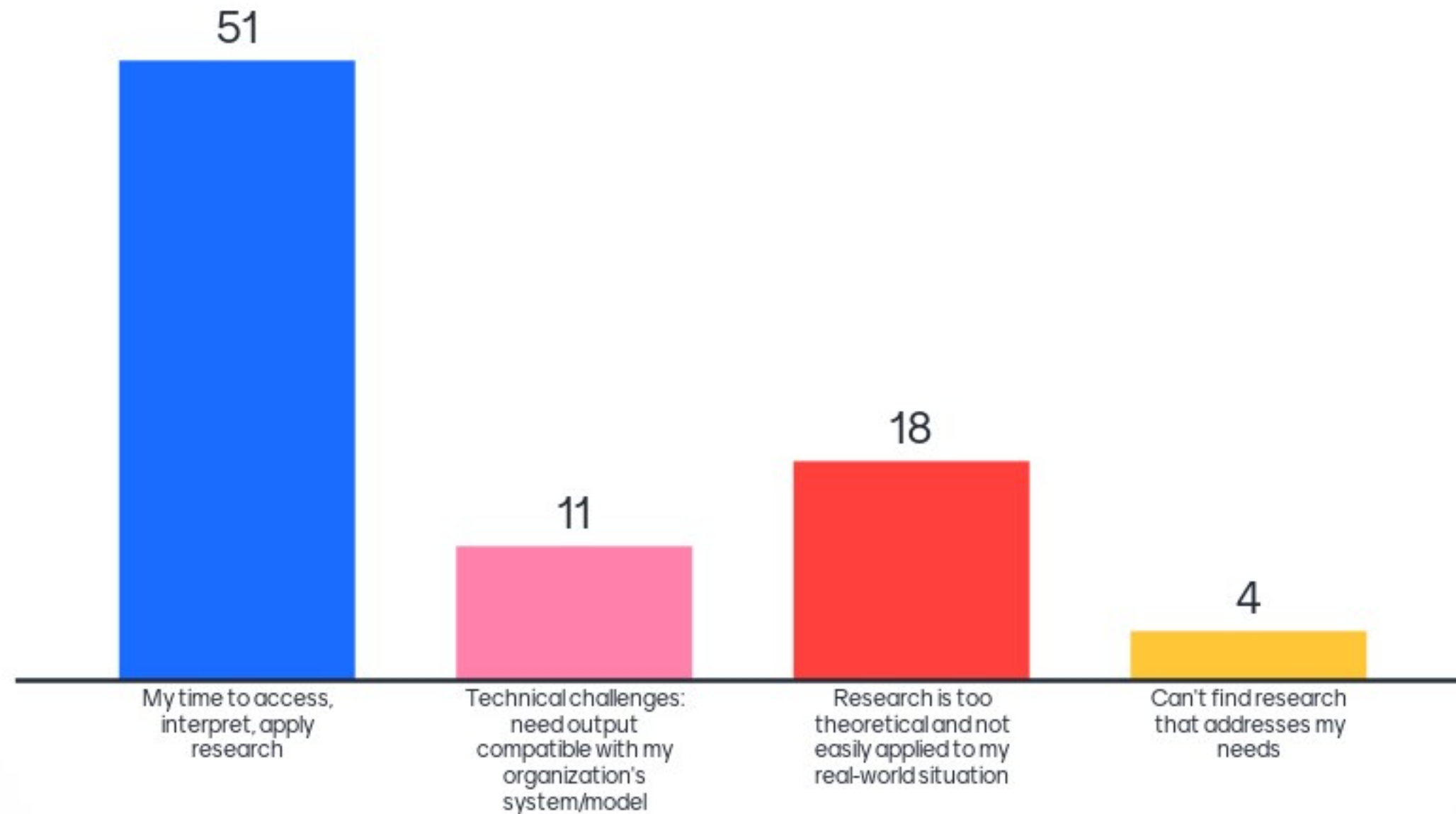
Simple models for practitioners to use during PRE FIRE assessments that look at vulnerabilities (most are very challenging for practitioners)

climate change and how post fire response may differ in places where there have not historically been many fires (ie. Alaska and the western PNW)

Fuel models



What is the greatest barrier to implementing the latest research in your post-fire response?



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Online open forums for discussions

More/better communication between groups

Additional funding

Advocate funding for this

In-person workshops on tools, models, outputs, etc.

Get the researcher out into the events! Especially newer researchers!

What tools/models are most useful for practitioners?
Interactive tools? Static maps?

More webinar/education opportunities

Have researchers come out into the field (our working environment) more



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

crowdsourcing for
implementation ideas

Include an application section to
the research paper

Agency culture

Blogs

Understand what is needed for our "operations" and boil
the research outcomes down to tailor it - we don't have
the time to do that

Include practitioner input from
the beginning of the research.

Like the blog idea; periodic
digest swell organized

Work with outreach organizations (shameless plug for
JFSP Fire Science Exchanges, Fire Adapted
Communities Learning Network, etc.)

Create a one stop shop multi
agency website that contains all
the data in an arcgis platform



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Showing geographically where
model are most appropriate

Connect with NGO's in the field.

Researchers involving
practitioners at the partner level,
not just stakeholder.

accessibility to researchers
during events for timely answers

Communication, coordination,
and collaboration

Bringing researchers to the field

Success stories of how used by
other practitioners

Pre-fire outreach to local
emergency response planners

Easily Digestible reports, charts,
or media



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

advocate more time for specialists to perform and learn

Funding to implement

Having researchers assist with Baer assessment.

Workshops and short fieldbook/worksheets

Connecting short (1, 2 page) use-cases to data and models (i.e. traceable applications of data and models)

Test and refine tools to be included as default for agency workflows.

The 2 page informal newsletter that doesn't provide all the info but let's practitioners know it's out there

Co-production of science knowledge, integration of postfire in JFSP Fire Science Exchange Network

meetings like this, and interactive webinars directed towards practitioner groups lead by researchers.



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Research never results in a product, model, or updates

Data and information sharing; where research input is integrated directly into operational systems. Also, the general co-production method mentioned during the panel discussion.

Would like to see more conferences and online discussions about research and where others have applied the research and what their results were.

Have research specialist on BAER teams to give recommendations to other agencies outside of federal boundary.

Webinars

More JFSP consortium field trips

More webinars that are recorded

!#*&!\$

Include practitioners and locals to identify issues and direct questions



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Don't speak down to practitioners. Practitioners are often very educated and invested in the research process, but it sometimes seems that researchers assume they know the most meaningful questions or best approaches

Create specialists in facilitating tech transfer

More direct interaction and discussion between researchers and practitioners, like we have been doing over the last 2 days

Communications, training, more one to one discussion on model usage.

Policy and legislative barriers

Fire Science Consortium events

Access is an issue for practitioners. The previous question lumped time and access together. Conduits from researchers rely sometimes on paid journal subscription that local practitioners don't always have access to

Specific sub watersheds for managers to better focus treatment/funding on

Continued/more interaction with researchers during event response



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Hydro & erosion model comparison tools -- which are better for given situations or locations

More direct interaction and info sharing

Education to increase public knowledge & support

More coordination between agencies to pool together funds, and to ensure funding is not being used for research already completed. Perhaps annual meetings to review what everyone is doing and identify ways to work together and pool funds.

Higher priority of cross-mentoring for practitioners across Forests/ agencies/ states/ etc.

Too many process/justification barriers - and need adequate funding to effectively implement

No real social media presence or community

PR outputs through the universities, agencies, state, etc., not just publishing papers in academic journals

Speedier timeline within agency to move from research to operations



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

We need more tools and ways for researchers to leverage practitioners for data collection and collaboration

Pie-in-the-sky, - participating in something like the experimental forecast office situations that the NWS has for flash floods and other weather types, but not for post-fire flash flood debris flows.

Examine research success criteria to reward researchers for informing operational application

Time to build relationships

One web location to find information from across the country and across different disciplines.

Summary/state-of-the-science/review papers are useful!

Focus on how research products can provide operational intelligence

Understand agency limitations. IT, people hours, policies, etc

Keep practitioner needs above publication pressures



Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Create a success/failure paper based on after effects of practical implementation.

Capturing post-fire solutions in the form of some more-or-less standardized PROCESS-FRAMEWORK so that people can dive into specific parts of that framework that apply to their problem

I think the way the forest service institutionally separates researchers from forest system staff is a huge barrier that impedes collaboration

a place to drop off a question to a general audience and see who has answers or would be available to help

crowdsourcing might be an interesting concept

Do not be afraid to share your knowledge and ideas before they are fully vetted or ready for peer review. They can inspire tools you haven't imagined.

BAER practitioners (at least the feds) have full-time jobs that do not allow them to spend a lot of time on digesting research

Citizen scientists - engagement, education, alternative perspectives

Toward bringing researchers into the field: Do they (are they willing to) maintain BAES qualification?

Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Trainings on how to use models and what the outputs mean

Find better ways to compile research papers from multiple sources, USGS and USFS and serial publications

Capacity for local teams in areas with no access to BAER, BAR, etc.

Need to work on developing a culture and capacity of local and state leadership in post fire work

Focus on management implications, practitioners assume that research techniques were done correctly, just give us the results and how to apply them

Use lay person language. Keep acronyms to a minimum.

Barrier- Practitioners working in dual resources due to a reduction in budget (i.e. soils and hydrology).

Many of us can't travel need online solutions. My travel for training, conferences was completely cut for 3 years. Frustrating and infuriating...

Predicting precipitation and integrated maps...data data data pre fire to support post fire...

Ideas for overcoming "research to operation" barriers (or other barriers of note)?

Identification of high risk areas

Studying pre-fire soil characteristics in terms of things like what are the runoff characteristics of dry summer soil than how that has changed after the fire.

One stop shopping for geospatial data layers

Drought/climate change -
vegetation change

Mapping of areas within basins
that are Predisposed to potential
debris flows

Susceptibility to erosion if
burned (by SBS category)

Pre-screening of more risky
watersheds based on size, slope,
soil types, etc.

Mapping of erosivability of
slopes or basins



What pre-fire research could be done (or is being done) that can inform post-fire response?

basic GIS mapping exercises - no models needed

Floodplain mapping

Rainfall thresholds

More LiDAR!!!!

Culverts and climate change

More on Jason's pre planning for debris flowd

calibrating hydro models

LiDAR based flow models for watersheds.

Changes in the water tables.



What pre-fire research could be done (or is being done) that can inform post-fire response?

Basic geomorphology data

How development is encroaching on the wildland-urban interface and what factors are taken into account in development and expansion

Mapping high risk areas using publicly available data.

Rainfall thresholds between flood flows and catastrophic debris flows

Predicting what the hydrologic response based on soil type, climate type, geology

Mapping alluvial fans and activity

Assessment tools to inform community land use planning and zoning decisions.

What messaging worked

Many times soil burn severity is more related to fire weather than fuel loading - how do we capture that in pre-fire modeling?

What pre-fire research could be done (or is being done) that can inform post-fire response?

GIS. Pictures worth 1000 words!

identify what characteristics of riparian areas are necessary to protect areas post-fire and design strategies to protect them

Geomorphic mapping

More landscape characterization and identifying high risk watersheds, or high burn severity probability. Lid ar!

historical event database - all the way back to early archives, to show potential in areas that haven't seen fire for a long time

Lidar availability

Understanding how to quickly assess fuel loads and potential post fire risks.

Yes!!! To preplanning efforts!!!! What gis layers are needed, what data matters - how do we incorporate into CWPPs

LiDAR data everywhere



What pre-fire research could be done (or is being done) that can inform post-fire response?

Easy models and training on how to pre-identify vulnerable watersheds. The work out there is not user friendly so is being left out of pre fire assessments, plans, and mitigation activities

expand fully functional usgs streamstats to Nevada

completion of state and transition models for ecological sites

Better soils data

Longer term hydrologic change in different ecosystems

Effects of fire intensity

Simple maps of post fire risk (H, M, L) to use prefire

Soil moisture impacts on soil burn severity

Map fans on lidar

What pre-fire research could be done (or is being done) that can inform post-fire response?

LiDAR for more of states

Additional stream and rain gages to increase gage density.

Hydrologic modeling that can be more robust than rapid models

Beefing up GIS data.

Outreach with communities

Effect of reburns on soil burn severity

Pre fire debris flow assessments as discussed

Region specific burn severity mapping from fire ecologists

Drought effects on restoration strategies



What pre-fire research could be done (or is being done) that can inform post-fire response?

Response educational needs.
Implementing training.

Develop information sharing and
coordination platforms

More coordination with invasive
species management actions,
research, and information.

Identifying areas vulnerable to debris flow prior to fire
events. Many times Fire is followed shortly by
precipitation and time for response or analysis is short

Pre-screening/ identification of
risky watersheds based on size,
slope, soil types, etc.

Wildfire ontology

Better incorporation of quality
soils data into models

More work on how to simulate
burn severity pre-fire

Relationship between
vegetation, fire intensity, burn
severity, and post fire effect



What pre-fire research could be done (or is being done) that can inform post-fire response?

Soil-ecological site relationships understood and documented for state and transition models.

!#*&!\$

Define how important is difference between Debris flow and hyperconcentrated flow to hazard assessment?

Take into account treatments, fires and post-fire processes as updated pre-fire conditions

More lidar

Impacts to riparian areas from firewise recommendations implementation

Challenges of lidar are mainly availability!

Map data in a way that is in a format for those of us that are not arcMap experts can use.

soil-plant relationship understanding. How plant communities change after disturbance (fire) with respect to soil characteristics or properties.

What pre-fire research could be done (or is being done) that can inform post-fire response?

Help provide resource valuation across all jurisdictions

Land use planning tools that incorporate post fire erosion vulnerability

Soil burn severity impacts on recovery over geographic ranges

Long term catchment monitoring

Developing local, optimized post fire seed mixes! Or even soil inocula

More stream gauges

how to best educate the public on a threat they can't image or don't think will ever affect

Resource valuation is important to increase consistency

Flood magnitude Prediction in small/ ungedged basins



What pre-fire research could be done (or is being done) that can inform post-fire response?

good soils maps for fire teams could inform tactics

Improve burn severity accuracy for rangelands

Completion of order 3 soil surveys for landscapes

map areas of high risk and discourage development in those areas

More hydro/erosion/debris flow model validation

soil burn severity and relationships to soil properties and characteristics

Relationship between fire history and increased erosion potential



Enjoy a 5 minute break!





Update on WFLC/WGA Efforts at National Roadmap

- Mike Zupko, WFLC
- Troy Timmons, WGA
- Q&A following presentation through Mentimeter

Post-Fire Science Needs for Emergency Response, Hazards & Rehabilitation Webinar

Update on WFLC/WGA efforts at national roadmap and collaborative efforts



Mike Zupko, Executive Director, WFLC
Troy Timmons, Director of Strategic Initiatives, WGA
May 20, 2020

Carr Fire, 2018 Courtesy USDA Forest Service

Multiple Engagement Points

- WFLC Coordination Calls to Understand Depth of Issue (2018/19)
- WFLC Co-Chairs Meetings with WGA Leadership
- WGA MOU with USDA – Shared Stewardship
- WFLC Principals’ Meeting to Set Stage and Expectations
 - Post Fire Science has been presented throughout
- WGA Working Lands Forum to begin buildout of Needs
 - Roadmap and Navigator Concepts
- Small Group “Writing Meeting” to Build Out Concepts
- WFLC Principal Ranking to Understand Policy Gap Priorities

Incident Management Team Integration

- Establishing Post-Fire Considerations for Incident Commanders and agency administrators
- November 7, 2019 briefing paper
- USFS and DOI starting integration of core areas

Post-Fire Impacts Roadmap

- Provide wildfire-affected communities with a roadmap of available assistance
- Increase awareness for federal agencies, states, local governments
- Interagency and state/local engagement over the past several months
- Rollout of a “short-version/emergency kit” roadmap this summer

Roadmap Considerations

FEDERAL LAND

PRE-FIRE

FS - SPF DOI - HMF

FS - HMF BLM - CA

POST-FIRE

FS - BAER DOI - ES

DOI - BAR- SPF

FEMA - BRIC FEMA - HMGP

FEMA - FMA FEMA - NMIS

FEMA - PDM NRCS - EQIP

FEMA - PA FEMA - NFIP

FEMA - PDA NRCS - EWP

FEMA - FMAG FEMA - IA

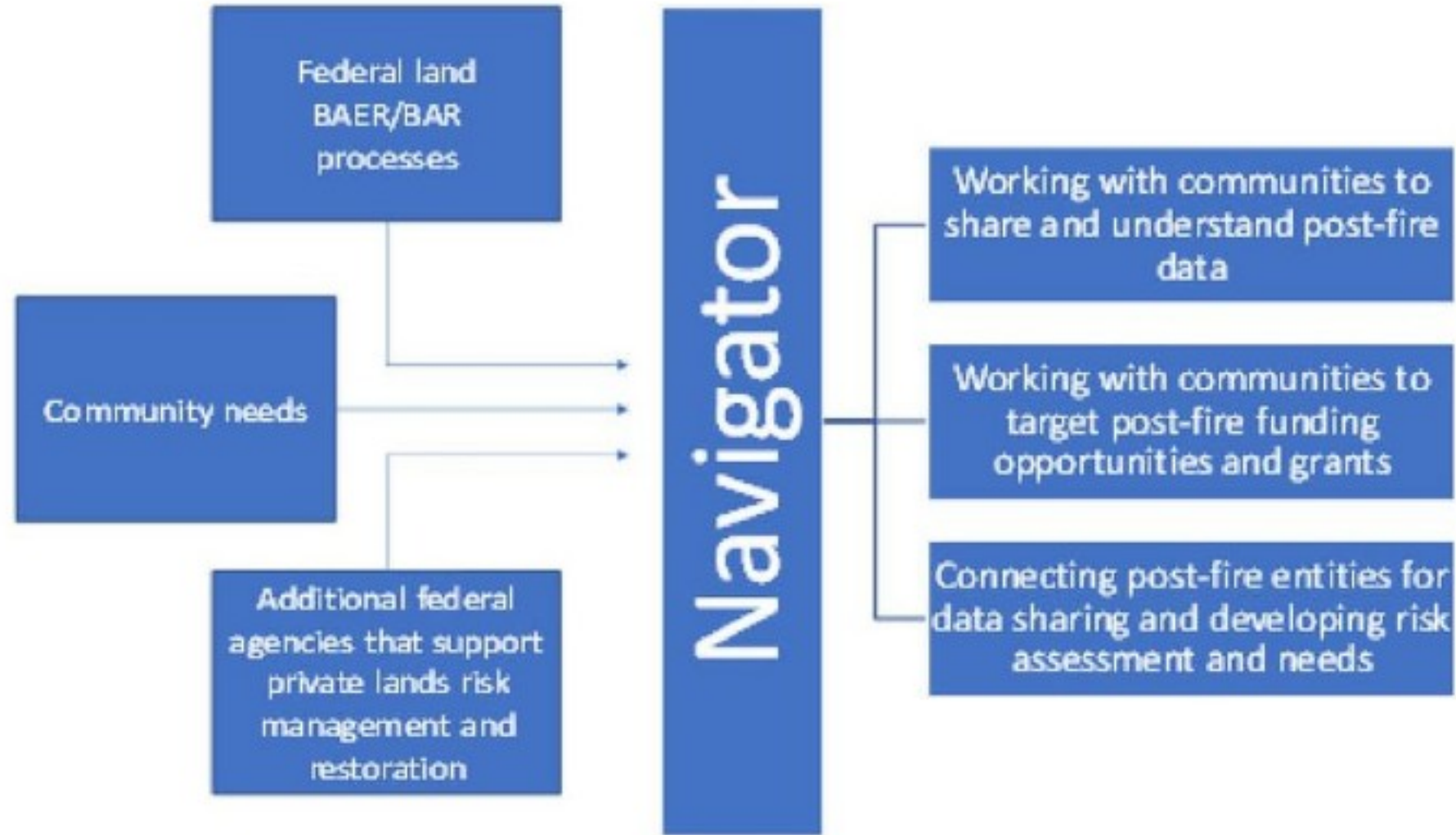
FEMA - HMGP PF

NON FEDERAL LAND

Navigator Development

- Need for Roadmap “navigators” to assist communities
- Three roles:
 - Assist local communities with identifying risk management and restoration needs, funding sources and availability, and application processes
 - Serve as a liaison between communities affected by wildfire and federal agencies conducting risk management and restoration work
 - Function as subject matter experts on post-wildfire risk management and restoration needs across a broad range of values (housing, water quality, habitat, infrastructure...)

Navigator Considerations



Policy Gaps and Opportunities

- Post-Fire Coordinator Designation
- Post-Fire Master Agreement
- Data and information sharing/coordination
- Aligning federal post-fire response with community needs
- Improving IMT/post-fire handoff
- Integrating land management and fire management responsibilities
- Statutory issues



Thank you!

For more information, please contact:

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Questions for Mike and Troy?

do you foresee a time when BAER-like federal funds will be available for non-federal and tribal land mitigation?

Time frame for roll out?

Do you have plans for webinars or trainings for practitioners?

What opportunities exist for people to get involved in shaping these conversations?

What are some of the top policy issues that you think might be solvable in short(er) timeframes?

How best to package info for reaching WGA on post fire issues? What are they responsive to?

how many states have implemented interagency BAER teams of state and local representatives?

Will these navigators be additional funded positions or just asking additional job duties of existing positions? Have you thought about having people already doing some of this work (extension, outreach, UPH, etc.) just have additional funding?

How do you plan to find the navigators for communities?

Questions for Mike and Troy?

Many State Geological Surveys have people who would be great navigators. Is AASG (Am Assoc State Geologists) involved in there efforts?

There has been a lot of postfire science discussion in this symposium, where does science fit in with WFLC and WGA?

How can small rural local agencies access funding to support training for staff to be effective post fire response?

How have you communicated your policy gaps and opportunities to both practitioners and researchers?

Many of us live in small towns either impacted by now or soon to be wild fires.... I have been struggling to get on a team that can help the locals, can you assist with this? Seems the only time they care is when a fire happens...

Does your work include assisting regions who have no federal lands and their associated resources, experts, and efforts?

I excited to see a road map! Our NGO was able to help disaster survivors make a match (using volunteer hours and funds) for the federal programs. It was a great partnership.

Are you working with communities of all sizes?

NRCS, DOI, USFS and NRCS main players identified in the diagram. Noting that there are much broader agency resources available (HUD, SBA, EPA, USACE, etc)and the issues are broader than land mgt and fire mgt.



Questions for Mike and Troy?

do you see the navigators as government or non-profits? Funding?

Are navigators only post-fire or also pre-fire?

Would Navigators be necessary for Pre-incident, During Incident/Post Fire Planning and Mitigation Implementation phases?

Tribal lands r covered by doi Baer teams. Nrcs and army Corp of engineers can fund post fire treatment on pvt. Lands.

What are your suggestions for navigating the issues big liability? How can federal employees balance providing risk information with non federal players with liability?

Other than BAER, what other programs is the group looking at?

Bravo on the roadmap and navigator ideas. Small counties simply can not navigate the maze of state and federal programs. It will take a team for most large fires. The smaller the county, the larger the team that is needed.

I've seen quasi navigators from the firefighter community try to liaison the post fire response without sucess

Much of the discussion here over the past two days has focused on landscape impacts. Is there any thought that these navigators may need to cover more integrated post-fire issues?

Questions for Mike and Troy?

Army Corps of Engineers and Silver Jackets are working on very similar roadmap products, many already completed for some states. Are you coordinating efforts?

Is there a roadmap for people working in areas with no federal lands and/or no experience with post fire work?

Look for ways that navigators can be holistic and integrated positions - prefire and post-fire and help support local capacity

Am I hearing. Navigation taskforce, very small team, multi-governmental level?

Have you considered reaching out to soil and water conservation districts to be a good place to start with navigators. They are local, often have technical resources, and are generally trusted by the public.

We often have Baer interagency liaisons that fulfill the navigator roll. Even after the assessment is complete. They work with other cooperators to assist with post fire planning.

Are there any upcoming roadmap and navigator trainings? Opportunities to bring partners in to learn from you together?

How can the results of this symposium be used by WFLC and WGA?

We have federal interagency liaisons often during Baer assessments



Questions for Mike and Troy?

JFSP Governing Board could be requested to give additional emphasis on the postfire environment

communication

preparation time

mentorship

mentoring





Other Networks and Collaborative Efforts

- Anne Bradley, The Nature Conservancy
- Cara Farr, USFS
- Q&A following presentation through Mentimeter



Circle of Fire



Examples of networks addressing the postfire environment

COCO- After the Flames Conference

Fire Adapted Community Network- facilitated information sharing on the Podio platform, blogposts <https://fireadaptednetwork.org/>

Joint Fire Science funded Fire Science Consortia
https://www.firescience.gov/JFSP_exchanges.cfm

TNC FLN- funded Burned Area Learning Network conservationgateway.org

USING INTENTIONAL NETWORKS FOR THE COPRODUCTION OF SCIENCE

- ▶ Provide sustained, two-way participation from scientists and stakeholders throughout all phases of knowledge production
- ▶ Focus on developing actionable information
- ▶ Everyone a learner, everyone a teacher
- ▶ Can incorporate multiple ways of knowing western science and practice, and TEK
- ▶ Emphasis on building relationships for future conversation and discovery-good networks are generative
- ▶ Value boundary spanners who work to engage a range of expertise and organizations



Burned Area Learning Network- Prefire Planning to Improve Postfire Actions

- ▶ Improve the efficiency and accuracy of short and long-term post-fire risk assessments.
- ▶ Improve inter and intra-agency relationships and develop more cohesive interagency strategies for post fire response
- ▶ Expand the suite of immediate post-fire rehabilitation and *longer-term* restoration tools and improve their execution.
- ▶ Integrate short term and long-term objectives for burned area management.
- ▶ .Advance engagement of the public in pre-fire planning for post-fire actions.
- ▶ Create an adaptive feedback mechanism to effectively incorporate existing and new information into pre-fire planning and post-fire actions.

- ▶ After Wildfire Learning Exchange- state county, federal, contractor and university roles- who does what where and when?
- ▶ Integrate postfire risks into landscape fire risk assessments (RMRS GTR-315) to prepare communities
- ▶ Long-term management of large burned areas- build reforestation capacity, and integrate forest reestablishment with continued fire management

Questions for Anne and Cara?

Are these networks working together?

Does Burned Area Learning Network have a blog or webpage or place to share this information for learning exchange?

Firewise communities Are a great way to share

Is Burned Area Learning Network part of or tied to the Fire learning Network?

Local Conservation Districts are also a great resource!

How can we get involved in some of these networks?

Our Long Term Recovery Group is a member of Fire Adapted Communities and it is proving to be a very efficient partnership!

Practitioners and stakeholders added to discussions

Planning - early engagement with BAER folks et al to help discussions of how landscapes may react to a fire

Questions for Anne and Cara?

Local Fire Safety Councils

Would assume many Universities are engaged in research - not sure if they are engaged with existing networks mentioned.

Comment: connection of Troy's slide, fed, non-fed lands and funding sources - the NM RMRS GTR-315 suggestion: connect to state hazard mitigation plan and local HMP to connect to FEMA grant programs

Army Corps of Engineers and Silver Jackets "roadmaps" or "toolkits"

Watershed interest groups -- great example from New Mexico. How can we expand this reduction of litigation to forest thinning when that will be better for the watershed?

Association of State Floodplain Managers at national level and state chapters are focusing more on post-fire issues and being more proactive of managing floodplains to minimize these impacts.

funding

intense effort



Are there any networks/efforts we missed that people should know about?

Local Conservation Districts are awesome!

High Altitude Reveg conference,
Natural Areas Conference,
George Wright Society

How can we get involved with some of these networks?

How do these networks articulate with watershed consortia etc

Prescribed Fire Councils

Fire Adapted Communities Learning Network opportunities for people to join as Affiliate members

Are their networks with water providers that we should be engaged with?

Floodplain Management Assoc

Our Air Quality District is very helpful, also.



Are there any networks/efforts we missed that people should know about?

State fire adapted communities networks: WA, NV, MT, NM, CO, and AZ

The NASA/NOAA/USGS co-funded Federation of Earth Science Information Partners (ESIP) Agriculture and Climate Cluster has recently started to examine AI-related methods for knowledge discovery related to wildfire mitigation and response.

Have we been effective in getting info on these networks out to practitioners?

Watershed partnerships, NGOs and others that pull regional fire folks and natural resource managers together: Fire Safe Councils, etc

JFSP Governing Board could be requested to give additional emphasis to Postfire environment

How do we become a "part of" the JFSP to create a learning exchange focused on post-fire

Watershed councils

Does Joint Fire Science have a post-fire sub-area ?

In New Mexico working with Spanish Land Grant communities and or acequia associations



Are there any networks/efforts we missed that people should know about?

are researchers engaged with networks?

NASA Satellite Needs Working Group

Army Corps of Engineers and Silver Jackets "roadmaps" and "toolkits", some completed and some in progress

Local nursery for native species grasses. Local farmers for weed free straw

California has integrated regional water management groups that would be a good interagency network.

Long Term Recovery Groups and their DCM's are a great resource to the private land owners!

Healthy Headwaters collaboration of water providers and land managers (recently moved to National Wildlife Federation)

DOI Remote Sensing Working Group; Infrared Interpreters; etc.

Community Wildfire Protection Plans incorporate all your models. CWPP is used to implement work in Fire Adapted Communities

Are there any networks/efforts we missed that people should know about?

It would be great to see some kind of centralized "address book" for practitioners and researchers working in post fire to connect.

Partnerships

Visualization Tools

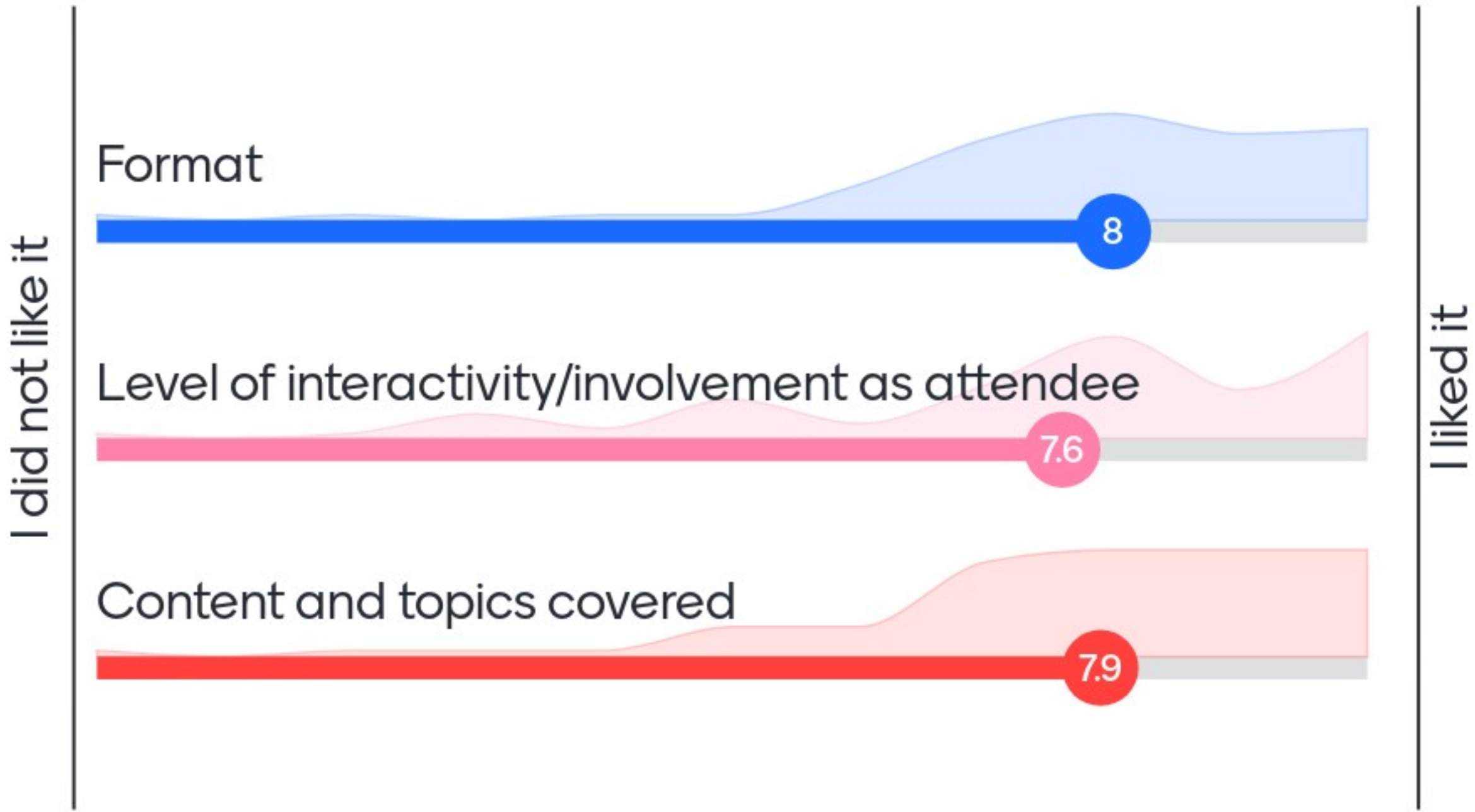
Information



What two words best describe what we need for post-fire response going forward?



Feedback on the conference:



Feedback or recommendations for future virtual conferences?

More of same

Great Job!

More panel discussions and Q&A

Pre-conference input on key topics needed

Needs to happen regularly

Loved mentimeter. Great tool

Success Stories of communication between NGO's and government post fire.

Please let us know about the agenda prior to the start of the session. Thank you very much!

The lack of ability to chat with other participants was frustrating



Feedback or recommendations for future virtual conferences?

More Mentimeter

short presentation by research (5 slides only)

4-hour sessions

LOVED the mentimeter interactivity - great for a large group

I liked the mentimeter input. sometimes too much commentary by participants is distracting.

Very heavy on debris flow, include more on vegetation recovery and ecology

Appreciate including audience participation - much more engaging than just webinar

Awesome conference!

Preparedness to minimize post fire impacts.



Feedback or recommendations for future virtual conferences?

Useful tools overview/how to

Lessons learned

Monitoring results of flood and debris flow mitigation.

Have panel responses to their intro Qs on screen

I like how the session was recorded and emailed to us for future reference

I liked Mentimeter. It was interactive and kept people engaged.

I really liked the mention of involving contractors. There is a lot that can be offered through that type of exchange and validation.

Ability to form small collaborative working groups for special topics or projects to sustain the networking and interaction post conference. Email lists?

in depth long sessions on particular science topics, like ash / water quality / erosion / etc



Feedback or recommendations for future virtual conferences?

Doing this kind of thing more frequently

Great job engaging all in a virtual conference

More feedback from practitioners - communities, emergency managers.

Panels were challenging to follow, although the presentations were good on virtual medium.

Another science presentation would have been welcome

effective treatments

10 minute break would be great

See actual science in action, successful and failures.

More integration of other post-fire pieces (not just debris flow)

Feedback or recommendations for future virtual conferences?

Social science application to the post-fire environment

Even post Covid, this format allows for broad participation. In person is great, but not everyone can always travel.

Breakout groups for relevant topics

This is a perfect way to get everybody into the same virtual room. Brilliant!

More SOIL

Really impressed with how quickly this was pulled together at such an effective level

The Mentimeter was a nice interface.

Thank you for going forward with this. I really appreciate the work you all did to make this happen.

Hearing from communities, community members, about their side of this story



Feedback or recommendations for future virtual conferences?

slightly longer breaks 10 min.

case studies from practitioners that are partnered with researchers

Communication of risks to community

Great job! Loved mentimeter and the webinar format with videos/presentations. Thanks!

Include more on preplanning for cascading disasters

Amazing job! Thank you to the organizers of this conference.

Speakers share short videos or pics of research being applied - show how this has worked...

How to manage and protect riparian areas proximal to infrastructure and homes

How to move BAER skills and information into local planning; especially WUI!



Feedback or recommendations for future virtual conferences?

Short course on how to do modeling

more on atmospheric rivers affect on post-fire landscapes

Really pleased with this - will definitely be seeking to attend more of these, and get funding for in-person attendance if/when it happens again

Some way for attendees to vote on Q responses to make it easier to address the most important ones

More engagement and conversation with practitioners

Phone typing to respond as prompted is not my favorite part. I am more comfortable typing on full sized keyboard.

Another way for participants to add comments or verbalize support along the way. Maybe enter in chat to be documented later by organizers

Effective strategies for EWP coordination.

I think it would be really valuable if participants could comment or submit questions thru chat, similar to how the SW Fire Consortium webinars are run

Feedback or recommendations for future virtual conferences?

Solid follow-on to last year's conference - keep it up

Well done

Revegetation and recovery

Invite a broader audience and other agencies that bring expertise to this topic and not the standard agencies. Let's hear from FEMA for example

Reach out to us social scientists for us to share our experiences researching post-fire environments

Have some breakout groups...debris flow groups, state surveys

deep dive on post-fire policy issues / challenges / progress / solutions

As you are aware, I am sure, it wasn't as good as in-person. Discussions where Could have clarified or added there wasn't a chance to do that. But I realize this was as good as could be done virtually. Plugging in questions and feedback worked. Menti

love how mentimeter lets it be interactive-the polls were fun and informative



Feedback or recommendations for future virtual conferences?

Yes! show actual success stories!!

Doing it virtually allowed those of us that don't have travel budgets the chance to participate and engage.

Excellent job by speakers and panel members

More on vegetation and fuel management post-fire (longer-term than BAER)

Chat box.

Really liked the Mentimeter. I appreciated the anonymity - makes it easier to contribute. A follow - up link or write up synthesizing the workshop would be great.

Some focus on what can be done prefire to help with potential post fire effects.

I liked the survey questions and ability to provide questions that can guide the science and discussion

post-fire salvage logging impacts

Feedback or recommendations for future virtual conferences?

The webinar was well done and effective. Nice work!

Maybe some sub-sessions that allow people to talk about regional challenges/efforts

Bravo. Well done. Mentimeter was great.

Thanks so much! I was really impressed with the lineup and the format

Complete the report and publish it

Lightening talks from more people would be nice

Mentimeter was a great way to engage! Thank you.

Anonymity of Mentimeter seems to increase participation and feedback - excellent use of this tool, even for in-person events

This was great, thank you. Looking forward to more how-tos, policy, help developing local working groups, applying science, discussion and next steps for practitioners



Feedback or recommendations for future virtual conferences?

Land treatment short course

Thank you!

Mentimeter worked well

Hope there are some tangible outcomes as a result of the past 2 days.

Spell out acronyms

+1 to subsessions or breakout groups

Broader topics including vegetation recovery and seeding

For this group and subject area, somehow following up with the group on progress on all future work needed that was (identified in the webinar)

Mentimeter worked well.



Feedback or recommendations for future virtual conferences?

It was easier to have Mentimeter up in another tab in my computer browser than on a phone for answering questions.

The Silo question; unpack that more. It's not just the ivory tower that some researcher thought it was!

This is a great way to allow me to attend multiple meetings!

Let's hear from Australia's post-fire specialists

Keep them shorter, 2 hours

Examples of regional wildfire prevention districts at local level that do planning and implementation

Webinar with practitioners giving project overviews.

how do we connect all the participants on this call?

Agree on the WFLC AND WGA subjects for a conference.



Feedback or recommendations for future virtual conferences?

road treatment short course

Advertise more! I was lucky to have heard about it by chance, and I think you could cast a wider net. Advertise to academics, universities and state geological surveys.

Wasn't going to be able to attend the in-person conference so this was a nice opportunity. Perhaps future in person conferences could have a virtual option.

Invite Firesafe Councils to participate..they are local, collaborative and hands on

Conference emphasizing that the incident does not end with suppression!





Future of After the Flames

- COCO will host additional After the Flames webinars in the coming year
- We hope to have another in-person conference in the future
- We welcome suggestions for future meeting topics, speakers, etc.
- We are gathering resources for AftertheFlames.com, resource suggestions welcome





Thank you for attending After the Flames Virtual Symposium

- Thank you to Jane Mannon and Maria Petkash of CUSP/COCO for managing technical aspects of this conference!
- Stay tuned for workshop summary and attendee list arriving in your inbox!

