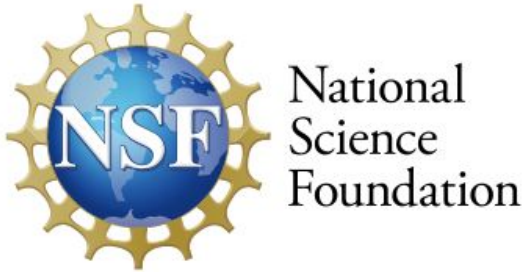
The Intermountain West Transformation Network

INTERMOUNTAIN WEST
TRANSFORMATION
NETWORK

Funded by NSF Grant #2115169

What is the TN?



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The goal of the **Intermountain West Transformation Network (IMW-TN)** is to build capacity for adaptations and guided transformations towards **sustainable regional systems** through innovative and equitable solutions.

Our Team & Region: Building the Transformation Network

8

Universities
5 Hispanic-Serving Institutions
5 American Indian & Alaska Native Serving-Institutions

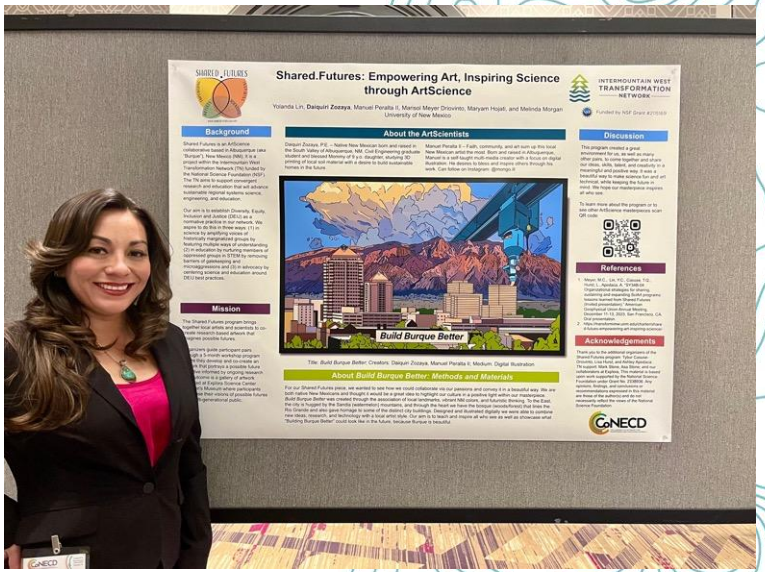
5

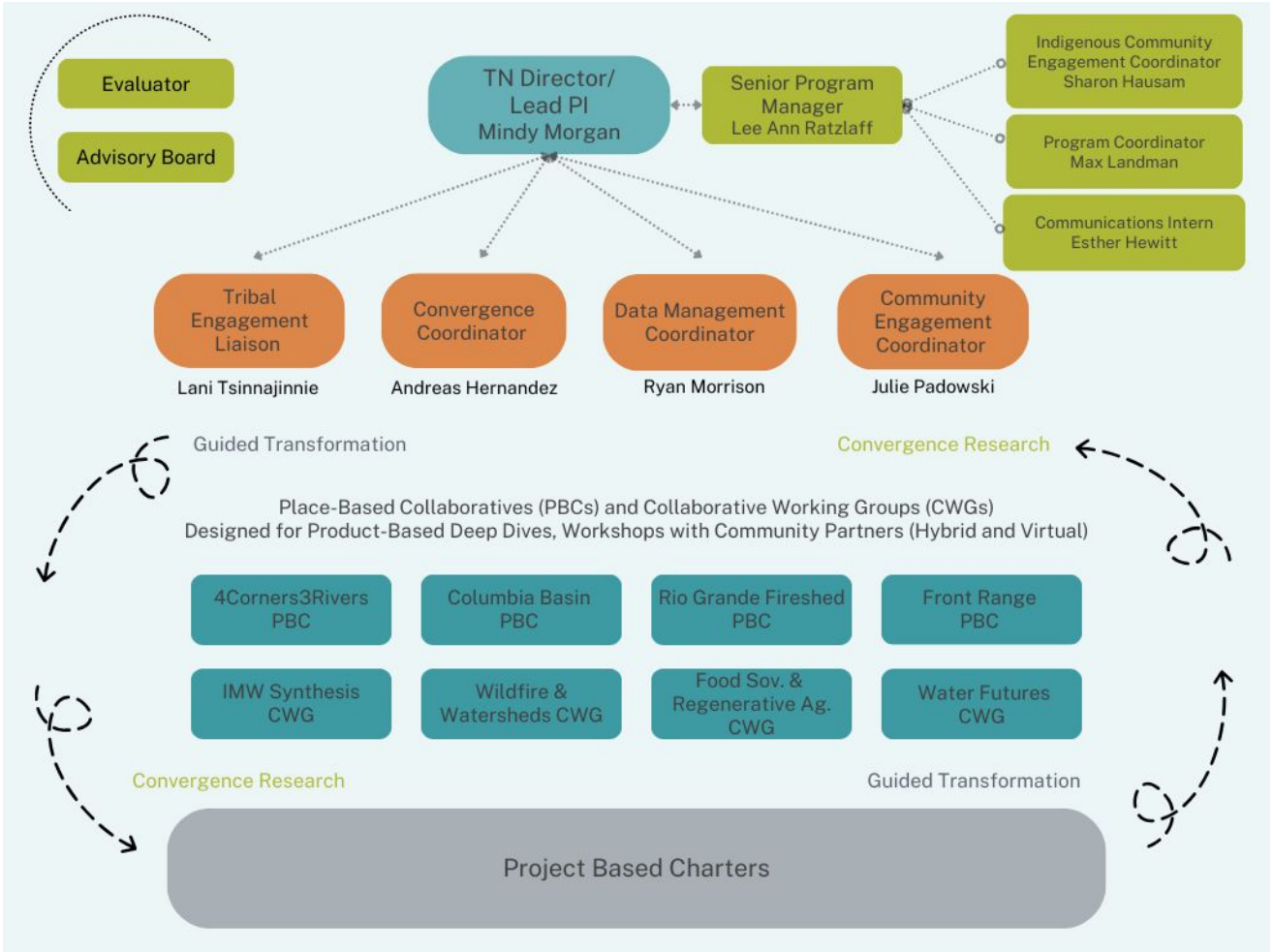
States

Convergent Research Design

Our convergent research design aims to follow these principles:

1. Research should begin with a societal problem rather than an academic pursuit;
2. Work should consciously involve people from outside the academy who can be community members and other stakeholders in all research steps and particularly in the creation of research questions and research design.

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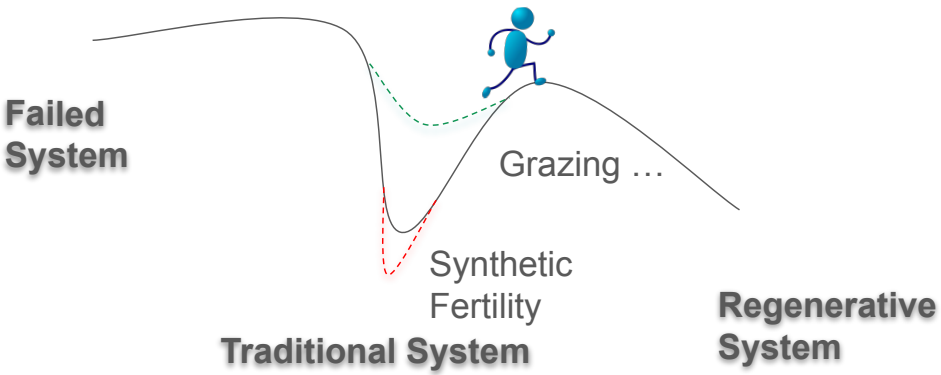
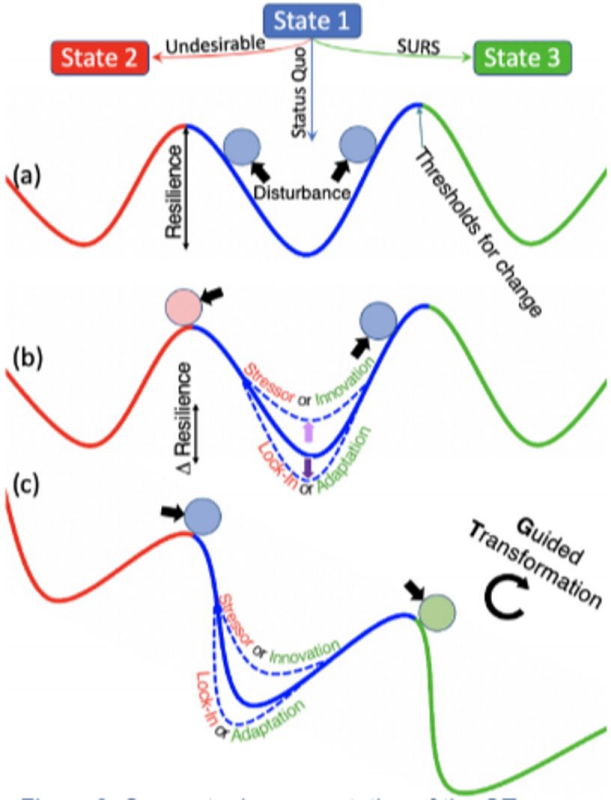
Guided Transformation
Convergence Research
Place-Based Collaboratives (PBCs) and Collaborative Working Groups (CWGs)
Designed for Product-Based Deep Dives, Workshops with Community Partners (Hybrid and Virtual)
4Corners3Rivers
PBC
Columbia Basin
PBC
Rio Grande Fireshed
PBC
Front Range
PBC
IMW Synthesis
CWG
Wildfire &
Watersheds CWG
Food Sov. &
Regenerative Ag.
CWG
Water Futures
CWG
Convergence Research
Guided Transformation
Project Based Charters

Guided Transformation (example)

1) Why are growers seeking to transform their operations?
2) What are barriers and opportunities to transformation?
3) What is the role of the actors in the transformation?

Guided Transformation Framework





Research Design

Place-Based Collaboratives:

Place-Based Collaboratives provide a platform for place-based, convergent research, and ensure integration of research themes and educational activities.

Collaborative Working Groups:

Collaborative Working Groups facilitate cross-cutting opportunities and shared learning among projects, fostering collaboration and producing tangible outcomes.

Place-Based Collaboratives

Columbia River Basin

This PBC aims to address the complex water management challenges in the Columbia River Basin, fostering collaboration among stakeholders to integrate data, reports, and models and explore transformative solutions for community and environmental well-being.

Read More

Front Range

The Front Range PBC focuses on addressing biophysical changes and water management challenges in the Colorado Front Range corridor, emphasizing resilience following wildfires, impacts of urban expansion, and the colonization of water right law.

Read More

Rio Grande Fireshed

This PBC focuses on understanding and addressing the impacts of climate change and wildfires on New Mexico's Rio Grande Fireshed, particularly in the Santa Fe Watershed. It seeks to advance knowledge through partnerships with Indigenous communities, NGOs, and local government, aiming to mitigate water insecurity and ecological transformations in the region.

Read More

Four Corners and Three Rivers

This PBC focuses on addressing challenges related to food sovereignty, the transition of the carbon economy, and water conflicts in the convergence of four states and three rivers. With partnerships including the Navajo Nation Tri-Chapters, it centers around principles of regional Food-Energy-Water Systems (rFEWS) to promote sovereignty in these essential resources.

Read More

Collaborative Working Groups

Wildfires and Watersheds

This Collaborative Working Group aims to address the challenges posed by wildfires and climate change in the Intermountain West, focusing on research to understand wildfire impacts, governance strategies, and watershed resilience.

Read More

Food Sovereignty and Regenerative Agriculture

This Collaborative Working Group seeks to enhance research synergies within the Transformation Network, focusing on regenerative agriculture, global supply chains, and food sovereignty.

Read More

Intermountain West Synthesis

This Collaborative Working Group focuses on analyzing research and datasets spanning the entire region, with a particular emphasis on exploring transformations and urban-rural connections.

Read More

Water Futures

This Collaborative Working Group focuses on addressing water challenges in the Intermountain West, connecting research that explores sustainable watersheds and community futures.

Read More

Wildfire Hazards & Post-fire Recovery

Preparing Watersheds for Wildfire

Daniel Cadol, New Mexico Tech
Kelly Jones, New Mexico State University
Melinda Morgan, University of New Mexico

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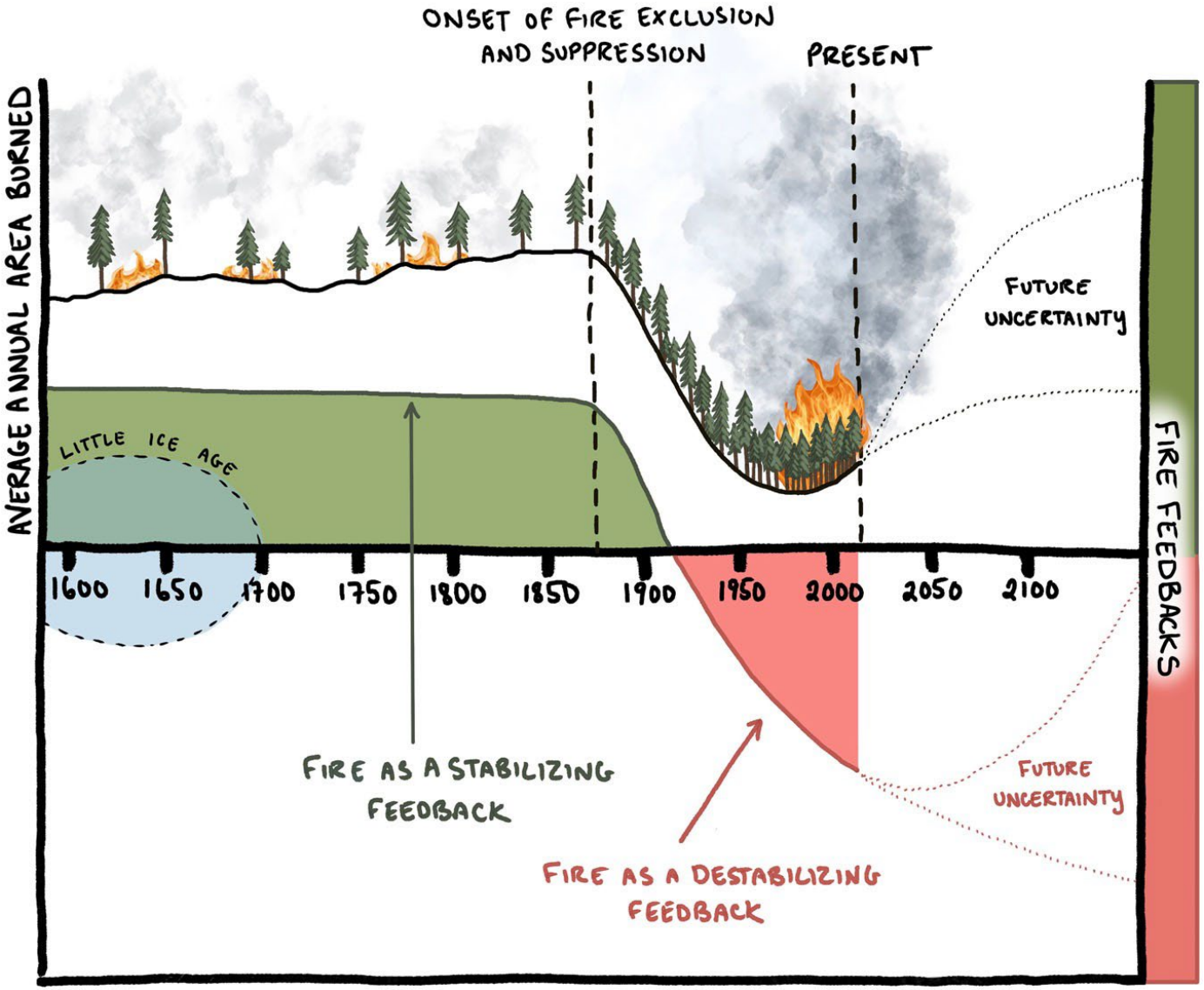
Image credits: **Todd Fuqua | Ruidoso News**

The Hazard

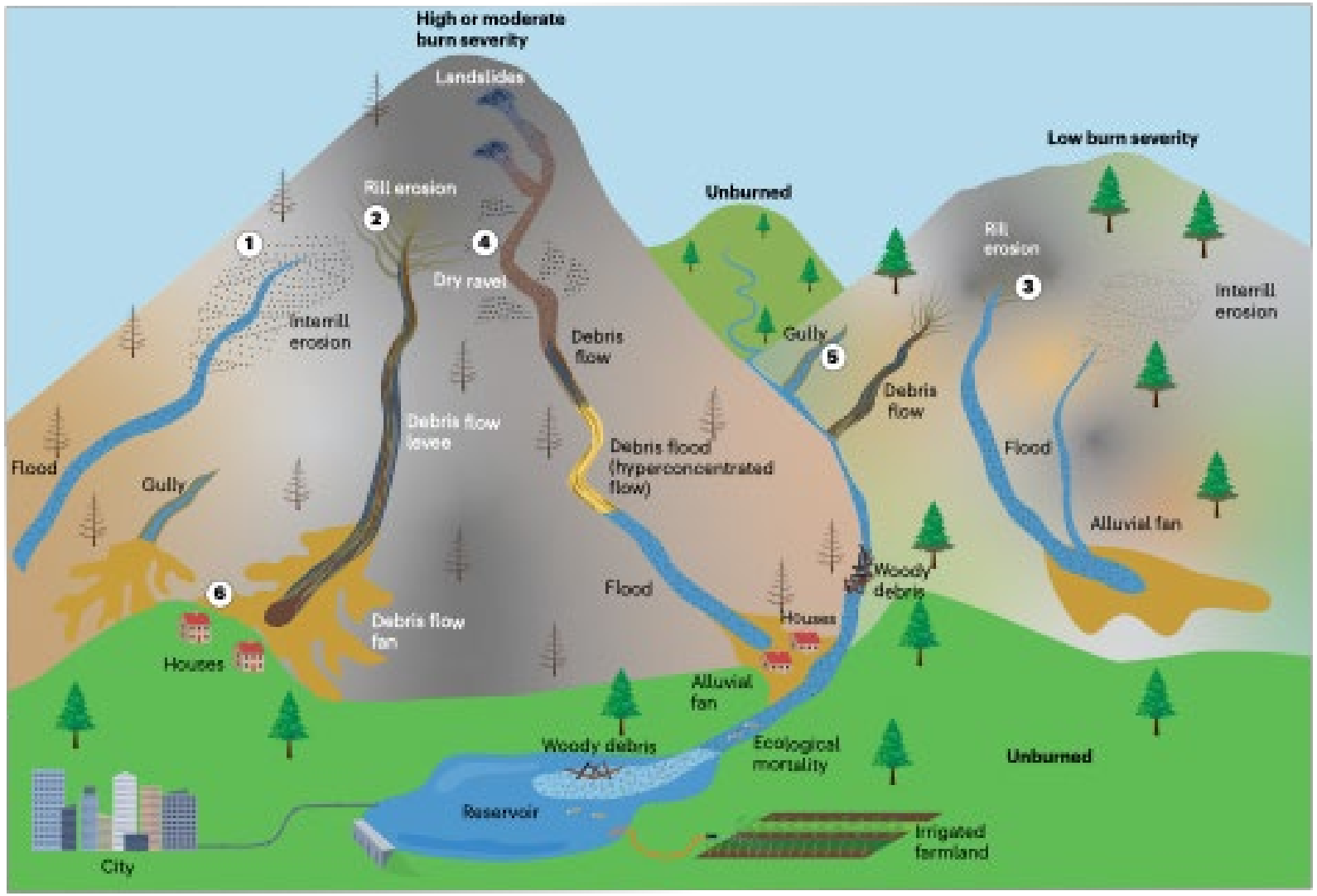
- Wildfire intensity, extent, and frequency are increasing (though are still below pre-suppression levels)



Parks, Guiterman, Margolis, et al. (2025). A fire deficit persists across diverse North American forests despite recent increases in area burned. *Nature communications*, *16*(1), 1493.

The Hazard

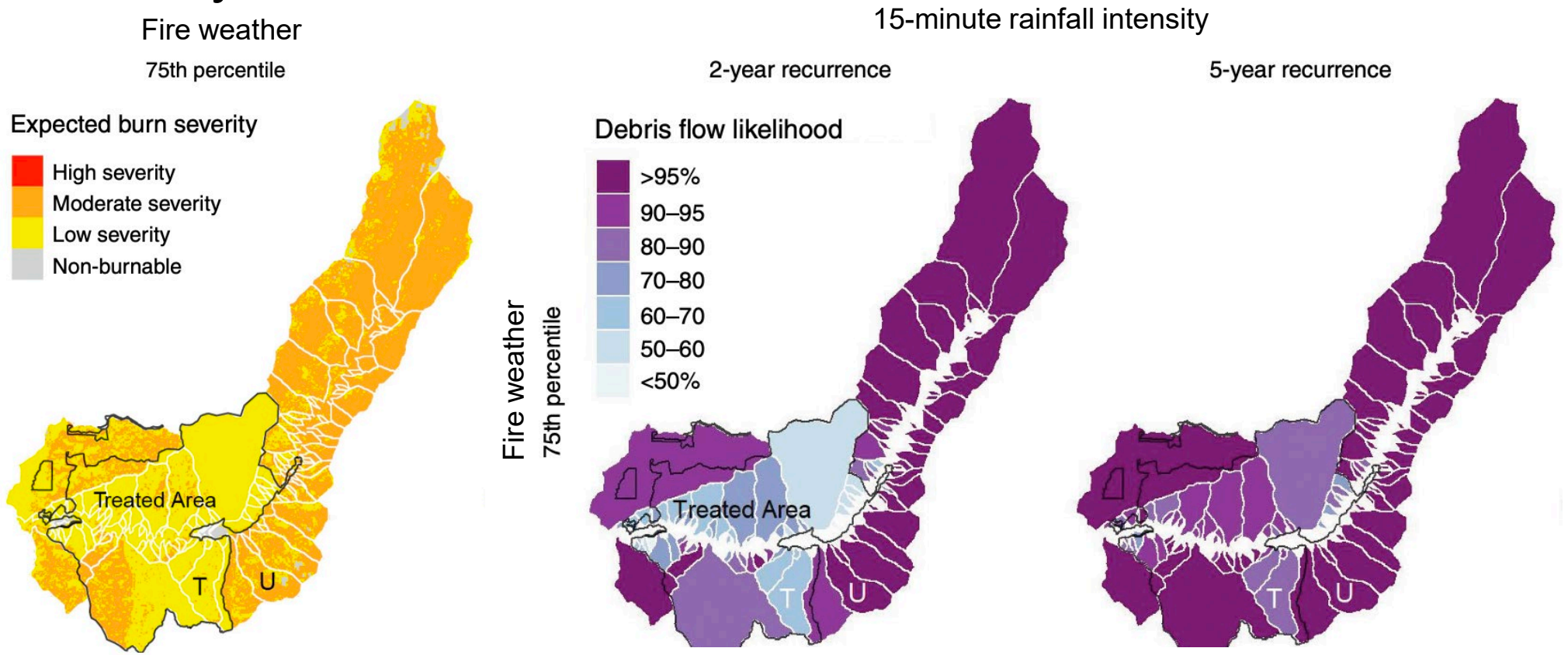
- Most fire-related loss of life and property is from post-fire floods and debris flows



McGuire, Ebel, Rengers, Vieira, & Nyman. (2024). Fire effects on geomorphic processes. *Nature reviews earth & environment*, *5*(7), 486-503.

Hazard Estimation

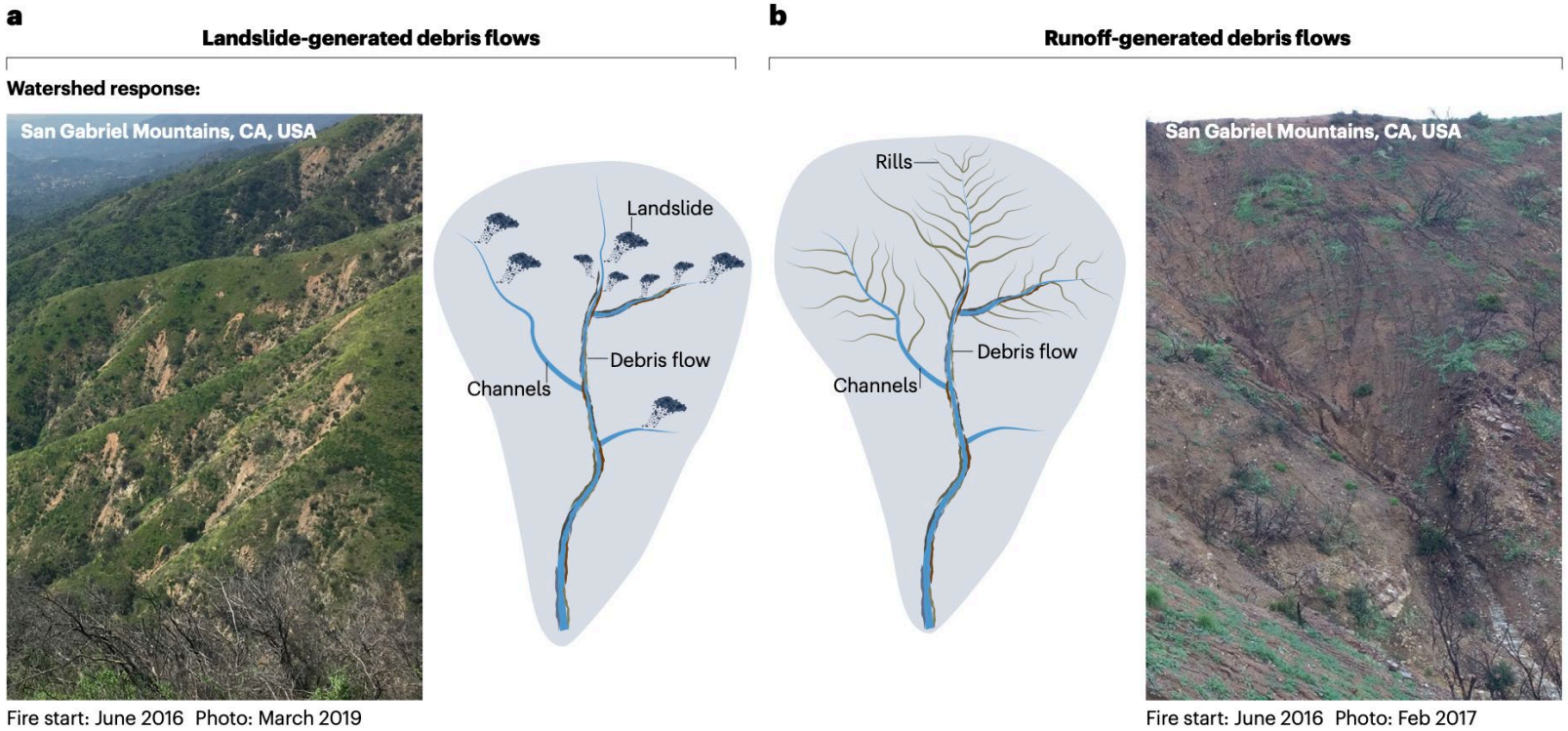
- Flooding and debris flow risk depends on fire severity and rainfall intensity.

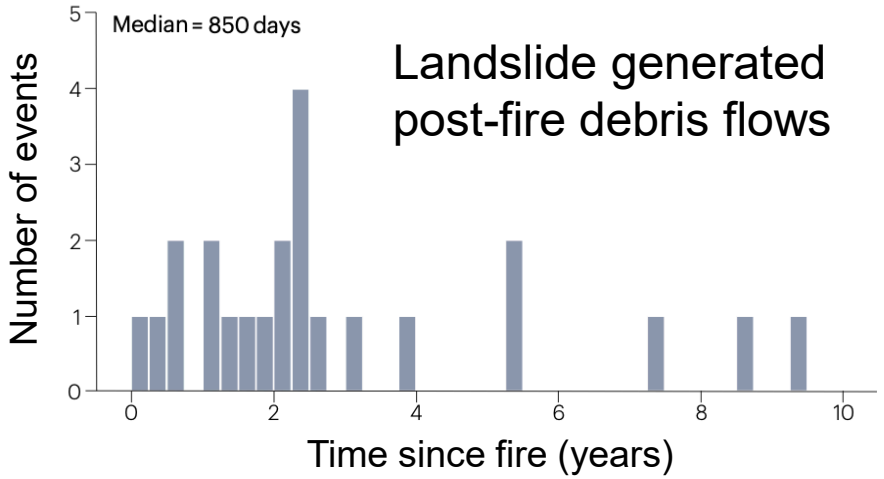


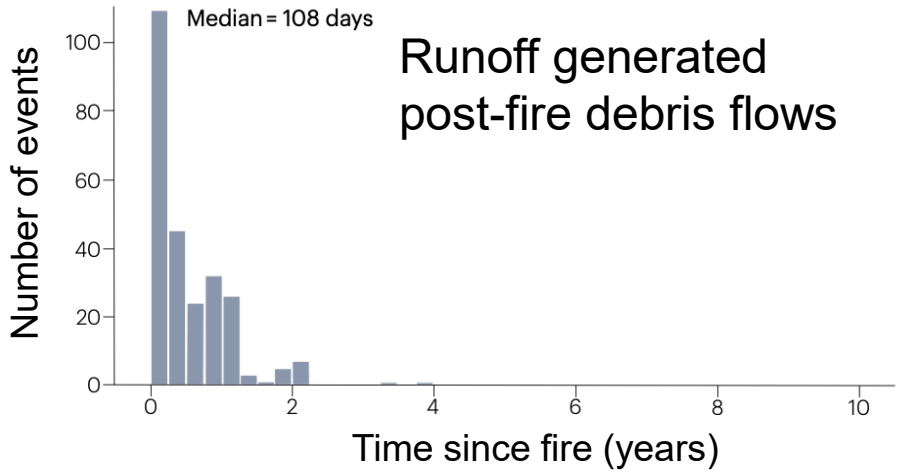
Lopez, M., Margolis, E., Tillery, A., Bassett, S., & Hook, A. (2024). Pre-fire assessment of post-fire debris-flow hazards in the Santa Fe Municipal Watershed. *International Journal of Wildland Fire*, *33*(9).

Risk Duration

- Debris flows typically occur within two years of the fire
- Some landslide-triggered debris flows can occur beyond this typical window





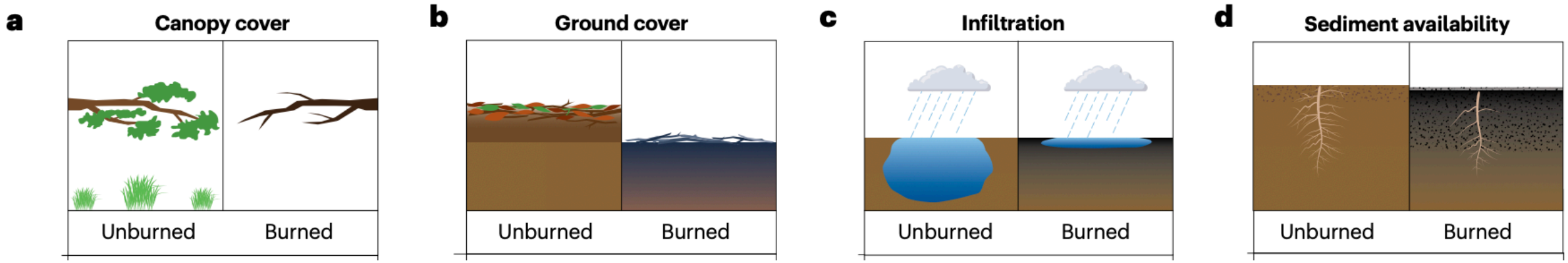


McGuire et al. (2024). *Nature reviews.*

Drivers of post-fire flood risk

- Counteracting the mechanisms that drive enhanced runoff after a fire is difficult
- There are trade-offs in effectiveness and cost between on-the-hillslope treatments and in-the-channel treatments

Post-fire changes that drive flood risk



McGuire et al. (2024). *Nature reviews.*

Post-fire management actions

- On the Hillslope

Silt fences and mulching

Robichaud, Lewis, Wagenbrenner, Ashmun, & Brown. (2013). Post-fire mulching for runoff and erosion mitigation: Part I: Effectiveness at reducing hillslope erosion rates. *Catena*, *105*, 75-92.

Contour felling

Bautista, Robichaud, & Bladé. (2009). Post-fire mulching. In *Fire effects on soils and restoration strategies*(pp. 353-372). CRC press.

Post-fire management actions

- In the Channels

Zuni bowls

Image credit: Daniel Cadol

Log mats

Image credit: Daniel Cadol

Log checks

Image credit: Daniel Cadol

Pre-fire management actions

- The scale of post-fire work is difficult, especially in the potentially short time between fire and first rain
- Often it is more cost-effective to focus on pre-fire thinning

Image credit: Luis Sanchez Saturno | Santa Fe New Mexican

Connect with the TN

Transformation Network website:
https://transformimw.unm.edu/

Instagram: https://www.instagram.com/transformimw/

Facebook: https://www.facebook.com/TransformIMW

Twitter/X: https://twitter.com/TransformIMW

Image credit: Philip Higuera, University of Montana