

AN OPEN DATA STATEMENT BY THE CLIMATE & WILDFIRE INSTITUTE



ABOUT THE CLIMATE & WILDFIRE INSTITUTE

The Climate & Wildfire Institute (CWI) is an independent nonprofit organization that accelerates solutions to climate and wildfire challenges. CWI works to speed new solutions to the frontlines and to decision-makers by building a consortium of collaborative partnerships. As a boundary organization, we operate at the intersections of research, policy, and practice, facilitating collaboration and innovation across sectors to advance climate and wildfire resilience within the Western United States.

CWI's initiatives are founded on the need to increase the pace and scale of projects that build landscape resilience while reducing the impacts of catastrophic wildfires. To that end, we support and facilitate greater information sharing, primarily through open-source data integration, which can drive faster decision making and policy creation and, thus, implementation. Our work in the climate and wildfire data space bridges field-responsive data needs with research, technology, and policy applications. We aim to co-develop and curate wildfire-related data in ways that are ethical, transparent, and community-driven. We do this, in part, by supporting open, accessible data for decision-makers.

WHY OPEN DATA MATTERS

Across the U.S., the intensifying wildfire crisis demands a more strategic, integrated approach to how data is generated, shared, and used. While local, state, federal, Tribal, and private investments have led to important advancements in wildfire modeling,¹ early warning systems,² and mitigation technologies³ (e.g., robotics, decision-support tools, imagery), persistent gaps and fragmentation in our information infrastructure continue to limit progress. Critical datasets remain missing or inaccessible, predictive tools often fail to reflect contemporary fire behavior (e.g., fire spread in heavy wildland fuels⁴), and efforts to integrate data across diverse landscapes, from wildlands and working lands to the wildland-urban interface (WUI) and urban centers, are still limited in scope and scale.⁵

To meet the urgency and complexity of this challenge, we must accelerate the development of a trusted, inclusive, and interoperable data ecosystem.⁶ Timely, accurate, and accessible information is foundational to planning for fire-resilient communities, protecting public health, and sustaining ecosystem integrity. Meanwhile, historical and ongoing challenges, such as fragmented data systems, uneven access, and insufficient governance, have disproportionately impacted frontline communities, Tribal Nations, and local jurisdictions that are often closest to the threat and furthest from the resources needed to respond.

Persistent challenges facing data systems at multiple scales include:

- Gaps in critical data related to forest health, smoke exposure, infrastructure vulnerability, and cultural fire practices.
- Inconsistent standards and siloed systems across agencies, sectors, and geographies.
- Limited accessibility of relevant data for Tribes, rural communities, and under-resourced local organizations.
- Delays in the availability of key datasets during emergencies and post-fire recovery.
- A lack of shared governance and ethical frameworks for managing culturally sensitive or community-held data.

As Western states and regions advance goals around climate adaptation, innovative policy and administrative solutions, cross-jurisdictional collaboration, and Indigenous leadership will be key to unlocking the enabling conditions for a fully functional, open, and equitable data ecosystem.⁷ Achieving wildfire resilience at scale will require coordinated long-term investment in data infrastructure, greater transparency and usability, and inclusive support for innovation across communities, agencies, and Tribal Nations. This also means aligning with the broader open science movement to integrate open data with transparent methods, reproducible workflows, and open-source decision-support tools. Shifting to a more transparent and collaborative scientific process will ensure that publicly funded wildfire research and decision-support systems are trusted, adaptable, and consistently improving.⁸

The Climate & Wildfire Institute is committed to supporting this shift, ensuring that data becomes a tool for empowerment, not exclusion, in shaping a fire-adapted future for the West.

WHAT IS 'OPEN DATA'?

Open data refers to data that is available, accessible, usable by anyone, and maintained for public benefit while protecting privacy, sovereignty, and safeguarding against unethical use.

In the wildfire and climate resilience context, open data includes centralized, cross-sector, and intergovernmental datasets that are hosted and managed as a public good. These may encompass wildfire detection, risk modeling, weather, and climate data, fuels and treatment information, burned area mapping, smoke impacts, and workforce or resource availability. Such data and tools support decision-making across agencies, communities, and the public, and as such should be freely available. When paired with open science practices, this trusted information is also used to define, analyze, and interpret real-world conditions, enabling applied research and driving innovation to address global challenges.

Concurrently, open data can produce unintended consequences if not carefully governed. Misuse, such as applying data outside its intended purpose, undermining Tribal sovereignty, or exploiting sensitive information, can lead to inequities or privacy breaches. These risks underscore the need for strong guardrails to ensure that open data is used responsibly, ethically, and for the public good.

Open data requires active governance. Building and sustaining effective open data systems⁹ involves regular oversight, maintenance, and innovation. This work depends on coordinated contributions from the private sector, government agencies, Tribal and community partners, academia, and NGOs, each playing a vital role in ensuring that open data is freely available, reliable, equitable, and impactful.

CWI'S VISION FOR OPEN DATA

- Open data practices are inclusive, transparent, and driven by community needs.
- Tribal data sovereignty, privacy, and consent are foundational to ethical data governance.
- Cross-sector and public-private collaborations overcome shared data challenges and unlock new opportunities.
- Interoperable systems that prioritize timeliness, quality, and usability are critical to a responsive wildfire data ecosystem.
- Communities are equipped and empowered to use data for adaptive planning, preparedness, and recovery.

CWI'S OPEN DATA PRINCIPLES

Transparency, Accessibility, & Equity

- Ensure data tools and platforms are accessible and understandable to underserved, rural, and/or frontline communities.
- Enable open access to non-sensitive, non-proprietary datasets that advance wildfire resilience and are structured for rapid use in operational contexts.
- Require transparency not only in data access but also in data intent and use.
- Track inclusivity metrics that monitor who uses data, for what purpose, and where access barriers remain. Establish feedback loops to refine tools and ensure equity in practice.

Respect for Sovereignty

- Uphold Indigenous data sovereignty principles to ensure Indigenous communities own, control, access, and steward their data.
- Never publish or use Indigenous or community-held data without their free, prior, and informed consent (respecting that free, prior, and informed consent is an iterative process that can be withdrawn at any time).

Data Stewardship & Governance

- Promote responsible use, curation, and attribution of data.
- Align systems, incentives, and shared frameworks across boundaries and sectors for effective data use and stewardship.
- Ensure roles and responsibilities for data stewardship are well understood, with consistent funding and regular maintenance to sustain datasets over time and ensure continued relevance.
- Promote nimble governance and upkeep to enable innovation and limit administrative barriers to shared decision-making.
- Appropriate entities maintain metadata and provenance to ensure trust and scientific integrity.

Enable End-User Adoption: Translate, Educate, and Advocate

- Advocate for standardized data sets and vocabularies, in particular to enable AI-readiness.
- Close the implementation gap by aligning science, tools, and centering end-user needs.
- Provide appropriate context and training opportunities so that end-users are equipped with the necessary knowledge and skillsets to leverage data into action.

COLLABORATING FOR OPEN INNOVATION

CWI operates as a collaborative consortium, intentionally designed to bridge the gaps between data producers, data users, and decision makers. Recognizing that no single entity can meet the scale or complexity of wildfire resilience alone, CWI convenes cross-sector partners to surface shared data needs, co-develop solutions, and ensure that innovation is grounded in real-world application. Through its consortium model, CWI facilitates ongoing dialogue across academia, government, Tribal Nations, industry, and civil society, supporting trusted community platforms like the Wildfire Science & Technology Commons with practical, real-world context and prioritization. By providing technical guidance, fostering inclusive partnerships, and showcasing actionable case studies, CWI helps turn open data principles into practical tools and decision-support systems that work for communities, managers, and policymakers alike.

THE NEED FOR A CONSORTIUM MODEL

CWI's consortium model for open wildfire data and technology considers the relative strengths and limitations of the diverse entities that shape the sector as a whole. By convening these groups in a consortium, strengths are aligned, and another's capacity addresses limitations, ensuring that cross-cutting needs are collectively addressed.

- Universities bring innovation and a culture of sharing information, but can have competing research and academic priorities, and are generally not structured for long-term management of data products.
- Government agencies bring essential policy expertise, jurisdictional authority, and command resources, but bureaucratic processes and politics can be challenging.
- For-profit companies bring innovation, operational expertise, and capital, but their business model often runs counter to data sharing and open science, and is largely driven by market forces, rather than the public good.
- Non-profits bring responsiveness and commitment to the public good, often the most nimble in responding to public need, but resources and sustainability can be challenging for small non-profits, and larger ones can be as bureaucratic as the structures listed above.
- Civil society and the public provide critical input on pressing wildfire data and technology priorities as wildfire-affected community members and potential end users.

BUILDING A TRUSTED AND INCLUSIVE WILDFIRE DATA FUTURE

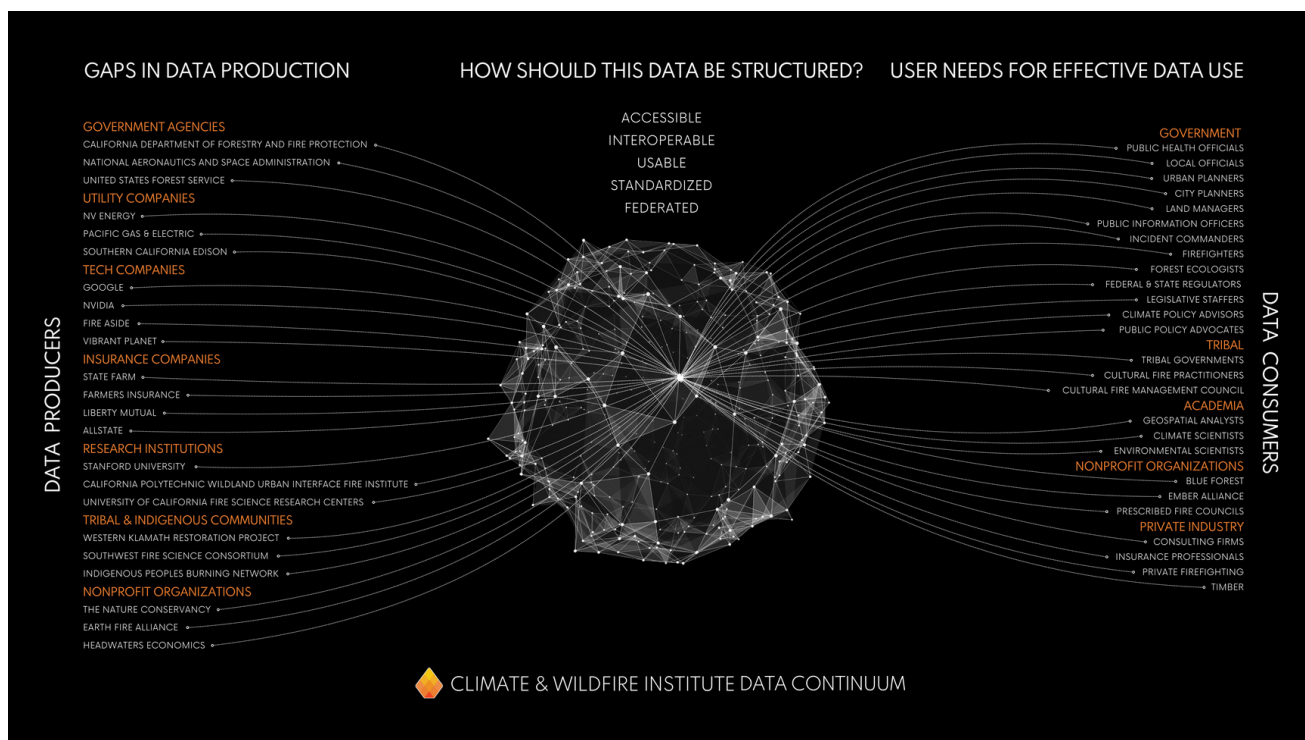
CWI believes that climate and wildfire resilience requires data and science that is accessible, actionable, equitable, and rooted in trust to meet the scale of the challenges facing our landscapes and communities. Open data sustained with long-term public investment and meaningful cross-sector collaboration will improve wildfire outcomes by providing end-users with the centralized governance and shared resources needed for effective use. We invite Tribes, government agencies, researchers, non-profit and community-based organizations, land stewards, private sector innovators, and the public to join together in co-creating a more open and inclusive data ecosystem. Your insights, priorities, and lived experience are essential to shaping data practices that reflect diverse realities and lead to better outcomes for people and places.

Working towards an open data future, together we can:

- Close data gaps that hinder timely and just climate and wildfire response;
- Advance policy solutions in support of fully interoperable and well-supported open data ecosystems;
- Uplift community-led solutions and knowledge systems;
- Ensure ethical use and governance of sensitive and cultural data; and
- Inform, refine, and innovate on tools and platforms that serve the public good.

Partner with CWI to pilot data-driven innovations, shape convenings, share expertise, and support open, interoperable, and respectful data infrastructure for a fire-resilient future.

For more information, contact Sarah Caldwell, Deputy Director of Collaborative Programs, at scaldwell@climateandwildfire.org.



This data continuum graphic was developed for CWI's 2025 Convening: Wildfire Data Workshop to provide a glimpse into the producers, consumers, gaps, and user needs of the wildfire data landscape.

ENDNOTES

- ¹ [A generalized wildfire containment algorithm](#)
- ² [A Review of Technologies for the Early Detection of Wildfires](#)
- ³ [New computationally efficient model will 'tame' fire](#)
- ⁴ [Mass fire behavior created by extensive tree mortality and high tree density not predicted by operational fire behavior models in the southern Sierra Nevada](#)
- ⁵ [Towards an Integrated Cyberinfrastructure for Scalable Data-driven Monitoring, Dynamic Prediction and Resilience of Wildfires](#)
- ⁶ [Integrated data could augment resilience Wildfires: Opportunity for restoration?](#)
- ⁷ [Indigenous Fire Data Sovereignty: Applying Indigenous Data Sovereignty Principles to Fire Research](#)
- ⁸ [Open Science at NASA](#)
- ⁹ [Putting Data To Work](#)