Traditional Ecological Knowledge

Engaging with Indigenous Peoples in Braiding TEK and Western Science

North Central Climate Adaptation Science Center | University of Colorado Boulder

Research and synthesis by Phurwa Dondrub. Storymap by Hailey Robe. With contributions from Jane Wolken, Tony Ciocco, Heather Yocum, and James Rattling Leaf, Sr.

[Cover image: low-angle shot of a forest, looking up at the bright sky surrounded by conifers]

Introduction

[Image: a rocky foreground with bright green, mossy plants; a sunset over mountains in the background.]

There are growing calls to include Traditional Ecological Knowledge (TEK) along with Western science to inform climate change adaptation. But how can climate, ecological, and social scientists do so equitably and in partnership with Tribal communities?

[Image: Secretary of the Interior Deb Haaland, at the Avi Lwa Ame National Monument in Nevada, meets people dressed in traditional clothes.]

The goal of this storymap, based on work done by Phurwa Dondrub as a NC CASC Graduate Research Assistant in 2021, is **to provide a resource for scientists and managers interested in partnering with Tribal partners and communities**. More specifically, this storymap aims to define TEK and to provide guidance on best practices for braiding Western science and TEK in order to more fully understand the climate, ecological and societal impacts of climate change, and to support Tribal climate adaptation needs. While all Indigenous cultures have their own Traditional Ecological Knowledge, information regarding data sovereignty and collaboration in this resource is most specific to those living on the land now known as the United States.

Ultimately, the most equitable partnerships will form when TEK is considered under an anti-colonial framework of justice, where partners respect cultural context and governance value of the knowledge, and recognize and respect multiple ways of knowing. This will allow partnerships based on equity, respect, and mutual understanding.

[Image: green grass and Ponderosa pines make up the foreground of this image with the Boulder Flatirons in the background under a cloudy sky.]

The North Central Climate Adaptation Science Center (NC CASC) fosters innovative and applied research in support of Tribal, federal, state and local natural resource management and decision-making. Partnerships with Tribal nations in the North Central region and beyond are unique in that Indigenous peoples have deep relationships to the land; the NC CASC recognizes the importance and value of Traditional Ecological Knowledge in addressing the climate, ecological, and societal impacts of climate change.

***This page is intended to be a living resource** that will be updated as the NC CASC continues to learn from and support underserved communities to address their climate adaptation needs.*

Traditional Ecological Knowledge

Traditional Ecological Knowledge (TEK) refers to "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment" (3).

Traditional Ecological Knowledge or Indigenous Knowledge? For the purposes of this resource, the phrases "Traditional Ecological Knowledge" and "Indigenous Knowledge" will be used interchangeably, as they both refer to "local knowledge of the land;" however, there are differences between the two in that TEK refers more directly to "understandings in ecology and resource management" (9).

There are five interconnected and mutually informing faces of Traditional Ecological Knowledge that can be used in co-management, based around cosmology (above) (15). Non-Natives tend to understand and utilize empirical observations - labeled in the diagram as "Factual Observations" - management systems, and past and current land uses; however, all facets must be acknowledged in order to have a complete picture of TEK (15).

[Image: five icons connected by lines surrounding central icon of three stars, labeled "Cosmology." Other icons are a hand and heart labeled "Ethics and Values," mountains labeled "Past and Current Land Uses," outlines of people labeled "Culture and Identity," a clipboard labeled "Factual Observations," and five hands reaching together labeled "Management Systems."]

TEK consists of dynamic systems of knowledge that are made up by embodied, place-based, and process-oriented ways of life which have a special value to Indigenous planning efforts, their collective flourishing, and the pursuit of self-determination (16). TEK is a continuous relationship with the environment (16), not a stagnant or historic knowledge about "waning ways of life" (24). Any efforts to integrate TEK into Western scientific systems must understand this fundamental concept in order to respectfully relate to Tribal partners or Indigenous communities.

What does Indigenous Knowledge do for Indigenous Peoples?
Based on Kyle Whyte's (2018) book chapter of the same title.

[Image: Secretary of the Interior Deb Haaland meets with rights holders and stakeholders in the forest.]

When Indigenous Knowledge is valued for its role in supplementing scientific data, Indigenous people can access improved, usable science. But when Indigenous Knowledge is valued for its governance role, it can enhance Indigenous capacities for resurgence and collective continuance.

For Indigenous Peoples, Indigenous Knowledge therefore should enable them to:

1. Advance the past, present, and future wellbeing of Indigenous persons, families, communities, and nations;
2. Protect Indigenous Knowledge sovereignty, or the internal capacity to cultivate, transmit, and exercise Indigenous Knowledge;
3. Guide scientific research, rather than being led by Western science, in the process of saving and sharing Indigenous Knowledge; and
4. Define what Indigenous Knowledge is and how it can be shared (24).

Any engagement with TEK should follow these four guidelines to ensure interactions with Indigenous communities are equitable, respectful, and helpful.

[Image: Grand Teton National Park. Mountains far away in background, with yellow, red/purple, and brown grasses in the foreground. Conifers to the left side of the image. Small streams run through the grasses.]

Power Dynamics
In any collaboration, it is important to be conscious of power imbalances that may result from historic and present discrimination, colonialism, or marginalization. These power imbalances may “manifest in a number of ways, including but not limited to:

- Lack of equity in weight of knowledge types and fact claims;
- [TEK] holders not getting to reap the benefit of sharing their knowledge;
- [TEK] holders not receiving real gratitude from scientists (little to no positive feedback); and
- [TEK] holders not contributing in a real and meaningful way to the application of research” (6).

To best support Indigenous voices and initiatives, Western scientists must be aware of these potential power imbalances, how they can present during collaborations with Indigenous communities, and the potential ramifications of these imbalances. Power dynamics are also inherently at play when TEK is integrated and presented in a Western framework due to the framing of TEK in Western legal systems.

Legal Aspects of TEK

[Image: Photo from the Cascades. Mountains silhouetted in background under bright orange sunset. Conifers in the foreground with rocks and leafy vegetation.]

To fully understand the history of Western engagement with TEK, it is important to understand how TEK is represented in the legal system. (As a reminder, this resource is most relevant to those under the United States legal system).

[Image: Silhouettes of mountain foothills in the background, with a blue patterned text box that reads "FAIR" and "CARE." "FAIR" stands for "Findable, Accessible, Interoperable, and Reusable," while "CARE" stands for "Collective benefit, Authority to control, Responsibility, and Ethics." This image is captioned, "'FAIR' and 'CARE' principles for scientific data management and stewardship, from Global Indigenous Data Alliance."]

- **Intellectual Property Rights**: Indigenous people face the dilemma of whether or not, and how, to share their knowledge given histories of appropriation and the persistent risks associated with it[12]. This dilemma could be overcome by an exchange of knowledge through a governance mechanism that treats traditional knowledge holders as members of sovereign Tribal governments (as recognized by national and international law on Indigenous peoples), not just a stakeholder group (12).
    - *"Scientists… may not be dealing with knowledge and resources held by one stakeholder among many whose rights can be balanced, but with knowledge held collectively by a political entity that has the right of self-determination and self-governance" (12).*
    - **Best Practices**: The CARE principles provide a framework for equitable Indigenous data governance that can (and should) be applied to other collaborations between Indigenous peoples and Western scientists.

[Image: The Oregon coastline under a hazy, pink-purple sky. Choppy waves, rocky foreground and outcrops, conifers.]

- **Freedom of Expression Act**: The Freedom of Expression Act, which favors an individualistic framework and specific discourse of voluntary guidelines, protocols, partnerships and agreement, offers impediments to sharing TEK as they are held within specific social arrangements that have no equivalence in legal systems (12). Hence, respectful partnerships may be difficult without reforms in legal systems that take Indigenous ways of knowing and being into account.
- **Copyright Laws**: Copyright laws treat traditional knowledge as being in the public domain, which has the adverse effect of stripping away the beliefs and customary laws associated with it (12). The fair use exemptions that copyright laws grant for research, which although essential for academic research functionality, might be ethically

problematic for Indigenous Knowledge because they negate the cosmologies or lifeways under which traditional knowledge are embedded.

[Image: People wearing brightly-colored traditional clothes dance at the Avi Kwa Ame National Monument.]

- **Takeaways**:
    - Respectful partnership may be difficult without reforms in legal systems that take Indigenous ways of knowing and being into account.
    - Moreover, the sharing of Indigenous Knowledge should not just be governed by frameworks of property rights, as this renders Indigenous Knowledge as secular, open, and in the public domain (12).
    - Instead, Indigenous Knowledge should be protected for its value for Indigenous governance that advance Indigenous collective continuance (24).

Braiding Knowledges: Equitable Engagement with Traditional Ecological Knowledge

How are Traditional Ecological Knowledge and Western science integrated, and how do we collect, exchange, and communicate knowledge?

"Braiding Knowledges" refers to "bring[ing] multiple ways of knowing together in a respectful way that does not interfere with the qualities and processes of each knowledge system" (23). The following section discusses ways to braid Indigenous ways of knowing with Western science while acknowledging, respecting, and learning from both perspectives.

Working Equitably with Indigenous Partners
When Western scientists, governments, or managers interact with TEK, there is a tendency to apply TEK to Western science in a way that does not value Indigenous ways of knowing or systems of governance. The following points provide guidance on how to respectfully and equitably engage with Indigenous partners and braid TEK with Western science:

[Image: Robin Wall Kimmerer points out moss on a log in a dense, green forest in upstate New York to three other people.]

1. Complementarity of TEK and Western Science

    "I have Bruce King's portrait of Skywoman, Moment in Flight*, hanging in my lab. Floating to the earth with her handful of seeds and flowers, she looks down on my microscopes and data loggers. It might seem an odd juxtaposition, but to me she belongs there. As a writer, a scientist, and a carrier of Skywoman's story, I sit at the feet of my elder teachers listening for their songs."*
    Quote from Robin Wall Kimmerer, Braiding Sweetgrass (17)

TEK is radically different from Western science because it emphasizes relationships in addition to empirical observations (7). TEK is made up of multigenerational "deep spatial knowledge," focusing on relationality and sensitivity to small-scale interactional changes (25). TEK can complement Western science by providing local observations and historical information that can fill gaps in scientific data, improve scientific research, and facilitate environmental management and problem-solving; however, the potential complementarity should expand beyond "filling gaps." A deeper braiding of TEK and Western Science can profoundly contribute to our understanding of climate change by viewing it as an interconnected process rather than isolated data.

Best Practices: Move beyond the dichotomy of Indigenous vs. Scientific knowledge

Indigenous and scientific knowledge are not on opposite sides of a spectrum, but are two interconnected ways of looking at the world. Western science is not more substantiated or "proven" than TEK. Any productive engagement with Indigenous Knowledge should move beyond the dichotomy of Indigenous vs. scientific knowledge and advance greater autonomy for Indigenous peoples themselves (1).

Answer the following questions to ensure equitable partnership with Indigenous communities (18):

- Is there a Risk-Benefit Analysis?
- Is Free, Prior, and Informed Consent followed?
- What are the procedural safeguards for accessing Traditional Knowledge?

Best Practices: Make Room and Move Over (18).

Non-Indigenous actors must "make both substantive investment in relationships that value Indigenous ways of knowing and being - to make room - and transfer resources and authority or decision-making power to Indigenous-led projects and Indigenous research leaderships - to move over" (18).

In other words, making room and moving over means respecting Indigenous Knowledge sovereignty and self-determination, which refers to the entitlement of Indigenous peoples to practice their intellectual traditions in line with their governance processes, sovereignty, and legal orders (18).

However, even making room and moving over has its limits. As a result of European colonization, Western cultures, languages, and practices have been imposed on Indigenous communities; therefore, potential partners must take concrete and material actions to *decolonize* our institutions and systems to equitably collaborate with Indigenous communities today.

This happens through both decolonization and “Indigenization”; simply, “Indigenization can only be done by Indigenous people… but decolonization is the work of all people” (10). In other words, decolonization is the process of dismantling colonial thinking and institutions, while Indigenization is supporting initiatives designed and led by Indigenous peoples for their own communities. Successful partnerships therefore must be decolonized and Indigenized.

Best Practices: Engage in an Ethical Space Framework

An ethical space is where two different knowledge systems can come together in a place between both cultures in order to understand and communicate with one another, bringing their best intentions, practices, and knowledges together (8). Using an ethical space framework can support the “reconciliation of Indigenous and Western worldviews with the goal of helping to co-create a better future together” (13). Furthermore, an ethical space framework requires considering Respect, Relevance, Reciprocity, and Relationality at every step.

“Ethical Space can serve as an effective, equitable, and harmonious approach to making complex decisions in the realm of environmental and climate justice.” *Quote from James Rattling Leaf, Sr. (13)*

[Image: A man, Darren McGregor, beats the drum for medicine expert Perry McLeod. He is in the center of a room with wooden beams on the ceiling and a projector to the side, in the middle of a circle of people.]

2. Documenting TEK

Indigenous Knowledge is often framed through the narratives of loss or disappearance due to the inevitable and ostensibly incompatible force of modernization (19, 1); however, this narrative of loss and salvation excludes the impact of colonialism on Indigenous people, land, and knowledge.

TEK is an ongoing process that takes place in the culture it came from and lives within knowledge holders; it cannot be separated from the individuals, communities, or environment. Rather than “saving” disappearing TEK by collecting, documenting, and storing TEK in ex-situ archives - which decontextualizes and disembodies the knowledge and fundamentally alters it - support Tribes and knowledge holders in carrying out their own documentation in a form that works best for them.

Best Practices: Support Tribal members themselves in carrying out documentation (1).

Tribal members themselves must be supported to carry out documentation because, “even when treated with the utmost respect, documentation and use of [TEK] outside of the control of the knowledge holder(s) creates an innate power imbalance that undermines that advancement of [TEK] holders’ rights for self-determination” (6).

Therefore, instead of attempting to interview Indigenous Knowledge holders to "collect" knowledge and documenting it elsewhere for use in Western science, we must "reorient and reverse state policies to permit members of threatened populations to determine their own future and... facilitate in-situ preservation of Indigenous Knowledges” (1).

The appropriate thing to do is to support Tribal members in carrying out documentation of TEK in whichever way is meaningful to them, and to support systems that respect and promote Indigenous self-determination (1).

Best Practices: Support Indigenous authorship

Most national and international synthesis efforts on climate change have been *about* Indigenous peoples rather than *by* them. There has been a recent shift in this pattern, with more agencies making an effort to include Indigenous scholars, authors, and speakers (for example, NC CASC’s James Rattling Leaf, Sr. was an author on the recent NCA5 Indigenous Peoples chapter) (7). Continuing to support Indigenous peoples in authoring their own stories is critical in addressing the equity gap between TEK and Western science.

[Image: water and sandy soil in the foreground with bright green coniferous trees. Tall, rocky cliffs in the background under blue cloudy sky.]

3. Indigenous People are rights holders, not stakeholders

It is imperative to establish partnership between Tribal and non-Tribal entities to design climate mitigation and adaptation strategies.

Most efforts to integrate TEK into scientific research and environmental management view Indigenous partners as "stakeholders," not self-determining nations or rights holders (18). By treating them as stakeholders rather than rights holders, Indigenous cultural protocols, sovereignty, and land-based practices are often ignored.

“Tribes are sovereigns, not stakeholders.”
Quote from Whyte, 2013

"Therefore, exchange of knowledge should occur through a governance mechanism that treats Traditional Knowledge holders as members of sovereign Tribal governments, not just a stakeholder group."
Quote from Hardison and Williams, 2013

Best Practices: Promote "Indigenuity" and Indigenous leadership for good relations (25).

Indigenuity refers to the suite of TEK and traditional practices that uphold the standard of maintaining good relationships in the complex and diverse life-systems of this planet[25]:

> *"The Indigenous Peoples or the First Nations of America must not only assume the leadership roles in addressing climate change adaptation strategies on their present colonially-determined reservations, but for their extensive ancestral territorial lands... in order to maintain good relationships with our 'other-than-human' natural relatives" (25).*
> Quote from Daniel Wildcat, 2013

Instead of just including Indigenous people as stakeholders, we must promote Indigenous-led projects, or partner with them as rights holders, leaders, and sovereigns.

[Image: a golden eagle perched on a tree branch.]

4. Ways of Knowing

The inclusion of TEK in Western science often happens within Western frameworks that privilege Western ways of knowing. This is made clear by terminologies Western scientists use to describe Indigenous Knowledge, such as "information, data, intellectual property, public domain, secular and open knowledge" (11).

In contrast, Indigenous people may use different terms, like "guardianship, cosmovision, customary law, reciprocity, kinship, [and] relationality" (11).

TEK should not be framed within Western scientific knowledge; it is a way of knowing in and of itself. Viewing TEK from Western frameworks also filters out spiritual and governance contexts within which TEK is embedded. Therefore, Western scientists must understand the linguistic-cultural contexts, expressions, and governance systems that drive Indigenous Knowledge, and take these into account rather than perpetuating Western scientific frameworks (4).

For example, in the context of Arctic Indigenous Peoples, TEK and Climate change in the Arctic perpetuates "colonial assumptions, knowledge, and practices" in at least three specific ways (5):

1. Delimiting the Indigenous to the "local" and "traditional";
2. Framing climate change as anti/apolitical and largely a field of technical intervention - in other words, dismissing the inherently political aspects of climate change in favor of focusing on technical aspects; and

3. Obscuring or excluding the broader colonial political-economic contexts that have produced and limited Indigenous Peoples' ability to respond to climate change (5).

Best Practices: Recognize multiple ways of knowing

One of the most successful uses of TEK by scientists and Indigenous scholars has been through a multi-evidence based approach that treats TEK as an equally valid form of knowledge to Western knowledge and frameworks.

For example, local ecological knowledge of harvesters in the Himalaya has been combined with ecological modeling to come to a more complete understanding of the causes of the decline of caterpillar fungus (14).

Indigenous ways of knowing and governance systems must be emphasized as well; this work helps to correct the misconception of a gap between Western knowledge and TEK. They are not on opposite ends of a spectrum, but are two interconnected ways of looking at the world.

Best Practices: Respect governance value

Governance value: an integral component of collective self-determination and of how Indigenous communities and nations plan for the future (24).

The integration of TEK in adaptation and management practices should not just treat TEK as observational data, but should also respect the governance value of TEK.

The appropriate form of knowledge exchange should involve scientists learning about the governance value of Indigenous Knowledge, and reflecting upon whether and how their initiatives and frameworks advance the ideologies, law, and governance systems of Indigenous communities.

[Image: A bright green, grassy meadow in the foreground with sweetgrass taking up the majority of the photo. Dark green conifers and light blue mountains in the background.]

5. Using a Framework of Justice

To support a framework of justice when working with Indigenous communities, engage with diverse Indigenous people and recognize their institutions and systems of governance. The majority of engagements with TEK and climate change do not adequately recognize Indigenous institutions and people (12). This occurs because of the assumption that TEK and data can be extracted by detaching them from the knowledge holders as well as from the geographic and cultural context of its production.

Furthermore, acknowledge the history of colonialism as well as its continuing systematic impacts today; this cannot be ignored, excluded, or erased.

Best Practices: Integrate forward-looking justice frameworks (24).

Adaptation programs should advance **Tribal collective continuance**, which refers to a Tribe's ability to fight colonial hardship and foster robust living (24).

- Respectful partnering and collaboration between Indigenous peoples and non-Indigenous governments, scientists, and organizations is created by forming a "social and cultural climate change," or fostering a relationship based on justice and equity (24).

This approach should focus on active strategies to dismantle colonial thinking and recover Indigenous intellectual traditions, Indigenous self-determination, and control over their territories (20).

Best Practices: Respect Indigenous ethical guidelines and protocols for research

How do we remain accountable in our engagements with TEK and the knowledge holders? (18) This refers to not just past injustices, but ensuring the fair and equitable engagement with TEK today.

Many Tribal communities have their own ethical guidelines and protocols for research, such as Tribal IRBs (Institutional Review Boards) (2). Identify and respect them. When they don't have ethical guidelines, develop or follow guidelines that protect data sovereignty, and respect Indigenous cultural contexts and governance mechanisms. For example, see the University of Arizona's Research Engagement Guidelines.

As another example, the Tribal Climate Adaptation Menu provides a framework for incorporating Indigenous Knowledge, language, culture, and history into climate adaptation planning processes and natural resource management. It contains **guiding principles for interacting with Tribes and culturally appropriate actions**, such as[21]:

1. Developing a language of parity between human and nonhuman relationships;
2. Recognizing histories of erasure and revitalizing Tribal language and culture;
3. Considering specific cultural paradigms, such as offering tobacco in Anishinaabe culture;
4. Proper community engagement; and
5. Recognizing colonial histories including the violation of treaty rights (21).

Based on this information, here are **five approaches for collaboration and partnership between Indigenous peoples and scientists or governments** (7).

[Image: five circles branching off from a central point, each containing information on approaches for collaboration. They read: "Create an environment of mutual respect for multiple ways of knowing," "Involve communities in designing climate change solutions," "Directly

support communities in achieving their adaptation goals," "Foster regional and international networking to share climate solutions," and "Promote partnerships that foster effective climate solutions from both Western and Indigenous perspectives."]

Moving Forward

How can we equitably work with Indigenous peoples to understand and address climate change?

Ultimately, the most equitable partnerships will form when TEK is considered under an anti-colonial framework of justice, where partners respect context and governance value of the knowledge, and recognize and respect multiple ways of knowing. This will allow partnerships based on equity, respect, and mutual understanding. But, to truly collaborate with Indigenous communities, we should consider the approach of knowledge coevolution.

***Knowledge coevolution**: a solutions-oriented approach bringing "knowledge sources and types together to address a defined problem" (knowledge coproduction) put into "the context of long-term application" by focusing on empowerment (6).*

One approach to knowledge coevolution is described by the following diagram (6):

[Image: A diagram titled "Knowledge Coevolution Framework" made up of several concentric circles. The middle circle contains the following phrases: "Trust," "Respect," "Mutual Learning," and "Open Mindedness." The next circle to the outside contains labels for Stages 1-9, which corresponds to the outermost circle, made up of arrows to show the process. Stages 1 & 2 correspond to "Identification of Reassessment of Knowledge Gaps" Stage 3 corresponds with "Knowledge Sharing." Step 4 corresponds with "Formulation of Research Questions." An arrow branches off of the circle between steps 4 and 5 to "Training and Capacity Building." Stage 5 corresponds to "Knowledge Gathering." Stage 6 corresponds to "Knowledge Unification." Three phrases on the outside of the circle are connected to Stage 6 with arrows: these phrases are "Indigenous Knowledge Categories 3&4," "Researcher/Collaborator Knowledge Categories 3&4," and "Knowledge Categories 1&2, empirical knowledge, and historical observations," referring to previously-defined terms in this paper. These categories will be defined at the end of this caption. Stage 7 corresponds to "Knowledge Interpretation," with "Knowledge Category 4" connected with another arrow. Stage 8 corresponds to "Knowledge Application." Between Stages 8 and 9, an arrow branches off the circle to "Advanced and Supported Self Determination and Co-management." Finally, Stage 9 corresponds to "Ongoing Observation and Monitoring," completing the circle.]

"Knowledge Categories 1 & 2" are "the factual knowledge from the past and empirical observations of the environment over time as experienced by individuals or reported by the community" (22). "Categories 3 & 4" refer to the "[broad-scope], encompassing societal norms and knowledge systems specific to a community" (22). Category 3 knowledge refers to Indigenous "moral and ethical values [for interacting] with the environment," while Category 4

forms the “foundation of the knowledge system… the lens through which knowledge is interpreted” (22).

In this framework, Indigenous partners are included in every step of the research process, from sharing knowledge to designing the question and methods to presenting the findings (6). Participants are urged to engage in ethical frameworks, and the emphasis is on strengthening TEK rather than changing or merging it with Western scientific methods (6). As Western institutions learn how to best engage with TEK, this process of knowledge coevolution - along with the other “Best Practices” listed in this resource - can provide a path to build, strengthen, and support relationships with Indigenous communities.

Resources

Best practices for management and science integrate Traditional Ecological Knowledge and Western science. Resources for this work include:

- Plain-text version of story map (best format for screen reader software)
- Phurwa Dondrub’s original synthesis, summary, and works cited
- Understanding TEK:
    - Carroll, C. (2015). Roots of Our Renewal: Ethnobotany and Cherokee Environmental Governance. Paperback. University of Minnesota Press. SKU: 9780816690909.
    - Kimmerer, R. W. (2015). Braiding Sweetgrass. Milkweed Editions.
    - Kimmerer, R. W. (2003). Gathering Moss: A Natural and Cultural History of Mosses. Oregon State University Press.
- Working with Tribal Partners:
    - BIA Tribal Resilience Program (USGS)
    - CARE Principles (Global Indigenous Data Alliance)
    - Chapman, J. M. & Schott, S. (2020). Knowledge coevolution: generating new understanding through bridging and strengthening distinct knowledge systems and empowering local knowledge holders. Sustainability Science, 15, 931-943. https://doi.org/10.1007/s11625-020-00781-2.
    - “Indigenous Academic Integrity” prepared by Keeta Gladue at University of Calgary. This resource specifically discusses Indigenousness in academia, but is applicable to other settings as well.
    - “Guidelines for Considering Traditional Knowledges in Climate Change Initiatives” from the Climate and Traditional Knowledges Workgroup
    - Keown, Larry D. 2010. Working in Indian Country: Building Successful Business Relationships with American Indian Tribes. Englewood, Colorado: Banyan Tree Press.
    - Research Engagement Guidelines (University of Arizona)
    - Resources for Tribal Partners (NC CASC)
    - Tribal Climate Adaptation Menu (Climate Change Response Framework)
    - Tribal Climate Leaders Program (NC CASC)

    - "Weaving Ways of Knowing: Braiding, Bridging, or Weaving Knowledge" (Weaving Ways of Knowing for the Environment).

- Other resources
    - US Climate Resilience Toolkit: Guidelines for Considering Traditional Knowledge in Climate Change Initiatives
    - The Rising Voices Center for Indigenous and Earth Sciences (aka Rising Voices) at the National Center for Atmospheric Research: https://risingvoices.ucar.edu/
        - Rising Voices is a community of practice working "to position Indigenous knowledge systems at the center of Earth science innovation, in response to extreme weather and climate change. Our Vision is to see an increasingly diverse, inclusive collaboration within Earth sciences (including atmospheric, social, biological, ecological approaches) that will drive a climate-resilient world."
    - Native Land Digital (https://native-land.ca/): a collaborative resource made to map Indigenous territories, treaties, and languages. A great resource to learn whose present, ancestral, and/or cultural land you are living on.

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