Maka Sitomniya Working Group Meeting Summary  
July 8-12, 2024

**Meeting Objectives**:

* Establish data governance: Who produces the work, who can publish, and how we protect data.
* Define outputs from this meeting and the larger Maka Sitomniya project.
* Draft a data management plan: Identify necessary data resources and security measures.
* Design a data cube template to support Tribal resilience and integrate Traditional Knowledge.
* Explore funding opportunities (e.g., NSF proposals).
* Develop a professional development plan to train Tribal members (TCUs, MS/PhD students).
* Identify how Tribal members can use and benefit from the data cube.

**Key Discussion Topics**:

1. Data Governance and Security:
   * Who manages and accesses the data cube?
   * Protecting new content derived from public data.
   * Consult CU legal resources or NARF for legal guidance.
2. Community Engagement:
   * Ensure Tribal voices shape the data cube's design and use.
   * Plan mechanisms for gathering and integrating community feedback.
3. Education and Outreach:
   * Train Tribal members and scientists via CyVerse and open-source tools (Python/R).
   * Include GitHub and data cube demos in the agenda.
4. Technical Development:
   * Identify datasets (e.g., Lakota geographic sites) and methods.
   * Design access protocols and long-term data management.

Teams:

* Tech Team: Lilly, Elisha, William, Jarrod, Brian
* Education/Outreach Team: Cami, Al
* Decision-Maker/Management Team: Phil, Elisha

**Monday Summary – Data Cube Workshop**

**Opening and Vision Setting:**

* Wocekiya – Woksape (Prayer – Wisdom): Began with smudging and a circle gathering.
* Welcome: Chelsea Nagy (ESIIL), Rachell L., and others introduced.
* Vision (Phil Two Eagle):
  + Origin of the data cube idea—focused on Tribal sovereignty and governance.
  + Importance of treaty boundaries vs. reservation boundaries, federal consultation, and building Tribal capacity.
  + Consensus-driven work rooted in Lakota philosophy and traditional knowledge (ITEK).
  + Ensure the project is Indigenous-led, with a clear, shared vision.

**Key Objectives:**

1. Data Sovereignty and Protocols:
   * Develop Tribal-specific protocols for data governance.
   * Address permission processes—when and how to ask Tribes for data use.
   * Ensure no confidential data is exposed and uphold Tribal self-determination.
2. Technical Development:
   * Build a working data cube model during the workshop.
   * Consider technical solutions: encryption, offline machines, API access.
   * Document the development process for future users.
3. Community Engagement:
   * Include Tribal perspectives at every stage.
   * Involve Tribal legal representatives and community voices in decision-making.
   * Develop informed consent agreements regarding Indigenous Knowledge sharing.
4. Long-Term Vision and Sustainability:
   * Support Tribal capacity-building through education (including potential MS/PhD tuition waivers).
   * Align work with NSF guidelines while centering Lakota cultural frameworks (e.g., canupa and Wolakota).
   * Ensure work benefits future Tribal students and researchers.

**Teams and Roles**:

* Technical/Science: Focus on coding, integration, and geospatial analysis.
* Policy/Culture/Application: Emphasize Indigenous Data Sovereignty and decision tools.
* Education/Training/Outreach: Support UX design, training, and community engagement.

**Next Steps and Action Items**:

* Build and refine the “core” Data Cube.
* Develop a clear protocol for data permissions and ownership.
* Establish communication frameworks for ongoing collaboration.
* Evaluate and document progress through daily reflections and reporting.

**Considerations**:

* Uphold Tribal sovereignty and data governance.
* Build relationships through ongoing communication and consensus.
* Ensure practical, usable outcomes that reflect Tribal priorities.

**Summary – Data Cube Planning Meeting (Tuesday)**

1. **Group Structure Proposal**:

* Break into smaller groups:
  + Tech Team: Focus on building the data cube, defining use cases, and creating analytic workflows.
  + Education/Outreach Team: Promote ethical research processes and support Native master’s and PhD students.
  + Decision-Maker/Management Team: Address intellectual property (IP) agreements and policy development.

2. Tech Team Key Points:

* Data Organization:
  + Structure data from a watershed perspective, starting with watersheds in treaty territories.
  + Incorporate Lakota terms (e.g., mni, inyan, maka).
  + Reference the Lower Brule Sioux Tribe map for place names.
* Data Categories:
  + Core categories: Water, earth, air, wildlife, imagery, climate, cultural/sacred sites.
  + Include data for legal and environmental frameworks (e.g., treaty rights, climate justice, fire management).
* Metadata Requirements:
  + Provide workflows for users (e.g., how to analyze bison habitat or hydrologic budgets).

3. Education/Outreach Team Key Points:

* Support Native graduate research and ethical data use.
* Identify funding for tribal member science scholarships.
* Develop an Environmental Data Science (EDS) workforce certificate at Tribal colleges (OLC, SBC, SGU).
* Create a code of ethics for external researchers.

4. Decision-Maker/Management Team Key Points:

* Draft intellectual property agreements affirming inherent Tribal ownership.
* Establish guidelines for defining and protecting special Tribal data (e.g., sacred sites, land data, winter counts).
* Design a Tribal-approved Data Management Plan aligned with NSF guidelines.

5. Policy and Cultural Framework:

* Statement of Inherent Ownership:
  + Assert sovereignty over data related to Tribal identity, land, and cultural knowledge.
  + Define sovereign Tribal data (sacred sites, mineral resources, biological data).
* Rights Declaration:
  + Control data collection, storage, and dissemination.
  + Demand redaction or removal of sensitive data from public records.
  + Ensure equitable benefit sharing and enforce data attribution.
  + Establish Tribal oversight for data use and access.

6. Governance and Decision-Making:

* Disputes and questions on data sovereignty must be resolved by the Oceti Sakowin Treaty Council.

7. **Open Questions**:

* Who determines data access rights and defines data guardrails?
* How to circumvent Western accreditation models while ensuring data integrity?
* How to manage non-public data and implement appropriate metadata?
* How to enforce data discretion for existing government-held Tribal data?
* What does a unified stance for Oceti Sakowin and other Tribes look like for the Supreme Court?

**Summary of Key Points:**

Cyverse and Data Management

* Data Transfer and Security: Discussed methods to transfer data from Cyverse to secure locations, including the use of Spatiotemporal Asset Catalogs (STAC) for spatial data filtering.
* Access and Sharing: Cyverse allows controlled data sharing (read-only or full access) with specific users or the public, including DOI creation for published data.
* Tools and Integration: Demonstrated workflows for integrating Cyverse with QGIS and ArcGIS, including WebDAV access and writing code for dynamic data retrieval.
* Long-term data curation: Plans to support evolving datasets through automation, while considering multi-modal datasets and machine-readability.
* Collaborations: Exploring how ESIIL interacts with Cyverse and the potential to establish local servers (e.g., physical servers on Rosebud) connected to Cyverse through federated systems.

**ESIIL and Earth Lab Collaboration**

* User Experience: Emphasis on understanding how different users might access the Data Cube, use information, and engage with workflows. A powerpoint is available to guide this process.
* Capacity Building: Focus on building internal expertise, equiping users to create solutions, and demonstrating value through tangible products.
* Hardware and Sensors: Upcoming demo of data cube use by ESIIL scientists, with ongoing work on workflow documentation.

**Policy and Legal Considerations**

* Tribal Data Sovereignty: Emphasis on developing clear guidelines for researchers who encounter sensitive Tribal data. Legal input is sought to shape a data sovereignty statement centered on Indigenous governance and the CARE principles.
* Intellectual Property: Clarified that CU owns IP created by CU employees, NSF owns outputs funded by NSF, but Tribal data remains within Tribal rights.

**Community and Next Steps**

* **Collaboration and Engagement**: Need for stronger collaboration with local Tribal IT staff, outreach to high school students, and maintaining focus on data sovereignty and cultural values.
* **Workflows and Documentation**: Prioritizing clear documentation, user-centered workflows, and assigning responsibilities for ongoing work. There is an emphasis on supporting qualitative local data and expanding to other Tribes.
* **Funding and Grants**: Identified funding opportunities (e.g., EPA Climate Resilience Support) and the need to align efforts for upcoming grant proposals.
* **Vision and Philosophy**: Rooted in Lakota cultural frameworks (Wolakota values) and focused on equiping Tribes to make informed decisions while protecting sensitive data.

**Action Items**

1. **Workflow Development**: Finalize and document workflows specific to Tribal data and user needs.
2. **Data Sovereignty Statement**: Work with legal advisors to refine a statement focused on Indigenous Knowledge governance.
3. **Community Building**: Foster stronger relationships with Tribal institutions (e.g., Rosebud IT staff) and promote local capacity development.
4. **Regular Check-Ins**: Establish ongoing meetings to maintain momentum and cohesion across teams.
5. **Grant Preparation**: Collaborate on upcoming funding proposals (e.g., OLC’s June deadline) and identify broader grant opportunities.

**Friday Summary – Half Day:**

* **Closing Reflections and Next Steps**
* Notable Event: Discussed Treaty Conference in Rapid City (December).

**Action Items and Responsibilities:**

1. **Communication Plan**
   * Leads: Phil, Jim S., James RL, Robin, Bob N.
2. **Data Sovereignty Statement**
   * Development of a clear policy focused on Tribal ownership of data.
3. **Memorandum of Understanding (MOU) with CU**
   * Establish formal agreement regarding intellectual property and data ownership.
4. **User Experience (UX) Vision**
   * Lead: Patrick.
5. **Communication Tools**
   * Leads: William, Jim S.
   * Set up and manage collaborative platforms:
     + Listserv
     + Folder structure (Google Drive)
     + Slack
     + GitHub
6. **Tech Team**
   * Lakota name for Data Cube: "Wizipan"
   * "Iktomi Tawokaske" (Spider Web) for interconnected workflows.
7. **Workflows**
   * Leads: Lilly, William, Jim S.
   * Focus on treaties (1851, 1868), mining and extraction, and water.
8. **Education Team Collaboration**
   * Leads: Lilly, Cami, Brian, Bob R.
9. **Data Management Plan**
   * Leads: Jeff W., Bob N., Brian, Robin.
   * Coordination with Cyverse and other platforms.
10. **Education and Outreach**

* Leads: Al, Bob R., Cami, Elisha, Brian.
* Create a draft curriculum with defined learning outcomes.

1. **Language Integration**

* Lead: Phil.
* Ensure language and cultural framing are included throughout the work.