Tó éí ‘líná dóó éí Diné Bikéyah Bikáa’gí (Water is Life on the Navajo Nation)

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Research Question

How can Diné people re-generate traditional Diné knowledge to sustain freshwater resources?

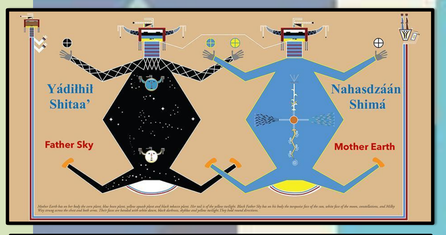

Figure 1. These sand paintings of Father Sky and Mother Earth are Diné deities found in rugs as a form of storytelling (https://www.nativechild.com/)

Introduction

Drought severity due to climate change disrupts water quality on the Diné Bikéyah (Navajo Nation), severely impacting the people, plants, animals, and culture. Culturally, natural resources such as water are used in ceremonies and prayers, which shape Diné culture. Today, fewer Diné youth experience the cultural practices because Diné people are leaving the reservation to move to larger cities and towns in order to access clean water and food sources.

In addition to drought, soils are degraded from constant landscape changes (e.g. agriculture, plowing, and tilling), causing an imbalance to the environment (Narang, 2018). Using Diné knowledge to adapt to changes is a culturally relevant approach to drought impacts.

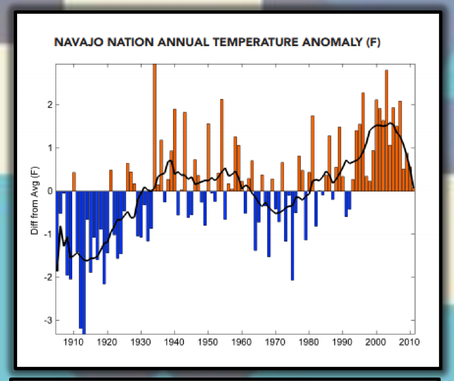

Figure 2. Displays annual precipitation long-term monitoring from 1905-2011 of the Navajo Nation (Crimmins et al., 2013)

Cultural Background

Diné viewpoint on (Tó) water is a lifeway (ethno-societal):

- Several families have water clans
- Creation stories tied to the water coming from the Holy People
- Dry farming
- Offering for prayers
- Water found on sacred sites is considered holy
- he sound of thunder and rainfall is the first sign of spring
- Snowfall is when Yei bi Cheii (holy beings) emerge in the physical world from the spiritual world and traditional stories are told during the winter months; including string games
- Differentiate between female-rain (light showers) and male-rain (aggressive rain) (Nez, 2018).

Geography of Diné Bikéyah

In southwestern United States, the environment has a desert climate with low precipitation (rain and snow). Diné Bikéyah occupies state regions of southern Utah, northern Arizona and New Mexico. It is the largest Native American reservation in the United States with a population of approximately 300,000 Diné citizens (Redsteer et al. 2014, p. 39). The reservation territory is in proximity with other Southwestern Tribal reservations: Hopi, Zuni, San Juan Paiute, and Jicarilla Apache (Redsteer, 2010).

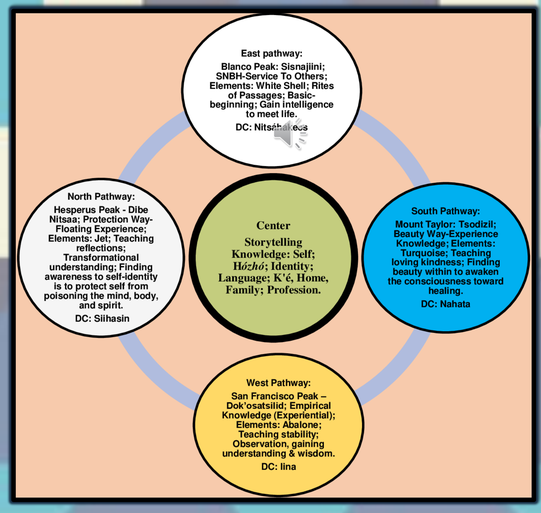

Figure 3. shows a model of the Diné medicine wheel of how the Four Sacred Mountains express the spiritual and physical side of the healing and connecting to the culture (Nez, 2018).

Figure 4. Famous Diné artist Harrison Begay painted this sand like painting of Diné men and women interacting with the ecosystem

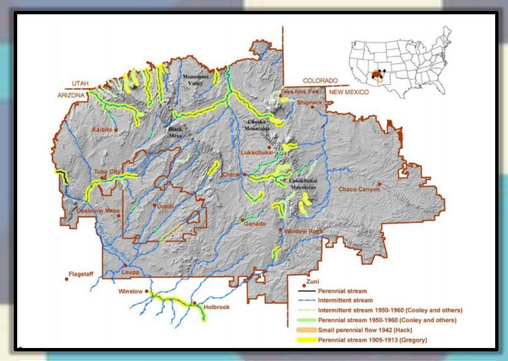

Figure 5. The boundary map of the Navajo Nation showing of historical stream flows (Redsteer et al., 2011).

Regenerating Diné Knowledge

In Figure 3, Diné College created a four directions model, which explains how each circle relates to the Four Sacred Mountains and relates back to Dine spirituality. Sa’ah Naagháí Bik’eh Hózhóón (SNBH) process describes Diné traditional aspects: (1) Beauty Way (Hózhóójii) is a lifetime teaching of healing to find your own definition of beauty, (2) Empirical Knowledge is to gain knowledge through experience and to perceive of others life experiences, (3) Protection Way (Naayée’ k’egho) becoming a leader to protect your self-identity and surrounding, (4) SNBH (Hózhó) is helping others through language, self, responsible living, and (5) Center-Storytelling is the keeper of sacred oral tradition and traditional knowledge of the culture. Diné worldviews, holistically tie the environment to the human mind, body, and soul in a way that cannot be further distilled (Nez, 2018).

Navajo Nation Departments

Several Navajo agencies and federal institutes gather data on low precipitation rates for the region:

- Navajo Nation Department of Agriculture
- Navajo Nation Department of Water Resources
- Navajo Nation Environmental Protection Agency
- Diné College, Northern Arizona University and University of Arizona.

Monitoring Drought

Federal research institutes utilize drought monitors to record drought warnings and precipitation data on the Navajo Nation:

- NASA and Navajo Departments created the Drought Severity Evaluation Tool (DSET) which gathers information about: (1) Drought, (2) Precipitation, (3), Evapotranspiration, (4) Snow cover, (5) Soil moisture, and (6) Vegetation conditions

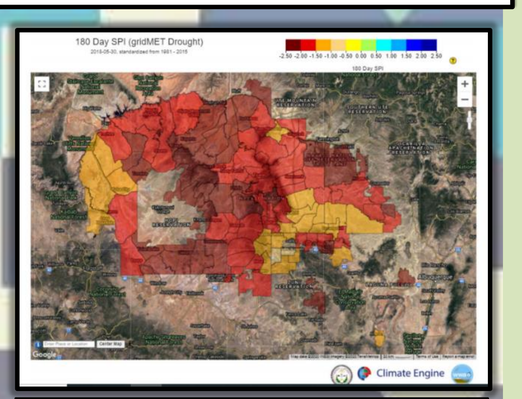

Figure 6. Navajo Nation Department of Water Resources (NNDWR) and Desert Research Institute co-developed a satellite data called Drought Severity Evaluation Tool (DSET) that have rain gauges placed throughout the Navajo Nation to monitor the precipitation of each Chapter House District.
https://wwao.jpl.nasa.gov/news-insight/articles/connecting-drops-nikki-tulley/

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