

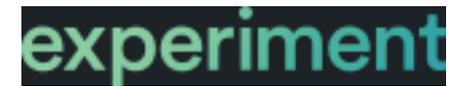
Anticipating a Changing Climate: Adapting Traditional Ecological Calendars in the Pamir Mountains of Afghanistan-Tajikistan

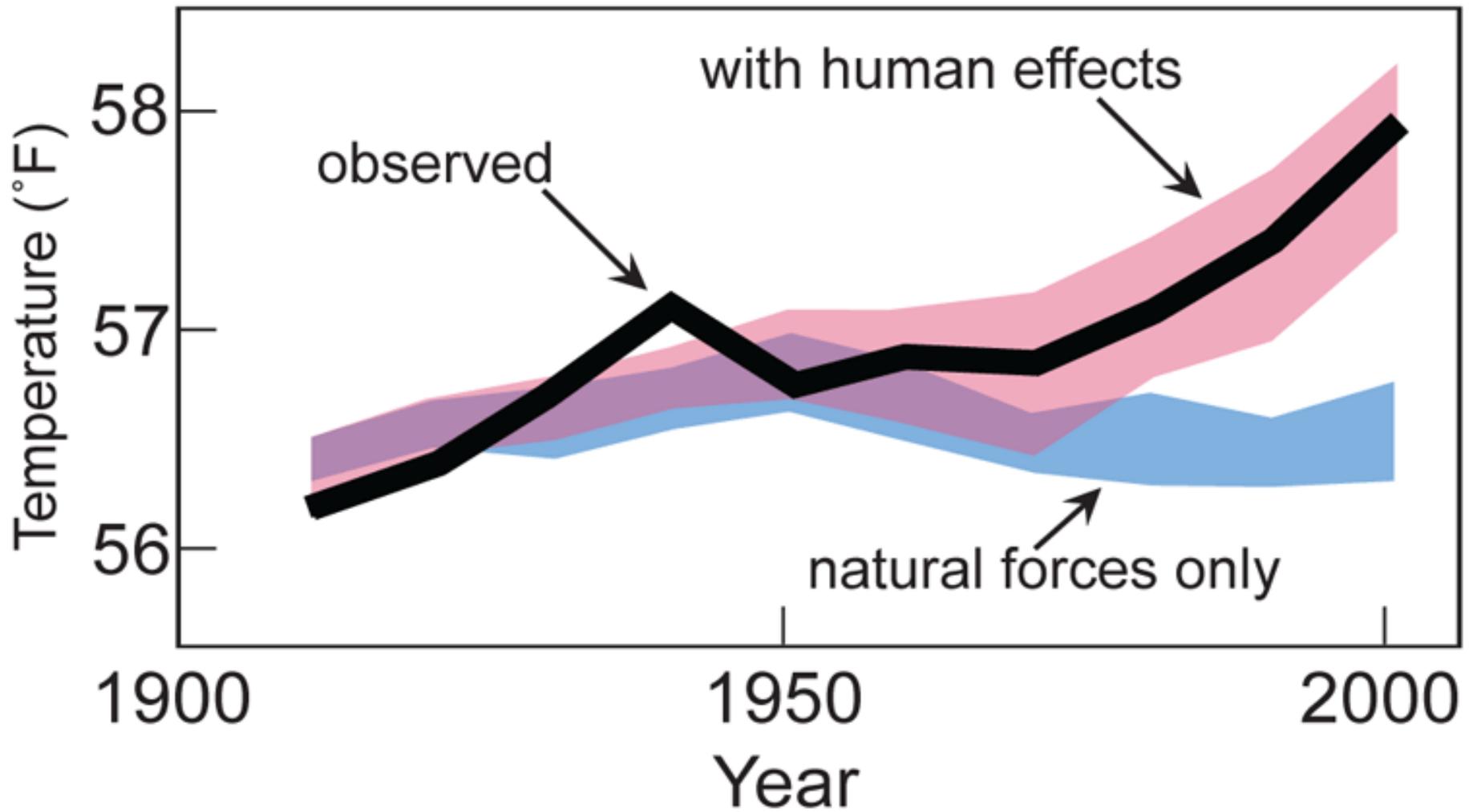
Raj Pandya





Thank you: Karim-Aly Kassam,
Anne Nolin, Julia Galkiewicz,
Sarah Kapnick, Subhashree
Mishra, Morgan Ruelle, Natasha
Udu-gama, Nicole Dorrell, Billy
Williams

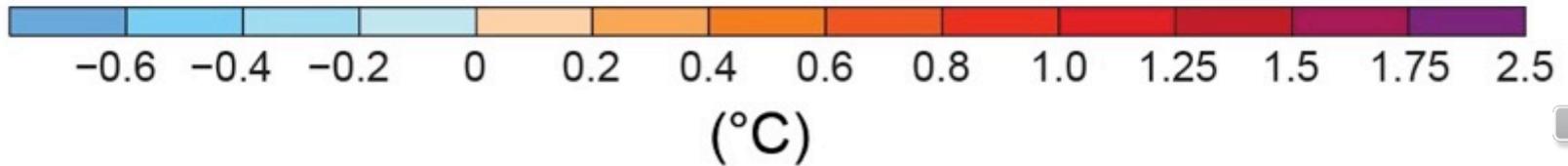
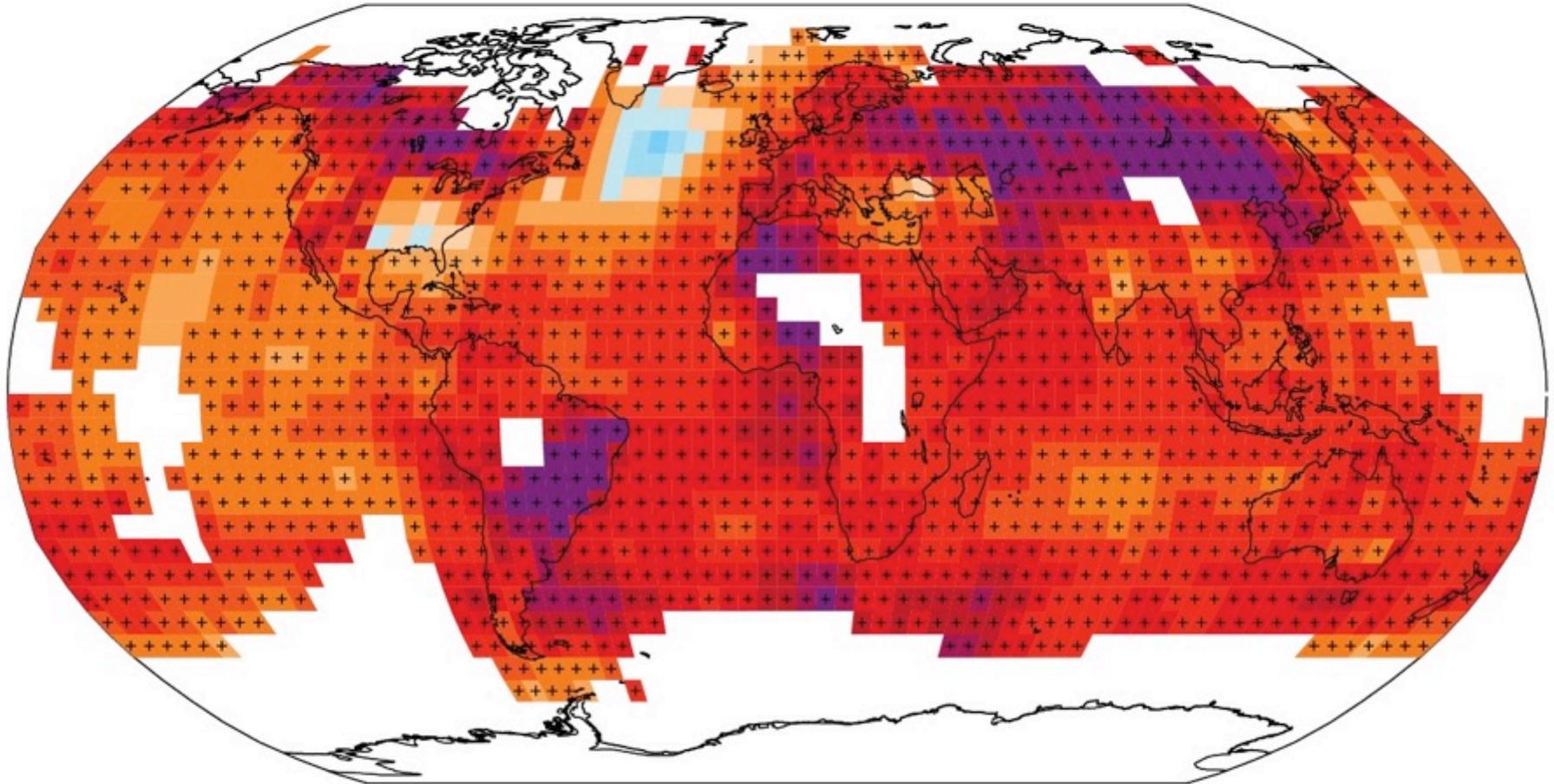




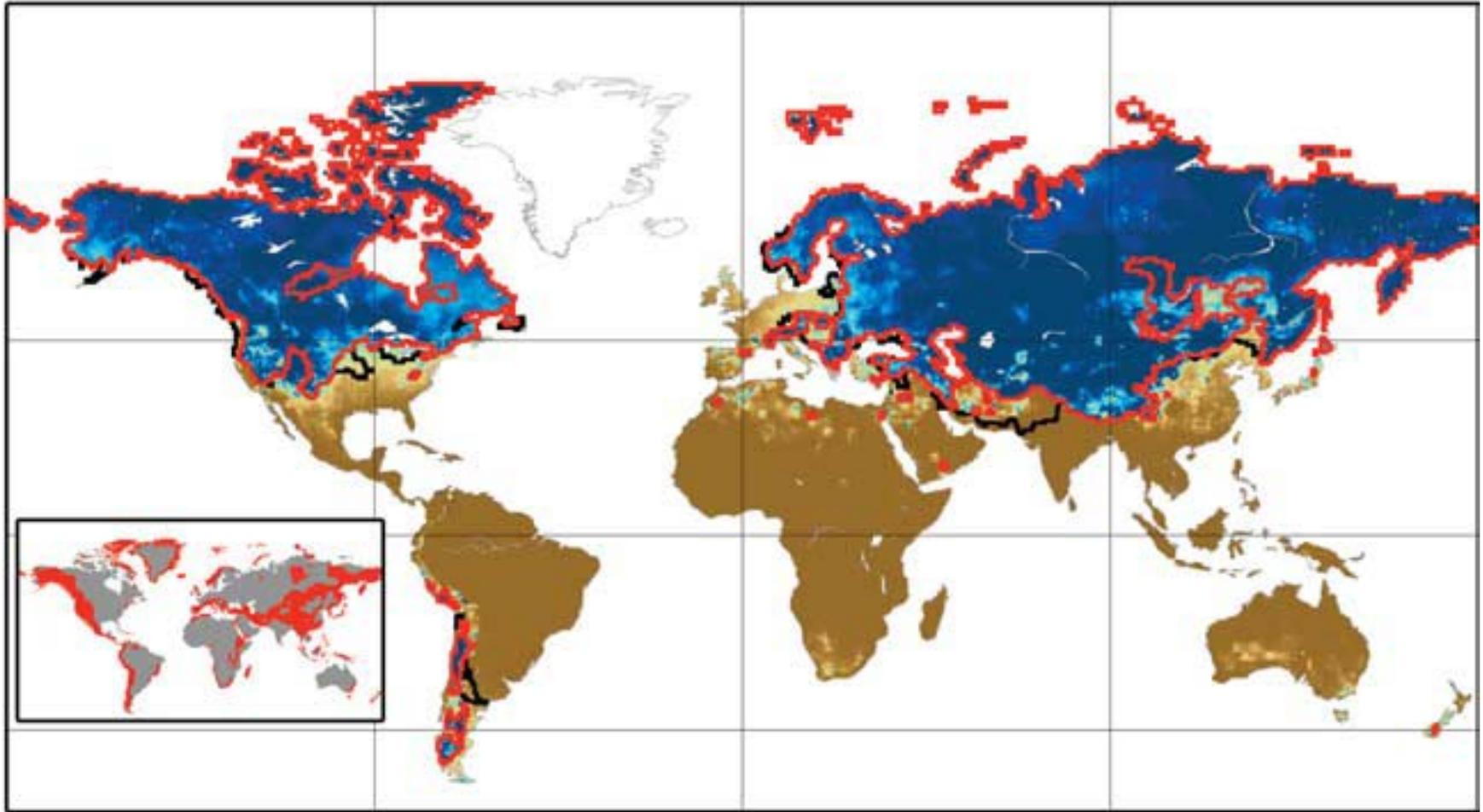
- Observations
- Models using only natural forces
- Models using both natural and human forces



Observed change in surface temperature 1901–2012



Accumulated annual snowfall divided by annual runoff

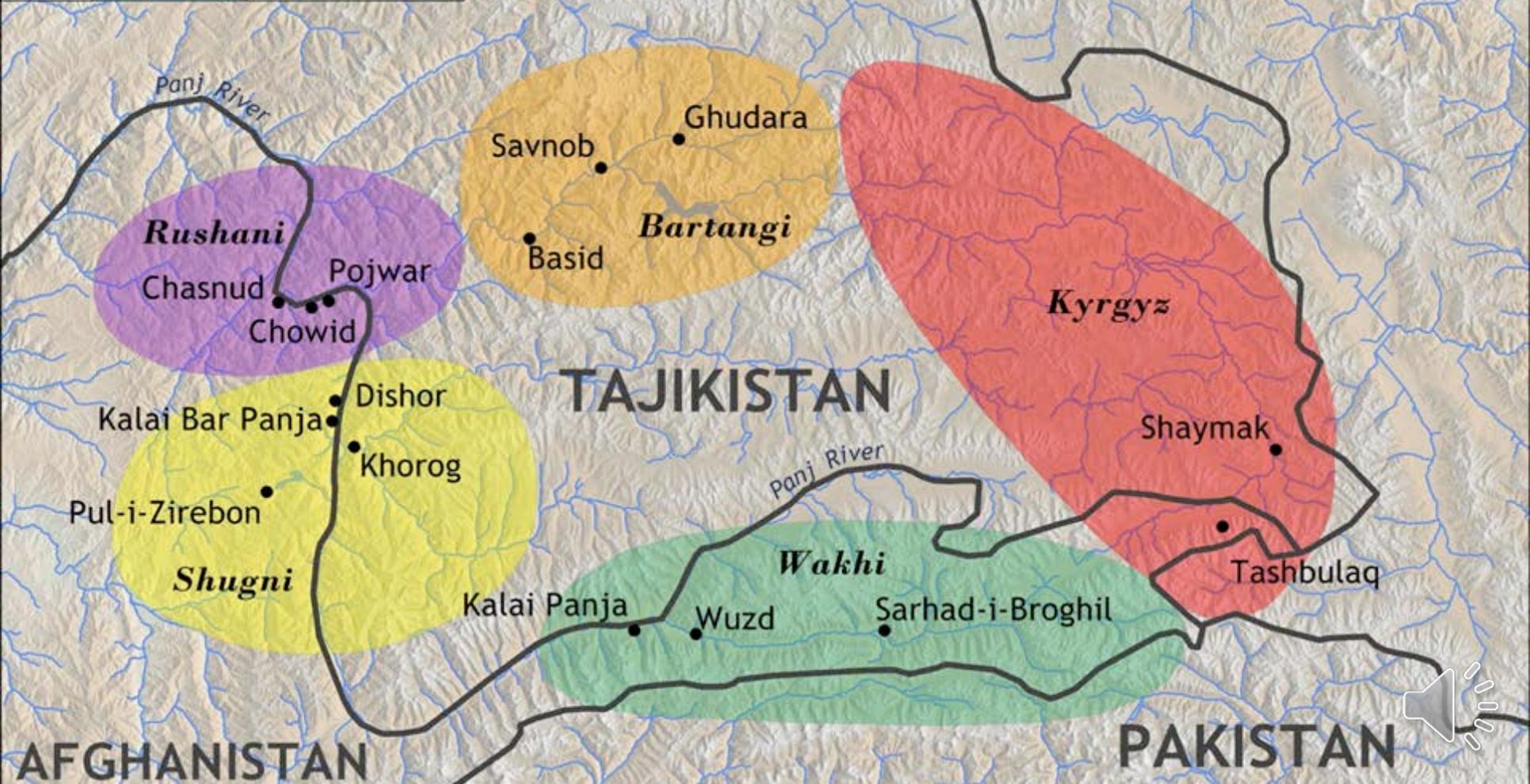




KYRGYZSTAN

CHINA

0 100 km



Indigenous Mountain Societies are at the vanguard of climate change, and already seeing Impact

They would like partners to anticipate future changes



Farmers & herders have integrated their activities with their ecological surroundings using calendars that measure time with respect to phenology

Figure 2. Illustrative example of the calendar of the human body from the village of Chartem as documented by Andreev (1958) in 1902.





How can climate science work with indigenous ecological knowledge to update and recalibrate the calendars to anticipate climate change?





Offer your ideas:

www.thrivingearthexchange.org



Thriving Earth Exchange

Inspiring and empowering scientists, communities, and sponsors to do science together for the benefit of people and the planet.



TEX is one of AGU's responses to the Anthropocene





Unprecedented
Impact



**Cold is what makes my language,
my culture, my identity. What
am I going to do without cold?**

-Oscar Kawagley, Yup'ik





Unprecedented
Vulnerability 



Unprecedented Inequity



Victor H. Rivera-Monroy and Robert R. Twilley



“We didn’t
have religion,
we had a way
of living”

Albert Whitehat,
Sincagu Lakota

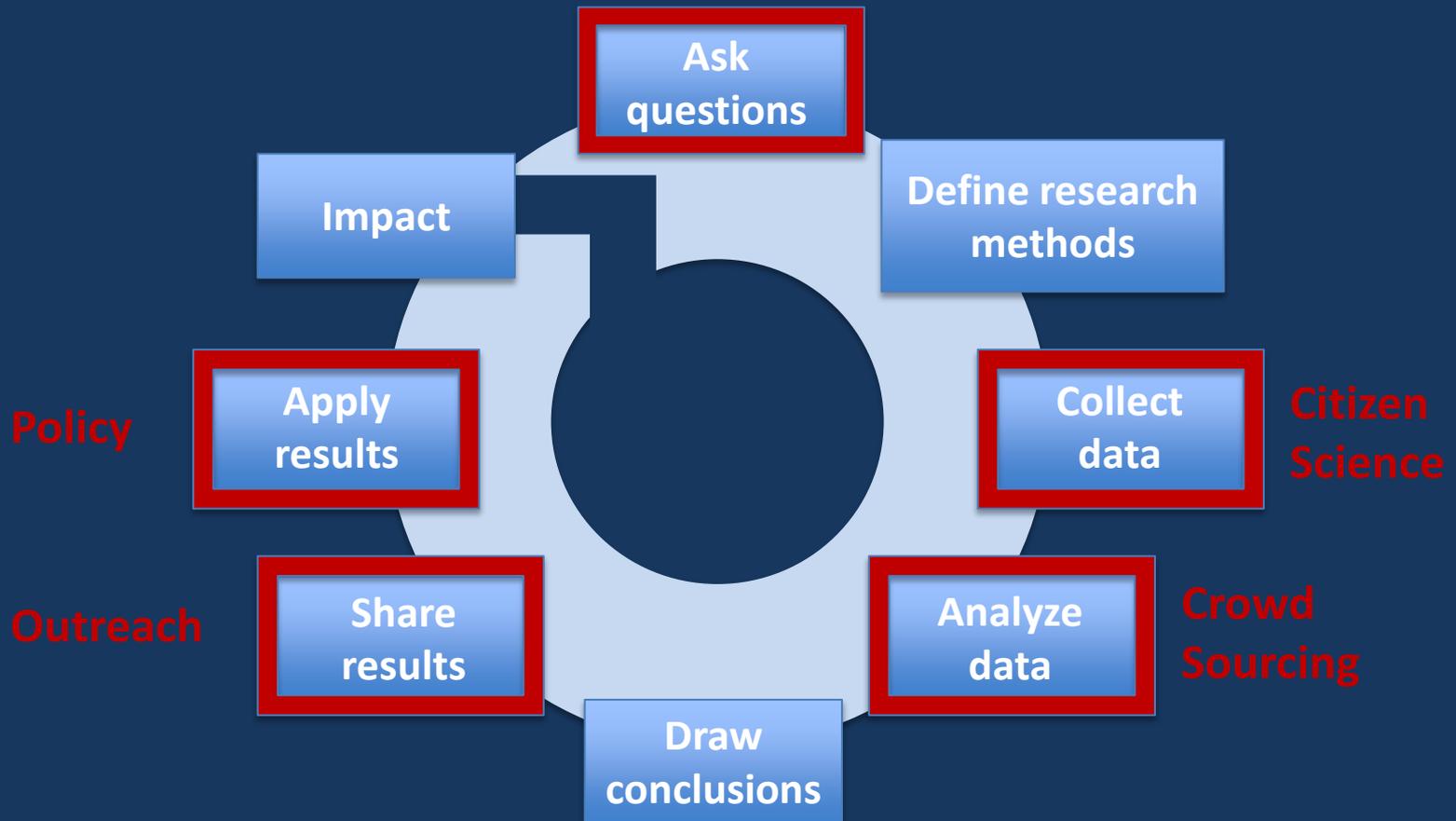


“It’s wonderful to have the opportunity given us by society to do basic research, but in return, ***we have a very important moral responsibility to apply that research to benefiting humanity.***”

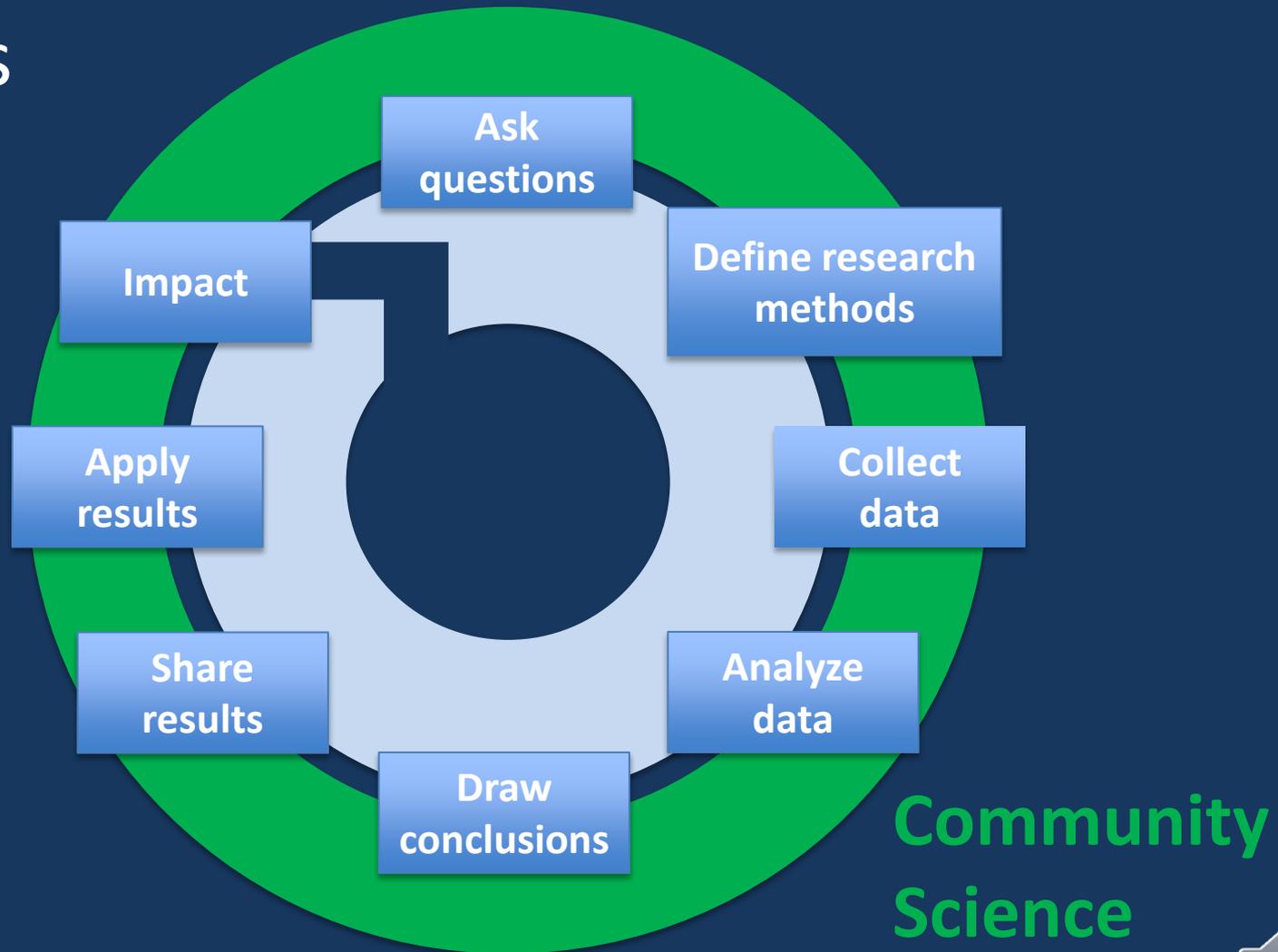
Walter Orr Roberts,
Founder of the National Center for
Atmospheric Research



Science often engages people in only parts of the process



Community Science engages whole communities in every step of the science process



Community Science

inspires

future and current scientists

solves

real-world problems

Advances

communities

integrates

knowledge and
perspectives

Grows

Literacy and support for science



THRIVING EARTH EXCHANGE[®]

Powered by AGU

The idea of community science

A set of community science projects

Tools to catalyze community science

A network for advancing community science





Meteorologists and water managers improving drought prediction in South Central Kentucky





Climate scientists and Pamiri villagers working climate projections into traditional calendars

K. Kassam





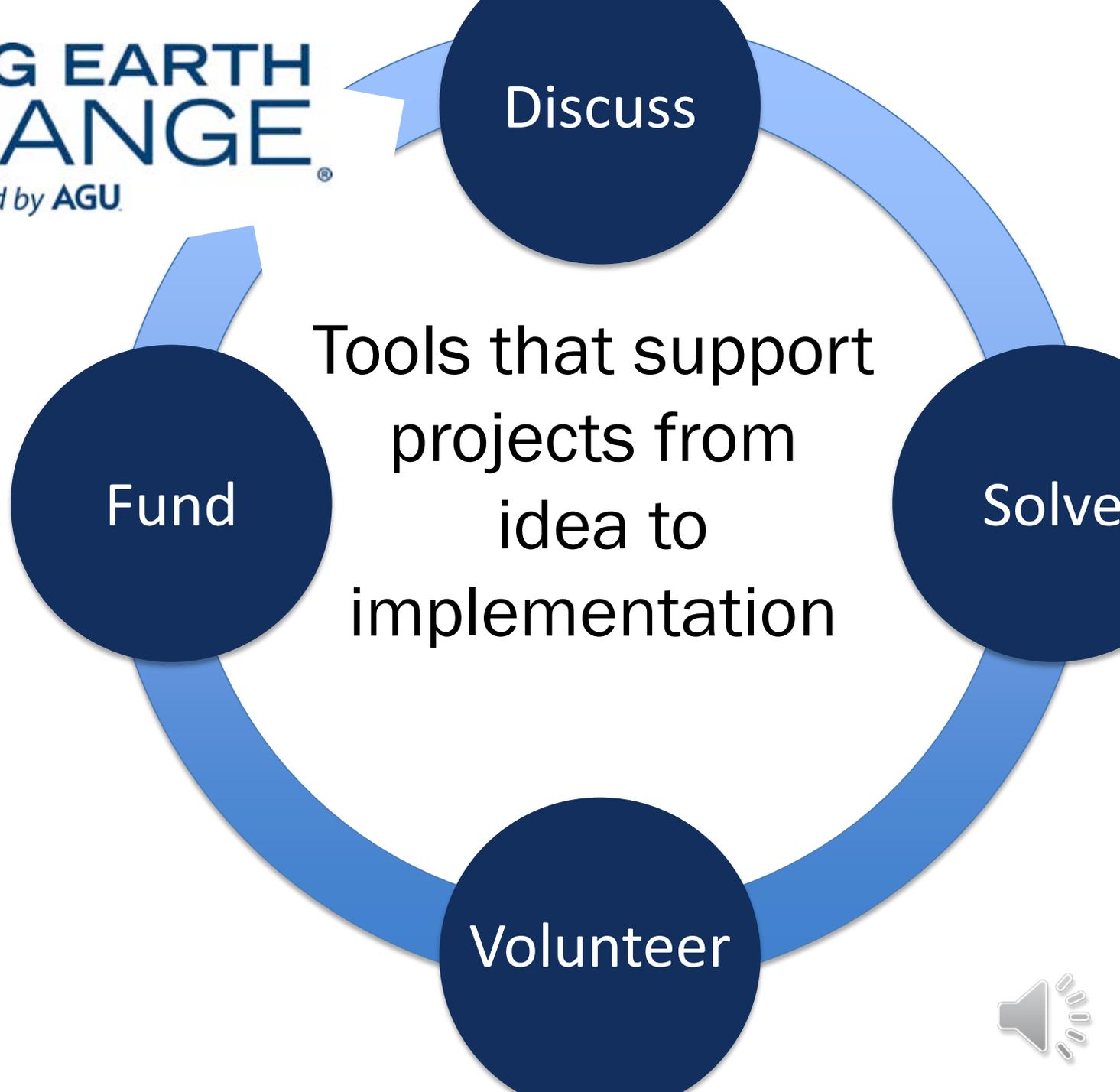
Chemists working with neighborhood leaders to identify and mitigate sources of air pollution





Geologists and Lakota people mapping and filtering heavy metals from the water





Discuss

The screenshot shows a web browser window with the URL `climatecolab.org/web/guest/plans/~plans/contestId/1301102`. The page header includes the Climate CoLab logo and navigation links for About, Contests, and Community. The main content area features a contest titled "Anticipating Climate Change in the Pamir Mountains" with a progress bar showing "85 days until Proposal creation ends". The contest description asks: "How can traditional ecological calendars used to guide agricultural activity link to climate science so as to anticipate climate change in the Pamir Mountains?". Below the description, there are social media icons for Facebook, Twitter, and Email, and a "Subscribe" button. The footer contains contact information, the MIT Center for Collective Intelligence logo, and a Creative Commons license notice.

Solve

Tools to discuss challenges and offer solutions.



Fund

The screenshot shows a web browser window with the URL <https://experiment.com/projects/white-earth-nation-in-minnesota-water-monitoring-to-ensure-healthy-wild-rice?s=...>. The page features the Experiment.com logo and a search bar. The main content area displays the project title, the lead researcher T. M. (Bull) Bennett from Thriving Earth Exchange and Kiksapa Consulting, LLC, and a funding progress bar. The progress bar shows \$160 pledged, 3% of a \$6,500 goal, with 30 days left. A green 'Fund this Project' button is visible.

TEX is figuring out how to help you raise funds

understanding the lakes it grows on will help people protect it.

land use changes, pollution, and a database we build with and a cultural touchstone;



Budget Overview

White Earth Department of Natural Resources is only able to monitor 15 lakes annually, out of over 300 square miles of lakes and rivers. This project will allow White Earth residents to monitor the rest of those lakes and rivers.



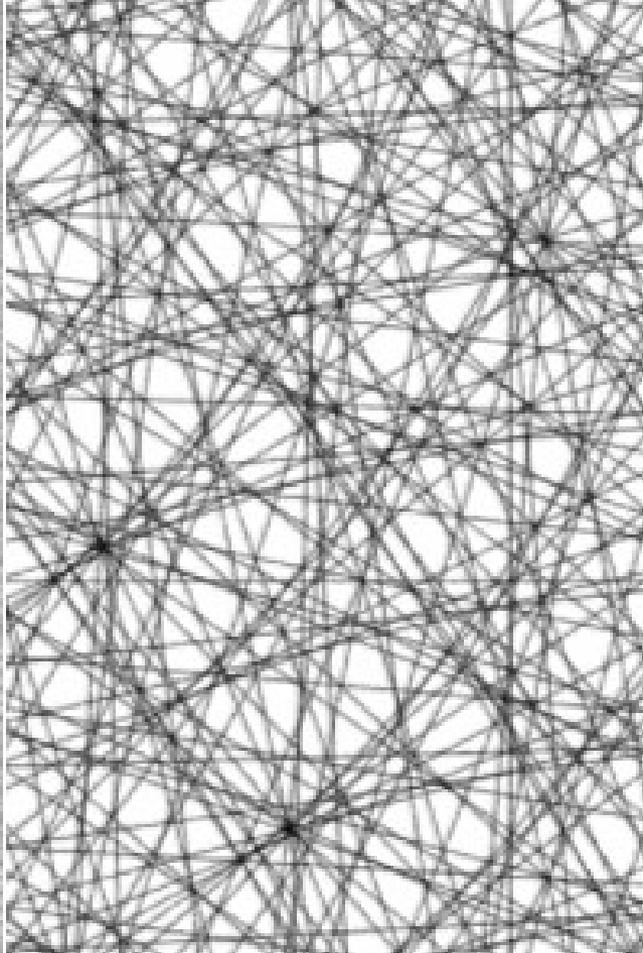
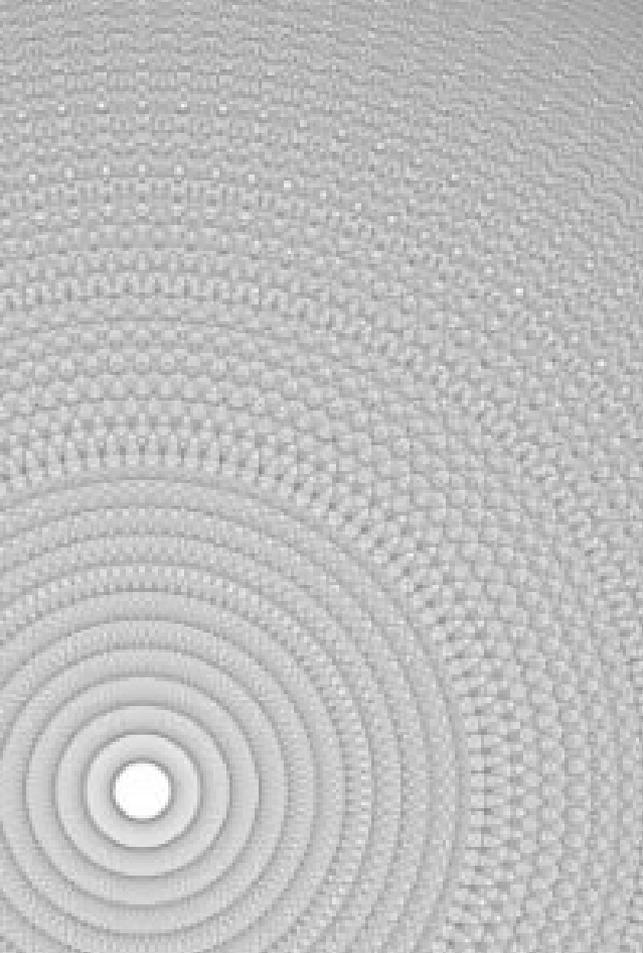


Soon, TEX will include
volunteer options

Volunteer







Three Ways to Engage

1. Propose for the Pamir Mountains
2. Be a TEX ambassador and explore how science connects where you live
3. We'll match you to a community that wants a science partner