Task SES1: Building and evaluating partnerships between LTER scientists and rural communities to increase two-way communication, develop metrics to asses impact, and ultimately expand utility of LTER research to local stakeholders.

Krista Heeringa, Todd Brinkman, Terry Chapin, Orville Huntington, Ben Stevens, Brooke Woods, Tessa Hasbrouck, Ed Sarten, Don Honea, Arnold Demoski, Nathan Elswick, Barret Ristroph, Robin Reid, Caroline Brown, Casey Brow, Lindsey Parkinson, Joe Metesi, Rich Hum, Malinda Chase, Debra Lynne, Marilyn Jones

UAF, Tanana Chiefs Conference, Nulato Tribal Council, Koyukuk Tribal Council, Ruby Tribal Council, Anvik Tribal Council, City of Tanana, Native Village of Ventie Tribal Governments, Alaska Department of Fish & Game, Colorado State University

Task SES1: Building partnerships

Develop collaborative research that support community vision for self-reliance and food security.

Document current challenges and changes affecting traditional harvest practices.

Explore factors that strengthen the ability of individuals and communities to adapt to these changes.

Task SES1: Building Partnerships

Ruby Tribal Council

Ruby Food Security Assessment

Nulato Tribal Council

Affects of climate change on moose harvest success

Koyukuk Tribal Council- *Local/ non-local moose hunting competition*

MTNT, LTD.

Community fish-wheel monitoring project

City of Tanana

Energy, Wood Harvest, Subsistence and the Biomass Program in Tanana

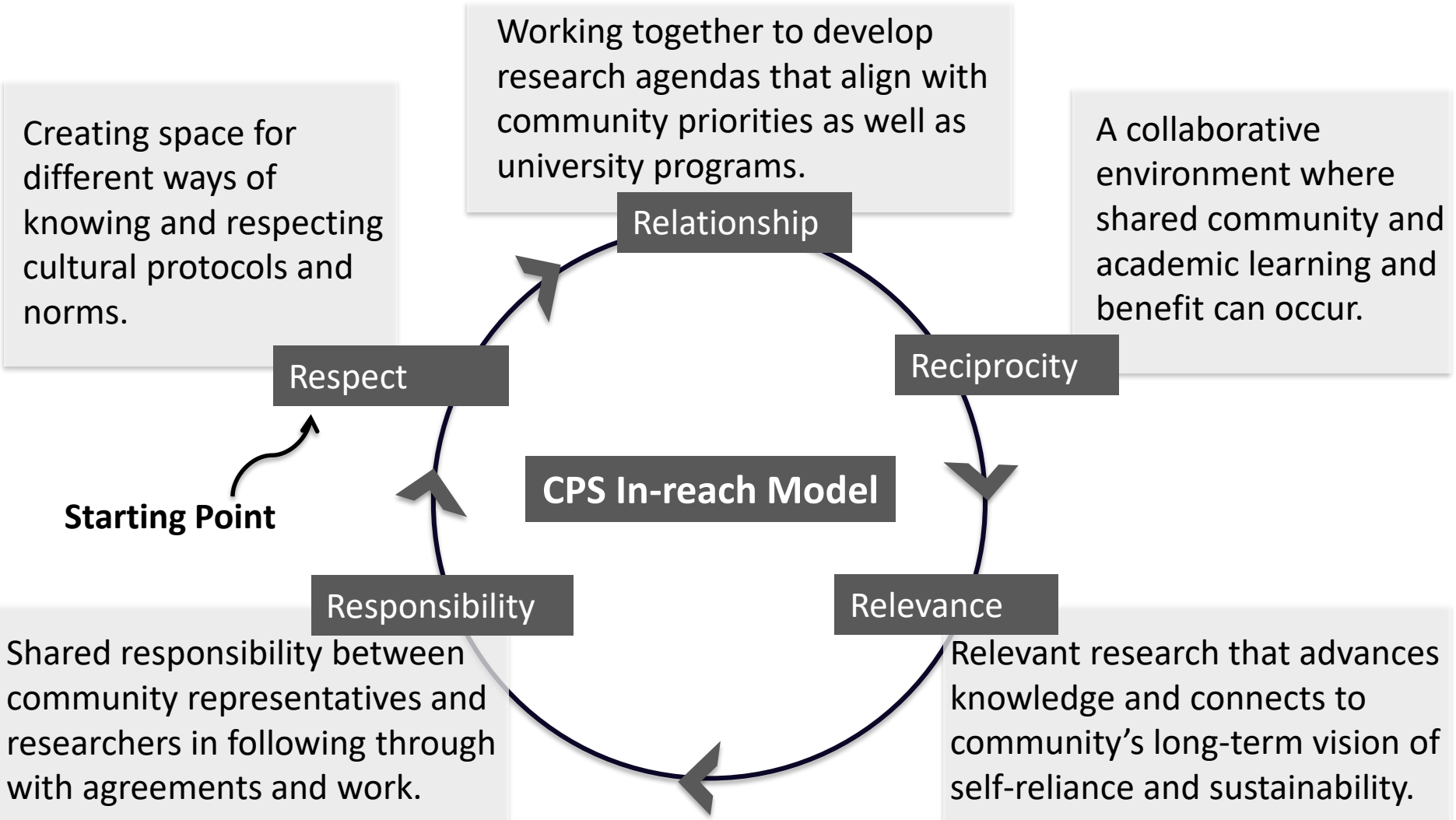
Anvik Tribal Council

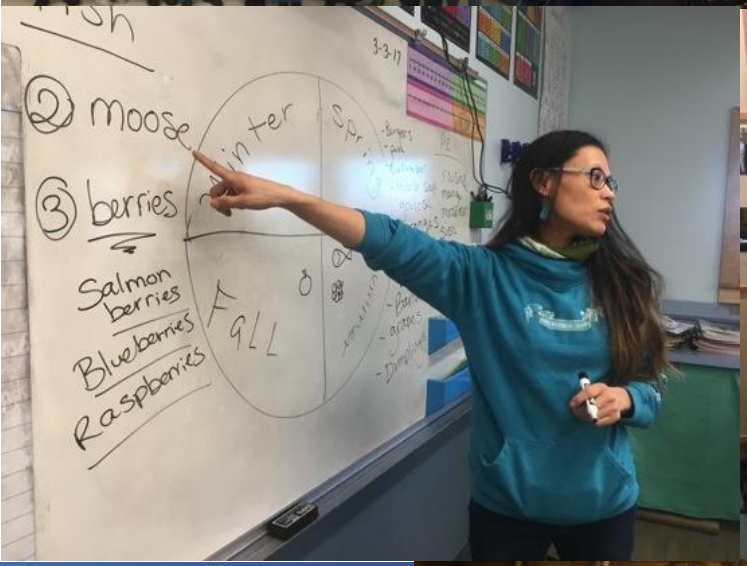
Deg Hit'an Dingan' Place Name Map

Native Village of Venetie Tribal Gov't.

Land use mapping

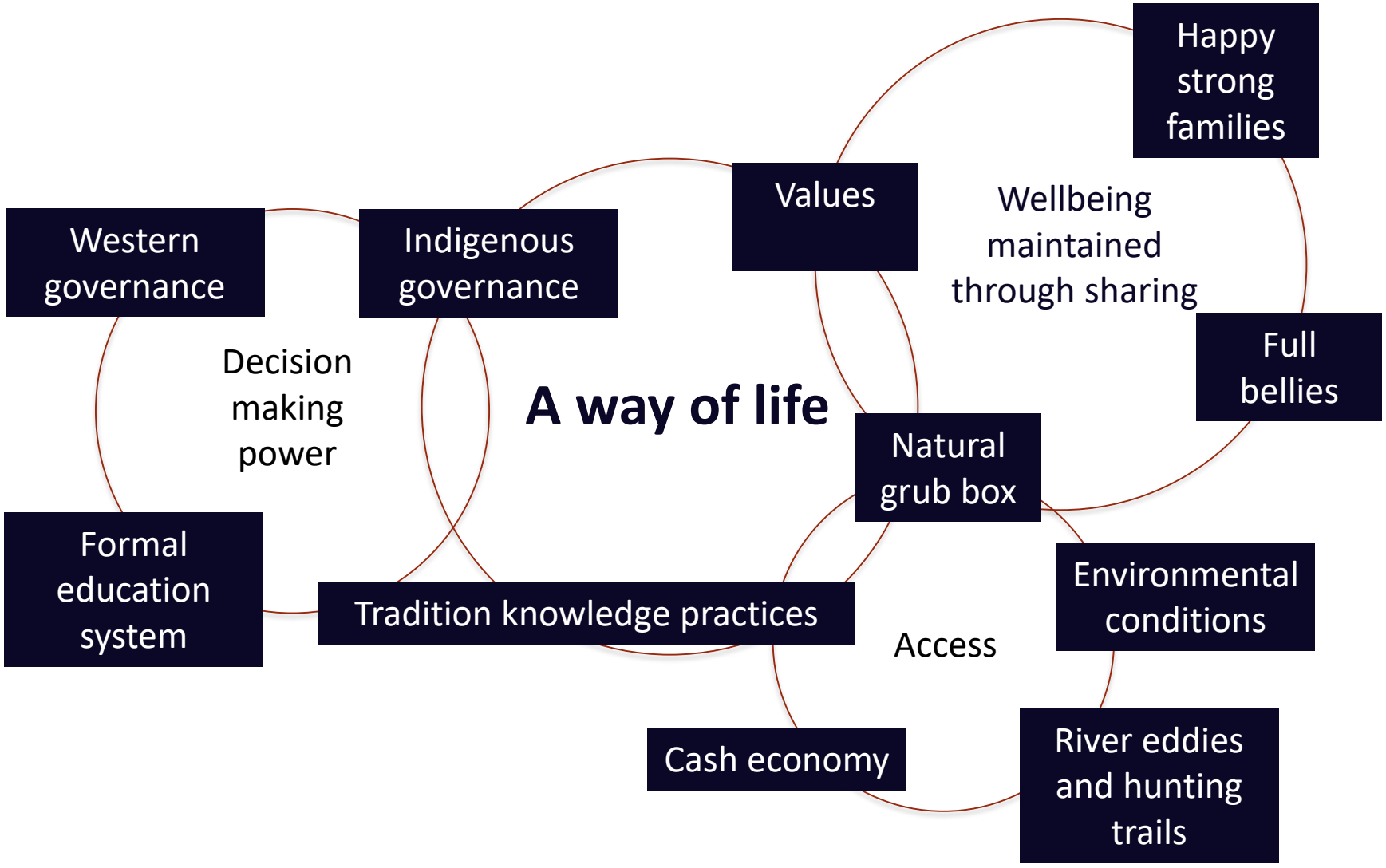
SES1: Supporting two-way communication



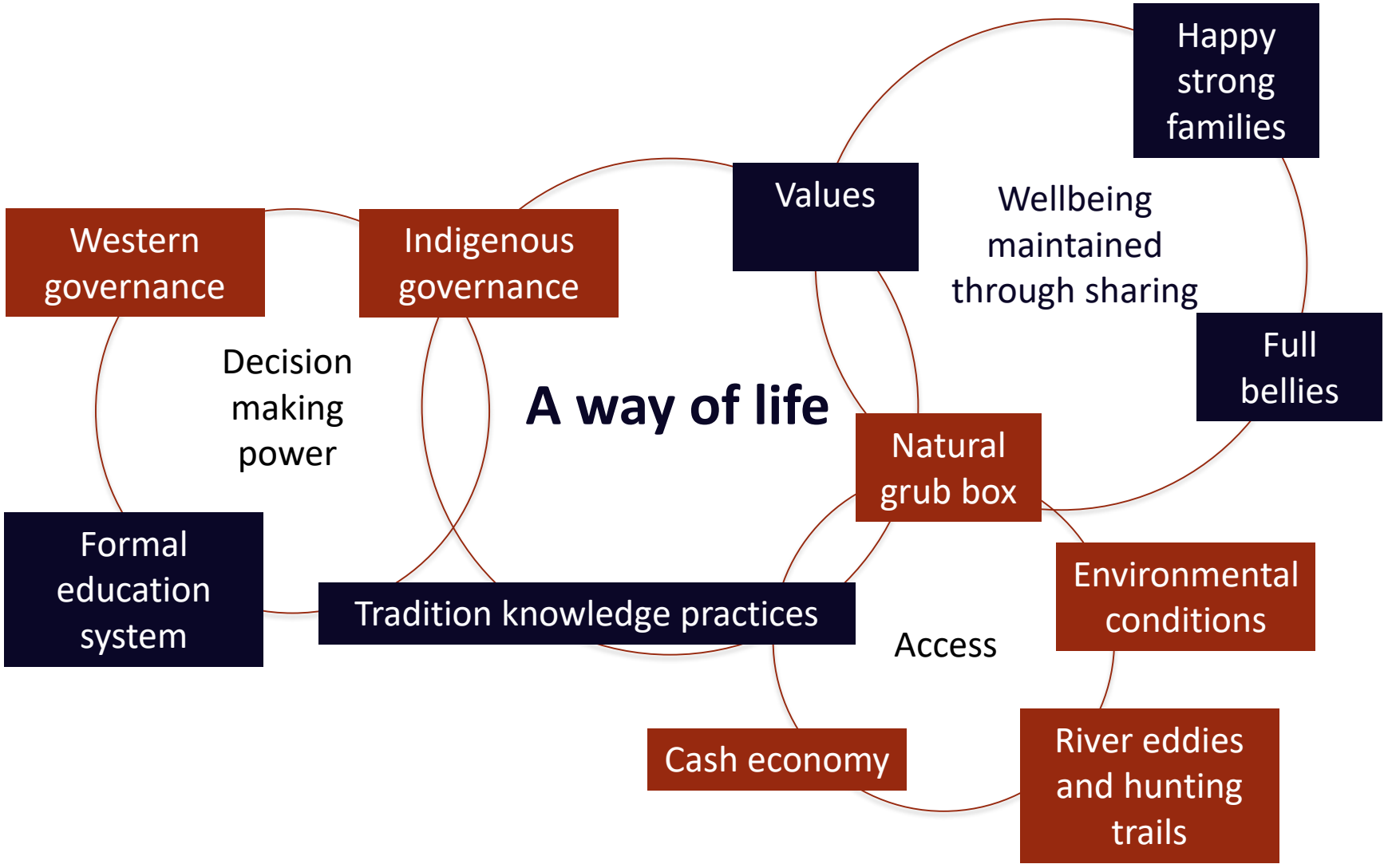

2 moose
3 berries
Salmon berries
Blueberries
Raspberries
FALL


Post-it

SES1: Framework for assessing impacts to traditional harvest practices



SES1: Framework for assessing impacts to traditional harvest practices



SES1: Next steps

Evaluation components:

- Partnership process including communication and organizational structure
- Capacity building among participants and the communities, institutions, or organizations they represent.
- How information from partnerships was shared or used in decision making.

Accepted

Heeringa, Huntington, Woods, Chapin, Hum, Brinkman, et al. (accepted). A holistic definition of healthy traditional harvest practices for rural Indigenous communities in rural Alaska. *Journal of Agriculture, Food Systems, and Community Development.*

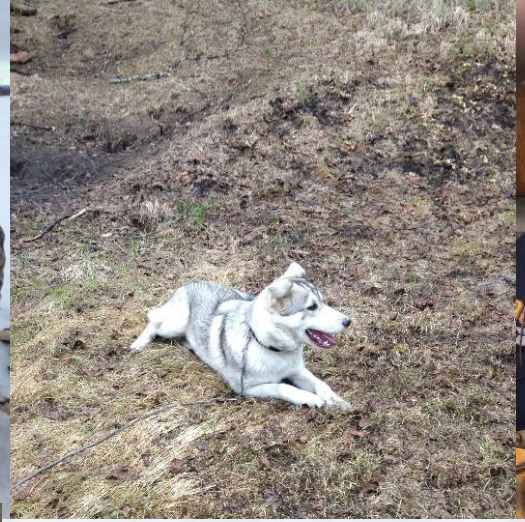
Planned Publications

- Evaluation of partnerships
- Impacts to traditional harvest practices.

SES2: Advance the practice of community-based ecological monitoring through development of methods for documenting local observations

Helen Cold, Todd Brinkman, Teresa Hollingsworth, Caroline Brown, Krista Heeringa, David Verbyla, Dana Nossov Brown, Scott Rupp (SNAP Crew)


KSB







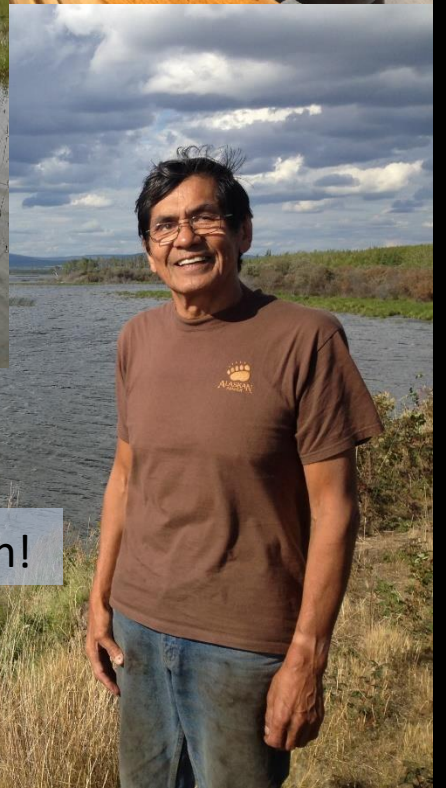

Thank you to everyone that contributed to this research!
ABoVE
ARCTIC BOREAL VULNERABILITY EXPERIMENT
NASA
ALASKA
UAF
UNIVERSITY OF ALASKA FAIRBANKS

Photo do conditions

NASA Mapping Project

Documenting conditions related to travel & access to wild resources

Name:_____ Date:_____

Photo ID:_____

What is pictured?

_____

_____

_____

How do these conditions influence travel or access to resources?

_____

_____

_____

Trip purpose?

- ○ Hunting
- ○ Fishing
- ○ Trapping
- ○ Gathering (wood, berries)
- ○ Village travel
- ○ Camp
- ○ Other_____

How frequently have you observed this travel condition?

- ○ Observed weekly
- ○ Observed monthly
- ○ Observed seasonally
- ○ Observed yearly
- ○ Observed every few years
- ○ Observed every few decades
- ○ Never observed before
- ○ Not applicable

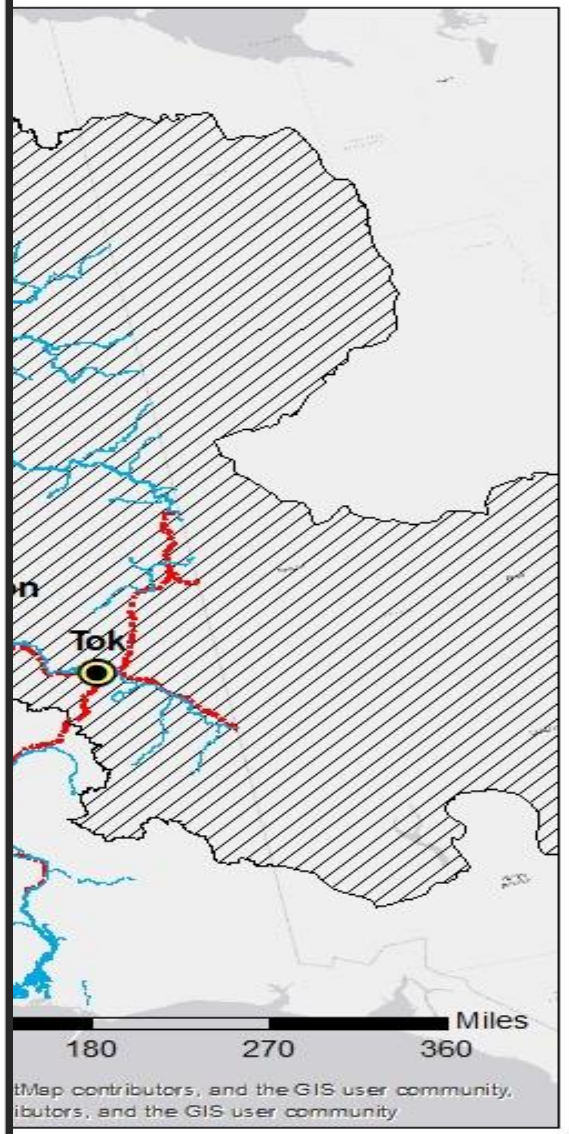
What year did you first notice this change? _____

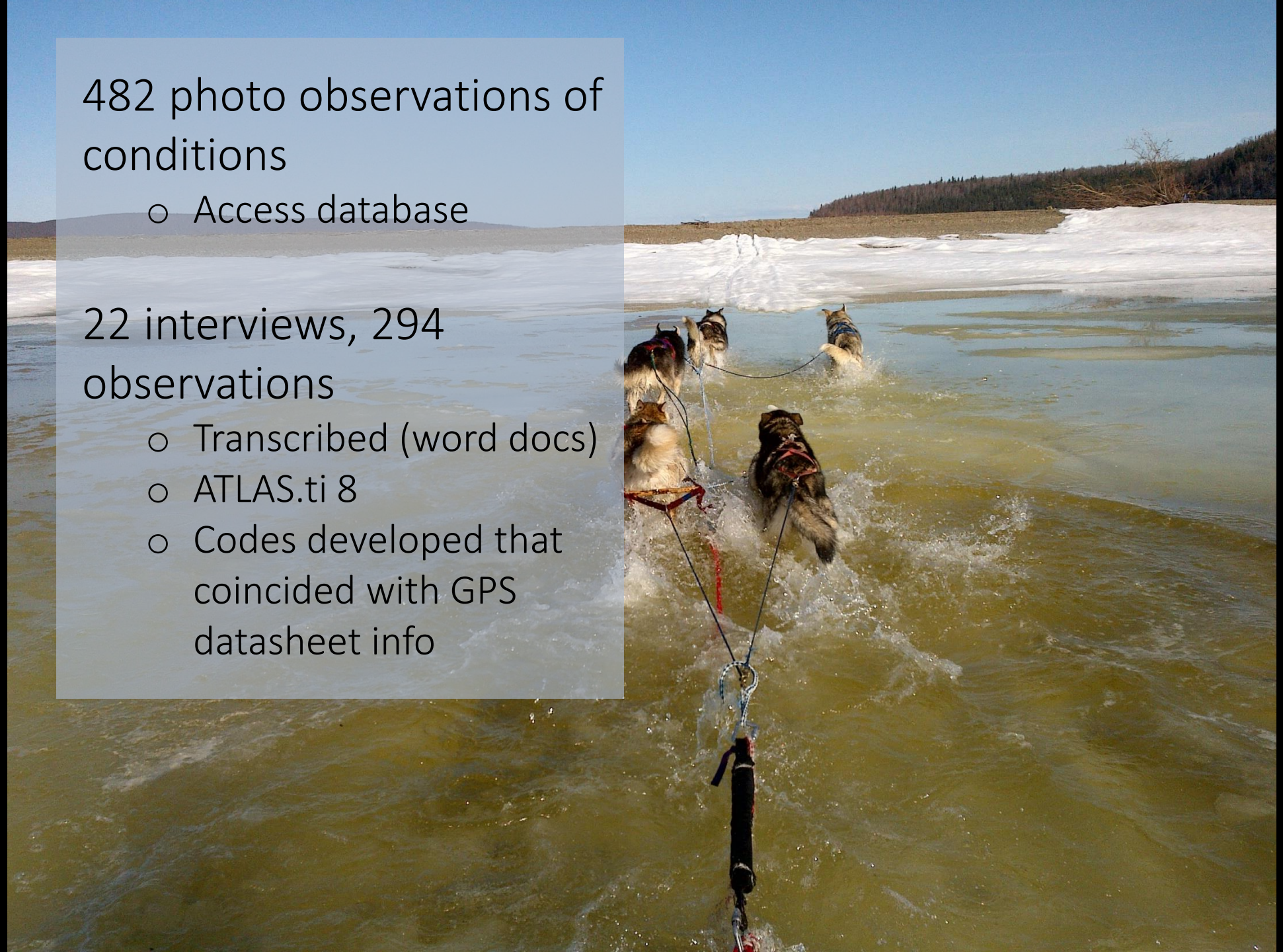
To what extent does this condition affect travel safety?

- ○ Strong affect
- ○ Moderate affect
- ○ Weak affect
- ○ No affect

How common is this condition occurring in other places around your community?

- ○ This change is common, I see it everywhere.
- ○ I have seen this change in some other areas.
- ○ I haven't seen this change anywhere else.





482 photo observations of conditions

- Access database

22 interviews, 294 observations

- Transcribed (word docs)
- ATLAS.ti 8
- Codes developed that coincided with GPS datasheet info



Ice conditions: Presence/absence, thickness, and quality of riverine and lacustrine ice (including aufeis).



Snow conditions: Presence/absence, depth, and consistency of snow.



Water levels: Amount and depth of water present aquatic or terrestrial travel ways.


Vegetative community composition: Changes in vegetative communities, including species composition, growth rates/patterns, phenology, and fire-related disturbance and succession.



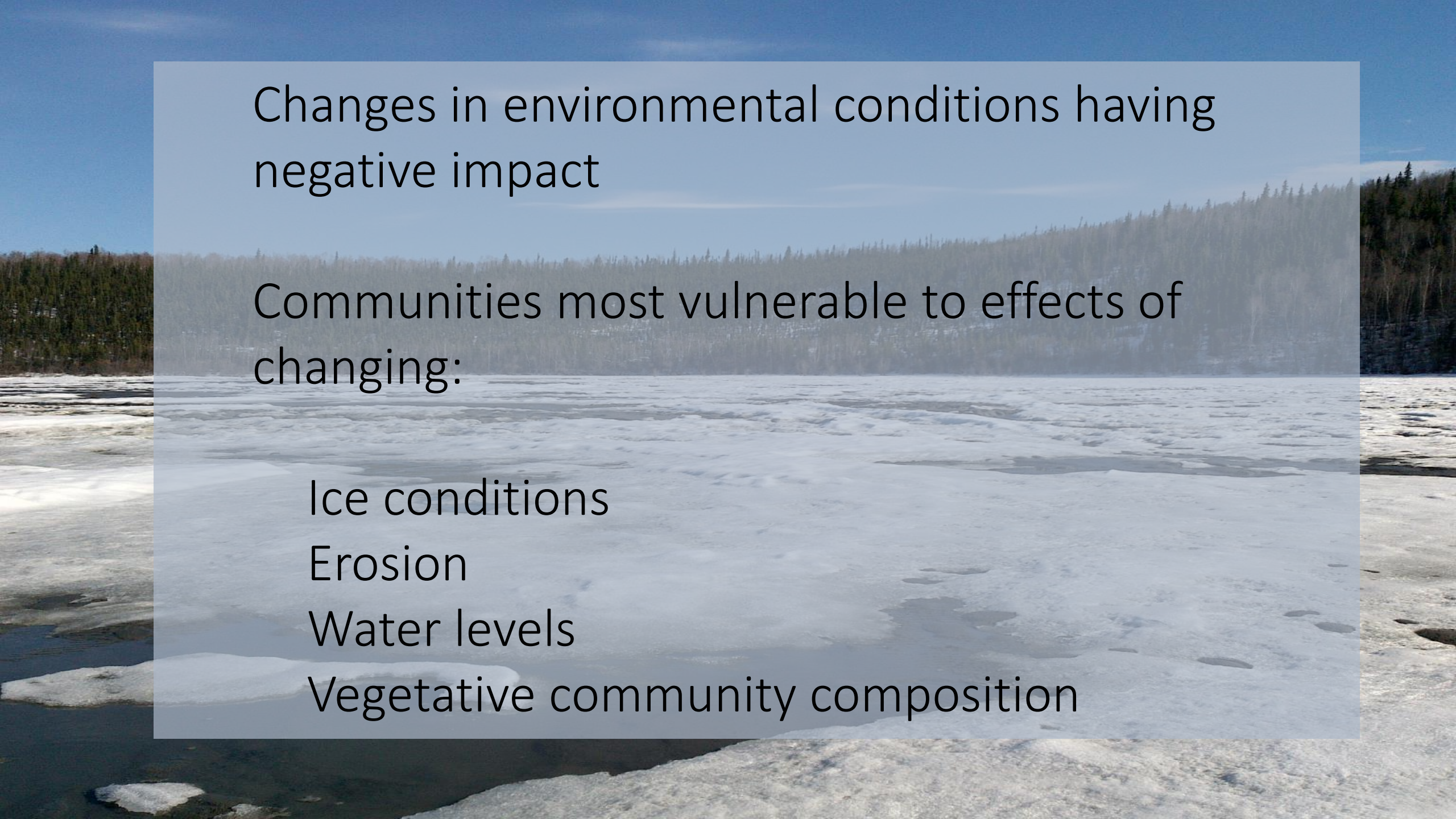
Erosion: Loss of soil and mineral material by water, wind, and thermokarst.


Weather: Temperature extremes and weather events directly affecting travel (including wind and precipitation).


Sedimentation: Deposition of soil and mineral material by wind and water.

Condition	N	Average Sensitivity Value	V score (across)
Ice Conditions	0.30	0.79	1.10
Snow Conditions	0.25	0.72	0.97
Vegetative Community Composition	0.21	0.76	0.98
Sedimentation	0.13	0.72	0.82
Water Levels	0.26	0.73	0.98
Erosion	0.15	0.78	1.00
Weather	0.10	0.72	0.82

Road-connected communities different than off-road network communities



Changes in environmental conditions having negative impact

Communities most vulnerable to effects of changing:

- Ice conditions
- Erosion
- Water levels
- Vegetative community composition

Future Directions

- Continue to monitor and explore
  - How are people adapting and how effective are those adaptations

Cross-scale interactions

- Lots of opportunities to overlay these observations with other maps to assess patterns
  - Permafrost thaw risk maps

Publication and Communication tools

- Cold HS, Brinkman TJ, Brown CL, Hollingsworth TN, Verbyla DL, Heeringa KM, Brown DRN. 2019. Assessing vulnerability of subsistence travel to effects of environmental change in Interior Alaska. *Ecology and Society* (in review)

Online communication tools

http://mapventure.org/environmental-impacts-access/index.html

SES3: Evaluate interactions among environmental change, harvest regulations, and hunter access to wildlife

Tessa Hasbrouck, Todd Brinkman, Krista Heeringa, Dana Nossov Brown, Knut Kielland, Glen Stout, Caroline Brown, Teresa Hollingsworth, Dave Verbyla, Erin Trochim, Terry Chapin, Bob Bolton

Questions

- What are the biophysical causes and mechanisms causing environmental conditions that are challenging hunter access?
- How are these environmental conditions actually affecting harvest?
- What is the association between challenging conditions and what other LTER scientists are studying?

Changing River Ice S
Impacts on Interior Alaska

Findings: Spring and autumn air temperatu impacted timing of bre up (-2.0 days/˚C) and freeze-up (+2.0 days/

Significance: The duration of river ice co for safe travel is decli

Showing Results for "fell through ice"

20 results found - Advanced Archive Search

2 dead near Bethel when four-wheelers fall through river ice amid warnings to stay off

Zaz Hollander | Alaska News | April 1

Passers-by rescue children who fell through ice in Bethel

Associated Press | Rural Alaska | February 18

Volunteer search underway near Big Lake for missing snowmachiners

Madeline McGee | Alaska News | December 19, 2018

No sign of man who fell through ice on Western Alaska fishing trip

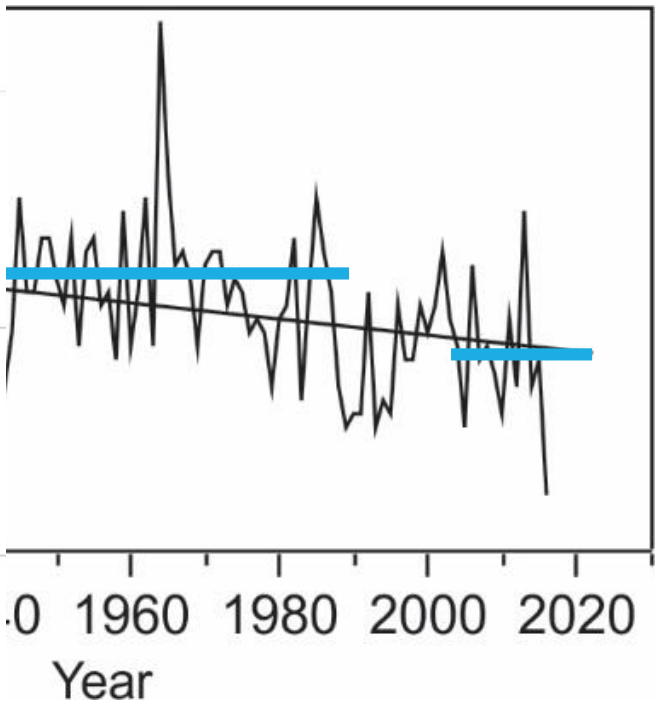
Zaz Hollander | Rural Alaska | November 9, 2018

Body found along Kuskokwim River identified as man who fell through ice 2 years ago

Kyle Hopkins | Rural Alaska | May 23, 2018

Father dies, 5 people rescued after family falls through river ice near Bethel

Anna Rose MacArthur, KYUK | Rural Alaska | January 2, 2018

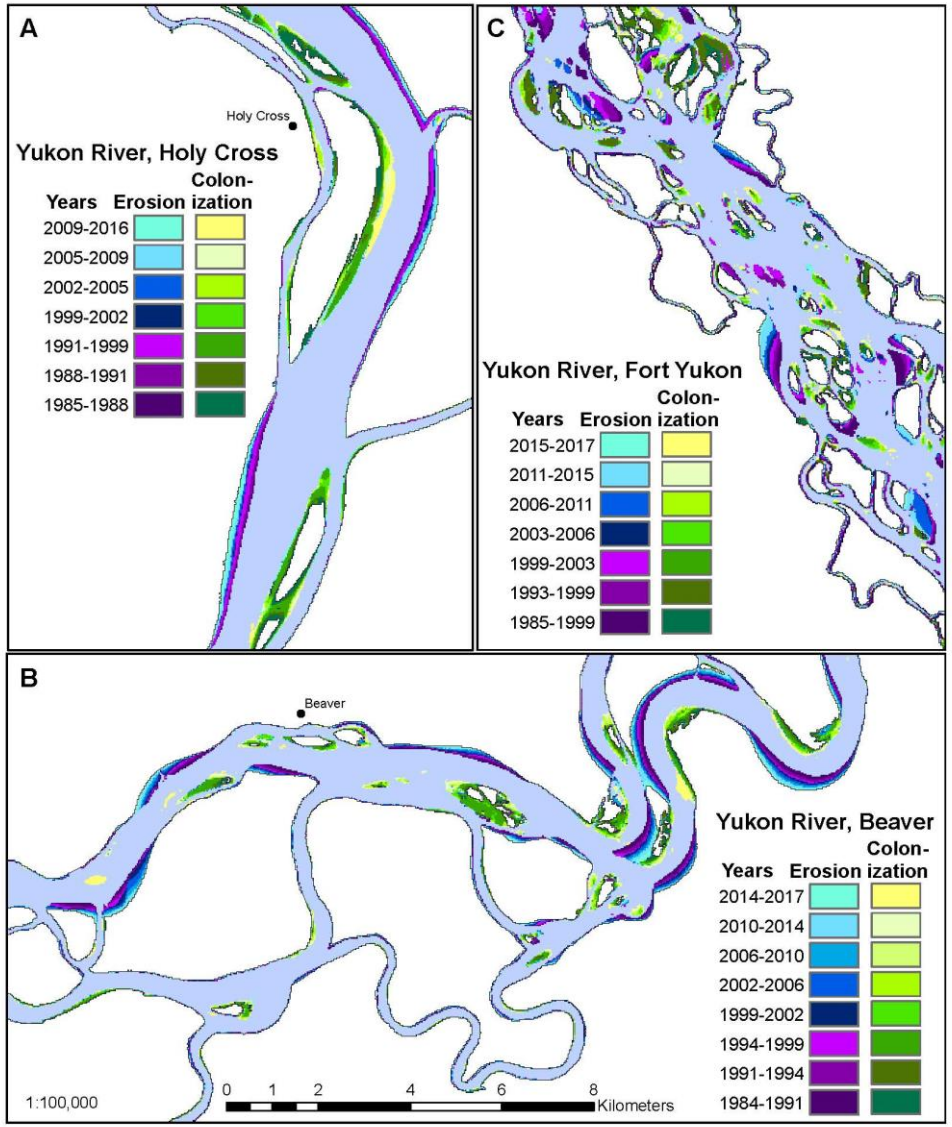


- Tanana River at Manley Hot Springs
- Yukon River at Circle
- Yukon River at Russian Mission
- Yukon River at Tanana

Impacts of Climate Change on Subarctic Riverbank Erosion

Findings: Winter river discharge and earlier break-up dates were positively associated with river bank erosion rate

Significance: Climate-related changes to fluvial dynamics impact communities through effects on infrastructure, travel safety, channel navigability, fish and wildlife habitat, and access to subsistence resources.



Maps of riverbank erosion and vegetation colonization along reaches of the Yukon River, derived from Landsat imagery (1984-2017).

change in
temperature

change in
leaf drop

change in
water levels

Explore impacts on **moose harvest rates**

www.kdlg.org/post/warm-weather-meant-tough-hunting-gmus-17b-and-c#stream/0

Search

EarthExplorer | FAA Aviation Weather... | Webmail | AK GIS Layers | Band Combinations fo... | Alaska Hunting | Blackboard | ADFG Regs | Uaonline

Warm weather meant tough hunting in GMUs 17B and C

By ISABELLE ROSS • SEP 20, 2018

Tweet
Share
Google+
Email

Biologists and hunters are theorizing that moose laid low to escape the heat and inadvertently escaped the freezer.

CREDIT ADF&G

Alaska Department of Fish and Game
Boards Support Section
P.O. Box 115526
Juneau, AK 99811-5526

THE ALASKA BOARD OF GAME

2018/2019 Proposed Changes to Regulations

- Southeast Region
- Southcentral Region

Results, *"weekly" univariate statistics*

Local hunter harvest

	1-5 Sept	6-10 Sept	11-15 Sept	16-20 Sept	21-25 Sept
Temperature	No	No	No	No	No
Leaf drop	No	No	No	No	No
Water level	No	No	No	**P<0.01**	No

Non-local hunter harvest

	1-5 Sept	6-10 Sept	11-15 Sept	16-20 Sept	21-25 Sept
Temperature	No	**P<0.01**	**P=0.02**	**p<0.01**	No
Leaf drop	No	No	No	No	No
Water level	No	**P=0.02**	**P=0.02**	**P<0.01**	No

Future Directions & Cross-Scale Interactions

- Continue to explore biophysical causes and mechanisms influencing conditions affecting hunter access

- Incredible opportunities to connect LTER science to localized conditions affecting society, especially rural communities with reliance on stable conditions that foster food security sustain cultural practices

Publications

- Hasbrouck T, Brinkman TJ, Stout G, Kielland K. Assessing moose harvest patterns to address hunter competition. *Alces* (*in prep*)
- Hasbrouck T, Brinkman TJ, Stout G, Kielland K. Quantifying effects of environmental factors on moose hunting success. *Wildlife Biology* (in prep)
- Brown DR, Brinkman TJ, Verbyla DL, Bolton W, Hollingsworth TN. Impacts of climate change on subarctic riverbank erosion. *Climatic Change* (*In review*)
- Brown, DR, Brinkman TJ, Verbyla DL, Cold HS, Brown CL, Hollingsworth TN. 2018. Changing river ice seasonality and impacts on interior Alaskan communities. *Weather, Climate, & Society* DOI.org/10.1175/WCAS-D-17-0101.1
- Brinkman, TJ. Hunter acceptance of antlerless moose harvest in Alaska: Importance of agency trust, proximity of hunter residence to hunting area, and hunting experience. 2018. Human Dimensions of Wildlife 23(2):129-145.
- Brinkman TJ, Hansen W, Chapin FS, Kofinas GP, BurnSilver S, Rupp TS. Arctic communities perceive climate impacts on access as a critical challenge to availability of subsistence resources. Climatic Change 2016;139(3-4):413-427.