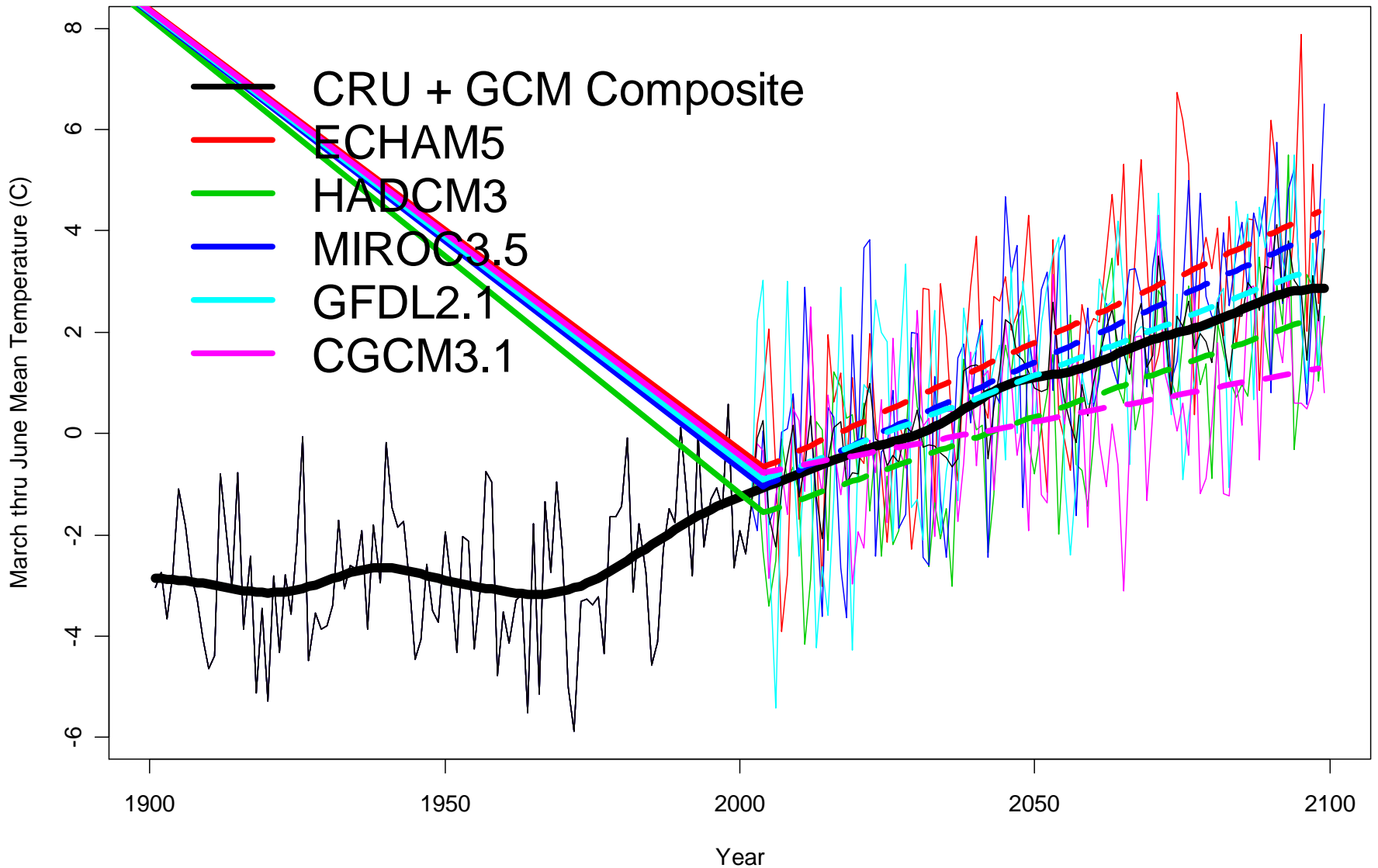


# Alaska Planning for Climate- Change Adaptation

Terry Chapin

March 29, 2011

# March-June Average Temperature (C°) Alaska: 1901-2099



# Climate Change in Newtok, Alaska



**Community must move.**

**They want to move, have acquired the land; some funding available**

**Existing formal institutions have no authority to participate**

# Sea ice retreat: Ice-dependent sea mammals (and communities) at risk





**Area burned in W. North  
America has doubled  
in last 40 years**



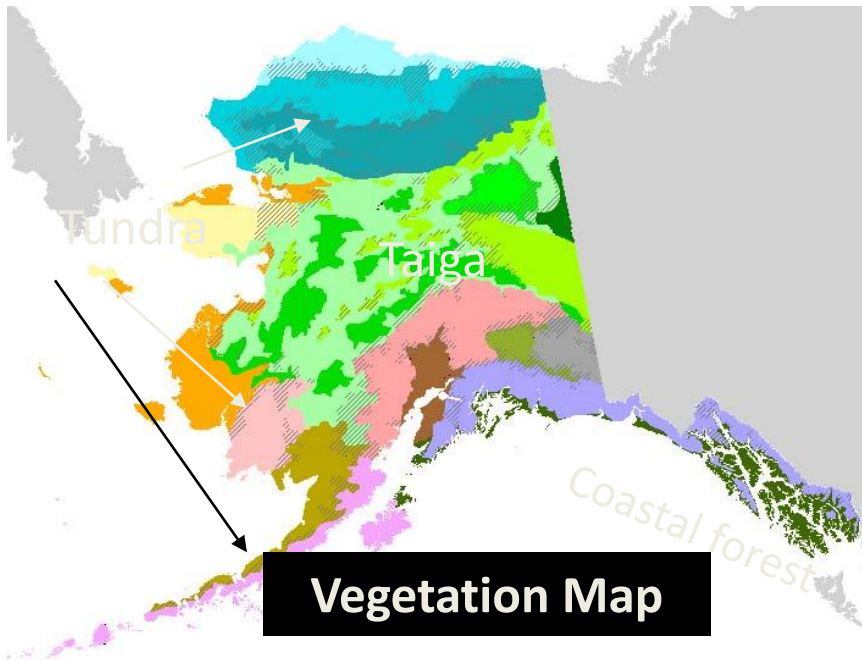


# Changes in burn depth lead to new forest types



# Close connection between ecology and culture

## If we change ecology, what happens to culture?





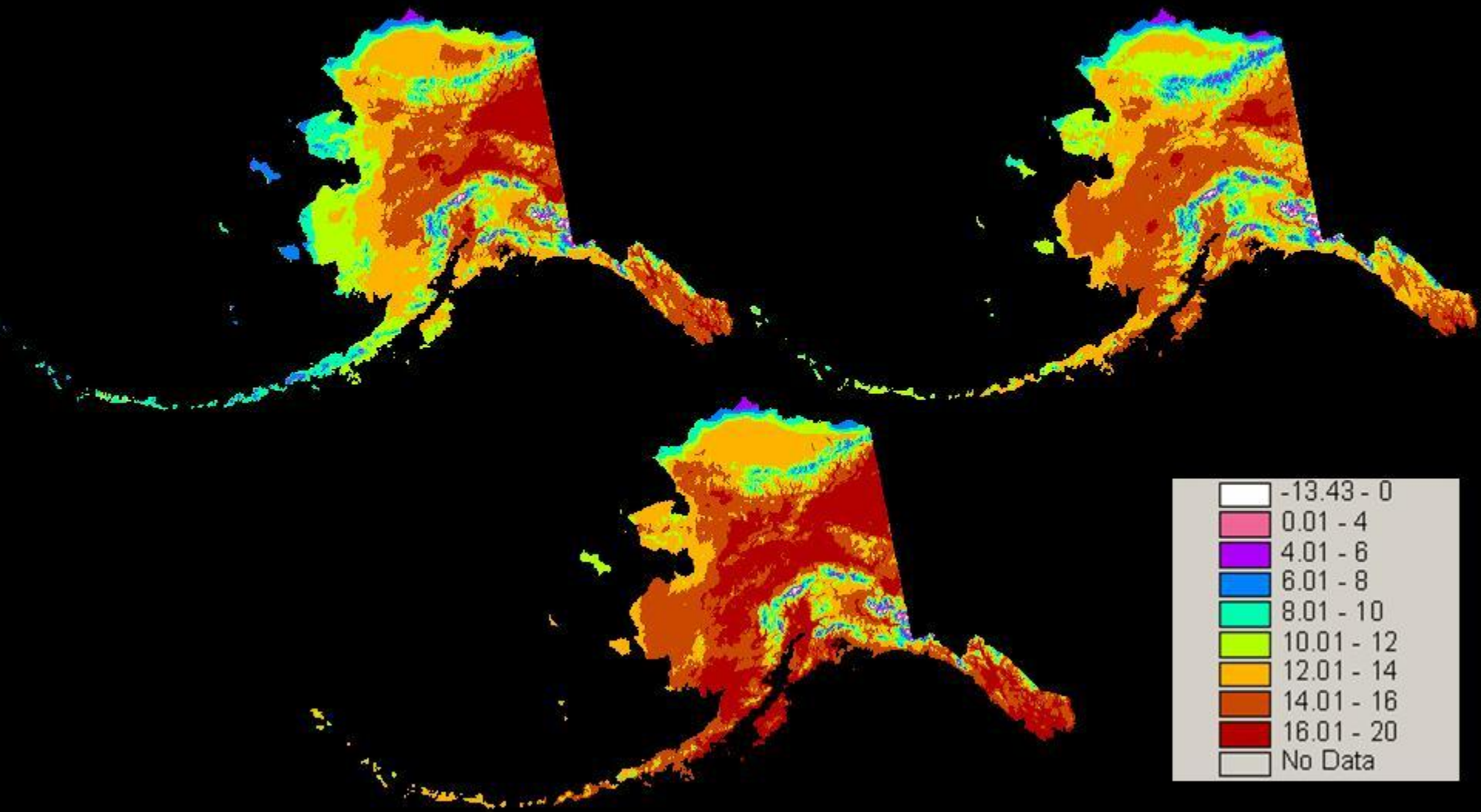
# Community involvement: Looking for a larger context

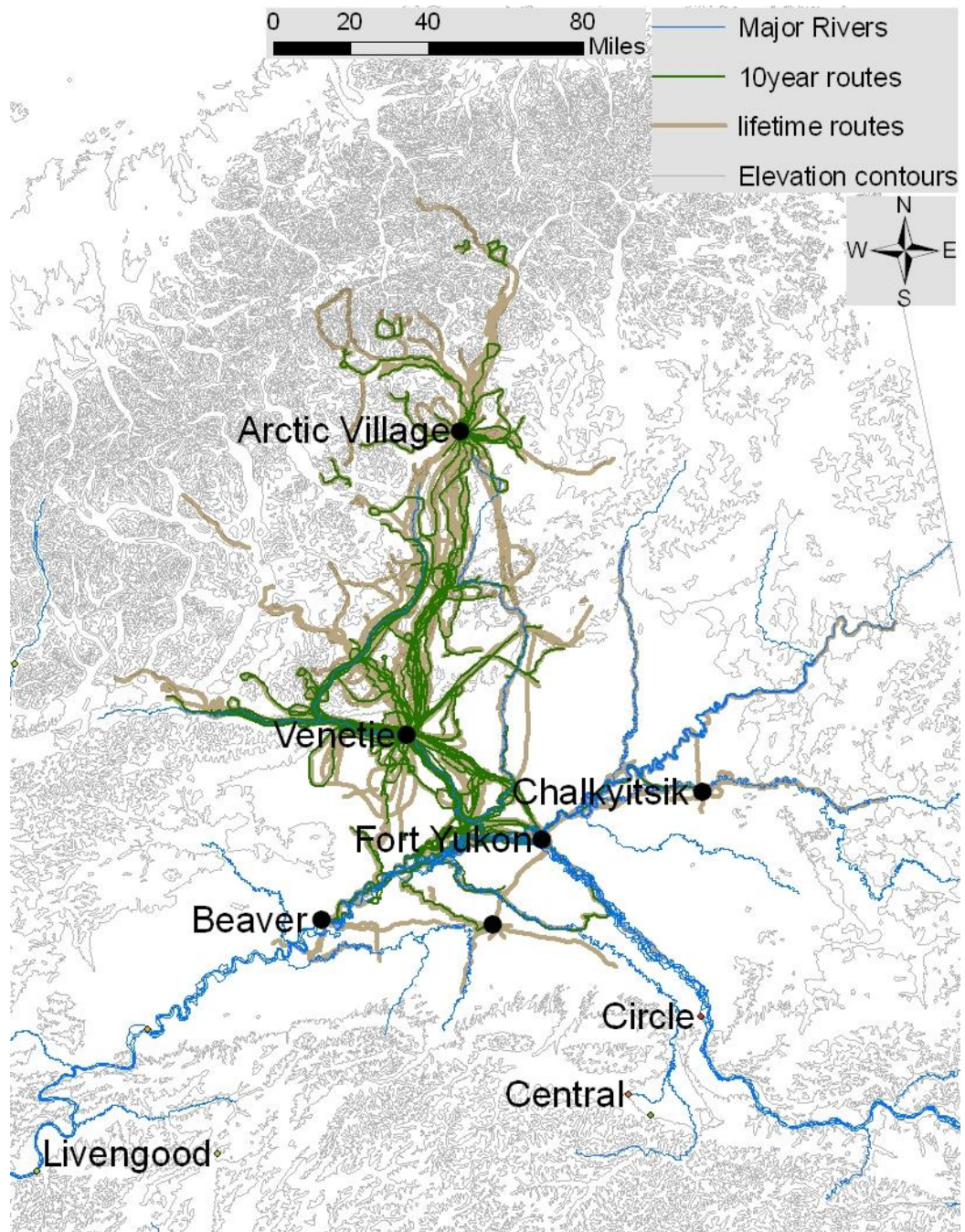
- Fire suppression increases fire risk
  - Communities surrounded by late-successional fire-prone vegetation
- Fuel costs > \$9/gallon
  - Drives rural-urban migration
  - Threatens viability of rural communities
- Spruce harvest to reduce fire risk
  - Ecologically sustainable (90% of communities)
  - Economically viable (>80% of communities)
  - 90% of costs kept local as wages
  - Improved moose habitat near villages





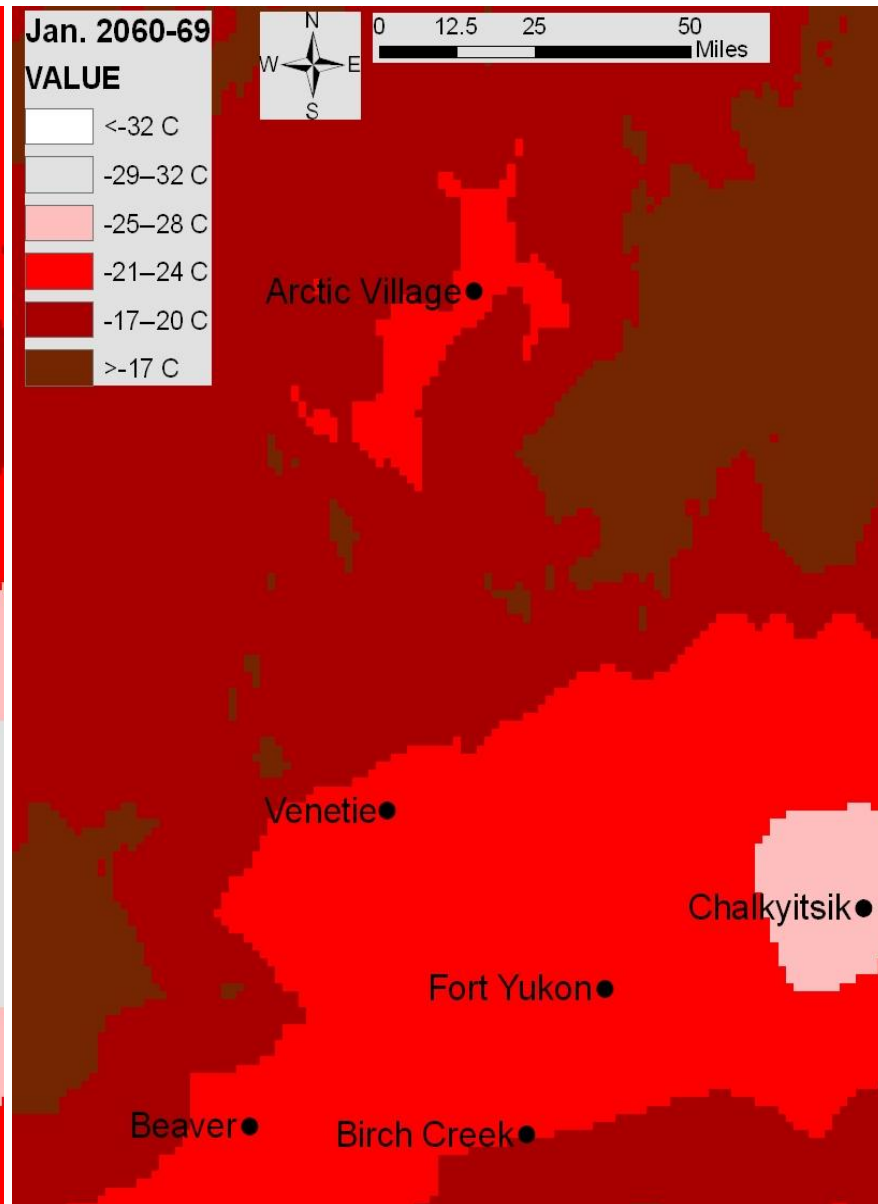
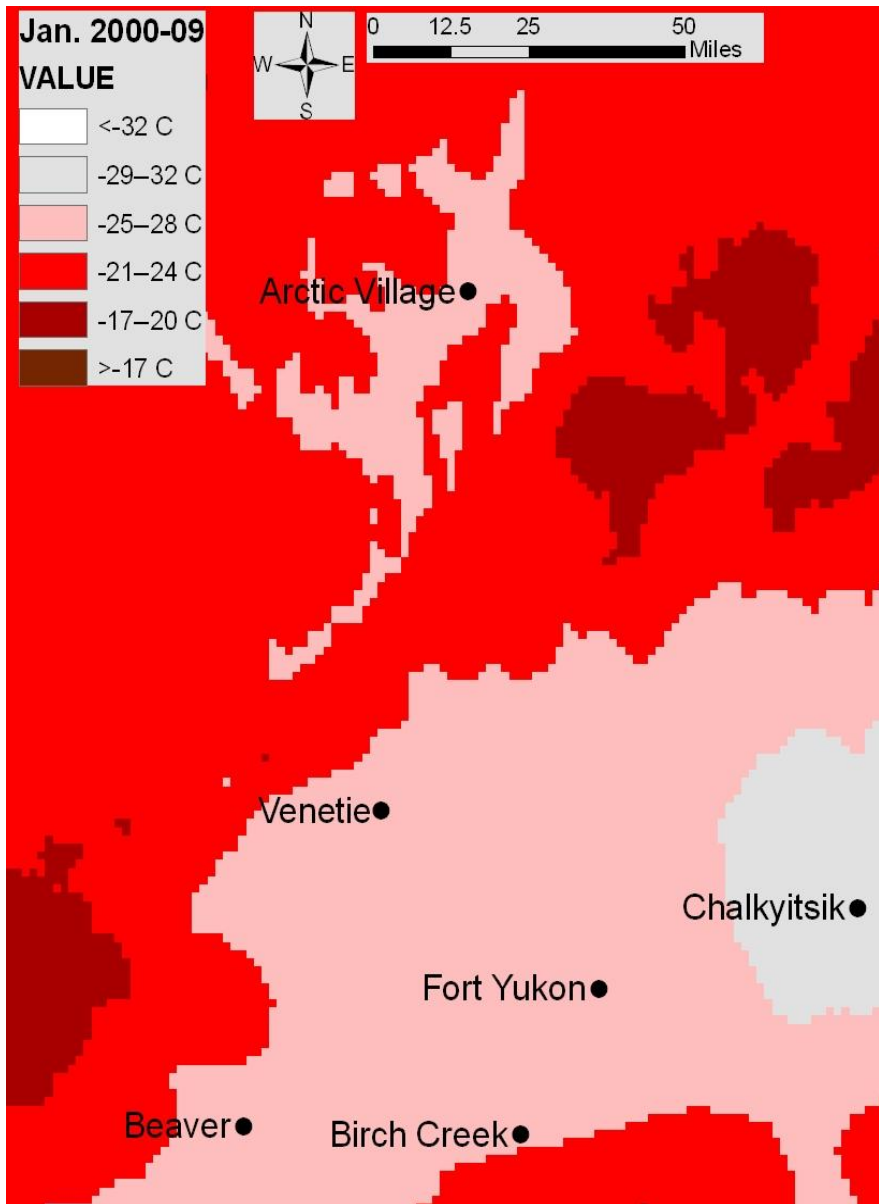
# Average July Temperatures 2007, 2050, and 2099 *ECHAM5*

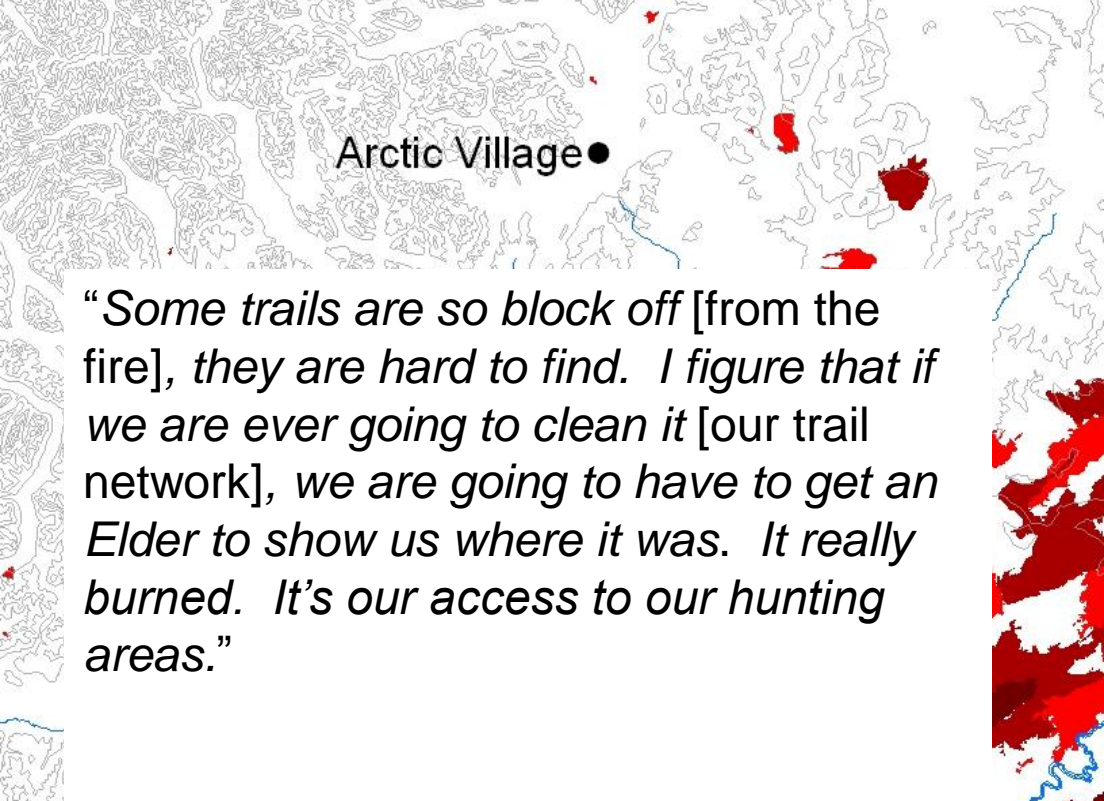
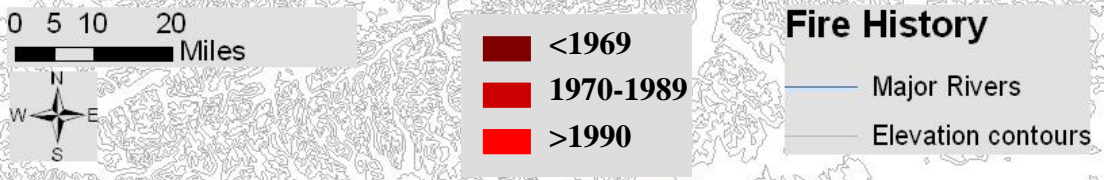




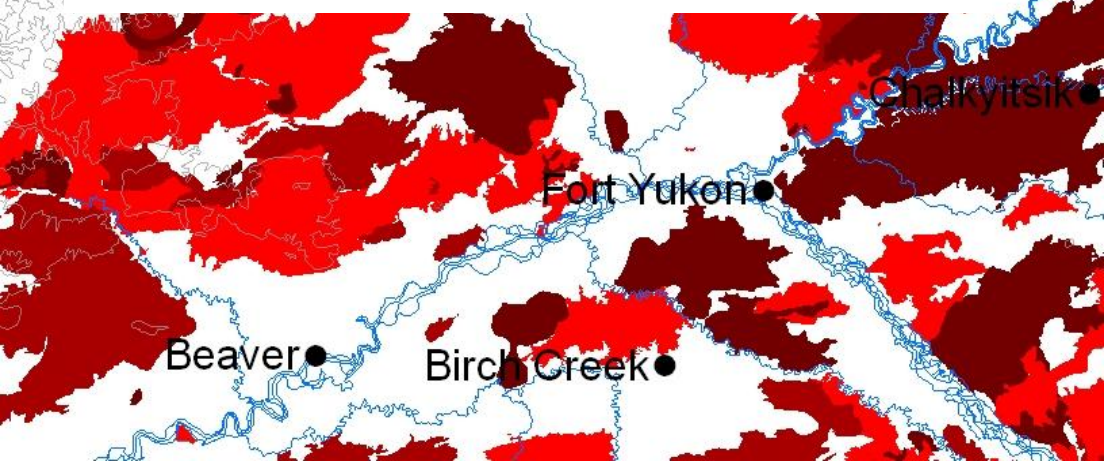


# Temperature





*“Some trails are so block off [from the fire], they are hard to find. I figure that if we are ever going to clean it [our trail network], we are going to have to get an Elder to show us where it was. It really burned. It’s our access to our hunting areas.”*



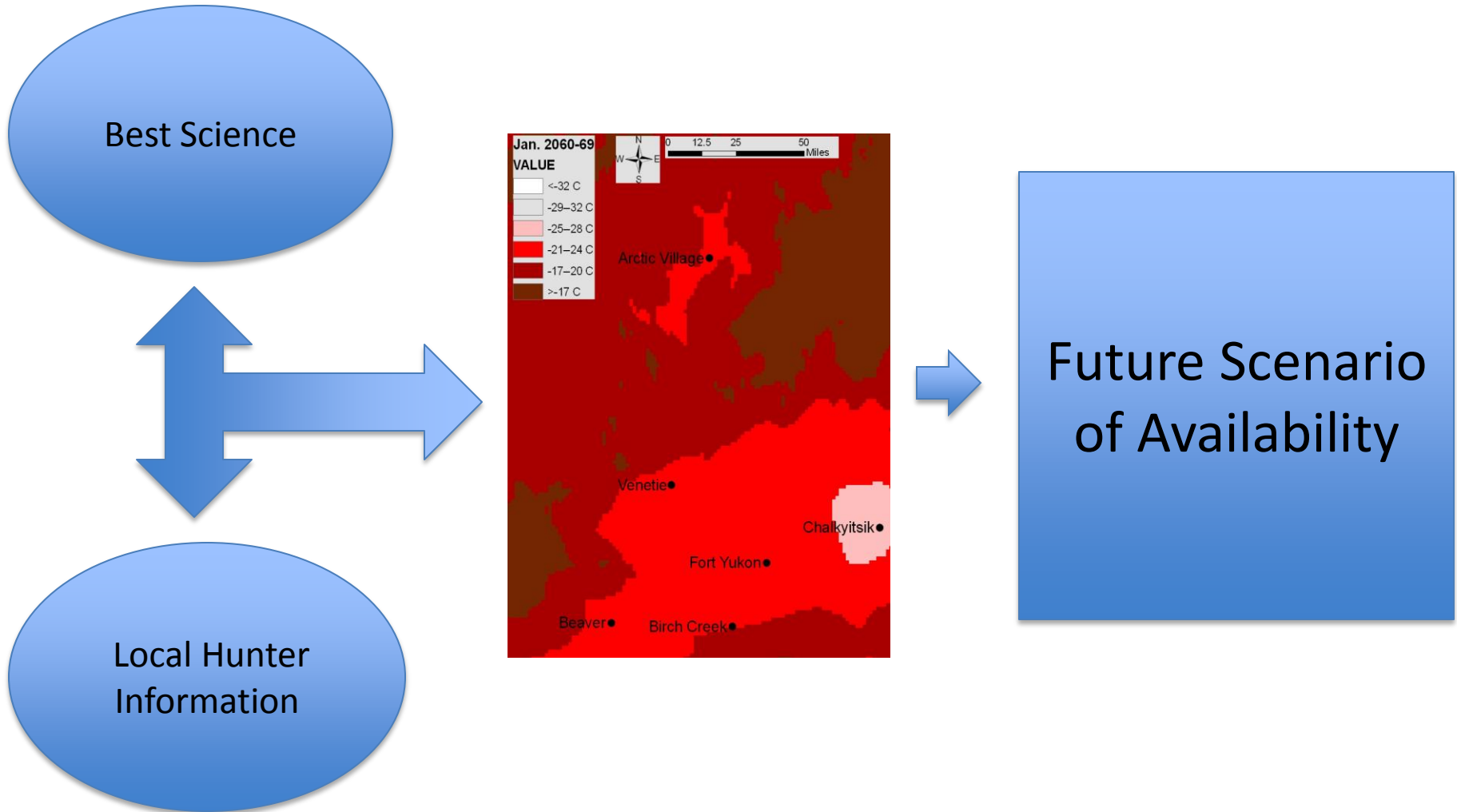
Access:

Caribou:

- Moose:
1. Burns destroy trails
  1. Caribou avoid burns.
  2. Create rough ground
  1. Fires are thought to initially displace moose, but moose return within a few years.
  2. Hunters suggested that caribou don't come as far south because of the burns to the north. movement and visibility
  2. Most hunters agreed, fires were good for moose.



# Merge Interactions with Future Projections



# What did I learn about climate change?

## Communication is crucial

- Build on respect for one another
- Find topics of shared concern
  - Science must be relevant to communities
- Share observations (dialogue)
  - Community observations fill gaps in science data
- Talk together about what it means
  - Implications for communities
- Decide what to do
  - Communities must lead the decision making
  - Communities differ in capacity to do this



# Climate change is part of a larger challenge

- Climate change affects the options for responding to rising fuel costs
- It affects foods which affect health
- Integrate climate change with other community issues
- Holistic approach allows many problems to be considered at the same time

# Requires a new kind of science

- Builds on understanding of climate change
  - Both traditional knowledge and western science
- Focused on practical solutions to tough problems
- Requires partnerships between scientists and users of all sorts
- Recognizes the moral and spiritual values that motivate people's actions



# Earth Stewardship

- Active shaping of the interactions of people and nature to enhance ecosystem resilience and human well-being
- Consistent with First Nations worldview
- Key features
  - Active intervention
  - Shaping change
  - System of people and nature
  - Twin goals: ecosystem resilience, human well-being

# Working Group on Rural Alaskan Self-Reliance

- Broad goal of rural Alaskan communities
- Start with community vision of self-reliance
- Community-university-working group partnership
  - Explore ways to implement community vision
- Build a knowledge network
  - Community member and student are key interface
  - Databases of resources (information, funding)
  - Databases of lessons learned
    - Best practices, successes, failures

# Conclusions

- Climate change is likely to continue, especially in the North
- We know enough to plan for many of these changes
  - But expect surprises
- A science-community partnership benefits both science and communities
- We must explore many ways to make this work
  - Try different ideas (there's no best answer)
  - Actively shape the world in which we live



# How you communicate matters!

## Negative messages lead to

- Trigger fear, anger, shame
- Fight-or-flight behavior
- Avoid the issues
- Often associated with consumerism and concern for self

# Positive messages

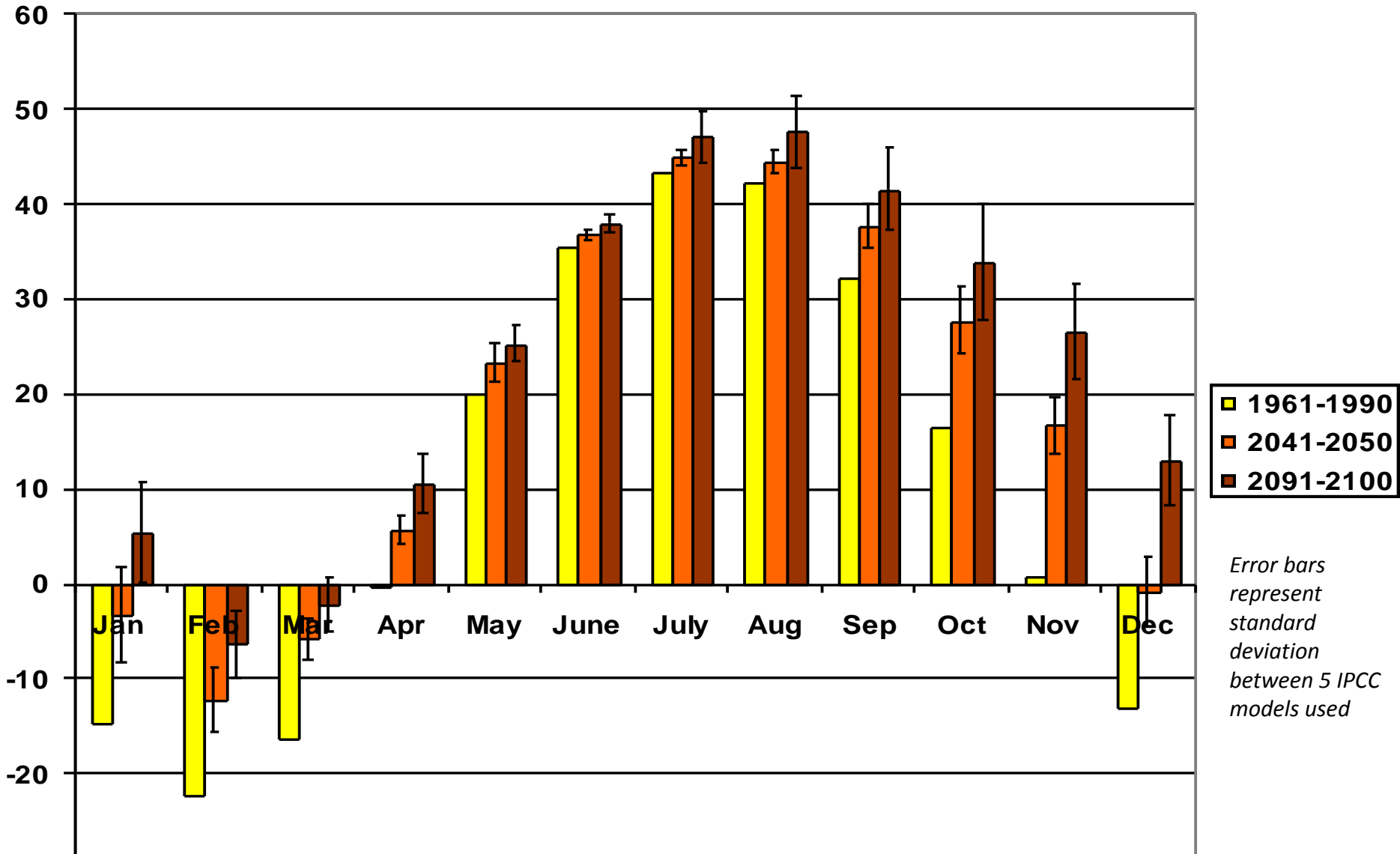
- Trigger positive feelings that make you think and take actions
- Draw on creative abilities
- Lead to behaviors that care for nature
- Leads to community engagement, strong personal relationships, resilience, problem-solving

# How do you create positive messages about climate change?

- Opportunities for people and communities to take actions

# Wainwright Projections

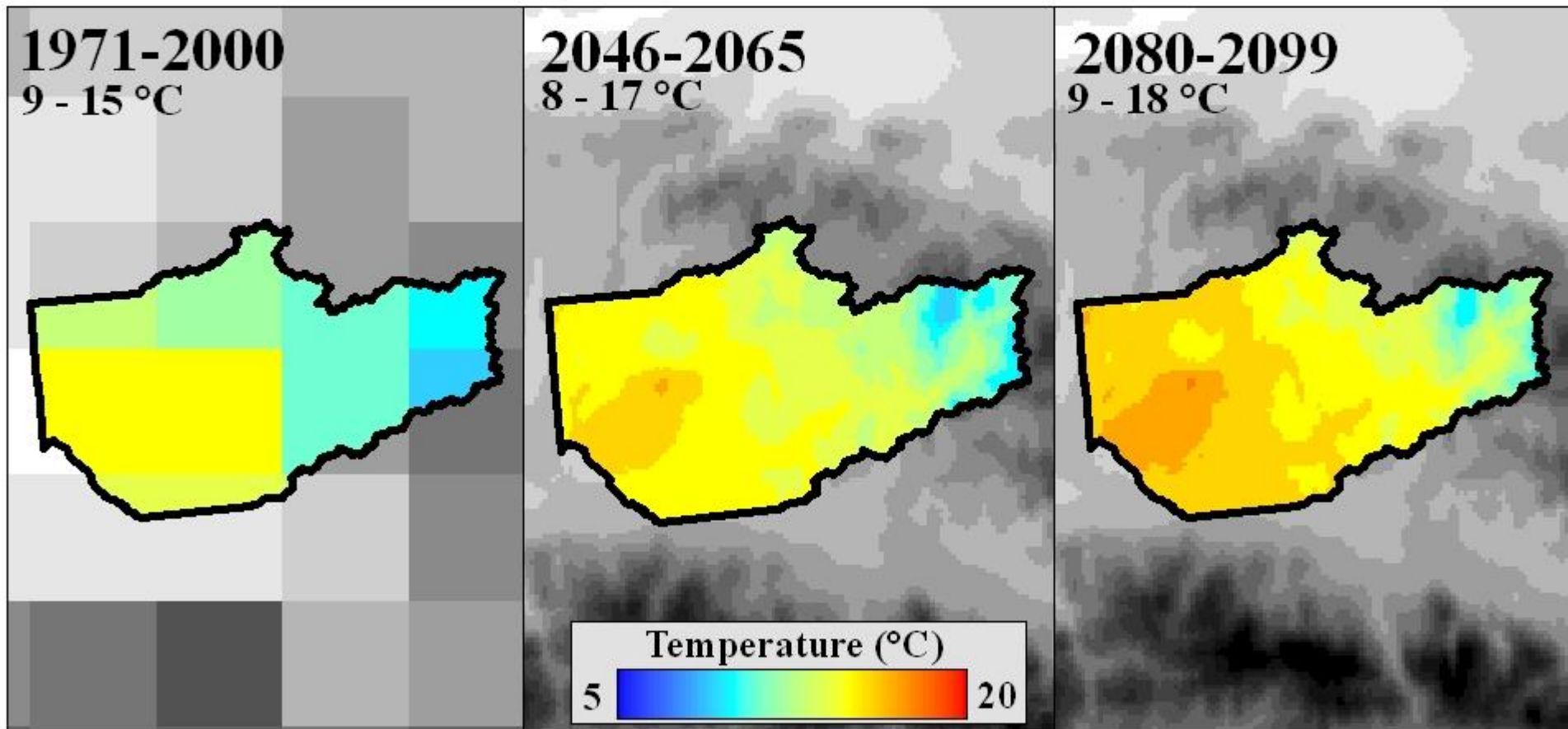
## Temperature (°F)



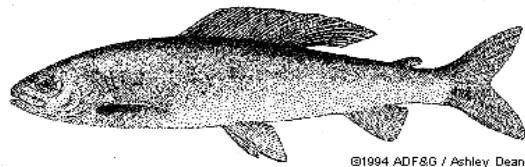


# Fairbanks is expected to get warmer

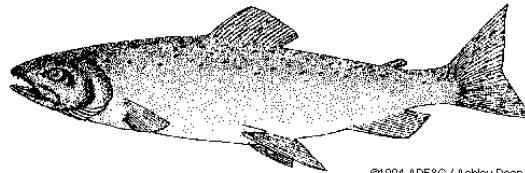
**Mean Monthly June Temperature (°C) Averaged over the Years Shown.**



# Step 1: Community Identifies Critical Species



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If facts are obvious, why don't people do the right things?

Possible explanations:

- Climate skeptics spread misinformation?
- Vested interests thwart policies?
- Scientists are ineffective in communicating climate-change science?

# Six Americas Yale University Study

- Alarmed (14%)
- Concerned (31%)
- Cautious and disengaged (33%)
- Doubtful (12%)
- Dismissive (11%)



# Alarmed and concerned (45%)

- Strong environmental values
- Believe global warming is happening
- Think human emissions contribute
- Think the ozone hole causes warming
  - Ban aerosol cans!!
- Trust scientists as best sources of information

# Cautious and disengaged (33%)

- Don't know enough about climate change to have strong opinions
- Other things in their lives are higher priorities

# Doubtful and dismissive (23%)

- Don't believe climate change is happening
- Most don't believe people are causal factor
- Less likely to say ozone hole is contributing factor
- Don't trust scientists as much as family and friends for sources of information
  - Where do scientists put the effort in climate-change communication?
  - Maybe scientists aren't the best messengers?