Alaska ACE
Southcentral Test Case

Alaska Adapting to Changing Environments ("Alaska ACE") is a place-based, interdisciplinary effort by Alaska EPSCoR, a program of the National Science Foundation, to increase Alaska's research capacity.

* Five year initiative

* Organized into three regional test cases based at University of Alaska campuses

  Southcentral test case-University of Alaska Anchorage (including Kenai Peninsula College)
  Southeast test case-University of Alaska Southeast
  Northern test case-University of Alaska Fairbanks

* Addresses features of changing environments

* Identifies key variables and processes that maximize communities ability to effectively respond to change

The ACE project will produce multiple long-term benefits for Alaska

* Development of tools that can be used by decision-makers to assist adaptive responses
* Establishment of a center for ongoing studies of adaptation in the North; a permanent, accessible resource to Alaskans supporting adaptation decision making
* Capacity building at small and rural UA campuses
* Contribute hydrological data useful to researchers, watershed managers, and residents
* Development of a data portal providing geospatial, scientific and social/demographic data for use by researchers and citizens
* Education and workforce development efforts to increase interest and expertise in STEM disciplines

NSF

Alaska EPSCoR

www.alaska.edu/epscor

Southcentral Test Case

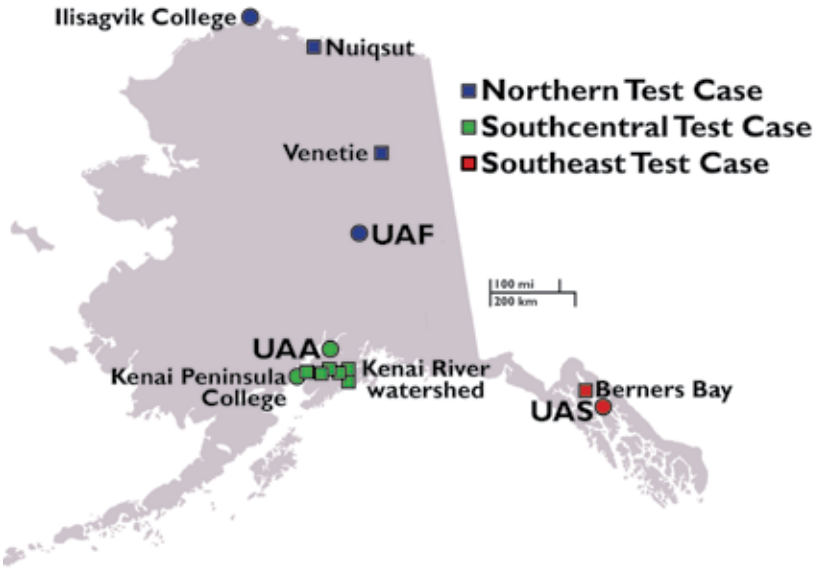

Fig 1. Map of regional test cases based at University of Alaska campuses

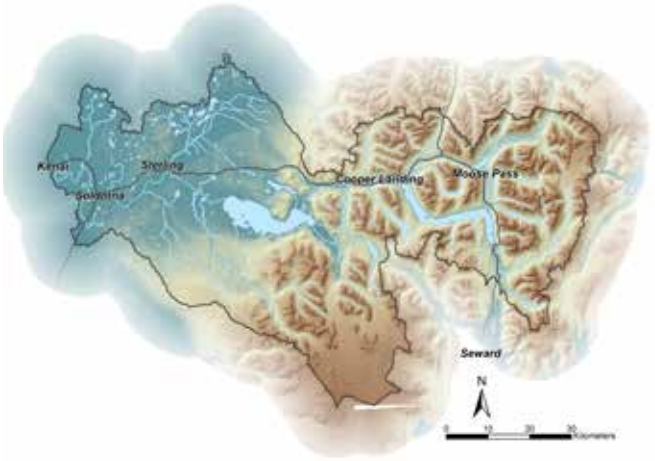

Fig 2. Map of communities in the Kenai watershed included in Southcentral test case research

The Southcentral test case will provide a place-based examination of multiple drivers of social-ecological change contributing to the development of research capacity for adaptation to change in Alaskan communities.

The ***Southcentral Test Case***, based at the University of Alaska Anchorage, focuses on drivers of change in the communities of the Kenai River watershed. The area is subject to multiple drivers of change, including global and regional temperature and precipitation changes; salmon population fluctuations; a recent tourism downturn; recreational pressure from Anchorage; shrinking wetlands and successional change; and forest fire dynamics. Hydrological changes in the area include river discharge, water temperature, and sedimentation, while landcover changes include urbanization, resource extraction, infrastructure, drying wetlands, and forest fires. These multiple interacting factors form the basis of a 'messy' social-ecological system and necessitate response and adaptation by communities in the watershed.

Goals of the Southcentral Test Case

* Measure hydrological, landscape and associated social changes on the Kenai peninsula
* Understand the interactions of these multiple drivers of change and their societal impacts
* Identify the factors contributing to adaptive capacity as a response to these changes and consequences

The Southcentral test case will work with:

Coordination, Integration and Synthesis (CIS) Working Group- CIS will assist with methodology and technology to support research and to coordinate with other test cases, and develop tools and models for decision support across the state.

Education, Outreach and Diversity (EOD) Working Group- EOD will help to involve a broad cross-section of Alaskan students and residents in research efforts and to keep the public informed of results.

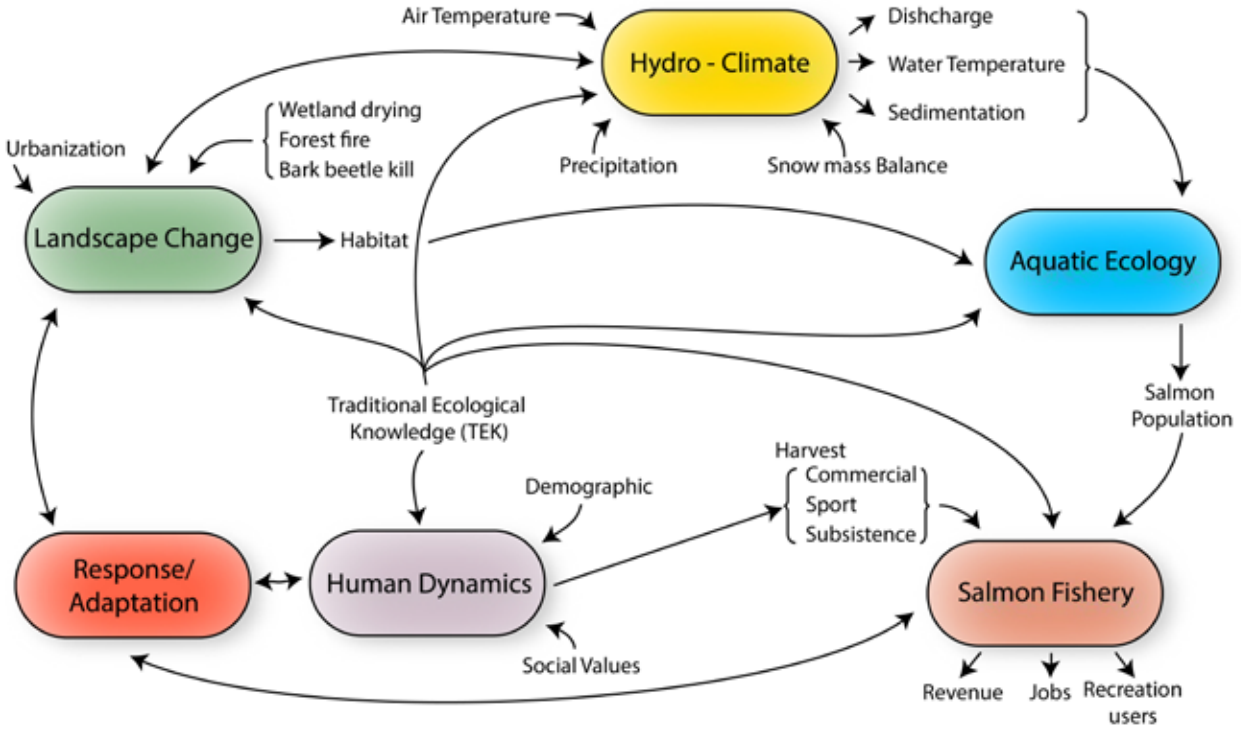

Fig 3. Southcentral test case: multiple drivers of change

Each Southcentral test case research area examines the consequences of:

Hydro-Climate climate-induced changes in air temperature and precipitation, and landscape changes in the Kenai River watershed. Primary consequences considered include changes in river discharge, water temperature, and sediment discharge. Existing USGS and KWF hydrological monitoring on the main stem of the Kenai River is utilized in conjunction with reactivation of hydrological monitoring on three tributaries – Beaver Creek, Russian River, and Ptarmigan Creek.

Landscape change anthropogenic and natural landscape disturbance in the Kenai River watershed on the hydrological signature and on aquatic habitat. Anthropogenic disturbance includes the human footprint on Kenai River watershed resulting from urban development, road construction, and resource exploration and extraction. Natural disturbances include spruce bark beetle kill, forest fire, and wetland drying and succession.

Aquatic ecology hydrological change and landscape change on aquatic habitat in the Kenai River watershed, particularly for sockeye and Chinook salmon rearing. Although the focus is on salmon rearing habitat this is considered within the context of Kenai River salmon populations, socio-economic factors, and the potential effects for salmon fisheries.

Salmon fishery changes in salmon habitat on the Sockeye and Chinook fisheries in the Kenai River, including subsistence, sport, and commercial fisheries. Consideration is given to monetary consequences (harvest size, revenue, jobs, user numbers) and non-monetary consequences (social values). Although the focus is on salmon habitat, this is considered within the context of endogenous factors, such as the local and state oil and gas sector, and exogenous factors, such as the global nature of commercial fisheries, and the marine component of salmon as anadramous species.

Human dynamics effects from, hydrological change, landscape change, and subsequent effects on salmon habitat, salmon populations, and salmon fisheries as a result of anthropogenic or human activities. Social factors to be considered include social values, perceptions, human demography, and Kenaitze traditional knowledge, with a view to understanding community response and adaptive capacity.

How can you be involved?

* Contribute to and explore our data catalog: sctc.gina.alaska.edu
* Provide feedback on developed products
* Participate in community surveys
* Share your traditional knowledge
* Get involved in our initiatives: K-12 education, diversity, data catalogue
* Review our website for other current initiatives and actitivities: www.alaska.edu/epscor

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GINA