

Regional Climate Projections: Southcentral Alaska



Southcentral Alaska includes the Alaska Range, Wrangell Mountains, Copper River Basin and Cook Inlet areas. In much of this region, including Anchorage, mean annual temperatures are above freezing, and precipitation is substantially higher than in Interior Alaska. Projected increases in temperature and precipitation coupled with the drying effects of greater evapotranspiration are expected to result in higher incidence of insect outbreaks and forest fires and the further spread of invasive species. Ocean acidification may impact fisheries.

Who We Are

SNAP — The Scenarios Network for Alaska & Arctic Planning links university researchers with communities and resource managers. Through partnerships involving data sharing, research, modeling and interpretation of model results, SNAP addresses some of the complex challenges of adapting to future conditions.

CES — The Cooperative Extension Service is the educational outreach component of the national land grant university system — in Alaska, the University of Alaska Fairbanks. CES conducts research and provides educational outreach statewide.

ACCAP — The aim of the Alaska Center for Climate Assessment and Policy is to assess the socioeconomic and biophysical impacts of climate variability in Alaska, make this information available to decision makers, and improve the ability of Alaskans to adapt to a changing climate.

Together, SNAP, ACCAP and CES provide a variety of services that may assist you in meeting your community planning needs.

Planning for Change

Alaskans face many challenges in the next century. Rising energy costs have impacted the cost of food, fuel and other services. Changes in temperature and moisture can trigger profound landscape-level changes such as sea level rise, modified patterns of storms, flooding or fire, and altered migration routes, breeding patterns or survivorship of fish and wildlife.

Everyone — from engineers to farmers to wildlife managers — will need to take economic change, social change and climate change into account when planning for the future in order to avoid costly mistakes and take advantage of new opportunities. Planning requires objective analysis

of future projections, including clear explanations of the uncertainty inherent in all forms of forecasting.

Uncertainty

While values are based on the best available climate models, they are estimates only. There is variation among climate models and annual variation within each model. Interpretation of impacts adds additional uncertainty.

Climate Models

SNAP provides average values of projections from five global models used by the Intergovernmental Panel on Climate Change (IPCC). Climate projections are based on three scenarios for carbon dioxide emissions that cover a wide range of possible future conditions.

Statewide Trends

Temperatures and precipitation are expected to increase across the state throughout the next century. The growing season will lengthen, and glaciers, sea ice and permafrost will be reduced. Significant ecosystem shifts are likely statewide.



www.uaf.edu/ces

1-877-520-5211

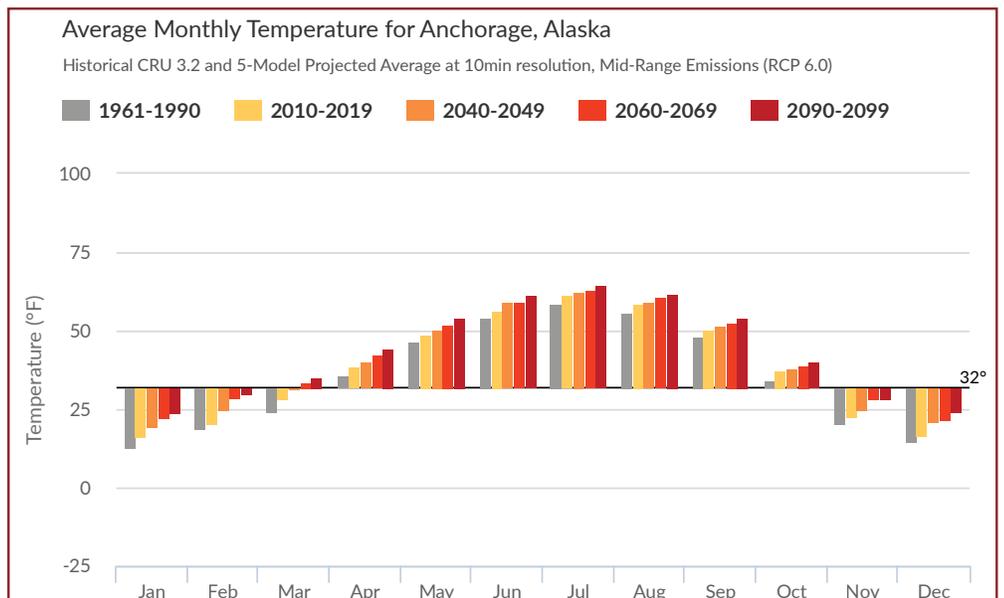
www.snap.uaf.edu

Climate Projections

Temperatures in this region are projected to increase over the coming decades at an average rate of about 1°F per decade. Mean temperatures in Anchorage are projected to rise from well below freezing in November and March to slightly above freezing, with corresponding increases in December–February. Milder winters will likely result in significant reductions in snowpack, since a higher percentage of precipitation would occur as rain. Precipitation is predicted to increase in this region, although it will be offset by an increase in evapotranspiration from warmer temperatures and a longer growing season. As a result, conditions are expected to become substantially drier in the summer and potentially icier in winter.

Regional Impacts

In Southcentral Alaska, warmer and drier conditions will likely cause further shifts in native and invasive species. Shorter, milder winters allow for greater survival of pest species, as was the case with recent bark beetle outbreaks. Non-native insects such as the green alder sawfly have caused extensive mortality of thinleaf alders

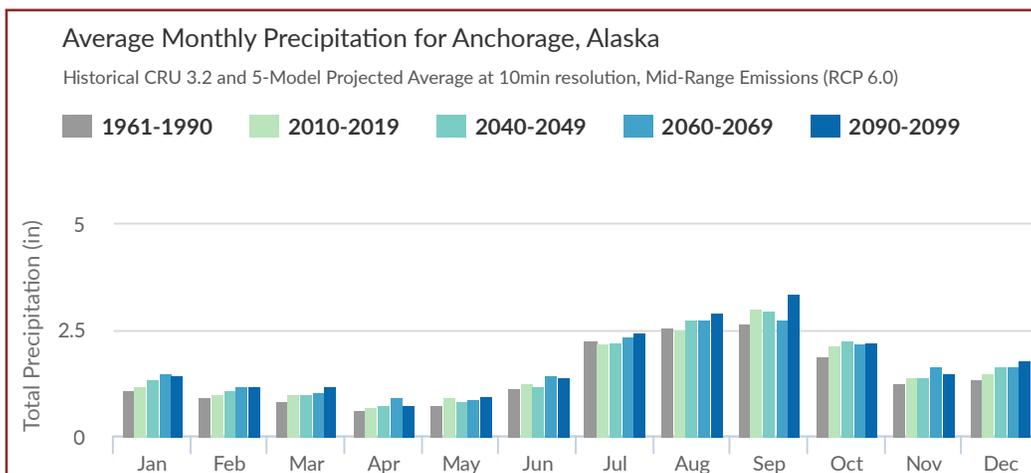


in this region. Warmer weather and insect-killed trees may also lead to increased incidence and severity of forest fire.

Species shifts could negatively impact ecosystem function and subsistence activities. However, longer growing seasons and milder winters could also expand agricultural potential. Higher temperatures result in a longer growing season, which could have significant effects on wildlife mating cycles, plant growth and flowering, water availability in soil and rivers, and hunting and fishing.

In the Southcentral boreal forest, invasive species are the dominant mechanism of change. Invasive plants such as orange hawkweed, purple loosestrife and white sweet-clover spread aggressively and outcompete native vegetation. The spread of invasive species alters forest structure and regeneration. The indirect effects on water and nutrient availability will likely determine future productivity of trees in Southcentral Alaska.

Around Cook Inlet, storm severity and the associated risks from flooding and erosion are likely to increase.



The chart tool used to create these graphs is available for more than 440 communities statewide at www.snap.uaf.edu.