

Water Temperature of Streams in the Cook Inlet Basin, Alaska, and Implications of Climate Change

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Water-temperature data from 32 sites in the Cook Inlet Basin, south-central Alaska, indicate various trends that depend on watershed characteristics. Basins that have 25 percent or more of their area covered by glaciers have the coldest water temperature during the open-water season, mid-May to mid-October. Streams and rivers that drain lowlands have the warmest water temperatures. A model that uses air temperature as input to predict water temperature as output was utilized to simulate future trends in water temperature based on increased air temperatures due to climate warming. Based on the Nash–Sutcliffe coefficient, the model produced acceptable results for 27 sites. For basins that have more than 25 percent glacial coverage, the model was not as accurate. Results indicate that 15 sites had a predicted water-temperature change of 3 degrees Celsius or more, a magnitude of change that is considered significant for the incidence of disease in fish populations.