Campbell Creek Watershed, Anchorage, AK
Cam_AK_TAIG AK CMC 61.15oN, 149.9oW

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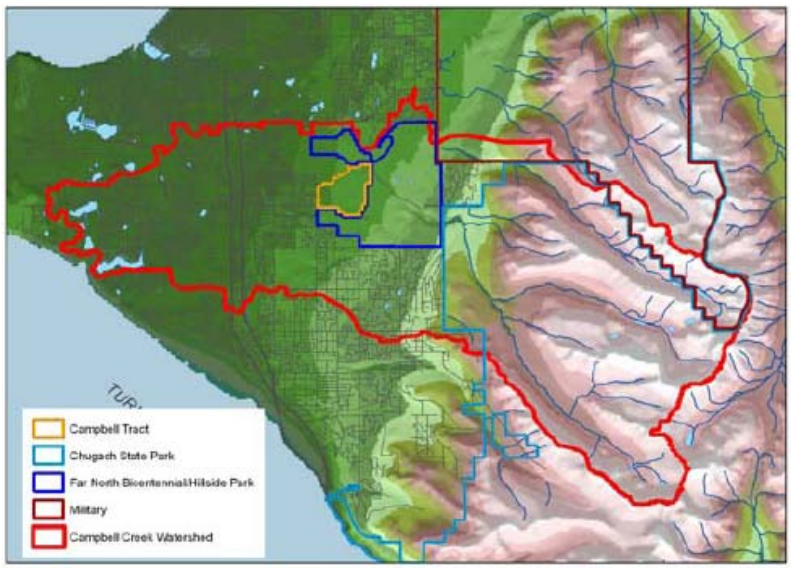
Location of site: The Campbell Creek Watershed spans the alpine and boreal regions of the Chugach State Park (http://www.dnr.state.ak.us/parks/units/chugach/) to the Pacific Ocean of Cook Inlet.



History of site: The Campbell Creek Watershed has been studied since 1985 with a focus on carbon and nitrogen cycling in plants, soils and water. The BLM has long been a landholder in a portion of the watershed (see Map) and the watershed includes pristine headwaters, the Bicentennial parkland and direct urban influences before entering Cook Inlet. Since 1995 the BLM has used this watershed for citizen science and has recently establish the Campbell Creek Science Center (http://www.blm.gov/ak/sciencecenter/index.html), an outstanding outreach and education facility. Today, we have several studies underway that address stream water isotope geochemistry (Sjostrom et al. 2006-AGU) including sampling for metals and other contaminants.

Key Characteristics: This watershed is an ideal model to study urban influences on terrestrial, atmospheric and aquatic processes as it begins in a pristine headwater, flows through Anchorage and enters the Pacific Ocean in Cook Inlet. We have access throughout the watershed for instrument placement; we have BLM, USGS, UA and other agencies active in the region. The vegetation includes alpine tundra, altitudinal tree line as well as a shrub line zone. The lower elevations are dominated by coastal boreal forest with a mix of black and white spruce, birch and alder. The site also fits along our tundra-taiga climate/vegetation gradient as a boundary ecosystem between the interior boreal forest and the northern temperature rain forest. At present there are a few hemlock and Sitka spruce in our upper forest, which will likely increase in density if climate change patterns favor the expansion of the northern temperate rain forest to the north as climates warm. National ecological observatories will be able to document these changes in vegetation zones over the next 30 years in this system.

Existing Infrastructure and Facilities: First, we have the BLM Science Center that can headquarter our citizen science, outreach and education. Second, we have the UAA Boreal Forest Experimental Observatory which consist of a set of low-level micrometerological towers in white and black spruce sites (http://beo.alaska.edu). We also have power throughout the watershed and wind energy could be used in the tree line and alpine locations. We have an existing set of very high quality air photos for tracking vegetation changes that were taken in 1985. We would also have access to laboratory facilities of the Environment and Natural Resources Institute include mass spectrometers, ICPMS, LC-MS and an array of equipment with the USGS and USFWS.

References: Sjostrom, D., Munk, L., Cohen, J, and Welker, J. 2006. Stable Isotope Hydrology of the Anchorage, Alaska Area: Precipitation, Streamwater, and Groundwater Connections. AGU SF, 2006. **Sveinbjornsson** B, Davis J, Abadie WD, Butler A (1995) Soil carbon and nitrogen mineralization at different elevations in the Chugach mountains of south-central Alaska, U.S.A. Arctic and Alpine Research 27:29-3 **Sveinbjörnsson** B (2000) North American and European treelines: external forces and internal processes controlling position. Ambio 29:388-394 **Sveinbjörnsson** B, Hofgaard A, Lloyd A (2002) Natural causes of the tundra-taiga boundary. Ambio Special Report 12:23-29