**Variability in hydrological conditions in ponds between an urban Arctic community and surrounding tundra**

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Changes in hydrological conditions due to climatic warming is of critical concern to Arctic communities. As part of an NSF Navigating the New Arctic project, our team of multi-disciplinary researchers and community participants in Utqiaġvik, Alaska is addressing how the presence of surface and subsurface waters related to infrastructure influences both the hydrology and water quality within the changing landscape. Deployment of a comprehensive aquatic sensor array is needed to observe these interactions at varying scales from neighborhoods to sub-watersheds. A suite of stand-alone HOBO loggers measuring conductivity, temperature, and pressure (water level), and multi-parameter YSI sondes will monitor key water characteristics, with a focus on the changing hydrologic connectivity and quality of water bodies with increased infrastructure development. Coincident terrestrial micro-meteorological sensors and geophysical surveys will provide an extensive supplemental dataset to further examine the interactions of the built environment on the surrounding water. Sensors were installed in the summers of 2022 and 2023 across 17 ponds with water bodies covering a range of environmental gradients within the community related to urbanization, infrastructure type, and coastal influence. Monthly water samples in June, August, and September were collected for nutrient analyses with results indicating elevated concentrations of ammonium ($NH_4^+$), total nitrite-nitrate ($NO_3^-$), and dissolved phosphorus ($PO_4^{3-}$) in urban ponds compared to the surrounding tundra which agree with preliminary conductivity data findings. Concentrations across all sites decreased between the months of June and August, with average $NH_4^+$ concentrations in June of 4.5uM in urban ponds compared to 1.6uM in tundra sites. Average values for the month of August for urban vs. tundra were 1.8uM and 1.3uM respectively. Variability in hydrologic conditions and nutrient concentrations between urban and surrounding ponds related to localized permafrost conditions, watershed slope, and seasonal flow patterns will be examined further to understand the factors driving these differences.