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**Title**

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Theme -Theme 1: Design, Optimization and Implementation of the Observing System  
Theme 2: Observing in Support of Adaptation and Mitigation

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Poster title (brief) Indigenous Observation Network: Leveraging citizen-science on existing instrumentation networks and for community-based research and global connections

Abstract - text box

The Indigenous Observation Network (ION) was established in partnership between the Yukon River Inter-Tribal Watershed Council (YRTIWC) , Native Alaska Tribes, First Nations, and the USGS with the vision to extend water quality monitoring activities on the Yukon River Basin (YRB) in 2006. Thirteen years later the YRTIWC and USGS continue to work together to research and monitor environmental changes throughout the YRB. While this collaboration has inevitably faced challenges largely due to funding and remote locations, ION has provided publicly available international water chemistry data throughout the YRB while also contributing to the Arctic Great Rivers Observatory. Participating indigenous communities use this data to document water quality baseline conditions and its changes over times. Combining the citizen-science ION data with the existing and historical network of the USGS allows for the synergistic modeling of water quality fluxes for over three decades and at a rare spatial scale for an Arctic river watershed. Several years after the initiation of ION, the program has extended to include an Active Layer Network (ALN). The ALN was developed to investigate active layer dynamics throughout the watershed with communities along YRB and shares his data with the Circumpolar Active Layer Monitoring (CALM) Network. Large scale permafrost degradation, within the predominantly discontinuous permafrost YRB, has been hypothesized as one of the reasons for increasing groundwater contributions. At the same time, multi-decadal increases of annual fluxes of weathering ions have also been observed within the Yukon to support the hypothesis of increasing groundwater as the result of permafrost degradation. Changing biogeochemistry and active layer dynamics of the YRB have important implications for the global effort to characterize arctic river fluxes as they relate to permafrost dynamics, the carbon cycle, aquatic ecosystems, and contaminant transport. At the community scale, this research is important to document baseline conditions and environmental changes that are relevant to climate adaptation planning, food security, infrastructure and public health. Finally, ION has served as a stepping stone to conduct more participatory research at the community level that initiates a positive feed back loop of strengthening relationships between communities and researchers.