

The Yukon River Basin Indigenous Observation Network: Enhancing long-term data with traditional knowledge.

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The Yukon River Inter-Tribal Watershed Council (YRITWC) Science Department has partnered with the United States Geological Survey (USGS) and the Yukon River Basin (YRB) Tribes and First Nations in Alaska and Canada to create the largest Indigenous Observation Network (ION) in the world. This partnership is generating a long-term baseline dataset of water quality and water chemistry looking specifically at parameters that are sensitive to climate change. The Science Department was developed in an effort to address increasing concerns voiced by the Indigenous Peoples living in the YRB about the health of the Yukon River due to changes they had observed. In an effort to provide one of the first long-term water quality datasets of the Yukon River and its tributaries, the YRITWC began working with USGS in 2005 to develop a water quality study with the goal of seamless continuation from the USGS 5-year Yukon River study that had begun in 2001. Long-term datasets have proven to be indispensable in documenting trends in systems and identifying conditions that may be causing noticeable shifts from the documented baseline order. Combining these datasets with corresponding Local Traditional Knowledge (LTK) provides a powerful combination of information that specifically addresses changes in environmental trends over time. These datasets are becoming increasingly important as changing climate events begin to dictate the livelihoods of people around the world, particularly in the Arctic.

The foundation of the YRITWC is the participation and support of Tribes and First Nations within the YRB in Alaska and Canada. Interested participants from the Tribes and First Nations were trained to collect water samples and follow protocols in accordance to USGS method standards and have become the largest Indigenous Observation Network. Through this collaborative partnership water quality parameters including, pH, alkalinity, major ions, dissolved organic carbon, greenhouse gases and water isotopes, have been collected from 45 sites during 2001-2010. The ION was able to expand sampling efforts to simultaneous bi-weekly collections (May-September) from widely distributed sites on the Yukon River and tributaries. The success and strong relationships developed in the execution of the water quality study spurred the collaborative Active Layer Network (ALN) project in 2009 to begin long-term observation of systematic changes in active layer thickness with correlating soil temperature and moisture analysis. Over the course of two years 20 ALN sites were installed in locations across the YRB. ION technicians, and/or USGS/YRITWC staff complete annual active layer measurements and soil moisture/temperature data retrieval. Active Layer grid measurement and accompanying data have been added to the online international Circumpolar Active Layer Monitoring (CALM) database. Preliminary results are proving to be valuable components to the project's long-term strength and sustainability.

The natural movement of LTK dialogue is enhanced by the participation of the ION with YRITWC projects. By narrowing the gap between scientific data collection and LTK, we are able to pursue a more holistic approach to our environmental research.

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