

Glacial retreat over 40 years at Gulkana Glacier, Alaska Range.

### CHANGING CLIMATE IN ALASKA

Northern regions are typically the primary indicators to how the world is changing in regards to a warming climate. Many people around the world are already living with the effects of the changing climate in their day to day lives. In Alaska, average winter temperatures have increased 5.7°F in the past 60 years. The temperature shift may seem small, but both scientist and Indigenous Peoples are noticing significant affects.

Warmer temperatures in the Arctic and Sub-Arctic have far reaching effects on plants, animals and the people who have adapted to this region. Shrubs and trees are moving into the tundra, permafrost is thawing and not freezing back as thick in the winter, regional animal patterns are changing and the Arctic sea ice thickness is in decline. These are just a few of the ecosystem changes we are facing.

Through collaborative efforts of scientific research, Traditional Ecological Knowledge (TEK) and community education we will be able to contribute valuable information for our adaptation to the changing climate.

A technician collects water samples to be analyzed for basic water chemistry parameters.

Kotlik, AK



### COMMUNITIES INVOLVED

ARCTIC VILLAGE COUNCIL ♦ ANVIK TRIBAL COUNCIL ♦ ALLAKAKET TRADITIONAL COUNCIL ♦ EAGLE TRADITIONAL COUNCIL ♦ GWICHYAA GWICH'IN TRIBAL GOV ♦ COUNCIL OF ATHABASCAN TRIBAL GOVT ♦ KOTLIK TRADITIONAL COUNCIL ♦ HOOPER BAY NATIVE VILLAGE ♦ NATIVE VILLAGE OF ST. MICHAELS ♦ EMMONAK TRADITIONAL COUNCIL ♦ NATIVE VILLAGE OF TANACROSS ♦ NENANA NATIVE COUNCIL ♦ CHULOOKAWICK NATIVE VILLAGE ♦ CIRCLE VILLAGE COUNCIL ♦ OHOGAMIUT TRADITIONAL COUNCIL ♦ PILOT STATION TRADITIONAL COUNCIL ♦ RUBY TRIBAL COUNCIL ♦ LOUDEN TRIBAL COUNCIL ♦ KOYUKUK TRIBAL COUNCIL ♦ IQURMIUT TRIBAL COUNCIL ♦ YUPIIT OF ANDREAFSKI ♦ STEBBINS IRA COUNCIL ♦ VENETIE TRIBAL GOVERNMENT ♦ VENETIE VILLAGE COUNCIL ♦ CARCROSS TAGISH FIRST NATION ♦ NACHO NYAK DUN FIRST NATION ♦ KWANLIN DUN FIRST NATION ♦ LITTLE SALMON/CARMACKS FIRST NATION ♦ TA'AN FIRST NATION ♦ TAKU RIVER TLINGIT FIRST NATION ♦ TESLIN TLINGIT COUNCIL FIRST NATION ♦ TR'ONDEK HWECH'IN FIRST NATION

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Yukon River Inter-Tribal Watershed Council

## SCIENCE DEPARTMENT



### Mission Statement






*We, the Indigenous Tribes/First Nations from the headwaters to the mouth of the Yukon River, having been placed here by our Creator, do hereby agree to initiate and continue the clean up and preservation of the Yukon River for the protection of our own and future generations of our Tribes/First Nations and for the continuation of our traditional Native way of life.*

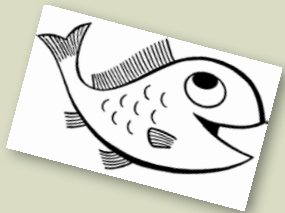
# Science in the Yukon River Basin

[www.yritwc.org/science](http://www.yritwc.org/science)



## YUKON RIVER FACTS

-  - 4th largest drainage basin in North America.
-  - Longest Pacific Salmon run in the world.
-  - The River and surrounding lands provide over 50% of the Indigenous peoples diet.
-  - Contributes 8% of the Arctic Ocean's freshwater supply.
-  - Longest free flowing river in the world!
-  - The River spans more than 2,300 miles from Northwest Canada to the Bering Sea.



## WHO ARE WE?

The Yukon River Inter-Tribal Watershed Council (YRITWC) is an Indigenous International, non-profit, grassroots organization consisting of 70+ First Nations and Tribes, dedicated to the protection and preservation of the Yukon River Basin.

## WHY LOOK AT THE YUKON RIVER?

The size, relatively pristine conditions, diversity of eco-regions and location make the Yukon River an ideal system to delineate benchmarks for large rivers in a changing climate. Many have called Alaska the "canary in the coal mine" because of its early and rapid response to climate change. The Yukon River sustains life at every level across the basin. Improved understanding of regional variations and human responses to climate change in Alaska and the Yukon will provide informational resources for peoples adapting to a changing climate.

## WHAT DO WE DO?

### WATER PROJECT

In 2006, the YRITWC Science Department picked up where the U.S. Geological Survey (USGS) left off of a five- year study on water quality in the Yukon River Basin. The 2008 field season was the first time in history water quality was seen at the basin scale in a single "snapshot" in time. A baseline study of such a large watershed is made possible only through the development of partnerships with those who live along the river. In 2011, the National Science Foundation (NSF) awarded us an Arctic research grant that expands & continues the baseline hydrology research. All data from this collaborative study can be found online at [www.yritwc.dsys.ca](http://www.yritwc.dsys.ca)

## ACTIVE LAYER NETWORK

In 2009, a project was started to initiate Active Layer observation grids in communities across the basin. An annual measurement of the active layer (thawed ground above permafrost) is taken each fall, as well as sensors installed that collect air temperature, soil moisture and soil temperature data. The scientific vision of this study is realized through long term data collection, however, an immediate goal sees to empower a connective body of community based technicians with skills and information to educate and improve local decision making. The data is included on an international database and can be seen at <http://www.udel.edu/Geography/calm/data/north.html>

## SEWAGE MONITORING INVENTORY

The goal of this project is to improve sewage management systems by actively identifying and monitoring sewage disposal systems in the Yukon River Basin. The outcome will provide resources and training necessary for local communities to self regulate sewage discharge, track impacts of the discharge on the river system, provide monitoring data to permitting agencies and produce a current list of the types and locations of lagoon systems. The project is funded through an Administration for Native Americans (ANA) Regulatory grant.



YRITWC began to lead a canoe-based "Healing Journey" along the Yukon River and its tributaries in 2007. These canoe paddles are the foundation of a program to pursue three central goals: (1) to spread messages of environmental stewardship to youth and communities along the rivers we travel, (2) to learn the Traditional knowledge of Indigenous peoples of the rivers, and (3) to collect and process scientific data to create a real-time baseline of an entire river system's health.