After formative time in Fairbanks and years of education in California, Bob Bolton has spent the last decade studying Arctic hydrology at IARC. During this time, Bolton has designed multiple research projects, leading to important insights and contributions to boreal forest hydrology, and terrestrial/atmospheric water exchange or “flux.”

Recently, IARC’s Publications team sat down with Bob Bolton to discuss his background, interests, and ongoing work.

**How has your background contributed to your scientific career?**

I became specifically interested in studying hydrology after witnessing the very public struggles that the state of California has experienced recently over its water use, which stretches to the social and political realms. Living and studying there, it became clear to me that water and its storage, dynamics, and behavior would always prove interesting and important. Through my ensuing education and research in hydrology, I have found my way back to Alaska and to IARC for the vast opportunity and importance residing in the region’s unique watershed and permafrost characteristics.

Prompted first by a USGS internship and more recently by its distinguishing prospects, I have found Fairbanks and the Interior rich and unique with research needs. Much of my current work investigates the changes to stream flow in areas of discontinuous permafrost, such as the sub-Arctic areas of interior Alaska. Particularly in Alaska’s boreal forest, I have examined how permafrost distribution and seasonal thawing soils affect aspects of regional hydrology, including snow melt runoff, soil moisture, evaporation, transpiration (plants’ “breathing” process), and the region’s unique vegetation. I have taken some field-based, observational approaches to these investigations and some modeling approaches.

Much of my hydrology research is constructed with a goal of quantifying uncertainty within existing research and climate models. What may distinguish my work among the hydrological community is this focus on acknowledging and defining ambiguity, through such specific ways as the inclusion of probability ranges and error bars. I hope that this approach will help reduce existing uncertainty in our field’s methods and resources.

**What would people be interested to know about your current projects?**

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Water pathways and primary mechanisms affecting the pathways in coniferous dominated ecosystems (left side of panels) and deciduous dominated ecosystems (right side of panels).

In both my professional and personal life, I have always sought to look at the world through a variety of perspectives, and one of the most enjoyable ways for me to experience new views is through travel; I’m glad to have traveled widely, including my most recent experience of climbing Mount Kilimanjaro.

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**What are your interests outside of hydrology?**

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