

The Class of 2009 Katrina

Ph.D. Thesis

Thesis: Changes in Extreme Hydroclimate Events in Interior Alaska Boreal Forest Watersheds

Extreme hydroclimate events in the boreal forest of Interior Alaska have changed in the past and are projected to change in the future. Statistical modeling tools indicate shifting hydrologic regimes from snowmelt toward rainfall-dominated systems. These changes will increase risk to society and the boreal forest environment.

Major Professor: Dr. Larry Hinzman

Charles Edward Jones Jr. **

Ph.D. Thesis

Thesis: The Integrated Hydrologic and Societal Impacts of a Warming Climate in Interior Alaska

Hydrological changes in Alaska associated with climate were examined using

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Jacqueline Marie Rahm **

Ph.D.

Thesis: Deconstructing the Western Worldview: Toward the Repatriation and Indigenization of Wellness

Through indigenous frameworks and methodologies, this research explores fundamental similarities between pre-Socratic and indigenous epistemologies. It examines historical forces that have shaped Western thought as it diverged and has impacted American indigenous peoples. It suggests the critical need for shifting the dominant paradigm toward an original congruity with indigenous worldviews.

Major Professor: Dr. Michael Koskey

College of Natural Science and Mathematics

Benjamin Walter Abbott **

Ph.D.

Thesis: Permafrost in a Warmer World: Net Ecosystem Carbon Imbalance

This study investigated the effects of climate change on ecosystem carbon balance in the permafrost region. Permafrost thaw caused substantial hydrologic and gaseous carbon loss. However, results suggest that three-quarters of permafrost carbon release could be avoided if human greenhouse gas emissions are actively reduced before the end of the century.

Major Professor: Dr. Gary Jones Jr

Andrew Wentworth th Balsler

Ph.D.

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Christo Gregory Furin *

Ph.D. Biology

Thesis: Perchlorate Toxicity in Fish: Trophic Transfer, Developmental Windows, and Histological Biomarkers

Chemical, histological, morphological, and reproductive endpoints were used to study the bioaccumulation of and toxicodynamics and morphological changes caused by perchlorate exposure to threespine stickleback (*Gasterosteus aculeatus*) and northern pike (*Esox lucius*), particularly during early development, in order to understand when this endocrine disruptor has its greatest effects on fish.

Major Professors: Dr. Todd O'Hara and Dr. Frank von Hippel

Cristina M. Hansen

Ph.D. Biology

Thesis: Novel Methods of Disease Surveillance in Wildlife

Disease agents in wildlife impact human health, and accurate research, monitoring, and diagnostic methods are necessary. Methods for bacterial disease agent and mercury surveillance were developed using wildlife tissue samples, and an investigation of avian embryo mortality was conducted using one of these methods.

Major Professor: Dr. Karsten Hueber

Susmita Hazra

Ph.D. Physics

Thesis: Variation of Electron and Ion Density Distribution Along Earth's Magnetic Field Line Deduced from Whistler Mode (Wm) Sounding of IMAGE/RPI Satellite Below Altitude 5000 Km

This research effort provides a methodology to dynamically generate context-appropriate honeynets. The honeynet conforms to the target environment using passive or increasing degrees of active scanning. The gathered information aids the administrator in creating a network topology and understanding the flux of devices in the network.

Major Professor: Dr. Martin Truher

Rebecca Eliza Hewitt *

Ph.D. Biology

Thesis: Fire-Severity Effects on Plant-Fungal Interactions: Implications for Alaskan Treeline Dynamics in a Warming Climate

Major sources of uncertainty in predicting treeline advance are the controls over treeline seedling establishment with climate warming and associated wildfire activity. This study found that, at treeline and in tundra, wildfire severity influenced symbiotic fungal communities, and persistence of critical mycobionts after wildfire facilitated treeline seedling establishment.

Major Professors: Dr. Teresa Hollingsworth and Dr. F. Stuart "Terry" Chapin III

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Peter K. Peterson

 *D. E*

College of Rural and Community Development

Norma Ann Shorty

Ph.D.

Thesis: Inland Tlingit of Teslin, Yukon:

Sean Reiss Brennan *

Ph.D.

Abstract: Using Strontium Isotopes to Track Pacific Salmon Migrations in Alaska

Alaska is geographically vast, geologically diverse, and home to abundant runs of Pacific salmon. Strontium isotope variation is driven by geologic heterogeneity. This work showed how, in geologically diverse habitats, strontium isotopes recorded in salmon otoliths could apportion fishery harvests to the sub-basin level of salmon biodiversity and elucidate freshwater movements.

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Vanessa Rebeca von Biela

Ph.D.

Thesis: Examining Sources of Primary Production and Bottom-Up Limitations in Nearshore Ecosystems of the Northeast Pacific Ocean Using Fish-Based Indicators

This dissertation examines the energy pathways and oceanographic influences in nearshore kelp forests. Stable isotope analysis indicated the importance of kelp in nearshore food webs. The width of annual growth rings in fish ear bones were correlated with local oceanography and revealed which conditions were associated with faster fish growth.

Major Professor: Dr. Gordon Kruse

Shiway Wei Wang *

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School of Natural Resources and Extension

Watcharee Ruairuen

Ph.D. *Water, soil, and plant interactions in subarctic agroecosystems*

Thesis: Evapotranspiration in a Subarctic Agroecosystem: Field Measurements, Modeling and Sustainability Perspectives

Surface energetics is central to understanding vulnerabilities of Alaska agriculture to climate change. Numerical and experimental methods were used to integrate data from disparate sources. Evapotranspiration was found to represent a large