The Class of 2018

Doctor of Philosophy Degrees

College of Engineering and Mines

Dr. Douglas J. Goering, Dean

Erovie-Oghene Uyoyou-karo Afieroho

Ph.D. Petroleum Engineering, Economics, and Policy Management: Interdisciplinary Program

B.E., Ambrose Alli University, 1994; MBA, Pan-African University, 2005; M.S., University of Alaska Anchorage, 2010.

Thesis: Dying Intestate or with a Will on Toxic Estate? An Evaluation of Petroleum Fiscal Systems and the Economic and Policy Implications for Decommissioning of Onshore Crude Oil Fields in Nigeria

The knowledge frontier was extended through this study with introduction of (i) a methodology that determines cost of decommissioning petroleum fields; (ii) metrics for evaluation of vulnerability to decommissioning default risk, and (iii) the Fairbanks maturity model that demonstrates level of preparedness of a region for decommissioning its petroleum fields.

Major Professor: Dr. Shirish Patil

Nicholas T. Janssen *

Ph.D. Engineering: Mechanical Engineering

B.S., University of Wisconsin, Platteville, 2005; M.S., North Carolina State University, 2010.

Thesis: Electric Thermal Storage in Isolated Wind Diesel Power Systems: Use of Distributed Secondary Loads for Frequency Regulation

Remote communities historically rely upon diesel fuel to energize their electrical grids, with cleaner wind power a recent trend. Strategies for the deployment of electric thermal storage devices as autonomous distributed secondary loads were developed in order to better utilize this wind energy while improving frequency regulation on the grid.

Major Professors: Dr. Rorik Peterson and Dr. Richard Wies Jr.

Rambabu Pothina **

Ph.D. Engineering: Mining Engineering

B.E., Kakatiya University, 2001; M.S., Pennsylvania State University, 2006.

Thesis: Automatic Detection of Sensor Calibration Errors in Mining Industry

Industrial sensor calibration errors are subtle, develop over time and are difficult to identify. Economic losses start accumulating even when errors are small. A data mining-based technique developed with Pogo Mine in Alaska that exploits intersensor relations in a multisensor environment is able to detect errors as low as 2 percent in magnitude.

Major Professor: Dr. Rajive Ganguli

College of Fisheries and Ocean Sciences

Dr. S. Bradley Moran, Dean

Dean L. Courtney **

Ph.D. Fisheries

B.A., University of California, San Diego, 1992; M.S., University of Alaska Fairbanks, 1997.

Thesis: Pacific Sleeper Sharks in the Northeast Pacific Ocean: Relative Abundance, Plausible Incidental Exploitation Rates, Trophic Ecology, and Habitat Use

Pacific sleeper shark relative abundance indices were developed and incidental exploitation rates in commercial fisheries were evaluated to inform fisheries management. Baseline information about Pacific sleeper shark trophic ecology and habitat utilization was developed from analysis of stable isotope ratios and time series analysis of electronic archival tag data.

Major Professor: Dr. Milo Adkison

Ying-Chih Fang **

Ph.D. Oceanography

B.S., National Cheng Kung University, 2005; M.S., National Taiwan University, 2007.

Thesis: Circulation and Dynamics on the Northeastern Chukchi Sea Shelf

This dissertation analyzed radar-derived surface current measurements and velocity observations from subsurface moorings on the northeastern Chukchi Sea Shelf. Wind-induced surface and subsurface circulation patterns were determined, and circulation north of Hanna Shoal was found important for future studies of shelf-basin exchange.

Major Professor: Dr. Thomas Weingartner

Thomas Jean Farrugia **

Ph.D. Fisheries

B.S., McGill University, 2004; M.S., California State University, Long Beach, 2010.

Thesis: Interdisciplinary Assessment of the Skate Fishery in the Gulf of Alaska

Skates are common bottom-dwelling fishes and valuable nontarget species in Gulf of Alaska fisheries. An investigation of the ecology, population dynamics, nutritional content and bioeconomics of skates and their fisheries provided information about these understudied fishes, helping to improve the sustainability and profitability of skate harvests.

Major Professor: Dr. Andrew Seitz

Elizabeth Carroll Figus

Ph.D. Fisheries

B.A., Mount Holyoke College, 2009.

Thesis: Using Local Knowledge to Inform Commercial Fisheries Science and Management in Poland and Alaska

This dissertation documents local knowledge of fishermen in Poland and Alaska, and advances methods for using that knowledge in fisheries management. Findings show how including local knowledge in fisheries management need not be limited to informal conversations or public testimony at meetings to be meaningfully interpretable by managers.

Major Professor: Dr. Keith Criddle

Sarah M. Laske *

Ph.D. Fisheries

B.S., University of Illinois, Urbana Champaign, 2004; M.S., University of Wyoming, 2010.

Thesis: Surface Water Connectivity of Arctic Lakes Drives Patterns of Fish Species Richness and Composition, and Food Web Structure

Investigation of Arctic freshwater fish food webs led to the determination that access to a hydrologic network increased fish species richness and food web complexity in surface water-connected lakes compared to physically isolated lakes. Fish species functional traits and individual feeding strategies influenced in-lake assemblages and food web dynamics.

Major Professors: Dr. Amanda Rosenberger and Dr. Mark Wipfli

Sarah Beth Traiger *

Ph.D. Marine Biology

B.S., University of California, Santa Cruz, 2010.

Thesis: Otters, Sea Stars, and Glacial Melt: Top-Down and Bottom-Up Factors that Influence Kelp Communities

Top-down and bottom-up factors affecting kelp in a glacial estuary were investigated. Kelp recruitment, fecundity and gametophyte competition were related to environmental factors, including sedimentation. Foraging pits and shell litter were evaluated as methods for determining clam predation. This research contributed to understanding the effects of glacial melt on kelp.

Major Professor: Dr. Brenda Konar

Jordan Thomas Watson **

Ph.D. Fisheries

B.S., University of California, Santa Barbara, 2000; M.S., University of Washington, 2007.

Thesis: Quantifying Fisher Responses to Environmental and Regulatory Dynamics in Marine Systems

Commercial fishers are part of dynamic environments — physical, biological, management and economic considerations drive their behaviors through a set of complex interactions. We used a big-data approach to quantify how fishers responded to changes in fish abundance, water temperature and regulatory structures to optimize efficiency and yield.

Major Professors: Dr. Franz Mueter and Dr. Alan Haynie

Leah Sloan Zacher

Ph.D. Marine Biology

B.S., California State University, Long Beach, 2009; M.S., Humboldt State University, 2012.

Thesis: Alaskan King Crab: Bering Sea Distribution and a Parasitic Castrator

Sustainability of Alaskan king crab is of concern, especially with climate change. A parasitic barnacle can transform a king crab into a castrated "zombie crab." Survival of the parasitic larvae under different environmental conditions, and metabolites in infected crab were studied. King crab distributions under different temperature regimes also were explored.

Major Professor: Dr. Sarah Hardy

College of Liberal Arts

Mr. Todd Sherman, Dean

Keri M. Boyd

Ph.D. Clinical-Community Psychology

B.S., University of Alaska Anchorage, 2001; M.S., University of Alaska Anchorage, 2011.

Thesis: "We Did Listen." Successful Aging from the Perspective of Alaska Native Elders in Northwest Alaska

A qualitative exploration of the phenomenon of successful aging as experienced by Alaska Native elders in Northwest Alaska revealed that family and community engagement, self-awareness and gratitude were essential. Successfully aging elders listen to their elders, enact their traditional values and practices, and share wisdom and knowledge with future generations.

Major Professor: Dr. Valerie Gifford

Douglas Cost *

Ph.D. Cross-Cultural Education and Futures Studies: Interdisciplinary Program

B.A., University of Southern California, 1995; M.A., California State University, Northridge, 2005; M.F.A., University of Alaska Fairbanks, 2010.

Thesis: Compulsory Education and Resilience in Northern Alaska: The Role of Social Learning and Youth in Healthy Sustainable Communities

An investigation of the social-environmental systems, resilience, compulsory education and Indigenous knowledge in Arctic Alaska used interviews, surveys and scenarios development workshops to better understand the feedbacks and connections of these elements within rural communities. Public schools offer often underutilized opportunities to better link societies and environments through governance.

Major Professors: Dr. Beth Leonard and Dr. Diane Hirshberg

Kyle Raymond Kwon Dexter *

Ph.D. Clinical-Community Psychology

B.A., University of Alaska Fairbanks, 2012; M.S., University of Alaska Anchorage, 2015.

Thesis: Routine Outcome Monitoring and Clinical Supervision: Do Therapists Really Care About Their Patients?

The use of routine outcome-monitoring tools within daily practices of psychotherapy and clinical supervision was examined in order to provide information regarding implementation, adoption and utilization of psychotherapy outcome measures.

Major Professor: Dr. Jason Whipple

Dan Ho

Ph.D. Indigenous Studies

B.A., Roosevelt University, 1988; M.A., University of Guam, 2014.

Thesis: Fa'ñague: A Chamorro Epistemology of Post-life Communication

This analysis of the spiritual aspect of Chamorro cosmology known as fa'ñague (visitations from the deceased) shed light on how and why it exists in Guam, and how it differs among Chamorro Natives who experience it on the island and abroad.

Major Professors: Dr. Michael Koskey and Dr. Beth Leonard

Yasmeen Stephanie Hossain *

Ph.D. Sustainable Development: Interdisciplinary Program

B.A., Alliant International University, 2002; M.S., University of London, 2006.

Thesis: Energy-Efficient Homes in Alaska: Historical and Contemporary Perspectives on Adaptation and Innovation

My research explores the potential of energy-efficient homes to mitigate climate change impacts while aiding household members to adapt to the effects of global change. In particular, the viability of highly energy-efficient homes in Alaska was examined from historical, economic and environmental perspectives.

Major Professors: Dr. Philip Loring and Dr. Tomas Marsik

Richard E. Hum *

Ph.D. Networked Communication: Interdisciplinary Program

B.A., University of California, Santa Cruz, 2010; M.A., University of Alaska Fairbanks, 2013.

Thesis: Networks of Change: Extending Alaska-Based Communication Networks to Meet the Challenges of the Anthropocene

The Anthropocene can be defined by an increased coupling of human and environmental systems at the global scale. Many local social-ecological systems are experiencing dramatic changes as a result. This dissertation presents a methodology for strategically using modern communication tools to promote environmental sustainability and resilience throughout these changes.

Major Professors: Dr. Karen Taylor and Dr. F. Stuart "Terry" Chapin III

Polly E. Hyslop

Ph.D. Indigenous Studies

B.A., University of Alaska Fairbanks, 1990; M.A., University of Alaska Fairbanks, 2013.

Thesis: Circle Peacemaking in Kake, Alaska: A Case Study of Indigenous Planning and Dispute Systems Design

Circle peacemaking is a restorative practice designed by the people of Kake, a Tlingit community in Southeast Alaska. Based on local values, ancient laws and traditional knowledge, circle peacemaking has lowered the recidivism rate for wrongdoers in the community and pays close attention to the needs of the victims.

Major Professors: Dr. Beth Leonard and Dr. Brian Jarrett

Janice Jo DeVore Littlebear

Ph.D. Cross-Cultural Studies and Education: Interdisciplinary Program

B.A., Alaska Pacific University, 1991; M.A., University of Alaska Anchorage, 1997.

Thesis: Teaching Through Culture in the K-12 Classroom

This study explored how experienced teachers use culture to deliver K-12 classroom instruction. Further, it developed and tested the effectiveness of a resource designed to inform about the use of culture to deliver classroom instruction. Five common themes emerged when teaching through culture: relationships, communication, connections, respect and multicultural resources.

Major Professors: Dr. Theresa John and Dr. Barbara Adams

Katrina Anne Rast

Ph.D. Clinical-Community Psychology

B.A., University of Alaska Fairbanks, 2011; M.S., University of Alaska Anchorage, 2014.

Thesis: Identifying and Working with Non-Responsive and Deteriorating Patients Within the Process of Supervision: Methods of Practicing Supervisors

The purpose of this study was to explore how supervisors identify and respond to deteriorating patients within the context of supervision. Results indicated that supervisors use tools contraindicated by clinical literature to identify deteriorating patients. However, their methods of responding to these patients coincide with common practices within psychotherapy.

Major Professor: Dr. Valerie Gifford

Charlene Barbara Stern

Ph.D. Indigenous Studies

B.A., Western Washington University, 2002; M.A., University of New Mexico, 2005.

Thesis: From Camps to Communities: Neets'ąįį Gwich'in Planning and Development in a Pre- and Post-settlement Context

This dissertation focused on the Neets'ąįį Gwich'in and their experiences with planning and development in a pre- and post-settlement context. Planning ahead, being prepared and adapting to changing conditions were key strategies that enabled the Neets'ąįį to survive across generations in one of the harshest climates in the world.

Major Professors: Dr. Michael Koskey and Dr. Beth Leonard

Lexie Tom

Ph.D. ***Indigenous Studies***

B.A., Western Washington University, 2011; M.P.A., Evergreen State College, 2014.

Thesis: An Indigenous Teacher Preparation Framework

An Indigenous Teacher Preparation Framework was created at Northwest Indian College as a result of this research. An Indigenous paradigm was used to design this qualitative research project. This framework, along with the teacher competencies and methods of measurement, aligns with the college's overall vision of indigenizing institutional systems.

Major Professor: Dr. Theresa John

College of Natural Science and Mathematics

Dr. Anupma Prakash, Dean

Olaniyi Akeem Ajadi *

Ph.D. ***Geophysics***

B.S., Federal University of Agriculture, 2009; M.S., University of Alaska Anchorage, 2010; M.S., Murray State University, 2012.

Thesis: Unsupervised Multi-Scale Change Detection from SAR Imagery for Monitoring Natural and Anthropogenic Disasters

An automatic change detection technique for disaster monitoring was developed that lends itself well for operational implementation. The developed technique can be broadly described as a combination of an initial data enhancement step, followed by the core change detection algorithm, which includes image filtering and automatic multiscale change detection procedures.

Major Professor: Dr. Franz Meyer

Yeganeh Ataian

Ph.D. ***Biochemistry and Molecular Biology***

B.S., University of Alaska Anchorage, 1990; M.S., University of Alaska Anchorage, 2000.

Thesis: Development of Acetylcholine-Binding Protein (AChBP) as a Biosensor for Serotonin Ligands

Serotonin receptors are involved in nervous system disorders, and serotonin ligands are considered powerful therapeutic agents. We used acetylcholine-binding protein to engineer a soluble serotonin-binding protein. Our results contribute to multiple applications, including drug design and testing, high-throughput drug screening, and in-vivo and in-vitro screening of biologically active compounds.

Major Professors: Dr. Lawrence Duffy and Dr. Marvin Schulte

Saurav Bhowmick **

Ph.D. Biochemistry and Neuroscience: Neuroscience

B.S., Bangalore University, 2007; M.S., Bangalore University, 2009.

Thesis: Modulation of Ischemia-Reperfusion Injury in Mammalian Hibernators And Non-Hibernators: A Comparative Study

Ischemia/reperfusion (I/R) associated with stroke and cardiac arrest are among the most frequent causes of debilitating neurological injury and death worldwide. This dissertation presents how obligate hibernators such as arctic ground squirrels may hold insight into possible interventions to ameliorate disorders characterized by I/R injury.

Major Professor: Dr. Kelly Drew

Douglas John Brinkerhoff **

Ph.D. Geophysics

B.S., University of Montana, 2009; M.S., University of Montana, 2012.

Thesis: Bayesian Methods in Glaciology

Bayesian inference was used to find the probability distributions of unobservable properties at a glacier bed, given a set of surface observations. These methods produced better estimates of subglacial topography, hydrology and ice velocity, as well as an improved understanding of their uncertainties.

Major Professors: Dr. Martin Truffer and Dr. Andreas Aschwanden

Lei Cai

Ph.D. Atmospheric Sciences

B.S., Nanjing University, 2011; M.S., University of Kansas, 2014.

Thesis: Global and Local Contributors to the Historical and Projected Regional Climate Change on the North Slope of Alaska

Four contributing factors that result in regional climate change on the North Slope of Alaska are quantitatively explored and compared by numerical simulations. Global warming was found to be the leading contributing factor, while other factors primarily contribute to the spatial and temporal asymmetries of the regional climate change.

Major Professor: Dr. Vladimir Alexeev

Christina Seiman Chu *

Ph.D. Space Physics

B.S., Embry-Riddle Aeronautical University, 2010; B.S., Embry-Riddle Aeronautical University, 2010; M.S., Embry-Riddle Aeronautical University, 2010.

Thesis: Hot Flow Anomalies at Earth's Bow Shock and Their Magnetospheric-Ionospheric Signatures

This dissertation presents statistical and case studies of hot flow anomalies (HFAs) identified in THEMIS satellite data from 2007-2009. The characteristics and occurrence of HFAs, their dependence on solar wind/interplanetary magnetic field conditions and location, and their magnetospheric-ionospheric signatures, have been investigated using in situ spacecraft observations and ground-based observations.

Major Professor: Dr. Hui Zhang

Dyre Oliver Dammann *

Ph.D. Geophysics

B.S., University of Oslo, 2008; M.S., University of Alaska Fairbanks, 2011.

Thesis: Arctic Sea Ice Trafficability — New Strategies for a Changing Icescape

This work demonstrates an approach to improve knowledge of over-ice travel by outlining steps toward strategies capable of addressing key stakeholder needs. The result is a series of remote sensing techniques capable of evaluating critical parameters to ensure safety of sea ice operations and investigate potential implications of long-term change.

Major Professor: Dr. Hajo Eicken

Abraham Melesse Endalamaw *

Ph.D. Atmospheric Sciences

B.S., Arba Minch University, 2005; M.P.S., Cornell University, 2009.

Thesis: Development of a Parameterization for Mesoscale Hydrological Modeling and Application to Landscape and Climate Change in the Interior Alaska Boreal Forest Ecosystem

This research addressed the limitations of modeling hydrological processes in Interior Alaska boreal forest catchments by simulating small-scale processes to regional-scale catchments via development of a small-scale landscape model. By developing a coupled climate-vegetation-permafrost-hydrology model, this study also quantified the impact of future climate on hydrological processes.

Major Professors: Dr. William Bolton and Dr. Jessica Young-Robertson

Louise Melanie Farquharson **

Ph.D. Geology

B.S., University of Sussex, 2007; M.S., University of Alaska Fairbanks, 2012.

Thesis: Arctic Landscape Dynamics: Modern Processes and Pleistocene Legacies

To understand how the cryosphere will respond to warming, we need to understand landscape processes across a wide range of spatial and temporal scales. This dissertation uses a combination of field surveys, sedimentology, geochronology and remote sensing to explore Arctic cryosphere responses to climate change in the distant and recent past.

Major Professors: Dr. Daniel Mann and Dr. Vladimir Romanovsky

John Robinson Harley **

Ph.D. Biochemistry and Neuroscience: Neuroscience

B.S., University of California, Santa Cruz, 2010.

Thesis: One Health Toxicology: Expanding Perspectives and Methods to Assess Environmental Contaminants

One Health is founded on the idea that environmental, wildlife and human health are intimately linked. The development and incorporation of novel technologies will expand the scope of One Health in order to better examine the impact of environmental contaminants on humans and wildlife in a changing world.

Major Professor: Dr. Todd O'Hara

Scott P. Jerome

Ph.D. ***Biochemistry and Neuroscience: Biochemistry***

B.A., Bates College, 1993; M.S., Northern Michigan University, 2000.

Thesis: Vitamin D, Cognitive Function, and Oxidative Stress: Clues to Overtraining Syndrome?

Endurance athletes are often stricken by overtraining syndrome (OTS), which is characterized by an unexplainable drop in athletic performance. OTS etiology remains unclear; the only known remedy is sustained rest. Our study revealed that vitamin D deficiency and oxidative stress marker HNE are associated with a drop in athletic performance.

Major Professor: Dr. Arleigh Reynolds

Nicholas John Kerhoulas **

Ph.D. ***Biological Sciences***

B.S., Humboldt State University, 2006; M.A., Humboldt State University, 2008.

Thesis: Phylogeography and Molecular Phylogenetics of the Hoary Marmot (*Marmota caligata*)

A study of the phylogeographic history of the hoary marmot (*Marmota caligata*) and its molecular phylogenetic relationships with Vancouver Island (*M. vancouverensis*) and Olympic (*M. olympus*) marmots provides insight into future management and conservation of these iconic alpine mammals.

Major Professor: Dr. Link Olson

Masoud Khalaj-Teimoury

Ph.D. ***Environmental Studies and Water Security: Interdisciplinary Program***

B.S., University of Kentucky, 1980; M.S., University of Louisville, 1983.

Thesis: Environmental Impacts on Guam's Water Security and Sustainable Management of the Resource

Impacts of climate change on freshwater resources of inhabited islands in the Pacific Ocean are of great concern. Utilizing historical data, evidence of change in water quality and access on Guam has been examined. Several indicators support the hypothesis that climate change trends are impacting Guam's water security.

Major Professors: Dr. Lawrence Duffy and Dr. Alicia Aguon

Amanda Nicole Lindoo *

Ph.D. ***Geology***

B.A., Augustana College, 2011.

Thesis: Causes and Consequences of Coupled Crystallization and Vesciculation in Ascending Mafic Magmas

The explosivity of a volcanic eruption is governed by how easily gases migrate through and out of magma, along with the speed at which magma rises. This thesis explores the effect of crystals on the degassing process via laboratory experiments and analysis of eruption products from the Kasatochi 2008 eruption.

Major Professor: Dr. Jessica Larsen

Ipshita Majhi

Ph.D. Atmospheric Sciences

B.E., University of Pune, 1999; M.S., University of Alaska Fairbanks, 2002; M.S., University of Alaska Fairbanks, 2004.

Thesis: Hydroclimate in Eurasia from the Arctic to the Tropics

The research focused on the Arctic region and understanding how dams impact the river discharge and how climate variables such as snow and temperature change the discharge profile. The thesis also explores how recent rapid declines in sea ice could affect features of the tropical climate, particularly the Indian monsoon.

Major Professor: Dr. Uma Bhatt

Kathleen F. McKee **

Ph.D. Geophysics

B.S., University of Tulsa, 2008; M.S., Michigan Technological University, 2012.

Thesis: Detection, Source Location, and Analysis of Volcano Infrasound

Volcano infrasound is the study of sound from volcanoes, how volcanic processes produce it and the path it travels from source to receivers. We evaluated a common source-location technique in the presence of topography, characterized gas-jetting fumarole acoustics and developed a technique to estimate the back-azimuth to acoustic sources.

Major Professor: Dr. David Fee

Swarup Mitra *

Ph.D. Biochemistry and Neuroscience

B.S., Vidyasagar University, 2003; M.S., Bangalore University, 2005; MBA, University of Wolverhampton, 2010.

Thesis: Determining Face, Predictive, Construct Validity and Novel Receptor Targets in a Spontaneous Compulsive-Like Mouse Model

Obsessive-compulsive disorder is one of the most prevalent neuropsychiatric disorders with unknown etiology. This study evaluated the role of genetic variation, sex differences and physiological stages, such as pregnancy, postpartum and menopause in females, in influencing the pathophysiology of obsessions and compulsions.

Major Professor: Dr. Abel Bult-Ito

Jeremy Mizel **

Ph.D. Biological Sciences: Wildlife Biology and Conservation

B.A., University of North Carolina, Chapel Hill, 1998; B.S., University of Montana, 2002; M.S., West Virginia University, 2011.

Thesis: Optimizing Landbird Surveys for Detecting Population and Spatial Dynamics

The following were developed to increase the sensitivity of landbird monitoring programs for detecting population and spatial dynamics: a spatial-distance sampling model that accommodates temporary emigration and a multistate, time-removal model for inventorying and monitoring cliff-nesting raptors. Lastly, interannual variation in arrival timing was investigated for sub-Arctic-breeding passerines.

Major Professor: Dr. Mark Lindberg

Justin Robert Olnes

Ph.D. ***Biological Sciences***

B.S., University of Idaho, 2013.

Thesis: The Snowshoe Hare Filter to Spruce Establishment in Boreal Alaska

Snowshoe hare herbivory and spruce establishment in boreal Alaska were explored. Snowshoe hares act as a spatially aggregating force to spruce establishment, where the potential for optimal spruce regeneration is highest during periods of low hare abundance and where hares are absent from the landscape.

Major Professor: Dr. Knut Kielland

Vijay Prabhakar Patil

Ph.D. ***Biological Sciences: Wildlife Biology and Conservation***

B.S., Cornell University, 2005; M.S., University of Alberta, 2010.

Thesis: Shrinking Boreal Lakes as Agents of Change: Untangling Structure and Function in Hydrologically-Coupled Lakes and Wetlands

Field surveys and space-for-time substitution modeling were used to explore the effects of long-term reductions in lake size on lake-margin wetlands of the Yukon River floodplain. Lake shrinkage influenced the exchange of water, organic matter, and nutrients between lakes and wetlands, and significantly affected wetland biodiversity and carbon storage.

Major Professors: Dr. Dennis Griffith and Dr. Eugenie S. Euskirchen

Mitchell D. Reed *

Ph.D. ***Biological Sciences***

B.A., University of Alaska Fairbanks, 2011.

Thesis: Development of Respiratory Centers in the Bullfrog Tadpole Brainstem

An investigation into the effects of development on the control of breathing in bullfrog tadpoles using electrophysiology and immunohistochemistry provided information about the potential for conserved medullary regions between amphibians and mammals involved in respiration.

Major Professors: Dr. Barbara Taylor and Dr. Kristin O'Brien

Blake Stauffer

Ph.D. ***Space Physics***

B.S., Brigham Young University, 2012.

Thesis: Modeling the Generation and Propagation of Dispersive Waves in the Giant Magnetospheres Through Mass Loading and Transport Using Hybrid Simulation

Sets of hybrid (kinetic ion/fluid electron) plasma simulations of the Rayleigh-Taylor instability and the Io flux tube using conditions similar to the magnetosphere of Jupiter are presented. Both the Io torus and the planetary magnetodisc act as resonant cavities for interacting waves, which creates turbulence and generates aurora at Jupiter.

Major Professor: Dr. Peter Delamere

Christine Waigl **

Ph.D. ***Geophysics***

M.S., University of Heidelberg, 1994.

Thesis: Satellite Remote Sensing of Active Wildfires in Alaska's Boreal Forest

The VIIRS I-band Fire Detection Algorithm for High Latitudes (VIFDAHL) was developed, offering improved detection of low-intensity boreal fires. A band-averaged Hyperspectral Fire Detection Index performed best for fire detection with the Hyperion sensor. Active fire temperatures were retrieved using both VIIRS and Hyperion satellite data.

Major Professors: Dr. Martin Stuefer and Dr. Anupma Prakash

Paul Stephen Wilcox *

Ph.D. ***Geology***

B.S., Middle Tennessee State University, 2010; M.S., University of Cincinnati, 2013.

Thesis: 60,000 Year Climate and Vegetation History of Southeast Alaska

Pollen in sediment cores and stable isotopes from speleothems were used to reconstruct vegetation and climate of coastal Southeast Alaska during the last glacial/interglacial transition. Continuous stalagmite growth indicates areas free of ice, and appearance of tree pollen immediately following deglaciation suggests proximity to ice age forest refugia.

Major Professor: Dr. Sarah Fowell

School of Education

Dr. Steve Atwater, Dean

Scott Raymond Christian **

Ph.D. ***Multicultural Education: Interdisciplinary Program***

B.A., University of Montana, 1985; M.A., Middlebury College, 1995.

Thesis: Culturally Responsive Teaching and Student Self-Efficacy in Alaskan Middle Schools

The definitions and applications of culturally responsive teaching in Alaska's middle schools were explored through classroom observations, semi-structured interviews and surveys. According to teachers and principals, the Alaska Cultural Standards are a valuable resource, yet there is not widespread implementation with the breadth and depth intended.

Major Professor: Dr. Ute Kaden

Beth J. Geiges **

Ph.D. ***Indigenous Studies***

B.A., Hollins University, 1977; M.Ed., Arcadia University, 2005.

Thesis: Pedagogy for Reading in Rural Alaska: The Effect of Culturally Relevant Reading Materials on Student Reading Achievement in Chevak, Alaska

Culturally relevant reading materials and pedagogy, used in a mixed-methods quasi-experimental study, were situated within cultural expert views.
Results showed Alaska Native materials and teaching techniques can be used interchangeably with Western materials with expectation of both similar success in student reading and increased motivation to read.

Major Professor: Dr. Beth Leonard

Carol Gering *

Ph.D. Online Education and Psychology: Interdisciplinary Program

B.S., Southern Nazarene University, 1980; M.Ed., University of Alaska Fairbanks, 2008.

Thesis: Strengths-Based Analysis of Student Success in Online Courses

Online student success was evaluated through analysis of personal, circumstantial and course-related variables among 27,000 postsecondary enrollments. Additional data on noncognitive attributes and perceptions, as well as personal interviews with individual students, supported a comprehensive, contextually rich understanding. Predictive models of success were generated for each level of class standing.

Major Professors: Dr. Allan Morotti and Dr. Daní Sheppard

Alberta June Jones

Ph.D. Indigenous Studies

B.Ed., University of Alaska Southeast, 1988; M.Ed., University of Alaska Southeast, 2006; M.Ed., University of Alaska Anchorage, 2007.

Thesis: Alaska Native Scholars: A Mixed Methods Investigation of Factors Influencing PhD Attainment

An investigation of nearly all living Alaska Native Ph.D. recipients revealed influential factors both supporting and hindering their degree journeys. Data from a survey instrument was validated by interviews. Degree recipients imparted advice to aspiring graduate students and universities seeking to recruit, retain and graduate Alaska Native graduate students.

Major Professors: Dr. Raymond Barnhardt and Dr. Amy Vinlove

Deborah Rinio

Ph.D. Communication and Education: Interdisciplinary Program

B.L.A., University of California, Riverside, 2001; M.L.S., University of Arizona, 2003.

Thesis: The Use of Social Network Analysis by School Librarians to Evaluate and Improve Collaborative Networks in Their Secondary Schools: A Pilot Study

This mixed-methods study developed and pilot tested the Social Network Analysis for School Librarians Process using participatory analysis. Analysis revealed the process can enable school librarians to evaluate and improve the collaborative network of their schools by identifying individuals in specific roles and producing generative insight regarding the structure of the network.

Major Professor: Dr. Gary Jacobsen

School of Management

Dr. Mark Herrmann, Dean

Maduabuchi Pascal Umekwe

Ph.D. ***Petroleum Economics and Policy Management: Interdisciplinary Program***

B.E., Federal University of Technology, 2007; M.S., University of Alaska Fairbanks, 2011.

Thesis: Market Impacts and Global Implications of U.S. Shale Development and Hydraulic Fracturing: An Economic, Engineering, and Environmental Perspective

The U.S. tight oil revolution provides a template for other aspiring regions with similar resources. Lessons that the U.S. experience could provide to other aspiring regions were examined using econometric and petroleum engineering techniques. Case studies of successful U.S. plays and regulations suggest solutions for tight oil development challenges.

Major Professor: Dr. Jungho Baek

School of Natural Resources and Extension

Dr. David W. Valentine, Director of Academic Programs

Berill Blair *

Ph.D. ***Natural Resources and Sustainability***

B.S., Western Oregon University, 2002; M.A., University of Alaska Fairbanks, 2010.

Thesis: Toward Arctic Transitions and Sustainability Modeling Risks and Resilience Across Scales of Governance

Perceptions of risks to sustainability, and the extent to which they scale horizontally (between same-level jurisdictions) and vertically (between levels in a dominant jurisdictional structure), were studied among Arctic Alaska stakeholder groups. The dissertation concludes with the recommendations for optimizing complex decision-making under uncertainty.

Major Professors: Dr. Gary Kofinas and Dr. Amy Lovecraft

Alyssa Shanks Rodrigues

Ph.D. ***Natural Resources and Sustainability***

B.S., Oregon State University, 2005; M.S., Oregon State University, 2008.

Thesis: Up in Smoke: Exploring the Changing Relationship Between Wildland Firefighting and Subsistence Harvest

Changes to the wildland firefighting regime due to climate change may impact participation in fall subsistence hunting. This research finds that rural communities will continue to be able to participate in firefighting and fall subsistence hunting while meeting their subsistence needs except in the most extreme cases.

Major Professor: Dr. Joseph Little