

1. **Dr. Adnan Akyuz**, North Dakota State Climatologist and Professor of Climatological Practice, North Dakota State University
Research Description: Dr. Akyüz teaches meteorology, climatology and microclimatology courses at North Dakota State University. He is currently active with research topics dealing with climate change impact on growing seasons in the Northern Plains, adaptation of agroecosystems to climate change, drought assessment and drought impact in North Dakota. He developed the Drought Severity and Coverage Index (DSCI) here at home for North Dakota which is now widely used for all 50 states.
2. **Dr. Paul Barhart**, Assistant Professor of Biology, Department of Natural Sciences, Dickinson State University
Research Description: Dr. Barhart's research centers on the impacts of agricultural land use changes and their influences on bat behaviors. Very little is known about how climate change will impact volant, nocturnal species such as bats; in fact, little work has been done on bat habitat use in agriculturally dominated landscapes. Due to potential threats facing bat populations, his work will assess habitat use, current distributions, predatory behaviors, and species abundance of bats in these ephemeral agricultural landscapes. The information gathered by his work will lay the foundation for the conservation of bat species as their habitat use changes on agricultural landscapes in the face of climate change.
3. **Aaron Bergstrom**, High Performance Computer Specialist, Computational Research Center, University of North Dakota
Research Description: Since 2006, Aaron has worked as the High Performance Computing (HPC) Specialist for the University of North Dakota (UND) Computational Research Center. In this position, he consults with faculty and students on the use of local and national HPC (aka supercomputing) and visualization resources, including the Center for Regional Climate Studies (CRCS). Aaron also serves as the UND Campus Champion and the Region 3 Campus Champion (ND, SD, MN, IA, WI, IL) for national HPC resources available through XSEDE. Previously, Aaron served as the Computer Visualization Manager for the North Dakota State University (NDSU) Archaeology Technologies Laboratory. He received a Masters of Science in Social Science from NDSU in 2007 where he specialized in 3D graphics and other computer applications in archaeology.
4. **Dr. Frank Bowman**, Associate Professor and Associate Chair for Education and Outreach, Department of Chemical Engineering, University of North Dakota
Research Description: Within the Center for Regional Climate Studies (CRCS), the Bowman research group is focused on the impact of climate and land use change on atmospheric aerosols and air quality. We are conducting laboratory chamber experiments to study the physical and chemical transformations that occur when emissions from agricultural crops, diesel engines, and oilfield activities are emitted into the atmosphere. In particular, we are exploring how changes in particle composition due to condensation and coagulation affect cloud condensation nuclei (CCN) activation that influences cloud formation. We are also performing WRF-Chem modeling studies of the Northern Great Plains to investigate linkages between surface emissions, atmospheric chemistry, aerosols, and clouds.
5. **Dr. Eric C. Brevik**, Professor of Geology and Soils, Department of Natural Sciences, Dickinson State University

Research description: The role of Dr. Brevik and his research team within the Center for Regional Climate Studies (CRCS) is investigating the effects of soil management changes on the agroecosystem and feedbacks related to shifts in climate. Dr. Brevik's role specifically is investigating the impact of management changes on soil organic carbon and nitrogen stocks. This in turn is related to potential greenhouse gas emissions related to agricultural management practices.

6. **Dr. Xuefeng (Michael) Chu**, Associate Professor, Department of Civil & Environmental Engineering, North Dakota State University

Research Description: Within the Center for Regional Climate Studies (CRCS), the Chu research group focuses on topographic analysis and hydrologic modeling at both regional and local scales. The ultimate goal of the research is to develop an integrated hydrologic modeling (IHM) system supported by hydrological and meteorological databases and remote sensing observations across spatial and temporal scales. Specific research topics include: land surface delineation and topographic characterization, quantification of depression-dominated overland flow dynamics, hydrologic monitoring and field data collection, watershed hydrologic modeling, and model calibration and validation.

7. **Dr. Andre DeLorme**, Professor, Science Department, Valley City State University

Research Description: Dr. DeLorme is a professor and the Chair of the Science Department at Valley City State University. He came to VCSU in 1996 and has developed the VCSU Macroinvertebrate Lab as a basis for his undergraduate research efforts. The focus of the lab is on collecting and identifying different aquatic invertebrates as an indicator of aquatic health. Dr. DeLorme's focus with the Center for Regional Climate Studies involves documenting an array of aquatic biota found in North Dakota rivers and streams to establish a solid baseline of data for studies of shifts in climate. To document, understand, and possibly mitigate these changes it is important to determine past and current fauna of North Dakota water bodies and to set up long term practices for documenting future changes.

8. **Dr. Lauren Dennhardt**, Assistant Professor, Science Department, Valley City State University

Research Description: Dr. Dennhardt's research focuses on how prairie plant populations may be changing due to shifting climate. As the number of growing degree days increase in our region, a new climactic niche has formed in our prairies in the early spring and late fall. This niche is typically occupied by invasive grass species with little competition from other species. The Dennhardt lab is testing whether southern ecotypes of native grass species can fill this new niche and compete with invasive grass species. Ultimately, this research may help mitigate biodiversity loss.

9. **Dr. Anne Denton** Associate Professor, Department of Computer Science and Operations Research, North Dakota State University

Research Description: The Denton research group focuses on big data approaches for assessing the impact of climate on agricultural output. Two aspects of this problem are of particular interest, 1) quantifying the effect of climate variables on plant growth, and 2) establishing the impact of climate on soil health. These relationships are of direct relevance to farmers, and they also contribute to quantitative scientific ethics indicators such footprints. Temporal data mining techniques and generalizations of multivariate correlation analysis are developed for evaluating attribute selection and preprocessing of climate variables as they relate to plant growth. Geospatial approaches, including newly

introduced multi-scalar, window-based techniques, enable inferences on soil health from remotely sensed imagery, and allow tracking the impact of climate variables over time.

10. **Dr. David Franzen**, Extension Soil Specialist, Department of Soil Sciences, North Dakota State University
Research Description: Dr. Franzen provides educational programs on soil and soil fertility topics to extension agents and specialists, industry professionals, farm producers and the public. He presents material using meetings, field tours, written material, radio, TV, video and internet resources. He performs applied soils research projects as are relevant to North Dakota producers. Dr. Franzen has a BS, MS, and Ph.D. from University of Illinois, Urbana, IL. He also has 18 years of experience as an agronomist and manager in the retail fertilizer business in East Central Illinois. Dr. Franzen joined the NDSU faculty in June, 1994.
11. **Dr. Kerry E. Hartman**, Academic Dean, Nueta Hidatsa Sahnish College
Research Description: Dr. Hartman studies the environment, with a particular focus on how climate and human use has impacted native fruit species. He also serves as the NATURE Coordinator for Nueta Hidatsa Sahnish College, where he mentors undergraduate researchers. He also organizes and helps run the Sunday Academies and Tribal College Summer Science Camp.
12. **Dr. Aaron Kennedy**, Assistant Professor, Department of Atmospheric Sciences, University of North Dakota
Research description: Aaron's research is focused on exploring the fidelity and trends of weather events (thunderstorms, snowstorms, etc.) in historical and future climate simulations. Because these phenomena are difficult to observe and simulate, innovative techniques such as neural networks and dynamical downscaling are used to advance this research. Output from these projects will be provided to the watershed and crop modeling components of CRCS.
13. **Dr. David C. Roberts**, Associate Professor, Department of Agribusiness and Applied Economics, North Dakota State University
Research Description: Dr. Roberts studies the economics of agricultural land use change in North Dakota, including the effects of climate and weather on crop selection decisions throughout the state. Rapid conversion from small grains-based agriculture to corn-soy rotations since the mid-1990s, especially in southeastern North Dakota, makes the state an ideal location for investigating how unique climate conditions have interacted with market forces during the intervening years to influence how farmers behave. Dr. Roberts currently supervises two graduate students funded by the CRCS to conduct research in this topic area.
14. **Dr. Joshua Steffan**, Assistant Professor Biology and Agriculture, Dickinson State University
Research Description: Dr. Steffan's research project involves documenting the changes that occur to soils under different land-use management. Specifically, he is interested in how the soil microbial communities change as conservation reserve program land is put back into production agriculture. Since soil is the world's foremost source for carbon storage, the carbon content in soil plays a role in climate change. The overall goal of my project is to examine total ecosystem changes, especially with regards to soil carbon and microbes, as they relate to different land uses and how these different land uses impact local and/or regional climate.

15. **Dr. Jianglong Zhang**, Associate Professor, Department of Atmospheric Sciences, University of North Dakota
Research Description: Dr. Zhang's research for the Center of Regional Climate Studies team focuses on studying regional climate/weather from satellite and ground-based observations as well as numerical modeled data. His research team has also been involved in evaluating the impact of regional climate on agricultural production as well as feedbacks of agricultural-based land use and land change on the regional climate and environment.
16. **Dr. Haochi Zheng**, Assistant Professor, Department of Earth System Science and Policy, University of North Dakota
Research Description: Dr. Zheng's academic interests are environmental and natural resource economics, as well as ecological economics with a specific emphasis on the institutions and mechanisms that guide human behavior in natural resource use and management. Some of her recent research topics include: land-use change related to biofuel production, economic valuation of ecosystem services, reforestation policy in developing countries, and behavior change on recycling and energy use. As part of the CRCS team, Dr. Zheng studies the impacts of climate variation on regional agricultural production, land use, and its feedback to ecosystem services. She is interested in questions, such as how market, policy, and environmental forces affect crop production and individual landowners' decision-making on land use and management. She is also concerned with what policy instruments can improve both economic efficiency and environmental sustainability by taking into account of all private and social costs. Dr. Zheng joined UND in 2010 after finishing completing her PhD in Agricultural and Applied Economics with a Conservation Biology minor at the University of Minnesota, Twin Cities. She received her BA in International Economics from Fudan University, China, and completed her M.S. in Economics at Yokohama National University, Japan.