Graduate Assistantships available for Fall 2012

The Earth System Science and Policy Department (ESSP) at the University of North Dakota has assistantship positions for students seeking a Masters of Environmental Management (MEM), Master of Science (MS) or Ph.D. Tuition waiver is available for all announcements listed below. Some positions include Research Assistantship funding for 9 months; subsequent funding is dependent on student performance and availability of additional funding. Application deadline is May 1, 2012; early applications will receive top priority for admission. For more information about ESSP, please see the department website: http://essp.und.edu/. For application instructions, please see the UND Graduate School website www.und.edu/dept/grad/.

ESSP Graduate Program Information
The Earth System Science and Policy Department (ESSP) at the University of North Dakota is an interdisciplinary department which focuses on environmental sustainability. All students entering the ESSP graduate program are required to take ESSP 501 and ESSP 502 courses (10 credits each) in the first academic year. These courses cover the basics of broad earth system science and the socio-economic-political interactions, including Biosphere and biodiversity, Energy and economics, Policy and society, the Geosphere and Earth observation, the Water cycle and Hydrology, and Biogeochemical cycles. Information on the Earth System Science and Policy Department is available at: http://essp.und.edu/.

Applicants must meet the requirements for GPA, GRE, TOEFL standards (appropriate to MS or PhD) and meet all the requirements of the Graduate School of the University of North Dakota.

PhD students are expected to write a grant to support their work as part of the process of proposing their dissertation topic.

Interested students should contact the appropriate individual faculty members directly at the emails provided above to discuss the projects.

Applications for the ESSP graduate program must be made directly to the UND Graduate School http://graduateschool.und.edu/my-gradspace.cfm. Application deadline is May 1, 2012; however, early applications will receive top priority for admission.

For more information about the UND community, see the following websites:
The University of North Dakota: www.und.edu
Local Government Planning for Climate Change

1. Are local governments across the United States planning for climate change impacts? If yes, how? If no, why not? Students are sought to assist implementation of a survey of local government officials to examine these and other questions. This study will examine attitudes and behavior change, public participation, and environmental policies involved in planning for future climate change. The study will involve telephone interviews, statistical analysis, and some content analysis. Topics within this study may be tailored to fit a Master of Science thesis research project. Students from a wide range of backgrounds are encouraged to apply, including sociology, psychology, ecology, political science, environmental studies, geography, and others with experience in environmental fields. Familiarity with the computer programs SPSS for statistics and/or ARC GIS for spatial-data analysis will be a benefit. A graduate assistantship position and/or tuition waiver will be available dependent on funding. For more information, please contact Dr. Rebecca Romsdahl: rebecca.romsdahl@und.edu.

Remote Sensing and Hydrological Cycle

2. Students pursuing master or doctoral degrees are sought to conduct research in the general areas of applying remote sensing technology in modeling hydrological cycle. The current research topics include development of remote sensing based algorithm, modeling of evapotranspiration, hydrological modeling of watershed, impact of climate change on water cycle and quality, and validation using cutting-edge field instruments measuring water and energy fluxes. Students with undergraduate training in physical sciences are encouraged to apply. Skills in programming will be a benefit. Tuition waiver and/or graduate assistantship will be available dependent on funding. For information, please contact Dr. Xiaodong Zhang: zhang@aero.und.edu.
Environmental Change and Impacts Related to Climate Change Using Remote Sensing and GIS Techniques

3. Positions are open for graduate students seeking a Master of Science Degree. The primary area of research involves studying changes in North American glaciers and how these changes relate to climate fluctuations, as well as the impacts on downstream water use. This study involves the use of remote sensing and GIS techniques in which ENVI remote sensing and ESRI GIS software will be utilized in analyzing ASTER and Landsat images, Aerial Photography, and Digital Elevation Models. Knowledge of either software and/or the above data types is desirable, but not necessary. Field work is likely to occur during the late summer months and some experience in wilderness travel is desired but also not necessary. These topics can be tailored to fit a M.S. degree and the possibility of tuition waiver and funding in the form of Research Assistantships may be available. Students from a wide range of fields are encouraged to apply, such as Geography, Geology, Environmental Science, Climatology, Hydrology as well as many others in environmental majors. Information about past preliminary glacial field work can be found at: http://essp.und.edu/About/VanLooyBio.aspx. If the above research topics are of interest, please see the UND Graduate School website (www.und.edu/dept/grad/) for application instructions, or contact Dr. Jeff VanLooy of the Department of Earth System Science and Policy at the University of North Dakota at (701) 777-4755, or by e-mail: jvanlooy@aero.und.edu.

4. Students are being sought to assist in classifying land cover/land use change between 1930 and 2010 within the Sheyenne National Grassland in Southeast North Dakota. Preliminary analysis of this study area over the last decade indicate increases in wetlands within the National Grassland which is having an impact on various biological, economic, and cultural features, including grassland species and tourism. This study involves the use of remote sensing and GIS techniques in which ENVI and ERDAS Imagine remote sensing, and ESRI GIS software will be utilized in analyzing ASTER and Landsat images, Aerial Photography, and Digital Elevation Models. As well, visits to the study site and field work will be necessary. Knowledge of either software and/or the above data types is desirable, but not necessary. These topics can be tailored to fit a M.S. degree and the possibility of tuition waiver and funding in the form of Research Assistantships are available through a NASA grant which allows students to gain experience working on a variety of research projects. Students from a wide range of fields are encouraged to apply, such as Geography, Geology, Biology, Environmental Science, Climatology, Hydrology as well as many others in environmental majors. If the above research topics are of interest, please see the UND Graduate School website (www.und.edu/dept/grad/) for application instructions, or contact Dr. Jeff VanLooy of the Department of Earth System Science and Policy at the University of North Dakota at (701) 777-4755, or by e-mail: jvanlooy@aero.und.edu.
Switchgrass as Energy Crop in the Northern Great Plains
These two projects can be tailored to MS or PhD program requirements.

5. Identifying and Mapping Potential Land for Switchgrass Production in North Dakota.
Switchgrass (Panicum virgatum L.) is a potential bioenergy crop for the Northern Great Plains regions. The adoption of switchgrass into the traditional cropping system depends on its productivity and economic returns for producers. Economic benefits depend, in part, on the sustained break-even yield of switchgrass, i.e., sustained yield threshold below which switchgrass is not economically competitive with other crop species in much of the Northern Great Plains. This research seeks to assess the potential for Switchgrass Biofuel Pellets in North Dakota taking into account the potential productivity, tradeoff with crops and environmental limitations, the technology feasibility, and regional economic and social scenarios. The project would use a new software tool – MCAS-S (Multi-Criteria Analysis Shell – Spatial). This project requires an interest in the interface between humans and the environment. Good spatial data skills or a keen interest in their development is desirable. Some knowledge of crop/grass physiology will be an advantage. For more information, contact Soizik Laguette, laguette@aero.und.edu. Tuition waiver may be available.

6. Remote sensing to assess switchgrass yield and energy characterization in North Dakota.
Switchgrass (Panicum virgatum L.) is as one of herbaceous crops that could be grown specifically for bioenergy supply. When grown for energy purposes switchgrass management practices must take into account both, biomass production and biofuel quality. Monitoring switchgrass and acquiring information about its growth throughout the growing season is important to optimize crop management or get information on energy quality. Crop growth models may be good tools to diagnose switchgrass growing conditions, support management decisions, or predict yield over large areas. This project seeks to investigate remote sensing of switchgrass physiology and biochemistry for assessment of plant development and production, and energy content characterization in order to be used as crop growth model input. Familiarity with remote sensing principle or a very keen interest in learning is desirable. Knowledge of crop/grass physiology and/or crop modeling principle will be an advantage. For more information, contact Soizik Laguette, laguette@aero.und.edu. Tuition waiver may be available.