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UofA GIS Day
Friday, November 16, 2018

GISday A Showcase of GIS Applications
at the
University of Alberta

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Agenda

10:00	**Welcome**	*CCIS 1-140*
10:10	Teaching and learning with digital soil maps in the classroom and in the field	**Dr. Darrell G. Schulze** University of Purdue and CTL Visiting Speaker
11:00	Climate change scenarios for the dry forest in the Guanacaste province	**Sofia Calvo** Earth & Atmospheric Sciences
11:20	Mapping birth outcomes and air pollution in space and time	**Dr. Charlene C. Nielsen** Pediatrics
11:40	What's new in Esri training and resources for students and faculty at UofA	**David Parry** Esri Canada
12:00	**Lunch & Networking**	

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1:10   Teaching and learning with digital soil maps in the classroom and in the field

Maps are more than posters on the wall. They are powerful tools for teaching and learning in disciplines that are intrinsically spatial like soil science, geology, and ecology. I will show how Soil Explorer, available online at SoilExplorer.net or as a free app for Apple iPad, is designed to help learners understand how and why soils and landscapes vary at different scales and why it matters. I will show how students in the upper level Soils and Landscapes course I teach use digital maps throughout the semester to learn how concepts discussed in the lecture correspond to the features they see on the maps. Then, during field labs they use iPads to learn how the features on the maps correspond to the real features they see in the field. This teaching-with-maps approach allows students to develop a deep understanding of the spatial aspects of soils that would be impossible to obtain any other way. Soil Explorer is an ongoing community effort, with collaborators from universities in 17 US states and the US Department of Agriculture (USDA) contributing so far. Soil Explorer is built using publicly available data from the USDA, US Geological Survey, OpenSteetMap, and other sources. The platform is extensible and in addition to maps for the US, currently hosts maps for Kenya and the Arequipa region of Peru.

Dr. Schulze is a Professor of Soil Science in the Agronomy Department at Purdue University. He received his B.S. in Agronomy and M.S. in Soil Science from Texas A&M University, and his Ph.D. in Soil Science from the Technical University of Munich. He is a distinguished visiting speaker, courtesy of Dr. Guillermo Hernandez Ramirez, Department of Renewable Resources, and the Centre for Teaching and Learning.

11:00   Climate change scenarios for the dry forest in the Guanacaste province

Understanding how the climate is predicted to change on a local and regional scale is important because of the sensitivity and biodiversity of the ecosystems, such as the Tropical Dry Forest, that are found in Costa Rica. The objective of this study is to project the future climate scenarios across the Guanacaste Province in Costa Rica. The climate is projected forward using the mean statistical ClimateSA models for the RCP 4.5 and 8.5 scenarios. The data were projected every 30 years to 2020, 2050, and 2080. The regional climate model shows that while the precipitation will stay within the historic levels, the minimum, mean, and maximum temperature increase in both the RCP 4.5 and 8.5 scenarios. The climatic moisture deficit (CMD) also increases, however we see spatial differences across the province, where some areas are more at risk of increased drought conditions and water shortage.

Ms. Calvo completed her M.Sc. in 2015 from the Department of Earth and Atmospheric Sciences (EAS) at the University of Alberta. She is currently a Ph.D. student at the Centre for Earth Observation Sciences (CEOS) Laboratory in the EAS department, supervised by Dr. Arturo Sanchez-Azofeifa. Her research mainly focuses on applying remote sensing techniques and modeling approaches to understand climate change impacts on Tropical Dry Forests.

11:20   Mapping birth outcomes and air pollution in space and time

The geography of where pregnant mothers live is important in furthering our understanding of babies born too small. Small for gestational age (SGA) newborns are suspected to have associations with shared environmental exposures on their pregnant mothers. Time-series and three-dimensional mapping help explain how we found spatiotemporal relationships between hot spots of SGA and surrounding land use, area-level socioeconomic status, and industrial emissions in the greater Edmonton area.

Dr. Nielsen recently completed her Interdisciplinary PhD in Earth and Atmospheric Sciences & Medical Sciences-Pediatrics, co-supervised by Dr. Alvaro Osornio Vargas and Dr. Carl Amrhein. She is currently a postdoctoral fellow in the Department of Pediatrics conducting research on children's environmental health.

11:40   What's new in Esri training and resources for students and faculty at U of A

Learn from the GIS software industry leader about Esri Canada and ArcGIS for academia.

Mr. Parry is a University of Alberta alumnus with a B.Sc. with Specialization in Geology. For the last 20 years, his career has focused on consulting & implementing geographic information systems while working with TELUS Geomatics & Environmental Systems Research Institute (now Esri Canada). He supports clients in government and most sectors of the Canadian economy, including: Natural Resources & Environment, Pipeline, Utilities, Public Safety & Health. A once competitive whitewater kayaker and canoeist, David has an interest in developing sustainable conservation corridors within the regional urban landscape and is also a Board Member of the Edmonton & Area Land Trust.

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