Profiles

Department of Soil Science
UNIVERSITY OF WISCONSIN–MADISON

DEC 2019 VOL. 11 NO.1

ANTIGO SILT LOAM

Message from the Department Chair

130 years of soil science at UW Madison!

We just graduated our 500th PhD student – exactly 101 years after our first PhD student graduated. Soil science has changed much in the past 100 years. It went from a somewhat descriptive science with few theories but a strong urge to make a difference, to a primary science that has contributed directly or indirectly to the welfare of humankind.

2019-2020 Soil Science Graduate Students

The soil science discipline continues to evolve. Some of that comes from improved theory, new instrumentation and technological development. In a sense, the situation is the same as half a century ago when, for example, radioactive and heavy isotopes became widely available accompanied by instrumentation like flame and atomic absorption spectrometers, emission and mass spectrographs, X-ray diffractometers and fluorescence, spectrophotometers, column and gas chromatographs, and the first computers. Progress in instrumentation allowed improved soil testing for better guidance of fertilizer use, or improved water management. Other developments which aided soil research were advances in statistics and design of field experiments, theories on ion transport from the solid phase to the root surface, and the improved understanding of soil physical processes. Our department has been on the forefront of these developments.

Now we are experiencing a similar upsurge with better measuring and modeling tools, and expanding technology that coincides with demands on our discipline to help solve the global environmental challenges. These are not small challenges, and they are different at different scales. We always strive to conduct the best science, excel in teaching, and provide extension and outreach that makes a real difference in a way our soils are managed. The urge to make a difference is deeply rooted in all that we do. We are fortunate to attract some of the best students, and will continue to graduate them with skills and insights so that they know the forefronts and the work that needs to be done. During their study, we aim to unleash their creativity, curiosity, and determination to become successful. It took 101 years to graduate our first 500 PhD students in soil science. And we think it is only the beginning, for the world needs the best soil science. We thank you all for a most productive year, and the enduring support to our department. All of us in soils in Madison wish you a wonderful winter, and peace and joy in the New Year!

Alfred Hartemink

Staff Profile: Susan Reinen

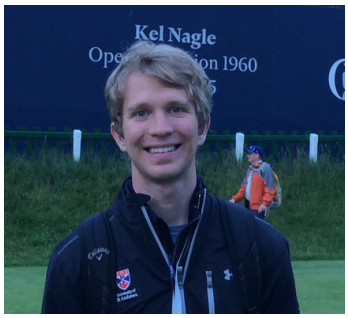
As a UW Alum, Sue is a huge Badger fan and cheers loudly and proudly. In general, she is a sports enthusiast rooting for all Wisconsin teams. A perfect day involves a fun tailgate followed by an action packed game. Sue likes to keep busy with yard work and finds nothing more relaxing than planting perennials in her yard. Family and community are important to Sue. Growing up on a dairy farm near Sun Prairie, it was her personal goal to return to the area to be closer to her roots. For all these reasons, Sue feels that Soil Science and Biological Systems Engineering are the ideal departments for her to work in.

Prior to coming to UW, Sue worked for Kohl's department stores as a Store Manager. During her time with Kohl's, Sue moved quite frequently while managing nine different stores in three states. She enjoyed the pace, people, and variety, but after almost 25 years of retail management, she decided to move on. Sue is thrilled with her decision to join UW-Madison, and has been with the university for 10 years. Before joining the Soil Science department, she held various positions in the Biological Systems Engineering department, most recently as Department Administrator. Comparable to Kohl's, she finds her position rewarding, challenging, and a constant learning experience. Bottom-line, it is the people and team environment that she values most. Stop by her soils office to introduce yourself or just say, "Hi."

Research Corner: Jingyi Huang

Soil plays a fundamental role in terrestrial ecosystems and human society. Monitoring and forecasting spatial and temporal variations of water content and fluxes (e.g., evapotranspiration, deep drainage) and transport of solutes (e.g., salts, nitrates) in soil is essential for maintaining global food security and understanding hydrological, meteorological, and ecosystem processes under climate change and human activities. The Soil Sensing and Monitoring (SSM) lab uses a combination of in situ (station-based), proximal (ground-based) and remote (airborne and space-borne) sensor networks and platforms and physical mechanistic models to improve our ability to measure, monitor, model, map, and forecast soil and water resources across scales. The lab currently consists of two graduate students Sumanta Chatterjee (PhD) and Jie Hu (PhD) and undergraduate researchers. Current research projects include applying sensor fusion approaches to develop high-resolution maps of soil water content and fluxes across the USA and globally, and investigating the interactions between soil, vegetation, climate across scales using hyperspectral imaging and spatial-temporal modeling. The current studies at the SSM lab show that adoption of best agricultural management practices in Wisconsin improve soil carbon sequestration under climate change and the use of soil moisture sensors and machine learning algorithms increases water use efficiency in irrigated sandy soils in Wisconsin. If you are interested in how soil moisture sensors work in the field or want to keep up with the latest science and technologies designed to map and monitor soils and water in your neighborhood, across the country, or globally, please come to our lab and have a chat!

Student Profile: Michael Bekken



Michael Bekken grew up as an enthusiastic environmentalist and golfer, two passions that at times seemed at odds with one another. Instead of choosing one passion over the other, Michael decided to combine his interests and pursue a career in sustainable golf course design and management. Michael grew up in Blacksburg, Virginia and attended William and Mary, where he majored in Biology and Geology and played on the golf team. Michael then moved to Scotland to work for the Golf Environment Organization (GEO), a non-profit that certifies golf courses that have made a commitment to sustainability. While at GEO he realized that many questions about sustainable resource use on golf courses had yet to be answered. To begin to answer these questions, he a joined the Soldat lab in 2017. Michael's research project primarily focuses on developing sustainability metrics for golf courses so that they can pursue greater efficiency in their use of water, energy, fertilizer, and pesticide.

Department News

Nick Balster received the 2019 Honored Instructor designation by University Housing residents as an outstanding classroom instructor.

Gordon Research Conference on Environmental Nanotechnology has elected **Joel Pedersen** as vice-chair in 2021 and chair in 2023. He was also named Fellow of the Royal Society of Chemistry.

A Digital Atlas of Historic Mining Activity in Southwestern Wisconsin was recently published by authors **Kyle Pepp, Geoff Siemering, and Steve Ventura**. This beautifully designed publication can be viewed and purchased by visiting UW's The Learning Store.

Nadia Alber (Director of the Wisconsin School for Beginning Dairy & Livestock Farmers) and her husband, Chad Backes had a baby girl, Beatrix on May 30, 2019.

Miranda Sikora (Research Assistant, Dr. Ruark) submitted and received a Sustainable Agriculture Research and Education (SARE) grant.

Save the Date

Wednesday, April 29, 2020 is the date of the 8th annual **Leo M. Walsh Distinguished Lectureship in Soil Science.** Dr. Jirka (Jiri) Simunek, Professor of Hydrology in the Department of Environmental Sciences at the University of California - Riverside will be our guest presenter. The Department wishes to thank Leo and Hanna Walsh for making this opportunity possible.

May 31 to June 4, 2020: The Department will host the **"Global Conference on Sandy Soils"** next year. Sandy soils cover approximately 900 million hectares worldwide, particularly in arid or semi-arid regions. With increasing global pressure on land resources, marginal soils such as sandy soils are taken into production or cultivated more intensely. There is a need to quantify and understand the properties of sandy soils across the globe. See https://sandysoils.org/ for more information.

Alumni Update

Emeritus Professor Marvin T. Beatty was inducted into the Van Hise Society of Wisconsin Foundation and Alumni Association for his charitable contributions to UW and the Department of Soil Science.

James G. Bockheim Distinguished Lectureship in Soil Science

The department was pleased to host Dr. Rebecca Lybrand for the 2nd annual James G. Bockheim Distinguished Lectureship in Soil Science held on October 16. Dr. Lybrand is an assistant professor in the Department of Crop and Soil Science at Oregon State University. Her presentation entitled, "Incipient Weathering in the Critical Zone: Assessing the Bioweathering of Minreals at the Microscale," was well attended by students, staff, and faculty from across campus. This lectureship is made possible by the generosity of James and Julie Bockheim.

Emeritus Professor of soil science James Bockheim (left) and Julie Bockheim (right) with 2019 James G. Bockheim Distinguished Lecture presenter, Dr. Rebecca Lybrand

Our Supporters

5/01/2019 to 11/30/2019

Mr. and Mrs. Brooks
Professor Brown and Dr. Brown
Ms. Comfort and Dr. Comfort
Corteva Agriscience
Mr. Daniels
Mr. and Mrs. Duffy
Ms. Foreman-Ortiz
Ms. Frazier and Dr. Frazier
Dr. Hadley
Professor Harris and Ms. Harris
Professor Hartemink
Dr. Hendrickson
Mr. Hess
Dr. Hobson
Mr. Hole
Mr. Immega and Ms. Immega
Professor Keeney and Ms. Keeney
Professor Kirkham
Mr. Krueger and Ms. Krueger
Ms. Laszewski
Prof. McSweeney and Dr. McSweeney
Mosaic Global Sales LLC
National Turgrass Evaluation Prog.
Professor Norman and Ms. Norman
Dr. Pan
Mr. Rand and Ms. Rand
Dr. Randall
Mr. Richgels
Mr. Schmidt
Professor Emeritus Sommers and Dr. Sommers
Mr. and Mrs. Stellato
Ms. Tanner
Mr. Timmons
Mr. and Mrs. Van Herwynen
Wisconsin Agri-Business Assoc.
Wisconsin Potato and Vegetable Growers Assoc.

Recent Graduates

Graduate Degrees

Bybee, Laura M. - MS, 2019
Soil Science (RA, Barak)
Suitability of Manure Digest for Ammonium Recovery.

Teeter, Anna O. - MS, 2019
Soil Science (RA, Laboski)
Evaluating the use of Cover Crop and Nitrapyrin to Improve Manure Nitrogen Availability to Corn.

Yost, Jenifer L. - PhD, 2019
Soil Science (RA, Hartemink)
Soil Carbon in the Sandy Soils of the Wisconsin Central Sand Plains.

Zhang, Yakun - PhD, 2019
Soil Science (RA, Hartemink)
Short Range Variation of Soils at the Farm Scale.

Undergraduate Degrees

Guagliardo, Rachel E. - B.S. 2019

Tracy, Zachary T. - BS, 2019

Van Herwynen, Mitchell - BS, 2019

Support the Department of Soil Science with your contribution

I/we wish to join other students/alumni, industry, and friends in enhancing the teaching, research, and outreach programs in the Department of Soil Science by contributing as indicated below.

____$50 ____$100 ____$250 ____$500 ____$1,000 ____Other

☐ Please charge my gift of $_____ to my (please circle): Mastercard Visa American Express

Card Number: Expiration Date:

Cardholder's Name (please print):

Cardholder's Signature: Date:

Name:

Home Phone: Work Phone:

Address:

City: State: Zip:

If paying by check, please make your check payable to the UW Foundation-Department of Soil Science and mail to:
University of Wisconsin Foundation • US Bank Lockbox • P.O. Box 78807 • Milwaukee, WI 53278-0807

Online donation is available on our website http://soils.wisc.edu/alumni-friends/

Department of Soil Science
UNIVERSITY OF WISCONSIN–MADISON

Profiles

Department of Soil Science
Julie Garvin, Editor

University of Wisconsin
1525 Observatory Drive
Madison, WI 53706-1207

Web site: soils.wisc.edu
Email: jgarvin2@wisc.edu

Printing/mailing paid for with UW Foundation/WALSAA/ Department funds.

Nonprofit Org.
US POSTAGE
PAID
Madison, WI
Permit No. 658

In Memoriam

Emeritus Professor Frederick W. Madison, Jr. (MS, 1963; PhD, 1972) passed away on June 3, 2019. Between earning his graduate degrees, Fred was appointed by the Peace Corps' first director, Sargent Shriver, as the Director of the Midwest Regional Recruiting Office and then served as Legislative Assistant to Senator Gaylord Nelson. In 1973, he began a joint appointment at UW-Madison in Soil Science and Wisconsin Geological and Natural History Survey until his retirement in 2011. He co-founded the UW-Extension Discovery Farms.

Herbert Massey (MS, 1950; PhD, 1952) passed away on June 4, 2019. He was a member of the University of Kentucky Soil Science and International Programs faculty from 1953 to 1998. He was the founder of the Herb Massey Visiting Scholars in Tropical Soil Research Fund at UW-Madison.

Welcome

Administrative Staff:

Sue Reinen (Academic Department Manager)
Pam Spahn (HR Assistant Advanced)

Postdoctoral Associates:

Nazim Ganji (Pedersen Lab)
Gafur Gazukara (F.D. Hole Lab)
Sam Thomas (Pedersen Lab)

Students:

Jie Hu (PhD, Huang)
Dana Johnson (MS, Whitman)
Kelsey Kruger (MS, Ruark)
Ashmita Rawal (PhD, Ruark)

Alumni Update

We'd love to hear from you! Please complete and return this form or send your updates via email to: jgarvin2@wisc.edu

Name:

Degree(s) and Year(s): BS ( ) MS ( ) PhD ( )

Home Address:

Email: Phone No.:

Position: Employer:

News to share:

Return to: Profiles Department of Soil Science • University of Wisconsin-Madison
1525 Observatory Drive • Madison WI 53706-1207