

**UF/IFAS Soil & Water Sciences Department
UF Invited Speaker Seminar**

Speaker: Sabine Grunwald, Ph.D.

Title: AI Modeling of Soils from Local to Global Scale

Date: Friday, October 15th, 2021

Time: 3:00 pm – 4:00 pm

Location: Live Stream & Recording Via Zoom

The discipline of *pedometrics* combines pedology (i.e., understanding of the physical, chemical, and biological soil properties, patterns, and their genesis) and quantitative modeling of soils in context of soil health and soil security. Pedometrics research has focused extensively to model soil properties, indices, functions and uncertainties from field to global scale. Over the past decade, artificial intelligence (AI)—machine learning (ML) and deep learning (DL) algorithms—has advanced a profound transformation in soil science toward data-driven geospatial soil prediction machines. In this seminar I will present AI-soils research that was conducted in the Pedometrics, Landscape Analysis, and GIS team and jointly with international collaborators entailing soil carbon modeling, remote sensing and soil proximal sensing to predict various soil indicators, and pedo-econometrics modeling of soil-ecosystem functions from field, regional (Florida, U.S., Brazil, India) to global scale. AI-soil models significantly outperformed other quantitative methods in terms of predictive power, accuracy, bias, and errors. The pivotal shift from pedological knowledge-discovery of soil-landscape patterns and genesis toward machine optimized digital soil models has created enthusiasm and critique in the pedometrics research community. The question is whether AI-soil modeling is a panacea and/or menace to address soil health, soil security, land degradation neutrality, food security, and other global environmental challenges.

This seminar can be viewed live via this link: [Dr. Sabine Grunwald](#). The password is **SWS2021**. All viewers will start in a waiting room and need to be admitted by the meeting host. Please email Robert Daffron (robert.daffron@ufl.edu) if you have any issues being admitted into the seminar. Viewers of the live stream may now ask questions by clicking on the message icon at the bottom. Questions will be read at the end during the question-and-answer portion. In addition, all seminars are archived for viewing on our [SWSD Seminar Page](#).