EGU24-11711, updated on 11 May 2024
https://doi.org/10.5194/egusphere-egu24-11711
EGU General Assembly 2024

The Deep Soil Ecotron – A Facility to Explore, Model, and Sense Deep Soil

Zachary Kayler[1], Michael Strickland[1], David Williams[2], Rodrigo Vargas[3], Zeli Tan[4], Caley Gasch[5], Susan Crow[6], and Noah Fierer[7]

[1]University of Idaho, Department of Soil and Water Systems, Moscow, ID, United States of America (zkayler@uidaho.edu, mstrickland@uidaho.edu)

[2]University of Wyoming, Department of Botany, Laramie, WY, United States of America (dgw@uwyo.edu)

[3]University of Delaware, Department of Plant Sciences, Newark, DE, United States of America (rvargas@udel.edu)

[4]Pacific Northwest National Laboratory, Land System Modeling, Richland, WA, United States of America, (zeli.tan@pnnl.gov)

[5]University of Alaska, Institute of Agriculture, Natural Resources and Extension, Fairbanks, AK, United States of America (ckgasch@alaska.edu)

[6]University of Hawaii, Department of Natural Resources an Environmental Management, Manoa, HI, United States of America (crows@hawaii.edu)

[7]University of Colorado, Ecology and Evolutionary Biology, Boulder, CO, United States of America (noah.fierer@colorado.edu)

The Deep Soil Ecotron will give researchers the unparalleled ability to investigate and experiment with deep soils while complementing established ecotrons across the globe. This facility, composed of twenty-four, highly instrumented ecounits, will allow for soil profiles up to three meters in depth to be repeatedly sampled and continuously monitored. This facility will be the first modern ecotron facility in the United States and as such will provide research infrastructure that this country currently lacks. The Deep Soil Ecotron will enable researchers to address the following four broad research needs using approaches and instrumentation that have been unattainable under more common field and laboratory experiments. First, the Deep Soil Ecotron will reveal how deep soil communities and processes affect and interact with surface soils to influence whole ecosystems. Second, the Deep Soil Ecotron will allow researchers to determine how deep soils and associated vegetation respond to global and land-use change, such as increasing soil temperature and agricultural management practices. Third, information gained from the Deep Soil Ecotron will be integrated into earth system models to improve model representation of soil carbon cycling. Fourth, the Deep Soil Ecotron will provide a testbed for the development of sensors for the *in-situ* monitoring of deep soils. This presentation will provide an overview of the Deep Soil Ecotron's design, capacity, and preliminary research agenda.