



Improving prediction of soil carbon and dynamics at the Reynolds Creek Critical Zone Observatory

Kathleen Lohse (1) and the Reynolds Creek Critical Zone Observatory Team

(1) Idaho State University, Pocatello, Idaho, United States (klohse@isu.edu), (2) USDA-ARS Northwest Watershed Research Center, Boise, Idaho, United States, (3) Boise State University, Boise, Idaho, United States

The Reynolds Creek Critical Zone Observatory (CZO) is being developed at the USDA-ARS Reynolds Creek Experimental Watershed in Southwestern Idaho to improve understanding and prediction of the processes governing soil carbon storage. Leveraging long-term (50 yr), spatially distributed hydroclimate data, the Reynolds Creek CZO is conducting a landscape-scale soil carbon survey, developing an environmental network for the measurement of water and carbon fluxes and calibration of land-surface models, and improving integrative modeling of carbon fluxes and stores. Preliminary soil survey data show that local topographic aspect controls of soil carbon storage can rival elevation-driven climatic controls in semi-arid environments. Lateral carbon export as surface water dissolved organic (range: 10-20 mg C/L) and inorganic carbon (range: 10-20 mg C/L) is surprisingly high in this environment. Cross CZO activities include estimating plant-atmospheric available water using multiple methods including soil based methods. Preliminary findings suggest that lateral carbon export in particulate as well as dissolved form may be an important carbon loss process in these semi-arid environments.