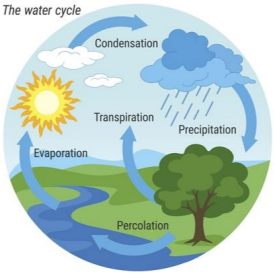
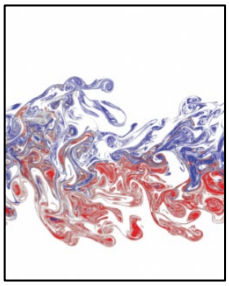
Boase Seminar Series in Hydrology and Water Resources Engineering

Department of Civil, Environmental and Architectural Engineering





Extending the Vadose Zone: Characterizing the Role of Snow for Liquid Water Storage and Transmission in Streamflow Generation

Professor Ryan Webb

Department of Civil, Architectural and Construction Management

University of Wyoming, Laramie, WY

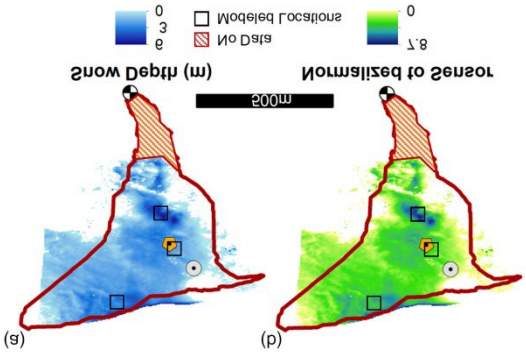
Wednesday, February 1, 2023 | 11:15 AM | ECCE 1B41 &

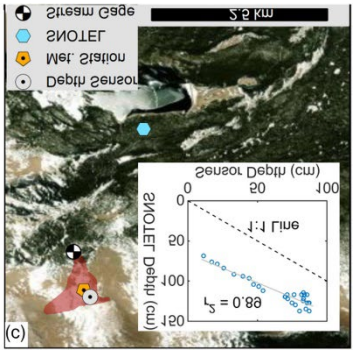
Zoom: https://cuboulder.zoom.us/j/98861379124

(passcode: water)

Abstract:

The dynamic processes that occur during snowmelt create a complex environment where the lateral flow of water has been shown to be hydrologically significant, though difficult to model. To model this process accurately, representation of snowpack properties and processes at appropriate scales are necessary. This seminar will present new approaches to specifically observe the liquid water content of a snowpack across multiple spatial and temporal scales. To accomplish this, field investigations combined methods including ground penetrating radar, LiDAR, lysimeters, and dye tracer experiments. These field observations informed the development of a two-dimensional numerical model to simulate the observed flow of liquid water through the snowpack. This work was conducted in the Colorado Front Range throughout multiple melt seasons in a high alpine environment to offer insights towards snowmelt runoff processes and form the basis for a conceptual model of snowmelt runoff in complex alpine terrain.





Speaker Bios: Ryan Webb received his B.S. in Construction Engineering prior to an M.S. in Civil Engineering with a focus on vadose zone hydrology. He then received a Ph.D. from Colorado State University in Civil Engineering focusing on snow hydrology. Ryan is currently an assistant professor of Civil Engineering at the University of Wyoming. His research group investigates how snow and rain produce streamflow, groundwater recharge, and soil moisture storage in mountain environments using a combination of geophysical techniques, remote sensing, field observations, and modeling.