EGU22-2086
https://doi.org/10.5194/egusphere-egu22-2086
EGU General Assembly 2022

Confronting the water potential information gap

Kimberly Novick[1], Darren Ficklin[1], Dennis Baldocchi[2], Kenneth Davis[3], Teamrat Ghezzehei[4], Alexandra Konings[5], Natasha MacBean[1], Nina Raoult[6], Russell Scott[7], Yuning Shi[3], Benjamin Sulman, and Jeffrey Wood

[1]Indiana Uinversity - Bloomington, United States of America (knovick@indiana.edu)
[2]University of California - Berkeley (USA)
[3]Pennsylvania State University (USA)
[4]University of California - Merced (USA)
[5]Stanford University (USA)
[6]Laboratoire des Sciences du Climat et de l'Environnement (France)
[7]US Department of Agriculture - Agricultural Research Service, Tucson, AZ (USA)

Water potential directly controls the function of leaves, roots and microbes, and water potential gradients drive water flows throughout the soil-plant-atmosphere continuum. Notwithstanding its clear relevance for many ecosystem processes, soil water potential is rarely measured in-situ, and plant water potential observations are generally discrete, sparse, and not yet aggregated into accessible databases. These gaps limit our conceptual understanding of biophysical responses to moisture stress and inject large uncertainty into hydrologic and land surface models. Here, we outline the conceptual and predictive gains that could be made with more continuous and discoverable observations of water potential in soils and plants. We discuss improvements to sensor technologies that facilitate in situ characterization of water potential, as well as strategies for building new networks that aggregate water potential data across sites. We end by highlighting novel opportunities for linking more representative site-level observations of water potential to remotely-sensed proxies. Together, these considerations offer a roadmap for clearer links between ecohydrological processes and the water potential gradients that have the 'potential' to substantially reduce conceptual and modeling uncertainties.