



Environmental Science
& Policy Program
at Michigan State University

Research Colloquia Series

How Water Flux Influences Aquifer Supply across the High Plains Aquifer

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Abstract:

Once considered a vast resource, the High Plains Aquifer has gained much attention in recent decades for its rapid decline in overall water supply. Within the last century, approximately 410 billion cubic meters of groundwater has been depleted from the aquifer – roughly the size of Lake Erie. This decline is due in large part to the extensive irrigation applications that drive the multi-billion dollar agricultural industry of the region. Crop production on the High Plains relies heavily on groundwater-fed irrigation, creating a complex scenario where farmer livelihoods rely on the continued depletion of the resource necessary to sustain high-yield crop production. Accurate assessment of hydrologic flux across regions is necessary for successful groundwater management strategies, particularly in the dry Southern High Plains (SHP) region where small variances in water flux can result in large changes to predicted aquifer recharge. SHP recharge is less than 200 mm/yr, and the majority of this recharge occurs as deep percolation through approximately 30,000 ephemeral playa lakes that drain 90% of the region. This presentation builds on a comprehensive water use analysis across the High Plains Aquifer and introduces the early results of the SHP Landscape Hydrology Model. Results show that recharge beneath playas may be as high 2 m/yr, even during dry years, and interplaya recharge is marginal. The implications of these results link directly to the future of agricultural water use across the SHP region.

Panelists:

Dr. Anthony Kendall, Department of Geological Sciences

Erin Haacker, PhD Candidate, ESPP Specialization Student, Department of Geological Sciences

3:30 p.m. Thursday Feb. 4
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