

Soil and Water Sciences Department Graduate Student Research Seminar

Speaker: **Katie McCurley**
Ph.D. Dissertation Degree Candidate



Advisor(s): Jim Jawitz, Ph.D.

Title: **Evapotranspiration Drivers and Patterns in Global Climate Zones**

Date: Friday, November 15th

Time: 3:00 pm – 4:00 pm

Location: McCarty Hall A, Room G186

Global water supply is heterogeneously distributed in a manner that is not always proportionate to demand. The already unequal allocation of water resources is of increasing concern due to recent and projected changes in water supply drivers. An important factor that impacts water availability is evapotranspiration (ET), which is a result of the interplay between water and energy budgets. ET is driven by dynamic climate and evolving land cover variables, which influence ET at rates that are contingent on climate zone. Therefore, the body of work presented here answers three main questions. 1) What climate and land cover drivers are important for predicting mean annual ET across global climate zones? 2) How do forest conversions impact ET rates in tropical climate zones? 3) Which hydroclimate classification system is best for global scale water budget inquiries? To address these questions, a global gridded database consisting of climate variables and land cover types was created and a statistical, regression-based approach was employed. Results from the three analysis chapters showed: 1) climate drivers dominated ET rates across all global climate zones, land cover was a more ET driver important in some zones than others, and forest and tundra were the most important land cover types for predicting ET, 2) 100% forest cover conversion to an alternate vegetative type impacted ET by no more than 12% on average, but there was substantial variability in ET impact across pixels, and 3) the Köppen-Geiger climate classification system provided the most efficient boundary scheme for water budget inquiries. This dissertation's findings have important implications for land management strategies, such as legislation governing agricultural expansion and deforestation limitations, which impact water availability differently across global climate zones. Policies should therefore be specific to climate zone, especially as variations in hydrologic drivers are expected to impact water supply in the future.

This seminar can be viewed via live or watched later via this link: [Katie McCurley](#). Viewers of the live stream may now ask questions by clicking on the message icon at the bottom. Questions will be read at the end during the question and answer portion. In addition, all seminars are archived for viewing on our [SWSD Seminar Page](#).