Abstract (250 words, maximum):

In regions where groundwater is used for irrigation, significant water losses take place due to evaporation. Knowledge of this is important in meaningful water management, as has been demonstrated in previous studies. These studies demonstrated the utility of stable oxygen and hydrogen isotopes in estimating evaporative loss. However, those studies focused on arid regions. This study examines the region around Kalamazoo, Michigan, which experiences a more humid and temperate climate. Irrigation in the Kalamazoo area primarily uses center-pivot systems supplied by groundwater wells, unlike flood irrigation in previous study areas. Water samples were taken periodically from wells close to and far from center-pivot irrigation systems. Water losses due to evaporation were estimated using stable oxygen and hydrogen isotopes, which are the best tracers since water is made up of these atoms. This approach was possible in the Kalamazoo area since the distribution of oxygen and hydrogen isotopes in local precipitation, which is the source of groundwater recharge, is known based on years of measurements. Preliminary results suggest water loss due to evaporation is approximately 22%. Sampling and analysis are ongoing. These studies will be augmented by examining other potential tracers such as chloride.