



## **Partitioning the evapotranspiration flux from a maize field using stable isotopes**

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Knowledge of the components of evapotranspiration (ET) is important for SVAT modelling and also agriculture, particularly for irrigation efficiency and crop productivity. Measurements of transpiration (T) and soil evaporation (E) can have significant errors due to upscaling, caused by heterogeneities within the vegetation and environment. The stable isotope method can be used to estimate the ratio of evaporation to transpiration and when combined with eddy covariance measurements can be used to measure the values of evaporation and transpiration at a field scale.

During the summer of 2014 the concentration and isotopic ratios of water vapour in the ecosystem boundary layer of a growing maize field at the HOAL catchment was measured using a Picarro field sampling device and in conjunction with isotope samples from the soil and maize plants this data was used to calculate the E:T ratio using the Keeling plot method. A tripod mounted eddy covariance device was used to calculate the ET value for the field with control measurements for the evaporation and transpiration being provided by sets of micro-lysimeters and sap flow devices respectively.

These results along with supporting energy balance and meteorological data will be used to analyse the performance of the HYDRUS 1-D model in partitioning the ET for a crop field.