



The role of plants in site and catchment isotope response

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The role of plants in isotope hydrology is investigated based on a literature review covering hydrological, botanical and plant physiological journals. A wealth of studies on isotope effects by plants exists evidencing a range of processes through which plants alter the stable isotope composition not only of cell water but also of soil and groundwater. A new general classification scheme of isotope effects is proposed that summarizes well documented isotope effects from the canopy, through plant and cell water exchange down to root zone effects such as redistribution. A research gap between the observation of isotope effects at the plant scale and a translation into site to catchment response was found. Therefore, a simple general plant isotope effect model is proposed that translates isotope effects into response for different climate, soil and site conditions.