



## **Diurnal changes in stable isotopes of leaf water on the southern Tibetan Plateau**

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Leaf water in plants playing a significant role in the hydrological cycle, will change the existing stable isotope hydrological cycle pattern. Based on stable isotopic analysis and corresponding meteorological measurement, a better understanding of water transport, storage, and usage can be achieved in stable isotope hydrological cycle on the Tibetan Plateau. This study focuses on the diurnal variations of leaf water stable isotopes at the Lhasa station, southern Tibetan Plateau. The results of our data show that, the diurnal variations of stable isotopic compositions ( $\delta^{18}\text{O}$  and  $\delta\text{D}$ ) of leaf water fluctuate obviously, with high value in the daytime and low value at night. The diurnal fluctuations of deuterium excess (d) of leaf water are also clear, with low value in the daytime and high value at night. At diurnal time scale, both air temperature and relative humidity control the variations of  $\delta^{18}\text{O}$  and  $\delta\text{D}$  in leaf water. Relative humidity correlates negatively with  $\delta^{18}\text{O}$ , and positively with d, in contrast to air temperature. The results reveal that deuterium excess may be an indicator of plant transpiration.