



Preliminary tree-ring isotopic study of Linzhi spruce in Bomi, southeastern Tibetan Plateau

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To understand the past climatic change of southeast Tibetan plateau, which locates in the frontier of the moisture trajectory of Indian summer monsoon, we chosen tree-ring cellulose isotopes as a proxy for such a warm and moist area, where neither temperature nor water availability could limit tree growth at lower elevation. Tree-ring O₁₈ measurements have been conducted on cellulose extracted from Linzhi spruce (*Picea likiangensis* var. *linzhiensis*) sampled near Bomi, southeast Tibetan Plateau (29°52' N, 95°33' E, elevation: 2682m). Two age groups spanning the recent fifty years were independently processed and analyzed, 4 and 11 trees were sampled respectively for youngest and oldest age group. On the youngest trees, intra-tree and inter-tree variability was quantified. No significant O₁₈ age effect was found comparing these two data sets. According to a one year monitoring of precipitation isotopic composition available at Bomi together with simulations run with isotopically enabled atmospheric models, the local climatic control on precipitation O₁₈ shifts from temperature in winter to amount effect in early summer. We conducted a calibration study of O₁₈ from each tree group and group-averaged data with local meteorological records. The tree ring ¹⁸O data show no link with temperature, and exhibit a surprising positive relationship with precipitation amount, which is difficult to reconcile with tree oxygen isotope models. Furthermore, ¹³C data have been measured on the youngest trees. The intrinsic water use efficiency deduced from these data shows a linear increasing trend. The O₁₈ samples of the oldest age group (dated back to 1780s) are still under processing.