



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

Chunming Shi, Valerie Masson-Delmotte, Valerie Daux, Gao Jing, Camille Risi, Thomas Eglin, and Qi-Bin Zhang

(chunming.shi@gmail.com)

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.