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Precipitation record since AD 1600 from ice cores on the central Tibetan Plateau

T. Yao^{1,2}, K. Duan², B. Xu¹, N. Wang², X. Guo¹, and X. Yang¹

¹Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, 100085, China

²State Key Laboratory of Cryospheric Sciences, Cold and Arid Regions Engineering and Environment Research Institute, CAS, Lanzhou, Gansu, 730000, China

Abstract. Lack of reliable long-term precipitation record from the northern Tibetan Plateau has constrained our understanding of precipitation variations in this region. We drilled an ice core on the Puruogangri Ice Field in the central Tibetan Plateau in 2000 to reveal the precipitation variations. The well dated part of the core extends back to AD 1600, allowing us to construct a 400-year annual accumulation record. This record shows that the central Tibetan plateau experienced a drier period with an average annual precipitation of ~300 mm in the 19th century, compared to ~450 mm in the wetter periods during 1700–1780 and the 20th century. This pattern agrees with precipitation reconstructions from the Dundee and Guliya ice cores on the northern Plateau but differs from that found in the Dasuopu ice cores from the southern Plateau. The north-south contrasts in precipitation reconstruction reveals difference in moisture origin between the south Tibetan Plateau dominated by the Asian monsoon and the north Tibetan Plateau dominated by the continental recycling and the westerlies.

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