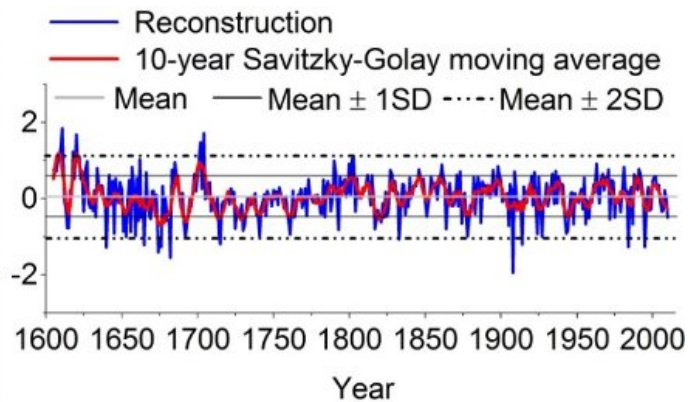


# Scientists reconstruct spring hydroclimate using living and dead alpine juniper shrubs

June 24 2020, by Li Yuan



Close-up view of Wilson juniper shrub patches around the Nam Co Lake and hydroclimate (Standardized Moisture Anomaly Index) reconstruction from 1605 to 2010. Credit: ITP

Alpine regions on the Tibetan Plateau are sensitive to climate change. Little is known, however, about their long-term hydroclimate variability due to short instrumental records.

A research team from the Institute of Tibetan Plateau Research of the Chinese Academy of Sciences established a 537-year standard shrub-ring chronology by cross-dating living and dead Wilson juniper (*Juniperus pingii* var. *wilsonii*) shrubs sampled near the Nam Co Lake on the south-central Tibetan Plateau.

Trees are absent in this area, where patches of alpine shrub species can survive. However, very few alpine shrub species there provide a rare opportunity to retrieve changes of alpine ecosystem by shrub-ring analysis. Among alpine shrubs, Wilson juniper is widespread throughout the south-central Tibetan Plateau.

The established shrub-ring width chronology is one of the world's longest shrub-ring chronologies. Shrub-ring chronology from 1605 to 2010 was then used to reconstruct mean May-June drought severity (Standardized Moisture Anomaly Index).

Two long-term dry spring periods (1637-1683 and 1708-1785) occurred during the Little Ice Age implies that cold temperature may slow down hydrological cycle.

This study, published in *Geophysical Research Letters*, highlights the importance of alpine juniper [shrubs](#) in understanding hydrological cycle in dry, continental alpine treeless areas.

The shrub-ring chronology and reconstructed data are available at the [National Tibetan Plateau Data Center](#).

**More information:** Xiaoming Lu et al. Spring Hydroclimate Reconstruction on the South-Central Tibetan Plateau Inferred From *Juniperus Pingii* Var. *Wilsonii* Shrub Rings Since 1605, *Geophysical Research Letters* (2020). [DOI: 10.1029/2020GL087707](https://doi.org/10.1029/2020GL087707)

Provided by Chinese Academy of Sciences

Citation: Scientists reconstruct spring hydroclimate using living and dead alpine juniper shrubs (2020, June 24) retrieved 2 May 2024 from <https://phys.org/news/2020-06-scientists-reconstruct->

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