



中国科学院 青藏高原研究所

Institute of Tibetan Plateau Research
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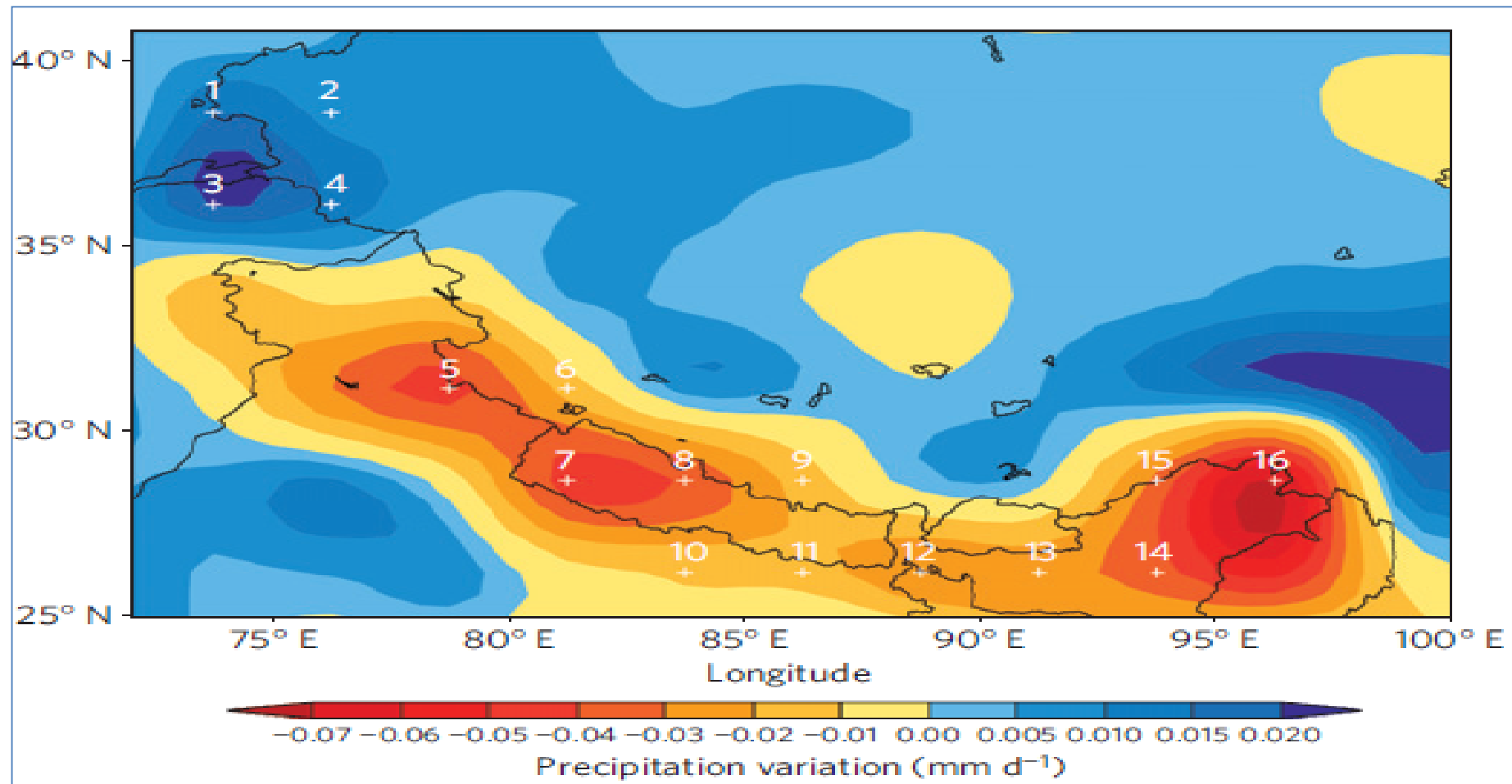
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Past the climate optimum: Recruitment is declining at the world's highest juniper shrublines on the Tibetan Plateau

Eryuan Liang, Xiaoming Lu, Yafeng Wang, Flurin Babst,
Steven W. Leavitt, and J. Julio Camarero

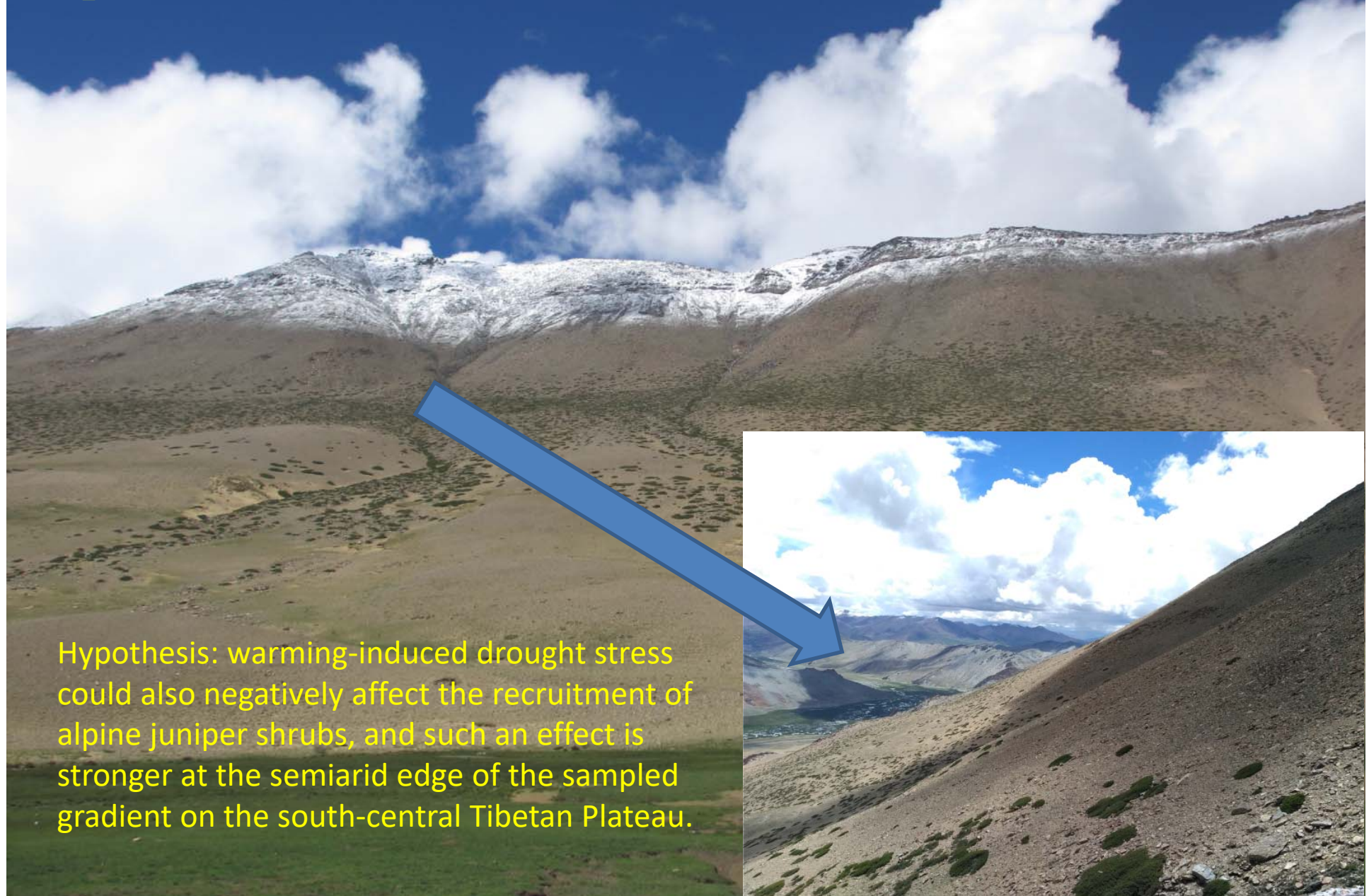
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A warming and drying tendency in the central Himalayas



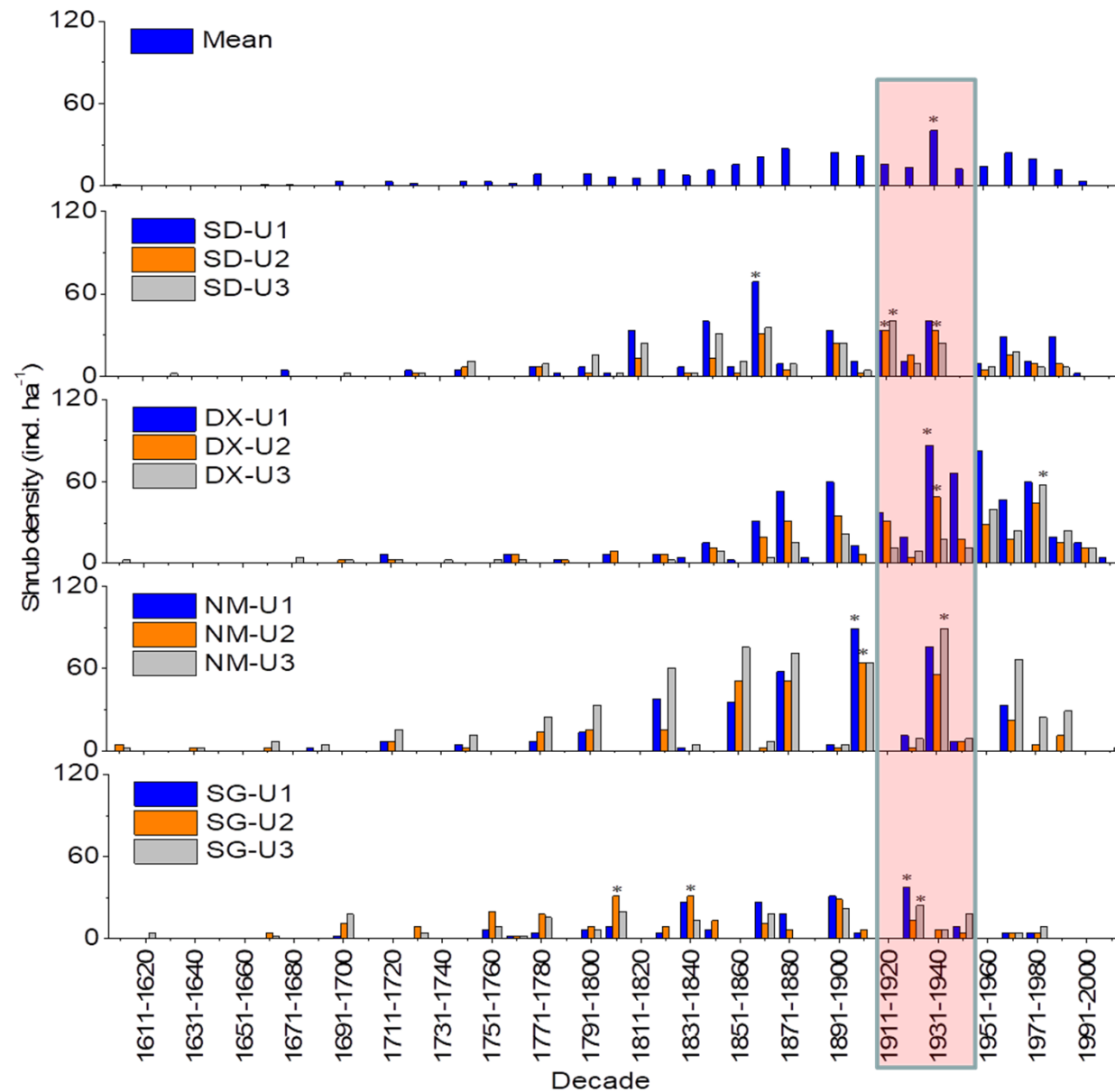
Yao et al., 2012, NCC

Alpine shrubline *Juniperus pingii* var. *wilsonii* at 5280 m a.s.l.

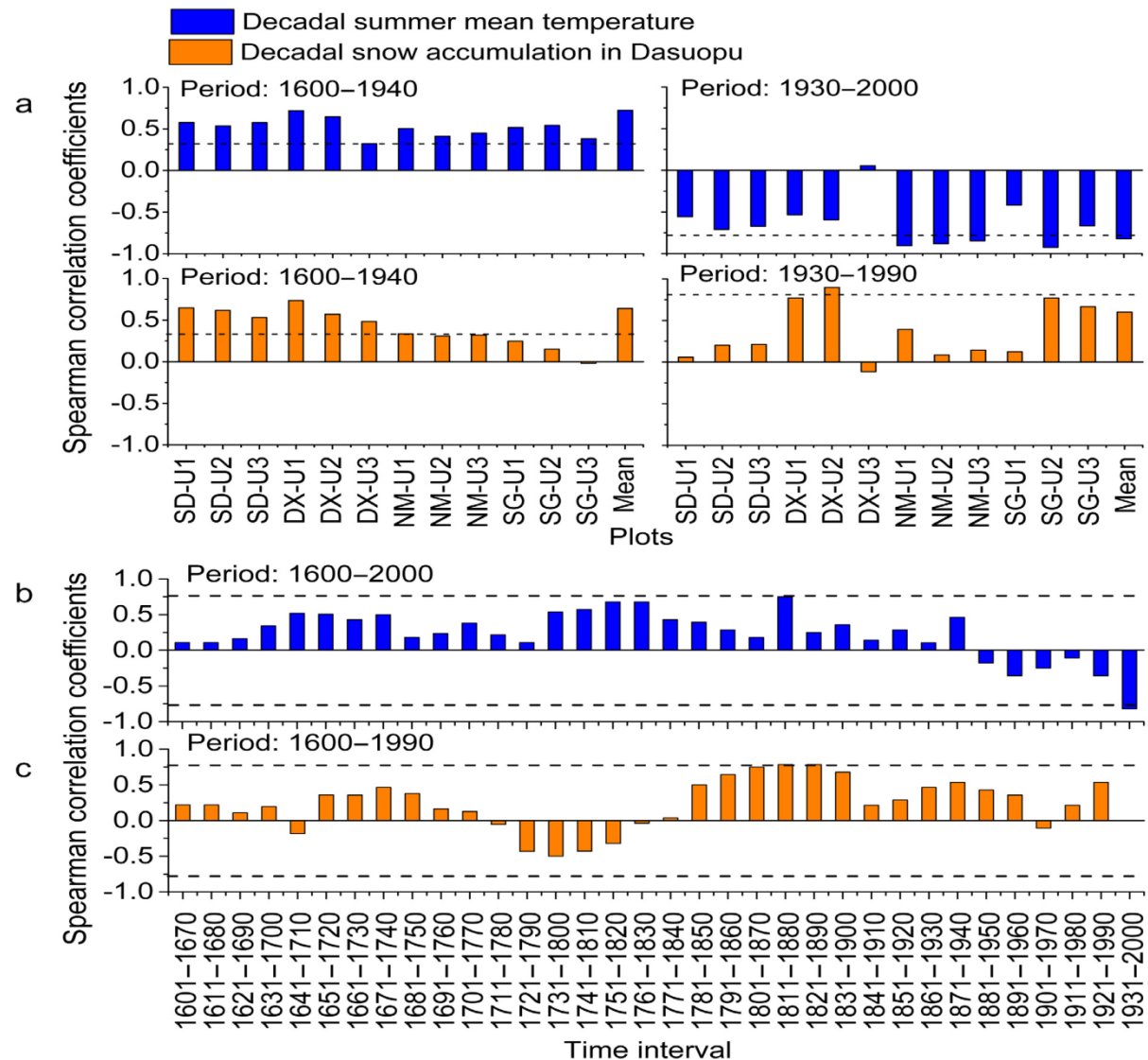


Hypothesis: warming-induced drought stress could also negatively affect the recruitment of alpine juniper shrubs, and such an effect is stronger at the semiarid edge of the sampled gradient on the south-central Tibetan Plateau.

The increasing shrub recruitment prior to the 1930s was followed by a decrease toward present



A temperature optimum for shrub recruitment was reached and passed in the 1930s. Warming-induced drought limitation has likely reduced the recruitment potential of alpine juniper shrubs in recent decades.



Past the climate optimum: Recruitment is declining at the world's highest juniper shrublines on the Tibetan Plateau

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Shifts in altitudinal shrublines showcase impacts of climatic change on alpine ecosystems. We detected changing recruitment patterns at the world's highest juniper (*Juniperus pingii* var. *wilsonii*) shrublines, showing a gradual increase from 1600 to 1900, a peak at 1900–1940, and a subsequent decrease toward present. This apparent tipping point in recruitment success coincides with a switch from positive to negative impacts of rising temperatures. Warming-induced drought limitation has likely reduced the recruitment potential of alpine juniper shrubs in recent decades. Continued warming is thus expected to further alter the dynamics of alpine shrublines on the Tibetan Plateau and elsewhere.