Supplement of

A major waterfall landscape maintained by fog drip water

Lucheng Zhan et al.

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Supplementary Figures

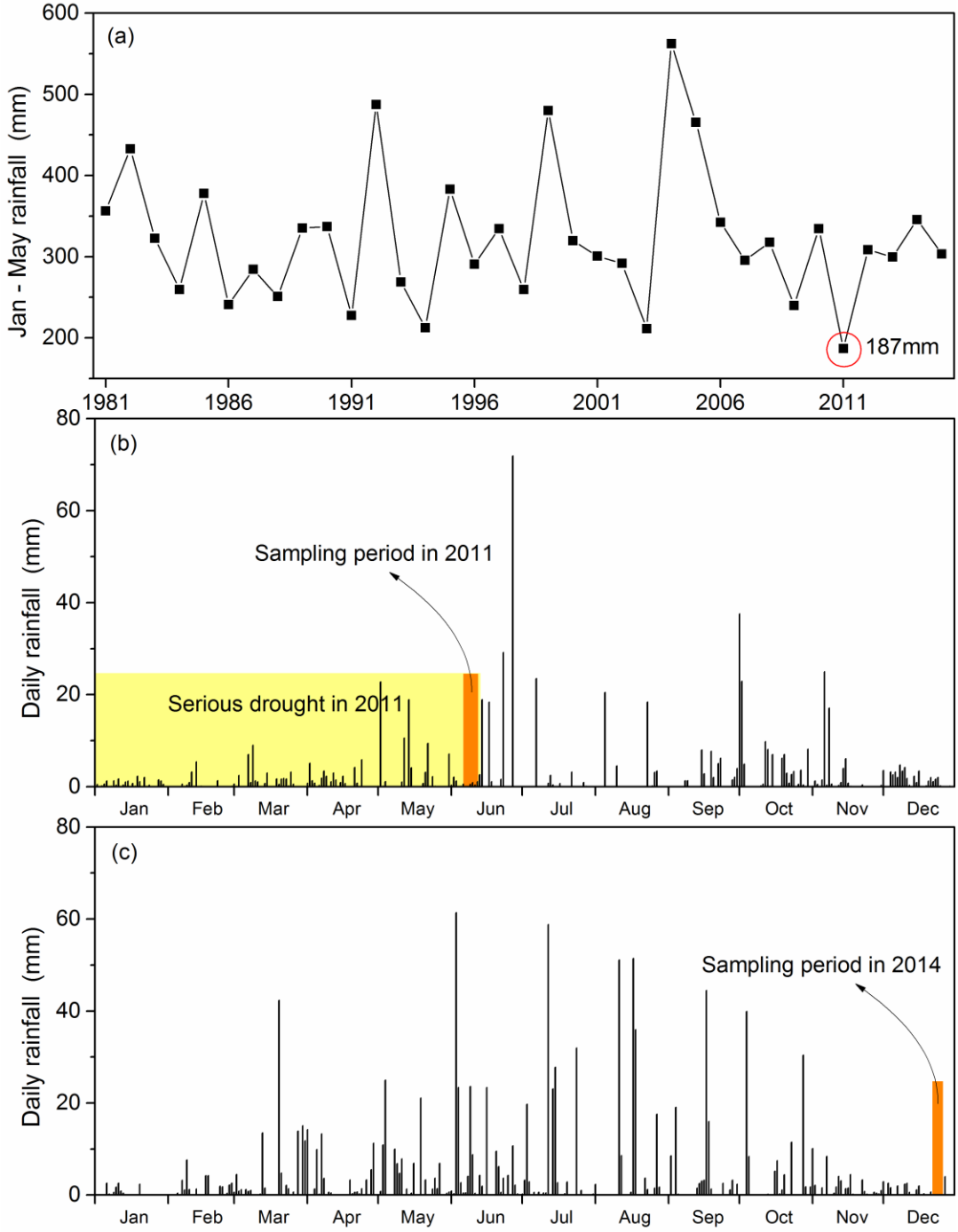

Figure S1. Historical (1981-2015) rainfall amount from January to May and the daily rainfall in 2011 and 2014 at a meteorological station in the study area. (a) Affected by the serious drought event, the rainfall amount from January to May in 2011 was only 187 mm (red circle), which is the lowest over the 35-year record. (b) The first sampling campaign was carried out from June 5 to 12, 2011, at the end of the serious drought. (c) The second sampling campaign was carried from December 22 to 26, 2014, during which there was no rainfall. Data are collected from the China Meteorological Database (http://data.cma.cn/).

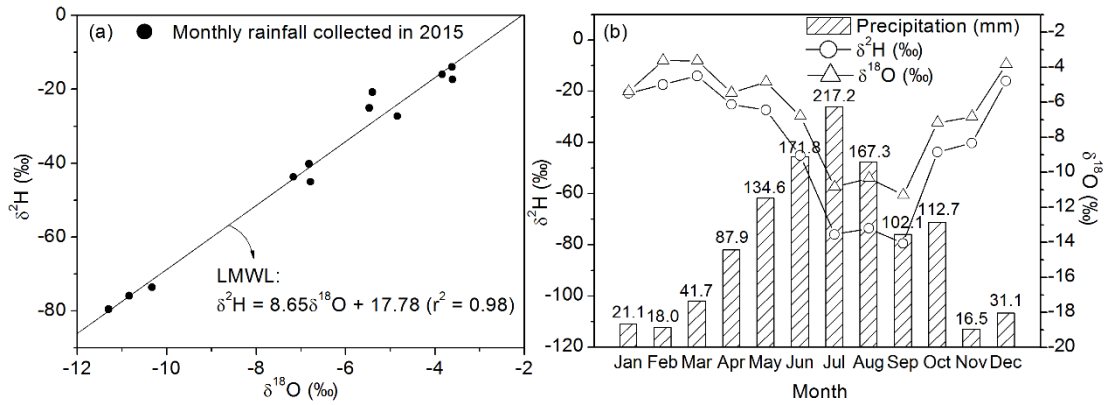

Figure S2. Relationships between monthly δ^2H, $\delta^{18}O$ and precipitation according to rainfall samples collected in the study area in 2015. The local meteoric water line is fitted as $\delta^2H = 8.65\delta^{18}O + 17.78$ ($r^2 = 0.98$). The monthly isotopes in rainfall show significant seasonal variations.

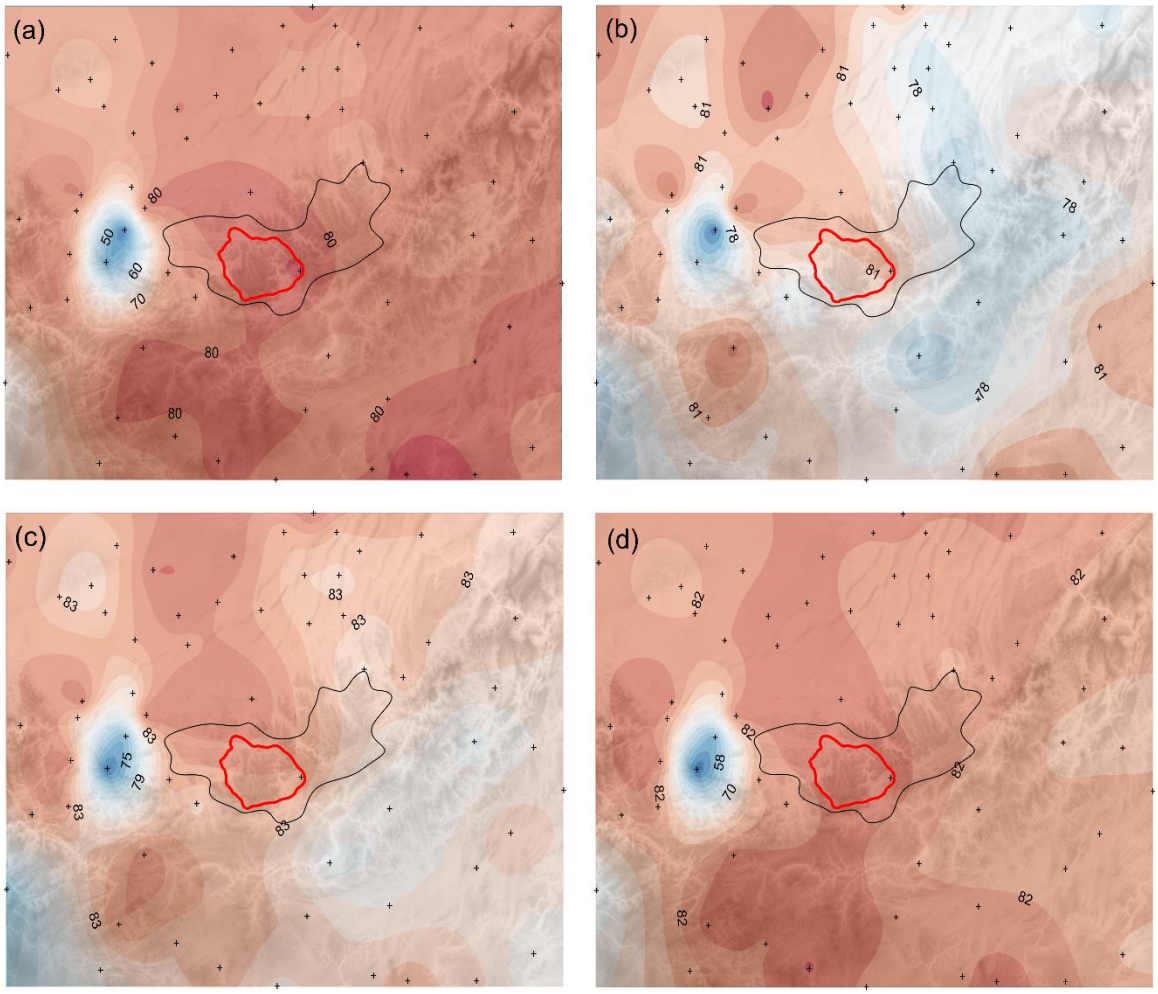

Figure S3. Distribution of relative humidity (%) in the Chishui sandstone area and surrounding regions in (**a**) spring (March to May), (**b**) summer (June to August), (**c**) autumn (September to November) and (**d**) winter (December to February). The meteorological data and digital elevation data for Figures S2 to S6 are sourced from the China Meteorological Database (http://data.cma.cn/) and China Geospatial Data Cloud (http://www.gscloud.cn/), respectively. The average monthly data for 61 meteorological stations (black crosses) during 1981-2010 are collected and averaged based on different seasons. The geographical ranges (104 °E -108 °E and 27 °N -30 °N), background digital elevation map and study area/sandstone area boundaries for Figures S2 to S6 are the same as Figure 7a in the text. Located in the central part of each small figure, the Chishui sandstone area always has higher and more stable relative humidity compared with surrounding areas.

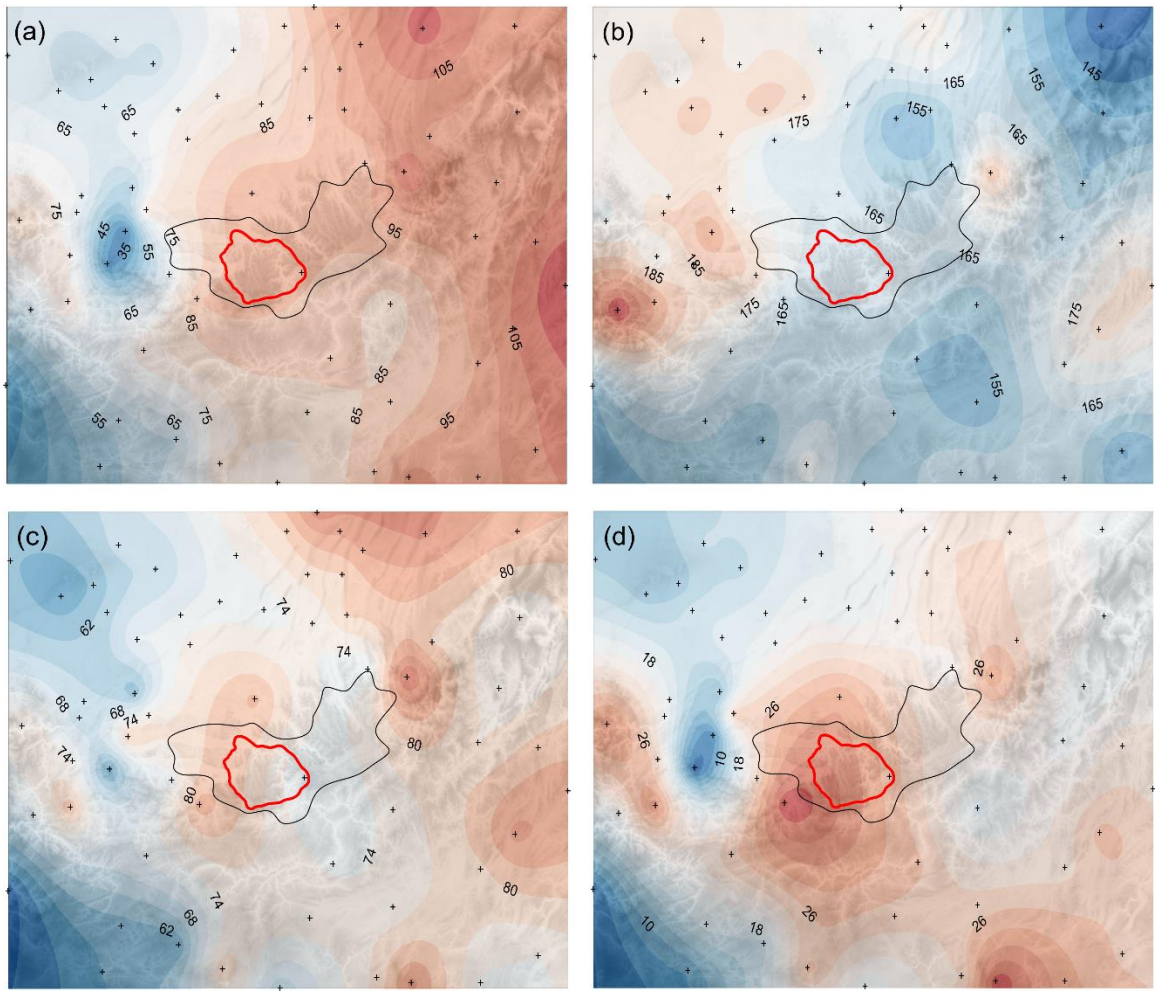

Figure S4. Distribution of precipitation (mm/month) in the Chishui sandstone area and surrounding regions in (**a**) spring (March to May), (**b**) summer (June to August), (**c**) autumn (September to November) and (**d**) winter (December to February). Most rainfall concentrates in spring and summer. The rainfall amount in the study area is smaller than those in surrounding areas in summer and autumn, while being bigger in winter and spring.

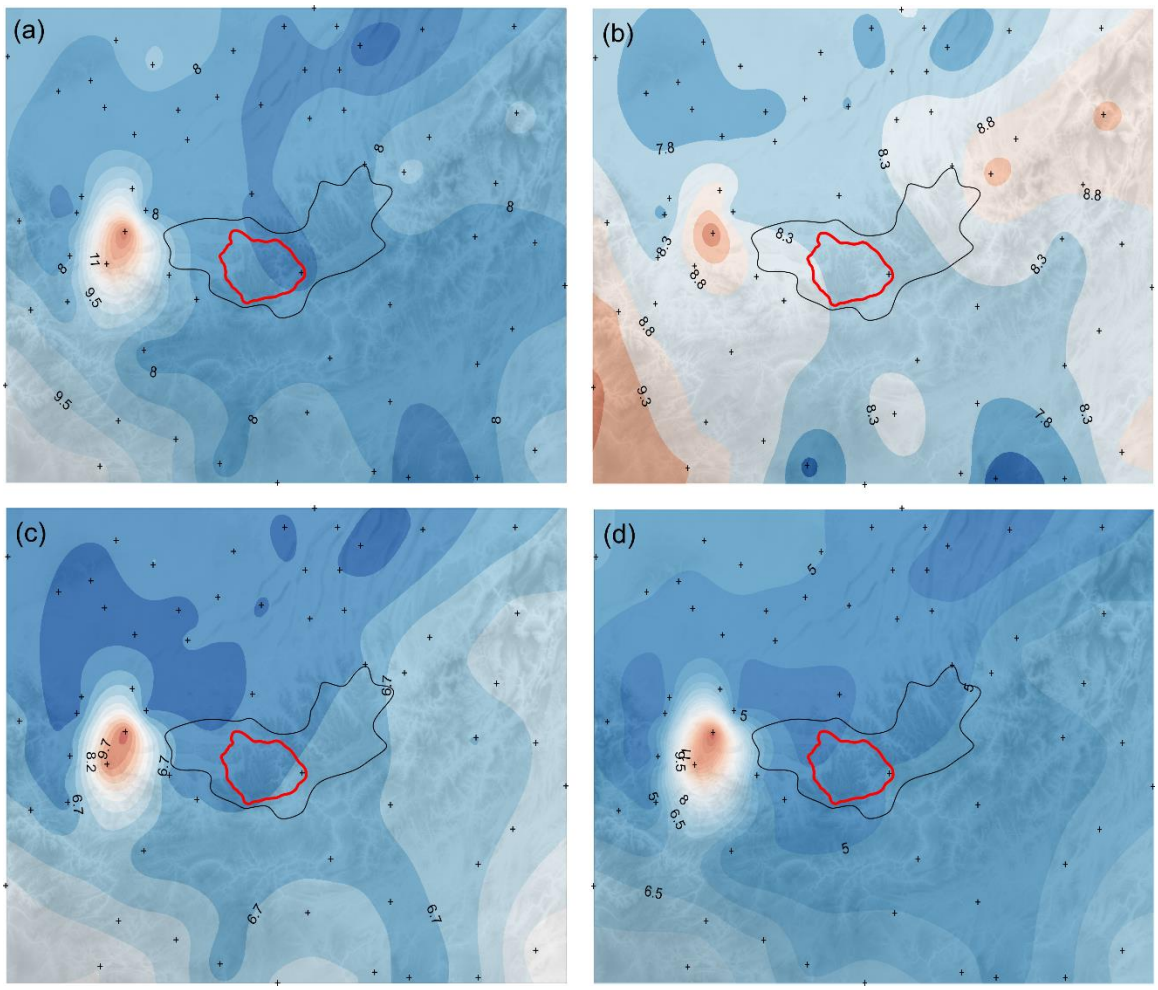

Figure S5. Distribution of daily air temperature range (℃) in the Chishui sandstone area and surrounding regions in (**a**) spring (March to May), (**b**) summer (June to August), (**c**) autumn (September to November) and (**d**) winter (December to February). The study area is always located within the regions with relatively small daily temperature range. The small daily temperature range in the study area should be caused by the forest's regulation on local climate and favors fog formation.

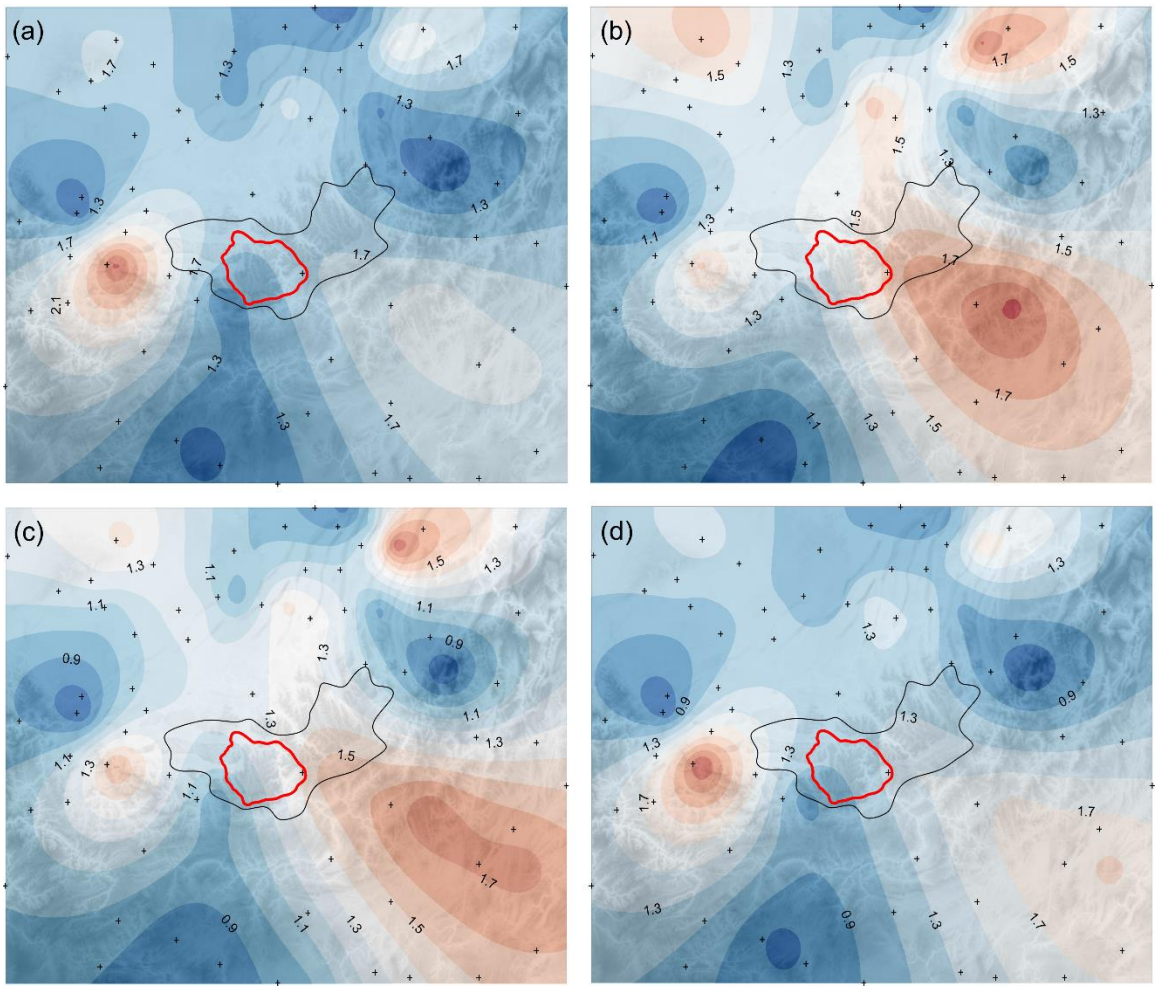

Figure S6. Distribution of wind speed (m/s) in the Chishui sandstone area and surrounding regions in (**a**) spring (March to May), (**b**) summer (June to August), (**c**) autumn (September to November) and (**d**) winter (December to February). The wind speed in the study area is usually smaller than 1.5 m/s, which is helpful for retaining water vapor and fogs in the area.

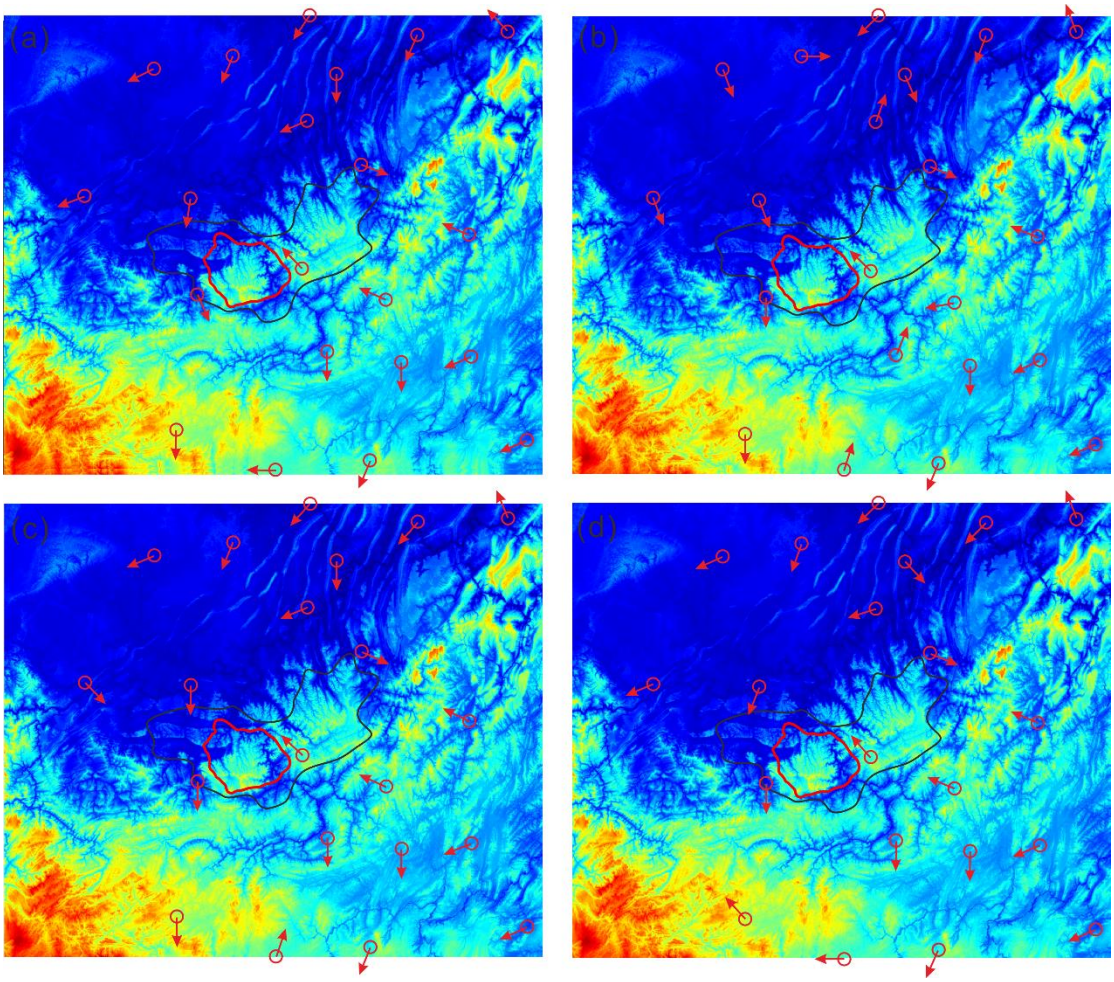

Figure S7. Distribution of prevailing wind direction in the Chishui sandstone area and surrounding regions in (**a**) spring (March to May), (**b**) summer (June to August), (**c**) autumn (September to November) and (**d**) winter (December to February). Red circles and arrows plotted on the DEM background show the prevailing wind direction of 21 meteorological stations that have available wind direction data. The legends for DEM colormap are the same with Figure 7a in the main text. During the whole year, wind mainly blows from the Sichuan Basin and south-eastern areas to the study area, bringing abundant water vapour for the occurrence of frequent fog events.