

Figure S1. History area evolution of drought events at different drought ranks from 1959 to 2018. The green line means the 20-year smoothed line based on the LOESS.

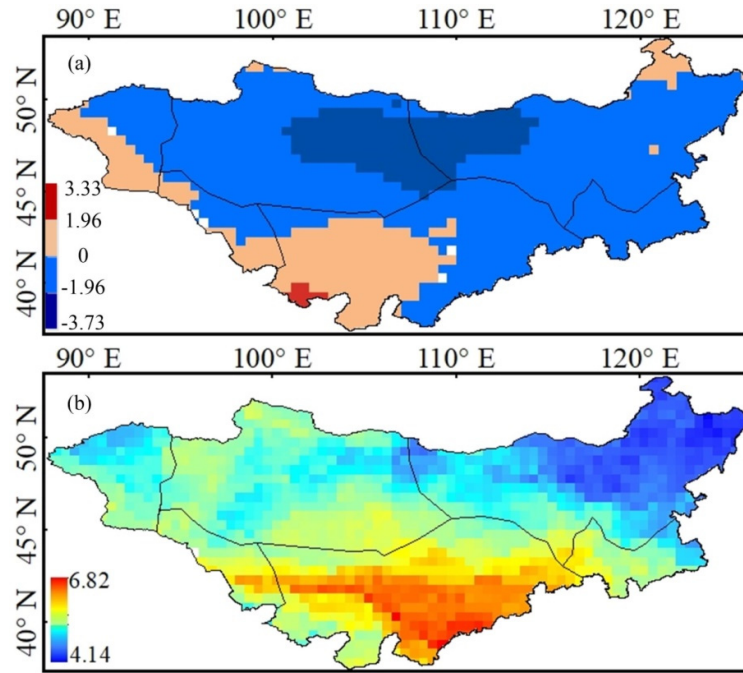


Figure S2. The MK significant values at a 0.05 significance threshold in annual precipitation (a) and annual mean temperature (b) over Mongolian Plateau during 1959–2018.

Table S1. Teleconnection indices used in this study with their full name, time period and source.

Indices	Full Name	Time Period	Source
NAO	North Atlantic Oscillation Index	1959-2018	NOAA Climate Prediction Center http://www.cpc.ncep.noaa.gov/data/teledoc/nao.shtml
AO	Arctic Oscillation	1959-2018	NOAA Earth System Research Laboratory https://www.esrl.noaa.gov/psd/gcos_wgsp/Timeseries/AO/
PDO	Pacific Decadal Oscillation	1959-2018	OAA Earth System Research Laboratory https://www.esrl.noaa.gov/psd/gcos_wgsp/Timeseries/PDO/
NINO34	NINO3.4 SST Index	1959-2018	NOAA Earth System Research Laboratory https://www.esrl.noaa.gov/psd/gcos_wgsp/Timeseries/Nino34/

Table S2. Variance contributions of the un-rotated and rotated components based on monthly scPDSI.

	Component	PC1	PC2	PC3	PC4	PC5	PC6
Un-rotated	Variance (%)	29.64	15.17	8.67	7.40	5.21	3.99
	Cumulative (%)	29.64	44.81	53.48	60.88	66.09	70.08
Rotated	Variance (%)	28.45	15.91	8.55	7.61	5.42	4.17
	Cumulative (%)	28.45	44.36	52.91	60.52	65.94	70.11

Table S3. Drought trend based on MK and Sen's slope.

scPDSI value	Category
$B < 0$ and $ Z > 1.96$	Significant dry
$B < 0$ and $ Z \leq 1.96$	Slight dry
$B \geq 0$ and $ Z \leq 1.96$	Slight wet
$B > 0$ and $ Z > 1.96$	Significant wet

β is the Sen's slope estimator and Z is the significant value of MK test.