Supplementary Information

Excess radiation exacerbates drought stress impacts on stomatal conductance along aridity gradients

Jing Wang[1], Xuefa Wen[1,2,3]

[1]Key Laboratory of Ecosystem Network Observation and Modeling, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing, 100101, China

[2]College of Resources and Environment, University of Chinese Academy of Sciences, Beijing, 101408, China

[3]Beijing Yanshan Earth Critical Zone National Research Station, University of Chinese Academy of Sciences, Beijing, 101408, China

Correspondence to: Xuefa Wen (wenxf@igsnrr.ac.cn) and Jing Wang (wangjing.15b@igsnrr.ac.cn)

Table S1 Results of standardized major axis (SMA) line-fitting for the relationship between stomatal conductance (using $1/\triangle^{18}O$ as proxy) and aridity.

		Intercept	slope	r^2	P
Loess Plateau	Estimate	2.21[c]	-45.07[a]	0.68	0.003
	Lower	1.52	-70.21		
	Upper	2.90	-28.93		
Inner Mongolia Plateau	Estimate	2.45[b]	-57.18[a]	0.72	0.002
	Lower	1.72	-87.05		
	Upper	3.17	-37.56		
Tibet Plateau	Estimate	3.01[a]	-83.37[a]	0.60	0.008
	Lower	1.82	-136.72		
	Upper	4.19	-50.84		

Different letters indicate significant differences ($P < 0.001$) among transects in intercepts and slopes.

50 **Table S2** Pearson coefficients for correlations among stomatal conductance (gs) and environmental factors and plant properties.

Transect	Variables	gs	Aridity	MAP	SM	VPD	SR	MAT	MATMAX	LA	SLA
Loess Plateau	gs	1									
	Aridity	-.848**	1								
	Precipitation	.856**	-.997**	1							
	SM	.719*	-.781**	.795**	1						
	VPD	-0.554	0.616	-0.563	-0.251	1					
	SR	-.639*	.810**	-.827**	-.851**	0.217	1				
	$Temp_{mean}$	.641*	-.665*	.710*	.766**	0.074	-.849**	1			
	$Temp_{max}$	.678*	-.698*	.737*	.751*	-0.026	-.795**	.980**	1		
	LA	.757*	-.881**	.863**	0.567	-.751*	-.637*	0.425	0.481	1	
	SLA	-0.519	0.460	-0.454	-0.499	0.356	0.422	-0.433	-0.483	-0.533	1
Inner Mongolia Plateau	gs	1									
	Aridity	-.843**	1								
	Precipitation	.919**	-.945**	1							
	SM	.707*	-.941**	.877**	1						
	VPD	-0.384	.736*	-0.490	-.741*	1					
	SR	-.728*	.725*	-.846**	-.751*	0.196	1				
	$Temp_{mean}$	0.303	-0.002	0.298	-0.009	.647*	-0.615	1			
	$Temp_{max}$	0.038	0.270	0.018	-0.235	.814**	-0.386	.943**	1		
	LA	.913**	-.721*	.875**	0.625	-0.218	-.731*	0.434	0.189	1	
	SLA	-0.576	.803**	-0.627	-.681*	.849**	0.310	0.397	0.628	-0.410	1
Tibetan Plateau	gs	1									
	Aridity	-.773**	1								
	Precipitation	.675*	-.978**	1							

SM	.659*	-.787**	.795**	1						
VPD	-.912**	.931**	-.868**	-.820**	1					
SR	-.850**	.963**	-.936**	-.801**	.943**	1				
$Temp_{mean}$	-.670*	0.325	-0.189	-0.454	0.622	0.393	1			
$Temp_{max}$	-.852**	.795**	-.740*	-.795**	.935**	.832**	.760*	1		
LA	0.610	-0.620	0.504	0.219	-0.624	-.658*	-0.401	-0.536	1	
SLA	-.648*	0.558	-0.486	-.779**	.715*	0.516	.724*	.729*	-0.078	1

**, P<0.01; *, P<0.05. gs, stomatal conductance; SM, soil moisture; VPD, vapor pressure deficit; SR, total solar radiation; $Temp_{mean}$, mean temperature; $Temp_{max}$, maximum temperature; LA, leaf area; SLA, specific leaf area.