Spatiotemporal Variation of Water Supply and Demand Balance under Drought Risk and Its Relationship with Maize Yield: A Case Study in Midwestern Jilin Province, China

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Table:

Table S1 Information of 33 global climate models from CMIP5

Code	Model groups	Research Institutions	Code	Model groups	Research Institutions
a	OBVERSATION	NMIC, China	r	GISS-E2-H-CC	NASA GISS, USA
b	ACCESS1-0	CSIRO and BoM, Australia	s	GISS-E2-R	NASA GISS, USA
c	ACCESS1-3	CSIRO and BoM, Australia	t	GFDL-CM3	NOAA GFDL, USA
d	BCC-CSM1-1	BCC, CMA, China	u	GFDL-ESM2G	NOAA GFDL, USA
e	BCC-CSM1-1-m	BCC, CMA, China	v	GFDL-ESM2M	NOAA GFDL, USA
f	BNU-ESM	GCESS, China	w	HadGEM2-AO	NIMR/KMA, South Korea/UK
g	CanESM2	CCCMA, Canada	x	INM-CM4	INM, Russia
h	CCSM4	NCAR, USA	y	IPSL-CM5A-LR	IPSL, France
i	CESM1-BGC	NSF-DOE-NCAR, USA	z	IPSL-CM5A-MR	IPSL, France
j	CESM1-CAM5	NSF-DOE-NCAR, USA	A	IPSL-CM5B-LR	IPSL, France
k	CESM1-WACCM	NSF-DOE-NCAR, USA	B	MIROC5	MIROC, Japan
l	CMCC-CM	CMCC, Italy	C	MIROC-ESM	MIROC, Japan
m	CMCC-CMS	CMCC, Italy	D	MIROC-ESM-CHEM	MIROC, Japan
n	CNRM-CM5	CNRM-GAME, France	E	MPI-ESM-LR	MPI-M, Germany
o	EC-EARTH	ICHEC, Europe	F	MRI-CGCM3	MRI, Japan
p	FIO-ESM	FIO, China	G	NorESM1-M	NCC, Norway
q	GISS-E2-H	NASA GISS, USA	H	NorESM1-ME	NCC, Norway

Table:

Sen's slope:

Sen's slope is used to calculate the extent of temporal trends in climate factors [1]. The Sen's slope is widely used in meteorological and hydrological research because it avoids the effects of missing time series data and data distribution patterns on the analysis results, and because it eliminates outliers from interfering with the time series [2,3].

Assuming a time series with n statistics (x_1, x_2, ..., x_n), Sen's slope is calculated as:

$$\beta = \text{Median}\left(\frac{x_j - x_i}{j-i}\right), \forall j > i \tag{1}$$

where, Median is the median function. β is used to determine the degree of time series trend, β>0 means positive trend, β<0 means negative trend, β=0 means insignificant trend, the value of β is the degree of trend.

References

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[3] Chatterjee, S., Khan, A., Akbari, H., Wang, Y. Monotonic trends in spatio-temporal distribution and concentration of monsoon precipitation (1901–2002), West Bengal, India. Atmos. Res. 2016, 182, 54-75. https://doi.org/10.1016/j.atmosres.2016.07.010

Table S2. M-K test and Sen's slope of variable for different periods

Period	Variable	MK-Z value	Sen's slope	Trends
	CWDI	1.97*	0.125	↑
	ET0	-1.32	-0.592	↓
Current	Etc	-1.22	-0.483	↓
	Pe	-0.43	-0.517	↓
	IRI	1.29	0.201	↑
	CWDI	-0.14	-0.023	↓
	ET0	-0.48	-0.451	↓
RCP4.5	Etc	-0.78	-0.494	↓
	Pe	0.54	0.742	↑
	IRI	-1.09	-0.361	↓
	CWDI	0.48	0.057	↑
	ET0	2.82**	2.065	↑
RCP8.5	Etc	3.26**	1.78	↑
	Pe	-1.8+	-2.603	↓
	IRI	1.46	0.347	↑

Note "+", "*" and "**" indicate that they passed the 0.1, 0.05 and 0.01 significance tests, respectively.

Figure:

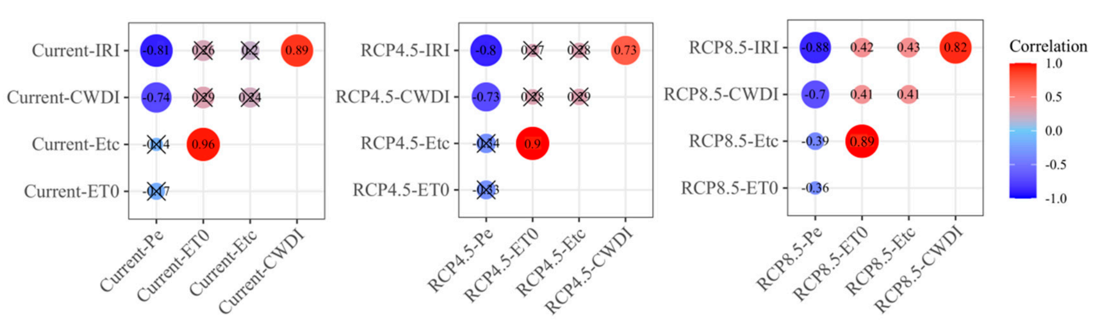

Figure S1. Correlation of various statistics for different periods (Current, RCP 4.5, RCP 8.5)