forests

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Article

Vegetation Growth Carryover and Lagged Climatic Effect at Different Scales: From Tree Rings to the Early Xylem Growth Season

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Table S1. Growth parameters simulated by VS model.

Argument	Description	Sampling size		
		KZB	ZTW	DWZ
T1	Min temperature/℃	5	3	8
T2	Temperature/℃	12	7	9.5
T3	Temperature/℃	20	17.5	10.5
T4	Maximum temperature/℃	32	27.5	27
PMAX	Maximum daily precipitation of saturated soil /mm	30	22	28
Droot	Root depth/mm	550	450	550
C1	The coefficient of infiltration of precipitation into the soil	0.53	0.51	0.05
C2	First coefficient for calculation of transpiration	0.06	0.07	0.1625
C3	Second coefficient for calculation of transpiration	0.19	0.19	0.04
W0	Initial soil moisture	0.065	0.05	0.05
W1	Minimum soil moisture content for growth	0.065	0.145	0.0975
W2	Lower limit of optimum growth soil moisture content	1	0.5	0.3
W3	Upper limit of moisture content of soil suitable for growth	0.325	0.3	0.1
W4	Maximum humidity for plant growth	0.55	0.45	0.35
Cd	Coefficient of soil drainage	0.03	0.03	0.01
Tbeg	Temperature sum/℃	90	91	102

Figure S1. KZB, ZTW, DWZ Walter-Lieth.

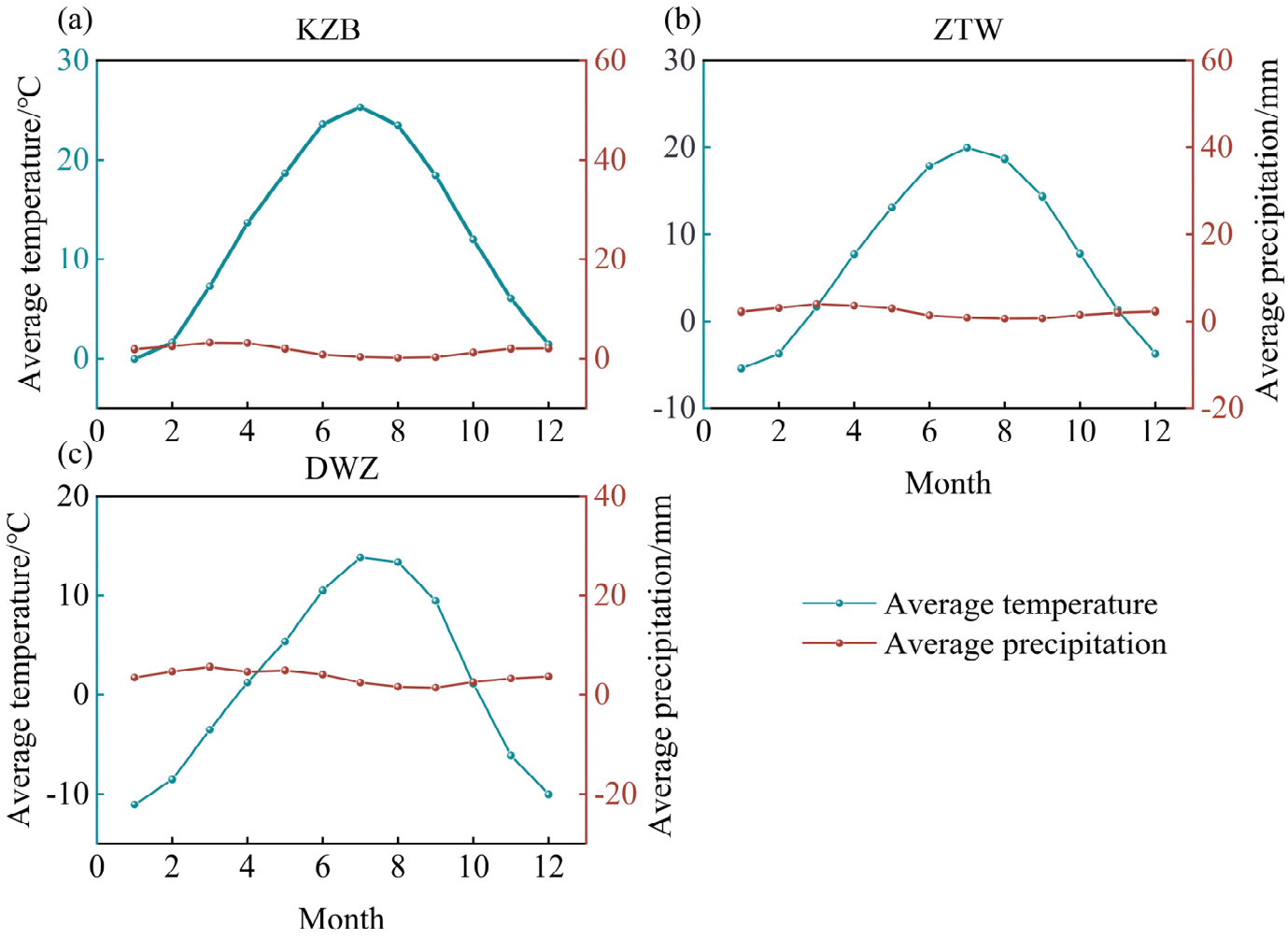


Figure S1. (a-c) The climatic charts of average temperatures and average precipitation for KZB, ZTW, and DWZ, drawn by Walter Lehrs, the Gaussen type representation P=2T (e.g.=20 ºC equivalent to 40 mm).

Figure S2. Augmented Dickey–Fuller, ADF.

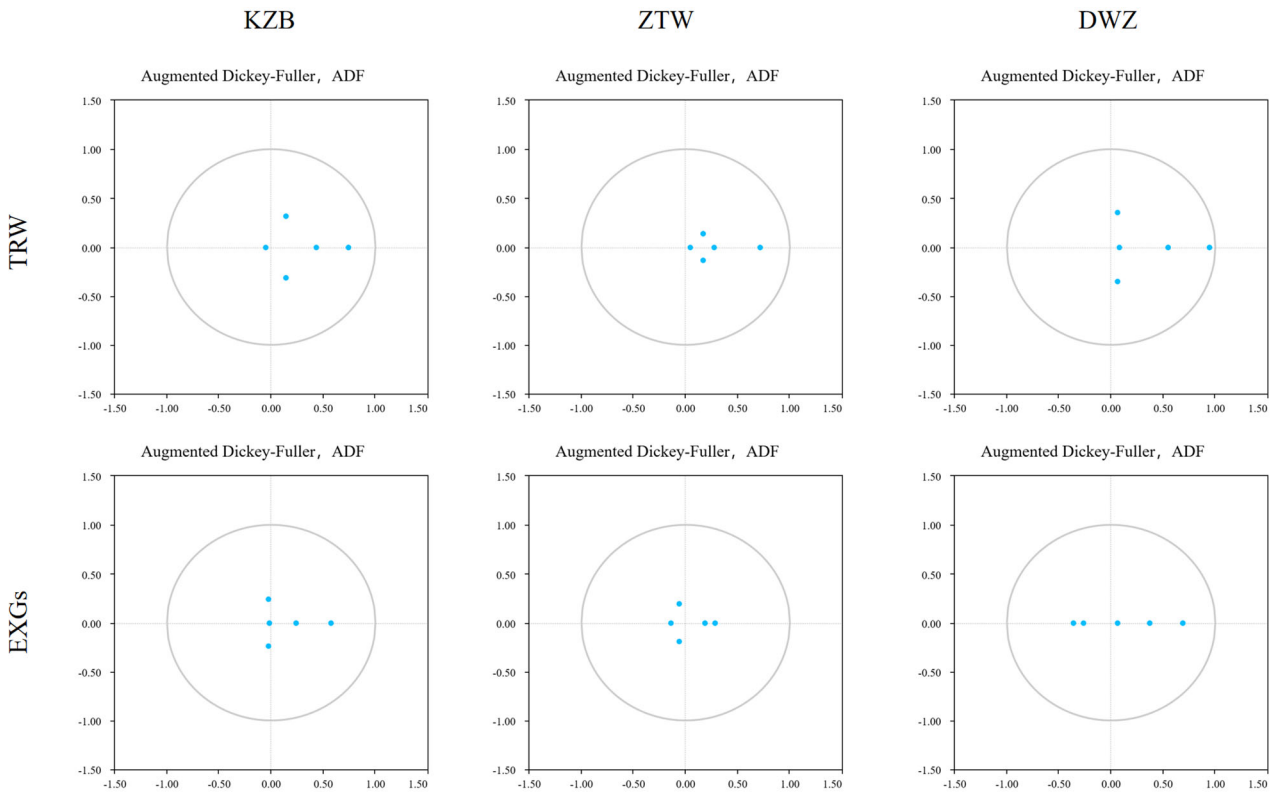
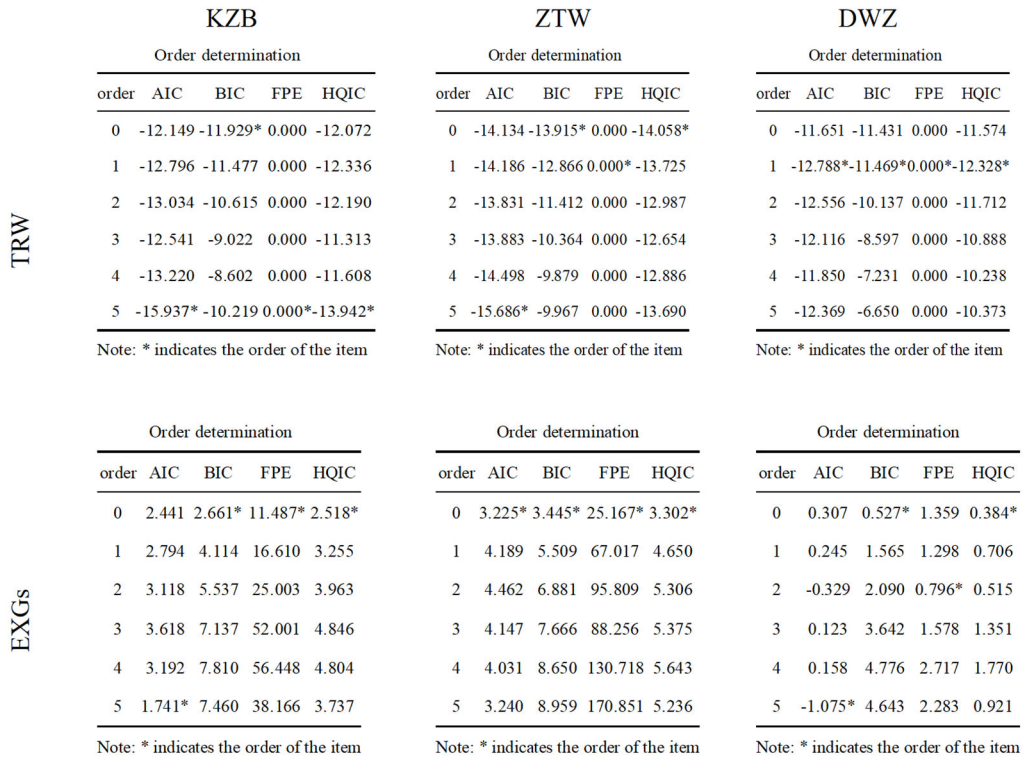


Figure S2. Augmented Dickey–Fuller plot of TRE and EXGs data series. If all eigenvalues are in the unit circle, that is, all points are in the circle, then the model is stable. If the feature roots appear outside the unit circle, it means that the model may not have long-term sustained stability.

Figure S3. The order of the lag term is determined.



TRW

KZB

Order determination

order	AIC	BIC	FPE	HQIC
0	-12.149	-11.929*	0.000	-12.072
1	-12.796	-11.477	0.000	-12.336
2	-13.034	-10.615	0.000	-12.190
3	-12.541	-9.022	0.000	-11.313
4	-13.220	-8.602	0.000	-11.608
5	-15.937*	-10.219	0.000*	-13.942*

Note: * indicates the order of the item

ZTW

Order determination

order	AIC	BIC	FPE	HQIC
0	-14.134	-13.915*	0.000	-14.058*
1	-14.186	-12.866	0.000*	-13.725
2	-13.831	-11.412	0.000	-12.987
3	-13.883	-10.364	0.000	-12.654
4	-14.498	-9.879	0.000	-12.886
5	-15.686*	-9.967	0.000	-13.690

Note: * indicates the order of the item

DWZ

Order determination

order	AIC	BIC	FPE	HQIC
0	-11.651	-11.431	0.000	-11.574
1	-12.788*	-11.469*	0.000*	-12.328*
2	-12.556	-10.137	0.000	-11.712
3	-12.116	-8.597	0.000	-10.888
4	-11.850	-7.231	0.000	-10.238
5	-12.369	-6.650	0.000	-10.373

Note: * indicates the order of the item

EXGs

Order determination

order	AIC	BIC	FPE	HQIC
0	2.441	2.661*	11.487*	2.518*
1	2.794	4.114	16.610	3.255
2	3.118	5.537	25.003	3.963
3	3.618	7.137	52.001	4.846
4	3.192	7.810	56.448	4.804
5	1.741*	7.460	38.166	3.737

Note: * indicates the order of the item

Order determination

order	AIC	BIC	FPE	HQIC
0	3.225*	3.445*	25.167*	3.302*
1	4.189	5.509	67.017	4.650
2	4.462	6.881	95.809	5.306
3	4.147	7.666	88.256	5.375
4	4.031	8.650	130.718	5.643
5	3.240	8.959	170.851	5.236

Note: * indicates the order of the item

Order determination

order	AIC	BIC	FPE	HQIC
0	0.307	0.527*	1.359	0.384*
1	0.245	1.565	1.298	0.706
2	-0.329	2.090	0.796*	0.515
3	0.123	3.642	1.578	1.351
4	0.158	4.776	2.717	1.770
5	-1.075*	4.643	2.283	0.921

Note: * indicates the order of the item

Figure S3. The order of the lag term is determined. There are four information criteria: Akaike information criterion, AIC; Bayesian information criterion, BIC; final prediction error, FPE; and Hannan–Quinn information criterion, HQIC. The order principle of the information criteria (such as AIC) is the smaller the better. In general, the smaller the lag order, the better; The order corresponding to the minimum value of the four index values is taken as the order of the fixed order. The minimum values of the four criteria appear to be less than 1, so the VAR model is finally constructed with order 1.