

# Electronic Supplementary Material to: Seasonal Prediction of Extreme High-Temperature Days in Southwestern China Based on the Physical Precursors\*

Zhiyi ZHOU<sup>1,2,3</sup>, Juan LI<sup>1,2</sup>, Haishan CHEN<sup>1</sup>, and Zhiwei ZHU<sup>1,2</sup>

<sup>1</sup>Key Laboratory of Meteorological Disaster, Ministry of Education (KLME)/ Collaborative Innovation Center on Forecast and Evaluation of Meteorological Disasters (CIC-FEMD)/Joint International Research Laboratory of Climate and Environment Change (ILCEC), Nanjing University of Information Science and Technology, Nanjing 210044, China

<sup>2</sup>State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG), Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing 100086, China

<sup>3</sup>University of Chinese Academy of Sciences, Beijing 100049, China

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**Table S1.** Correlation coefficients among predictor candidates (x1, x2, ..., x11) and SWC-EHDs over 1961–2005. Correlation coefficients significant at the 0.01 (0.05) level are in bold (italic).

	x1	x2	x3	CASD	x5	x6	x7	x8	NAT	x10	x11
SWC-EHDs	<b>0.47</b>	<b>0.41</b>	<b>0.43</b>	<i>0.36</i>	<b>0.48</b>	<b>0.43</b>	<b>0.39</b>	<b>0.48</b>	<b>0.5</b>	<i>0.35</i>	<i>0.37</i>
x1	–	<i>0.37</i>	<b>0.91</b>	0.15	0.22	<b>0.96</b>	<b>0.82</b>	0.28	<b>0.53</b>	0.21	<i>0.31</i>
x2	–	–	<b>0.44</b>	<i>0.33</i>	0.22	<i>0.37</i>	0.25	0.24	<b>0.79</b>	<b>0.76</b>	<b>0.39</b>
x3	–	–	–	0.16	0.08	<b>0.85</b>	<b>0.77</b>	0.14	<b>0.56</b>	<i>0.34</i>	<b>0.52</b>
CASD	–	–	–	–	0.16	0.13	0.1	<b>0.54</b>	0.23	<i>0.37</i>	<i>0.36</i>
x5	–	–	–	–	–	0.21	0.1	<b>0.42</b>	<i>0.35</i>	0.07	0.03
x6	–	–	–	–	–	–	<b>0.81</b>	0.28	<b>0.56</b>	0.22	0.26
x7	–	–	–	–	–	–	–	0.18	<b>0.4</b>	0.06	0.13
x8	–	–	–	–	–	–	–	–	<i>0.3</i>	0.26	0.07
NAT	–	–	–	–	–	–	–	–	–	<b>0.61</b>	<i>0.37</i>
x10	–	–	–	–	–	–	–	–	–	–	<b>0.49</b>

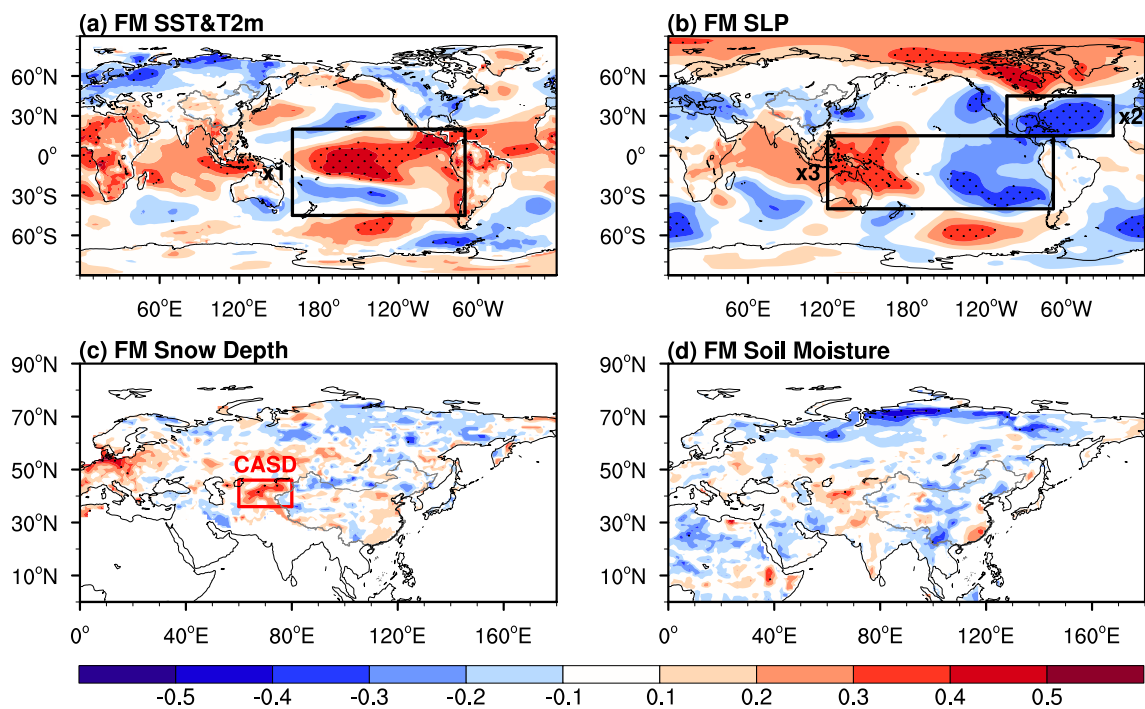
**Table S2.** Correlation coefficients among CASD, NAT, SWC-EHDs and Dec–Jan mean NAO index during 1961–2005. Correlation coefficients significant at the 0.01 (0.05) level are in bold (italic).

	CASD	NAT	SWC-EHDs
Feb–Mar minus Dec–Jan NAO	<b>–0.39</b>	<b>–0.42</b>	–0.18

\* The online version of this article can be found at <https://doi.org/10.1007/s00376-022-2075-5>.

**Table S3.** Summary of five climate models in ENSEMBLES used in this study.

Institute	Name	Hindcast period	Ensemble member	References
European Centre for Medium-range Weather Forecasts (ECMWF)	IFS/ HOPE	1961–2005	9	Stockdale et al., 2011; Balmaseda et al., 2008
Leibniz Institute of Marine Sciences at Kiel University (IFM-GEOMAR)	ECHAM5/ MPI-OM1	1961–2005	9	Keenlyside et al., 2005; Jungclaus et al., 2006
Météo France (MF)	ARPEGE4.6/ OPA8.2	1961–2005	9	Daget et al., 2009; Salas Mélia, 2002
United Kingdom Meteorological office (UKMO)	HadGEM2-A/ HadGEM2-O	1961–2005	9	Collins et al., 2011
Euro-Mediterranean Centre for Climate Change (CMCC-INGV)	ECHAM5/ OPA8.2	1961–2005	9	Alessandri et al., 2010; Masina et al., 2011



**Fig. S1.** The correlation coefficients between SWC-EHDs and the February–March mean (a) sea surface temperature and 2-m air temperature, (b) sea level pressure, (c) snow depth, and (d) soil moisture during 1961–2005. Correlation coefficients significant at the 0.1 level are dotted. The rectangle represents the domain of predictor candidates.

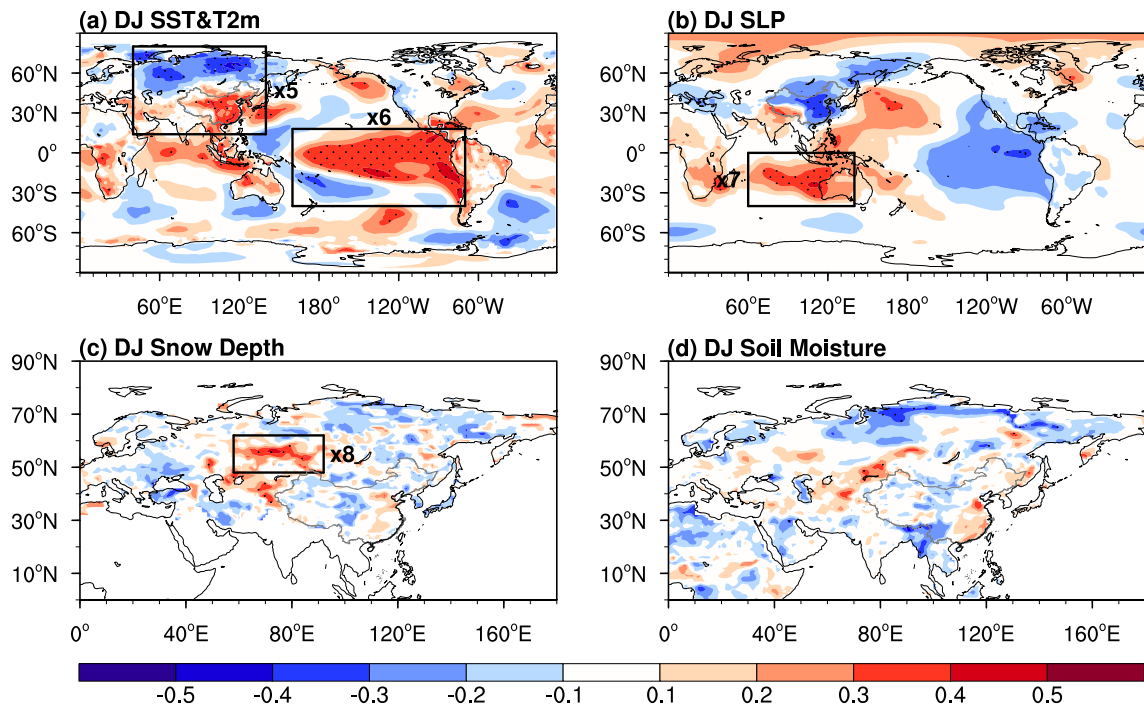


Fig. S2. Same as Fig. S1, but for the December–January mean fields.

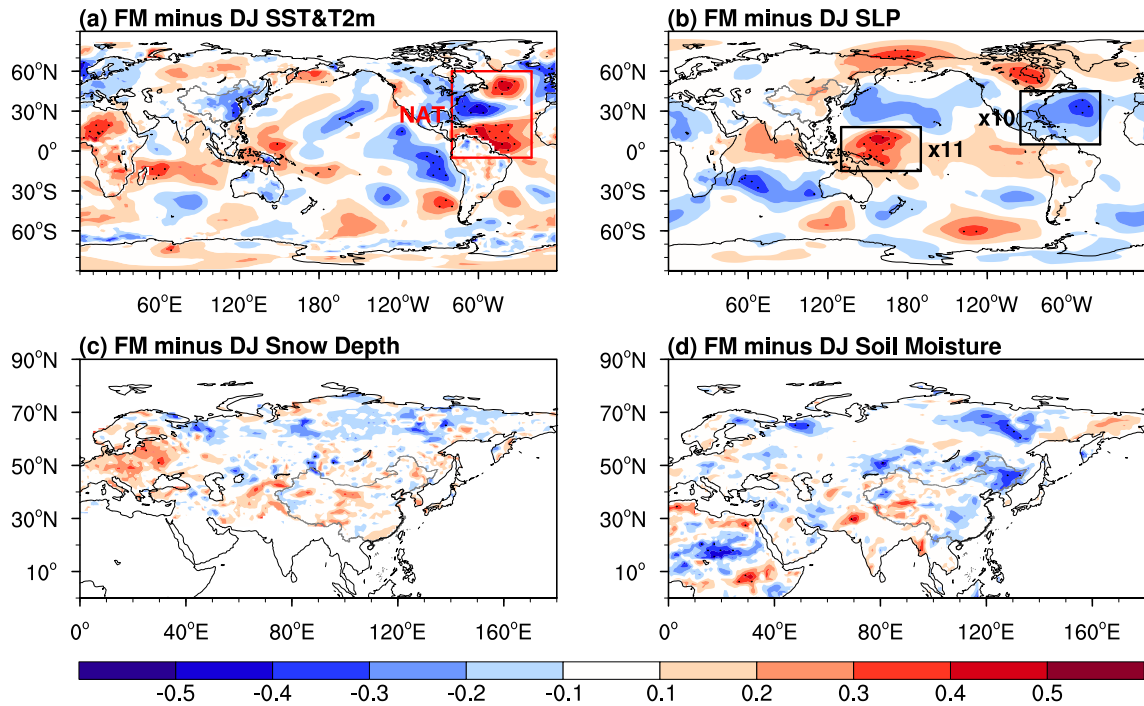
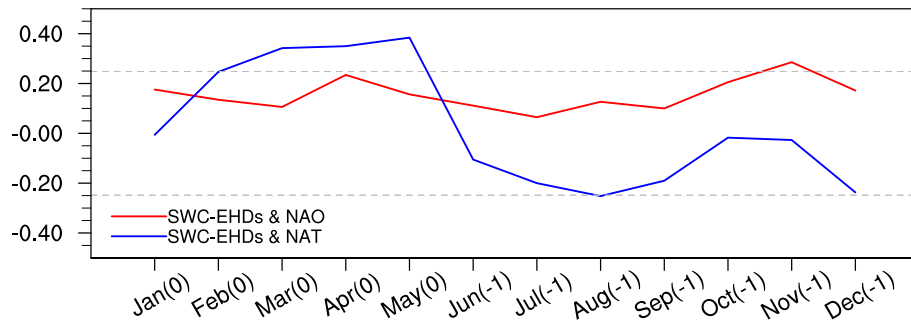
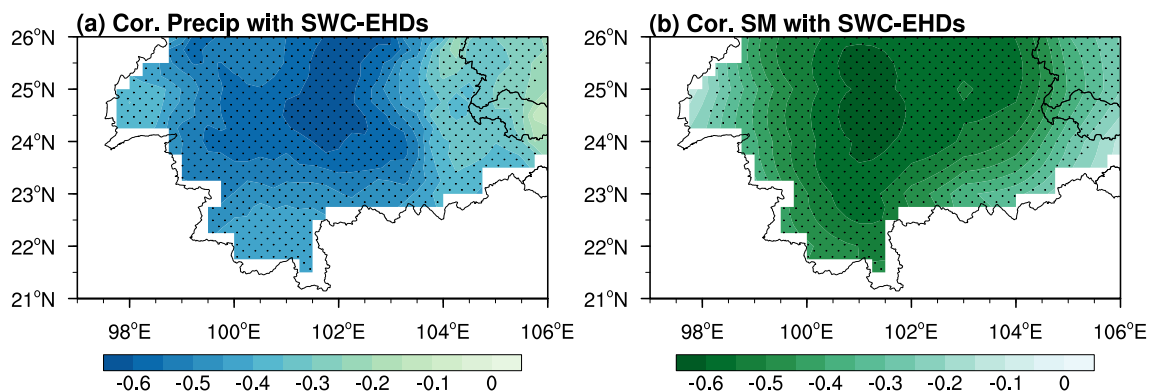


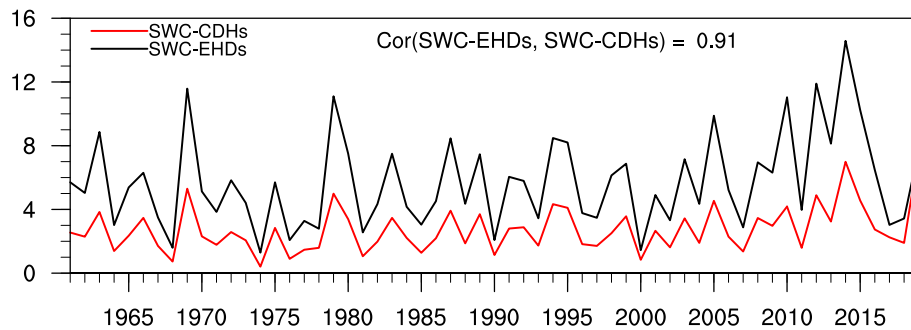
Fig. S3. Same as Fig. S1, but for the February–March minus December–January fields.



**Fig. S4.** Monthly lead-lag temporal correlation coefficients between NAO/NAT index and SWC-EHDs during 1961–2005. The gray dashed line indicates the threshold of the 0.1 significance level.



**Fig. S5.** Correlation coefficients between SWC-EHDs and simultaneous April–May (a) precipitation, (b) soil moisture over southwestern China during 1961–2019. Correlation coefficients significant at the 0.1 level are dotted.



**Fig. S6.** Time series of SWC-EHDs (black line) and April–May compound drought and EHDs over southwestern China (SWC-CDHs, red line) during 1961–2019.

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