

Table 1. Significance test results of the environmental parameters for six paired categories at the 0.05 significance level according to the procedure described in section 2. Categories are paired to test the significance of the differences between three types of severe convective events (i.e., hail, THWs, and SDHR). The letters “T” and “W” represent t tests and Wilcoxon–Mann–Whitney tests, respectively. “95%” (“–”) indicates that the difference of the paired category is significant (not significant) at the 0.05 significance level.

Parameters	Pair (hail vs. THWs vs. SDHR)					
	Hail mountain ¹	Hail mountain	THWs mountain	Hail plain	Hail plain	THWs plain
	THWs mountain	SDHR mountain	SDHR mountain	THWs plain	SDHR plain	SDHR plain
MUCAPE	M/–	M/–	M/–	M/–	M/95%	M/95%
LR85	T/–	M/95%	M/95%	T/95%	M/95%	M/95%
Thetase500	M/95%	M/95%	M/95%	T/95%	M/95%	M/95%
SHR3	M/95%	M/95%	M/95%	M/95%	M/95%	M/95%
SHR6	M/95%	M/95%	M/–	M/95%	M/95%	M/95%
DCAPE	T/–	M/95%	M/95%	M/–	M/95%	M/95%
PW	M/95%	M/95%	M/95%	T/95%	M/95%	M/95%

¹ Refers to all hail events (i.e., both ordinary and significant hail) over the mountains. Similar for other categories in Table S1.

Table S2. Same as Table S1, but for the pairings of severe convective events over mountains and plains.

Parameters	Pair (mountain vs. plain)
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	Ordinary hail mountain	Ordinary THWs mountain	Ordinary SDHR mountain	Significant hail mountain	Significant THWs mountain	Significant SDHR mountain
	Ordinary hail plain	Ordinary THWs plain	Ordinary SDHR plain	Significant hail plain	Significant THWs plain	Significant SDHR plain
MUCAPE	M/95%	M/95%	M/95%	M/–	M/95%	M/95%
LR85	T/95%	M/95%	M/95%	T/95%	T/95%	T/95%
Thetase500	T/95%	M/95%	M/–	T/95%	T/–	M/95%
SHR3	M/–	M/–	M/–	T/–	T/–	M/95%
SHR6	M/–	M/–	M/–	T/–	T/–	T/–
DCAPE	T/–	T/–	M/–	T/–	T/–	T/–
PW	M/95%	M/95%	M/95%	M/95%	T/95%	M/95%

Table S3. Same as Table S1, but for the pairings of ordinary and significant severe convective events.

Pair (ordinary vs. significant)						
Parameters	Ordinary hail mountain	Ordinary THWs mountain	Ordinary SDHR mountain	Ordinary hail plain	Ordinary THWs plain	Ordinary SDHR plain
	Significant hail mountain	Significant THWs mountain	Significant SDHR mountain	Significant hail plain	Significant THWs plain	Significant SDHR plain

MUCAPE	M/95%	M/–	M/95%	M/–	M/95%	M/95%
LR85	T/–	M/–	M/95%	T/–	T/–	M/–
Thetase500	T/–	M/–	M/95%	T/–	T/–	M/–
SHR3	M/–	M/–	M/95%	T/–	M/–	M/–
SHR6	M/–	M/–	M/95%	M/–	M/–	M/–
DCAPE	T/–	T/–	M/95%	T/–	T/95%	M/–
PW	M/95%	M/–	M/95%	T/–	T/–	M/95%