Supporting Information for "Changes in damaging hail in major Australian cities with global warming"

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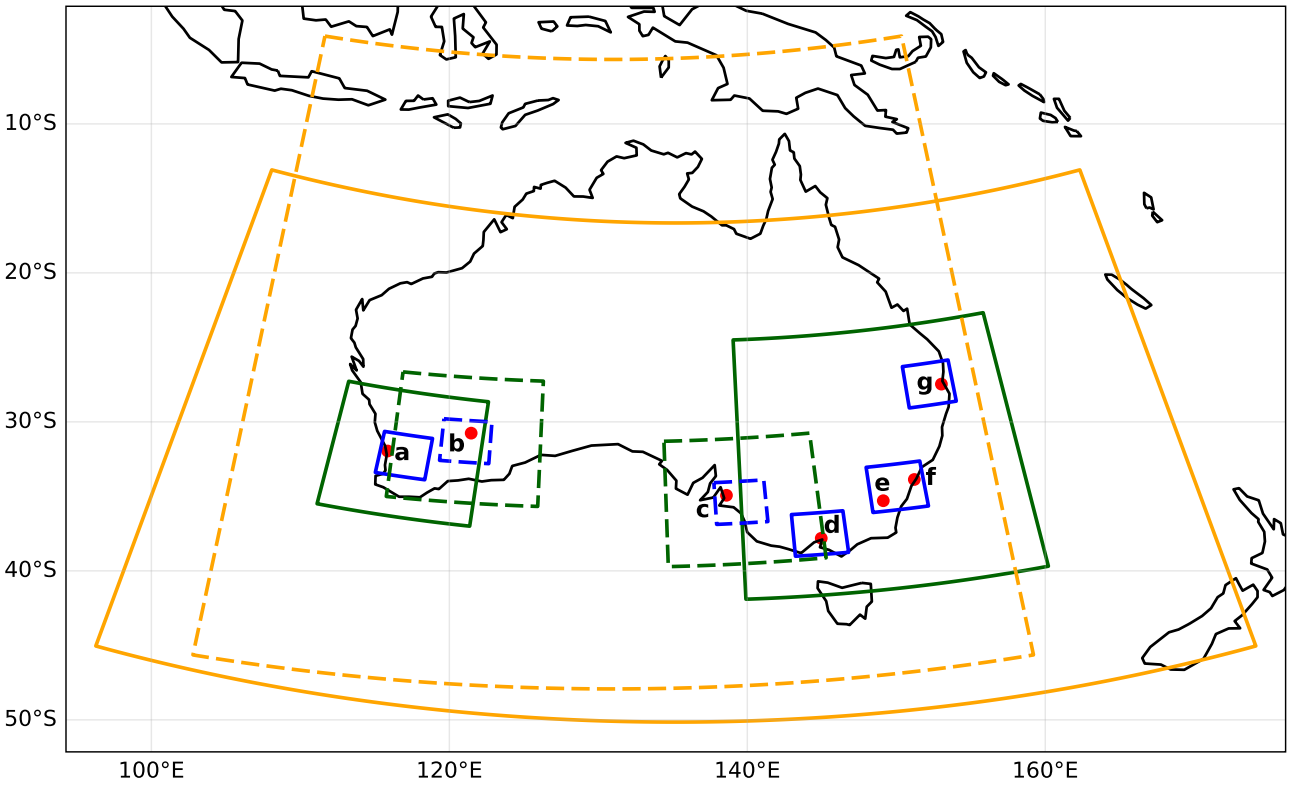

Figure S1. Approximate extents of the model domains on a map of Australia. The coarse-resolution domains are in yellow, medium-resolution domains in dark green, and fine-resolution domains in blue. The solid and dotted lines group the two sets of nested domains that were calculated together. Approximate city locations (with city extents not shown) are marked with red points for Perth (a), Kalgoorlie (b), Adelaide (c), Melbourne (d), Canberra (e), Sydney (f), and Brisbane (g).

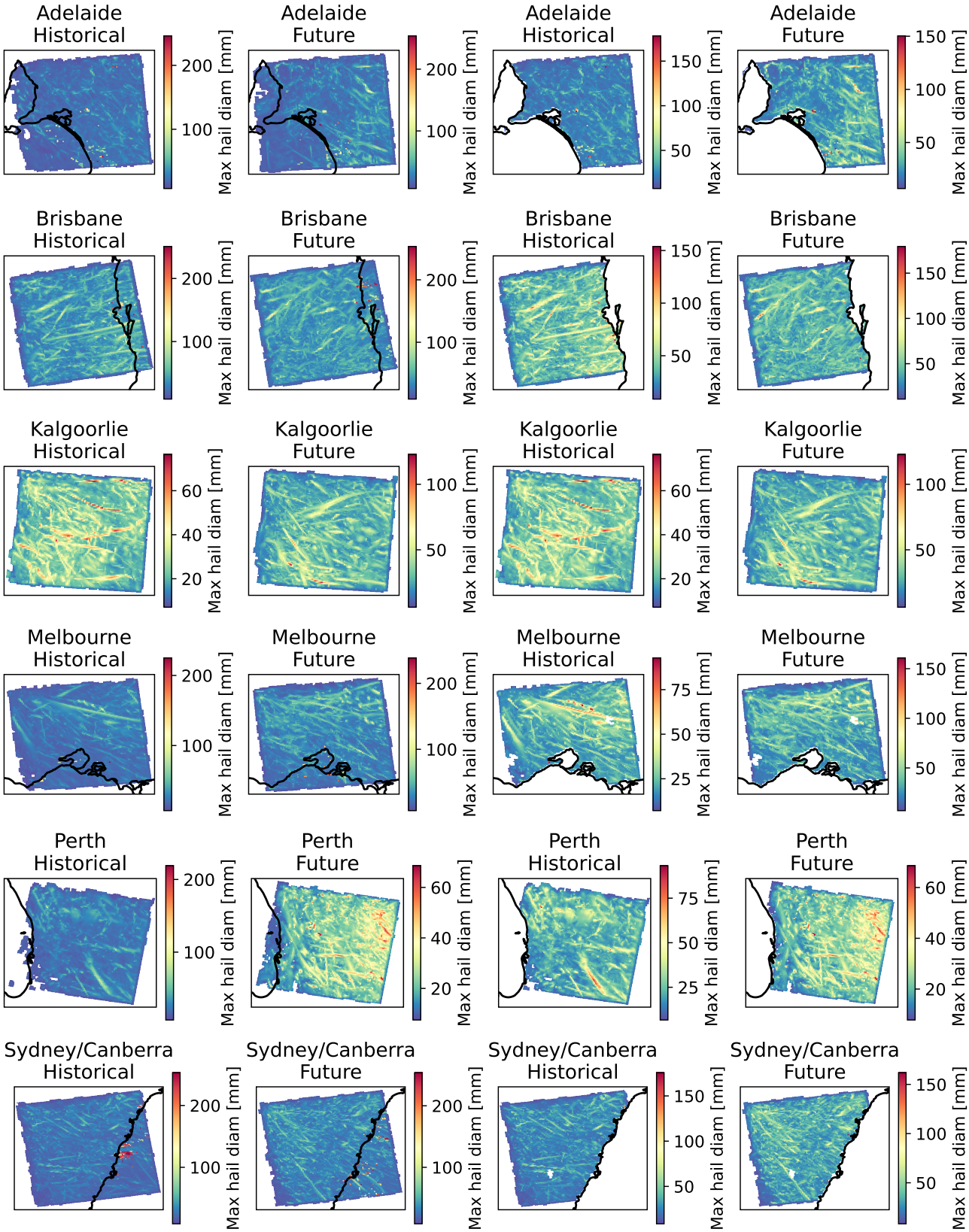

Figure S2. Maximum hail size diameters for the Adelaide, Brisbane, Kalgoorlie, Melbourne, Perth, and Sydney/Canberra domains under the historical and future scenarios, with and without ocean areas removed.

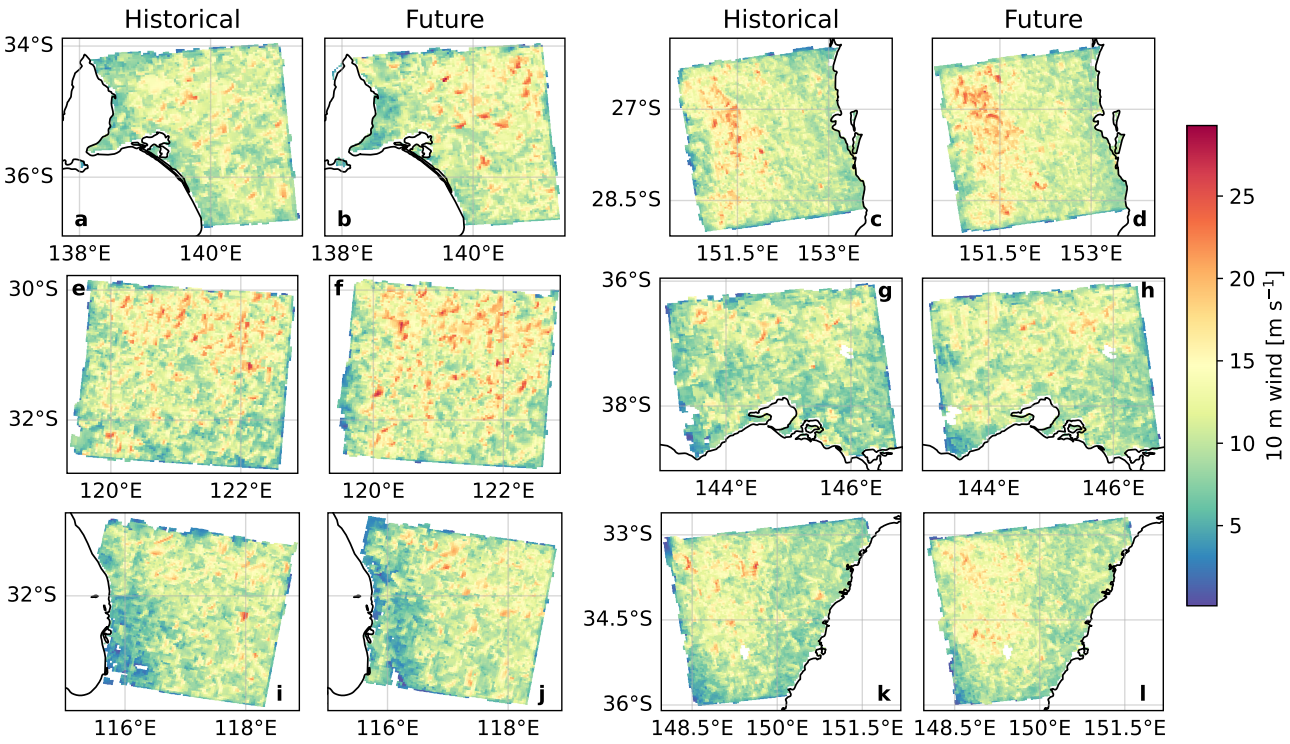

Figure S3. Maximum 10 m wind speed at hail times in historical and future climates, for Adelaide (a, b), Brisbane (c, d), Kalgoorlie (e, f), Melbourne (g, h), Perth (i, j) and Sydney/Canberra (k, l) domains.

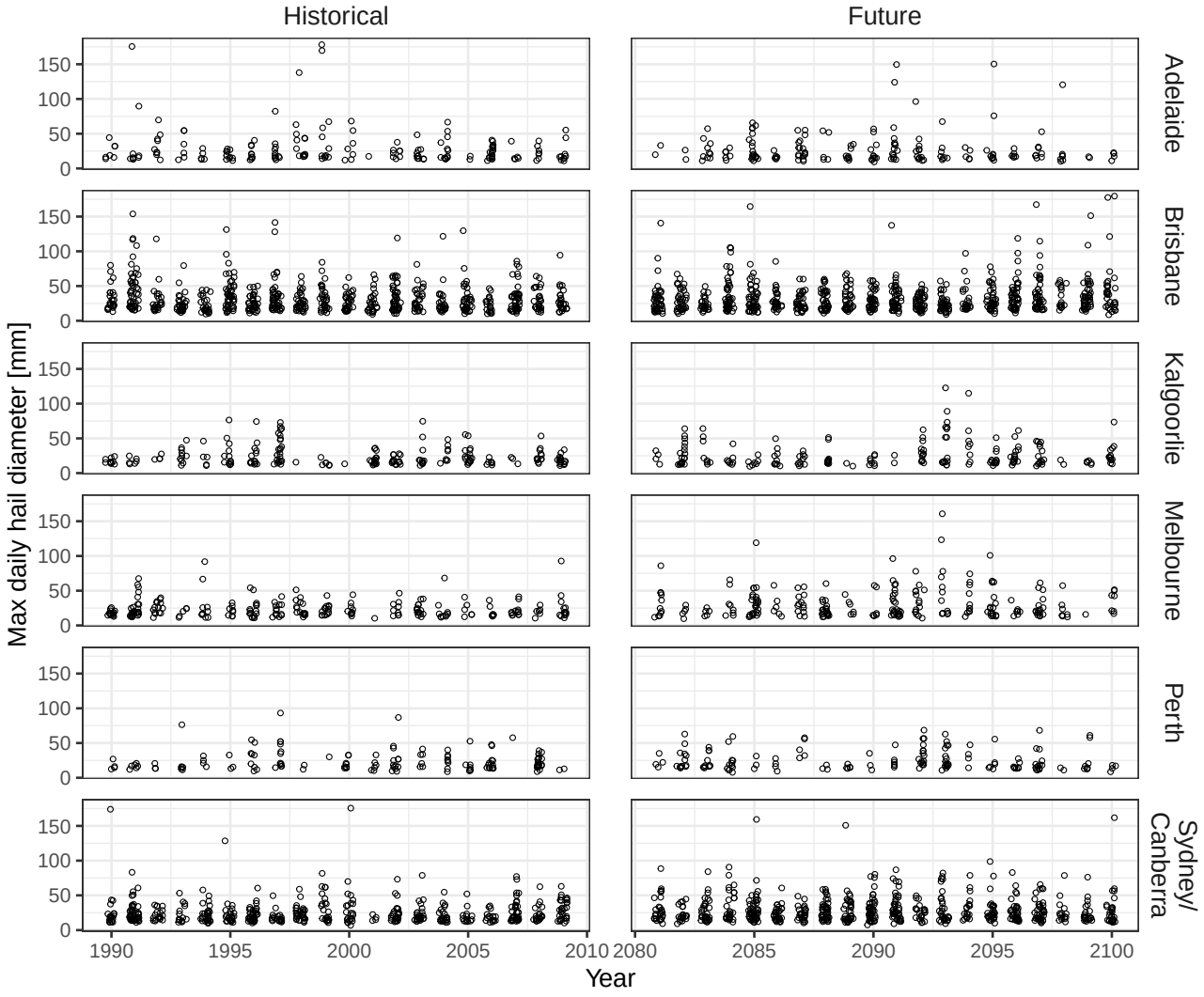

Figure S4. Time series of daily maximum hail sizes by domain and epoch. Gaps exist because only the convective season was simulated each year.

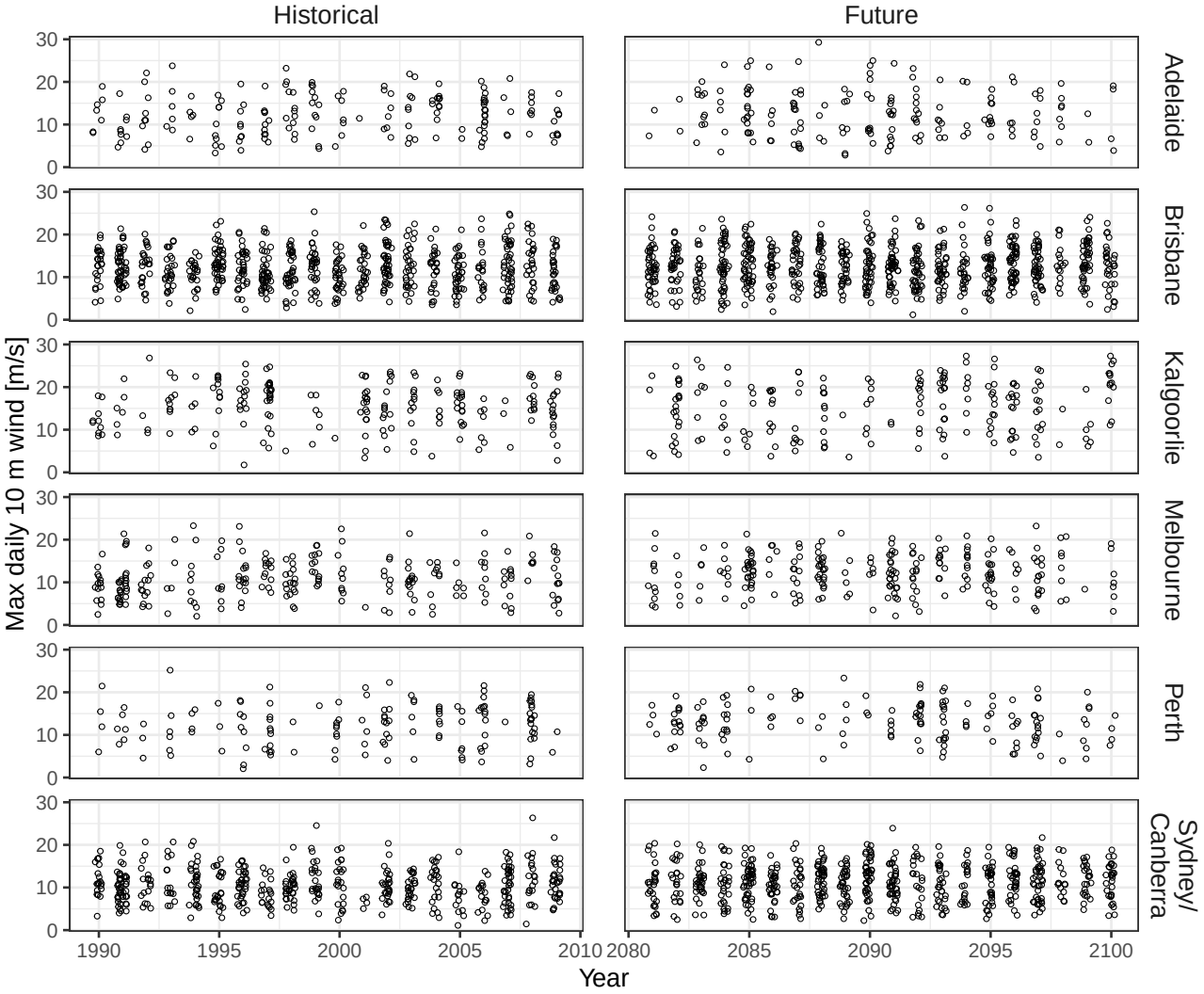

Figure S5. As for Figure S4, but for daily maximum 10 m wind collocated with hail.

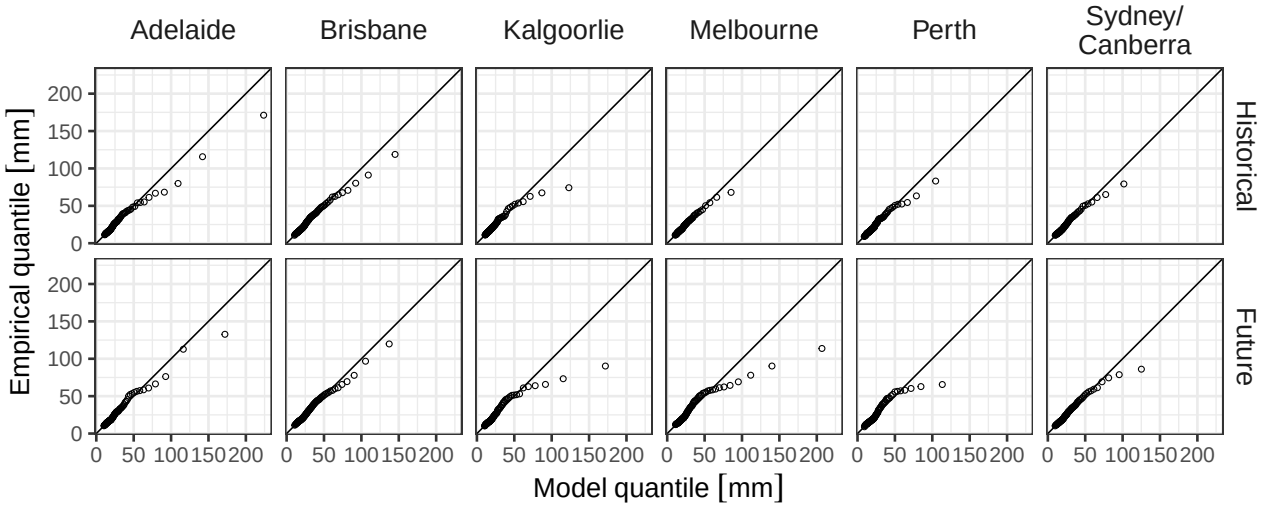

Figure S6. Quantile-quantile plots for GEV models fitted to daily maximum hail sizes, per domain and epoch.

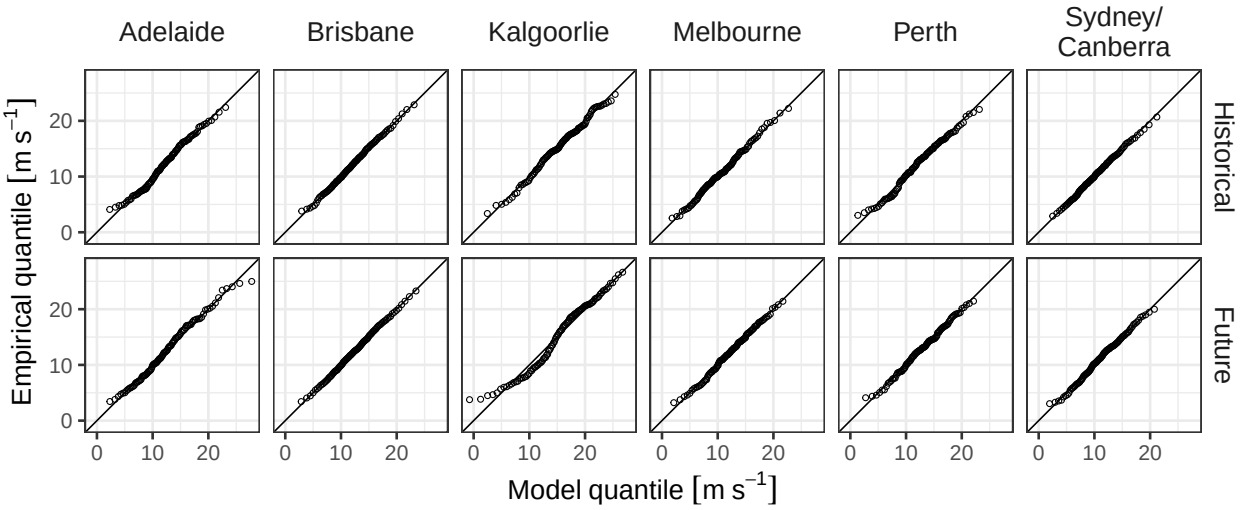

Figure S7. Quantile-quantile plots for GEV models fitted to daily maximum 10 m wind collocated with hail.

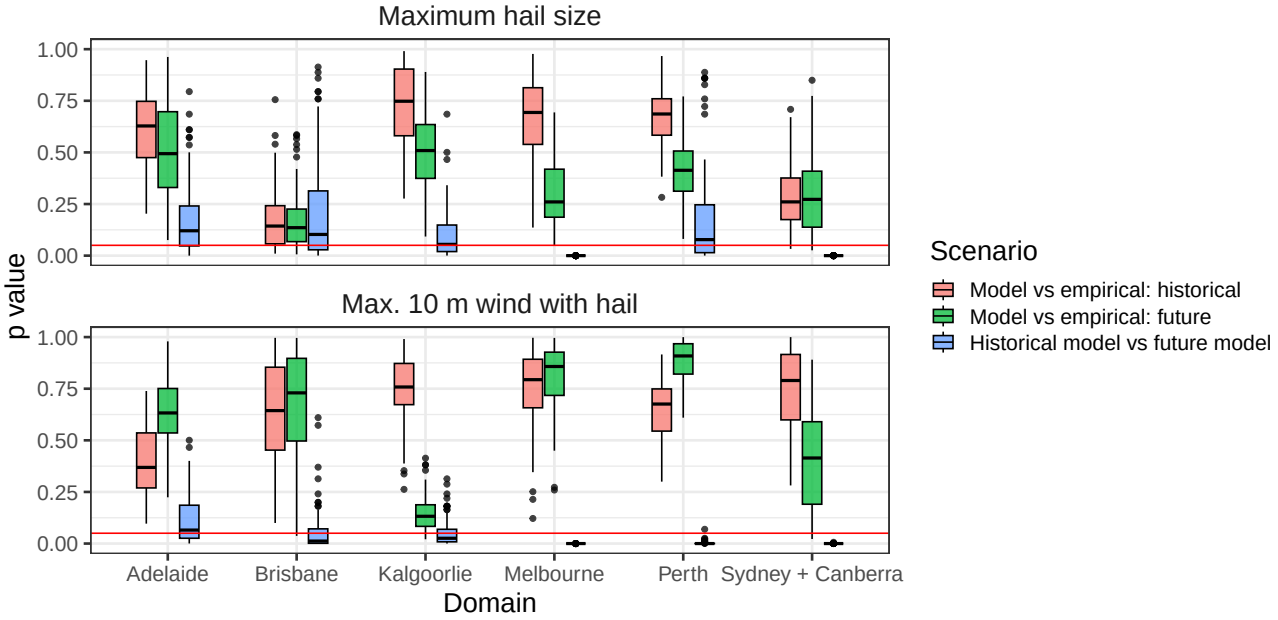

Figure S8. Distributions of p values from KS tests, comparing empirical values GEV models, and historical GEVs to future GEVs, per variable and domain. For each test, the KS test was applied 100 times with 1000 random values drawn from the relevant GEV distribution(s) each time, to obtain a distribution of p values. Bars show medians, box hinges show the interquartile ranges (IQRs), whiskers show the largest (smallest) values no more than 1.5 $\times$ IQR from the upper (lower) hinge, and points show outlier points beyond the whisker ranges. The red horizontal line shows $p = 0.05$; when p values are below this line the null hypothesis that the two samples come from the same distribution can be rejected.

Table S1. Parameterization schemes used in the WRF simulations.

Microphysics	P3-3moment (Milbrandt et al., 2021)
Cumulus (medium and coarse nests only)	New Tiedtke (Zhang & Wang, 2017)
Long wave and shortwave radiation	RRTMG (Iacono et al., 2008)
Planetary boundary layer	YSU (Hong et al., 2006)
Surface layer	Revised MM5 (Jiménez et al., 2012)
Land surface	Noah-MP (Niu et al., 2011)