Supplement of

Widespread flooding dynamics under climate change: characterising floods using grid-based hydrological modelling and regional climate projections

Adam Griffin et al.

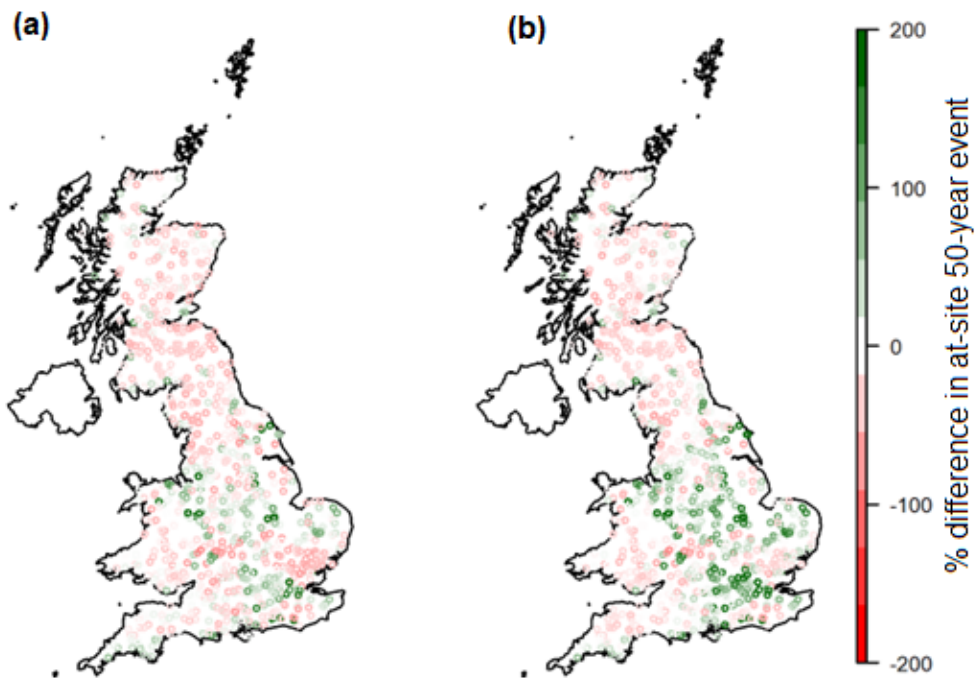*Correspondence to:* Adam Griffin (adagri@ceh.ac.uk)

Figure S1 Comparison of difference between (a) with and (b) without bias correction averaged over all 12 ensemble members. Colour indicated the change between the estimate for the 50-year return period peak flow (based on gauged daily flow). Positive values indicate that modelled data has a larger value of the 50-year event.
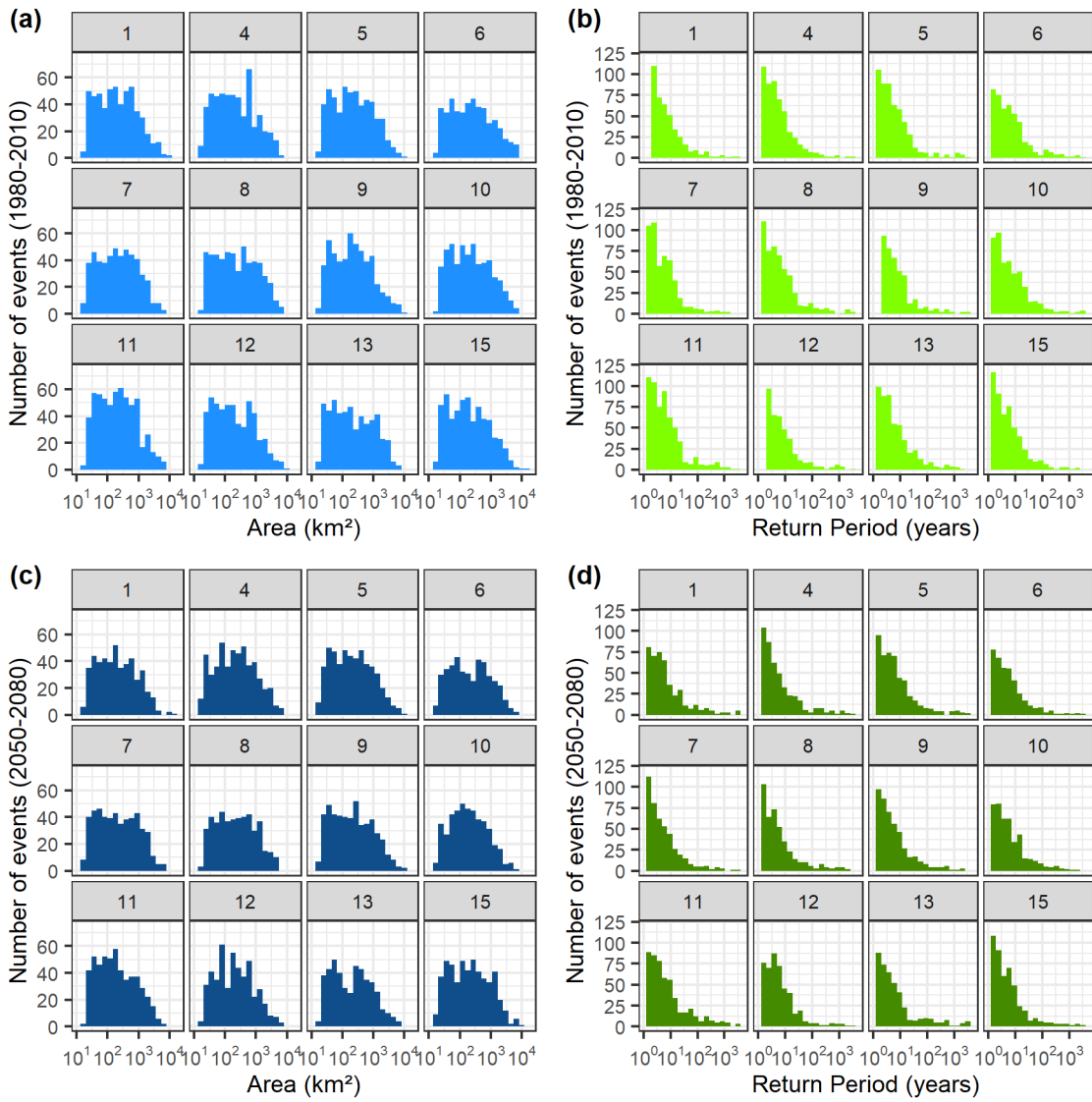
Figure S2 Histograms showing distribution of event area and return period, split across time-slices and ensemble members.
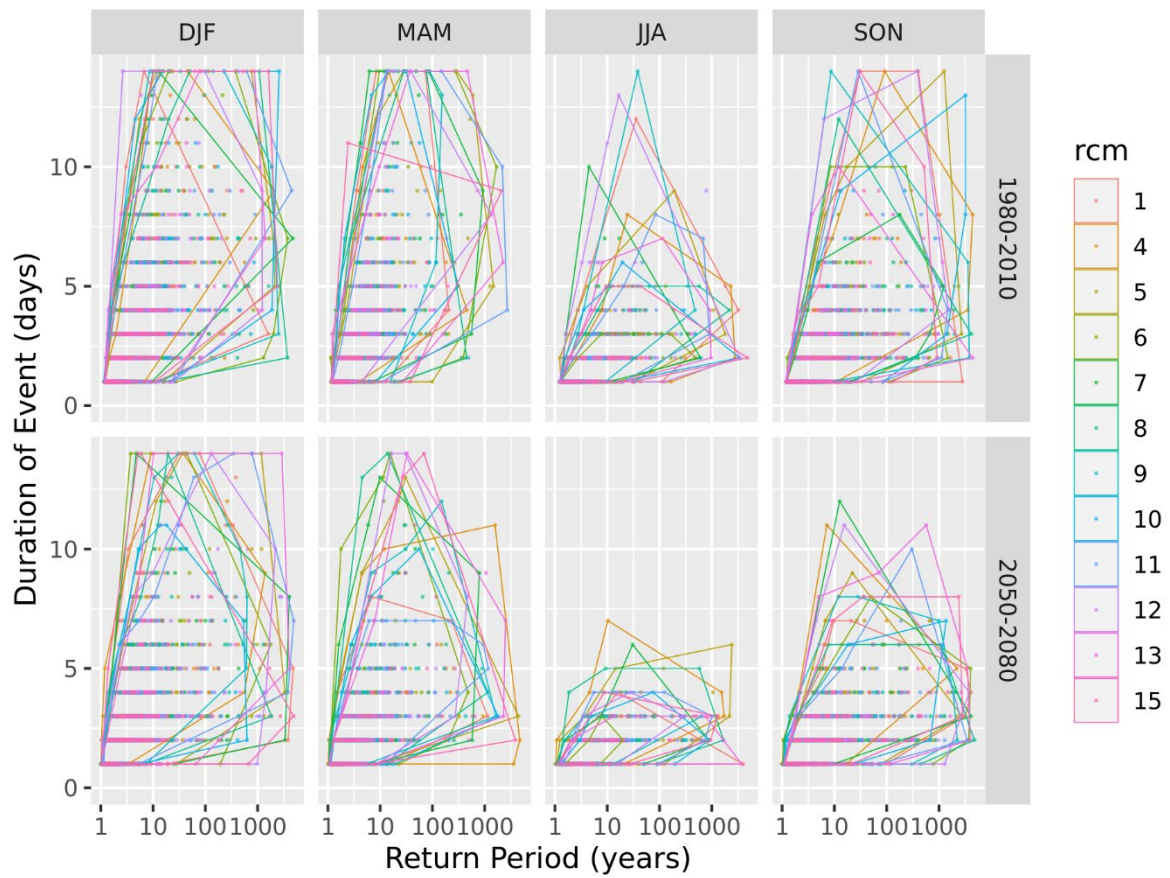
Figure S3 Scatterplots showing distribution of events with different areas and return periods, split by ensemble member, time-slice and season. Points and lines of matching colour correspond to the same ensemble member. The line indicates the convex hull of the points for a specific ensemble member.
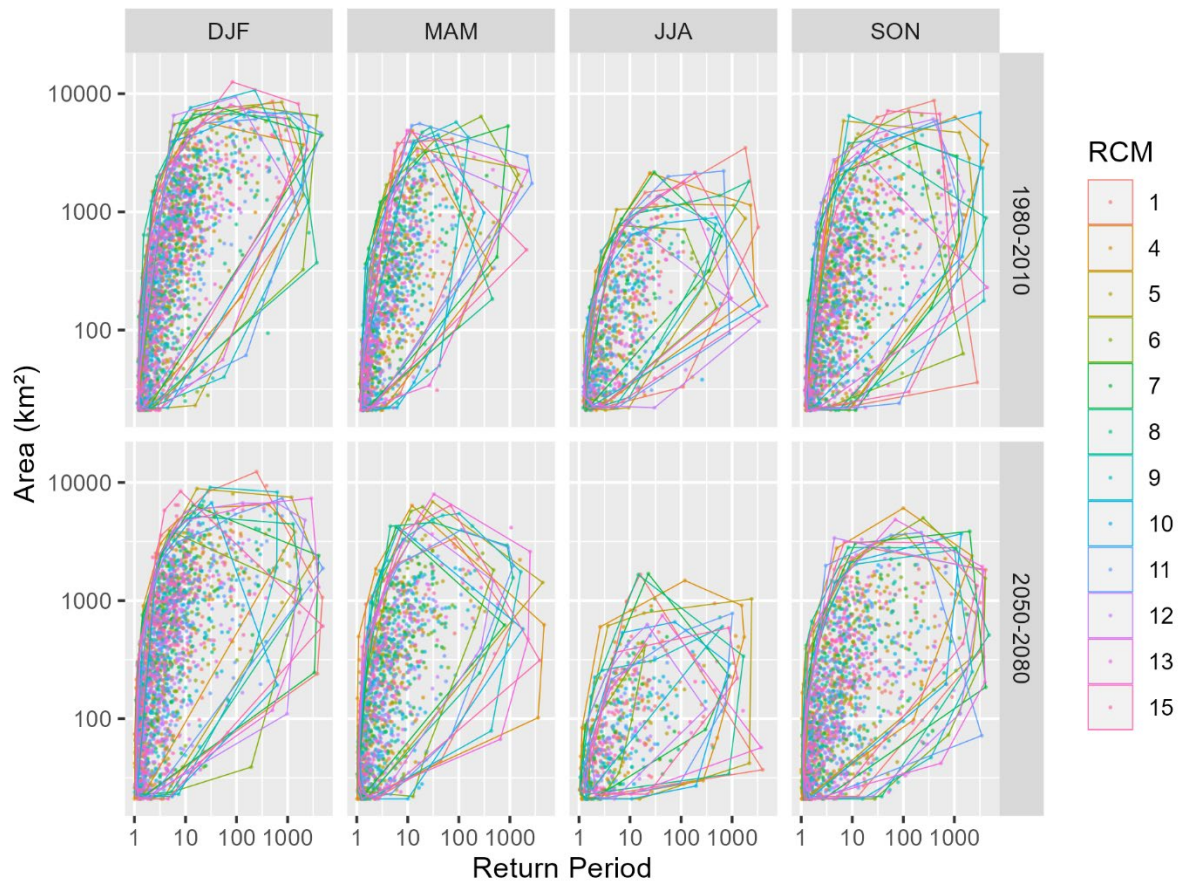
Figure S4 Scatterplots showing joint distribution of return period and event duration, split by ensemble member (RCM), season and time-slice. Points and lines of matching colour correspond to the same ensemble member. The line indicates the convex hull of the points for a specific ensemble member.

Figure S5 Scatterplots showing asymptotic dependence for 100 000 random pairs of points on the river network. χ is only shown for pairs of locations which are asymptotically dependent based on $\bar{\chi} > 0.99$. Points are split by period and ensemble member (rcm). Points and lines of matching colour correspond to the same ensemble member. The line indicates the convex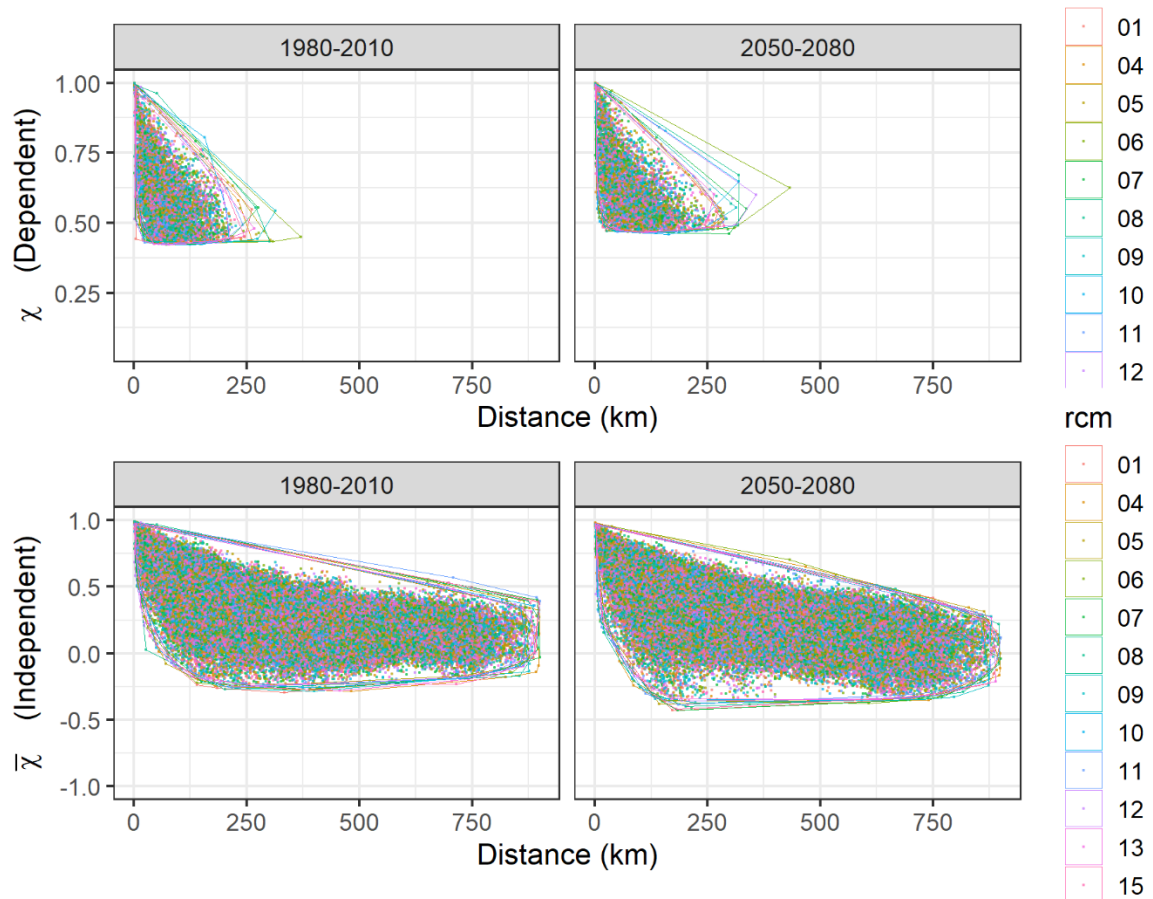 hull of the points for a specific ensemble member.