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Providing Historical Context To An Event In Real Time

Aim: To visualise the uncertainty in the forecast and return period estimate

Case study: Storm Ciara

Future research questions:

- Summarising ensembles into decision relevant scenarios
- Generating spatio-temporaly varying climatological return periods
- Quantifying the relative uncertainty from the return periods and forecasts
- Extending to impacts
- Verifying skill and usefulness of the tool for insurers

b) 0000 UTC 9 February 2020

Mogreps-UK 12 member ensemble, 54 hour lead time

For each ensemble member

Calculate max 24 hour rainfall from any 24 hour period[1] ★

Create scenarios by visual clustering of the ensemble and assign likelihood [2] ★

Weather story 1 — n of 12 members

Weather story 2 — n of 12 members

Weather story 3 — n of 12 members

ERA5 European climatology data from 1950-present

GPM - global climatology calculted from 2001 - 2019

Calculate gridded 5, 10, 25, 50, 100 year retrun periods for 24 hour rainfall[4] ★

Transform gridded return period to the same cordinate system as forecast rainfall ★

Downscale gridded return period to the same resolution as the forecast rainfall[5] ★

For each weather scenario using each return period estimation

calculate gridded return period threshold exceednaces[3] ★

Visualise data to enable users to explore forecast return periods and uncertainty