Searching for homogeneous regions of extreme rainfall in reanalysis data

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Motivation

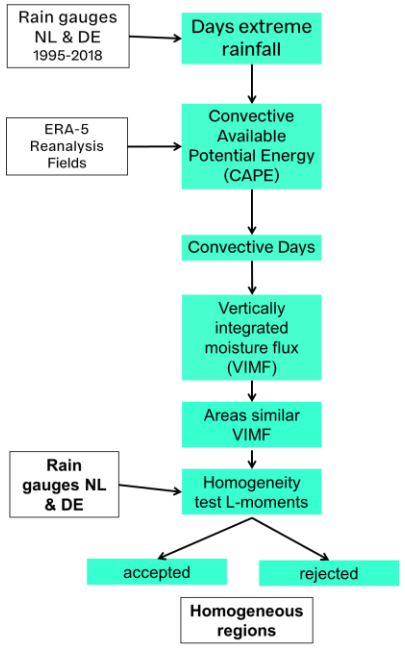
Data pooling is a promising way to make use of short climate model simulations (Li et al., 2017).

Research Questions:

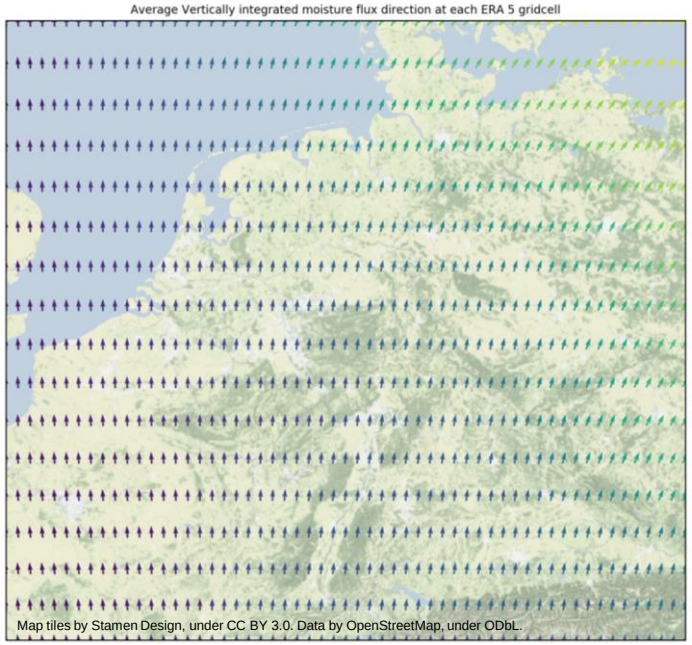
What regions can be considered homogeneous in terms of extreme hourly short duration rainfall?

Can such homogeneous regions be determined for NW Europe using meteorological indices from ERA-5 reanalysis data, without using sub-daily rainfall records? → test methodology Gabriele & Chiaravalloti (2013).

Method



Results



Homogeneity test

Not homogeneous for short duration rainfall (1 to 24 hours)

Conclusions & Discussion

Meteorological indices indicate the study area could be considered homogeneous. Expected orographic effects aren't distinct in the direction of the vertically integrated moisture flux.

However, the station data from the area is too heterogeneous.

Additional characteristics of the study domain are needed to form homogeneous regions; elevation and distance from the coast.

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