

Project 5: Verification of precipitation forecasts over NW Europe

Intro: Data-driven models are now able to generate global forecasts with performance comparable to the one of NWP models. GraphCast (Google Deepmind) and FuXi (Fudan University and Shanghai Qi Zhi Institute in Shanghai,) are 2 data-driven models that have precipitation as output variables. These models are run routinely at ECMWF starting from IFS operational analysis.

Data: The dataset covers a single season: JJA 2022. The variable of interest is 24h accumulated precipitation. Observations are from an open-dataset that covers Europe (ECAD); we focus here on NW Europe and restrain ourself to the assessment of forecasts at 604 stations. The forecasts are from 3 different models: IFS deterministic (9km), GraphCast (28km), and FuXi (28km). Collocated forecasts and observations are provided for lead times 1 day, 3, 5, 7 and 9 days.

Thresholds and coefficients used for the computation of SEEPS are also provided. The thresholds allow to build 3 categories of precipitation at each station: dry, light and heavy.

Goal: compare the performance and characteristics of the 3 forecasts.

Suggested analysis:

- Assessment of general characteristics of the forecast distributions
- Computation of SEEPS and a comparison of results with other metrics such as RMSE
- Build contingency tables (CT) using the climatological thresholds.
- Compute CT-based scores