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"ecPoint-Rainfall", A Statistical Post-Processing System for Probabilistic Rainfall Forecasts at Point-Scale

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Localized heavy rainfall is difficult to predict accurately, because the predicted location and the predicted intensity can both exhibit large errors.
Km-scale models have increasingly become the most common approach to forecasting such events. However, with current technology the deployment of km-scale models for global applications, for medium-range lead times is not yet viable. Global models could in principle be an alternative, but due to parametrizations (e.g. convection scheme) and coarse resolution they are not always able to produce reliable and skilful forecasts for such events.
ECMWF, in collaboration with the European and Global Flood Awareness System (EFAS, GLOFAS) team, has developed an innovative statistical post-processing system, called ecPoint-Rainfall that post-processes rainfall forecasts from ECMWF's global ENSemble (ENS) to produce global probabilistic rainfall forecasts at point-scale, up to medium-range lead times.
ecPoint-Rainfall relies on an understanding of the source of errors in the model's rainfall generation mechanisms to anticipate weather-dependant sub-grid variability, and to correct for weather-dependant biases in the model, and therefore define a probabilistic relationship between the raw rainfall forecasts (grid-box value for each ensemble member) and the expected point rainfall values within a grid-box.
One novel aspect in this innovative post-processing technique is the use of a "remote site" calibration technique that firstly, allows us to produce forecasts even where observations are not available, and secondly reduces significantly the training period required to only $\sim$1 year. This single year equates to hundreds of years or more in a traditional site-based post-processing approach. Long-term global verification has shown that the new post-processing system delivers much improved forecasts in both reliability and resolution. Regarding resolution, ROC area scores show that ecPoint-Rainfall outputs for high totals (e.g. 50mm/12h) provide a gain in lead-time over raw model outputs of several days. The poster will focus on the setup of the system, the verification results, and the further development of ecPoint-Rainfall.