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Keynote: On the importance of precipitation datasets for operational hydrological monitoring and forecasting

Monday 17 March 2025 16:00 (30 minutes)

Some of the most damaging natural disasters are hydrological extremes, with terrible consequences on human life, infrastructure, and the environment, such as the flash floods that devastated the Valencia region of Spain in October 2024. Understanding the variability and patterns in hydrological extremes and being able to anticipate events are essential to increase society's resilience and preparedness, especially important in the context of global warming.

River discharge modelling is an invaluable tool to help understand and predict such events. Models complement in-situ river discharge observations. This capability is particularly critical in poorly gauged regions, where traditional observation networks may be sparse or non-existent and in small catchments where short concentration times make it impossible to rely on river discharge observations to issue time-effective warnings.

As a key driver of river discharge, precipitation plays a key role in hydrological modelling and forecasting. This talk will go through how precipitation data can be used in hydrological monitoring and forecasting, from hydrological model calibration and set-up of reference datasets and extreme event catalogues of the past, to near real-time monitoring of hydrological status and forecasting at horizons from hours to months. Drawing from examples from the European and Global Flood Forecasting Systems EFAS and GloFAS, two operational early warning systems of the Copernicus Emergency Management Service of the European Commission, we will show some of the requirements and limitations but also potential for application and improvement of different precipitation datasets and products used at continental and global scales.

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