A statistical approach to the spatial analysis of precipitation by combining multiple data sources predictions

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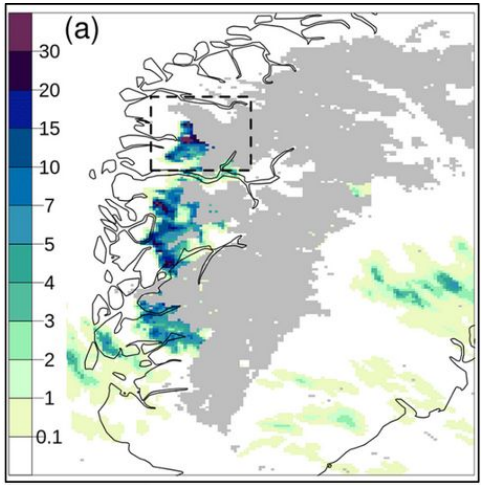
The Norwegian Meteorological Institute, Oslo, Norway

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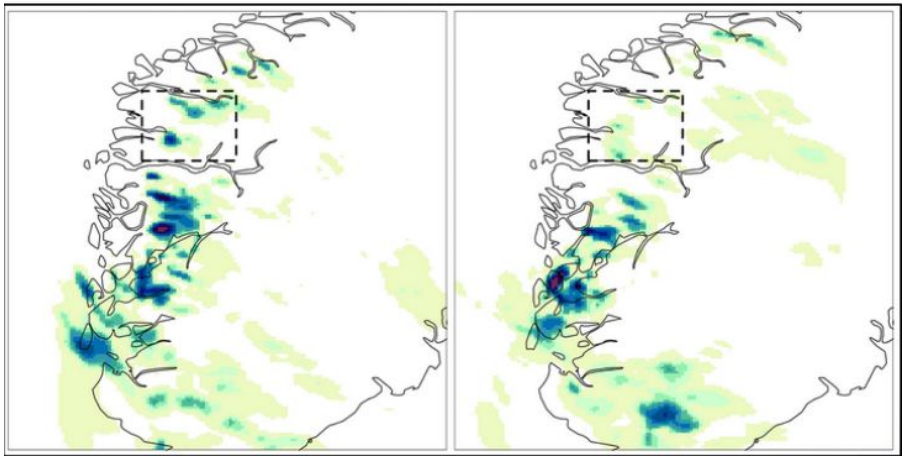
SCREEN CAPTURE WELCOME

2022-09-09

Different data sources = different but equally plausible (?) accounts of an event



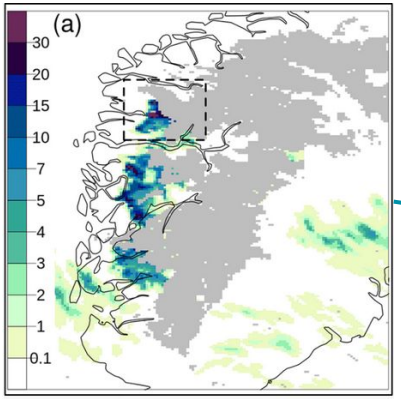
Observations: Radar and rain-gauges

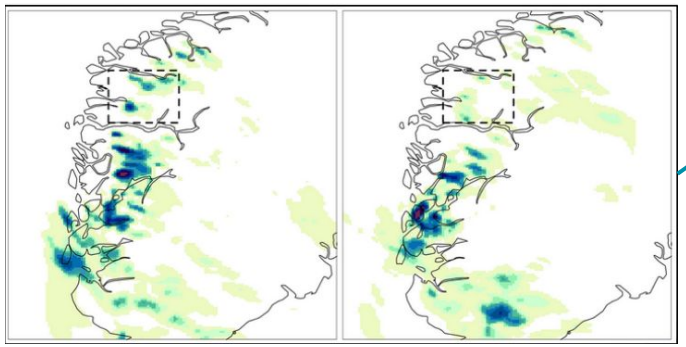


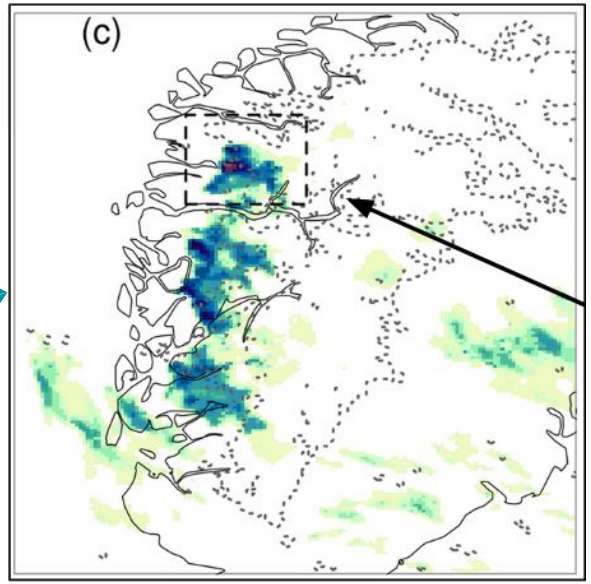
Numerical simulations: Ensemble members

EnSI Ensemble-Based Statistical Interpolation

Focus: Data transformation via Gaussian Anamorphosis



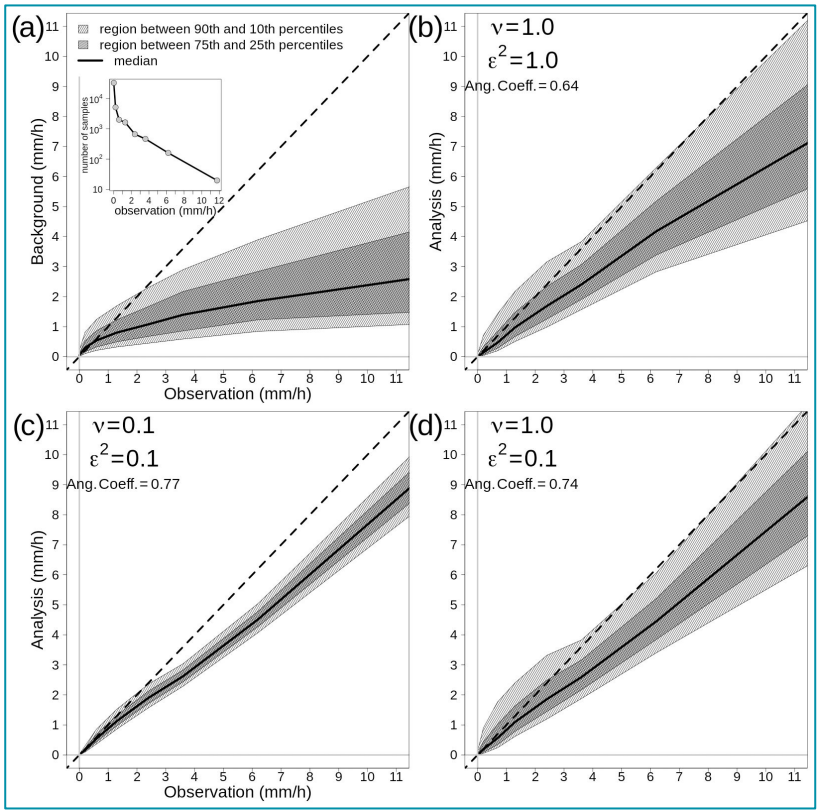




Best reconstruction based on Gamma PDF for precipitation

Ref:

Lussana, C., Nipen, T. N., Seierstad, I. A., and Elo, C. A.: Ensemble-based statistical interpolation with Gaussian anamorphosis for the spatial analysis of precipitation, Nonlin. Processes Geophys., 28, 61–91, https://doi.org/10.5194/npg-28-61-2021, 2021.



Does it work?

EnSI can attenuate some typical shortcomings of ensembles, improving the quality of the reconstructed precipitation field

Data transformation: the spread of the analysis PDF is less likely to become unrealistically large

Data-dense regions: the analysis envelope at a point can be representative of the distribution of precipitation values at smaller spatial scales than those resolved by the ensemble

Fig. Summer 2019 hourly precipitation statistics for cross validation experiments