# New web-based tool for extracting precipitation design values at any point in Norway

Anita Verpe Dyrrdal, Eirik Førland, and Hanne Heiberg

Norwegian Meteorological institute, Oslo, Norway

IDF (Intensity-Duration-Frequency) values are essential in the planning and design of important infrastructure. Traditionally, IDF values from the nearest station(s) are applied, introducing inaccuracies due to a sparse station network and short time series, as well as the large spatial variability associated with precipitation extremes.

We present a new web-based tool for extracting IDF-values at stations and at arbitrary sites from a high-resolution (1km) map of estimated design values. The maps, presented in Dyrrdal et al. (2015), are developed by linking Generalized Extreme Value (GEV) distributions with latent Gaussian fields in a Bayesian hierarchical model. Generalized linear models on the parameters of the GEV distribution are able to incorporate location-specific geographic and meteorological information from well known geographical and climatological covariates, while a Bayesian model averaging component directly assesses model uncertainty.

Today, the spatial maps are available for durations 10, 30, 60, 180, 360 and 720 minutes, and for return periods up to 200 years. With time, the quality of estimated design values will improve due to additional observational sites, longer time series and possibly more appropriate covariates. A measure of quality as a combination of model uncertainty and station density will also be provided.

The interactive tool responds to numerous requests from the user community over the past decades, enabling the user to obtain IDF-values (curves and tables) at any point in Norway. When launched through Norwegian Centre for Climate Services (NCCS) by the end of 2017, it will serve as the primary source of design precipitation in Norway. In a second phase, "climate factors"; the factor by which to multiply current design values to get a measure for future design values (Paus et al., 2015), will be implemented for climate adaptation purposes.

## References

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Paus, K.H., Førland, E.J., Fleig, A., Lindholm, O. and Åstebøl, S.O., 2015: Metoder for beregning av klimafaktorer for fremtidig nedbørintensitet. (In English: Methods for estimating Climate Factors for future rainfall intensity). Norwegian Environment Agency (Miljødirektoratet). Report M-292/2015