Norwegian Meteorological Institute

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

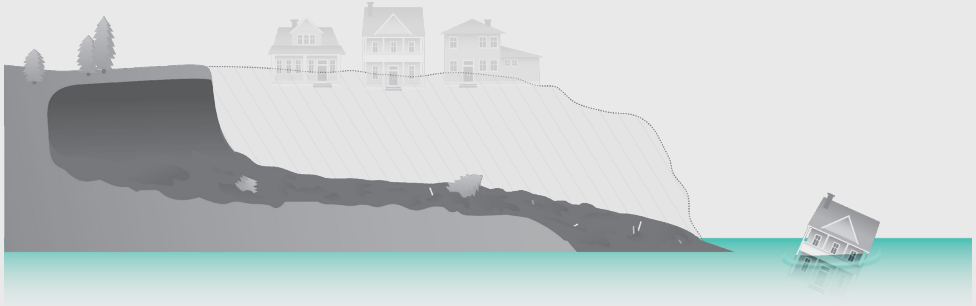
Anita Verpe Dyrrdal, Eirik Førland, Hanne Heiberg

EMS 7 Sep 2017. Session OSA2.7/UP3.7

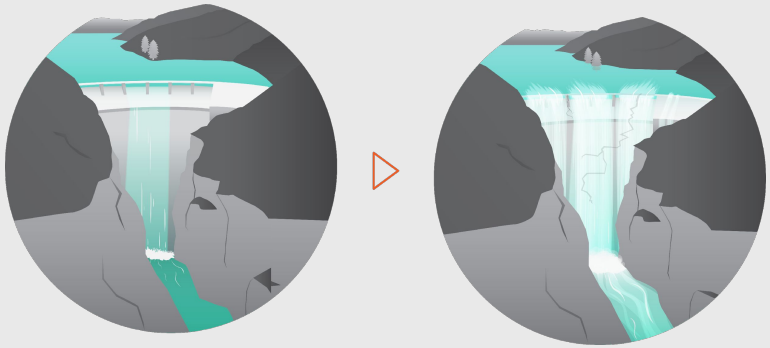
- Flash flood / Urban flooding

- Large scale floods

- Landslides



- Dam failure



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Norway is not designed for current climate conditions

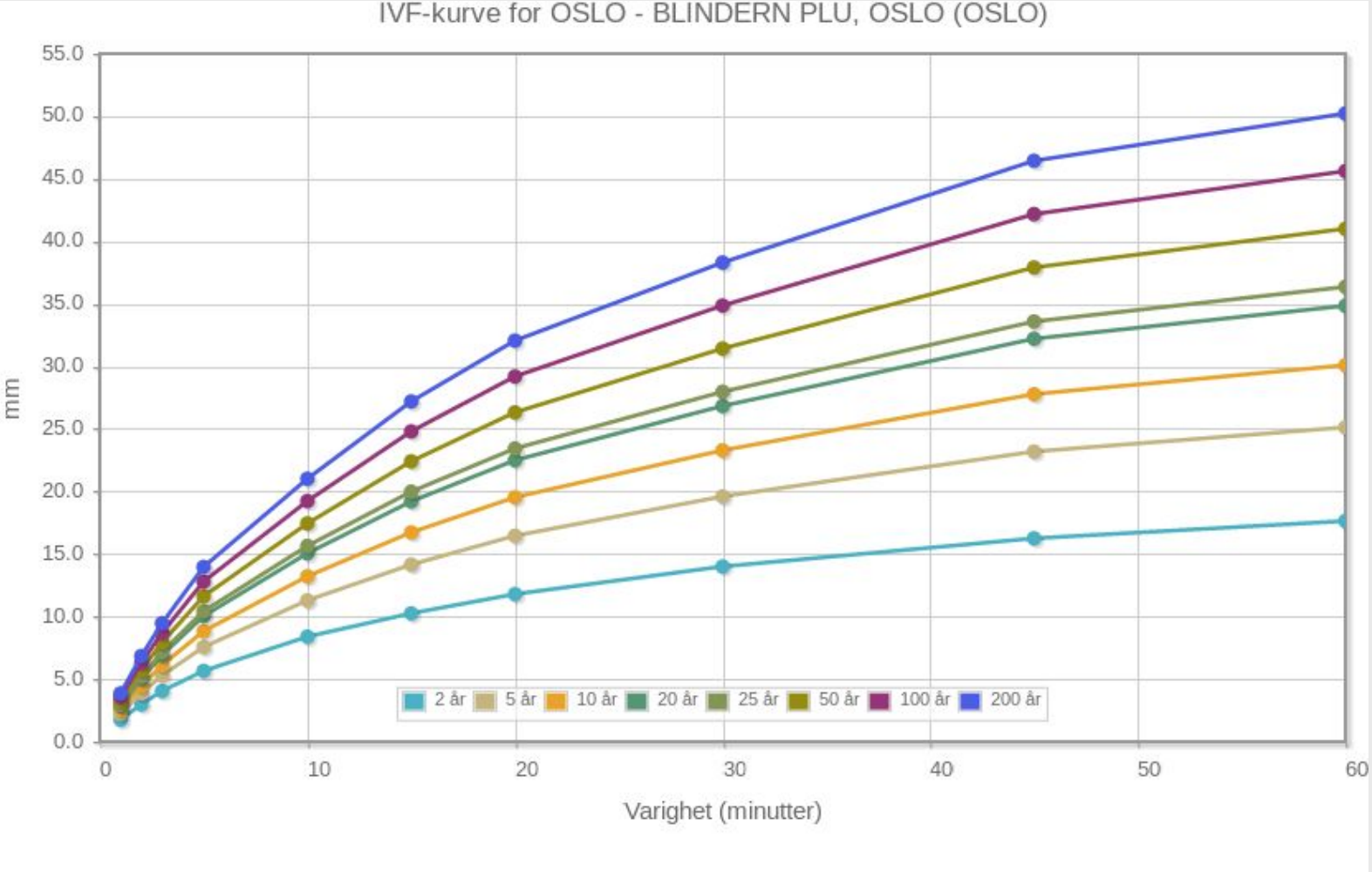
200-year events
WILL and
SHOULD occur!

Photo: VG

Photo: Helge Mikaelsen, VG

Photo: Janicke Simonsen

IDF-curve for Oslo



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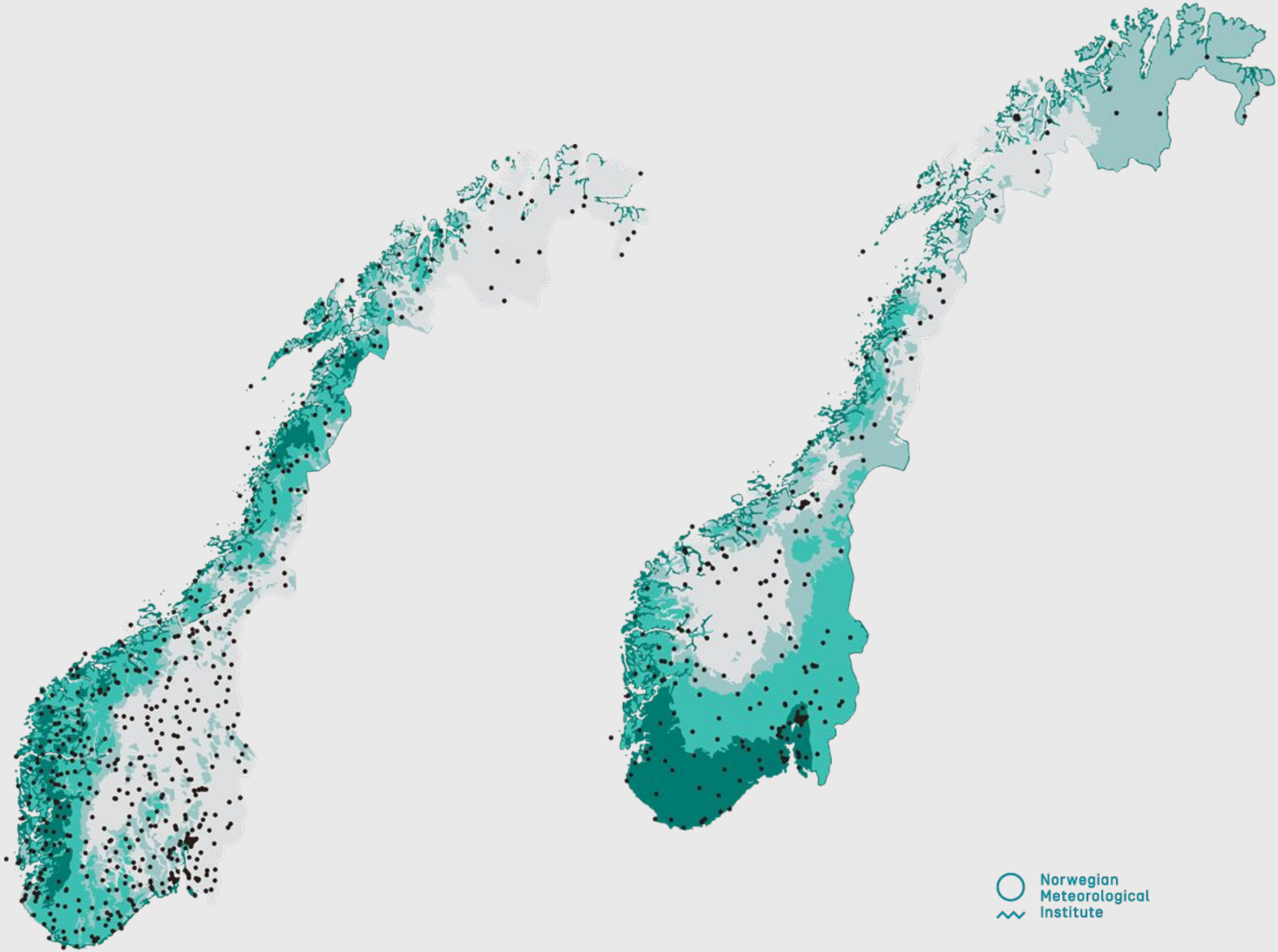
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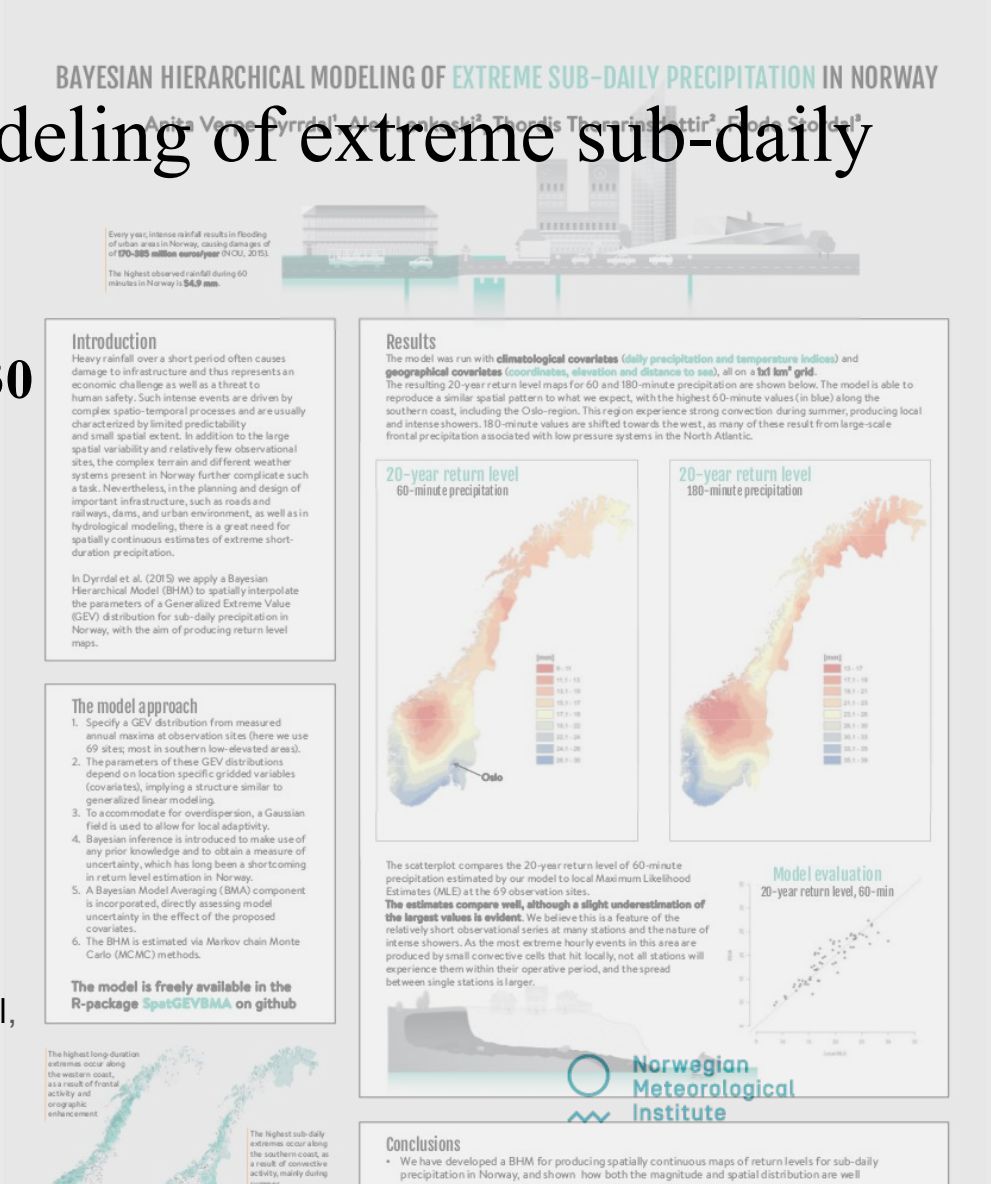
Institute

Poster P62 / Session OSA3.2

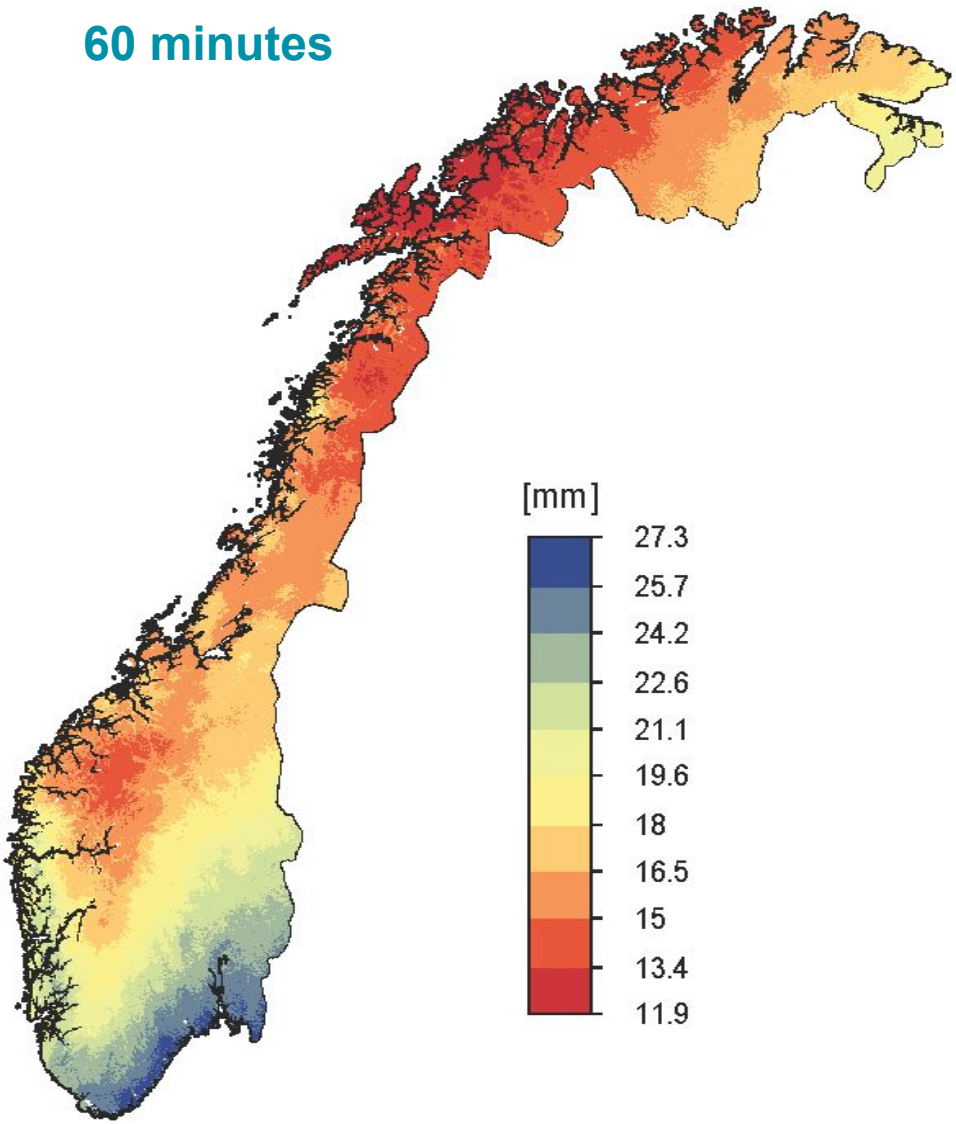
Bayesian hierarchical modeling of extreme sub-daily precipitation in Norway.

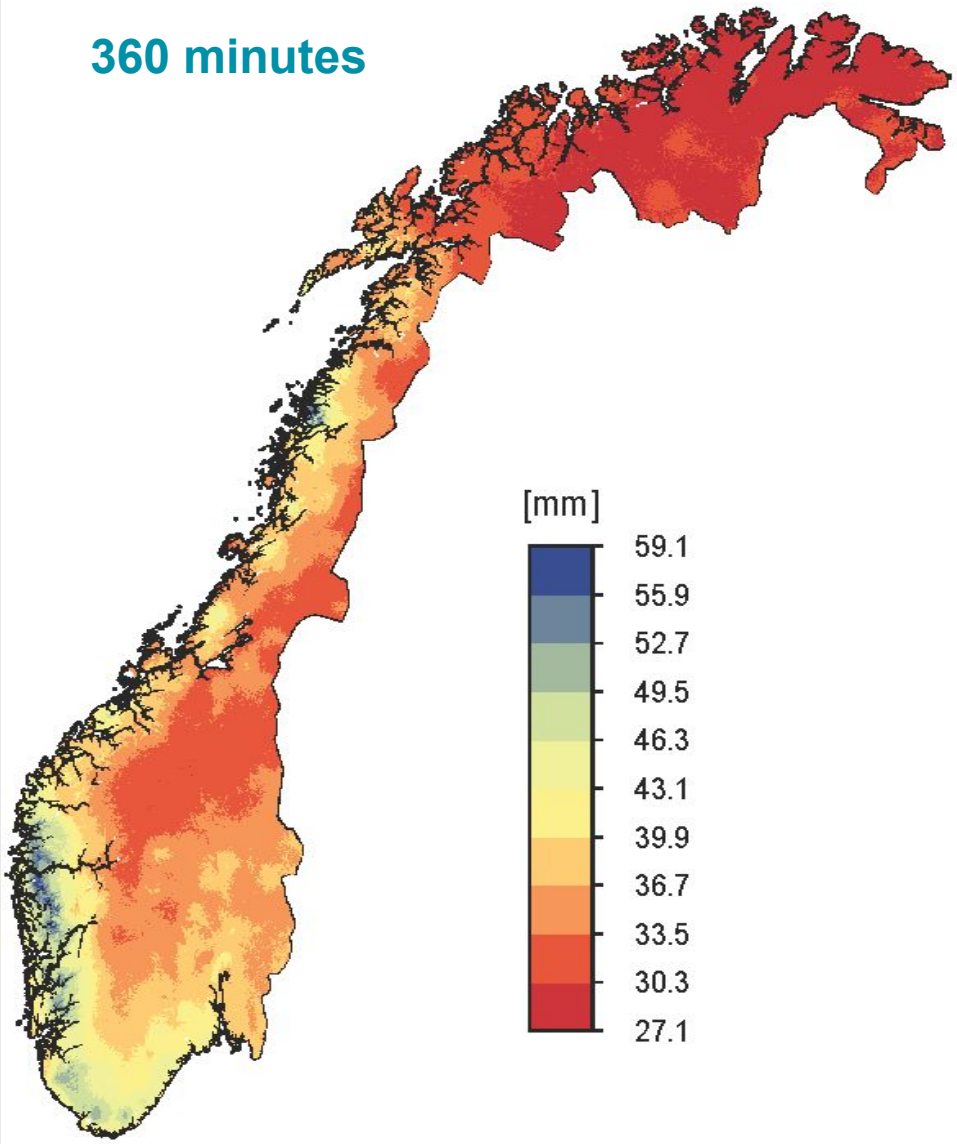
Attendance time: **Friday 10:30-11:30**



Dyrrdal, A.V., Lenkoski, A.,Thorarinsdottir, T.L., and Stordal, F.,2015: Bayesian hierarchical modeling of extreme hourly precipitation in Norway. Environmetrics, 26(2)

Estimated 20-year return levels





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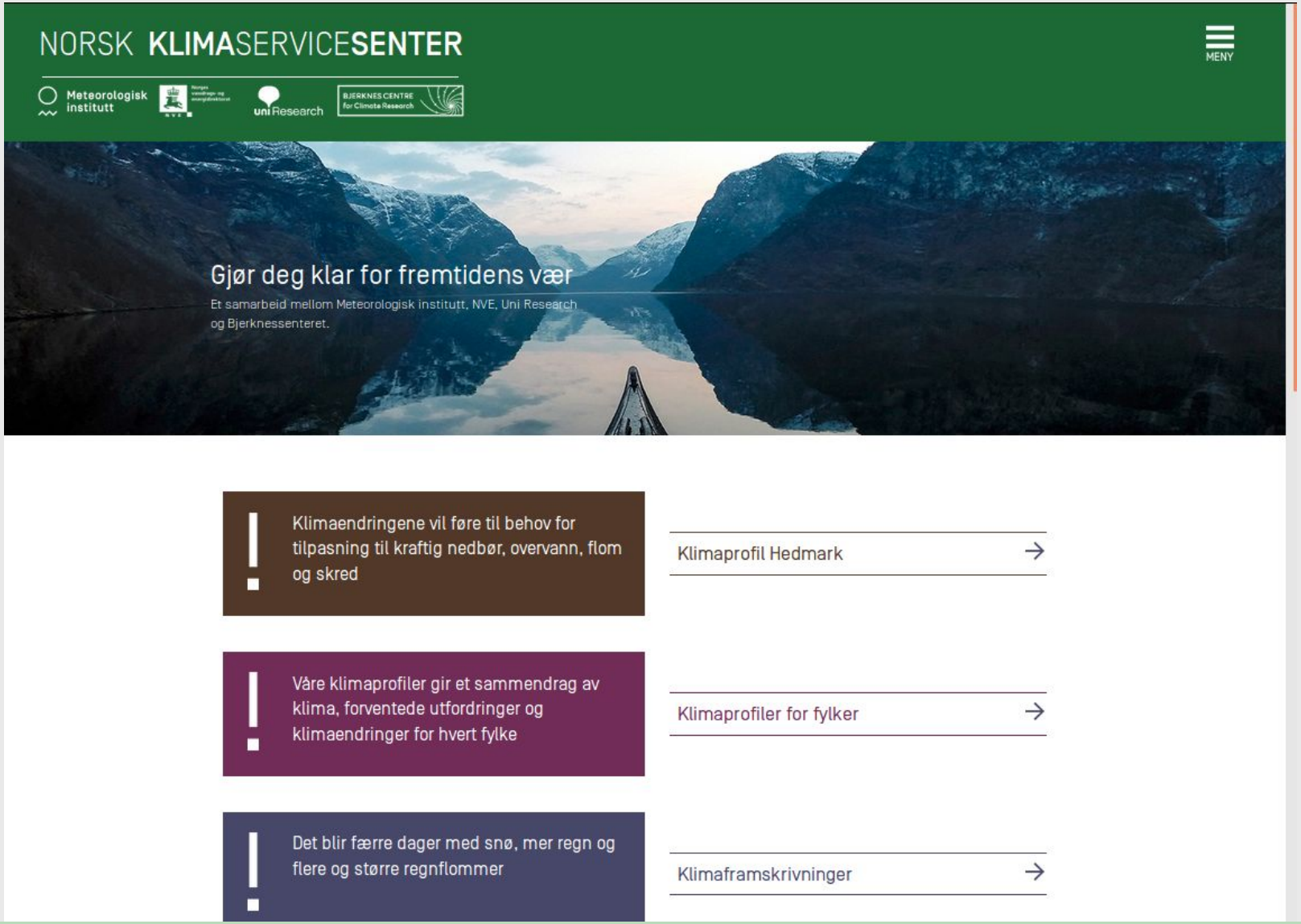
Norwegian Centre for Climate Services (NCCS)



Provide decision makers in Norway with information relevant for climate adaptation - in a changing climate

New IDF-tool

-Stations and gridded maps

Interactive map

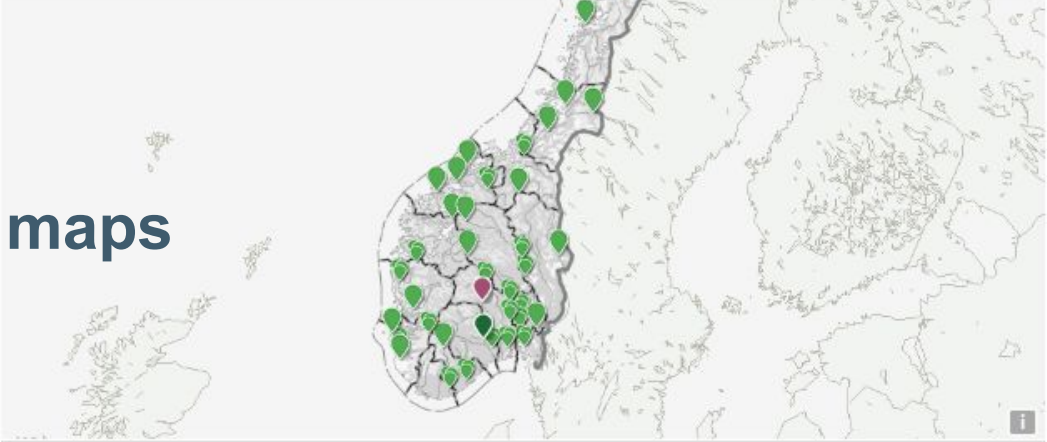
Search name or coordinates

Spatial resolution: 1 km

Durations: 10 - 1440 minutes

Return periods: 2 - 200 years

Curve and table for download



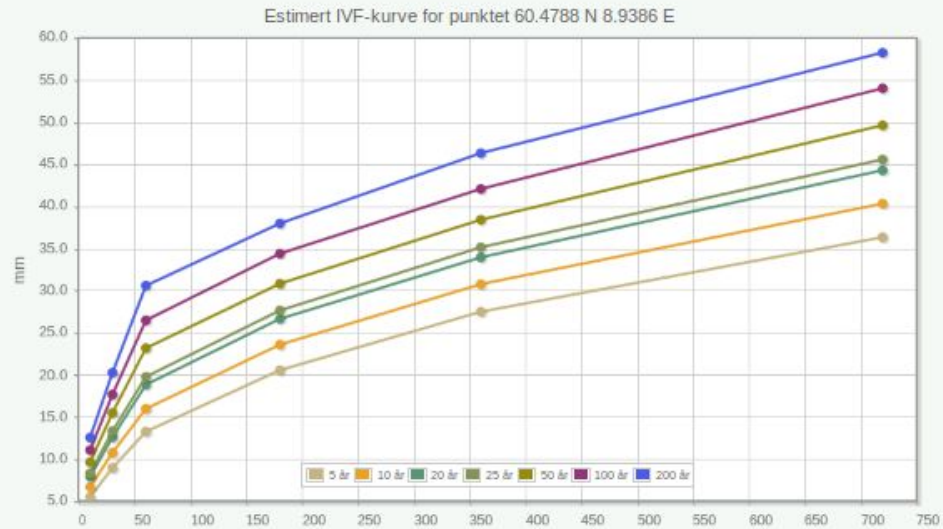
STEDSINFO

Breddegrad: 60.4788
Lengdegrad: 8.9386

DATA OG PROGNOSER FOR STED

NEDBØRSINTENSITET OG RETURVERDIER

Alle tilgjengelige varigheter | mm



New IDF-tool

Next steps...

Test users

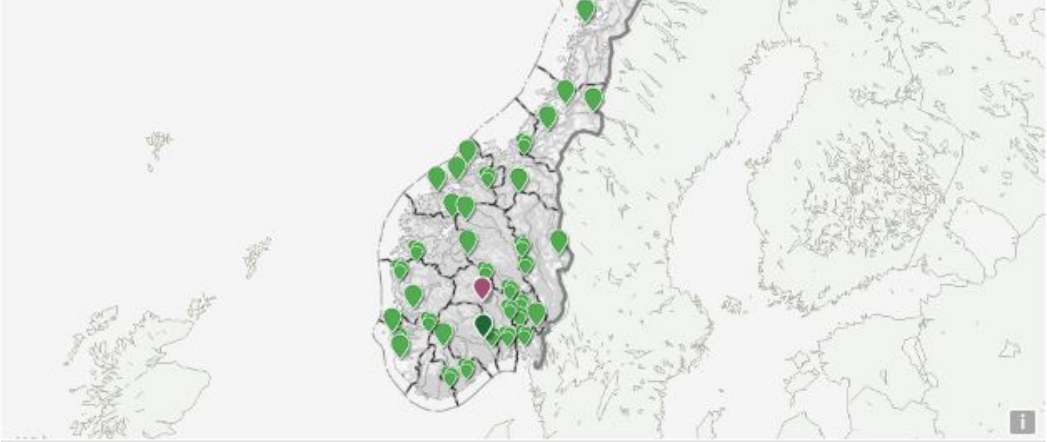
Longer durations

Precipitation records

Plot certain event

Uncertainty estimate

To be launched in 2018!



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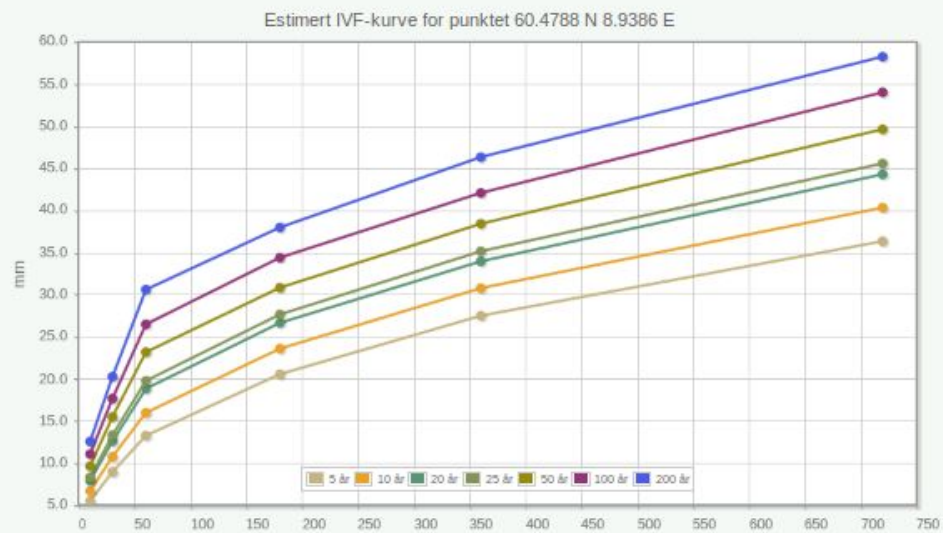
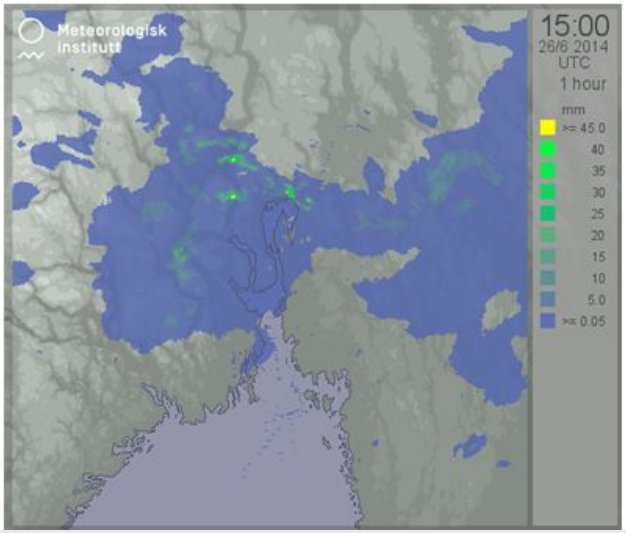


Future research topics

Most events don't hit the station sites

Probability of a x-year event occurring within a larger area?

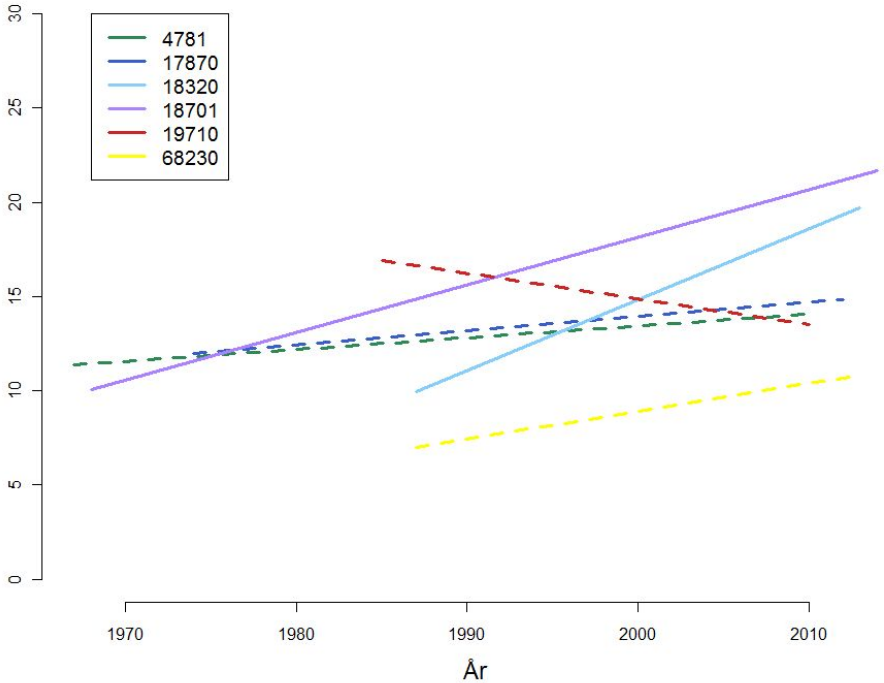
Oslo 26th June 2014



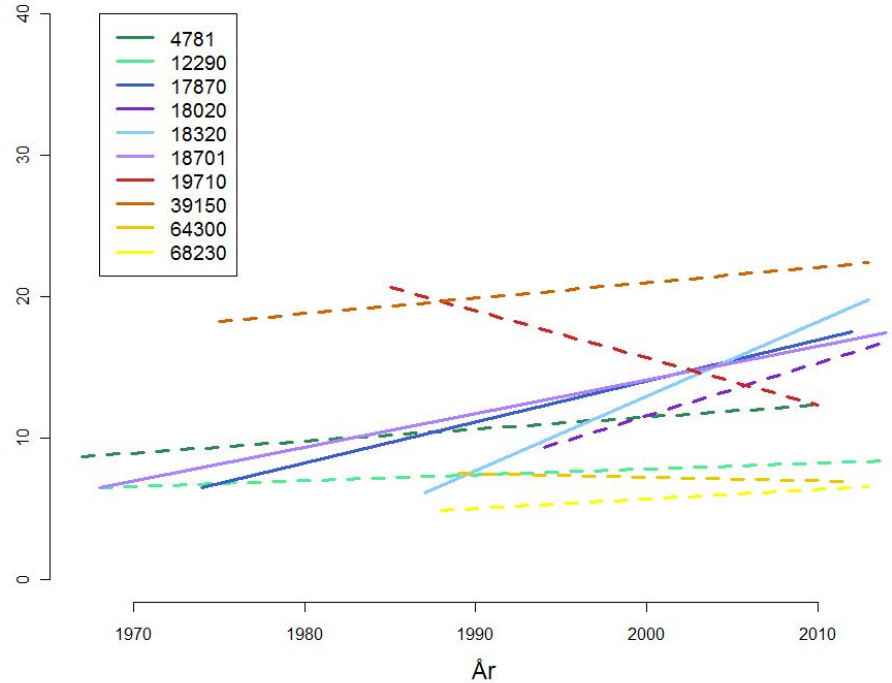
Future research topics

- Should we detrend time series for IDF-estimation?

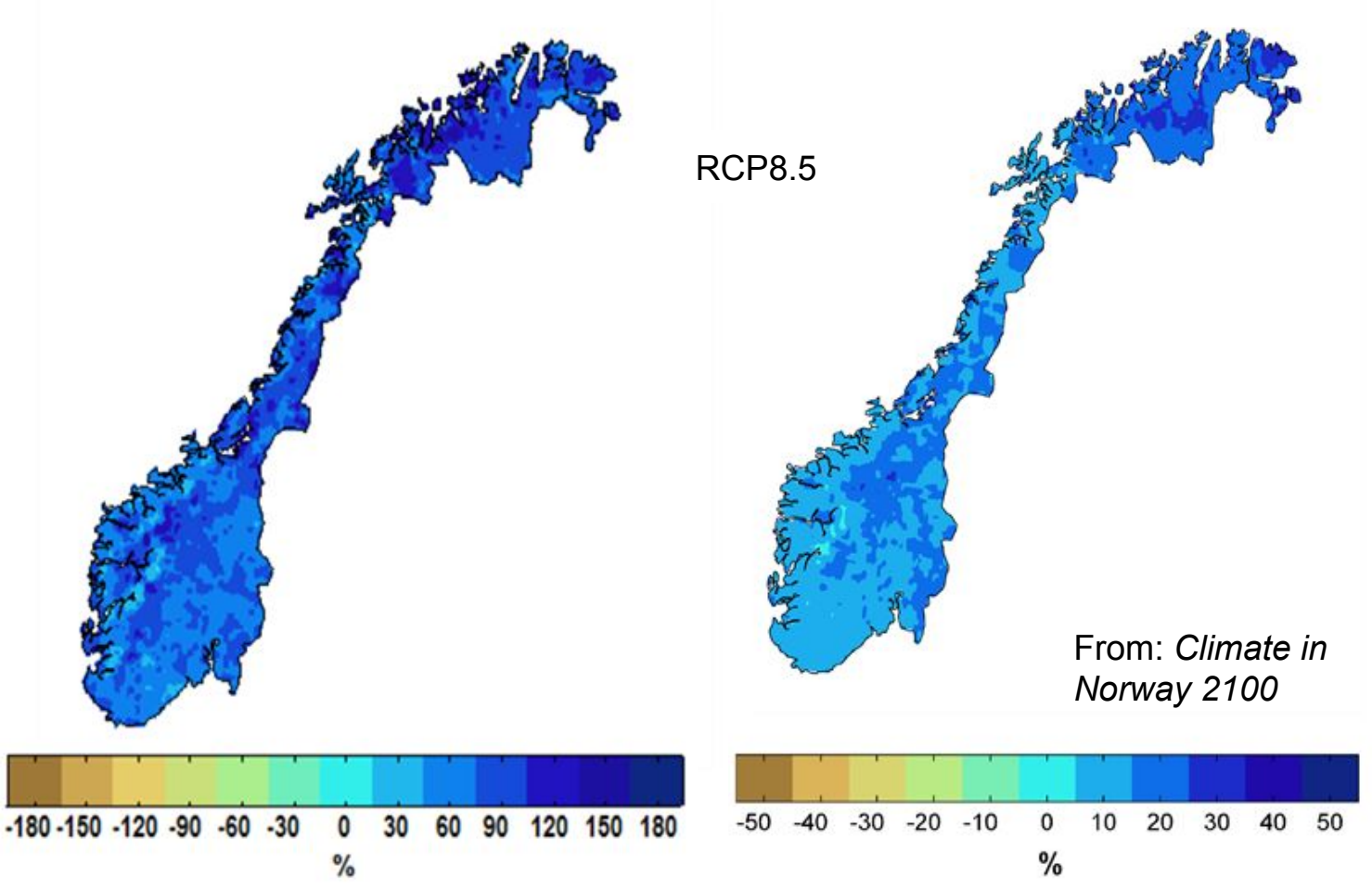
Annual maximum 60-min rainfall



Number of 60-min events > 5 mm



Heavy precipitation increases in frequency and intensity



Climate factors are needed to estimate future design values

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THANK YOU FOR THE ATTENTION

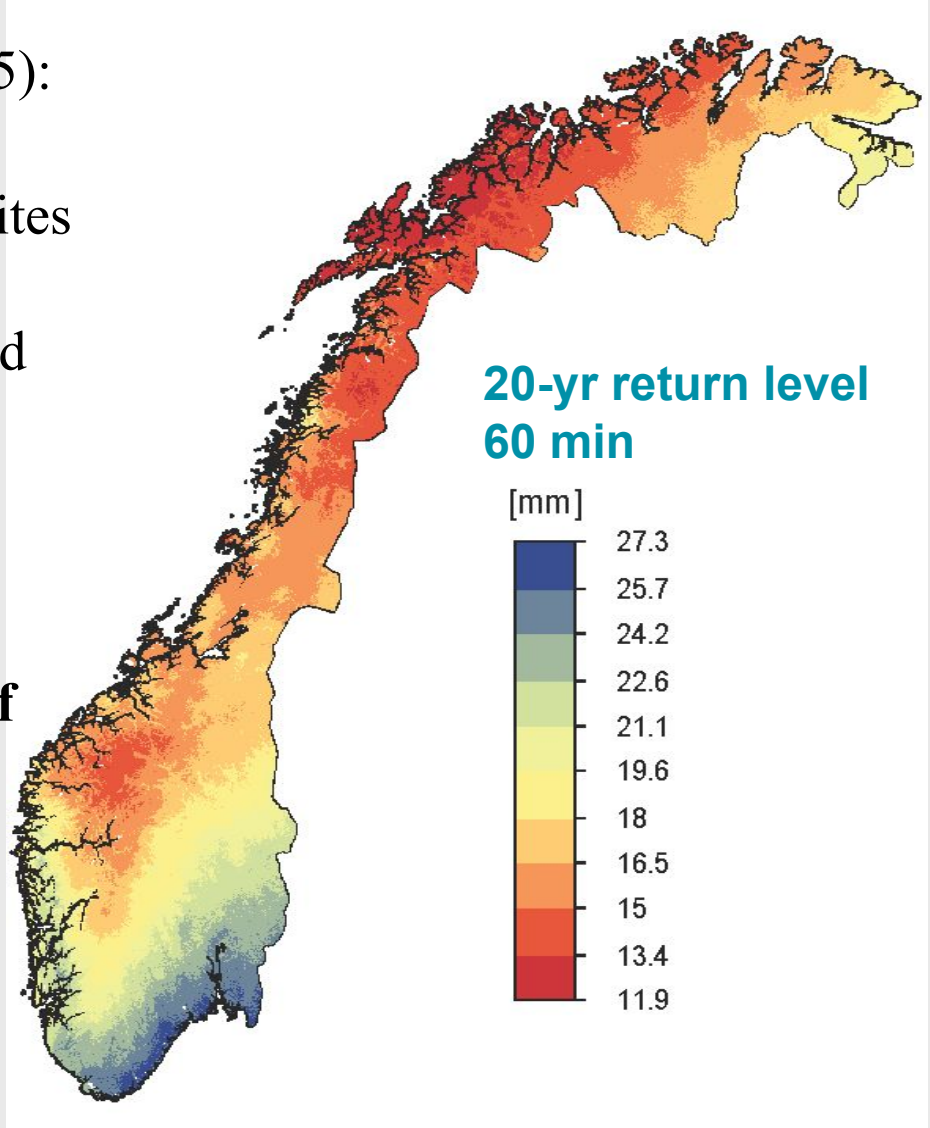
klimaservicesenteret.no

P62 Bayesian hierarchical modeling of extreme sub-daily precipitation in Norway

Approach presented in Dyrrdal et al. (2015):

- Interpolate the GEV parameters of sub-daily precipitation at observation sites
- The GEV parameters depend on climatological and geographical gridded variables (covariates)
- A Bayesian Model Averaging (BMA) component directly assesses model uncertainty

→ **Spatially continuous maps (1x1 km) of precipitation return levels**

→ **IDF-curves for any point in Norway**

R-package **SpatGEVBMA** (github)