



Aalborg Universitet

AALBORG UNIVERSITY  
DENMARK

## Rainfall extremes in the Nordic-Baltic region

Olsson, Jonas; Dyrddal, Anita Verpe; Médus, Erika; Aiskevia, Svetlana; Arnbjerg-Nielsen, Karsten; Førland, Eirik; Maiulyt, Viktorija; Mäkelä, Antti; Post, Piia; Thorndahl, Søren Liedtke; Wern, Lennart

DOI (link to publication from Publisher):  
[10.5194/egusphere-egu22-866](https://doi.org/10.5194/egusphere-egu22-866)

Creative Commons License  
CC BY 4.0

Publication date:  
2022

Document Version  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

### Citation for published version (APA):

Olsson, J., Dyrddal, A. V., Médus, E., Aiskevia, S., Arnbjerg-Nielsen, K., Førland, E., Maiulyt, V., Mäkelä, A., Post, P., Thorndahl, S. L., & Wern, L. (2022). *Rainfall extremes in the Nordic-Baltic region*. Abstract from EGU General Assembly 2022, Vienna, Austria. <https://doi.org/10.5194/egusphere-egu22-866>

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

### Take down policy

If you believe that this document breaches copyright please contact us at [vbn@aub.aau.dk](mailto:vbn@aub.aau.dk) providing details, and we will remove access to the work immediately and investigate your claim.

EGU22-866

<https://doi.org/10.5194/egusphere-egu22-866>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Rainfall extremes in the Nordic-Baltic region

**Jonas Olsson**<sup>1</sup>, Anita Verpe Dyrredal<sup>2</sup>, Erika Médus<sup>3</sup>, Svetlana Aniskeviča<sup>4</sup>, Karsten Arnbjerg-Nielsen<sup>5</sup>, Eirik Førland<sup>2</sup>, Viktorija Mačiulytė<sup>6</sup>, Antti Mäkelä<sup>3</sup>, Piia Post<sup>7</sup>, Søren Liedke Thorndahl<sup>8</sup>, and Lennart Wern<sup>1</sup>

<sup>1</sup>Swedish Meteorological and Hydrological Institute, Norrköping, Sweden

<sup>2</sup>Norwegian Meteorological institute, Oslo, Norway

<sup>3</sup>Finnish Meteorological Institute, Helsinki, Finland

<sup>4</sup>Latvian Environment, Geology and Meteorology Centre, Riga, Latvia

<sup>5</sup>Technical University of Denmark, Lyngby, Denmark

<sup>6</sup>Vilnius University, Vilnius, Lithuania

<sup>7</sup>University of Tartu, Tartu, Estonia

<sup>8</sup>Aalborg University, Aalborg, Denmark

Rainfall extremes, not least short-duration (sub-daily) extremes, are associated with a range of societal hazards, notably pluvial flooding but in addition e.g. debris flow and erosion-driven nutrient transport. Fundamental for all analysis, modelling and risk assessment related to rainfall extremes is the access to and analysis of observations. In this study, rainfall observations from meteorological stations in the Nordic-Baltic region were collected, quality controlled and consistently analyzed in terms of records, return levels and trends as well as geographical, climatic and seasonal dependencies. In terms of daily extremes, long-term analyses (since 1901) were performed at 138 stations and short-term analyses (since 1969) at 724 stations. In terms of sub-daily extremes, fewer stations and shorter records are available, and long-term analyses (since 1981) were performed at 47 stations and short-term analyses (since 2000) at 370 stations. The results reflect the heterogeneous rainfall climate in the region, with longitudinal and latitudinal gradients in the return levels as well as their time of occurrence for different durations (and return periods). Trend analyses show a majority of positive trends, both at daily and sub-daily scales, with geographical differences. Observations and data from the study are provided open access and we hope that this will be useful e.g. for regional harmonization of rainfall statistics used in infrastructural design and for climate model evaluation.