

## Extreme and mean rainfall differences in observational data used as reference in climate studies

Sørup, Hjalte Jomo Danielsen; Sunyer Pinya, Maria Antonia; Christensen, O. B.; Arnbjerg-Nielsen, Karsten; Mikkelsen, Peter Steen

Published in: Geophysical Research Abstracts

Publication date: 2012

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

## Link back to DTU Orbit

Citation (APA):

Sørup, H. J. D., Sunyer Pinya, M. A., Christensen, O. B., Arnbjerg-Nielsen, K., & Mikkelsen, P. S. (2012). Extreme and mean rainfall differences in observational data used as reference in climate studies. *Geophysical Research Abstracts*, *14*, EGU2012-7261.

## **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

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Geophysical Research Abstracts Vol. 14, EGU2012-7261, 2012 EGU General Assembly 2012 © Author(s) 2012



## Extreme and mean rainfall differences in observational data used as reference in climate studies

H. J. D. Sørup (1,2,\*), M. Sunyer (1), O. B. Christensen (2), K. Arnbjerg-Nielsen (1), and P. S. Mikkelsen (1) (1) Technical University of Denmark, Department of Environmental Engineering, Lyngby, Denmark, (2) Danish Meteorological Institute, Danish Climate Centre, Copenhagen, Denmark., (\*) Corresponding author: hjds@env.dtu.dk

The number of climate studies addressing changes in properties of extreme rainfall events has increased in recent years. These studies consider many different indices to characterize extreme rainfall. Indices ranging from the 75th up to 99th percentile of daily rainfall are widely found in the literature, with the lower percentiles sometimes referred to as "moderate extremes". Climate studies often use these indices to compare observations and climate models for evaluating the performance and bias of the models. In this context the characteristics of the observational data is of major importance, but often a single set of data is used for comparison and assumed to be completely correct.

In the present study mean and extreme indices are calculated for different sets of observational data with distinctly different properties with respect to smoothening and averaging. The study is based on five datasets covering Denmark: two datasets based on point measurement station networks; two gridded datasets; and one re-analysis dataset. We study the increase of the dissimilarities between these data sets when going from mean indices to more extreme indices. The extreme indices are highly dependent on the level of averaging in the observations and, thus, show a decreasing trend from pure observations to gridded data to reanalysis data, this smoothening effect is considered in relation to the spatial scale of the observations. Additionally, the study isolates to what level of "moderate extremes" the effect of the type of observational data is significant regarding data properties and methods developed for mean indices which may not be suitable for extremes. The implications of going from point scale to the gridded scale of climate models are highlighted. The study stresses the need for climate impact modellers to consider the indices evaluated and choose appropriate observational data when conclusions are drawn.