README file for "Pan-European data sets of heavy precipitation probability of occurrence under present and future climate"

Version

1.0, 26.04.2016

Author

Katrin Nissen

Institute of Meteorology, Freie Universität Berlin

Contact

Katrin Nissen katrin.nissen@met.fu-berlin.de

General information

- Two types of heavy precipitation events are analysed: a) long duration with high amount b) short-duration with high intensity.
- Total number of maps: 14
- Total number of files: 3

Scenarios
1. Present climate: 1971–2000
2. Future climate, RCP 4.5: 2021–2050
3. Future climate, RCP 4.5: 2071–2100
4. Future climate, RCP 8.5: 2021–2050
5. Future climate, RCP 8.5: 2071–2100

Domain
- The maps cover all European Union territory located within the geographical extent of Europe, excluding Madeira, the Azores and Svalbard, but including Cyprus and some other parts of Europe for continuity.

Horizontal Resolution
- The maps have a spatial resolution of 0.11°.

Data format
- All maps are in NetCDF format.

Data description:

For the RAIN project a method to detect heavy precipitation events was developed. A detailed description of the method is found in the project report D2.5 (available at http://rain-project.eu/). The method was applied to a multi-model ensemble of regional climate simulations. These model simulations were conducted within the EURO-CORDEX framework. The models included in the analysis are also listed in report D2.5. The data files contain the average number of events per year and aggregation period detected by the algorithm. The analysis was conducted for different periods and emission scenarios. A file including the thresholds used for the detection of the events (the 10-year return values) is also provided. 3 aggregation periods were considered for events with high precipitation amounts (1 day, 2 days, 3 days), thus the number of detected events in the files was divided by 3. One aggregation period was considered for high intensity events (3 hours).

Data files

return_value_10yr_ensemble_mean.nc:
Contains the multi-model ensemble mean of the local 10-year return values calculated for the period 1971-2000. The file contains the results of 4 different aggregation periods: 3 hours (calculated from 6 model simulations), 1, 2 and 3 days (calculated from 10 model simulations).

probability_ensemble_precipitation_amount.nc:
Contains the average number of detected events per year and aggregation period at each grid box. Considered are events with high precipitation amounts, which have exceeded the local 1, 2 or 3 day 10-year return value. The file includes results for the 5 different scenarios and time periods stored as 5 different variables.

probability_ensemble_precipitation_intensity.nc:
Contains the average number of events per year exceeding the local 10-year return value at each grid box. Considered are events with high precipitation intensities, which have exceeded the local 3-hour 10-year return value. The file includes results for the 5 different scenarios and time periods stored as 5 different variables.

Disclaimer:
Data available for download as a result of this project were made using large-scale datasets and are intended for providing an European-wide overview of present and future probability of occurrence of extreme weather hazards. Extreme caution should be made when drawing local-scale conclusions from the maps. Therefore, the data are provided for research purposes only. No warranty is given as to their suitability for user applications. No liability is accepted by the authors for any errors or omissions in the data or associated information and/or documentation.

Citation:
Groenemeijer, P., Púčik, T., Becker, N., Nissen, K., Ulbrich, U., Paprotny, D., Morales Nápoles, O., Vajda, A., Jokinen, P., Lehtonen, I., Kämäräinen, M., Venäläinen, A. (2016) Present and future probability of meteorological hazards in Europe, RAIN project report D2.5.

RAIN project, http://rain-project.eu/