

README file for “Pan-European data sets of river floods probability of occurrence under present and future climate”

Version

1.1, 25.07.2017

Description

GIS-compatible files containing data related to the probability of river floods occurring in Europe under present and future climate. Includes gridded (GeoTIFF) datasets of river flood extents (in two variants, with or without flood protection) and water depths. Additionally includes extreme river discharge estimates in ESRI Shapefile format. Based upon CLMcom-CCLM4-8-17-EC-EARTH regional climate simulation (EURO-CORDEX).

Please see the RAIN project report D2.5 for detailed description (http://rain-project.eu/wp-content/uploads/2016/09/D2.5_REPORT_final.pdf).

Authors

Dominik Paprotny & Oswaldo Morales-Nápoles

Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department of Hydraulic Engineering, Section of Hydraulic Structures and Flood Risk

Contact

Dominik Paprotny <d.paprotny@tudelft.nl>

List of files

- ‘River_flood_extent_X_Y_Z_no_protection’ contains flood extent, presented as a surface with 5 intervals – return periods of 10, 30, 100, 300, 1000 years, with the assumption of no flood defences present. [5 files]
- ‘River_flood_extent_X_Y_Z_with_protection’ contains flood extent, presented as a surface with 5 intervals – return periods of 10, 30, 100, 300, 1000 years, with the assumption that flood defences are present and has a protection standard as in FLOPROS database by Scussolini et al. (2015). [5 files]
- ‘River_flood_depth_X_Y_Z_R’ contains water depth in meters for a flood event with a return period of R, 100 m resolution. [25 files]
- ‘River_discharge_X_Y_Z’ contains river discharge values (m³/s) for 10 different return periods (from 2 to 1000 years) at selected points along rivers. This file is intended for use together with CCM River and Catchment Database, version 2.1 (CCM2). [5 files (*)]
- ‘River_return_periods_X_Y_Z’ contains return periods (in years) of discharges calculated using probability distributions from 1971–2000 for 10 different return periods defined for future climate (from 2 to 1000 years) at selected points along rivers. This file

is intended for use together with CCM River and Catchment Database, version 2.1 (CCM2). [4 files (*)]

X denotes start-year and Y end-year of the scenario.

Z denotes the scenario (“hist” – historical simulation, “RCP4.5”, “RCP8.5” – two climate change simulations with different socio-economic assumptions).

(*) denotes files that are intended for use together with CCM River and Catchment Database, version 2.1 (CCM2).

Spatial reference

ETRS89 / ETRS-LAEA projection (EPSG:3035).

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

- Paprotny, D., Morales Nápoles, O. (2017) Estimating extreme river discharges in Europe through a Bayesian Network. *Hydrology and Earth System Sciences* 21:2615–2636, doi:10.5194/hess-21-2615-2017.

Paprotny, D., Morales Nápoles, O., Jonkman, S. N. (2017) Efficient pan-European river flood hazard modelling through a combination of statistical and physical models. *Natural Hazards and Earth System Sciences* 17:1267–1283, doi:10.5194/nhess-17-1267-2017.

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.

Acknowledgements

The data in this collection were prepared within project “Risk Analysis of Infrastructure Networks in response to extreme weather” (RAIN). This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement no 608166.