Geophysical Research Abstracts Vol. 21, EGU2019-15794, 2019 EGU General Assembly 2019 © Author(s) 2019. CC Attribution 4.0 license.



Reconstruction of long daily precipitation fields using additional information from re-analysis data and analogous observed rainfall pattern

Uwe Haberlandt (1), Bora Shehu (1), and Cristina Primo Ramos (2)

(1) University of Hannover, Inst. of Hydrology and Water Resources Management, Hannover, Germany (haberlandt@iww.uni-hannover.de), (2) Goethe-Universität Frankfurt am Main, Institut für Atmosphäre und Umwelt, Germany

For the analysis and simulation of extreme historical floods long time series of precipitation are required which might extend the period for which sufficient observations are available. This study is trying to reconstruct spacetime distributed daily rainfall for a long period from 1900 to the current time. The station network density is very sparse at the beginning of the period and then increasing over time. Spatial interpolation shall provide raster based rainfall with sufficient resolution. The challenge is the interpolation for the first decades where only few stations are available. The idea is to utilize for interpolation additional information from a) meteorological model based re-analysis data and b) from analogous rainfall pattern ob-served in more recent times where a denser network was available. The interpolation uses non-stationary kriging approaches (e.g. external drift kriging) where the additional infor-mation is provided by re-analysis data and by most similar rainfall pattern from future peri-ods. These periods are selected based on a k - nearest neighbor approach. The case study is carried out for the Mulde River Basin in south-eastern Germany. It is hypothesized, that the additional information will improve the interpolation performance which will be assessed by cross validation.