



Statistical characterization of extreme rainfall climate along the future high-speed rail track in Portugal.

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The characterization of rainfall and its extremes at different spatial and temporal scales is important for the evaluation of environmental risks along high-speed rail systems. Rainfall can induce accidents for example through the activation of landslides and affects operations by causing slowdown. We present an exploratory analysis of point rainfall data from mainland Portugal, distributed over an area of approximately 30 km by 460 km. This corridor includes the high-speed rail track that is now being designed for Portugal. This is the first step in the assessment of hydrologic risk for this infrastructure.

The dataset includes rainfall time series with heterogeneous length and resolution: some of the data are from tipping bucket rain gauges with hourly resolution and an average length of 5 years, while others are from conventional gauges with daily data over periods of more than 50 years. Key statistical characteristics of the rainfall process, including extremes, are investigated to increase our understanding of the variability of the rainfall climate along the rail track. Maps showing the areal distribution of statistical characteristics of the process are drawn to better illustrate the spatial variability of the rainfall threat in the study area.

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