HIWAVES3: High Impact Weather Events in EurAsia Selected, Simulated and Storified

Call: Climate Predictability and Inter-Regional Linkages
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HIWAVES3 facilitates a dialogue between climate modelers, impact modelers and partners in different geographical regions with knowledge of local societal relevant meteorological events to construct stories of selected high-impact extreme events, simulated for present-day and future climate conditions. The story includes the origin of the extreme event from a meteorological perspective, its inter-regional linkages, its predictability, its societal impact and how climate change affects its magnitude and probability. Such stories, made available for schools, the general public and governments, are effective communication means, more so than bare numbers about the expected mean temperature increase, precipitation changes in % and such. Based on surveys, extreme summer events with large societal impacts, like droughts and floods, will be selected from the recent past for China, India and Europe. Similar events will be identified in large ensembles of global climate simulations. The size of the ensembles allows an analysis of the inter-regional linkages between the Arctic, the Midlatitudes and the Indian Monsoon region through large-scale Rossby waves and other meteorological factors leading to the extreme, like soil-moisture and sea-surface temperature conditions. In addition, a one in a thousand year event in China, India and Europe, although not witnessed in the recent past, will be analysed. The predictability of the event, weeks to months in advance will be assessed through additional simulations. Using empirical methods and process-based models, the impact on crop yields and economy will be estimated as well as the number of premature deaths. Using large ensembles under projected 2050 conditions the effect of climate change on these extremes and their impacts will be analysed. This research material is translated into powerful stories about concrete events that illustrate how climate affects man, man affects climate, how different geographical regions are connected and how extreme the weather might get. The meteorological data of these events will be made available for further impact studies.