



A multi-hazard Extreme Climate Index across Europe

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In summer 2017, Southern Europe and Euro-Mediterranean regions experienced one of the most extreme heat wave, which caused significant social and economic damages. The World Weather Attribution (WWA) provides a comprehensive analysis of the most remarkable aspects of the temperatures in June-August in the Euro-Mediterranean region and shows the exceptional characteristics of the last summer. A research question is whether or not there is a trend toward increasing temperature and whether or not anthropogenic climate change played a role.

Multi-hazard indices are capable of tracking changes in the frequency or magnitude of different types of extreme climate events. These changes indicate that a shift to a new climate regime may be underway in a particular area. The aim of this study is to apply the recently developed Extreme Climate Index (ECI) across Europe. The ECI is a multi-hazard index which has been developed in the context of the eXtreme Climate Facilities (XCF) project lead by ARC (African Risk Capacity). The main hazards covered by ECI are the extreme dry, wet and heat events. It is based on sufficiently long, high quality historical data of precipitation and surface temperature coming from satellite and reanalysis. The index has been widely tested across African regions, and adopting it on an area with a different climate regime represents a further challenge of this study. The required data have been retrieved from ERA-Interim reanalysis dataset for both precipitation and temperature. This study describes some preliminary results obtained across Europe. Specifically, we explore the opportunity to identify climatological homogenous regions, on the basis of ECI and its components, to evaluate the changes in the characteristics of extremes.