

>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

Submitted Abstract

ID IMC22-FSAbstr- 967

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Country	Austria
Region	Western Europe
Title	Alpine-Wide Mapping Of Meteorological, Agricultural And Hydrological Drought.
Keywords	Drought, Monitoring, Impacts, Risks, Data Portal
Type	List Of Focus Session
Focus Session ID	85

Abstract

Monitoring different aspects of the drought cycle in the Alpine region requires a variety of indicators and indices, which depict drought conditions on the very diverse and inhomogeneous terrain. Given the importance of the Alpine region for local and downstream water related activities, ADO project aimed to provide information on different characteristics of the hydrological and meteorological variables triggering drought situation in the Alpine region and to display different stages and types of drought development. Following a review of existing indices, indicators, methodologies and other drought-related data in operational drought monitoring in the Alpine countries, a selection of indices was identified as useful for homogeneous Alpine-wide drought monitoring and thus appropriate for upgrade and extension to the entire Alpine area, considering the availability of the input data and the index applicability in the specific requirements related to the diverse Alpine terrain. The selected indices describe changes in parameters that can be related to three different types of drought: meteorological drought (precipitation anomalies and SPI), agricultural drought (SPEI, SMA, VCI and VHI) and hydrological drought (SSPI, SDI, SSI and Q95). Collection and harmonization of input data available throughout the region was performed using various data sources, including ERA5 reanalyses, remote sensing products, SNOWGRID model and in-situ measurements. The indices are derived using state-of-the-art methodologies, taking into account a sufficiently long temporal coverage, high resolution and a high refresh rate. Throughout the project, the applicability and performance of the indices was tested in case study regions with the aim to inform planning and improve risk management related to drought.