EMS Annual Meeting Abstracts
Vol. 16, EMS2019-82-3, 2019

Drought 2018 in Switzerland: ensemble forecasts, severity and perception

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In recent years, Europe has been affected by intense drought events. Such events have been rather seldom in previous decades. In the summers of 2003, 2015 and 2018, droughts affected different aspects of life and economic sectors including agriculture, livestock, fauna in rivers, navigation, and water supply in Switzerland. The Swiss information platform for early recognition of drought in Switzerland "www.drought.ch" is online since 2013 and provides support for the management of critical drought situations. Since August 2018, the platform also integrates sub-seasonal forecasts of hydrological parameters with lead times of up to one month.

This study aims at analyzing the 2018 drought in Switzerland from different perspectives and includes the following analyses:

a) A regional assessment of the intensity of the drought in 2018 as compared to the events in 2003 and 2015;
b) An evaluation of the potential for early drought identification based on monthly forecasts (2012-2018).
c) An analyses of the perception of the drought situation in news articles and on social media, based on the number of accesses to "www.drought.ch";

The regional drought severity was assessed by combining measurements of precipitation and discharge at 137 poorly disturbed mesoscale basins with simulations of the natural water balance for 307 basins covering the whole country. This analysis suggests that the 2003 drought has been more severe in the north-western part of the country while the 2018 event was most severe in the north-eastern part.

The quality of ensemble forecasts has been completed for the same 307 basins included in the analysis of the severity. 7 years of monthly hydrological ensemble predictions have been evaluated against the simulations forced by actual observations. The analysis of the ensemble forecasts suggests that the prediction of drought onset was more reliable for the 2015 event, than for the 2018 case. In both cases, the hydrometeorological predictions were well able to identify the termination of the drought events. First analyses of a newly developed tercile weekly forecast indicate that forecasts have value up to a lead time of four weeks.

Finally the perception of the drougth event by the society was evaluated through a media analysis. The number of articles in the news (150 news per day), the use of "#Trockenheit" on Twitter (200 per day), and the number of accesses to "www.drought.ch" (1500 users per day) peaked between July 25th and August 10th 2018. Outside this period, the interest was about 5 times smaller. The actual severity of the situation according to the hydrological indicators was severe between Mid-July and end of November. The public interest in the drought event was correlated with the period with highest soil moisture deficit and the peak of the heatwave at the end of July.