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Socio-ecosystemic analysis of the 2018 drought in Wallonia (Belgium) and possible recommendations for a transversal and sustainable risk management

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Abstract

Drought – extreme climatic event due to an abnormal rainfall deficit – is a complex hazard which generates, depending on environmental and societal context, multiple and cumulative impacts that are often dramatic. Water scarcity is a major consequence of this meteorological phenomenon. Indeed, water is essential to the existence and sustainability of all the socio-ecosystems that make up our territories. Moreover, it is now clear that current and future global warming will lead to an increase in the frequency and intensity of droughts in Europe (IPCC, 2021). Wallonia (southern part of Belgium) is no exception to this observation and suffers, since the start of the 21st century, from recurrent water deficits and strong pressure on its water reserves in the summer period (Thibaut and Ozer, 2021). In this context, the objectives of the study (Thibaut et al., to be submitted) are (1) to better understand the interdisciplinary process of droughts and (2) to highlight ways of improving the management of this risk. In order to achieve these objectives, we used an original and innovative tool: the chrono-systemic timeline. This consists in a transversal analysis tool that allows visualization – in a single diagram – of temporal and multi-sectoral highlights of crisis and their relationships (Bergeret et al., 2015). Considered exceptional by the Royal Meteorological Institute of Belgium and qualified as an agricultural calamity by the Walloon government, the 2018 drought served as a case study for development of the chrono-systemic timeline. The data introduced into the model concern environmental conditions (climate and hydrology), economic and social context (water production, agriculture, natural environments, energy, navigation, tourism) and political and administrative decisions of the case study. The chrono-systemic timeline of the 2018 drought in Wallonia (cf. figure 15 in Thibaut, 2020, p. 31) highlights an often long period of major impacts, a slow return to normal situation and a reactive crisis management. It also shows presence of water stress situations in all socio-ecosystems of the territory. The study concludes that it is necessary (1) to better consider risks associated with water deficits in public policies and (2) to put in place anticipatory and adaptive management of these risks. In view of the many socio-ecosystemic connections engendered by water scarcity, nature-based solutions appear to be efficient future strategies for integrated adaptation to droughts.

Keywords: drought, risk management, chrono-systemic timeline, socio-ecosystemic analysis, Wallonia

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