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Flash Drought Research: Growth, Challenges and Future Perspectives

Akif Rahim and Yannis Markonis

Faculty of Environmental Sciences, Czech University of Life Sciences Prague, Kamycka 129, Praha-Suchdol, 16500, Czech Republic

Over the past decades, the evolution of the “flash drought” concept has offered new insights in the analysis of extreme climate. Rapid development and devastating effects on the ecosystem have made flash droughts different from the traditional drought. For example, the flash drought event of 2012 across the Great Plains in the USA caused an agricultural loss of \$30 billion. In this study, we reviewed the progress and determined the growth rate of flash drought research over the past decades. Furthermore, we compiled the challenges addressed by the researchers and then presented the future perspectives to cope with these challenges. We used the Scopus database as a search engine to track articles published from 2000 to 2020. The association technique of clustering s applied to the author’s keywords and research titles to identify the hot spots of flash drought research. The results show that the literature on flash droughts has grown rapidly over the past decade. The main identified challenges are the appropriate definition and identification of flash drought, the development of an effective early warning system, the determination of the ecosystem response time to flash droughts, and the data scarcity in both spatial and temporal scales. Future research should establish a detailed framework to integrate each of the challenges and provide mitigation suggestions to the effects of flash drought.