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A Multi-Scale Study of US Drought Awareness from the Lens of Big Data

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POSTECH

From the perspective of water-related disaster preparedness and mitigation, Big Data provides a unique opportunity to explore the dynamics of social response during the disaster emergency. Monitoring data for relevant information search activities via cyberspace provide an indicator of public awareness/interest. However, However, Big Data was underutilized to water-related disaster mitigation due to lack of awareness of the existing big data and the lack of pioneering efforts to apply it to smart water resources management.

In this seminar, I will introduce the utility of Google Trends data, as a type of Big Data, in investigating the potential triggers and dynamic patterns of social response during past US droughts at the state and national level. First, I will introduce how we can utilize Big Data to investigate potential triggers of Californian's awareness during the 2011–17 Drought and how we can quantify the forgetting rates of the public awareness. To quantify forgetting factors of public interest or social memory, power law stochastic models are selected and trained against the monthly Google Trends data. Second, I will share the findings from a spatiotemporal analysis of US national drought awareness via the Principal Component Analysis. The key findings of this study are 1) drought awareness spreads out beyond the drought-affected areas simultaneously at the monthly time scale and 2) forgetting rates are various across the states and are determined by the socioeconomic structures.

In closing, I will discuss a potential application of the proposed methods to a case study of Korean public awareness about drought and discuss the role of big data in transforming our nation to a water-related disaster-ready environment in coming years.

- **When : 2020.05.06. (Wed) 16:00**
- **Where: Online (Link: Check UEE Homepage) - uee.unist.ac.kr**
- **Host : Prof. Lee, Myong-In ext) 2813, milee@unist.ac.kr**

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