A Heuristic Method of In-situ Drought Using Mass Media Information

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Abstract

This study is to evaluate the drought-related bigdata characteristics published from South Korean by developing crawler. The 5 years (2013 ~ 2017) drought-related posted articles were collected from Korean internet search engine 'NAVER' which contains 13 main and 81 local daily newspapers. During the 5 years period, total 40,219 news articles including 'drought' word were found using crawler. To filter the homonyms liken drought to soccer goal drought in sports, money drought economics, and policy drought in politics often used in South Korea, the quality control was processed and 47.8 % articles were filtered. After, the 20,999 (52.2 %) drought news articles of this study were classified into four categories of water deficit (WD), water security and support (WSS), economic damage and impact (EDI), and environmental and sanitation impact (ESI) with 27, 15, 13, and 18 drought-related keywords in each category. The WD, WSS, EDI, and ESI occupied 41.4 %, 34.5 %, 14.8 %, and 9.3 % respectively. The drought articles were mostly posted in June 2015 and June 2017 with 22.7 % (15,097) and 15.9 % (10,619) respectively. The drought news articles were spatiotemporally compared with SPI (Standardized Precipitation Index) and RDI (Reservoir Drought Index) were calculated. They were classified into administration boundaries of 8 main cities and 9 provinces in South Korea because the drought response works based on local government unit. The space-time clustering between news articles (WD, WSS, EDI, and ESI) and indices (SPI and RDI) were tried how much they have correlation each other. The spatiotemporal clusters detection was applied using SaTScan software (Kulldorff, 2015). The retrospective and prospective cluster analyses were conducted for past and present time to understand how much they are intensive in clusters. The news articles of WD, WSS and EDI had strong clusters in provinces, and ESI in cities.

Keywords : Drought, News media, Spatio-temporal analysis, Space-time scan statistic.

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