



## Development of a Strategic Framework for Drought Management

Jaewon Kang (1), Sooyoung Kim (2), Aesook Suh (3), and Younghyun Cho (4)

(1) Hydrometeorological Cooperation Center, Korea, Republic Of (jwkang@partner.kwater.or.kr), (2) Hydrometeorological Cooperation Center, Korea, Republic Of (sykim48@kwater.or.kr), (3) Hydrometeorological Cooperation Center, Korea, Republic Of (assuh@partner.kwater.or.kr), (4) Hydrometeorological Cooperation Center, Korea, Republic Of (yhcho@kwater.or.kr)

A drought starts with lack of precipitation; as the deficit of precipitation is prolonged, the loss of water influences on the amount of soil water because of evapotranspiration. In addition, the decreased runoff of surface and underground water also reduces discharge in rivers and storage in reservoirs; these reductions then lead to the decline in the supply capability of water resources supply facilities. Therefore, individuals may experience a given drought differently depending on their circumstances. In an area with a metropolitan water supply network that draws water from a multipurpose dam, residents might not realize that a meteorological drought is present since they are provided with sufficient water. Similar situation might occur in farmlands for which an irrigation system supplies water from an agricultural reservoir.

In Korea, several institutions adopt each drought indices in their roles. Since March 2016, the Ministry of Public Safety and Security, via inter-ministerial cooperation, has been classifying and announcing drought situations in each administrative district of Korea into three types, meteorological, agricultural, or hydrological droughts, with three levels such as 'caution,' 'serious,' or 'very serious.' Deriving the drought index considering storage facilities and other factors and expressing them in three categories are valid as methods. However, the current method that represent the drought situation in an administrative district as a whole should be improved to recognize the drought situation more realistically and to make appropriate strategic responses.

This study designs and implements a pilot model of a framework that re-establishes zones for drought situation representation, taking water usage and water supply infrastructure into account based on land use maps. In addition, each resulting district is provided with statistical indices that can assist in the application of appropriate drought indices and the understanding of situations. In the framework, different areas classified as forest/grassland, paddy fields with an irrigation system, paddy/dry fields relying on rainwater, areas with a metropolitan or provincial water supply, or areas with other residential/industrial water supply, in a single administrative district have different values for meteorological, agricultural, or hydrological droughts. And the situation can be analyzed on a daily basis to take into account areas with a possibility that the drought may be relieved by a short-term downpour or similar event.

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