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## Study on the Influence of Heat Wave and Cold Wave Characteristics and Vulnerable Areas in Busan, Ulsan and Gyeongsangnam-do

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The frequency of extreme weather phenomena such as heat wave and cold wave has increased recently, and the intensity of weather has been strengthened, resulting in human and physical damage. The Republic of Korea has been working to reduce damage since 2018 by including heat and cold waves in natural disasters. The Korea Meteorological Administration (KMA) also provides impact-based forecasts, which requires research that suits local characteristics. In this study, weather observation data related to the summer heat wave in Busan, Ulsan and South Gyeongsang Province was analyzed to determine the weather conditions for the heat wave. In addition, in relation to the heat wave impact-based forecast that was provided regularly in 2019, the heat threshold was applied by comparing the current status of the heat-related patients with the maximum temperature, the number of consecutive days of the heat wave and the current status of the heat-related patients. The impacts of heat waves in different fields were analyzed, including livestock waste, fisheries food damage, and heat damage by crops. The cold wave also analyzed the number of days of cold wave in Busan, Ulsan, and South Gyeongsang Province by comparing the lowest temperature with the current status of cold-related patients. The impacts of cold weather conditions such as wind direction, wind speed and the number of consecutive days of the cold wave were also analyzed. Further, for regular provision of cold wave impact-based forecast to be implemented in 2020, the impacts of each cold wave vulnerable areas suitable for Busan, Ulsan, and South Gyeongsang Province were analyzed and referred to when applying cold wave thresholds.