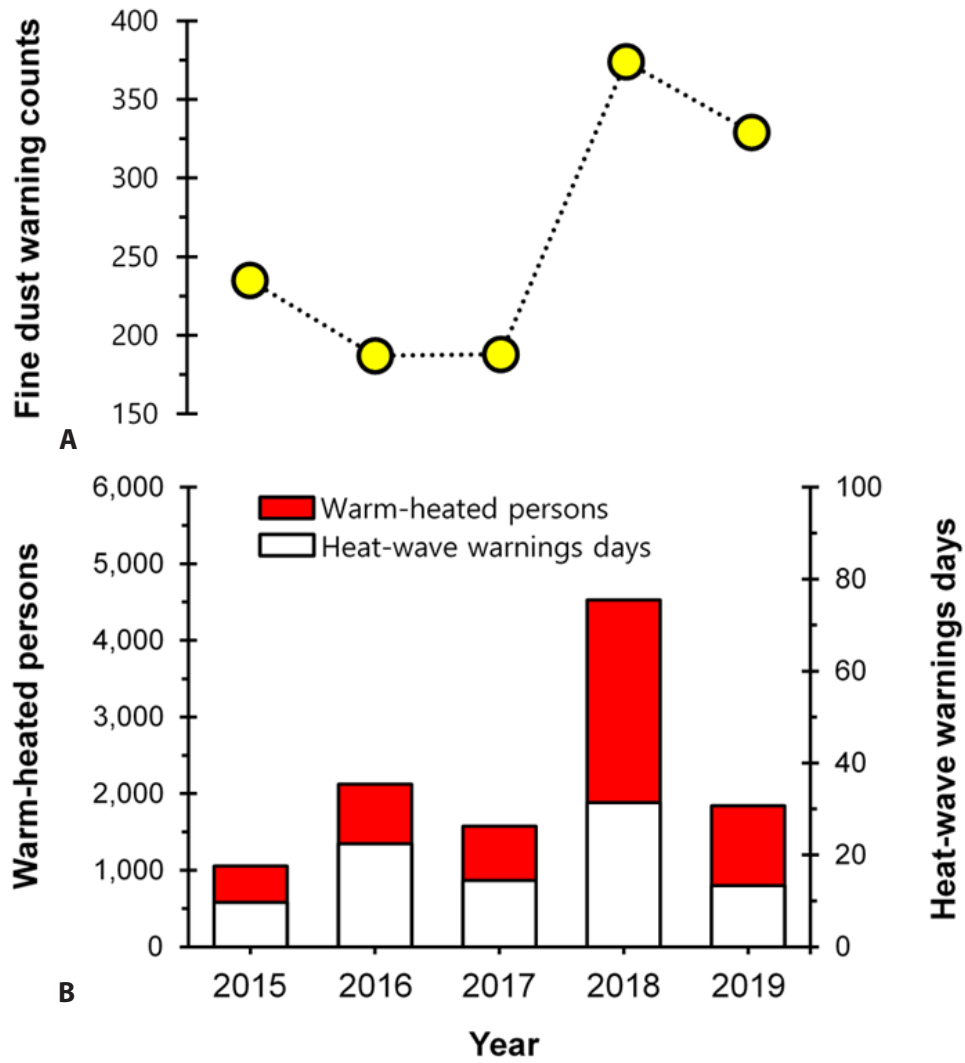


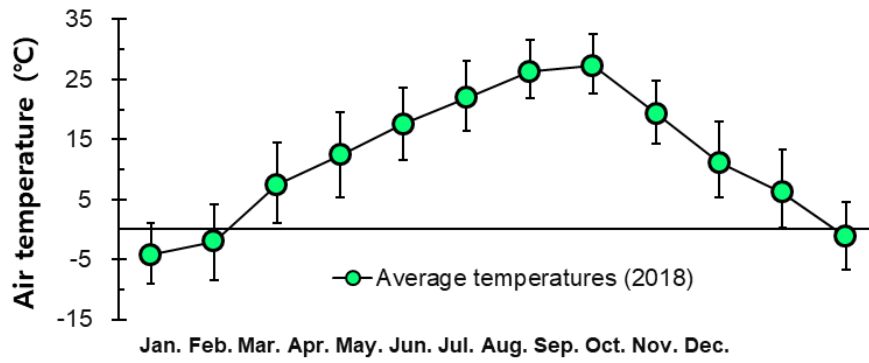
**Supplementary Table 1. Fine dust warning counts, persons exposed to heat wave and heat-wave warning days in each year (2015–2019)**

Category	Year				
	2015	2016	2017	2018	2019
Fine dust warning counts	235	187	188	374	329
Persons exposed to heat	1,056	2,125	1,574	4,526	1,841
Heat-wave warnings days	9.7	22.4	14.4	3.4	13.3

Fine dust warning counts: Based on weather conditions, the average concentration of particulate matter 10 h of the local atmospheric automatic measuring station lasted more than 2 h over 150  $\mu\text{g}/\text{m}^2$  in real time (by the Korea Environment Corporation).



Supplementary Fig. 1. (A) Counts of fine dust warnings in 17 major cities and provinces including Seoul, the capital of Republic of Korea (Pusan, Daegu, Incheon, Gwangju, Daejeon, Ulsan, Sejong, Gyeonggi, Gangwon, Chungbuk, Chungnam, Jeonnam, Jeonbuk, Gyeongbuk, Gyeongnam, Jeju) in 2015–2019 years, (B) trends in heat-wave warnings and persons exposed to heat in Republic of Korea.



**Supplementary Fig. 2. Monthly mean and daily average ambient temperatures from January 2018 to December 2018 in Cheonan (126°52'N, 33.38'E; Republic of Korea).** Cheonan is located in a temperate zone, with four distinct geopolitical seasons, and very hot summer 27.2°C (Max 5.3 and Min 4.5, average temperature of August). However, cold winter (the monthly mean daily average ambient temperature during the experimental period occurs from January 2018; temperature, -4.2°C (Max 5.2 and Min -4.8); humidity, 63.5% (Max 29.0 and Min 31.7). Max, maximum; Min, minimum.