



# Climate change impact on heat-related mortality

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## Background

The Inter-Sectoral Impact Model Integration and Intercomparison Project proposed a new protocol, called ISI-MIP IIb. Following this protocol, we estimated the impact of climate change on heat-related mortality using Japanese general circulation model and our own method of evaluating heat-related mortality.

## Methods

As described in WHO report (2014)<sup>1</sup>, we did projection of heat-related mortality attributable to climate change. Using the same method except for age group and the general circulation model (all ages and MIROC5 in this projection), we conducted projection following ISI-MIP IIb protocol. Figure 1 shows the heat risk function we used. The scenarios were "piconrol" for preindustrial baseline, RCP2.6, and RCP6.0 with SSP2. Future mortality estimation was obtained from Wittgenstein Centre<sup>2</sup>.

## Results

When we fixed the socio-economic status to be 2005 throughout the projection period, the total heat-related deaths in 2099 were 500,000 for RCP6.0, 350,000 for RCP2.6 and 150,000 for piconrol (Figure 2). When we assume SSP2, the numbers were 900,000 for RCP6.0, 500,00 for RCP2.6, and 200,000 for piconrol (Figure 3).

## Discussion

The RCP2.6 results can be regarded as the impact of 1.5 degC increase from preindustrial level. Thus, the difference between RCP2.6 and piconrol, i.e., 150,000 in case of fixed socio-economic status and 300,000 in case of SSP2. This shows that the climate change impact is substantial even under 1.5 degC increase scenario. Still, the 1.5 degC impact was much smaller than RCP6.0, and it appears that it is worth pursuing 1.5 degC target. At the presentation, we will also provide the results that consider adaptation.

## Reference

1. Hales S et al. eds. (2014) Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s. WHO.
2. <http://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/dataexplorer/index>.

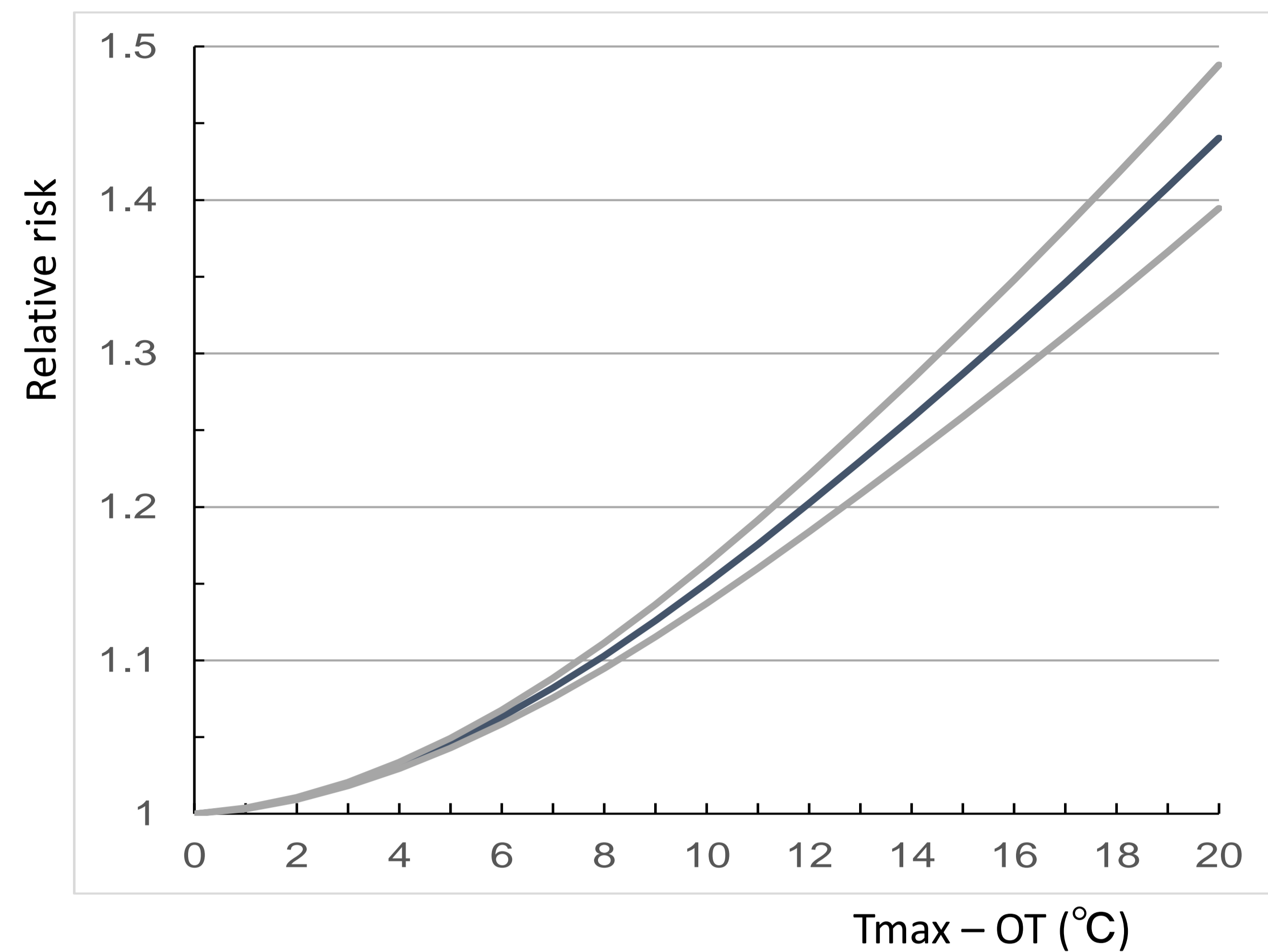


Figure 1. Risk function of the heat-related mortality.

\* "Tmax - OT" indicates the heat beyond "Optimum Temperature."

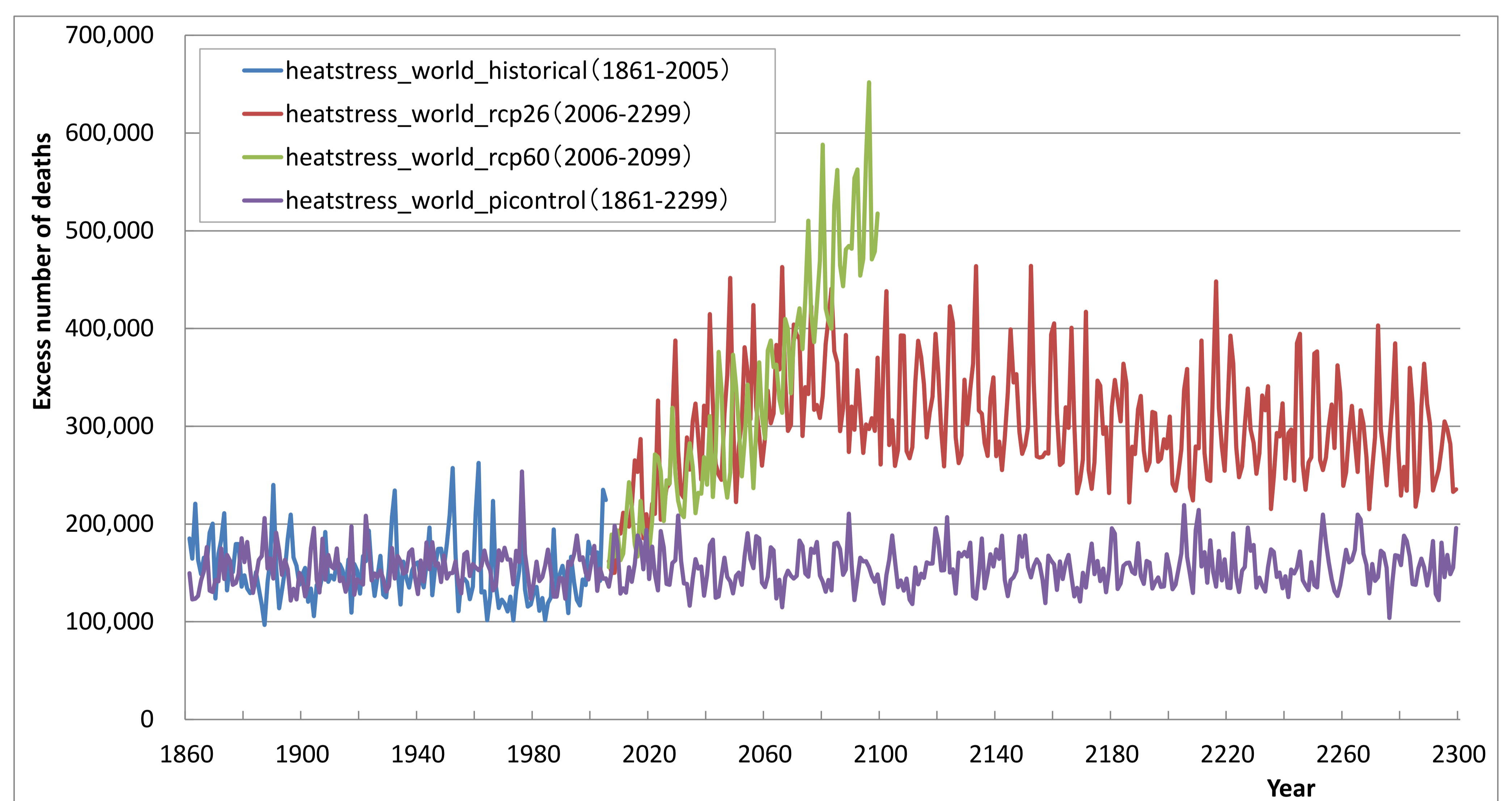


Figure 2. Projection of heat related mortality (Socio-economic status fixed).

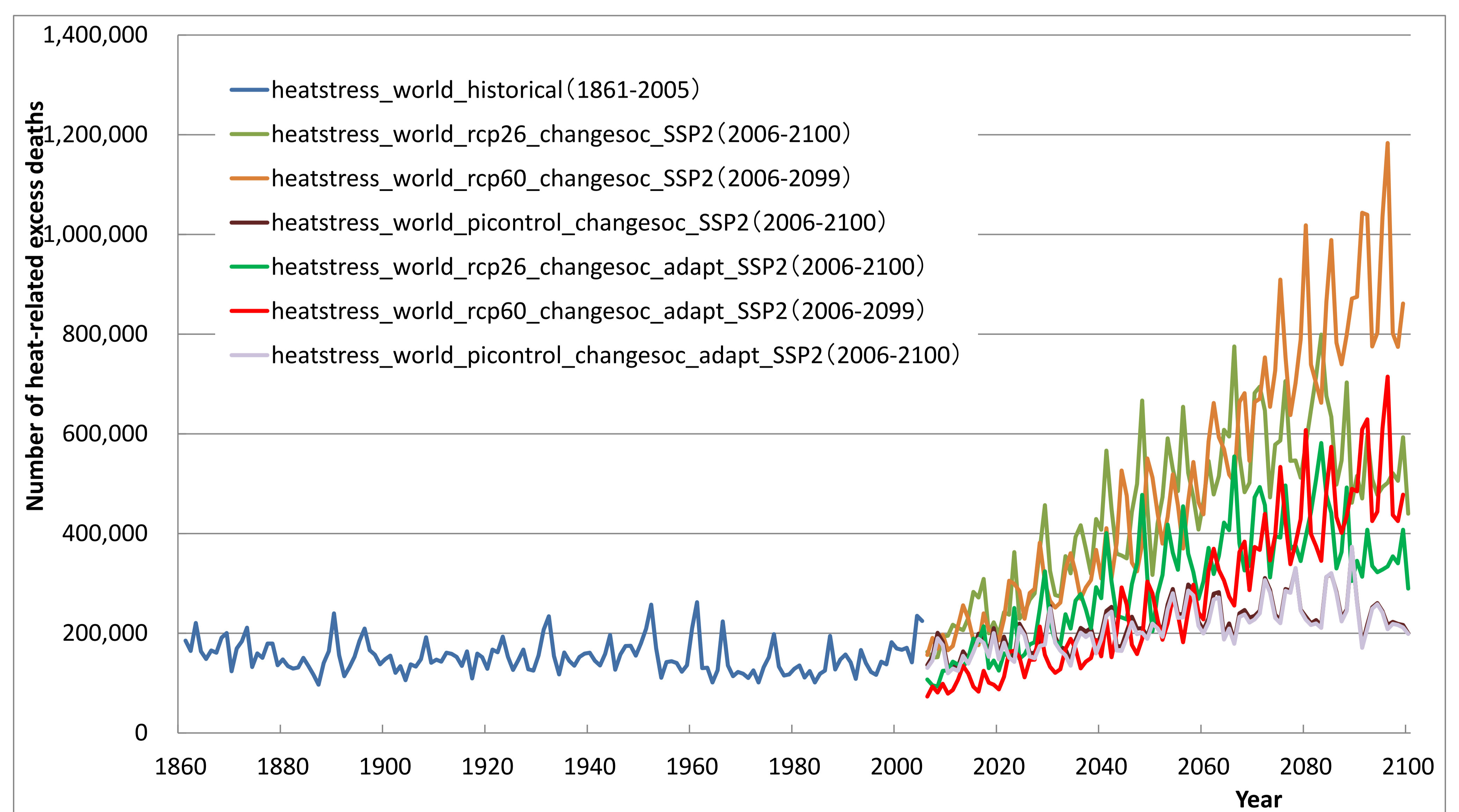


Figure 3. Projection of heat-related excess mortality (SSP2).