



← Figure 1. Simulated monthly mean spatial distributions of (a) the number of Mousho-bi days (daily maximum air temperature, AT, $\geq 35\text{ }^{\circ}\text{C}$), (b) the number of danger Heat Index (HI) days (daily maximum HI $\geq 41\text{ }^{\circ}\text{C}$), (c) daytime AT (1400 JST), and (d) daytime HI (1400 JST), all for August 2007 in western Japan. Regions of A–E in (b) indicate those of especially high HI: region A, the Osaka Plain; B, the Tokushima Plain; C, the Okayama Plain; D, the Sanuki Plain; and E, the Nakatsu Plain.

- From numerical simulations (Fig. 1), we specified five regions, the Osaka, Tokushima, Okayama, Sanuki, and Nakatsu Plains, where undesirably high daytime Heat Index (HI) with a “danger” HI rank of above $41\text{ }^{\circ}\text{C}$ was found around the Seto Inland Sea in western Japan in August 2007. However, simulated Mousho-bi days, having a daily maximum air temperature (AT) of $35\text{ }^{\circ}\text{C}$ or more, appeared most frequently on the Osaka Plain.
- Daytime differences between HI and AT were large on all the aforementioned plains except the Osaka Plain; those showed differences of $5\text{--}7\text{ }^{\circ}\text{C}$ in our simulation. The difference between HI and AT was caused by the different relative humidity in regions.
- Sensitivity experiments revealed that mountains and SST increased the daytime HI in some regions through thermal effects induced by valley-like terrain and warm and moist air transports from the sea, respectively. These were related to the development of daytime sea breezes or valley winds attributable to topographic sources. From the experimental results, increases of $1\text{--}2\text{ }^{\circ}\text{C}$ in HI were confirmed in the aforementioned four regions except the Osaka Plain.