Effect of Mountain Breeze on Urban Heat Island in Nagano, Japan

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Nocturnal mountain breeze appears in Nagano City, a typical basin-bottom city like Stuttgart in Germany, and it invades to central part of the urbanized area. In meteorological conditions which mountain breeze appears, urban heat island would also appear and thermal mitigation of urban heat island by mountain breeze as a relative cooler air flow is expected. In this study, features of the mountain breeze in Nagano is clarified by meteorological observations and its thermal mitigation probability on urban heat island, namely, an availability as urban ventilation lanes is discussed.

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(1) Vertical wind profile at city center of Nagano
(2) Vertical profile of temperature at (a) inside and (b) outside of mountain breeze area
(Early morning of 25th April, 2004)