

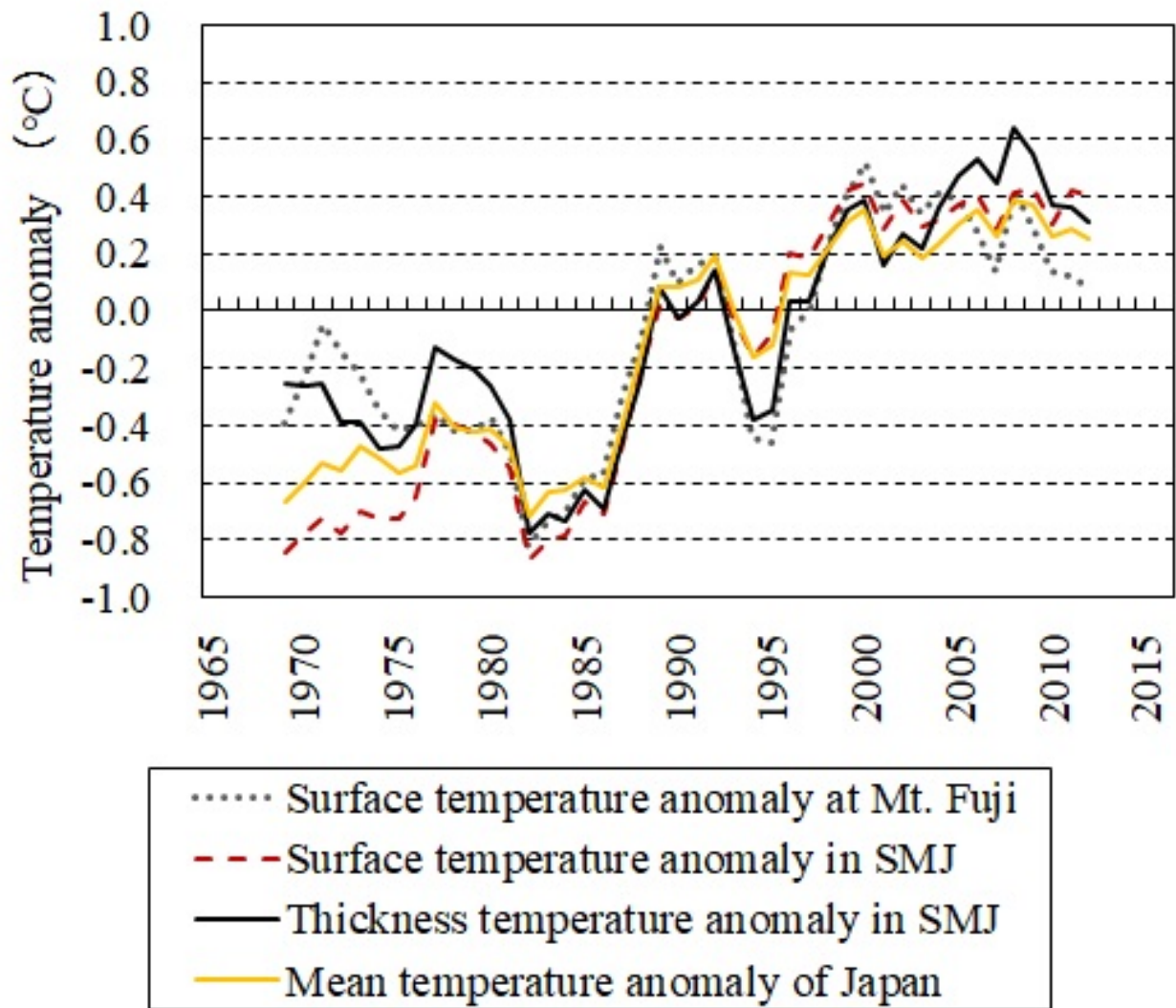
# Temperature trends from thickness, surface, and radiosonde observations at Mt. Fuji observatory and surrounding sites in the south-part of middle Japan, during 1965-2016.

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By the global warming, the temperature increase in the troposphere has attracted attention as well as that at the surface. From the studies so far, the features of temperature trends at the surface and in the troposphere are appeared to be different between those from the model simulations and the observations by the surface, radiosondes, and satellite measurements. Since temperature measurements might include several errors such as uncertainty of measurement precision and calibration, change of environments, and uneven locations of network station, these influences on temperature trend have not yet been clear. In the present paper, the thickness-temperature trend in the south of middle of Japan (SMJ), used the long-term pressure measurements (1965-2016) at the summit of Mount Fuji (3776m a.s.l.) and surrounded meteorological sites located in the SMJ, is compared with those of the surface temperature around there and the temperature at 700 hPa level by radiosonde over the nearest aerological site. It is found that the temperature at constant pressure level by radiosonde is not appropriate for detecting the long-term trend because of the rises of observation altitudes by the atmospheric warming. While both the thickness temperature and the surface temperatures have increased in the SMJ, the magnitudes of their trends have reversed between those of the whole period (1965-2016) and after 1985.

Keywords: temperature trend, troposphere, thickness temperature, surface temperature



Annual courses of 9-year running-mean temperature