

Estimated changes in daily and climatological mean temperature in highland region of South Asia by increasing observational data input

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A daily mean gridded temperature dataset of monsoon Asia (15S-55N, 60E-150E) for the period of 1961-2007 is created and open to public (Yasutomi et al., 2011) as a part of APHRDITE project (Yatagai et al., 2012).

The number of stations used the interpolation analysis is up to 2 times the number of stations based on the Global Telecommunication System (GTS), which have been used to obtain other gridded temperature products. We obtained daily surface observation in collaboration with the local agency. Comparison between monthly mean temperature datasets (CRU_TS3.2 and Univ. of Delaware) and APHRDITE daily mean temperature dataset (AphroTemp V1801) is made to estimate the effect of the increase of surface observation input.

V1801 includes more data collection from Bhutan, Thailand, Myanmar, Mongolia, China and India than current version (AphroTempV1204R1).

In comparison with CRU_TS3.2 and UDel4.1, significant difference is not shown over coastal and plain region over Monsoon Asia. However, differences of 2-5 degC are shown in mountainous region of Tibetan Plateau and Central Asia. Those differences are more dominant in winter than in summer. Increase of inputs in high altitudes contributes more on improvements in climatological mean temperature than plain or oceanic area.

As for data increase of India in V1801, extremely temperature rising by 10degC is found in Jammu and Kashmir in comparison with AphroTempV1201R1. Good estimation of the mean temperature of mountainous regions still depends on the in-situ observations.

Keywords: daily mean temperature, global warming, mountainous region