

Resumption of Indian Radiosonde Temperature Data Usage in the JMA Data Assimilation System

Hirokatsu Onoda

Numerical Prediction Division, Japan Meteorological Agency

1-3-4 Otemachi, Chiyoda-ku, Tokyo 100-8122, Japan

(E-mail: h.onoda@met.kishou.go.jp)

1. Abstract

At the Japan Meteorological Agency (JMA), temperature data from Indian radiosondes have been blacklisted for many years due to low data quality. However, sequential updates to this radiosonde equipment since around spring 2009 have resulted in improved data quality at stations using the updated instruments. With careful monitoring and evaluation, JMA has decided to restart the use of these data in its data assimilation system.

2. Details of removal from the blacklist

We have sequentially monitored the mean error (ME) and standard deviation (SD) of temperature calculated against the JMA Global Spectral Model to identify stations with improved temperature data quality. At the point of WMO station ID 43333, for example, Hovmöller improvements for the ME and SD of temperature were seen around March 2009 (Fig. 1). Although small errors remain in the upper air, these may be due to model error and can be tolerated. We also found other improved stations with levels of data quality acceptable for operational use. Some stations require temperature bias correction because their departures (observation minus first guess field) are still large for some altitudes. The magnitude of bias correction is estimated from statistics on departures for sufficient periods.

In November 2009, some of the improved stations were removed from the blacklist and their data were re-assimilated into the JMA system. Figure 2 shows a map indicating the current usage status of Indian radiosondes. The red points indicate usage, the green points show usage with bias correction, and the blue points show stations not yet used.

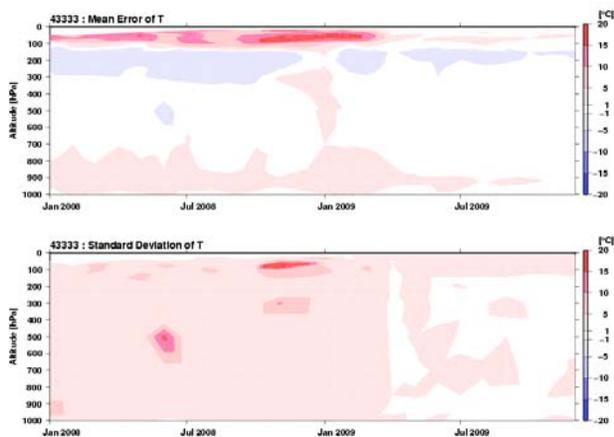


Fig. 1 Time sequences of ME and SD for temperature from January 2008 to December 2009 at station ID 43333 (11.7°N, 92.7°E)

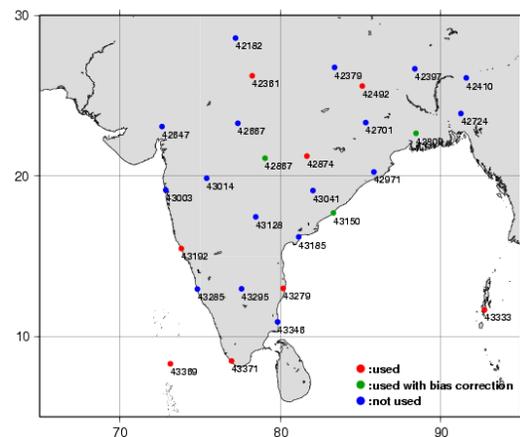


Fig. 2 Map showing current usage status of Indian radiosondes in the JMA data assimilation system