

CORRECTION

An update to the NWP-SAF 137-level profile dataset

Reima Eresmaa and Anthony P. McNally

European Centre for Medium-range Weather Forecasts
Shinfield Park, Reading, RG2 9AX, United Kingdom

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Summary

A number of corrupted elements have been discovered in the latest version of the ECMWF 137-level diverse profile database. The problem affects the temperature, cloud cover, rain, snow, and vertical velocity for a small number of profiles sampled from December 2013. Surface fields are not affected.

An update to the database is provided with corrected profile information. The small amount of corrupted data did not influence the profile selection or the overall statistical characteristics of the data. Thus no update of the user documentation is required and the previous version is still valid.

Description

The corruption data are illustrated in Fig. 1. Panel (a) shows the difference between 2-metre temperature and lowest model level temperature for all 25,000 profiles included in the database. The difference is mostly on the order of a few Kelvins or smaller, but there are five distinct ranges of profile index where the difference is inflated to the order of several tens of Kelvin. Each of these distinct index ranges is associated with one sampling subset (i.e., profile indices 1–5,000 are for cloud condensate subset, indices 5,001–10,000 are for ozone subset, and so on for humidity, precipitation, and temperature subsets). It is useful to note that, within each subset, profiles are ordered primarily according to ascending time stamp and secondarily according to ascending grid point index. The profile indices showing inflated temperature differences are found to correspond to December 2013 (while the full profile database covers the time period of 1st September 2013 – 31st August 2014).

Panel (a) highlights the inconsistency between 2-metre temperature and temperature profile information, but does not tell which one is incorrect. Panels (b) and (c), respectively, show distributions of 2-metre temperature and the lowest model level temperature as a function of latitude. Presence of low-level temperatures near 300 K at high latitudes make it clear that it is the profile information which is incorrect. Distribution of 2-metre temperature appears more reasonable.

All atmospheric and surface variables have been re-retrieved from the ECMWF meteorological archive for the appropriate forecasts in December 2013 and the profile database has been updated accordingly. Panel (d) of Fig. 1 is equivalent to panel (c) except that it corresponds to the corrected profile database. Comparing the initial release with the corrected database indicates that the data corruption has an effect on profile information of temperature, cloud cover, rain, snow, and vertical velocity. There is no effect on humidity, ozone, cloud liquid water and cloud ice water profiles or on any surface parameters.

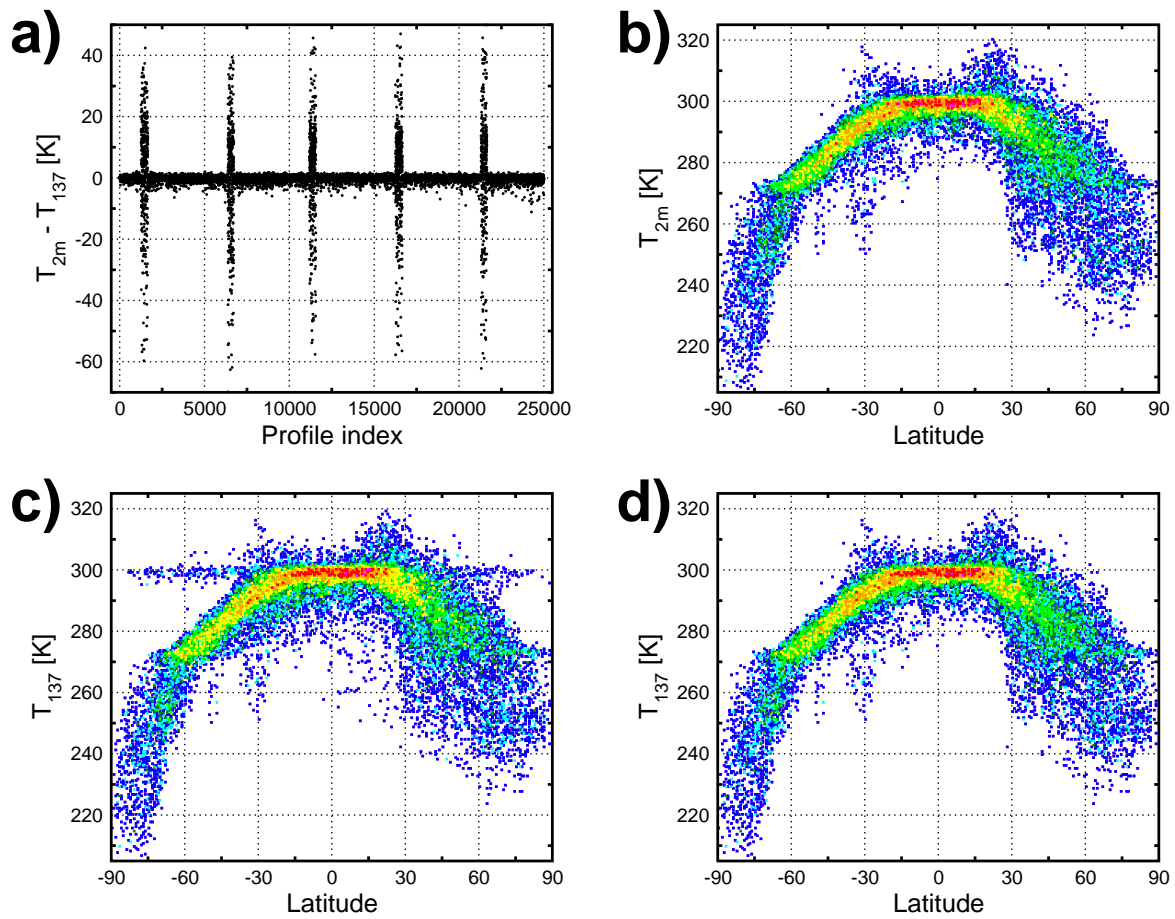


Figure 1: (a) Difference between 2-metre temperature and lowest model level temperature in the initial release of the database. (b) Distribution of 2-metre temperature as a function of latitude in the initial release. (c) Distribution of the lowest model level temperature in the initial release. (d) Distribution of the lowest model level temperature in the corrected release.