

IDENTIFICATION OF FORECAST BIAS AND OBSERVATION BIAS

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ABSTRACT

Known errors in observations ought to be corrected before the data is used in an assimilation. Every aspect of system performance will be improved thereby. Most operational analysis schemes assume that the background and the observations have no systematic errors, or at least that the systematic errors are much smaller than the random errors. Unfortunately, this is not always the case. This paper considers the problem of how to develop and maintain a set of bias corrections in an operational environment.

Bias is a particular feature of radiosonde height data. We discuss several methods for identifying radiosonde height bias. We suggest that the most effective means for improving the quality of radiosonde data is a program of data monitoring by forecast centres to identify randomly distributed biases between stations, combined with a program of WMO sonde intercomparisons to identify biases between widely used sondes from large homogeneous networks.

As demonstrated at this workshop, radiosonde data can provide striking measurements of tidal effects. This information is of considerable potential value to researchers on NWP, as well as to researchers concerned with separating a true diurnal effect from radiation errors on sondes. We propose a new method to determine the climatology of the tides on a seasonally varying basis. Such a determination would enable one to separate sonde bias from a tidal signal. It would permit NWP centres to monitor any drift away from the intercomparison results, and so signal a need for a new intercomparison exercise.

The full text of this paper will appear as an ECMWF Technical Memorandum in due course.