Introduction

Diagnosis of data assimilation systems is important for a variety of reasons. It is needed on a routine basis to assess the performance of both the observing system and the data assimilation system in operational numerical weather prediction centres. Effective diagnostic tools are particularly needed for:

- automated observation bias monitoring, for purposes of blacklisting, bias correction and feedback of information to data producers;

- determination of model error, especially in the context of 4D-Var and the simplified Kalman filter;

- determination of representativeness errors, notably for dense observations such as AIREPs and for complex observation operators.

More generally, it is important to provide guidelines for the setting of research priorities, and to properly assess all proposed modifications of the assimilation system. At ECMWF, the recent major change to the background error formulation and the introduction of 4D-Var in 1997 make this a good time to have a debate on these issues.

The workshop followed the usual format of invited lectures and discussions in working groups and concluded with a plenary session. Groups were set up to consider the issues of tuning of an assimilation system, quality control and use of observations, and interactions between modelling and data assimilation; the discussions and recommendations of these groups are summarized in the following three reports. This time, in order to speed up the production of the workshop proceedings, the invited lecturers were requested to provide short abstracts, which are presented in this volume.

ECMWF thanks all the participants for contributing to a successful and stimulating workshop.