

## INTRODUCTION

Every September, ECMWF organizes a seminar to discuss progress in a selected topic related to numerical weather prediction (NWP). It forms part of the Centre's educational programme and is aimed mainly at young post-graduate / post-doctorate scientists in ECMWF member states.

In 1993, the seminar was on the subject of developments in the use of satellite data in NWP, and it was co-sponsored by EUMETSAT. It covered developments over the last five years in the use of satellite data for both data assimilation and model validation.

Accounts were presented of recent developments in data assimilation methods which have opened up new opportunities for more effective exploitation of satellite data. Details were presented of schemes for improved assimilation of TOVS radiances data, of cloud-tracked winds, of SSM/I data, of wind and wave information from ERS-1, and of information contained in satellite imagery. Satellite data from several sources are being used to investigate weaknesses in the formulation of models used for NWP and climate research. Examples of this work were presented and remaining challenges in this field were discussed.

The seminar demonstrated that considerable progress had been made in these areas since our last seminar on a similar topic in 1988. We are grateful to the lecturers for their stimulating verbal presentations, and for the texts presented here. We thank also the students for their lively contributions to the formal and informal discussions, which were essential to the success of the seminar.