SESSION VI

NEW DEVELOPMENTS AND APPLICATIONS

Chairperson: Xu Jianmin

The sixth session presented seven papers. Research and development activities on more dense, more accurate data with wind information, their assimilation and applications were addressed.

J. Purdom addressed opportunities for improving our ability to define the atmosphere's wind fields using both polar and geostationary satellites. Those opportunities include optimum frequent and targeted observations from GOES, stereographic height assignment with both geostationary and polar satellites, and atmospheric thermodynamic fields from AMSU. Suggestions of how to merge those data, independent of data from other observing systems, and how to define a consistent dynamic state of the atmosphere were discussed.

G. Campbell demonstrated the technique of asynchronous stereo height and motion analysis with slowly changing cirrus clouds. This technique uses several observations in time and from more than one viewpoint to derive both height and motion of clouds. With 1 km resolution geosynchronous data, height accuracy is better than 1 km. Useful results have been obtained from 4 km resolution infrared data.

M. Rattenborg provided information of METEOSAT-5 at 63°E to support INDOEX field experiment.

A future product on high resolution visible winds from MSG for nowcasting and other applications was presented by J. Fernandez. This product has been defined and planned taking into account: the characteristics of these data and their possibilities and limitations; the requirements for parameters describing the dynamics including a dependence on the conditions or the location; the experience and current procedures related to both operational and experimental Atmospheric Motion Vector schemes at different centres. Elements of the product definition, work status and plans were shown.

G. Dew discussed the technique aimed at improving computation efficiency of cross-correlation in the Fourier domain. The results show that the performance can be optimised by careful selection of template and target sizes. Calculation results based on the traditional technique and those with fast mixed-radix FT were compared.

R. Munro described the results of initial assimilation experiments carried out to assess the importance of direct assimilation of geostationary radiance data within the ECMWF 4 DVAR assimilation system. Direct assimilation of radiance data within an NWP system can provide information for the correction of model temperature, humidity and ozone fields. By taking advantage of the high temporal resolution of such data sets, there is the possibility to correct not only the model variables, but also the model motion fields.

J. Scheiber demonstrated a software package for nowcasting applications. With a sequence of weather satellite images, it computes the following real-time information and products; Quality controlled cloud motion fields; Forecasted satellite images for the next 2-4 hours; Smooth and accurate weather animation movies based on cloud movement analysis; Automatic indicators for cloud development derived by image change detection; Trajectories that predict the future movements of the latest satellite image.

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