SESSION III

Verification/Objective Quality Analysis

Chairperson: Masami Tokuno

Session three covered verification and objective quality analysis of Atmospheric Motion Vectors (AMVs).

The first presentation by Niels Bormann showed that flow-dependent systematic height assignment errors and the treatment of AMVs as single-level data contribute to slow speed biases at high levels in the extra-tropics for EUMETSAT AMVs. He identified that speed biases and NRMSVDs can be significantly improved through a statistical height reassignment scheme and a revised observation operator. He stressed that winds producers should be encouraged to identify and correct sources of biases in the processing as far as possible without using forecast data.

Ken Holmlund presented a scheme combined QI and RFF to drive AMVs and showed that the best vectors are generally those given the highest quality by RFF and QI schemes and give the biggest NWP impact. He appealed that further works are focused on error characterization, forecast independence, increase utilization and height assignment to be used RFF/QI more commonly in AMV schemes and to become a promising scheme to NWP.

Niels Bormann reported on the spatial structure of the error correlations for AMVs based on a one-year dataset of pairs of AMV /radiosonde collocations. He showed that AMVs have spatially corrected errors for distances up to about 800 km and the error correlations are similar for data from different satellites (producers), channels, vertical levels. The error correlations showed considerable anisotropy and the spatially correlated AMV component error is about 2.8 – 3.3 m /s for high level winds. It was highlighted that such error correlations have a number of implications for the assimilation of AMVs, as such error correlations are usually neglected in assimilation systems.

J Le Marshall presented high-density atmospheric motion vectors and their application to operational NWP in BoM. He showed that AMVs at intervals of 30 or 60 minutes throughout the day are significantly useful to improve Operational Regional NWP. He also showed that these AMVs have the potential to significantly improve TC forecasting. He emphasized that the GIFTS on EOS will provide a unique opportunity for improved AMVs with abundant improvement in NWP.

Réal Sarrazin reported that modifications to the CMC 3D-Var-analysis program and to the number and type of assimilated observations became operational in the CMC system on 11 December 2001. The modifications improved slightly the quality of the forecast system and the influence of this type of observation is relatively modest in the CMC forecast system, except for the wind field in the Tropics where the improvement in the quality of the forecasts is more significant. The results also indicated that further tuning might be needed.

Munmun Das Gupta presented impact of high-resolution atmospheric motion vectors in NCMRWF global data assimilation forecast system. She showed the coverage of Meteosat-5 winds is able to fill the data gap over Indian ocean and the effectiveness of high density satellite winds for improving the representation of the features of monsoon flow, e.g. depth of monsoon and low level Jet etc. She also showed that positive impact of assimilating of these winds on precipitation forecast over Indian subcontinent.

The final presentation by Pauline Butterworth presented improvements in forecasts at the UK Met Office through reduced weighs for satellite winds. She showed an improvement in the accuracy of the forecast by setting observation errors to be double those normally used. She also showed the results of other satellite wind trials, in which GOES WV winds are added in processing and METEOSAT SATOBs are replaced with BUFR-coded winds; these give a neutral and a small improvement on NWP forecasts, respectively, although further impact trials are required.

Masami Tokuno, Chairperson of Session III
Japan Meteorological Agency, Tokyo