

SESSION II

ASSIMILATION AND IMPACT OF ATMOSPHERIC MOTION VECTORS (AMVs) IN NUMERICAL WEATHER PREDICTION (NWP)

Chairperson: HansPeter Roesli

The second session on assimilation and impact of AMVs in NWP focused on recent evaluation studies using operational numerical forecasts in different regions world-wide. From the USA Paul Menzel presented results of a case study into the sensitivity of the Eta data assimilation system (EDAS) to radiosonde observations, wind estimates from ACARS (Aircraft Communications Addressing and Reporting System), GOES cloud drift winds, and GOES water vapour motions. While radiosonde information was very important, observations of water vapour winds were also found to have significant impact on the 48-hour Eta forecast of 500-hPa geopotential heights. Luiz Machado of Brazil outlined their NWP activities using winds and trajectories inferred from GOES. It was noted that southern hemisphere wind information is sparse and opportunities for nowcasting impact remain, in particular when tracking convective systems over South America. John Le Marshall presented impressive results for tropical cyclone applications over the Australian region, using hourly GMS-5 winds in their high-resolution (15km) 4D-VAR assimilation system. 72-hour trajectory forecast errors have been reduced to about 120km (down from 360km five years ago). In addition it was found that winds derived from scatterometer data were important to pin initial tropical storm positions in the numerical forecast model. Per Kallberg from ECMWF presented results of their 15-year re-analysis (ERA15). The quality of the AMVs increased considerably from 1979 to 1993. To expand the benefit of satellite data, it is proposed that available satellite data from archives be re-processed with current AMV algorithms (EUMETSAT is proceeding with plans to do this). The new re-analysis (ERA40) will use 3D-VAR approaches with 6-hourly cycling. A second ECMWF contribution by Graeme Kelly noted the difficulty of interpreting clear-sky water vapour winds. The volumetric nature of this information is being studied in 4DVAR simulations.

Session II ended with two shorter ad hoc contributions. Masami Tokuno illustrated the impact of a revised scheme for the comparison of CMVs with radiosonde observations. Don Hinsman and Jim Purdom reported on recent satellite training activities using virtual teaching techniques.

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