SESSION I

CURRENT SYSTEMS TO DERIVE ATMOSPHERIC MOTION VECTORS (AMVs)

Chairperson: Donald Hinsman

Session I contained seven presentations, which described the status of systems, used in the production of Atmospheric Motion Vectors (AMVs). Each of the major production centres described present and future plans. A common thread in many of the presentations was the emerging production of high-density winds. The use of high density winds and improvements in quality control procedures portend a major impact at the numerical weather prediction centres where preliminary tests already indicate improvements in forecast skill.

NESDIS presented two papers (J.M. Daniels and R.J. Walter) showing the advantage of recent advances to global and regional numerical models to ingest high quality cloud motion winds at significantly increased spatial and temporal resolution. With the availability of increased computer resources, NESDIS has been able to achieve a ten-fold increase in the yield of wind vectors which were generated every three hours. The new operational process is fully automated. The Cooperative Institute for Meteorological Satellite Studies (CIMSS, C. Velden) has recently developed a cirrus check to improve the water vapour wind height assignment method. Additionally, diagnostic winds such as wind shear and upper level divergence are routinely derived from multi-spectral wind fields. Positive impact (10%) of high density winds in 72 hour forecast of hurricane trajectories was demonstrated. A paper by J. Xu of the People's Republic of China extensively analyzed cloud motion winds produced with data from its FY-2 geostationary satellite and Japan's GMS-5. Through comparisons of correlations between IR and WV measurements in tracer regions, improved discrimination of high and low cloud tracers has produced more AMVs in light cloud regions. M. Rattenborg of EUMETSAT described the current operational wind products derived from 5 km resolution imagery in all three Meteosat channels as well as the High-Resolution Visible winds (HRV) derived from full 2.5 km resolution visible images. Winds from the operation of M-5 over the Indian Ocean since July 1998 were presented. The relationships between the present system and that being developed for products from the new Meteosat Second Generation (MSG) satellites were discussed. Additionally, EUMETSAT (S. Elliott) described the advantages of a new "unified" BUFR wind template that would include quality control information. The Japan Meteorological Agency (M. Tokuno) evaluated the extraction of high-density wind vectors once a day with an improved height assignment method. The number of AMVs for cloud motion vectors were doubled (quadrupled for water vapour) above the current system. The new height assignment method discriminates cloudy and clear sky segments by a threshold brightness temperature in the water vapour channel.

Donald Hinsman, Chairperson of Session I
WMO, Geneva