SESSION II

UTILIZATION OF SATELLITE-TRACKED WINDS

Chairperson: Donald Hinsman

Session II heard presentations on the utilization of satellite-tracked winds. The presentations focused on two areas: methods for assimilation of wind data and the impact of satellite-derived winds. The session was fortunate in that two keynote papers were given.

First, C. Velden discussed the positive impact of satellite-derived winds during the 1995 hurricane season. He stressed that data application and processing strategies should take into account the increased resolution and accuracy of present forecast models. He demonstrated that with optimized processing strategies and high-density satellite wind data sets very positive impacts on hurricane track and intensity forecasts could be realized. Secondly, J. Purdom vividly demonstrated the advantages of high-temporal imagery (one and three minute) and the associated potential to increase and improve cloud drift winds. He highlighted the need to address adaptive observing strategies since such scenarios could be possible by the turn of the century. He also discussed the potential of a virtual laboratory whereby researchers and educators could share data and training experiences on a near-real-time basis.

T. Kunhikrishnan discussed theoretical aspects of non-linear objective analysis of wind field for NWP models. In applying his scheme for the August 1988 Monsoon over India, he demonstrated that the primary circulation features and the centre of depression were fairly well represented. He noted the potential to improve the forecast in the tropics. The next presentation by G. Kelly complemented T. Kunhikrishnan's work in that it briefly described the variational analysis at ECMWF. He noted that variational analysis offers a simple way to utilize the volume information from cloud track winds. He then demonstrated results of experiments from ECMWF s 3D-VAR system.

The next two presentations focused on the impact of satellite winds to the operational forecaster. J. M. Serdan briefed the workshop on the use of satellite winds calculated at the Instituto Nacional de Meteorologia (INM). He noted that INM is extracting winds from METEOSAT loops. He showed that by combining the various data sets available a forecaster could have a better 4-dimensional picture of the atmosphere. G. Gitonga from the Kenyan Meteorological Department discussed the impact of satellite-derived winds on weather forecasting in Africa. She demonstrated how the inclusion of high-density multi-spectral satellite-derived winds has the potential to improve weather forecasting in Africa.

The last presentation in the session by M. Tomassini covered assimilation experiments with low level cloud motion winds at ECMWF. She showed that all the low level cloud motion vectors have a substantial positive impact on the short-range forecast of the circulation over the

tropical and southern oceans and a positive impact in the global medium range forecast of the Southern Hemisphere. She also used scatterometer winds from ERS-1 as a reference for surface wind data.

In summary, the ability of present NWP models to accept high volume and detailed wind data is robust and the resulting forecasts consistently demonstrate positive impact. Furthermore, operational forecasters equipped with current technology workstations can also assimilate wind data in developing their forecasts. Equipped with such technology, improved forecast skill can be achieved.

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