SESSION 2

WIND TRACKING FROM ABSORPTION CHANNEL DATA

Chairperson: Johannes Schmetz

This session focussed on the derivation of wind fields from images in the highly absorbing water vapour (WV) band around 6.3 *μm.*

The keynote paper by K. Holmlund reported on the WV wind extraction that is in quasi-operational use at the European Space Operations Centre (ESOC) since Summer 1992. After a test period of more than one year, the WV wind product is available as an experimental product on GTS four times per day since 3 November 1993. The product is confined to high level winds (< 400 hPa) and it is primarily based on the tracking of cloudy/moist features. The second part of the talk described a new real-time system for the derivation of hourly WV winds including an automatic scheme for assigning quality flags to each wind vector.

R.W. Lunnon presented innovative work on WV winds from synthesized fields of atmosperic temperature, humidity and wind profiles. The satellite observed radiances were simulated with a radiation code as a function of space and time. Displacement (apparent wind velocity) was obtained with a pattern tracking algorithm. The study proved that in cloud free areas the displacement corresponds to a weighted mean wind.

In preparation for the GMS-5 satellite, which will be equipped with a WV channel, H. Uchida developed a new WV wind extraction scheme on the basis of Meteosat data. The study presented novel ideas for the target selection and height allocation. A comparison with collocated IR winds showed good agreement.

The final paper by C. Velden demonstrated the usefulness of clear-sky WV winds for the NMC forecast. Over data void areas the WV winds outperformed the NMC forecast in comparison with radiosonde winds from island stations. WV winds proved especially useful for hurricane forecasting. An interesting aspect of C. Velden's talk was the use of both GOES-7 and Meteosat-3 images, which clearly illustrated the importance of the better spatial resolution and signal-to-noise performance of the Meteosat WV channel.

The short session can be concluded with the following remarks:

- WV winds seem to be superior to the IR channel winds for the tracking of high level cloud features due to the higher sensitivity to tenuous cloud/moisture.

- This may lead to a change of the previous concept where the winds from the WV channel were mainly considered as gap fillers for the IR winds in cloud free regions.

- The WV channel provides useful results in clear areas. The difficulty in assigning an adequate height to a displacement vector will be alleviated since numerical models will, in the foreseeable future, be able to use such wind data as deep layer means.

- The advent of Japanese and Chinese geostationary satellites with WV channels provides scope for a large degree of commonality in the high level winds from different producers, which would be beneficial to the users of global wind data.

- Progress has been made toward a continuous (i.e. hourly) extraction of WV wind data as the required computing power becomes availabale in a cost-efficient manner on workstations.

Johannes Schmetz, Chairperson of Session 2
ESA/ESOC, Darmstadt