SESSION V

NEW TECHNIQUES

Chairperson: Jianmin Xu

In Session V, 4 papers were presented.

The paper “Polar Orbiter: stereo heights and cloud motions” presented by Garrett Campbell showed that multiple satellites are needed to measure motion with some uncertainty due to undetermined cloud height. But one multiple view satellite and an additional satellite provide enough information to derive both height and motion. This was demonstrated with data from POLDER and GOES. However the 6-km resolution of POLDER limits the accuracy. Comparison was also made to the differential Oxygen height estimate method.

The paper “On the use of rapid scan” by Joe Schmetz provided a summary of previous work of rapid scan including preliminary results from Meteosat-6 rapid scans and the perspectives for Meteosat Second Generation (MSG). MSG will have a full disk repeat cycle of 15 minutes and a twelve-channel imager, which provide new opportunities to observe the fast component of the hydrological cycle (cloud formation, convection, water vapor outflow). Results from other papers were confirmed; the rapid scans from Meteosat-6 provided more continue wind fields and more numerous wind vectors. The computation of divergence fields from these wind fields is feasible.

The paper “Investigation of cross-correlation and Euclidean distance target matching techniques in the Meteorological Product Extraction Facility (MPEF) environment” presented by Ken Holmlund provided further results of a comparison of both spatial and Fourier techniques undertaken in the MPEF environment. Significant performance benefits were achieved by computing the Fourier domain cross-correlation using Mixed Radix Fast Fourier Transform (FFT) with specific optimal data sizes. The paper also compared the displacement vectors derived by spatial and Fourier techniques. It was indicated that in low contrast regions maximum discrepancy was observed between the two techniques.

The paper “Tracking low level clouds over land on Meteosat images” by André Szantai described a reliable cloud motion wind tracking task. It was concluded that a limited number of low level cloud motion winds could be computed over land with standard time interval of 30 min. The selection can be improved with the use of climatological thresholds. An important increase of the number of CMWs is observed over land in the tropics when the time interval between images is reduced to 15 min. The use of the IR/WV correlation and the IR brightness temperature of the coldest pixels lead to similar selection of low level CMWs. CMW fields computed with a solar correction are very close to those computed without it. The method based on optical flow techniques gives a realistic motion in some areas.

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