

## SESSION V

### Microwave / Lidar Studies

*Chairperson: Ramesh C. Bhatia*

There were in all eight presentations during this session which covered developmental status of Lidar and related studies as well as utilization of active and Passive Microwave Remote Sensing data for a few applications. Jochan Horstmann presented an algorithm designed to retrieve high resolution wind fields from C-band SAR operating at both V and H polarizations. It is basically a modification of the model developed originally for ERS-1 and 2 Scatterometers. Comparison of SAR derived winds with co-located ERS winds shows very good agreement. Error sources in SAR wind retrievals are also discussed. Dr. A.F. Nerushev proposed a new method for determining the most important structural parameters of Tropical cyclones using the data of Microwave Soundings that makes possible to retrieve a smoothed spatial distribution of the sea surface wind velocity right from center to periphery of the cyclone. Some typical examples were also shown. Mr. Roy Bhowmik from India showed the impact of MSMR derived surface wind speed on the analysis and forecast of the operational model of IMD. Wind directions computed from the routine model analysis field are used to derive U and V components from the MSMR surface wind speed. Results of impact studies were presented showing positive impact.

Ad Stoffelen of KNMI presented results of a scheme developed for assimilation of Scatterometer data in NWP. It was shown that the resulting product is also useful for nowcasting purposes. The developmental work on this product was very well brought out during the presentation. Dr. Jeffrey Hawkins of NRL, USA presented results of research on wind remote sensing and utilization of wind data. Use of both active and passive microwave remote sensors was shown to map ocean surface winds. Particularly Scatterometer winds were shown to be extremely useful for Navy nowcasting applications. These data when used in conjunction with geostationary cloud and water vapour tracked winds assist in mapping the 3-D wind field. A CIMSS geo-wind algorithm is run to produce high density GMS-5 winds.

Paul Ingmann from ESA presented the status of development of the Doppler wind Lidar Profiling mission ADM-AEOLUS scheduled for launch in 2006/7 time frame. Results of various science activities in support of this mission were also presented. It was also shown that the mission has potential to provide as by products, ancillary information on cloud top heights vertical distribution of clouds, aerosol properties and wind variability. On the same subject of wind Lidar Dr. Ad Stoffelen brought out certain problems in accurate wind retrievals and focused on the possible ways to develop the anticipated QC schemes. He brought out the important point that if these problems are not properly addressed, there could be a negative impact in areas with extensive cloud cover. Prof. Robert Atlas in his presentation brought out the importance of global wind profiles for a wide range of meteorological applications. He stressed the importance of satellite Lidar winds to improve atmospheric analysis and forecasts based on results from experiments conducted at DAO and demonstrated from a practical forecasting problem, how Lidar winds could have improved a crucial forecast.

During all presentations a number of technical classifications/questions were asked by the learned participants which made the session very interactive and useful. Lot of useful ideas were exchanged.

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