JAMES W. WILSON

Senior Scientist

Earth Observing Laboratory and Research Applications Laboratory

National Center for Atmospheric Research, Boulder CO.

Education

M.S. Meteorology 1961 University of Washington

B.S. Physics 1959 University of North Carolina

Professional Appointments

1991-present Senior Scientist NCAR/EOL/RAL

1980-1991 Scientist III NCAR/ATD

1978-1980 Scientist II NCAR/ATD

1976-1977 Visiting Scientist, NCAR/ATD

1961-1977 Research Scientist, Center for the Environment and Man and Travelers

 Research Center, Hartford Conn.

1960-1961 Research Staff University of Washington

1959-1961 Student Meteorologist (summers) U.S. Weather Bureau

Professional Societies

 American Meteorological Society

 American Geophysical Society

Professional Accomplishments

Wilson has been conducting research with weather radars for 50 years. He is internationally recog­nized as a leader in nowcasting and the use of Doppler radar to investigate mesoscale phenomena and into its use for operational weather forecasting. He was one of the first scientists to conduct research into the structure and evolution of microbursts and played an early role in developing and testing Doppler radar technology for operational detection and warning of hazardous wind shear events affecting aircraft operations. Partially based on this work a network of Doppler radars for wind shear detec­tion has been deployed by the FAA near airports.

Wilson has collaborated with several other scientists in demonstrating that the vorticity for non- super cell tornadoes originates in the boundary layer along convergence lines that undergoes rapid growth when the low level vortex is stretched by a locally strong updraft that is associated with a rapidly growing thunderstorm. This has stimulated research among other scientists that this mech­anism may often play an important role in the genesis of intense supercell tornadoes.

He advanced the concept of nowcasting thunderstorm initiation based on his original discovery that a large percentage of thunderstorms developed on radar detectable convergence lines in the clear air boundary layer. This work has stimulated a considerable amount of interest in other sci­entists that has resulted in a series of field programs and numerical modeling research to better under­stand the thunderstorm initiation process. He directed the Convective Weather Group in RAL for a number of years. Primary activities of this group are to develop and test in operational environments the very short-period forecasting of thunderstorms and quantitative precipitation.

Wilson has been active in transferring radar technology to the operational sector through lectures, papers, and experiments. He has trained forecasters at National Weather Service offices into the use of Dop­pler radar to forecast mesoscale phenomena. This work was a catalyst for stimulating COMET. He prepared for COMET the first video training module to be used by forecasters throughout the world and was a frequent lecture at COMET courses.

Wilson has worked very closely with a large number of scientists in his capacity as field project manager for radar deployments in ATD/EOL. The list of over 75 field projects includes nearly all the major convective-scale programs in the U.S. and a number of winter and international programs. He also played a major role in promoting the development of the NCAR S-Pol radar.

Among his most referenced work is the early work he did in the use of radar to estimate rainfall.

In recent years he has been very active in the transfer of radar and nowcasting technology trough software packages and training to Weather Services in Australia, Brazil, Turkey, Africa, S. Korea and China. He is an active member of the Nowcasting Working Group of the World Weather Research Program. That has conducted Forecast Demonstration Projects for both the Sydney and Beijing Olympic Games.

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Wilson was awarded the AMS 2003 Remote Sensing Lecture Award for his outstanding contribution and leadership in the applications of meteorological remote sensing. He was also selected to give the Royal Meteorological Society 2005 Symons Lecture. He was presented with the first NCAR mentoring award in 2004 and the 2010 Royal Meteorological Society Hugh Robert Mill award.

Wilson has written ~200 scientific articles, 85 of which are formal, refereed publications