

Dr. Alexander E. MacDonald

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EDUCATION

Ph.D. in Meteorology (Minor in Computer Science), University of Utah, 1975
Master of Science, Meteorology, University of Utah, 1973
Bachelor of Science, Mathematics/Physics, Montana State University, 1967
USAF Weather Course Certificate, Meteorology, St. Louis University, 1968

PROFESSIONAL EXPERIENCE

2006: Deputy Assistant Administrator, Laboratories and Cooperative Institutes, OAR
Director, Earth System Research Laboratory, NOAA
1988 - 2006: Director, Forecast Systems Laboratory, NOAA
1983 - 1988: Director of the Program for Regional Observing and Forecasting Services (PROFS),
Environmental Research Laboratories (ERL), NOAA
1980 -1982: Chief of PROFS, Exploratory Development Group, ERL, NOAA
1975 -1980: Techniques Improvement Meteorologist in the Scientific Services Division, Western
Region National Weather Service, NOAA in Salt Lake City
1967-1971: Air Force Officer of the U.S. Air Force

RECENT PUBLICATIONS

- J. L. Lee, W. C. Lee, and A. E. MacDonald 2006: *Estimating Vertical Velocity and Radial Flow From Doppler Radar Observations of Tropical Cyclones*. Royal Meteorological Society.
- Alexander E. MacDonald 2005: *A Global Profiling System for Improved Weather and Climate Prediction*. Bulletin of the American Meteorological Society.
- J.L. Lee, Y.-H Kuo and A. E. MacDonald 2003: *The vorticity method: Extension to mesoscale vertical velocity and validation for tropical storms*. Royal Meteorological Society 2003(129).
- Robert J. Serafin, Alexander E. MacDonald, and Robert L. Gall 2002: *Transition of Weather Research to Operations: How the National Weather Service can implement, in a timely and continual manner, the rapid technological advances in the computing and software arena*. Bulletin of the American Meteorological Society.
- Alexander E. MacDonald, Yuanfu Xie and Randolph Ware 2001: *Diagnosis of Three-Dimensional Water Vapor Using a GPS Network*, MONTHLY WEATHER REVIEW 2002(130).

- Alexander E. MacDonald 2001: *The Wild Card in the Climate Change Debate: The potential for abrupt, drastic climate changes in a regional scale is being underestimated by policymakers.* ISSUES IN SCIENCE AND TECHNOLOGY.
- A. E. MacDonald, J. L. Lee, and S. Sun 1999: *QNH: Design and Test of a Quasi-Nonhydrostatic Model for Mesoscale Weather Prediction.* MONTHLY WEATHER REVIEW 2000(128).
- A. E. MacDonald, J. L. Lee, and Y. Xie 1999: *The Use of Quasi-Nonhydrostatic Models for Mesoscale Weather Prediction.* J. Atmos. Sci. 2000(47).

CAREER HIGHLIGHTS

- Leader in the concept development of the use of Unmanned Aircraft Systems for use in weather and climate prediction.
- Developed a new and unique mesoscale weather prediction model named QNH (for quasi-nonhydrostatic).
- Worked in the White House with Vice President Al Gore to start the GLOBE program, awarded the Distinguished Presidential Rank Award.
- Received the Department of Commerce Gold Medal Award for his role in the development of the National Weather Service AWIPS (Advanced Weather Interactive Processing System) model.
- Lead Forecast Systems Laboratory in parallel computing which resulted in the development, installation and operation of a High-Performance Computing System (HPCS) named JET.
- Created Science on a Sphere™ which is a multimedia system that uses high-speed computers, advanced imaging techniques, and strategically placed projectors to display full color animated images of satellite, geophysical and astronomical data on a sphere.
- Developed the concept of diagnosis of three-dimensional water vapor using a GPS (Global Positioning System).