RONALD J. THOMAS

Associate Professor, Department of Electrical Engineering
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Education

Ph.D. in E.E. (Atmospheric Physics), Utah State University 1970.
M.S. in Physics, Utah State University 1968.
B.S. in E.E., New Mexico State University 1966.

Research and Academic Positions

Associate Professor, Department of Electrical Engineering, New Mexico Tech, 1989-present.
Adjunct Faculty, Department of Physics, New Mexico Tech, 1990-present.
Research Associate, Laboratory for Atmospheric and Space Physics, U. of Colorado, 1973-1989.
Lecturer, Astrophysical, Planetary, and Atmospheric Sciences, U. of Colorado, 1973-1989.
Research Associate, University of Pittsburgh, 1970-1973.
Research Associate, Utah State University, 1970.

Research Related Experience

Co-Principal Investigator, Development of a Lightning Lidar System, 1994-present.
Principal Investigator, Algorithm development and modeling for ionospheric apps., 1991-present.
Co-Investigator, Nitrogen Dioxide from SME and SAGE, 1990-1994.
Co-Investigator, Mesosphere-Lower Thermosphere Explorer Satellite, 1988-1990.
Principal Investigator, Analysis of SME Airglows in the Upper Mesosphere, April 1986 - 1989.
Co-Investigator, Solar Mesosphere Explorer Satellite, 1979-1989.
Principal Investigator, Minor Neutral Species, April 1976 - 1983.
Principal Investigator, Atomic Oxygen and Airglow Rocket Experiment 31.005, July, 1977.
Co-Investigator, Nitric Oxide Rocket Experiment 18.167, December, 1974.
Co-Investigator, Ultraviolet Aeronomy Rocket Experiment 13.112, June, 1975.
Co-Investigator, Ultraviolet Aeronomy Rocket Experiment 18.155, December, 1975.

Professional Affiliations

American Geophysical Union
Institute of Electrical and Electronics Engineers
American Society for Engineering Education
Sigma Xi

Professional Activities

Member of Ozone Trends Panel working group on Ozone Retrieval Algorithms, 1987.
Referee for JRG, GRL, Annales Geophysicae, J Atmos and Terrestrial Physics, Applied Opt, and proposals for NASA and NSF.
Publications include 47 refereed papers and 59 presentations.
International collaboration with groups in Germany, France and Canada.

Research Interests

My major research interest has been related to the physics and chemistry of the earth's atmosphere, and have recently expanded from the middle and upper atmosphere to include lightning and thunderstorms. This began as an undergraduate employee of New Mexico State University's Physical Science Laboratory providing Doppler tracking of rockets and satellites. As a thesis project, I developed a sensor to measure atomic oxygen in the lower thermosphere, using thin silver film, that was launched on a small rocket. At the University of Pittsburgh, my research turned to analysis of OGO-6 thermospheric atomic oxygen airglow. My research at the University of Colorado continued with rocket measurements of nitric oxide, atomic oxygen and related airglows. The later measurements greatly clarified the green line production mechanism. My activity then turned to the SME spacecraft experiments beginning with their conception and continuing through the design and calibration to final data analysis of ozone and oxygen airglows. Currently one side of my research concentrates complex data analysis methods to use measurements of optical emissions from the earth's ionosphere. A spacecraft will be soon launched to make these measurements and allow this effort to expand. The other side of my research, as part of a NM Tech team, is the very successful development a system to map lightning inside clouds and now to analyze and understand the data.