

CLINTON P. MACDONALD

Group Manager, Meteorological Measurements and Analysis



Educational Background

M.S., Atmospheric Science, University of California at Davis
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Professional Experience

Mr. MacDonald joined STI in 1996 and is the Manager of STI's Meteorological Measurements and Analysis Group. Mr. MacDonald's areas of expertise include meteorological and air quality analysis, air quality forecasting, diagnostic modeling, and the deployment, operations, and maintenance of radar wind profilers (RWPs), Radio Acoustic Sounding Systems (RASS), sodars, and surface meteorological stations.

Mr. MacDonald has published several journal articles on meteorological and air quality processes, co-authored the U.S. Environmental Protection Agency (EPA) guidance document on developing an air quality forecasting program, and authored many formal reports on air quality transport and dispersion. He developed and taught numerous courses including (1) U.S. Environmental Protection Agency's (EPA) 2002, 2003, and 2004 National Air Quality Forecasting Conference courses on air quality forecasting; (2) EPA-sponsored 2003 Regional PM Air Quality Forecasting workshops; and (3) the 2003 American Meteorological Society course entitled "Profiler Observations, Applications, and Analysis." In addition, Mr. MacDonald has held the position of adjunct professor of meteorology at Santa Rosa Junior College since 2005.

As part of his meteorological measurement work, Mr. MacDonald serves on the Application Advisory Group for STI's participation in a Cooperative Research and Development Agreement (CRADA) to commercialize the National Oceanic and Atmospheric Administration's (NOAA's) boundary layer RWP technology. His role in the CRADA is to identify new applications for RWP products and to design and oversee the creation of RWP application software. Recent meteorological experiments led by Mr. MacDonald include a study to measure the effects of air turbulence generated by gas-turbine power plants on aircraft and a study to evaluate the usefulness of a ceilometer to characterize atmospheric boundary layer processes. In addition, he recently led the deployment and operations of RWPs, a mini-sodar, and two surface meteorological stations for the Texas Air Quality Study II. He is currently the Principal Investigator of an RWP operations project for the South Coast Air Quality Management District and of an RWP and sodar measurements project for the Cleveland Multiple Air Pollution Study.

Mr. MacDonald has led and participated in many data analysis projects to understand meteorological and air quality processes. He is currently the project manager for the Air/Sea Interaction Study sponsored by the U.S. Department of the Interior's Minerals Management Service (MMS). He managed the 1998 MMS Atmospheric Boundary Layer Study in the Gulf of Mexico and is currently managing a similar study for MMS. As part of the 1998 project, he calculated, evaluated, and analyzed surface fluxes and scaling parameters using the latest techniques developed during the TOGA COARE experiments; characterized the atmospheric boundary layer (ABL); evaluated annual, seasonal, and diurnal variations in ABL structure; described processes that influence ABL structure and variations in the Gulf of Mexico; and developed a three-dimensional diagnostic wind field to perform transport and dispersion analyses. As part of the 1997 Southern California Ozone Study (SCOS) and the 2000-2001 California Regional PM₁₀/PM_{2.5} Air Quality Study, Mr. MacDonald led the production of hourly three-dimensional wind fields using the CALMET diagnostic wind model driven by RWP data. Mr. MacDonald has also performed a wide range of data analysis activities for other studies such as the 1996 and 1997 Paso del Norte Ozone Studies, the Kansas City Scoping Study, the San Antonio Ozone Study, the Northern Front Range Air Quality Study, the NARSTO-Northeast 1995 Study, the Integrated Monitoring Study in the San Joaquin Valley, California, and an ozone study for the state of North Carolina.