

Job Description

Job Title:	ACE Project Scientist
Department:	Chemistry
Reports To:	Chemistry Department Chair / ACE Mission Scientist
Jobs Reporting:	None
Salary Grade:	USG 13
Effective Date:	May 2022

Primary Purpose

The primary objective is to provide ACE atmospheric data products in a timely manner to hundreds of users around the world. Under the guidance of the Principal Investigator, the ACE Project Scientist is responsible for the scientific processing software for the Atmospheric Chemistry Experiment (ACE), which involves maintaining the current software suite for processing measurements from the high resolution Fourier transform spectrometer instrument on board the SCISAT satellite, along with developing upgrades to the processing software, improving the analysis for the set of atmospheric constituents currently reported by the mission, and generating analysis procedures for additional atmospheric constituents.

The ACE Mission is a space-based remote sensing investigation of the Earth's atmosphere that measures the infrared absorption of many atmospheric trace gas molecules during sunrise and sunset. From these measurements trace gas concentrations are determined as a function of altitude. The ACE science objectives are to study ozone depletion, air pollution and climate change. The SCISAT satellite was launched in August 2003 and continues to operate successfully whereby years of measurements have been recorded and continued operation is anticipated for several more years. The ACE mission is very successful with more than a five hundred publications making use of ACE data.

Key Accountabilities

Software maintenance:

- Maintain revision control of the current working version of the scientific processing software in a repository
- Provide compiled executables and all required inputs to the ACE systems and Data Specialist for the processing of ACE measurements

Data processing development:

- Investigate observed discrepancies between ACE data products and other data sets
- Evaluate the input information associated with the current ACE data products to improve the accuracy of these data products, wherever possible
- Revise the ACE software suite for functionality, improved accuracy of the reported data products, and/or improved processing speed
- Develop analysis procedures to derive data products for additional atmospheric constituents from the set of ACE measurements

Support for data users:

- Provide details of analysis procedures associated with a particular atmospheric constituent to researchers performing scientific studies of that constituent using ACE data
- Provide feedback to data user on data quality and limitations associated with the various ACE data products

Science Operations Center oversight:

Job Description



- Provide leadership and guidance as the senior member of the ACE Science Operations Center to keep the ACE mission at the forefront of satellite remote sensing of the Earth's atmosphere

Reports and presentations:

- Prepare and deliver presentations at scientific meetings as well as write reports and scientific papers for publication in peer-reviewed journals on atmospheric science and molecular spectroscopy

**All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

Required Qualifications

Education

- Ph.D. in Physics or Chemistry or equivalent education and experience required

Experience

- Experience with high resolution infrared spectroscopy and the analysis of spectra from Fourier transform spectrometers, particularly in the retrieval of atmospheric properties from limb measurements from Earth orbit is necessary
- Experience in developing new atmospheric data products and satellite data analysis procedures is an asset

Knowledge/Skills/Abilities

- Extensive knowledge of atmospheric science is necessary
- Extensive computer experience using C, C++, FORTRAN, POSTGRES-SQL, PERL, and Microsoft Office (Word, Excel), and in using Windows and Unix (or Linux) operating systems
- Extensive previous experience writing scientific papers and reports on infrared atmospheric spectroscopy from satellites is required
- Detailed understanding of the ACE project is advantageous
- Proven interpersonal skills to communicate with investigators, collaborators, staff and other stakeholders from UW and other institutions around the world with use ACE data

Nature and Scope

- **Contacts:** This position requires communication with hundreds of data users around the world and other members of the ACE team.
- **Level of Responsibility:** This position is a key member of the core Science Operations Centre for the Atmospheric Chemistry Experiment (ACE) in which each member has special skills and experience. As the senior member of the team, provides leadership and guidance.
- **Decision-Making Authority:** Limited to the Key Accountabilities listed above with the need to consult with other team members as needed.
- **Physical and Sensory Demands:** Limited to the working environment of a modern office.
- **Working Environment:** A continuously evolving environment of state-of-the-art computing facilities and data delivery services.