

## Job Description

---



<b>Job Title:</b>	System and Software Specialist – ACE Project
<b>Department:</b>	Chemistry
<b>Reports To:</b>	ACE Project Manager (fiscal), ACE Project Investigator (technical)
<b>Jobs Reporting:</b>	none
<b>Salary Grade:</b>	USG 9/10
<b>Effective Date:</b>	January 2020

---

### **Primary Purpose**

The System and Software Specialist is the principal member of staff on the Atmospheric Chemistry Experiment concerned with processing data from the ACE-FTS instrument on board Canada's SCISAT spacecraft. A large data set has been assembled over sixteen years of operations and primary processing is currently being run on a Linux based multi-processor system. Continued operation is anticipated for several more years.

### **Key Accountabilities**

#### **Computing Resources**

- Develop and maintain processing facilities for the Waterloo Science Team members.
- Develop and maintain databases for data storage and retrieval.
- Prepare and optimize resources on the SHARCNET supercomputing environment.
- Become intimately familiar with all existing computer facilities and operating procedures in order to anticipate issues and implement efficiencies.
- Perform necessary software and hardware upgrades to ensure the smooth operation of all machines and components of the data processing pipeline.

#### **Data Handling and Distribution**

- Use of Linux servers for daily work, providing software functionality in a service-oriented architecture
- Regularly update end data products for delivery to the wider ACE scientific community.
- Respond in a timely fashion to requests for specific data products, devising scripts to interface with databases as needed and/or creating descriptive plots.
- Perform regular data backups, both on- and off-site.

#### **ACE Science**

- Manage and execute the processing of ACE data on a daily basis, producing key metrics to track any errors or inconsistencies that may arise.
- Perform analyses to uncover, track and flag anomalies in data products, as they occur on a daily, monthly, or yearly basis.
- Produce scientific scripts to search for atmospheric phenomena, especially as related to warming trends resulting from climate change.
- Prepare and deliver technical presentations, documents and publications relating to project work.

#### **Administrative**

- Develop relationships with key stakeholders at Environment and Climate Change Canada (ECCC), the Canadian Space Agency (CSA) and academic institutions around the world.
- Assist in preparation of contract quarterly and annual reports.
- Maintain supporting documentation on computer facilities and operations.
- Support preparation of proposals to national computing consortia.

## Job Description



- Prepare or contribute to other project deliverables as required.

*\*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**

- Completion of a Bachelor's degree in Physics, Chemistry or Computer Science. Master's degree preferred.

#### **Experience**

- Significant experience working with Linux operating systems.
- Exposure to large numbers of servers; proficiency in networking and security.
- Demonstrated ability to work independently and with little oversight.
- Ability to effectively communicate technical issues and concepts to non-technical personnel.

#### **Knowledge/Skills/Abilities**

- Database administration and experience with structured queries (SQL) desirable.
- Experience with one or more of Python, bash scripting, Perl, Fortran, MATLAB, C, or C++

### **Nature and Scope**

- **Contacts:** Operate internally with a small science group and computer support personnel in Waterloo, technical groups in other universities.
- **Level of Responsibility:** Primary responsibility for ACE computing and data management.
- **Decision-Making Authority:** Primarily limited to selection and operation of computing facilities (hardware and software). Prepare business plans, strategies and proposals for revised system architectures.
- **Physical and Sensory Demands:** Working within a typical office environment.
- **Working Environment:** Typical office environment and server datacentre.