

**Opportunity Title:** Understanding Products and Processes as Sources of Organic Compounds in the Ambient Atmosphere

**Opportunity Reference Code:** EPA-ORD-NERL-CED-2018-02

**Organization** U.S. Environmental Protection Agency (EPA)

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**How to Apply** A complete application consists of:

- An application
- Transcripts – [Click here for detailed information about acceptable transcripts](#)
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional references

All documents must be in English or include an official English translation.

If you have questions, send an email to [EPArpp@orau.org](mailto:EPArpp@orau.org). Please include the reference code for this opportunity in your email.

**Description** A postgraduate research opportunity is currently available at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development/National Exposure Research Laboratory (NERL). The appointment will be served with the Computational Exposure Division (CED) in Research Triangle Park, NC.

In locations such as Los Angeles, California, the CMAQ model underestimates the amount of organic aerosol that forms in the atmosphere (Woody et al., 2016; Jathar et al., 2017). Hypotheses for this underestimate include missing organic aerosol precursor emissions, missing chemical pathways, and/or underestimated aerosol yields (Murphy et al., 2017). This research project will involve collaborating with a team of scientists. The research participant will be involved in the development of scientific hypotheses and data analysis to investigate how non-combustion sources of semivolatile, intermediate volatility, and volatile organic compounds contribute to organic aerosol. These non-combustion sources include products and processes which may be increasing contributors to organic emissions as combustion sources are reduced (e.g. Khare and Gentner, 2017). The sources will be examined for their potential to form SOA and resolve model/measurement discrepancies. This information will inform the next generation of secondary organic aerosol algorithms in the CMAQ model. Techniques employed may include box modeling, emission inventory development, regional chemical transport modeling, and/or the interpretation of field and laboratory data.

References:

Jathar, S. H., Woody, M., Pye, H. O. T., Baker, K. R., and Robinson, A. L.: Chemical Transport Model Simulations of Organic Aerosol in Southern California: Model Evaluation and Gasoline and Diesel Source Contributions, *Atmos. Chem. Phys.*, 17, 4305-4318, doi:10.5194/acp-17-4305-2017, 2017.

Khare, P. and Gentner, D. R.: Considering the future of anthropogenic gas-phase organic compound emissions and the increasing influence of non-combustion sources on urban air quality, *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2017-761>, in review, 2017.

Murphy, B. N., Woody, M. C., Jimenez, J. L., Carlton, A. M. G., Hayes, P. L., Liu, S., Ng, N. L., Russell, L. M., Setyan, A., Xu, L., Young, J., Zaveri, R. A., Zhang, Q., and Pye, H. O. T.: Semivolatile POA and parameterized total combustion SOA in CMAQv5.2: impacts on source strength and partitioning, *Atmos. Chem. Phys.*, 17, 11107-11133, doi:10.5194/acp-17-11107-2017, 2017.

Woody, M. C., Baker, K. R., Hayes, P. L., Jimenez, J. L., Koo, B., and Pye, H. O. T.: Understanding sources of organic aerosol during CalNex-2010 using the CMAQ-VBS, *Atmos. Chem. Phys.*, 16, 4081-4100, doi:10.5194/acp-16-4081-2016, 2016.

This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an interagency agreement between

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DOE and EPA.

The appointment is full time for three to six months and may be renewed upon recommendation of EPA and contingent on the availability of funds. The participant will receive a monthly stipend. Funding may be made available to reimburse the participant's travel expenses to present the results of his/her research at scientific conferences. No funding will be made available to cover travel costs for pre-appointment visits, relocation costs, tuition and fees, or participant's health insurance. The participant must show proof of health and medical insurance. **The participant does not become an EPA employee.**

The mentor for this project is Havala Pye ([pye.havala@epa.gov](mailto:pye.havala@epa.gov)). The desired start date is prior to June 1, 2018.

**Qualifications** Applicants must have received a bachelor's, master's or doctoral degree in earth and geosciences, engineering, environmental and marine sciences, life sciences, mathematics and statistics, physical sciences, physics, computer science, or a related field within five years of the desired starting date. Graduate students may also apply. Proof of enrollment will be required each semester. Knowledge of a data processing/data analysis language (MATLAB, R, Fortran, Python, etc) is desired.

**Eligibility Requirements**

- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Communications and Graphics Design** (1 )
  - **Computer Sciences** (17 )
  - **Earth and Geosciences** (23 )
  - **Engineering** (27 )
  - **Environmental and Marine Sciences** (13 )
  - **Life Health and Medical Sciences** (47 )
  - **Mathematics and Statistics** (11 )
  - **Other Physical Sciences** (12 )
  - **Physics** (16 )