

ATMOSPHERIC AND OCEANIC SCIENCE (AOSC)

Graduate Degree Program
College: Computer, Mathematical, and Natural Sciences

Abstract

The Department of Atmospheric and Oceanic Science offers graduate study leading to the Master of Professional Studies, Master of Science, and Doctor of Philosophy degrees. Coursework in atmospheric and oceanic sciences is also offered at the upper division and graduate level as a service to other campus graduate programs. The educational program is broadly based and involves many applications of the mathematical, physical and applied sciences that characterize modern atmospheric sciences and physical oceanography, including climate and earth system science, and multidisciplinary studies of the interrelationship among the atmosphere, the oceans, the land, and the biota. The Department's advanced degree programs are designed to prepare students for participation in contemporary research in the atmospheric and oceanic science. Research specializations include: atmospheric dynamics; atmospheric chemistry; physical oceanography; air pollution; atmospheric radiative transfer; remote sensing of the atmosphere, ocean, and land; climate variability and change; data assimilation; numerical weather prediction; severe storms; surface-atmosphere, ocean-atmosphere and biosphere-atmosphere interactions; and earth system modeling. The curriculum includes a set of Core courses to provide a fundamental background in atmospheric and oceanic dynamics, physical meteorology and atmospheric chemistry, earth system science and climate, as well as advanced specialized courses. Supervised research using state-of-the-art facilities then prepares the students for future contributions in their chosen field.

The Department's close association with federal agencies in the Washington area provides graduate students with good training and opportunities in atmospheric and oceanic science. As a research assistant, the student has the opportunity to develop a close working relationship with one or more of the scientific agencies.

Financial Assistance

Graduate research and teaching assistantships are available to qualified graduate students. Research assistants carry out research in the areas of physical and dynamic meteorology, physical oceanography, data assimilation, remote sensing, atmospheric chemistry, air pollution, climate dynamics, atmospheric radiation, severe storms, cryosphere, global climate change, and ocean-atmosphere and atmosphere-biosphere interactions. Fellowships are also awarded by the Graduate School to the most qualified applicants. In addition, hourly employment is available in the Department and off campus. Stipends are maintained at a competitive level.

Contact

Graduate Program Office
Department of Atmospheric and Oceanic Science
3405 Atlantic Building
4254 Stadium Drive
University of Maryland
College Park, MD 20742
Telephone: 301.405.5389
Fax: 301.314.9482

Email: aosc-apply@umd.edu

Website: <http://www.aosc.umd.edu>

Courses: AOSC (<https://academiccatalog.umd.edu/graduate/courses/aosc/>)

ADMISSIONS

GENERAL REQUIREMENTS

- Statement of Purpose
- Transcript(s)
- TOEFL/IELTS/PTE (international graduate students (<https://gradschool.umd.edu/admissions/english-language-proficiency-requirements/>))

PROGRAM-SPECIFIC REQUIREMENTS

- Statement of Research Interests
- Letters of Recommendation (3)
- CV/Resume (optional)
- Graduate Record Examination (GRE) (optional)
- Description of Research/Work Experience (optional)

In addition to the requirements of the Graduate School, graduate students enrolled in AOSC tend to have one or more undergraduate or graduate degrees in atmospheric science, meteorology, oceanography, mathematics, physics, chemistry, or engineering. They tend to have prior research experience from an internship, undergraduate thesis project, or advanced coursework. A recommended undergraduate background includes calculus, differential equations, calculus-based physics, and general chemistry. Most students also have experience writing software in a major computer language (e.g., Fortran, Python), which they acquired through formal training in classes or through prior employment or research experiences. The above however are only general guidelines, and backgrounds and experiences vary widely among students. We recommend potential applicants review the AOSC graduate course descriptions and consider their preparation for these courses. Scores from the GRE General Examination are optional. A GPA of 3.0 (out of 4.0) is typically required.

For information on the Master of Professional Studies in Atmospheric and Oceanic Science (<http://apps.gradschool.umd.edu/Catalog/public-programs-detail.php?MPAO>), please see its listing in the Graduate Catalog (<http://apps.gradschool.umd.edu/Catalog/public-programs-detail.php?MPAO>).

APPLICATION DEADLINES

Type of Applicant	Fall Deadline	Spring Deadline	Summer Deadline
Domestic Applicants			
US Citizens and Permanent Residents	December 3, 2026	October 30, 2026	N/A
International Applicants			

F (student) or J (exchange visitor) visas; A,E,G,H,I and L visas and immigrants	December 3, 2026	September 4, 2026	N/A
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RESOURCES AND LINKS:

Other Deadlines: [aosc.umd.edu \(http://www.aosc.umd.edu\)](http://www.aosc.umd.edu)

Program Website: [aosc.umd.edu/education/ms-phd \(http://aosc.umd.edu/education/ms-phd/\)](http://aosc.umd.edu/education/ms-phd)

Application Process: [https://gradschool.umd.edu/admissions \(https://gradschool.umd.edu/admissions/\)](https://gradschool.umd.edu/admissions)

REQUIREMENTS

- Atmospheric and Oceanic Science, Doctor of Philosophy (Ph.D.) (<https://academiccatalog.umd.edu/graduate/programs/atmospheric-oceanic-science-aosc/atmospheric-oceanic-science-phd/>)
- Atmospheric and Oceanic Science, Master of Science (M.S.) (<https://academiccatalog.umd.edu/graduate/programs/atmospheric-oceanic-science-aosc/atmospheric-oceanic-science-ms/>)

FACILITIES AND SPECIAL RESOURCES

The Department participates in the Earth System Science Interdisciplinary Center (ESSIC) and the Cooperative Institute for Climate Studies (CICS). These institutions conduct research, and offer opportunities for graduate research beyond those offered by the department faculty. In addition, the Department maintains close research and teaching associations with Departments of Mathematics and Chemistry, as well as the Institute for Physical Science and Technology (IPST), Center for Scientific Computation and Mathematical Modeling (CSCAMM), and nearby government agencies including NOAA, NASA, ONR, USDA, NIST, and Maryland's Department of the Environment and Department of Natural Resources. Special facilities that support the Department's teaching and research activities include sophisticated computing facilities allowing access to a variety of atmospheric and oceanographic datasets, a laboratory for atmospheric chemistry, a mobile air pollution laboratory, access to research aircraft, a variety of supercomputers, radar, wind profiler at Fort Meade, historical data. Most importantly the students are encouraged to exploit the resources of the nearby government laboratories: NASA Goddard Space Flight Center, NOAA National Centers for Environmental Prediction.

The Department maintains a specialized library with several hundred text and reference books in meteorology and allied sciences, specialized series of research reports, and many journals. The campus provides a main library as well as specialized libraries in chemistry, astronomy, and engineering. Several excellent government libraries in the area, including the Library of Congress, the NASA Goddard Space Flight Center, the National Archives, and the NOAA libraries provide unsurpassed resources.

The University of Maryland is located in an area of unparalleled professional resources. Because of its proximity to the nation's capital, The University of Maryland is able to interact closely with the many governmental groups interested in various aspects of the atmospheric, oceanic and earth system sciences. Scientists from government laboratories participate in many aspects of graduate education, such as giving lectures in classes, presenting research results in seminars, and

serving on dissertation committees. Likewise, the Department faculty often attend and participate in the seminars, colloquia and scientific workshops being held at these neighboring institutions.

The Washington, D.C. chapter of the American Meteorological Society consists of about 400 members who hold professional meetings each month. The Washington, D.C. area is frequently the site of national and international conferences, most notably of the American Association for the Advancement of Science and the American geophysical Union. In addition to the various government and academic institutions, the Washington metropolitan area contains numerous well-known private contractors and consulting companies involved in meteorology and oceanography, which provide employment opportunities for students both before and after graduation.

As a member of the University Corporation for Atmospheric Research, the department enjoys the common facilities offered by the National Center for Atmospheric Research such as research aircraft and supercomputers.