**Doctoral Programs**

Atmospheric, Oceanic & Space Sciences  
Geoscience & Remote Sensing  
Space & Planetary Physics

---

**Atmospheric & Space Science Research Areas**

**Atmospheric Science Research Areas**
- Atmosphere – Biosphere Interactions
- Atmospheric Chemistry, Aerosols & Air Quality
- Atmospheric Dynamics
- Climate, Climate Modeling & Climate Change
- Clouds & Precipitation
- Paleoclimate, Ice Dynamics

**Space Science Research Areas**
- High Energy Density Physics/Laboratory Astrophysics
- Magnetospheric & Ionsphere/Thermosphere Physics
- Planetary Magnetospheres
- Solar & Heliospheric Physics
- Space Weather
- Aeronomy

For Faculty involved in these research areas: [http://aoss.engin.umich.edu/pages/research](http://aoss.engin.umich.edu/pages/research)
**Program Description**

The AOSS Ph.D. Program is an integrated study designed to give students a broad base of knowledge in atmospheric, space and planetary sciences followed by more in-depth, concentrated studies in specific areas. The AOSS doctoral program is small, and all PhD students are fully supported by faculty research and/or fellowships. There is no guessing as to the research or faculty as students are paired with a faculty member upon admission.

There are three levels of courses required of AOSS graduate students:

- **Departmental Core Courses**: Required of all AOSS graduate students.
- **Program Core Courses**: Required courses in the program or concentration of your choice.
- **Further courses relevant to research**: A minimum of three AOSS courses plus other non-AOSS courses that are worthwhile and support your area of research.

**Program Advisors**

**Atmospheric and Space Sciences:**
Professor R. Paul Drake  
rpdrake@umich.edu

**Geoscience and Remote Sensing:**
Professor Christopher Ruf  
cruf@umich.edu

**Program in Atmospheric, Oceanic and Space Sciences**

The standard AOSS doctoral program, and the one in which nearly all of our PhD students are enrolled is the Atmospheric, Oceanic and Space Sciences degree program. Students receive a comprehensive battery of courses spanning these disciplines as well as the necessary physics, chemistry and mathematics. Students also get in-depth coursework in their particular specialty, whether it is fluid dynamics, atmospheric chemistry, climate physics, planetary science, or space plasmas.

Offered as an option, is a concentration in **Geoscience and Remote Sensing**, which explores the science and engineering behind remote measurements from space of the structure, composition and dynamics of Earth and planetary atmospheres and their underlying surface.

**Expectations**

AOSS doctoral students are expected to have a high level of ability and scholarship in atmospheric science, oceanography, space and planetary sciences, or geoscience and remote sensing.

- Students are expected to carry a course load of 9-12 credit hours (3-4 courses excluding seminar courses) each semester until the dissertation work is begun.
- There are no foreign language requirements.
- During the first year the student must select courses from among the core courses for their particular program.
- Typically after four semesters of classes, each student will take and must pass a qualifying examination before being advanced to candidacy. A PDF file describing the procedure and exam are available to download. ([http://aoss.engin.umich.edu/files/pages/QualProc2009.pdf](http://aoss.engin.umich.edu/files/pages/QualProc2009.pdf))
- Most students begin research soon after beginning their program. No later than upon achieving candidacy, they focus on dissertation research under the guidance of an advisor.
- The minimum GPA required to advance to candidacy is 3.3 on Rackham’s 4.3 point scale.
- During the first two years, students are expected to complete a total of two terms in seminar course AOSS 747 and a total of two terms in seminar course AOSS 749.

*Subject to change. Please consult with your advisor.*

“AOSS is definitely one of the more diverse groups of ‘space’ science departments that I found — in one hallway, you can talk to an atmospheric chemist, the next, a physicist, and in the next, hear all about the Sun or one of the planets.”