

## HAMPTON, VIRGINIA: HISTORY + TECHNOLOGY + LIFE

Virginia is Ranked 6th in the nation in high technology employment • 1,139 technology companies in the Norfolk/Hampton Region, many serve defense industry • Largest metro area between Washington, D.C. and Atlanta Examples of High Tech Assets in Hampton Roads • 8 local Colleges and Universities • Applied Research Center (ARC) • Center for Advanced Ship Repair and Maintenance • Thomas Jefferson National Accelerator Facility • Hampton Roads Technology Incubator • National Institute of Aerospace (NIA) • NASA Langley Research Center • Langley Air Force Base, Norfolk Naval Base, and Naval Air Station

### WHAT DO WE STUDY?

Atmospheric Science is the study of the physics, chemistry, and dynamics of gases, clouds, and aerosols that surround the planetary bodies of the solar system. Planetary Science is the study of the origin and evolution of the planetary bodies in the solar system and beyond. At HU, researchers study the dynamics of planetary interiors and the interaction of the solid planet and atmosphere.

### WHY IS IT CUTTING-EDGE?

"In this age, remote sensing in general and weather prediction in particular are impossible without satellite observations that allow us to get global coverage in a few hours or even minutes. Development and construction of space instruments are the most cutting-edge areas of modern technology. It combines and requires not only a fundamental background in math and physics but also in engineering, computer sciences, and many other fields. This is why successful education in atmospheric sciences provides students with knowledge and skills that can be applied in a wide range of different scientific areas." - **Stanislav Kireev, Ph.D.**

### SKILLED SCIENTISTS ARE NEEDED TO...

"Engineer new instrument systems, develop sophisticated four dimensional data analysis techniques, develop novel approaches to using these new remote sensing data for environmental prediction, develop numerical models able to assimilate the vast quantity of data which will be transmitted from these new remote sensing systems."  
- **W. L. Smith, Ph.D.**

"1) ... assess the threat of global warming by collecting and analyzing past and present data on worldwide temperature trends, greenhouse gasses, water vapor, and air pollutants; 2) ... investigate the sources, transport, and chemical changes in pollutants that are causing severe air quality problems; 3) ... study the variations in weather patterns that create droughts and floods, which can have dramatic effects on human lives; 4) ... understand what causes hurricanes to form and how to forecast their paths more accurately."  
- **Hovakim Nazaryan, Ph.D.**

### INDUSTRIES:

- Climatology • Air-pollution control • Forestry • Agriculture
- Defense • Transportation • Effective land use • NASA • Building design & heating/cooling systems • Aerospace

### TALK TO US

Atmospheric and Planetary Sciences  
Dr. Robert Loughman, Chairperson  
**PHONE:** 757.727.5137

CAS Co-Directors  
Dr. James M. Russell, III  
Dr. M. Patrick McCormick

### GO ONLINE

<http://science.hamptonu.edu/aps/>  
<http://cas.hamptonu.edu>

### TOUR CAMPUS

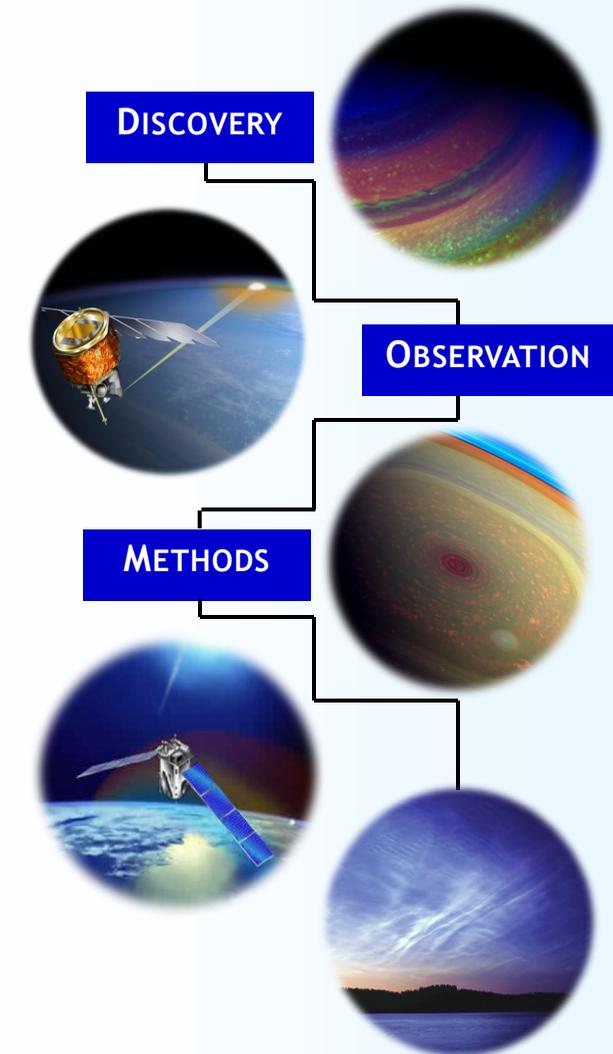
<http://www.hamptonu.edu/>



### ATMOSPHERIC and PLANETARY SCIENCES

Hampton University  
23 Tyler Street  
Hampton, VA 23668  
**PHONE:** 757-727-5108 **FAX:** 757-727-5090

## Hampton University's ATMOSPHERIC AND PLANETARY SCIENCES



## CAREER OPPORTUNITIES + RESEARCH

*Your Future*

### PARTNERS + ATMOSPHERIC and PLANETARY SCIENCES

APS is dedicated to increasing the participation of minorities in the fields of Atmospheric, Space, and Planetary Sciences. The department and its Center for Atmospheric Sciences (**CAS**) maintains strong partnerships with:

- Nat'l Aeronautics & Space Administration (NASA)
- Nat'l Oceanic & Atmospheric Administration (NOAA)
- Nat'l Science Foundation (NSF)
- Army Research Lab
- Naval Research Lab
- CNES
- JAXA
- BAS
- VSGC
- UCLA
- Nat'l Inst. Aerospace
- Univ. Colorado
- Univ. Iowa
- Univ. Maryland
- Univ. Virginia
- Univ. Washington
- Univ. Wisconsin
- George Mason Univ.
- Georgia Tech
- N.C. A&T
- N.C. State Univ.
- Utah State Univ.
- Virginia Tech

### AREAS OF ATMOSPHERIC and PLANETARY SCIENCES FACULTY RESEARCH:

- Ozone Trends and Atmospheric Chemistry
- Polar Stratospheric and Mesospheric Clouds
- Lidar and related technologies
- Solar Variability and Effects on Earth
- Remote Sensing
- Satellite Data Assimilation in Weather Forecast Models
- Icy Satellite Exploration
- Coupled Planetary and Atmospheric Evolution

### MISSIONS: PRESENT + PAST

- AIM
- GIFTS
- CALIPSO
- OMPS
- SABER (TIMED)
- HALOE (UARS)
- LIMS
- LITE
- PLS (Galileo)
- SAGE
- SAGE II
- SAGE III
- SAM II



Research activity and expertise are major strengths of the department and its associated Center for Atmospheric Sciences (CAS), providing opportunities for student participation.

APS offers a course of study in SEAS Minor leading to M.S. and Ph.D. degrees. Students from a variety of academic disciplines are welcome, and the curriculum maintains flexibility to match individual interest.

#### Ph.D.

Atmospheric Physics  
Atmospheric Radiative Transfer  
Geophysical Fluid Dynamics  
Atmospheric Measurements  
Writing & Presenting Seminar  
Intro to Structure & Dynamics \*AST  
Atmospheric Chemistry \*AST  
Principles of Planetary Science \*PST  
Space Weather \*PST  
Final Oral Exam  
Research  
Approved Electives  
**TOTAL 74 Credits**

#### M.S.

Atmospheric Physics  
Atmospheric Radiative Transfer  
Geophysical Fluid Dynamics  
Intro to Structure & Dynamics \*AST  
Atmospheric Chemistry \*AST  
Principles of Planetary Science \*PST  
Space Weather \*PST  
Research  
Thesis  
Approved Electives  
**TOTAL 30 Credits**

\*AST= Atmospheric Science Track

\*PST= Planetary Science Track

### HU GRADUATE COLLEGE

Address: The Graduate College, Hampton University  
Wigwam Building, Room 203, Hampton, VA 23668  
Phone: 757.727.5454

EXCELLENCE IN RESEARCH  
INTELLECTUAL CAPITAL CAS

#### (SEAS) Minor

#### Space, Earth & Atmospheric Sciences

Introduction to Weather and Climate  
Astronomy of the Planets  
Astronomy of Stars and Galaxies  
Meteorology  
Earth and Planetary Sciences  
Astrobiology  
Atmospheric Physics  
Seminar  
Physical Geology  
Introduction to Physical Science  
**(9-12 Hours)**  
Modeling the Soil-Plant-Atmosphere Continuum  
Remote Sensing  
Space, Earth & Atmospheric Science Research  
Space, Earth & Atmospheric Data Analysis Techniques  
Topics in Space, Earth & Atmospheric Science  
Introduction to Space Sciences  
Environmental Chemistry  
**(3-6 Hours)**  
\*The minor in SEAS requires **18 credit** hours

#### APS REQUIREMENTS

- 3.0 GPA or higher
- 2-3 semesters of calculus
- Differential equations
- 2 semesters of calculus-based physics
- GRE - submit scores
- TOEFL - for international students
- 3 letters of recommendation
- Personal statement
- Linear Algebra is recommended but not required
- Knowledge of some computer programming language

The above requirements are in addition to the graduate school application and requirements found at:  
[www.hamptonu.edu/studentservices/admissions/apply.htm](http://www.hamptonu.edu/studentservices/admissions/apply.htm)

## Letter from APS Department Chair

**ROBERT P. LOUGHMAN**



We truly welcome inquiries from students and others interested in our programs in the Atmospheric and Planetary Sciences department. The Hampton University campus is an attractive and comfortable setting for students and faculty. It maintains an air of friendliness and collegiality fostering intellectual development and achievement, and

we invite prospective students to contact us and arrange for a visit. Our research center, CAS, is home to an array of projects funded by NASA, NOAA, and other agencies, in partnership with other universities, research centers, and industry, both domestically and internationally. This research is a prominent feature of the education programs; offering students at all levels unparalleled opportunities to participate at the forefront of atmospheric and planetary sciences. We proudly note recognition by NASA of the exemplary success of the department.

As we all make our way through the 21st century, issues related to environment will present some of the greatest of challenges. A robust community of scientists is essential for assessment and insights to support informed decisions affecting generations to come. The department is dedicated to education and training of the next generation of scientists to extend our understanding of Earth and other worlds, and provide leadership in fields of atmospheric and planetary sciences.

### YOUR BACKGROUND

The program welcomes students from Environmental Sciences, Physics, Astronomy, Mathematics, Chemistry, Planetary Sciences, Computer Science, Geophysics and Engineering.

Students with other majors are encouraged to talk to Dr. Robert P. Loughman, Departmental Chair. Applicants without the minimum requirements will be considered for entry into the program. Some developmental coursework will be required.