



UNDERGRADUATE ATMOSPHERIC SCIENCE PROGRAM  
STUDENT ADVISING GUIDE  
2016-2017





## INTRODUCTION

The undergraduate Atmospheric Science program has been part of the academic curriculum at the University of Miami since 1977, when the College of Arts and Sciences and RSMAS joined together to establish an undergraduate Marine and Atmospheric Science Program. It is located within the Rosenstiel School of Marine and Atmospheric Science (RSMAS) since 2008, and the Atmospheric Science program became its own program in 2012. The program follows standards established by the American Meteorological Society, and emphasizes understanding the physical processes governing the motion and composition of the atmosphere. The major encompasses a minor in Mathematics. This approach lays the groundwork for both further graduate study and non-academic professional applications including broadcast meteorology. Undergraduate students are encouraged to work with the faculty, and are able to earn course credit by conducting independent research under the supervision of leading scientists in their field. Research at RSMAS encompasses atmospheric dynamics, climate science, boundary-layer processes, cloud processes, remote sensing and atmospheric chemistry. Focus areas include hurricanes (spanning modeling, data assimilation, field observations), tropical meteorology, atmosphere-ocean coupling, clouds and aerosols, climate and climate change and trace gas chemistry. Many faculty are active in fieldwork.



## ***METEOROLOGY CURRICULUM***

The Rosenstiel School of Marine and Atmospheric Science offers a Bachelor of Science in Marine and Atmospheric Science degree (B.S.M.A.S.) with a major in Meteorology. The major includes a minor in Math. The major prepares students for admission to graduate programs and for careers in teaching and research as well as for technical careers in government and private industries concerned with the oceans and atmosphere. The rigorous program requires 120-130 credits for graduation. Only those courses passed with a grade of "C-" or better may be applied to receive the major or minor; the math minor classes are required for the meteorology major. RSMAS courses at the 500-level may be taken for undergraduate credit with junior standing and departmental consent. Streamlined double major programs include options with Marine Science, Mathematics, and Broadcast Journalism.

**General Education requirements and Cognates:** In order to fulfill the University of Miami's General Education requirements students must complete courses in English composition (ENG 105 and 106 or ENG107) as well as courses with significant writing/communication components. In addition, students must complete a 9-credit cognate in two "areas of knowledge": Arts and Humanities and People and Society (Social Sciences). The optional Broadcast Journalism cognate or minor and Climate Science and Policy minor (pg ) fulfill the People and Society cognate requirement. Cognates integrating study abroad courses are also available. Information on cognates, along with a search engine, is available at: [www.miami.edu/cognates](http://www.miami.edu/cognates).

### FOR ADDITIONAL INFORMATION:

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## **Meteorology major with math minor (RSMM)**

Marine and Atmospheric Science (32 credits):

ATM103, MSC111, ATM118, ATM 220 or ATM307, ATM243, ATM303, ATM305, ATM405, ATM406, ATM407, ATM409.

Mathematics (20 credits)\*:

MTH161, MTH162, MTH210, MTH224 (may be replaced by MSC 204), MTH310, and MTH311 or MTH320

\* A minimum grade of C- is required in MTH161 and MTH162 to progress to 300 level ATM classes.

Broadcast meteorology majors must take either MTH224/MS204 or MTH311/320, but are not required to take both.

Physics (10 credits): PHY205, PHY206, PHY207, PHY208.

Chemistry (3 credits) ATM 265.

Computer Science (4 credits): CSC120

One free elective in Marine or Atmospheric Science, Mathematics or Science (3 credits) and Six credits of upper level electives (300-level and higher or at 200-level with prerequisites). We suggest MSC301, ATM306, ATM307, and ATM321. 500 level courses are open to undergraduates but are only offered at the RSMAS campus. The elective courses may be chosen to satisfy degree requirements for a second major or a second minor. For Broadcasting Journalism double majors and minors, the electives may be taken from the School of Communications.

## **Meteorology and Marine Science (RSMM MSC)**

Two courses, MSC111 and ATM220, apply to both majors.

Atmospheric Science (29 cr): 103, 118, 243, 303, 305, 405, 406, 407, 409, and 220 or 307

Marine Science (23 cr): MSC 111, 112, 215, 230, 301, 302, either 216 or 232, and 9 credits of MSC electives, of which at least 6 must be at the 300-level or higher.

Biology (5 cr): BIO 150 and 151 or 160 and 161

Chemistry (8 cr): CHM 111, 112, 113 and 114

Computer Science: CSC 120

Geological Sciences (4 or 5 cr): GSC 111 or 110 and 114

Mathematics (17 cr): MTH 161, 162, 210, 310, and either 311 or 320

Physics (10 cr): PHY 205, 206, 207 and 208

Statistics (3 cr): MSC 204 or MTH 224

## **Meteorology and Mathematics (RSMM MTH4 )**

Marine and Atmospheric Science (29 credits):

ATM103, ATM118, ATM 220 or ATM307, ATM243, ATM303, ATM305, ATM405, ATM406, ATM407, ATM409.

Mathematics core (23 credits):

MTH161 and 162 or 171 and 172, 210, 224 (may be replaced by MSC 204), 230, 310, 311, and 433 (or 533)

Physics (10 credits): PHY205, PHY206, PHY207, PHY208.

Chemistry (3 credits) ATM265.

Computer Science (4credits): CSC120

Three credits of upper level electives (300-level and higher or 200-level with prerequisites)

In addition, students are recommended to take the Applied Analysis track:

Applied Analysis: MTH 512, (513 and 514) or (515 and 516) and MTH542

**Minor in Broadcast Journalism:** This minor is operated by the School of Communications and is designed for Meteorology majors interested in Broadcast Meteorology. The flagship course is ATM306 (Broadcast Meteorology), taught by a professional broadcast meteorologist (CBS4 Chief Meteorologist Craig Setzer and NBC Meteorologist Ryan Phillips are affiliated with the program) and uses the UMTV studio. The other courses within the minor come from the School of Communications.

### **Minor in Broadcast Journalism**

This 18 credit minor consists of: JMM 102 Understanding Media and Content in the Digital Age, JMM 208 Fundamentals of News Gathering, JMM 108 Writing in the Digital Age, JMM 245 Introduction to Electronic Media Production, JMM 317 Broadcast Journalism, and an additional 300-level or higher class chosen with the prior approval of program director Andrew Barton. ATM306 Broadcast Meteorology qualifies as the additional class.

Meteorology major Rosemarie Knoll-Rodriguez serves as a weather anchor for UniMiami TV.



### **Minor in Climate Science and Policy**

For meteorology majors this 15-credit minor consists of two classes from: MSC222 (Earth's Climate: Past and Future), ATM307 (Physics of Climate), MSC 347 (Polar Science and Policy), GSC462 (Earth's Ancient Atmospheres, Climates and Sea Levels); two policy classes from MSC313 (Coastal Law), MSC314 (Ocean Law), MSC340 (Ocean Policy), MSC342 (Decision Making and the Environment), MSC418 (Climate Law), RSM 520 (Climate and Society); and MSC 346 (Climate Science and Policy).

**Minor in Climate Science and Policy:** The 15 credit minor provides students with a grounding in the science underlying climate change and the sociopolitical concepts with which to understand society's responses. The minor satisfies the People and Society cognate requirement for meteorology majors.

**Minor in Meteorology:** The 15-credit minor in Meteorology must include ATM 103, with the remainder classes selected from ATM 118, ATM 220, ATM 243, ATM 265, ATM 303 and ATM 306. The minor is open to all non-meteorology majors at UM.

## 2.1 Sample Curriculum **Meteorology Major (math minor)**

Freshman Year/Fall

Spring

ATM103 Intro Atmospheric Sci.	3	ATM118 Weather Topics	2
MTH161 Calculus I	4	MTH162 Calculus II	4
MSC111/112 Intro Marine Sci.	4	Cognate	3
ENG105	3	ENG106	3
ATM220 Climate Change	3	ATM265 Atm Chem	3
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>15</b>

Sophomore Year/Fall

Spring

ATM243 Weather Forecasting	3	ATM303 Atmospheric Obs.	3
MTH210 Vector and Matrices	3	CSC120	4
PHY205 Univ Physics I	3	PHY206/208 Univ Physics II	4
cognate	3	ATM 307 or 306 or 321	3
cognate	3		
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>14</b>

Junior Year/ Fall

Spring

ATM305 Atmos. Thermodynamics	3	MSC405 Atmos. Dynamics I	3
MTH310 Multivariate Calculus	3	MTH311/320	3
PHY207 Univ Physics III	3	ATM 307 or 306 or 321	3
elective	3	elective	3
cognate	3	cognate	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>

Senior Year/Fall

Spring

ATM406 Atmos. Dynamics II	3	ATM409 Physical Meteorol.	3
ATM407 Weather Analysis	4	ATM 307 or 306 or 321	3
MTH224 Intro. to Prob. Statistics	3	cognate	3
Elective	3	cognate	3
cognate	3	elective	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>15</b>

**Total: 122 credits** Science Electives: 9 additional credits hours from Biology, Chemistry, Computer Science, Ecosystem Science and Policy, Geology, Marine Science, Math, or Physics at the 200 level or higher (up to 500 level). Meteorology-focused electives are indicated above. ATM 307/321 are offered on alternating spring semesters.

## 2.2 Sample Curriculum **Meteorology**/Marine Science

Freshman Year/Fall

Spring

ATM103 Intro Atmospheric Sci.	3	ATM118 Weather Topics	2
ATM220 Climate Change	3	cognate	3
MTH161 Calculus I	4	MTH162 Calculus II	4
ENG105	3	ENG106	3
MSC111/112 Intro Marine Sci.	4	CHM111/113 Chem 1	4
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>16</b>

Sophomore Year/Fall

Spring

ATM243 Weather Forecasting	3	ATM303 Atmospheric Obs.	3
MTH210 Vectors and Matrices	3	MSC301/302 Intro to Phys Ocean	4
PHY205 Univ Physics I	3	PHY206/208 Univ Physics II	4
CHM 112/114 Chem II	4	cognate	3
cognate	3	MSC204 or MTH224	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>17</b>

Junior Year/Fall

Spring

ATM305 Atmos. Thermodynamics	3	CSC120 Computer Science	4
PHY207 Univ Physics III	3	ATM405 Atmos. Dynamics I	3
MSC215 Chemical Ocean	3	BIL 160/161 Biology	5
MTH310 Multivariable Calc	3	MTH311 or MTH320	3
elective	3		3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>

Senior Year/Fall

Spring

ATM406 Atmos. Dynamics II	3	ATM409 Cloud Phy/Atm. Rad.	3
ATM407 Weather Analysis	4	cognate	3
MSC230/232 Marin Biology	4	GSC111 Geology	3
elective	3	cognate	3
cognate	3	elective	3
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>16</b>

### **Total: 129 credits**

Recommended electives include: ATM 321 (Scientific Programming in the Atmospheric Sciences), ATM 307 (Physics of Climate), MPO 503 (Physical Oceanography), and MPO 561 (Tropical Meteorology).

## 2.3 Sample Curriculum **Meteorology/Math**

Freshman Year/Fall

Spring

ATM103 Intro Atmospheric Sci.	3	ATM118 Weather Topics	2
ATM220 ClimateChange	3	MTH224 Statistics	3
MTH161 Calculus I	4	MTH162 Calculus II	4
ENG105	3	ENG106	3
cognate	3	ATM265	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>15</b>

Sophomore Year/Fall

Spring

ATM243 Weather Forecasting	3	ATM303 Atmospheric Observations	3
MTH210 Vectors and Matrices	3	cognate	4
PHY205 Univ Physics I	3	PHY206/208 Univ Physics II	4
MTH310 Multivariate Calculus	3	MTH230 Intro Abstract Math	3
cognate	3		
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>14</b>

Junior Year/Fall

Spring

ATM305 Atmos. Thermodynamics	3	CSC120	4
PHY207 Univ Physics III	3	ATM405 Atmos. Dynamics I	3
MTH311 Ordinary Diff. Equations	3	MTH433	3
cognate	3	cognate	3
MTH310	3	Elective	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>16</b>

Senior Year/Fall

Spring

ATM406 Atmos. Dynamics II	3	ATM409 Physical Meteorol.	3
ATM407 Weather Analysis	4	MTH514 or MTH525	3
MTH513 Partial Diff. Equations I	3	MTH512 or MTH542	3
MTH542 or MTH524	3	Elective	3
cognate	3	Elective	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>15</b>

**Total: 122 credits** Recommended electives include: ATM 321 (Scientific Programming in the Atmospheric Sciences), ATM 306, ATM 307, MTH 320 (Intro to Numerical Analysis), MPO 503 (Physical Oceanography), and MPO 561 (Tropical Meteorology).



## 2.4 Sample Curriculum **Meteorology/Broadcasting Journalism**

Freshman Year/Fall

Spring

CNJ108 Writing in Digital Age	3	ATM118 Weather Topics	2
CEM102 Intro Electronic Media	3	MTH162 Calculus II	4
MTH161 Calculus I	4	CVJ106 Visual Design	3
ATM103	3	CNJ208 Fundamentals of Newsgathering	3
ENG105	3	ENG106	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>15</b>

Sophomore Year/Fall

Spring

ATM220 Climate Change	3	ATM303 Atmospheric Observations	3
ATM243 Weather Forecasting	3	CSC120	4
PHY205 University Physics I	3	PHY206/208 University Physics II	4
COM250 Freedom Expr. & Ethics	3	MTH210 Vector and Matrices	3
CEM245 Intro Elec Media Produc.	3	COS211 or COS 333 or CEM 233	3
		CVJ 331 or CVJ 341	
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>17</b>

Junior Year/Fall

Spring

ATM305 Atmos. Thermodynamics	3	ATM265 Atmospheric Chem.	3
MTH310 Multivariate Calculus	3	ATM405 Atmospheric Dynamics I	3
MTH224 or MTH311	3	ATM306 Broadcast Meteorology (CEM elective)	3
CEM 317 Broadcast Journalism	3	CEM345 Intermed. Elec. Media	3
PHY207	3		3
CEM301 or CEM 309			
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>

Senior Year/Fall

Spring

ATM406 Atmospheric Dynamics II	3	ATM409 Physical Meteorology	3
ATM407 Weather Analysis	4	CEM302 Social Control of Media	3
CEM517 Adv Broadcast Journal.	3	CEM elective (300+)	3
CEM elective (300+)	3		3
cognate	3	cognate	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>15</b>

**Total: 127 Credits**

# ATMOSPHERIC SCIENCE COURSE DESCRIPTIONS

**102 Introduction to Weather and Climate** (3 cr) *Offered Fall and Spring Semesters*

Structure, physics, dynamics and thermodynamics of the atmosphere; weather phenomena weather forecasting, climate and climate change. Contemporary topics covered in this class include global warming, the ozone hole, hurricanes and El Nino. For non-meteorology majors and minors.

**103 Survey of Modern Meteorology** (3 cr) *Offered Fall Semester*

Dynamics and thermodynamics of the atmosphere as they relate to contemporary issues in meteorology. Overview of numerical weather prediction techniques and new technologies for monitoring weather and climate. Prerequisite: MTH 108 or higher

**111 Introduction to Marine Science** (3 cr) *Offered Fall Semester*

Geological, physical, chemical and biological processes of the world's oceans; the role of the oceans in global dynamics and ocean management. Field trips included.

**112 Introduction to Marine Science** (3 cr) *Offered Fall and Spring Semester*

Laboratory and field exercises to accompany Marine Science (MSC111). Co-requisites or Prerequisite: MSC111

**118 Current Weather and Climate Topics** (2 cr) *Offered Spring Semester*

Weather and climate-related phenomena such as hurricanes, severe storms, global warming, and acid rain.

**220 Global Climate Change** (3cr) *Offered Fall and Spring Semester*

The Earth's climate and the role of natural and anthropogenic processes in shaping climate change.

**243 Weather Forecasting** (3 cr) *Offered Fall Semester*

Application of physical principles to weather forecasting; use and interpretation of computer-generated forecast guidance products of the U.S. Weather Service. Prereq: ATM103 or MSC103; MTH 108 or higher

**265 Atmospheric Chemistry** (3cr) *Offered Spring Semester*

Class lectures cover basic chemistry (atomic and molecular structure; properties of gases; chemical thermodynamics; reaction kinetics; organic chemistry) and atmospheric chemistry (ultra-violet and visible spectroscopy and its relationship to the structure of the atmosphere; stratospheric and tropospheric chemistry; infrared spectroscopy (greenhouse effect); chemistry of atmospheric aerosols). No prerequisites.

**303 Meteorological Instrumentation and Observation** (3 cr) *Offered Spring Semester*

Techniques for measuring meteorological variables at the ground and in the free atmosphere. Prerequisite: ATM 103 or MSC103; PHY 101 or 205

**305 Atmospheric Thermodynamics** (3 cr) *Offered Fall Semester*

Equation of state; water vapor and moist air thermodynamics; phase changes and latent heat; buoyancy and atmospheric convection; thermodynamic diagrams. Prerequisite: PHY 205

- 306 Advanced Principles in Broadcast Meteorology (3 cr) Offered Spring Semester**  
Broadcast meteorology including the production of professional weather briefings and weather news for on camera deliver. Emphasis on accurately communicating complex meteorological concepts, use of computer graphics, and on-camera delivery. Prerequisite: ATM103 or MSC103 or permission of instructor
- 307 Introduction to the Physics of Climate (3 cr) Offered alternate Spring Semesters**  
The physical mechanisms which govern the earth's climate and climate variability. Prerequisite: ATM 305
- 321 Scientific Programming in the Atmospheric Sciences (3 cr) Offered alternate Spring Semesters.**  
An introduction to scientific programming in a Linux environment using the FORTRAN 90/95 language with specific applications to meteorology. Prerequisite: CSC 120,
- 371 Readings in Atmospheric Science (1-2 cr) Offered Fall and Spring Semesters**  
Library research with faculty supervision; bibliography to be submitted in preparation for laboratory and/or field research project. Maximum 3 credits count towards major or minor.
- 405 Atmospheric Dynamics I (3 cr) Offered Spring Semester**  
Derivation and scaling of the equations of atmospheric motion; hydrostatic and geostrophic balance; circulation and vorticity. Prerequisite: ATM 305 and MTH310
- 406 Atmospheric Dynamics II (3 cr) Offered Fall Semester**  
Baroclinic and barotropic instability; boundary layer dynamics; mathematical principles of numerical weather prediction; maintenance of the general circulation. Prerequisite: ATM 405.
- 407 Weather Analysis (3 cr) Offered Fall Semester**  
Three-dimensional analysis of synoptic-scale weather systems; application of the fundamental laws of atmospheric dynamics to observed weather patterns; practical questions of worldwide data exchange and display. Prerequisite: ATM 305 .
- 409 Cloud Physics, Radiation, and Remote Sensing (3 cr) Offered Spring Semester**  
Atmospheric radiation; absorption and scattering principles of remote sensing of the atmosphere; cloud microphysics; nucleation, coalescence, ice crystal growth, atmospheric electricity and lighting. Prerequisite: ATM 305.
- 411 Projects in Atmospheric Science (1-3 cr) Offered Fall and Spring Semesters**  
Individual, independent research with faculty supervision. A formal written report is required. Prerequisite: permission of the coordinator during the semester preceding registration. No more than 6 credits in total from MSC371, MSC411, and MSC412 can be counted towards the MSC major or minor requirements
- 412 Undergraduate Thesis in Atmospheric Science (1 cr) Offered Fall and Spring Semesters**  
Undergraduate thesis in Atmospheric Science. Students will write a formal thesis summarizing the results of independent research carried out under faculty supervision. Prerequisite or corequisite: ATM411 and permission of instructor
- In addition, any 500 level courses offered by The Rosenstiel School are open to juniors and seniors with permission of the instructors, and may count as ATM/MSC electives. Such courses can be applied to a Master in Professional Science degree. For details of all current RSMAS graduate courses, see <http://www.rsmas.miami.edu/academics/graduate-programs/current-students/>**

# Honors in Atmospheric Science

The Honors in Atmospheric Science Program gives you an opportunity to do original research in an area of your choice, working closely with a faculty member.

Requirements for admission are:

- \* Sophomore status
- \* Completion of at least 2 semesters of science laboratory or calculus courses, and
- \* An overall GPA of at least 3.5

In addition to the requirements for the Bachelor of Science in Marine and Atmospheric Science degree, graduation with “Departmental Honors in Atmospheric Science” requires a student to complete at least four credits of independent research and thesis (ATM 411/412), write a senior thesis reviewed and accepted by a three-member faculty thesis committee, and present a poster of the research at the RSMAS Undergraduate Research Forum. A final G.P.A. of 3.5 overall must be maintained. Past research topics include:

Ken Dixon, 2011: “Effect of tropical cyclone structure on storm intensity prediction”.

Jeremy Berman, 2013: “Verification of medium-range tropical cyclone track forecasts.”.

Jonathan Labriola, 2013: “The prediction of pre-genesis tropical disturbances using operational statistical and dynamical models”.

Adam Cavender, 2014: “Analysis of the Factors Promoting Tornadogenesis Using NCDC Storm Events and IGRA Data.”

Sara Purdue, 2014: “Characteristics of the Summer 2013 Miami Saharan dust events”

Kevin Rodriguez, 2014: “Verification of Tropical Cyclone Wind Radii, Intensity, and Track Forecasts for Guidance Models in Atlantic Basin Storms”

Alex Goldstein, 2014: “The Influence of Initial Downdraft Convective Available Potential Energy Conditions on Supercell Thunderstorm Low-Level Rotation Using Weather Research and Forecasting Model Simulations”

Samantha Kramer, 2015: “Understanding the aerosol environment above Miami during the summer of 2014”

Theses and posters from 2014 can be found at

<http://www.rsmas.miami.edu/academics/undergraduate/meteorology-program/research-opportunities/>

## *Study Abroad*

Study abroad affiliations with universities in Australia, Britain and South Africa among others allow students to explore atmospheric sciences issues in a variety of physical and political contexts and to network with fellow students from around the world. Atmospheric science students have studied abroad at the University of East Anglia, McQuarie University in Australia, and Edinburgh, Scotland. New study abroad agreements can be developed as well. Students may apply scholarships and financial aid to study abroad programs. Preliminary applications should be made in the spring of the freshman year to ensure that curricular requirements are met.

## *Student Activities*



**Atmospheric Science students complement classroom study with active participation in related clubs.**

*Chi Epsilon Pi* is the national Honor Society for atmospheric science. Students with a GPA exceeding 3.4 who have made a significant contribution to scholarly activities are invited to join. Activities include inviting speakers to meetings, organizing visits to forecast offices and research labs, and writing forecast discussions. Chi Epsilon Pi members of particularly high academic standing are given priority for attending national meteorological conferences.

*The AMS Student Chapter* is involved in a wide range of activities. Anyone is eligible to join. Its activities include public outreach, participating in the National WxChallenge Forecasting Contest, visiting weather laboratories, identifying internship opportunities, providing weather forecasts to UM and the local media, and operating one of the rain gauges within the national Community Collaborative Rain, Hail and Snow Network. Some club members are offered the chance to attend local and national atmospheric science meetings, either by selection or as a volunteer. A key event is attendance to the AMS Annual Meeting by selected students.

*The Storm Chasing Club* organizes a 1-2 week long tornado chase during the early summer of every year.

Attendees at the  
2014 AMS Annual  
Meeting in Atlanta,  
GA.



Dr. Brian Mapes serves as faculty advisor to the students clubs.

## UNDERGRADUATE METEOROLOGY PROGRAM TEACHING FACULTY



Bruce Albrecht, Ph.D.  
Colorado State University  
Boundary-layer clouds  
Teaching Specialty:  
Atmospheric Observations



Ben Kirtman, Ph.D.  
University of Maryland  
El Niño prediction, dynamics  
and variations  
Teaching Specialty:  
Thermodynamics



Shuyi Chen, Ph.D.  
Pennsylvania State  
University  
Mesoscale and tropical  
meteorology  
Teaching Specialty: Survey  
of Modern Meteorology



Craig Setzer  
Chief Meteorologist, CBS4  
Miami  
Teaching Specialty: Broadcast  
Meteorology, Weather Forecasting



Amy Clement, Ph.D.  
Columbia University  
Climate modeling,  
paleoclimate  
Teaching Specialty:  
Physics of Climate



Brian Mapes, Ph.D.  
University of Washington  
Atmospheric convection and  
climate  
Teaching Specialty: Dynamics,  
and Synoptic Meteorology.  
Faculty advisor to student clubs



Anthony Hynes, Ph. D.  
University of Leeds, U.K.  
Laser spectroscopy  
Teaching Specialty:  
Atmospheric Chemistry  
Director of the Undergraduate  
Meteorology Program



David Nolan, Ph.D.  
Harvard University  
Dynamic meteorology  
Teaching Specialty: Dynamics



Mohamed Iskandarani, Ph.D.  
Cornell University  
Numerical methods, ocean flow  
simulation  
Teaching Specialty: Scientific  
Programming



Chidong Zhang, Ph.D.  
Pennsylvania State University  
Tropical Meteorology  
Teaching Specialty: Dynamics



Igor Kamenkovich, Ph.D.  
MIT/Woods Hole  
Ocean dynamics, large-scale  
ocean circulation  
Teaching Specialty: Global  
Climate Change



Paquita Zuidema, Ph.D.,  
University of Colorado-Boulder  
Cloud processes & remote sensing  
Teaching Specialty: Cloud Physics  
and Radiative Transfer