

Status: PENDING

**PROGRAM REQUEST**  
Minor in Atmospheric Sciences

Last Updated: Fink, Steven Scott  
12/04/2012

<b>Fiscal Unit/Academic Org</b>	Geography - D0733
<b>Administering College/Academic Group</b>	Arts and Sciences
<b>Co-administering College/Academic Group</b>	
<b>Semester Conversion Designation</b>	New Program/Plan
<b>Proposed Program/Plan Name</b>	Minor in Atmospheric Sciences
<b>Type of Program/Plan</b>	Undergraduate minor
<b>Program/Plan Code Abbreviation</b>	
<b>Proposed Degree Title</b>	

**Credit Hour Explanation**

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program				14	
Required credit hours offered by the unit	Minimum			14	
	Maximum			14	
Required credit hours offered outside of the unit	Minimum			0	
	Maximum			0	
Required prerequisite credit hours not included above	Minimum			5	
	Maximum			18	

**Program Learning Goals**

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

**Program Learning Goals**                      •

**Assessment**

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

**Is this a degree program (undergraduate, graduate, or professional) or major proposal?** No

**Program Specializations/Sub-Plans**

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

**Pre-Major**

**Does this Program have a Pre-Major?** No

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**Attachments**

- AS-Minor-Proposal.docx  
*(Program Proposal. Owner: Mansfield, Becky Kate)*
- AtmosSci SBS letter 110112.doc: ASCC Panel Chair--cover letter  
*(Other Supporting Documentation. Owner: Vankeerbergen, Bernadette Chantal)*
- rev ATMOSSCIMINORSHEET 11-19-12.doc: ASC Minor Advising Sheet  
*(Semester Advising Sheet(s). Owner: Vankeerbergen, Bernadette Chantal)*

**Comments**

- Approved by ASCC (11-16-12). *(by Vankeerbergen, Bernadette Chantal on 12/03/2012 11:45 AM)*

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Mansfield, Becky Kate	07/12/2012 01:59 PM	Submitted for Approval
Approved	Mansfield, Becky Kate	07/12/2012 01:59 PM	Unit Approval
Approved	Haddad, Deborah Moore	07/12/2012 02:20 PM	College Approval
Approved	Vankeerbergen, Bernadette Chantal	12/03/2012 11:45 AM	ASCCAO Approval
Approved	Fink, Steven Scott	12/04/2012 10:52 AM	ASC Approval
Pending Approval	Soave, Melissa A	12/04/2012 10:52 AM	CAA Approval



**Department of Geography**

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**July 9, 2012**

**Dr. Mitch Masters, Chair  
Arts and Sciences Curriculum Committee  
The Ohio State University  
Campus**

**Dear Colleagues,**

Enclosed please find Geography's proposal for an Undergraduate Minor in Atmospheric Sciences. In response to the growing demand for Atmospheric Sciences training and skills by students from multiple disciplines, Geography proposed the Atmospheric Sciences major back in 2008 and it received final approval from the Board of Regents in 2011. We also recognized that that many students might not be able to complete all the major requirements but still desire a substantial training experience in Atmospheric Sciences to advance their career for further academic or professional pursuits. The proposed Atmospheric Sciences minor is designed for students to meet such a need. The curriculum of the Atmospheric Sciences minor is based on that of the Atmospheric Sciences major, which includes a diverse range of courses that can be selected by students to count toward the proposed minor degree. It was discussed in detail among the Atmospheric Sciences faculty twice during Spring 2012. We believe the Atmospheric Sciences minor curriculum is rigorous and will meet students' needs. Geography is fully supportive of the proposed Atmospheric Sciences minor and we are fully committed to doing whatever it takes to make it a success. Your favorable consideration will be greatly appreciated.

Sincerely

A handwritten signature in black ink, appearing to read "Daniel Sui", with a long horizontal flourish extending to the right.

Daniel Sui  
Professor & Chair

## Proposal: Undergraduate Minor in Atmospheric Sciences

### I. General Information

Give the name of the proposed minor.

Atmospheric Sciences

State the proposed implementation date.

Autumn 2013

State what degree students completing the minor will receive.

Minor in Atmospheric Sciences

Identify the academic units (e.g. department, college, etc.) responsible for administrating the major program.

Department of Geography, College of the Arts and Sciences

Type of program.

Undergraduate minor

### II. Program Rationale Statement

The atmosphere affects Ohio in a number of ways. Blizzards snarl transportation and affect utilities. Floods threaten life and infrastructure. Droughts reduce agricultural production and heat waves cause the demand for electricity to spike. Hail and high winds damage property and increase insurance rates. Even sunshine can increase the formation of haze and smog. In addition, climate change may alter the severity and location of all these events. Students in many fields of study are interested in these topics and take courses that cover these topics. Undergraduates majoring in a number of disciplines have expressed an interest in a potential minor in Atmospheric Sciences in order to document formally their completion of a coherent set of courses dealing with weather and climate. For example, students interested in careers in media specializing in weather and climate have expressed a desire for a minor in Atmospheric Sciences to complement their major in Communications. Additionally, students in certain areas of engineering often take courses in Atmospheric Sciences as technical electives and have expressed and have expressed an interest in a minor to formally document their coherent choice of courses.

Geography at Ohio State has an almost ninety year tradition of research and teaching in the atmospheric sciences. Following a 1920 address to the American Meteorological Society, Eugene Van Cleef was invited to establish a climatology program at the Ohio State University in 1921. Van Cleef became a member of the Department of Geography when it was formed and served as a faculty member here until 1973. As a result of this longstanding focus on climatology and physical geography, the department is recognized internationally as top-ranked in atmospheric sciences-based research and teaching. At the undergraduate level the climatology program has evolved into the program of study leading to a B.S. in Atmospheric Sciences. The Atmospheric Sciences was established as a Graduate Program at Ohio State in 1971, offering both M.S. and Ph.D. degrees. The Atmospheric Sciences Program was co-located with the Department of Geography in 1986.

The topics of study in the atmospheric sciences have expanded considerably since the inauguration of atmospheric sciences in Geography at the Ohio State University. Climatology is now just one important component in a much broader landscape of research and teaching. Current faculty in the Department of

Geography offer a wide range of courses, touching on topics such as global warming, climate change, El Niño, hurricanes, floods and other aspects of severe weather.

Our B.S. in Atmospheric Sciences complements the B.S. degree in Geography. There are also existing M.S. and Ph.D. programs in Geography and in Atmospheric Sciences. However, there are undergraduates in other majors with an interest in atmospheric sciences who do not have the room in their course of study to complete the full requirements for the B.S. in Atmospheric Sciences. These students have expressed an interest in an undergraduate minor that would make it possible for them to take a coherent set of courses in atmospheric sciences that is consistent with their majors. The students also see the proposed minor as a way to acknowledge formally a concentration of study in atmospheric sciences. The primary reasons for this proposal are that it

- 1) responds to an existing demand at the undergraduate level for a minor in Atmospheric Sciences;
- 2) fills a need that exists at Ohio State;
- 3) takes full advantage of the expanded expertise of recent faculty hires; and accurately reflects the broadened nature of the atmospheric sciences

The minor is structured in such a way as to provide the students with a solid foundation to enable them to understand topics in atmospheric sciences and to allow the students sufficient flexibility for them to be able to choose a coherent set of courses that fits their interests and needs. Every student in the minor will be required to take either Atmospheric Sciences 2940 (Basic Meteorology) or Geography 5900 (Climatology). Each of those courses discusses the basic processes at work in the atmosphere and will provide the students with a solid foundation for the other courses in the minor. The difference between the two courses is the time scale on which the processes are operating. In Atmospheric Sciences 2940 the time scale is on the order of the events that create our patterns of weather, while in Geography 5900 the time is on the order that determines our patterns of climate and climate change. Thus, a student interested in becoming an on-air meteorologist on a television station would likely take Atmospheric Sciences 2940, while a student with an interest in causes of climate change would likely take Geography 5900. After a student completes either Atmospheric Sciences 2940 or Geography 5900, that individual would choose four additional courses from a list based on their needs and interests.

This proposal was first discussed by the faculty in the Department of Geography who teach the courses in the minor. The requirements for the minor were determined as a result of that discussion and those faculty unanimously approved the minor. The proposal was subsequently discussed and approved by the undergraduate curriculum committee in the department.

**III. List of Semester Courses**

Minimum number of semester credit hours = 14

Note: AS – Atmospheric Sciences, GEOG - Geography

Semester Number	Quarter Number	Course Title	Credit hours	Prereqs
<b>Required courses (3 hours students must take either AS 2940 or Geography 5900)</b>				
AS 2940	AS 230	Basic Meteorology	3	Physics 1251 and Math 1151
<b>OR</b>				
GEOG 5900	GEOG 520	Climatology	3	none
<b>Elective courses (students must choose at least 11 credit hours from the following list)</b>				
GEOG 3882	GEOG 597.02	Integrated Earth Systems: Confronting Global Change	3	none
GEOG 3900 OR 3901H	GEOG 410H OR 420	Global Climate and Environmental Change OR Global Climate Change: Causes and Consequences	3	none
AS 5901	AS 629	Climate System Modeling: Basic and Applications	3	2940 or GEOG5900
GEOG 5921	GEOG 622.01	Microclimatology: Boundary Layer Climatology	3	5900 or AS2940; Physics 1251
GEOG 5922	GEOG 622.02	Microclimatology: Microclimatological Measurements	3	GEOG 5921
AS 5940/GEOG 5940	AS 620/GEOG 620	Synoptic Meteorology Laboratory	2	5900 or AS2940; Physics 1251
GEOG 5941	GEOG 623.01	Synoptic Meteorology: Synoptic Analysis and Forecasting	3	5940
GEOG 5942	GEOG 623.02	Synoptic Meteorology: Severe Storm Forecasting by Radar and Satellite	3	5941
AS 5950	AS 631	Atmospheric Thermodynamics	3	Math 1152
AS 5951	AS 637	Dynamic Meteorology I	3	5950 and Math 2255
AS 5952	AS 638	Dynamic Meteorology II	3	5951

#### IV. Implementation –

##### Faculty Workload

The Department of Geography is capable of delivering the minor with the existing faculty members. All courses listed in the minor are offered on a regular basis.

##### Advising

The structure of the minor is relatively straightforward (see the attached advising sheet). The undergraduate advisor at the Department of Geography will be available to meet with students and discuss the minor with them.

##### Enrollment

Enrollment is likely to be modest at first, since students interested in the minor will have to find room for it in their existing plans of study. As the availability of the minor becomes more widely known, we anticipate a steady measured growth in the number of students completing the minor based on previous expressions of interest in such a minor.

##### Curriculum Oversight

The faculty who teach the courses listed in the minor meet periodically to review all aspects of the curriculum and make necessary changes. If approved, the minor and its contents would become part of that review process. In addition, the Undergraduate Curriculum Committee regularly meets and reviews all of the degree programs in the Department of Geography and would provide a departmental wide oversight of the proposed minor.

<b>Atmospheric Sciences Minor Advising Sheet</b>			
Course	Credit Hours	Grade	
1. <input type="checkbox"/> AS 2940 or GEOG 5900	3		
2.			
3.			
4.			
5.			
Total minor hours:			
Minimum minor hours:			14
Advisor Signature and Date:			
Name:			
Major/Specialization:			
Campus ID:			
<b>3 credit hours must be from required courses</b>			
<b>Students must have a minimum overall cumulative point-hour ratio of 2.00 in the minor.</b>			
<b>No grade below C- is permitted in courses in the minor.</b>			



The Ohio State University  
College of Arts and Sciences

Atmospheric Sciences Minor

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**Overview**

Atmospheric Sciences encompasses all aspects of the study of weather and climate. It includes severe storms and other systems that comprise our day-to-day weather. It also includes processes that create and change the Earth's climate. Atmospheric scientists work on scales that vary from local weather at the surface to global features of weather and climate.

**Minor Requirements**

The minor in Atmospheric Sciences requires a minimum of 14 credit hours. All students must take either Atmospheric Sciences 2940 or Geography 5900. Students must choose an additional 11-12 credit hours from a list of courses in Atmospheric Sciences and Geography. Students should meet with the Department of Geography's undergraduate advisor to customize a program.

**Required: 3 hours**

Atmospheric Sciences 2940 or Geography 5900

**Electives: at least 11 hours**

Students must take four elective courses. Students may count GEOG 3900 or 3901, but not both. Some courses in this minor have prerequisites; please consult the course bulletin and/or the geography advisor before enrolling in courses.

GEOG/Atmos. Sc. 5940	2 cr. hours
GEOG 5941	3 cr. hours
GEOG 5942	3 cr. hours
GEOG 5921	3 cr. hours
GEOG 5922	3 cr. hours
GEOG 3882	3 cr. hours
GEOG 3900 OR 3901	3 cr. hours
Atmos. Sc. 5901	3 cr. hours
Atmos. Sc. 5950	3 cr. hours
Atmos. Sc. 5951	3 cr. hours
Atmos. Sc. 5952	3 cr. hours

**Atmospheric Sciences minor program guidelines**

Required for graduation No

Credit hours required A minimum of 14 credit hrs. 1000 level courses shall not be counted toward the 14 credit hr minimum.

Transfer credit hours allowed A maximum of 6

Overlap with the GE Permitted.

Overlap with the major Not allowed and

- The minor must be in a different subject than the major.
- The same courses cannot count on the minor and on the major.

Overlap between minors Each minor completed must contain 12 unique hours.

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative point-hour ratio required for the minor.
- Course work graded Pass/Non-Pass cannot count on the minor.

Minor Approval The minor must be approved by the academic unit. Please see the undergraduate advisor for approval.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school counselor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by the academic unit offering the minor. Please see the undergraduate advisor for approval.

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Nov. 1, 2012

To: Mitch Masters, Chair, OSU Arts and Sciences Curriculum Committee

From: Tom Schwartz, <sup>jas</sup> Chair, ASCC Social and Behavioral Sciences Divisional Curricular Panel

Subject: Approval of Minor in Atmospheric Sciences

At its Oct. 25, 2012, meeting, the SBS panel approved a proposal for a new minor in atmospheric sciences. The panel members agreed that the proposal was strong, with a convincing case for the need for and benefits of the minor. The course requirements seemed to be a solid representation of the course requirements for the major.

Elements of the post-conversion proposal requirements were missing, e.g., a statement on benefits to the state and region, faculty qualifications and enrollment projections. But since the proposal was initiated before the requirements went into effect, the panel decided it would not require that they be met.

The panel's vote was unanimous.