

Department of Atmospheric Science
Graduate Program Review

Michael Hutchins
Eric Waithaka

December 6, 2010

Executive Summary of Findings

A majority of those students who participated in the site visit are pleased with the program. They are satisfied with the research opportunities available, their funding and the caliber of their faculty. However, four areas of concern were pointed out by the students. The first (and the major) concern for almost all students relates to the COGS system. Their fundamental complaint about this system is the lack of transparency, its late timing, the inconsistent interpretation of the process by faculty. The second area of concern revolves around the amount of classes the students need to take to satisfy program requirements. The third area of concern deals with student mentoring/advising. The fourth area of concern deals with TA work-load. The students present at the site visit also expressed concern over building safety in their department, lack of lab space and student office space as well as the direction of new research in the department. This report will hopefully provide some insight about the students perspective of what the Atmospheric Science Department is doing well as well as the above areas of concern.

Student educational status

There were only nine Student in attendance during the site visit. This was approximately 14.75% of the total student body¹. The composition of the student who attended the site visit session was predominantly 2nd years, a couple of 5th years, a 4th year and a 7th year.

Academic program

The are two interrelated issues with regard to the academic program. 1) The general exam (also referred to as the COGS system). 2) The required number of classes that the students should take.

The biggest flaw in the current structure of the graduate program in this department is the COGS system. There was uniform consensus among the students at the site visit that the COGS process is riddled with flaws and inconsistencies. The problems are in communication, transparency, timing and consistency.

According to the students, faculty have no uniform idea regarding COGS and what are the necessary requirements for the student to prepare for it. This leads to confusion and frustration on the part of the students who try to follow the guidelines for the process only to be met with conflicting ideas on what the process should be from the faculty.

There is a glaring lack of transparency in the COGS evaluation system, namely the criteria used to evaluate the students and how different aspects of the process are weighted. Furthermore, the COGS committee does not have a graduate student representative. A graduate student representative would help guarantee fair evaluations and a greater degree of transparency in the system.

Timing of the COGS process is the root of many problems and complaints by the graduate students. According to students the current structure favors students who sit for COGS at the end of their third year or into their fourth year, as their first form of formal feedback on their graduate career that is a long time to wait to know how they are doing. Many would like to see the process, or an alternative process, pushed up to be at the end or during their second year.

Part of the late taking of COGS by a majority of the student is because of a large required curriculum. Students feel that they are required to take a large number of classes within their first two years. Many see the required courses as an asset while others see it as a time sink. In particular, some student held

¹According to the departments self-study report 2009-2010 there are a total of 61 graduate students

the opinion that three of the dynamics classes could be distilled into two. They would also like to see more advanced atmospheric chemistry classes and a clear list of classes eligible for the out of department electives.

With the department starting to diversify its pool of faculty by adding new faculty with different research focuses in the field of atmospheric sciences, students are concerned about how classes in those new fields will manifest. With an already full course load they are worried that new fields will impose more required classes.

Teaching experience

Without the graduate student survey the following is what we could gather from the Department Self-study report and from the site visit. At any given time, there are 12 TA positions required in the program. TAs are mostly involved in teaching undergraduate courses. TAs are hired on per quarter basis and the work-load is assessed as requiring 20 hours/week. In these undergraduate classes, student enrollment is approximately 240 per class. Each class has an average of 2 TAs. Therefore, a TA has approximately 120 students to work with. The Self-Study Report notes this high ratio has been necessitated by making adjustments due to budget cuts. Previously, these undergraduate classes had 3 TAs per class.

Nearly all students present at the site visit reported being a TA at one point. The students expressed concern that some of the classes they taught were very large. Due to these classes being very large, the students felt that the overall design and 20 hours/week requirement of a TA position was unrealistic to the actual work that a TA does. Most students felt that being a TA took up a larger amount of time, almost 40 hours/week.

Research experience

The only concern that was raised regarding the research experience is the lack of necessary lab space for experiments for some students.

Career counseling and job search

The students did not mention career or job placement during the in site visit.

Advising

Student advising seems to be horrible, according to student discussion during the site visit. There are two things in student advising: 1) the department seems to have no formal graduate student mentoring policy and 2) there seem to be varied (and sometimes conflicting) specific student advising experience with regard to classes and the accomplishment of major program milestones.

There seem to be no formal or established student mentoring policy. For instance, the student present at the site visit unanimously expressed the view that once a student forms an academic advisory committee, the committee does not necessarily work with the students in preparing for CoGs. Some examples were given on how certain students have been surprised on learning that their chairs do not consider them adequately prepared for CoGs. In other instances, students have been surprised that their performance during CoGs was not good contrary to advising feedback they thought they received prior to the exam. These examples demonstrate a critical lack of formal mentoring or advising policy.

Student advising about classes and accomplishment of program milestones varies and sometimes appears to be differing. For example, all students present generally expressed concern with the large number of classes that they needed to take in the program. However, what markedly differed is the differing advised they received from their faculty advisors. While one student was being advised to take fewer classes and concentrate on developing her research, another student was being advised to take even more classes in the department.

What is more, it appeared there was a disconnect between what faculty think/advise student on courses and what the program coordinator thinks/advise students on the same. For instance, student reported that it was unclear which cross-listed courses with other departments could count toward their electives and which ones would not. In addition, although the general policy is that elective courses taken outside the department would be at the 500 level and above, most 500 level courses taken outside the department were not automatically approved. To avoid future problems in having the class count as an elective, most student had learned that they needed to get prior approval preferably from the faculty advisor and the program coordinator.

Departmental climate

The students feel comfortable in the department, some said that they are able to get too comfortable which contributes to the long time to degree. There is not much pressure on the students from the advising faculty and from the structure of the program itself which leads to a enjoyable work environment but requires stronger self motivation.

A concern of the students about the climate was, however, about the facilities themselves. There is a noticeable lack of common spaces and a crowded student office. The student reported that the "old Map Room" was once a place for the students to get together and hold discussions, however the room was converted to a library with an office inside, discouraging discussion. Similarly, the students reported being squeezed in their offices. The tight office space does not foster interactions in an effort to be polite to everyone else sharing the same space. Additionally lab space is also held at a premium for the students wishing to perform experiments or lab analysis.

Some students at the site visit expressed concern regarding the safety and stability of the building (ATG) in the event of an earthquake.

Finances

From the discussion during the site visit, there did not seem to be any concerns about funding sources available to students in the department. Like most graduate programs in the sciences the students are guaranteed funding by the department for the duration of their programs, be it through RA or TA positions.

General assessment

Based upon the site visit with the graduate students almost all are satisfied with the program and the research opportunities available, however most are dissatisfied in the way student assessment is performed (via COGS and advisory committees). There is also some concern with the amount of required curricula but while some see this as a problem many others see it as a core strength of the department. The work load for those with TA positions is said to be high though this is a result of budget cut backs.

Atmospheric Sciences-Data Summary

A 43 item survey was administered to graduate students in the Department of Atmospheric Sciences from November 11-29th of 2010. 24 students completed the survey resulting in a 36% response rate.

Educational Status

Among the students that responded, one student self-identified as a master's student and 14 self-identified as Master's/PhD students. Five self-identified as doctoral students and four self-identified as doctoral candidates. All of the students were pursuing a degree in the Department of Atmospheric Sciences and only one student identified also being part of an additional department. The majority of students that responded were admitted during the last four years.

Table 1. Years of admission

2004-2005	3
2006-2007	9
2008-2010	11

All 24 students were attending school full-time. Overall, students estimated that it would take five to six years to complete the program.

Table 2. Student's estimate of how long it would take them to obtain degree

3-4 years	3
5-6 years	18
7+ years	3

Academic Program

Table 3. Evaluation of the academic quality of program, faculty and faculty-student relationships

	Excellent	Very good	Good	Fair	Poor
Academic standards in the program	17	4	3	-	-
Integration of current developments in field	12	9	2	1	-
Program space and facilities	1	-	12	8	3
Overall program quality	14	10	-	-	-
Intellectual quality of the faculty	23	1	-	-	-
Intellectual quality of fellow graduate students	16	6	2	-	-
Relationship between faculty and graduate	9	12	3	-	-

students					
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Table 4. Student's evaluations of graduate program

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Program activities foster a sense of intellectual community	12	10	1	1	-
Program content supports my research or professional goals	11	10	1	1	1
The amount of coursework required seems appropriate to the degree	5	11	5	2	1
Program structure encourages collaboration and/or teamwork	5	10	7	2	-
Program structure provides opportunities to take coursework outside my own department	4	13	1	5	1
Program structure provides opportunities to engage in interdisciplinary work	6	8	5	5	-

Teaching experience

19 of the 24 students have had a teaching appointment while in graduate school. The majority of these students have assisted other faculty on their courses for an average of four quarters. Only one of these students has been the primary course instructor.

Nine of the students reported that their program did provide teacher training, nine students said it didn't and one student was not sure.

Table 5. Student's ratings of the quality of the teacher training (n=9)

	Excellent	Very good	Good	Fair	Poor	No opinion
Quality of teacher training	-	3	2	3	-	1

One student provided the following comment:

It's not really teacher training. The lead TA holds a grad student meeting where upcoming 1st time TAs give 3 minute lessons and get critiqued by fellow students.

Table 6. Student's rating of non-financial support for teaching (n=19)

Not enough	Just enough	Enough	More than enough
3	7	7	2

Table 7. Extent to which teaching experience affected their interest in teaching (n=19)

Increased my interest	11
Made no difference	6
Decreased my interest	1
No opinion	1

Research experience

Table 8. Student’s experiences with research, publications and conferences

	Yes	No	No response
Received adequate training before beginning own research or scholarly work	21	3	-
Received adequate faculty guidance in formulating a research topic	20	4	-
Conducted research in collaboration with one or more faculty members	23	1	-
Received funding through a faculty member’s grant	21	3	-
Received funding to do own research	14	10	-
Assisted in writing a grant proposal	7	17	-
Published one or more papers as sole author	-	24	-
Published one or more papers as lead author	12	12	-
Published one or more papers as a co-author	10	14	-
Have attended a professional conference	20	4	-
Have presented paper or poster at a professional conference	20	4	-

Career counseling and job search

Nine students reported that they weren’t sure whether they wanted to work in academia when they entered their graduate program and 12 said it was their initial goal and three said that it wasn’t.

Table 9. Career counseling from faculty

Did you receive advice on the following topics from your advisor or other faculty members?	Yes	No
Employment opportunities inside academia	11	13
Employment opportunities outside academia	9	15
How to search for a job	2	22
How to prepare a resume or curriculum vitae	3	21
How to prepare for an interview	-	24

Advising

Table 10. Accessibility of information

	Usually	Sometimes	Never	No opinion
Is information on degree requirements available?	22	2	-	-
Is information on degree	11	12	1	-

requirements clear?				
Are faculty and staff well-informed about degree requirements?	6	15	3	-
Have you had input into the design of your individual program of study?	11	7	6	-

Table 11. Student's satisfaction with the quality of advising in the program.

Very satisfied	9
Satisfied	13
Dissatisfied	2
Very dissatisfied	-
No opinion	-

Table 12. Interactions with advisor on the following items:

	4 + times a month (at least one a week)	1-3 times a month	Less than once a month	No response
Your ongoing research results	12	12	-	-
Writing your thesis	4	5	13	2

Table 13. Satisfaction with amount of communication with advisor

Very satisfied	Satisfied	Dissatisfied	Very dissatisfied	No opinion
14	7	2	-	1

15 students identified as doctoral students and they were asked specifically about the type of advising they had received in relation to their PhD.

Table 14. Type of advising received (n=15)

Have you received advice on the following?	Yes	No	No opinion	Not applicable
Preparing for qualifying exams	5	5	-	5
Preparing for general exams	-	1	1	13
Developing thesis/dissertation proposal	7	2	1	5
Selecting thesis/dissertation advisor	4	1	3	7
Doing your research	13	1	-	1
Plagiarism and other violations of the standards of academic integrity	6	1	6	2
Your thesis/dissertation draft	5	-	1	9
Preparing for your final defense	2	-	3	10

Departmental climate

One question on the survey was whether or not students felt that their peers were overly competitive. The majority of the students said that their peers were not overly competitive. And

even if they did find it a bit competitive they didn't see it as a negative. Only one student responded yes, but they did not provide any further explanation. Some of the students provided the following additional comments:

- No. If anything, the graduates all work together and have the success of every individual on their minds.
- No. Good balance of competitiveness and camaraderie; mainly motivated by intellectual curiosity.
- No. They are competitive, but not overly.
- No - there is competition, but I think it is healthy.
- Usually not, but sometimes students worry about grades because it is one factor considered by the Committee on Graduate Studies.
- No. We're a really laid-back department, which is awesome.
- No, not at all. We all have stable funding and do not do lab rotations - we have our adviser and funding set when we enter the program. Most classes are not large enough to curve the grades.

Table 15. Student's perception about sense of community in the department

Excellent	Very good	Good	Fair	Poor	No opinion
11	6	6	1	-	-

Table 17. Issues of diversity

	Yes	No	Unsure	No opinion
Program open to cultural diversity	18	2	3	1
Program committed to attracting and retaining underrepresented students	10	5	5	4
Program provides support for needs of diverse students	11	3	7	3

Table 16. Witnessed discrimination in the graduate program

	Frequently	Occasionally	Never	Unsure	No response
Gender	-	4	18	1	1
Race or ethnicity	-	-	22	1	1
Country of origin	-	2	19	2	1
Religion	-	1	20	2	1
Sexual orientation	-	-	22	1	1
Disability	-	-	22	1	1

Table 17. Experienced discrimination in the graduate program

	Frequently	Occasionally	Never	Unsure	No response
Gender	-	2	21	-	1

Race or ethnicity	-	-	23	-	1
Country of origin	-	-	24	-	1
Religion	-	-	24	-	1
Sexual orientation	-	-	24	-	1
Disability	-	-	24	-	1

Table 18. Student's response to discrimination

Spoke with perpetrator(s) of discrimination	-
Spoke with target(s) of discrimination	1
Discussed incident with friends or family	2
Spoke to other graduate students	-
Spoke to faculty or staff in my department	1
Contacted the UCIRO	-
Spoke to someone in the Graduate school	-
Not applicable	10
No response	12

Finances

Table 19. Student's funding

	More than 9 quarters	7-9 quarters	4-6 quarters	1-3 quarters	None	No answer
Teaching assistantship	-	-	-	19	5	-
Research assistantship	10	4	5	3	2	-
Non-service fellowship	2	1	3	3	9	6
Traineeship or grant	-	-	-	-	15	9
Need-based financial aid/loans	-	-	-	1	14	9
Personal funding	-	-	-	1	14	9
Other	-	-	-	1	14	9

19 students haven't had research or teaching opportunities outside of the program, but the remaining 5 students have. One student did not respond to this question.

Table 20. Are the criteria for financial support eligibility clear?

Usually	17
Sometimes	5
Never	2
No answer	-

Table 21. Does the program provide sufficient funding?

Yes	23
No	-
Unsure	-
No opinion	1

Table 22. Do you feel you had sufficient access to teaching and/or research opportunities?

Yes	21
No	-
Unsure	2
No opinion	1

Table 23. Anticipated accumulated debt from graduate school

\$0	21
\$1-\$9,999	2
\$10,000-\$19,999	1
\$20,000-\$29,999	-
\$30,000-\$39,999	-
\$40,000-\$49,999	-
\$50,000-\$59,999	-
\$60,000-\$69,999	-
\$80,000 or more	-
No response	-

General assessment

Table 24. Quality of their overall academic experience at this university

Excellent	15
Very good	9
Good	-
Fair	-
Poor	-
Other	-

Table 25. Obstacles to student's academic progress

	Not an obstacle	A minor obstacle	A major obstacle	Not applicable	No response
Work/financial commitments	17	3	1	3	-
Family obligations	17	3	2	2	-
Availability of faculty	16	6	2	-	-
Program structure and requirements	13	10	1	-	-
Defining a research topic	18	2	3	-	1
Course scheduling	15	9	-	-	-
Immigration laws or regulations	18	1	-	5	-

The majority of students said it was very likely that they would be able to complete their degree objective. Only four students said it was “somewhat likely.”

Table 26. Satisfaction with program and university

How likely are you to pursue graduate studies...	Definitely	Probably	Maybe	Probably not	Definitely not	No response
at this university	15	7	2	-	-	-
in your graduate program	15	7	-	2	-	-
in your field	13	8	2	1	-	-
in another field	-	2	11	6	4	1

Table 27. Recommending program and university

	Definitely	Probably	Maybe	Probably not	Definitely not	No opinion
Would you recommend this University to prospective students in your field?	19	5	-	-	-	-
Would you recommend this University to prospective students in any field?	4	8	9	1	-	2

Students responded to several open-ended questions. In the first question students were asked what they saw as the most positive characteristics of their program.

1. Open communication with all of the faculty, faculty are leaders in the field
2. Faculty with a "door open" policy. The faculty are always willing to take time to discuss research and life issues. The department feels welcoming and very supportive of graduate student/faculty relationships.
3. The faculty and students. Our program is fairly informal, but there are a lot of good thinkers
4. The atmosphere of all of the faculty and students is generally very supporting. Most of the big developments in our field are presented in department talks by the scientists working on them.
5. There are many very bright people doing a wide variety of excellent research across the field who are also excellent at teaching the material to students.
6. A academically superb faculty that is both friendly and available, excellent grad students, a constant flow of visitors giving talks, the Program on Climate Change (PCC)
7. Excellent courses and faculty, good collaboration among faculty and students in some disciplines.
8. Excellent faculty and reputation for atmospheric science

9. great research
10. Nowhere else, from what I can tell, has the same breadth of the field as UW's Atmospheric Science Dept't.
11. Diverse faculty offering a diversity of classes. Availability of faculty to advise students on their research. Large number of seminars/colloquia offered by the department.
12. Its breadth, ability to talk with a number of faculty members (collaboration), courses offered, prestige
13. Expert faculty and department community.
14. The program is top notch in terms of faculty quality, quality of research, and quality of fellow students. The sheer number of faculty and students who are at such a high level also provides great opportunity for collaboration. There's a great sense of community.
15. Sense of community and knowledgeable faculty
16. The availability of a number of outstanding faculty who are also very approachable. Generally good teaching (with some notable exceptions.) The fact that RA funding is completely taken for granted, since we're a physical-science department - no one hardly ever has to worry about it, unless they take a very long time to finish. The fact that we only have to TA one quarter our entire time here (since we're in a non-basic, rather specialized field that isn't required material for a ton of undergrads, the way, say, math or chemistry or physics is.) The small size (relative to most fields.) Probably best of all, the lack of completely insane research pressure on the grad students, like you have in more competitive fields like biology. (Though some advisors are worse than others.)
17. Strong sense of community, research assistantships w/ stipend so we don't have to work another job, health benefits, world class faculty, good department reputation.
18. Faculties are always available, willing to discuss with students.

In the second question, students described what they found to be the most challenging aspects of their graduate program?

1. Some of the coursework structure doesn't make sense, PhD entrance requirements have changed repeatedly since I've been here.
2. My advisor has high expectations and because of this I am becoming a better scientist.
3. Access to advisers can sometimes be difficult.
4. The standards are high and often it is difficult to figure out how to figure out what the standards are and then meet them.
5. Like anywhere, doing research is hard.
6. Unsupportive thesis advisors
7. The department is strongly invested in its dynamics program however is expanding its interests outside of dynamics without providing a strong background for students with interests outside of dynamics. This weakens the graduate education of these students and weakens the reputation of the department.
8. Long time to graduate
9. Large number of required courses outside of my area of expertise leaving little time to take courses important to my research topic.
10. The coursework is awesome, but it comes at the cost of a slow start to research
11. Lack of clarity and consistency on procedures for moving through the program.

12. The timing of degree milestones is too long. There are lots of course requirements that prohibit research to be done early on. The first pass/fail situation isn't until one's fourth year in many cases. The rules for this defense/exam are unclear.
13. Lack of formal writing or teaching guidance
14. The research is hard! That's OK though. Challenging isn't a bad word. I came here to be challenged. Unnecessarily challenging aspects, which is I assume what you mean, might include a somewhat outdated and uncoordinated curriculum - especially in the basic atmosphere and the atmosphere dynamics courses. There are a lot of really good individual teachers/classes, but it didn't all fit together - I could have a lot better physical understanding of the atmosphere than I actually do, if the curriculum had been organized a little better and each class hadn't been the fiefdom of its professor. I learn a lot better when I'm forced to than when I have to read about it on my own, unfortunately.
15. Some evaluation techniques/qualifying exam type requirements unclear/demanding, old building with shoddy a/c and heating system, faculty sometimes too busy to be good mentors, increasing demands on TA's as budget is cut.
16. It usually takes longer to graduate in our program compared with other programs.

The third question asked students, if they could change one thing about their graduate education to make it more successful or fulfilling, what would it be?

1. The resources for students could be better, for example, desks, file cabinets and computer monitors. We spend the majority of our lives at our desks, and I feel that adequate storage for our papers (file cabinets) is justified. In addition, most of the computer monitors are old and small, resulting in lowered efficiency. While these things are not essential for the success of a student, they would make the experience more comfortable and less frustrating.
2. Our degree requirements and check marks should be made clearer and the assessment process should be more transparent.
3. I wish there were more open discussion of everything that goes on: research, academic requirements, and life issues among students and faculty; however, even I would be pressed to more time for this than I already do.
4. More interdisciplinary science
5. Fund graduate students to pursue their own research interests rather than what the grant they're paid on requires.
6. My graduate experience would have been much better had I been able to get a master's degree sooner.
7. The geophysical fluid dynamics sequence could be streamlined, with a more coherent curriculum and especially a greater focus on geophysical applications in ATMOS 509.
8. Reorganization/restructuring/more flexibility of the first year courses.
9. Decrease the number of required classes outside of my field (which is atmospheric chemistry).
10. Change the Committee on Graduate Studies process.
11. I would try to have a more well-defined research project.
12. Add a course on scientific writing and on teaching
13. See #43 above. Better pedagogy at the course design / curriculum level. Again, most of the individual professors are good teachers, but it often doesn't fit together between

classes at all - there's no unifying vision. Key material was often skipped over, because Professor B took it for granted that of course Professor A would have covered it, while Professor A actually decided not to cover it, or ran out of time, or something. Again, I'm mainly talking about the basic structure and dynamics and synoptics courses, not the physics and chemistry sequence which were very well put together. For example, a lot of the students, during their entire GFD course experience, had no idea that the basic picture of our atmosphere was geostrophically balanced westerlies encircling the globe, with waves corresponding to midlatitude cyclones moving along them. No one had actually gone through that with us, shown us maps, etc. and it was assumed the whole first year that someone had. There was a lot of informal learning from fellow students who had been atmosphere majors or minors in their undergraduate experience, which was key in supplementing the classes. This could have easily been fixed if there was an actual thought-out curriculum that the professors were following.

14. Make my adviser less busy with other commitments (writing textbooks, etc).