4.1

WHAT SHOULD WE TEACH IN INTRODUCTORY METEOROLOGY? LET'S ASK THE STUDENTS!

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1. INTRODUCTION

What topics should be taught in a semester-long introductory meteorology course? For many students and instructors, this is a "given," the answer provided by the "canon" of topics included in a standard textbook on the subject. And yet the meteorological canon is not as firm as in some other scientific fields, partly due to the youth of meteorology as a science and partly due to the continual advances in research that reshape our understanding of the subject.

When we collaborated on an introductory meteorology textbook (Ackerman and Knox 2003) we discovered that there was less consensus on the canon than we expected. We were not provided with a list of mandatory topics by our publisher, for example. Instead, we compiled a "consensus" list of topics in most or all introductory texts, and then modified the list based on our experiences as instructors and scientists.

Who is left out of the canon-making effort? The students. To our knowledge, students are almost always "out of the loop" when it comes to curriculum design in our field. Faculty members create the textbooks they buy, and faculty members decide which textbooks (or unpublished notes) are used in their classes. Faculty members usually set the syllabi for their courses. Students may have opportunity to comment on the design of the syllabus and/or the utility of the text in an end-of-semester evaluation, which may have some impact on future curriculum decisions. But in our experience, faculty usually call the shots based primarily on their own views and interests. Curriculum design in meteorology is a very "top-down" process.

Does curriculum design *have* to be top-down? To quote the senior active U.S. meteorology Ph.D., "it'd be a mess if the students did it" (Reid Bryson, pers. comm., 2003). The implicit assumption is that students are only interested in a handful of flashy topics in our subject, and their superficial interests cannot be the basis for a substantive education in meteorology. For this reason, so the thinking goes, the experts—the faculty—must determine the curriculum.

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Meteorology is scarcely alone in this regard, of course. In classes from agronomy to zoology and from California to Maine, nearly complete faculty control of the college curriculum is the norm.

2. A MODEST PROPOSAL

There is, to our knowledge, no *proof* that introductory meteorology students care only about, say, tornadoes and hurricanes. The advent of The Weather Channel and the ubiquitous cable-TV weather specials, along with the increasing sophistication of local TV weather reports, have exposed the public to a level of meteorological sophistication unthinkable just two decades ago. Could it be that faculty members underrate their own students' maturity of interest in meteorology? Do instructors falsely assume that only faculty can and should devise a curriculum in this subject?

These questions could be endlessly and inconclusively discussed by professors trading anecdotal evidence. Instead, we modestly propose to go to the heart of the matter and ask the students what *they* want to learn in introductory meteorology.

If the results of such a query demonstrate "tunnelvision" on the part of the students, then complete professorial control of the curriculum, from syllabi to textbooks, is not only legitimate—it is vital to a vibrant educational experience. If, instead, the results demonstrate that students collectively have a mature interest in a wide range of meteorological topics, then the entire process of curriculum design in meteorology should be rethought. The basic questions are: does our field take into account the needs and interests of the thousands of students who take an introductory meteorology class in the U.S. every year; and *should* it?

To help answer these questions, we have conducted an admittedly unscientific poll of our students in introductory meteorology classes at the University of Georgia (UGA) and the University of Wisconsin-Madison (UW). Aside from some unpublished surveys in classes at the University of Illinois, we are not aware of any similar efforts in our field (Donna Charlevoix, pers. comm., 2003). The results below are based on the input of over 750 students at UGA and the UW. In the sections below, we describe how we gathered the data from the students, what the data appear to tell us about the students and their meteorological interests, and what we think the implications are for the future of meteorology education—if everyone from publishers to professors will listen.

3. THE "WEATHER QUESTION"

On the first day of the semester, the first author asked his introductory meteorology students at the University of Georgia to respond to this question:

> **What <u>specific question about weather and climate</u> would you most like to have answered in this class?**

This question was asked at the end of the very first class period of the semester, after the course syllabus was presented and discussed briefly. The responses were recorded (along with responses to other non-meteorological questions) by the students themselves on 3x5-inch note cards, with the results tabulated by the first author. This was done for three different sections of Introduction to Weather and Climate that the first author taught at the University of Georgia in the Fall 2002, Spring 2003, and Fall 2003 semesters.

The second author asked the same question of his Fall 2003 Introduction to Weather and Climate class at the University of Wisconsin-Madison. However, the question was handed out at the beginning of class and the student responses where collected prior to a discussion of a course syllabus. Results were once again tabulated by the first author, for consistency's sake.

We did not ask each student to design an entire semester-long curriculum, a task that would overwhelm even most meteorology majors. Instead, our intent is to find out which *one* topic is most important to each student, and to let the natural spread (or lack of spread) of responses give us a collective sense of students' meteorological interests.

We freely admit that this is an unscientific survey. For years, both authors have queried students regarding their interests. The particular approach taken with the survey grew out of the first author's traditional first-day-of-class survey of students. Ideally, students would be asked this question before they were aware of our own syllabi, which may bias the UGA results somewhat (but not the UW results). However, the question was the last of twenty questions asked of the UGA students, the preceding questions asking for the student's favorite novel, musical groups, etc., which also should have set the context for an emphasis on the students' desires, not on regurgitating the instructor's syllabus. On the plus side, by coupling the question with a survey of students' class standing, major, mathematical training, etc., we are able to characterize not only what the UGA students want to know about, but we can also define who the respondents are in terms of their backgrounds.

Imperfections in the experimental design notwithstanding, we believe that—in the apparent absence of any other data of this type for meteorology—these results provide a baseline for comparison with more carefully designed surveys in the future.

4. SURVEY RESULTS: UGA

4.1 *Demographics*

The demographic results of the survey from the three introductory meteorology classes at the University of Georgia are summarized in Table 1 below:

UGA GEOG 1112	**F2002**	**Sp2003**	**F2003**	**ALL**
# Students	249	199	92	**540**
# Responses	227	174	92	**493**
% Responding	91	87	100	**91**
OF THOSE RESPONDING:				
% Male	44	40	45	**43**
% Female	56	60	55	**57**
% from GA	81	81	82	**81**
% FR	47	64	51	**54**
% SO	32	20	20	**25**
% JR	15	7	17	**13**
% SR	5	6	12	**7**
MAJORS:				
% Business	26	22	23	**24**
% Education	6	12	13	**10**
% Journalism	8	9	7	**8**
% Atmos Sci	0.4	0.6	1	**0.6**
% Math/Sci/Engr	4	5	4	**5**
% Taken calculus in high school or college	44	48	45	**45**
# Listing a weather question	193	140	65	**398**
% Listing a weather question	85	80	71	**81**
[UGA-wide freshman SAT]	1208	—	1212	**1210**

Table 1. Survey demographic results from GEOG 1112, Introduction to Weather and Climate, at the University of Georgia. SAT data are the only items not self-reported by students; sources of the SAT data for all UGA freshmen are http://www.uga.edu/gwinnett/news/020405.html and http://career.cpp.uga.edu/ccweb/employers/ugaprofile.html

The three different classes surveyed cover both fall and spring semesters and include two large “superlectures” and one medium-sized lecture class with proportionately more upper-division undergraduates. The gender, home state and professional interests of the classes are relatively constant from one semester to the next, and are in line with published data for UGA. Data from the UGA Office of Institutional Research (http://irhst40.irp.uga.edu/html/irps/irpb/DegreesByYear/FY2003.HTM#S01) indicate that the three most popular UGA schools for bachelor’s degrees (after the omnibus Arts and Sciences) are: Business (29% of all bachelor’s degrees conferred); Education (11%); and Journalism (7%). Comparing these percentages to those for these three majors in Table 1, these introductory meteorology classes appear to contain a very representative cross-section of UGA undergraduates.

Several intriguing demographic results should be pointed out. The percentage of students in Introduction to Weather and Climate at UGA who are majoring in math, science or engineering is quite small, about 5%, although tabulation of this is category is subjective, and the error is probably ±1-2%. A very small number of students are in UGA’s new atmospheric science program. Almost 50% of students have exposure to calculus, a much higher percentage than introductory meteorology instructors or authors might normally assume. (For example, no introductory meteorology textbook in wide use today in the U.S. includes significant calculus-based material.) In addition, the percentage of students with calculus knowledge closely tracks the percentage of male students, although this may be a statistical coincidence.

The main demographic results of the survey at UGA can be summarized succinctly: the students who responded are very representative of the overall UGA undergraduate population. Collectively, they match the stereotype of the generic introductory science class that is primarily filled with freshman non-science majors.

4.2 *“Weather Question” responses by topic*

The UGA students’ responses to the question stated in Section 3 above are tabulated in Table 2. Because the question is open-ended, i.e. students were able to articulate their own questions instead of choosing from a list, categorizing the responses is inherently somewhat subjective. The first author lumped the responses into the categories shown in the table, sometimes after great contemplation. Different people could arrive at somewhat different topics and different numbers, but the differences probably would not be more than a few percentage points. Despite the wording of the question, some students stated more than one topic in their question, and these multiple topics were all included in the tabulation.

Arguably the most striking result of the responses is the prominence of weather forecasting. “How can we predict the weather?” and “Why is the meteorologist always so wrong?” are the most common type of questions asked by UGA students, despite the heavy emphasis on tornado-chasing in media depictions of meteorology. Perhaps surprisingly, severe weather accounts only for roughly 25% of all topics listed by the students. Another surprise is the sizable number of questions about atmospheric optics, such as “why is the sky blue?” Notable for its absence is the extratropical cyclone, a staple of the meteorology curriculum.

UGA GEOG 1112	**Fall 2002**	**Sp 2003**	**Fall 2003**	**ALL**
# Respondents to the weather question	193	140	65	**398**
# Topics listed in weather questions	207	169	78	**454**
% of Topics/Respondents	107	121	120	**114**
OF THOSE TOPICS:				
% Weather forecasting	13	12	17	**13**
% Tornadoes	10	17	9	**12**
% Precipitation	7	7	10	**7**
% Lightning and thunder	8	4	5	**6**
% Atmospheric optics	6	6	5	**6**
% Clouds	5	8	5	**6**
% Tropical cyclones	5	8	1	**5**
% Humidity	4	4	6	**4**
% Climate change	3	5	4	**4**
% Regional climate	5	1	5	**3**
% El Niño	5	2	1	**3**
% Pressure	4	2	1	**3**
% Thunderstorms	2	2	1	**2**
% Fronts	2	2	0	**2**
% Wind	0	4	0	**2**
% Weather variability	0.5	3	0	**1**
% Air-sea interaction	1	0	4	**1**

Table 2. Survey “weather question” results from GEOG 1112, Introduction to Weather and Climate, at the University of Georgia. Only topics with at least 1% of the overall share of responses are listed, and are listed in order of decreasing frequency.

In addition to the responses listed in Table 2, a few students (< 1%) also asked questions reflecting an impressive range of interest and knowledge about weather and climate, including questions dealing with: biometeorology; turbulence; weather modification; the jet stream; the occurrence of “100-year” storms; fire meteorology; the “rain smell”; and the ozone hole.

4.3 *“Weather Question” responses by text chapter*

Since the topics in Table 2 were chosen by the first author, the risk of bias exists in the tabulation of the students' responses exists. Therefore, the results were retabulated in a way to alter any bias caused by the arbitrarily chosen headings. The responses were recategorized by the chapter in an introductory meteorology textbook in which the answer to the question would be most likely to appear. The textbook used is Ackerman and Knox (2003), but the results should be relatively text-independent (with the exception of this text's unique chapter on "Observing the Atmosphere," which unites atmospheric optics with a discussion of remote sensing techniques).

The chapter-by-chapter categorization of the UGA students' responses is shown in Table 3:

UGA GEOG 1112	**Fall 2002**	**Sp 2003**	**Fall 2003**	**ALL**
# Respondents to the weather question	193	140	65	**398**
# Topics listed in weather questions	207	169	78	**454**
% of Topics/Respondents	107	121	120	**114**
% OF TOPICS FOUND IN:				
Ch. 1: Introduction	2	4	1	**3**
Ch. 2: Energy Cycle	0.5	2	0	**0.9**
Ch. 3: Temperature	1	0.6	1	**1**
Ch. 4: Water in the Atmosphere	12	17	19	**15**
Ch. 5: Observing the Atmosphere	7	6	7	**7**
Ch. 6: Atmospheric Forces and Wind	4	5	3	**4**
Ch. 7: Global-Scale Winds	0.5	1	1	**0.9**
Ch. 8: Atmosphere-Ocean Interactions	11	10	5	**10**
Ch. 9: Air Masses and Fronts	2	2	0	**2**
Ch. 10: Extratropical Cyclones and Anticyclones	0.5	0.6	3	**0.9**
Ch. 11: Thunderstorms and Tornadoes	24	23	16	**22**
Ch. 12: Small-Scale Winds	1	0	1	**0.9**
Ch. 13: Weather Forecasting	15	12	18	**15**
Ch. 14: Past and Present Climates	0.5	1	4	**1**
Ch. 15: Human Influences on Climate	4	6	4	**5**

Table 3. Survey "weather question" results from GEOG 1112, Introduction to Weather and Climate, at the University of Georgia, as categorized by the chapter in Ackerman and Knox (2003) in which the answer would most likely be found.

The five chapters in which UGA students would be most likely to turn to for answers to their questions are, in order:

1. **Thunderstorms and Tornadoes**
2. **Water in the Atmosphere**
3. **Weather Forecasting**
4. **Atmosphere-Ocean Interactions: El Niño and Tropical Cyclones**
5. **Observing the Atmosphere**

The breadth of student interest beyond severe weather is evident in this list. In addition, the next two chapters on the list,

6. **Human Influences on Climate**
7. **Atmospheric Forces and Wind**

further illustrate the range of questions asked by the UGA students. Conclusions to be drawn from this data will be discussed in Section 6.

5. SURVEY RESULTS: UW

The survey results in Section 4 are limited to the University of Georgia. To test the generality of these results, we conducted a similar survey for a similar number of introductory meteorology students at the University of Wisconsin-Madison at the beginning of the Fall 2003 semester. Some differences exist in how the data was gathered (see Section 3), but the exact same wording was used in the "weather question." Therefore, the results from Wisconsin should be able to reveal whether or not the UGA results are representative of public university students in another region of the United States.

5.1 *Demographics*

The demographic results of the survey from AOS 100/101, Introduction to Weather and Climate, at the University of Wisconsin-Madison are summarized in Table 4 on the next page. As discussed below, this class is a representative cross-section of UW students.

As of 2000-2001, the University of Wisconsin-Madison undergraduate population contained 47% men and 53% women (http://www.uwsa.edu/opar/ssb/2000-01/html/r_a302.htm); the distribution by class in 2001 was FR: 22%; SO: 22%; JR: 25%; and SR: 32% (http://www.chancellor.wisc.edu/AR2002/facts.html). The AOS 100/101 class has a similar composition, except for a higher proportion of freshmen and sophomores. This is to be expected of an introductory science class.

The online survey we conducted appears to have been a little skewed toward women; an analysis of names on the weather question responses revealed that at least 45% were men. This suggests that men's perspectives are underrepresented in the demographic results, but not in the weather question results.

The most popular majors among all UW undergraduates are 1) psychology, 2) political science, 3) communication arts, 4) history, and 5) journalism (http://www.uwalumni.com/onlinewisconsin/2002-2.html). In contrast, the three most popular majors in the AOS 100/101 class, according to the students self-reported major in the online survey, were: journalism; education; and business, the same top three majors as at UGA, although in rather different proportions than at UGA. (English, political science, and psychology were the next three most-popular majors among AOS 100/101 students.) Again, the class composition resembles the science-for-non-scientists stereotype.

However, the students in introductory meteorology at Wisconsin appear to be somewhat more science-oriented. They are three times likelier to be in a science major than the UGA introductory meteorology students, and are ten times more likely to be pursuing a degree related to atmospheric science than UGA students.

UW AOS 100/101	**F2003**
# Students	**395**
# Responses	**370**
% Responding	**94**
% Also responding to online survey:	**66**
OF THOSE RESPONDING TO ONLINE SURVEY:	
% Male	**40**
% Female	**60**
% FR	**37**
% SO	**33**
% JR	**20**
% SR	**9**
% Online respondents who reported a major(s)	**50**
OF ALL MAJORS REPORTED:	
% Business	**6**
% Education	**7**
% Journalism	**10**
% Atmos Sci	**5**
% Math/Sci/Engr	**17**
[Fall 2002 UW freshman SAT]	**1265**

Table 4. Survey demographic results from AOS 100/101, Introduction to Weather and Climate, at the University of Wisconsin-Madison. SAT data is not self-reported by students; the source is: http://www.uc.wisc.edu/facts.html

A note of caution: the relatively small fraction of the overall AOS 100/101 student body that responded to the online survey *and* also listed a major—only about 33% of the entire class, far less than for the UGA data—suggests that the results for majors in AOS 100/101 at Wisconsin should be interpreted a bit cautiously.

5.2 *"Weather Question" responses by topic*

The Wisconsin students' responses were tabulated by topic, in a process identical to that used for the UGA students' responses in Section 4. The same topic headings were used, except with some augmentation due to the wider spread of responses by the UW students. The results are summarized in Table 5, with the UGA results listed for comparison's sake:

COMPARISON	UGA ALL	**UW F2003**
# Respondents to the weather question	398	**370**
# Topics listed in weather questions	454	**455**
% of Topics/Respondents	114	**123**
OF THOSE TOPICS:		
% Weather forecasting	13	**14**
% Tornadoes	12	**10**
% Precipitation	7	**5**
% Lightning and thunder	6	**7**
% Atmospheric optics	6	**4**
% Clouds	6	**4**
% Tropical cyclones	5	**6**
% Humidity	4	**3**
% Climate change	4	**9**
% Regional climate	3	**5**
% El Niño	3	**2**
% Pressure	3	**2**
% Thunderstorms	2	**4**
% Fronts	2	**2**
% Wind	2	**2**
% Weather variability	1	**2**
% Air-sea interaction	1	**1**
% World climate	—	**2**
% Temperature	—	**2**
% Weather patterns/systems	—	**1**

Table 5. Survey "weather question" results from AOS 100/101, Introduction to Weather and Climate, at the University of Wisconsin-Madison (far right column), compared with the cumulative UGA results from Section 4 (middle column). Only topics with at least 1% of the overall share of responses are listed.

The results from Wisconsin are strikingly similar to the results from Georgia. Weather forecasting is again the most-cited topic of interest, followed by tornadoes. One obvious difference is the Wisconsin students' greater awareness of climate. Climate change is the third-most-cited topic, perhaps a reflection of the greater proportion of science students in Wisconsin's introductory meteorology classes, or perhaps due to climate changes that have taken place during students' lifetimes (such as warmer, less snowy winters) that have been far more noticeable to the average citizen in the Midwest than in the Southeast. Atmospheric optics is ninth in the UW survey, just ahead of thunderstorms, retaining the same top-ten status it enjoys at UGA.

5.3 *"Weather Question" responses by text chapter*

As in Section 4.3, the students' responses were retabulated to correspond to the chapter in Ackerman and Knox (2003) in which the answer would most likely be found. The results are listed in Table 6 in the next column, again with the UGA results for easy side-by-side comparison. The overall similarity in the results at Wisconsin with the results at Georgia is inescapable, with the single exception of the Wisconsin students' greater awareness of climate issues.

The seven chapters in which UW students would be most likely to turn to for answers to their questions are, in order:

1. **Thunderstorms and Tornadoes**
2. **Weather Forecasting**
3. **Water in the Atmosphere**
4. **Human Influences on Climate**
5. **Atmosphere-Ocean Interactions: El Niño and Tropical Cyclones**
6. **Observing the Atmosphere**
7. **(tie) Atmospheric Forces and Wind**
   Past and Present Climates

The chapters in this list are identical to the top seven chapters ranked on the basis of the UGA responses, with the exception of "Past and Present Climates"—reflecting Wisconsin students' greater focus on climate.

COMPARISON	UGA ALL	**UW F2003**
# Respondents to the weather question	398	**370**
# Topics listed in weather questions	454	**455**
% of Topics/Respondents	114	**123**
% OF TOPICS FOUND IN:		
Ch. 1: Introduction	3	**3**
Ch. 2: Energy Cycle	0.9	**1**
Ch. 3: Temperature	1	**3**
Ch. 4: Water in the Atmosphere	15	**12**
Ch. 5: Observing the Atmosphere	7	**5**
Ch. 6: Atmospheric Forces and Wind	4	**4**
Ch. 7: Global-Scale Winds	0.9	**2**
Ch. 8: Atmosphere-Ocean Interactions	10	**10**
Ch. 9: Air Masses and Fronts	2	**2**
Ch. 10: Extratropical Cyclones and Anticyclones	0.9	**2**
Ch. 11: Thunderstorms and Tornadoes	22	**23**
Ch. 12: Small-Scale Winds	0.9	**0.5**
Ch. 13: Weather Forecasting	15	**13**
Ch. 14: Past and Present Climates	1	**4**
Ch. 15: Human Influences on Climate	5	**10**

Table 6. Survey "weather question" results from AOS 100/101 at the University of Wisconsin-Madison (far right column), compared with cumulative UGA results from Section 5 (middle column), as categorized by the chapter in Ackerman and Knox (2003) in which the answer would most likely be found.

6. DISCUSSION OF ALL RESULTS

> "Suppose all of the syllabi and curricula and textbooks in the schools disappeared… What would you do? We have a possibility for you to consider: suppose that you decide to have the entire "curriculum" consist of questions. These questions would have to be worth seeking answers to not only from your point of view but, more importantly, from the point of view of the students."
>
> – Neil Postman and Charles Weingartner, *Teaching as a Subversive Activity*, 1969

In this paper we have outlined a real-life application of the ideas advocated by Postman and Weingartner (1969). The responses received from over 750 students at the University of Georgia and the University of Wisconsin-Madison provide provocative evidence that introductory meteorology students do *not* suffer from "tornado tunnelvision." Instead, their collective interests broadly cover nearly the entire breadth of meteorology, from weather maps to wind-whipped waves to drought to heat waves in Europe to 100-year storms to the consequences of global warming.

There are a number of more specific results of this survey, both demographic and relating to students' meteorological interests, which deserve emphasis in the context of current pedagogical practice in our field:

- Nearly 50% of the students at UGA have been exposed to calculus. But introductory meteorology makes no use of the students' mathematical maturity—with the vast majority of textbooks and classes requiring only occasional elementary arithmetic;

- Weather forecasting is the consensus #1 topic of interest for students at both Georgia and Wisconsin. But most textbooks provide a treatment of weather forecasting that lags behind current practice, pales in comparison to what can be found with even a cursory search of the Internet, and is confined to one chapter near the end of the book—and thus crammed into the hectic end of a long semester;

- Atmospheric optical phenomena are one of the most commonly named topics in our survey. But anecdotal evidence indicates that many instructors limit or even omit this material in introductory meteorology courses;

- Student interest in climate—sometimes seen as the antithesis of tornadocentrism—is significant, particularly at Wisconsin;

- Also, at both UGA and the UW, there is a small-but-steady drumbeat of interest in biometeorology, e.g. "why do people's joints ache before bad weather?" But this subject is rarely addressed in significant detail in introductory meteorology classes.

We should note that our survey results are from two public universities that are ranked as being among the top twenty public institutions in the nation (U.S. News & World Report 2003). As such, our results may or may not be representative of students at other college and universities. We encourage instructors to survey their own students as we have here, to tabulate the results, and to report their results.

Assuming that our results are broadly representative of all introductory meteorology students, these points of emphasis can and should be the starting point for discussions among introductory meteorology instructors, and also among textbook authors in our field.

Furthermore, there are significant implications to be drawn from our survey for how we do meteorology education in the classroom. If our students collectively contain within themselves the makings of a legitimate introductory meteorology curriculum, why not make them partners—"stakeholders"—in the creation of syllabi? We are aware of such efforts only at the University of Illinois, and also several years ago by the second author at Wisconsin. This approach need not take the form of a pure democracy, in which 23% of the semester is spent on a single chapter on thunderstorms and tornadoes. Instead, a "democratic republic" approach, in which the students' questions are shaped by the instructor into a syllabus that passes intellectual muster *and* maintains a proper balance among topics. For example, one insightful question about, say, mountain winds could be used by the instructor as the seedling for a lecture on small-scale winds, whereas a Bermuda Triangle question could be wisely ignored.

This question-based approach bears much in common with "constructivism" (Brooks and Brooks 2001). However, one need not go "whole-hog" into constructivism to employ this approach. At the least, an instructor could survey student interests, compile a syllabus reflective of these interests in proportions that seem appropriate to the instructor, and then employ traditional lecture methods for the rest of the semester. Even this, we claim, would be a useful first step toward a more intellectually interactive classroom.

As pedagogical materials become more flexible, e.g. with instructor-unique textbooks possible via electronic publishing and combined with versatile electronic ancillaries (e.g., Whittaker and Ackerman 2002), a student-influenced curriculum should be even easier to implement than it currently is today.

7. SUMMARY AND FUTURE WORK

We conducted an unscientific survey regarding which one question introductory meteorology students would most like to have answered in their classes. We received responses from over 750 introductory meteorology students at the University of Georgia and the University of Wisconsin-Madison. Their responses run the gamut of meteorology and are not overwhelmingly focused on any one topic. Results from Wisconsin and Georgia are nearly identical, with the exception of a greater awareness of climate issues at Wisconsin. Several topics most commonly noted by students, such as weather forecasting and atmospheric optics, are in our opinion not often given adequate treatment in introductory meteorology classes and in the textbooks used in these classes. Our survey results suggest that an instructor could use students' first-day responses to this kind of question and shape a syllabus that would incorporate student interests while retaining educational integrity.

In the future, we plan to conduct similar surveys in a more scientific process, and to teach introductory meteorology using student input to help craft our syllabi.

8. ACKNOWLEDGMENTS

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