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# WE ARE THE 20%: UPDATED STATISTICS ON FEMALE FACULTY IN EARTH SCIENCES IN THE U.S.

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## ABSTRACT

This paper presents data on the numbers of female and male professors at the 106 top US earth science PhD-ranting graduate programs during the 2010–2011 academic year. Overall, 20% of earth science faculty at PhD-granting research universities were women (470 female faculty members out of 2,324 total). By rank, 36% of assistant professors, 24% of associate professors, and 13% of full professors were women. Large ranges in percentages (0%–40%) of female professors were observed between departments. No geographic trends were observed, nor was there any correlation between the national ranking of department and the percentage of women faculty. A small positive correlation between the size of the department and the percentage of female faculty was present as department sizes increased from 5 to 30 faculty members, and a small decline occurred between 30 to 50 faculty. Percentages of tenured female faculty were generally lower than the total percentage of female faculty members in each department. The top 5 departments in terms of percentages of female faculty were SUNY Buffalo Department of Geology (40%), Louisiana State University–Baton Rouge Department of Geology and Geophysics (40%), University of New Hampshire Department of Earth Sciences (37%), University of Massachusetts–Amherst Department of Geosciences (36%), and University of Nevada–Las Vegas Department of Geoscience (35%).

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*"I have always claimed that there was no merit in being the only one of a kind."*

—**Florence Bascom** (1862–1945), first woman PhD from Johns Hopkins University, first woman geologist hired by U.S. Geological Survey, first woman officer of Geological Society of America, Bryn Mawr professor, founder of the Bryn Mawr geology department and mentor to numerous prominent female geologists. She modeled the geology program at Bryn Mawr on programs at male colleges, and insisted that her female students conduct field work, despite the fact that women's participation in geology had previously been primarily indoors (paleontology, cartography, etc). Many of the women geologists in the first part of the 20th century were followers of Florence Bascom [*Clary and Wandersee*, 2007].

Earth science is of vital importance to society: geoscientists strive to predict earthquakes and volcanic eruptions, forecast the effects of global climate change, and understand the evolution of life and global biogeochemical cycles through time, just to list a few research themes. Many women are fascinated by these topics, as illustrated by the fact that nearly 50% of the bachelor's degrees in earth science departments are granted to women [*Holmes et al.*, 2008].

The percentage of female graduate students in earth sciences is also relatively high: around 40% in the 2000s. The story changes going from graduate school to postdoctoral programs, and especially from postdoctoral programs into assistant professorships. Research has shown a large leak in the pipeline in between graduate school and assistant professorships [*Holmes and OConnell*, 2003; *Holmes et al.*, 2008], implying that academic earth science is a less attractive career choice for female PhDs. This gap is not filling at nearly the rate expected if the problem was simply the lag time needed for the increased numbers of female PhDs to climb the ranks in academia [*Holmes et al.,* 2008].

I compiled data on the numbers of female and male professors at all ranks (assistant, associate, and full, as well as research professors at the same three ranks) for the 106 top U.S. earth science PhD-granting graduate programs from the 2011 *U.S. News & World Report* college rankings, with a minimum of 5 faculty in the department and a maximum of 50 faculty. These data were obtained by counting the numbers of female and male professors listed on the faculty pages of each department's webpage; counts were made between November 2010 and May 2011. Adjunct and emeritus professors were not counted. Taken all together, 20% of earth science faculty at PhD-granting research universities were women (470 female faculty members out of 2,324 total); by rank, this varied from 36% for assistant professors (33% for assistant research professors), 24% for associate professors (30% for associate research professors), and 13% for full professors (10% for full research professors) (Figure 2.1). These numbers are up ~10% across the ranks from a 2002–2003 dataset, which found that on average 12% of the total earth science faculty were female: 26% female assistant professors, 14% female associate professors, and 8% female full professors [*de Wet et al.*, 2002; *Holmes*

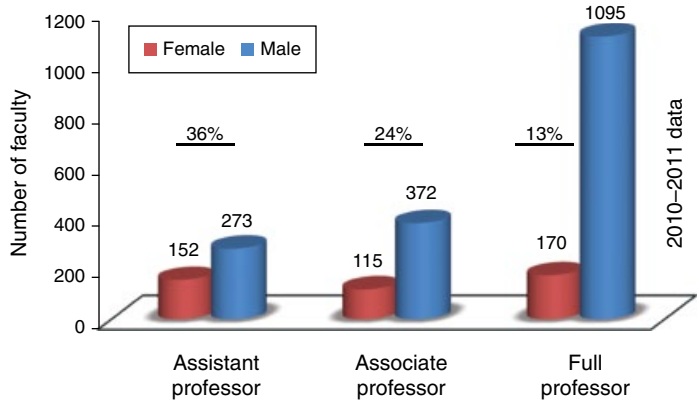


**Figure 2.1** Numbers of female and male faculty members by rank at the 106 top-ranked PhD-granting geoscience departments. Data for 2010–2011 academic year. For color detail, please see color plate section.

*and OConnell*, 2003; *Holmes et al*., 2008]. However, the 2010–2011 data remain well under the ultimate goal of 50% female earth science faculty at all ranks.

On a departmental level, there was a large range in the percentages of total faculty who were women, from 0% to 40% (Figure 2.2). One might suppose that departments with the most women are concentrated in a certain portion of the country. In fact, there are no clear geographic trends in the percentages of female faculty (Figure 2.3). There is also no correlation between ranking of department and the percentage of women faculty: the two top-ranked earth science graduate programs at Caltech and MIT have 22% and 18% female faculty, respectively, whereas two of the lowest ranked programs at University of Alabama and Baylor University have 27% and 7% female faculty, respectively. There was a very loose positive correlation between the size of the department and the percentage of female faculty as department sizes increased from 5 to 30 faculty members, and then a small decline in the percentage when the department size increased between 30 and 50 faculty. Percentages of tenured female faculty (associate and full professor) are generally lower than the total percentage of female faculty members in each department, with a few notable exceptions (Colorado State University: 50%, where 50% of the tenured professors are women; U. Nevada–Las Vegas: 44%; Georgia Tech, 38%; University of Wyoming: 27%; University of Wisconsin: 24%; Figure 2.2). This is important because women may be attracted to departments where there are already a significant number of senior female faculty members.

The top five departments in terms of percentages of female faculty in 2010–2011 were SUNY Buffalo Department of Geology (40%), Louisiana State University–Baton Rouge Department of Geology and Geophysics (40%), University of New Hampshire Department of Earth Sciences (37%), University of Massachusetts–Amherst Department of Geosciences (36%), and University of Nevada–Las Vegas

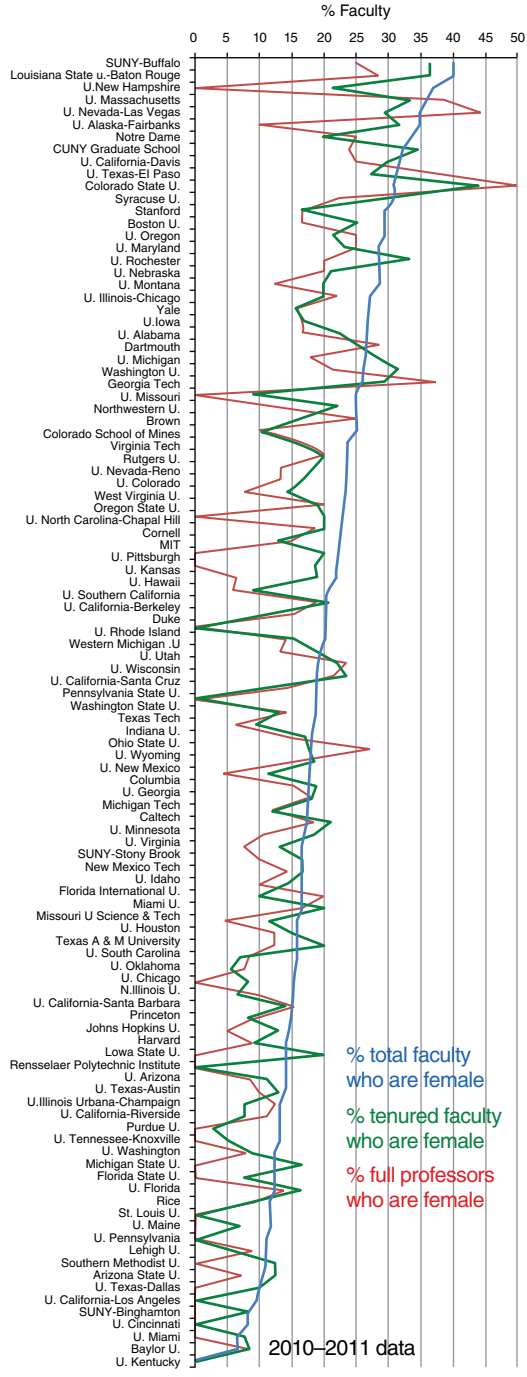


**Figure 2.2** Percentage of female faculty by institution for 106 top-ranking PhD-granting geoscience departments in the U.S. Data for 2010–2011 academic year. For color detail, please see color plate section.

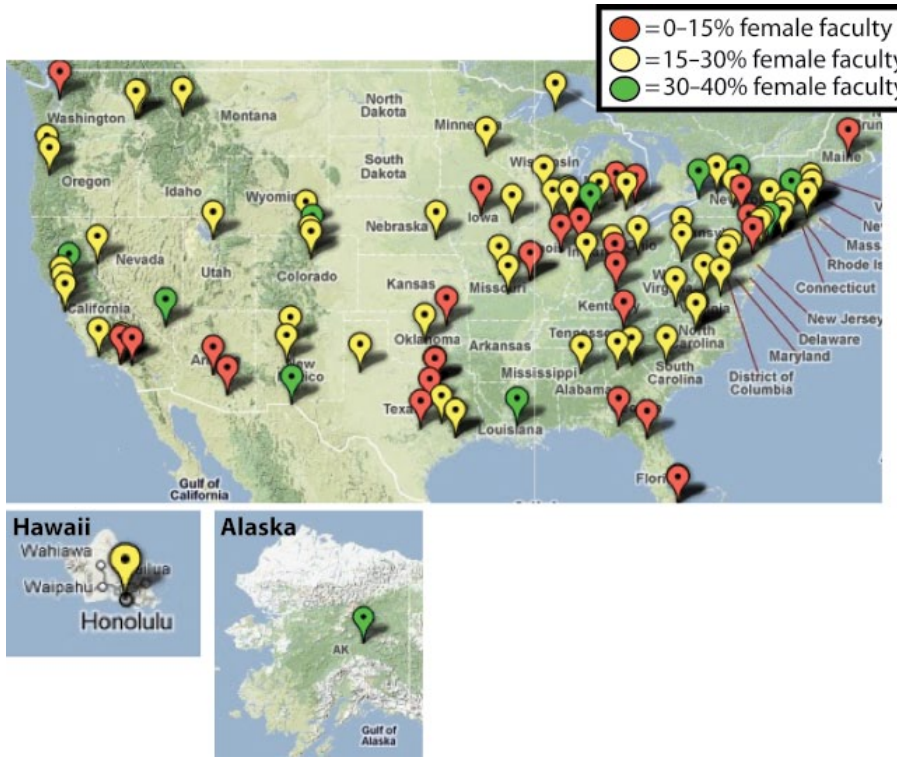


**Figure 2.3** Geographic location of top-ranked geoscience departments in the U.S. labeled by color based on percentage of total faculty who are women. For color detail, please see color plate section.

Department of Geoscience (35%). The bottom five departments were SUNY Binghamton Department of Geological Sciences (8%), University of Cincinnati Department of Geology (8%), University of Miami Department of Geological Sciences (7%), Baylor University Department of Geology (7%), and University of Kentucky Department of Earth and Environmental Sciences (0%).

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