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# Mentoring Groups

## A Non-Exit Strategy for Women in Physical Oceanography

BY VICTORIA COLES, LISA GERBER, SONYA LEGG, AND SUSAN LOZIER

We all know them: friends, colleagues, and students who left oceanography to pursue other careers. While their talents are certainly highly valued elsewhere, we are often left with lingering concerns that we could have done more to retain them in the field. Losing any oceanographer has an impact. The relatively small number of scientists in this profession leads to close collegial relationships, but the impact is broader than personal connections. Student training requires significant financial and time commitments by the advisor, scholarly institutions, and funding agencies (see sidebar). A recent study revealed that losses in physical oceanography are disproportionately female (Thompson et al., 2011). In a synthesis of the career paths of PhD graduates from six major physical oceanography programs, the authors find that 43% of female PhDs granted between 1980 and 2009 left independent research positions in physical oceanography, compared with 30% of men. Perhaps as a result, women in physical

### COMMITMENTS

The cost of losing an oceanography PhD: A typical federally funded student in the USA completing a degree in six years costs grants \$240,000–\$382,000 and 625–1,500 hours of advisor time.

oceanography constitute only 16% of assistant professors and 22% of associate professors (Figure 1) despite healthy enrollment of women in graduate programs across the country. Of those graduates who remained as independent researchers, 73% of men were in tenured or government positions with relatively secure funding, as compared with 57% of women (Thompson et al., 2011). Rather than slowly populating the research field with women, the picture that emerges is one of women leaving the fields of science, engineering, and mathematics at all stages following their PhDs, but particularly at the transition between

postdoctoral and full-time positions. This article describes a recent approach to retaining women through the development of mentor groups.

In 2004, a group of physical oceanographers convened a workshop to discuss strategies for improving the retention of women in independent research positions. The result of this workshop was MPOWIR (Mentoring Physical Oceanography Women to Increase Retention), a community-driven program described in Lozier (2005). MPOWIR has been functioning since 2005 with funding from the National Science Foundation (NSF), Office of Naval Research (ONR), Department of Energy (DOE), National Oceanic and Atmospheric Administration (NOAA), and National Aeronautics and Space

### PEER NETWORKING SUCCESS STORY

One participant mentioned that she was going to apply for a postdoc in a large international research program. Another group member was familiar with the project, and was able to help her target the application to the program objectives. She was offered the position, and, knowing more details about the project, felt comfortable relocating her family to another country to take the job.

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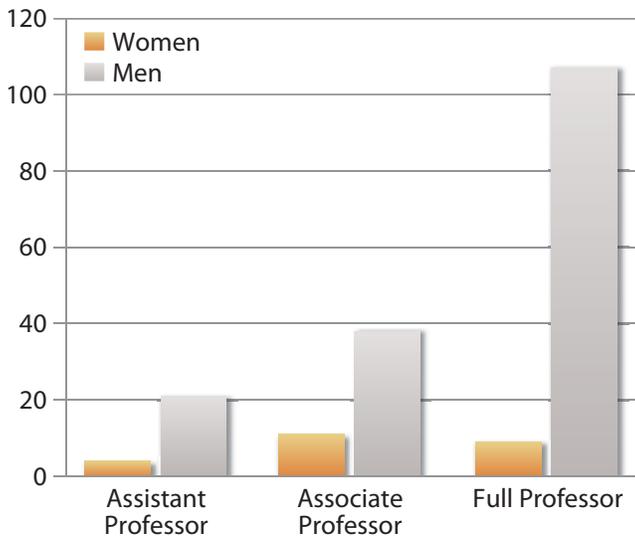


Figure 1. Gender distribution of physical oceanographers at 31 American institutions combining research and tenure-track positions. These data are based on an MPOWIR survey of institutions in 2009.

Administration (NASA). MPOWIR initiatives complement existing institutional programs and provide discipline-specific guidance that may be lacking at a new scientist’s home institution, including a biannual conference (Patullo Conference) focused on networking, career enhancement, and training; an internship at NOAA laboratories; a NASA speaker program; and a Web site and blog (Lozier, 2005). A further core effort is facilitation of mentor groups, which provide junior women with ongoing mentoring to complement the intensive networking of the Pattullo Conference. Although statistically significant metrics of the success of the mentoring groups will not be available for several years due to the long transition time from graduate school to a permanent position in oceanography and the relatively small number of female physical oceanography graduates each year (roughly five to six), participant response to the program has been so overwhelmingly positive that we wish to encourage development of similar efforts in other disciplines. Thus, the aim of this article is to describe the structure,

function, and successes of MPOWIR mentor groups to date.

Some of the challenges we confronted in designing a mentoring program aimed at women in physical oceanography are common among the Earth sciences, including the very small pool of senior female mentors, the time constraints for mentors who engage in extended periods of field work, widely distributed participant populations, and a general resistance to assigned mentor “pairing” on both sides of the mentoring relationship. We also wanted to design a mentoring program that included peer mentoring and networking. The importance of peer support in Earth science fields is amply demonstrated by the Earth Sciences Women’s Network email list, which has grown from six participants in 2002 to 1,170 participants at the end of 2010.

We structured the MPOWIR mentor groups to overcome these challenges, to be cost and time effective, and to incorporate peer mentoring and network building. Groups of five to seven early-career women (defined as spanning the period from two years pre-PhD to two years after obtaining a permanent

position) are assigned to a pair of female senior mentors. Participants self-identify as physical oceanographers, and interdisciplinary research interests are encouraged. Information about the membership in the groups, with the exception of the leader identities, is confined to group participants. Topics discussed in mentoring group meetings must also remain confidential unless all participants specifically agree otherwise.

Each mentor leader commits to a two-year period, although participants may leave as they wish. Pairing two senior mentors provides important continuity for the group when fieldwork or other professional commitments preclude a mentor’s participation. Pairing mentors also provides a broader diversity of perspectives and support for the mentors. To facilitate open discussion of issues related to advisors, committees, and departments, we arranged the groups so that senior mentors are from institutions other than those of the mentor group participants. Because of this geographic diversity, we hold all meetings via conference call.

Prior to the first meeting, leaders

#### SIDE BENEFITS

The mentor leaders agreed that their participation was not only rewarding, but also career enhancing. The concerns and challenges facing early-career scientists were clarified for them, which helped in mentoring and retaining their own students and postdocs. Additionally, these creative, talented, and successful young women become part of the leaders’ own professional science networks.

#### PAST DISCUSSION TOPICS

Past discussion topics have included writing reviews, establishing collaborations, finding time for work-life balance, developing a proposal, preparing a job application, dual-career couples, building networks, the five-minute description of your research to a layperson, requesting a lactation space, giving a good seminar, transitioning from postdoc to independent researcher, and more.

participate in a group training session developed in partnership with a meeting facilitator. This short training consists of a description of a typical meeting template, discussion of active listening techniques and advice on how to give constructive feedback, and a discussion of common issues that might develop in the groups. For ongoing support, leaders generally meet once or twice per year to discuss problems, successes, and logistics. All leaders and participants also complete a short biographical survey prior to the first meeting that gives information on their training and scientific interests as well as personal and professional short- and long-term goals. These bios and goals, along with some training materials and logistics, are mailed to all participants.

A part-time paid coordinator assists with goal surveys, group assignments, call scheduling and reminders, leader training, database maintenance, and the collection of follow-up surveys on group effectiveness. An important goal of the coordinator is to ensure that the leaders' time commitment is primarily limited to the calls themselves (~ 2 hours/month). Limiting the time commitment is critical

to retaining the senior mentors, as we draw from a small pool of women who have large demands on their time.

The mentor groups meet monthly via teleconference. Groups quickly develop their own identities; however, common factors include check-in time for quick updates, a focus on two to three of the participants' goals, and special discussion topics often related to issues that members of the group are experiencing. The initial survey results help to quickly identify which goals are being worked toward, and to determine discussion topics of interest. Group members sometimes email to update each other prior to the scheduled call, particularly if they have a problem they want to share, or a success story to relate.

After nine months, we asked participants to complete an anonymous survey to evaluate the group format. Although male mentors are the norm in physical oceanography, the initial group members indicated a strong preference for female-only mentor group leaders

and participants (88% surveyed, n=17). Participant comments suggested that while they would like mentor groups to be available to their male colleagues, they had questions and concerns that they felt more comfortable discussing in women-only groups. Thus, both the initial and follow-on groups are female only.

The three initial groups were expanded to five after one year, bringing the number of participants to 30. After two years, in August 2010, the three initial groups transitioned. Participants were given the options of signing up for a new mentor group and/or continuing in a peer-only mentoring group, or graduating from the program. Only two of the 18 participants chose to graduate, demonstrating that most felt their participation was worth maintaining, even when they needed to assume responsibility for planning the peer-only group calls. Three new groups were then formed so that participation is now 37 members in the five mentor groups, with several of the original group

#### 2010 SURVEY COMMENTS

Comments from the 2010 survey asking about ways to improve the groups:

*I love my group, and would like to see it continue indefinitely. I also understand that other students who are below me in the pipeline need mentoring too!*

*They are a fantastic outlet, unlike any other that I've encountered. It is wonderful to have a group of women in a similar career stage that you can get input from and gain support from. It's a great resource for talking about difficult topics that may not be easy to talk about directly with department colleagues/advisors etc.*

*I am satisfied with my current mentor group, but I think it would be interesting to see the points of view of different leaders.*

*I guess the only thing would be to hear more about the mentors themselves and the problems/struggles they are facing (if any). As is, they seem very perfect (and maybe they are).*

*As both of our mentors are primarily researchers, it would be nice to have a mentor to talk to who is a faculty member and involved with teaching on a regular basis.*

### GET INVOLVED

For specifics on joining a physical oceanography mentor group, or on the group logistics, see: <http://mpowir.org/get-involved/mentor-groups>

moving into peer groups. During the first two-year period, all 30 participants remained in research oceanography, although this time period is clearly too short for statistical significance. Participation in calls remained near 100% throughout the first two-year period, demonstrating the value that busy participants placed on the groups.

It remains a challenge to assess the effectiveness of a program whose participants are so few, and for which the time period is so short, but we have some strong evidence that the groups are making a positive difference. We resurveyed all five groups in May 2010, 19 months or nine months after their inception. Participation in the survey was 87%, and comments were left in 63% of the five comment opportunities. The high rate of survey response and comment further suggests that mentor groups are very important to the participants, and demonstrates their willingness to contribute to improving and continuing the program. Eighty-eight percent of respondents felt that the program had helped them progress toward their career goals as originally articulated when they joined the group. Eighty-four to ninety-two percent of respondents felt that the mentor group had influenced them positively in their general “happiness” at work, feelings of connection to the field, professional

network, support network, and understanding of how to transition from postdoc to principal investigator.

Future effort needs to be directed toward training and retaining mentor group leaders, developing career-oriented resources for groups, and maintaining statistics on participant retention. We invite other science communities to collaborate with us in building mentor programs to enhance the training of new scientists.

### ACKNOWLEDGEMENTS

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### SUPPORTING MATERIALS

The financial and time costs of a physical oceanography graduate student education are fairly conservatively based on the following assumptions: salary (\$18–25K), benefits 30%, overhead 50%, tuition \$5–15K, and two to five hours of advisor time per week. 

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