

# DIALOG VI and VII Program Report

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## Background

The Dissertations Initiative for the Advancement of Limnology and Oceanography, DIALOG (<http://aslo.org/phd.html>) is a capstone program to bring together biologically oriented PhDs across the full range of aquatic science. Recent PhDs are targeted in order to introduce graduates to the community, catalyze interdisciplinary understanding, enhance early career development and foster collegial interactions. The initiative includes annual symposia and electronic resources (webpage and weekly newsletter). The week-long **symposia** bring together international, interdisciplinary cohorts of roughly 40 recent graduates who are selected through a competitive application process. These events provide a forum where recent PhD graduates can expand their scientific and professional outlook and forge lifelong, interdisciplinary collegial networks. An **electronic newsletter** disseminates news, resources, job announcements and other time-sensitive information. The **webpage** offers resources developed for and by symposium participants to a global audience and archives the Ph.D. dissertation abstracts registered with the program. As part of the process to register dissertation abstracts, graduates are asked to complete a demographic profile.

This paper summarizes results from the DIALOG VI and VII database and symposia.

DIALOG is co-sponsored by various scientific societies (American Society of Limnology and Oceanography (ASLO), American Fisheries Society (AFS), American Geophysical Union (AGU), Ecological Society of America (ESA), Estuarine Research Federation (ERF), International Association of Great Lakes Research (IAGLR), International Society of Limnology (SIL), Japanese Society of Limnology (JSL), North American Benthological Society (NABS), North American Lake Management Society (NALMS), Oceanographic Society of Japan (OSJ), Phycological society of America, (PSA), Society of Canadian Limnologists (SCL), The Oceanography Society (TOS) and Western Society of Naturalists (WSN). The Co-sponsoring societies help advertise the program to their members. In recognition of its early encouragement, willingness to house the DIALOG web pages on its server and continued willingness to make program information available through its Bulletin, at its meetings and through electronic notices, ASLO is designated as program Sponsor.

The DIALOG VI/VII cycle targeted graduates with Ph.D. degrees completed April 1, 2002 - March 31, 2005. While there is a 24-month eligibility window, most graduates register 3 - 12 months post degree and tend to be on their first job. A total of 334 abstracts were registered during the two-year period. This group is comprised mostly of limnologists and oceanographers with a biological/ecological focus or interest. The program is fully international, with 44 countries represented and 53% of registrants receiving Ph.D.'s from US institutions ([Table 1](#)) and the rest from abroad ([Table II](#)).

## Data Comparisons

Because the number of registrants for any one country is small, most of this report concentrates on the 141 American citizens registered with DIALOG VI/VII. Where possible, responses are compared with the latest NSF data from their annual survey of PhD graduates from US institutions, the latest AGU/AGI survey of Earth and space-science graduates, and the latest data from the Consortium for Oceanographic Research and Education (CORE; U.S. Commission on Ocean Policy

2004). The NSF survey includes 819 Earth-, atmospheric- and ocean-science graduates, of whom 125 specified marine sciences or oceanography as their field of interest (NSF 2005). The AGU/AGI survey includes responses from 180 Earth- and space-science students who graduated in 2003 (AGU/AGI 2005); the number who were aquatic scientists was not specified. The CORE data includes 89 biological oceanography and marine biology graduates. None of these surveys captures the entire aquatic-science population, or even the ocean-science population, and the DIALOG survey is the only one to identify limnologists. The NSF data for oceanography and marine science tends to under-represent the biological oceanographers and marine biologists, since many of these self-classify themselves as ecologists, microbiologists or other biologists. Each data has its own bias (NSF does not classify limnologists and under-represents marine biology/ecology, the AGU/AGI survey tends to under-represent the biological sciences, and the CORE data does not survey all oceanography PhD-granting programs and includes none of the limnological programs; the DIALOG registry under-represents physical and chemical limnology, and oceanography, hydrology and geology/geophysics. None enjoy a 100% response rate, though NSF enjoys the highest return with a 91% success rate. Despite the limitations of each, they provide very useful indicators and provide an interesting basis for comparison. *The very small sample sizes for all reports should be remembered at all times.*

## Citizenship

Figure 1 summarizes citizenship by region. The Dissertation Registry attracted 334 recent graduates who were citizens of 46 countries:

United States (141), Argentina (4), Australia (8), Austria (2), Belarus (1), Belgium (3), Bhutan (1), Brazil (15), Bulgaria (1), Canada (25), Chile (1), China (7), Colombia (4), Czech Republic (1), Denmark (2), Ecuador (1), Finland (1), France (6), Germany (26), Ghana (1), Greece (5), Iceland (1), India (12), Indonesia (1), Ireland (2), Israel (4), Italy (3), Japan (6), Korea (3), Maldives (1), Mexico (6), Nepal (2), Netherlands (7), Nicaragua (1), Nigeria (1), Norwegian (1), Peru (1), Poland (2), Portugal (1), Singapore (1), Slovenia (1), South Africa (2), Spain (8), Sweden (5), Switzerland (2), Turkey (1) and United Kingdom (3).

## Country of PhD

Figure 2 summarizes country of PhD by geographic region. Of the 334 registrants, 176 (53%) completed their PhD in the United States. Of 176 graduates from U.S. institutions, 138 (78%) were American citizens. The remaining 38 graduates from US institutions were citizens of: Australia (1), Brazil (1), Canada (3), Chile (2), China (5), Columbia (3), Ecuador (1), France (1), Germany (4), Greece (2), Iceland (1), India (3), Italy (1), Korea (3), Mexico (2), Nicaragua (1), Netherlands (1), Nigeria (1), Peru (1), and United Kingdom (1). Only three of the registered Americans completed a Ph.D. outside the U.S. (Australia, Canada, New Zealand).

## Gender

Of the 334 registrants 52% were female and 48% were male. The 141 American citizens included 75 (53%) female and 66 (47%) male (Figure 3). This proportion is higher than reported by NSF for Earth and atmospheric sciences (28%), for oceanography (44%) and for the life sciences (48%). Females represented 33% of respondents to the AGU/AGI survey of Earth and space scientists and of the CORE respondents who were biological oceanographers. The reason for greater female participation in the DIALOG registry is unknown.

## Ethnicity

Of the 141 American DIALOG VI/VII registrants, five (3.5%) were **underrepresented minorities**: 2 (1.4%) African American, 1 (0.7%) American Indian or Alaska Native, 1 (0.7%) Multi-ethnic and 1 (0.7%) Other Hispanic American. According to NSF data, less than 4% of geoscience PhDs were earned by underrepresented minorities over the past five years. The CORE survey reported 6.1% from underrepresented minorities.

## **Disciplinary Specialty**

The majority (60%) of the 334 registrants indicated their primary area of interest as oceanography ([Figure 4](#)). American citizens included 87 (62%) **oceanographers**, 36 (26%) **limnologists**, 11 (8%) **hydrologists** and 7 (5%) other. The latest CORE report included data on 265 oceanography PhD graduates from 2000-2001, 89 of whom indicated marine biology and biological oceanography as their major field. NSF included 125 marine and ocean scientists, plus 47 fisheries graduates. The AGU/AGI report did not provide data on specialty.

## **Jobs**

Graduates tend to register with the program within the first few months post degree so most on their first job. Of the 141 **American citizens** 8 (5.7%) were **unemployed** at the time of registration ([Figure 5](#)). Nine percent of Europeans were unemployed compared with 3% of those from other parts of the world.

Of the 133 **American citizens** who were employed **67%** were on **postdocs**, **13%** were in '**other temporary**' work while **18%** held **permanent** or potentially permanent positions ([Figure 6](#)). The percentage of U.S. biologically oriented aquatic scientists on postdocs (67%) is lower than for 2001 - 2003 DIALOG registrants (71% on postdocs), but higher than the rate reported by the AGU/AGI for Earth and space graduates (58% in 2003, up from 54% in 2002) (Keelor, Martinez and Kaleuati 2005). NSF reported that, of the US citizens and permanent residents responding, 76% of biology graduates and 44% of Earth-, atmosphere- and ocean-science graduates were on postdocs.

Most of the Americans (97 or **68.8%**) were in the **academic job sector**. Of the rest, 17 (12.1%) were employed by the **Federal government**, 7 (5%) **non-profit**, 4 (2.8%) **commercial**, 2 (1.4%) **State government**, and 6 (4.3%) listed **other**.

## **Perceptions of the job market**

Registrants were asked to rate the job market as excellent, good, neutral/fair, bad, or hopeless.

Of the 141 American citizens less than 1% rated the job market as excellent; 24.8% good; 61% neutral; and 13.5% bad; none considered the job market as hopeless.

Western Europeans ratings were: 2.6% excellent; 14.1% good; 57.7% neutral, 21.8% bad; and 3.8% hopeless.

All other citizenships combined indicated: 3.4% excellent; 24.1% good; 55.2% neutral; 16.4% bad; and less than 1% hopeless ([Figure 7](#)) and ([Figure 7b](#)).

The DIALOG survey question is worded the same as for the AGU/AGI Survey of Earth- and space-science graduates. They reported 32% as responding bad or hopeless, 50% responded neutral, and 18% responded good or excellent, compared with 13.5%, 61% and 25.8% of DIALOG respondents, respectively. The more biologically focused DIALOG group is appear slightly more optimistic than

the Earth and space scientists in general, even though fewer were in permanent positions and more were unemployed at the time of the survey. However, the differences are too small to be significant.

### **Age at Ph.D**

Among the 334 registrants, the average age at PhD was 32.3 years (median 31.3). Among American registrants, the average age was 32.4 years with a median of 31.3 years (Figure 8). The NSF survey indicates a median age at time of PhD of 32.7 years for Earth- and Space-science graduates and 31.8 years for life-science graduates. Female American registrants averaged 31.6 (median 31.2) years, and males averaged 33.3 (median 31.4) years. In all, there were 66 males and 75 females among the 141 Americans (Figure 8b).

### **Marriage and children**

45% of all registrants were married. Of the 141 American citizens, 50% of females and 59% of males were married, 11% of females/6% of males were in permanent relationships, 31% females/29% males were single, 5% females/5% males were either separated or divorced and the remaining 3% females/2% males did not respond (Figure 9).

Overall 25% of the 334 registrants had children, but there were gender differences: Overall, just 17% of females had children compared with 33% of males. Of the 141 American registrants 22% of females and 39% of males had children (Figure 10).

**Lower marriage and family proportions among women have been seen in past DIALOG cycles as well.** It is sad to see that women continue to face a penalty when it comes to marriage and children. As Rossi so eloquently stated back in 1965, "Marriage, parenthood and meaningful work are major experiences in the adventure of life. No society can consider that the disadvantages of women have been overcome so long as the pursuit of a career exacts a personal deprivation of marriage and parenthood, or the pursuit of happiness in marriage and family life robs a woman of fulfillment in meaningful work."

### **Symposia**

With the symposia now on an annual basis rather than the previous biennial cycle, the number of applicants per symposium has decreased from 146 for DIALOG V, 97 for DIALOG VI and 77 for DIALOG VII. Thanks to the annual cycle, the success rate of applicants is running at 40-50% overall and 50 - 65% for US residents.

Based on a review of applications, the distinction between basic and applied research, which has always been fuzzy, is becoming ever more blurred. Proportionately more graduates are working on applied research questions, publishing before graduation, and working as part of an interdisciplinary team as graduate students. Based on input received at the symposia, more graduates are interested in interdisciplinary questions and communicating beyond the ivory towers. To best serve the recent grads and society, which depends on the work of these new professionals, the symposia will continue to evolve to meet changing needs.

The DIALOG VI symposium was held October 30 - November 6, 2004 at the Dauphin Island Sea Lab, Alabama. DIALOG VII is scheduled to take place December 3-10, 2005.

### **Publications from DIALOG V/VI Cycle**

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Weiler, C.S. 2004. Resources for scientific presentations recommended by DIALOG and DISCCRS participants. <http://marcus.whitman.edu/~weilercs/TalkingTips/>

Weiler, C.S. 2004. Meeting the needs of interdisciplinary Ph.D. graduates in a changing global environment. Report from an October, 2003 workshop. Whitman College, 20 pp. <http://marcus.whitman.edu/~weilercs/biocomplexity/>

Weiler, C.S. 2005. The Right Stuff: Preparing PhD graduates for the challenges posed by complex environmental systems. L&O Bulletin 14(1): 47-48.

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