

## **Dissertations Initiative for the Advancement of Limnology and Oceanography: DIALOG III and IV**

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Award #: N000149810590  
<http://www.aslo.org/dialog.html>

### **LONG TERM GOALS**

Originally founded in 1994, the Dissertations Initiative for the Advancement of Limnology and Oceanography (DIALOG) program seeks to (1) facilitate interdisciplinary, inter-institutional and international aquatic science research, understanding and collaborations; (2) reduce the historical, institutional and philosophical barriers that limit the exchange of information among aquatic scientists; and (3) expedite the transition from Ph.D. student to independent researcher.

### **OBJECTIVES**

DIALOG is an educational and human resource program. It targets aquatic scientists and those in related disciplines that have recently obtained their Ph.D. degrees and wish to pursue interdisciplinary aquatic science research. DIALOG consists of three parts.

- **Ph.D. Dissertation registry:** Recent Ph.D. recipients are invited to submit an abstract of their Ph.D. dissertation research for inclusion in the DIALOG Dissertation Registry.
- **Database:** Demographic information is collected with the dissertation abstracts in order to characterize recent graduates for human-resource purposes.
- **Symposium:** A symposium is held every other year to enhance interdisciplinary understanding and promote collegial interactions across the aquatic sciences. The fourth DIALOG symposium will be held October 14-19, 2001. Graduates who completed their Ph.D. between April 1, 1999 and December 31, 2000 are eligible.

### **APPROACH**

Using advertisements through American Society of Limnology and Oceanography (ASLO), and other professional societies, mailings, handouts, and a web site, the program is announced as widely as possible to reach all potential participants. All program and symposium application procedures are accomplished through the web site ([www.aslo.org/dialog.html](http://www.aslo.org/dialog.html)).

1. **Ph.D. Dissertation registry:** The registry provides a unique introduction to the work of this most recent generation of aquatic scientists. Each year increasing numbers of graduates take advantage of the opportunity to be part of this international collection, and more scientists, employers and administrators use this resource to identify recent graduates and get an overview of their work.

# Report Documentation Page

Form Approved  
OMB No. 0704-0188

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1. REPORT DATE <b>30 SEP 2001</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2001 to 00-00-2001</b>	
4. TITLE AND SUBTITLE <b>Dissertations Initiative for the Advancement of Limnology and Oceanography: DIALOG III and IV</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Whitman College,,Walla Walla,,WA, 99362</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT <b>Originally founded in 1994, the Dissertations Initiative for the Advancement of Limnology and Oceanography (DIALOG) program seeks to (1) facilitate interdisciplinary, inter-institutional and international aquatic science research, understanding and collaborations; (2) reduce the historical, institutional and philosophical barriers that limit the exchange of information among aquatic scientists; and (3) expedite the transition from Ph.D. student to independent researcher.</b>					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>8</b>	19a. NAME OF RESPONSIBLE PERSON
a REPORT <b>unclassified</b>	b ABSTRACT <b>unclassified</b>	c THIS PAGE <b>unclassified</b>			

Dissertation abstracts are submitted on line and immediately posted on the ASLO web site in a format that can be searched by year, name, and key words ([www.aslo.org/phd.html](http://www.aslo.org/phd.html)). Each issue of the *ASLO Bulletin* contains dissertation citations and e-mail addresses of those submitting abstracts since the previous bulletin deadline. In addition to the recognition, program participants receive a compilation of abstracts, a directory, and a demographic profile of their cohort.

2. **Database:** Information submitted by program applicants and the results of surveys completed by symposium participants are compiled in a database and used to characterize program participants and to assess trends.

3. **Symposium:** If individuals wish to be considered for symposium participation, they are also asked to submit a two page CV (with list of peer-reviewed publications), a half page essay answering the question “Why did you select your particular dissertation topic, and what is the importance/significance/potential impact of your findings?”, a half page essay answering the question “Why do you want to attend the symposium?” and, two letters of recommendation. A six member committee represented by the breadth of the aquatic science research community reviews applicants.

## WORK COMPLETED

A total of 221 dissertation abstracts were received for the DIALOG IV Program. Interest in the DIALOG symposia continues to grow. Applications were up by 38% from DIALOG III, and the increases vary considerably by region. Of the 221 who submitted dissertation abstracts, 124 (56%) applied for the symposium. Symposium applicants who were American citizens (53 total) were up 15%. Symposium Applicants who completed degrees at U.S. Institutions (65) were up 25%. Applications from Western Europeans increased by 39%.

The 221 participants were citizens of 40 countries, compared with 31 for DIALOG III. DIALOG IV participants were citizens of: Australia (11), Austria (3), Belgium (2), Brazil (5), Bulgaria (1), Canada (15), Chile (1), China (11), Czech Republic (2), Denmark (3), Finland (2), France (3), Germany (22), Greece (1), Hungary (2), India (1), Israel (1), Italy (1), Japan (4), Jordan (1), Lithuania (1), Malawi (1), Mexico (1), Netherlands (5), New Zealand (2), Nigeria (1), Poland (2), Portugal (2), Russia (2), South Korea (3), Spain (2), Sweden (6), Switzerland (1), Thailand (1), Turkey (1), Ukraine (3), United Kingdom (12), United States (81) Uruguay (1) and Venezuela (1).

**Degree-Granting Institutions.** Participants received degrees from 58 U.S. institutions and 88 degrees from other countries (TABLE I). The 221 DIALOG IV participants included:

81 (37%) limnologists	140 (63%) oceanographers
129 (58%) men	86 (39%) women
(6 did not specify gender)	

**U.S. Institutions.** There were 105 submissions from U.S. institutions, up 17% from DIALOG III. All of the 81 Americans who registered with the program received their PhDs from U.S. institutions. The other 24 graduates from U.S. institutions included citizens of: Australia (1), Canada (3), China (9, including 1 from Hong Kong), Germany (3), Greece (1), Mexico (1), South Korea (2), Switzerland (1), United Kingdom (2), and Venezuela (1). The 105 U.S. degree holders included:

32 (30%) limnologists	73 (70%) oceanographers.
62 (59%) men	42 (40%) women.

The low proportion of limnologists is somewhat troubling (31% of graduates from U.S. schools and 37% from all combined), and seems to be a consistent trend. The proportion of women is about what is expected given graduate student enrollments in related programs.

**American Citizens.** A total of 81 American citizens submitted dissertations, compared with 78 for DIALOG III. This represents a 4% increase, or 19% when corrected for the shorter eligibility window (21 months instead of 24).

## RESULTS

Forty-four symposium participants were selected from the 124 applicants. Selection was based on scientific training, dissertation topic and execution, interdisciplinary experience and interests, letters of recommendation, and program balance. With so many qualified candidates, many factors in addition to excellence in research were considered and many worthy individuals had to be turned away to maintain the critical size for fostering long-term interactions.

Participants came from a variety of institutions, including some of the most innovative and productive aquatic research programs in the world. The international mix provides valuable insight into the research strengths and concerns in different parts of the globe. Unlike so many professional conferences where multiple concurrent sessions force us to attend narrow sessions on select topics, the DIALOG symposium affords the luxury of listening without distraction to a diverse array of topics, to look for relationships and develop a broader context for their work.

With 40 countries involved and 221 participants, it was not possible to assess participation by country. Instead, program participants were divided into 9 groups based on nationality and geography. Most geographic groups showed increases, with just a couple remaining static (South America, Asia and the Middle East). Participation by Western Europeans grew significantly, from 40 in DIALOG III to 66 in DIALOG IV (a 65% increase), compared with a 6% increase for North and South America.

Of the participants who provided job information at the time they registered with DIALOG (generally 0-21 months post degree), 44 held permanent appointments (23%), 129 held postdoctoral positions (66%), 15 held other temporary positions (8%), and 7 were unemployed (3.5%). Those employed were working in the following sectors: 157 academia; 25 government (17 national, 8 state/regional); 9 non-profit; 3 commercial; and 12 "other".

Job information is so country-specific and the number per country was so small that, except for American citizens, no attempt was made at analysis. Of the 71 Americans who provided data, 15 (21%) held permanent positions, 54 (76%) were on postdoctoral appointments, and 2 (3%) held other temporary positions. The permanent positions were in a variety of sectors. As expected, academia was the largest employer (7). Other sectors included Federal government, non-profit organizations (2), state/regional government (1), and commerce (1). Of the 15 holding permanent positions, 8 were female and 7 were male; 4 were limnologists and 11 were oceanographers. The differences between limnologists and oceanographers reflect the small sample size. In DIALOG III, more limnologists than oceanographers held permanent positions.

**TABLE I** Institutions granting Ph.D. degrees to the 221 DIALOG IV program participants. Numbers refer to the number of pro; indicated limnology (lim) or oceanography (oce) as their primary field of interest.

Lim	Oce	U.S. Institutions	Lim	Oce	Institutions Outside the U.S.	Lim	Oce	Institutions Outside the U.S. Continued
1		Arizona State University	1		Agricultural University Wageningen (Netherlands)	1		University of Ibadan (Nigeria)
1		Boston University	1		Bar Ilan University (Israel)	1		University of Innsbruck (Austria)
4		College of William and Mary	1		Centre des Faibles Radioactivites, CFR-CEA (France)	2		University of Kiel (Germany)
2		Columbia University	1		Charles University (Czech Republic)	1		University of Konstanz (Germany)
3		Cornell University	1		Cochin University of Science and Technology (India)	1		University of Lisbon (Portugal)
1		Dartmouth College	1		Dalhousie University (Canada)	1		University of Malawi (Malawi)
1		Duke University	1		Ege University (Turkey)	1		University of New South Wales (Australia)
1		Florida International University	1		Ehime University (Japan)	2		University of Otago (New Zealand)
2		Florida State University	1		Griffith University (Australia)	1		University of Ottawa (Canada)
1		George Mason University	1		Hebrew University of Jerusalem (Israel)	1		University of Oviedo-Uvieu (Spain)
1		Idaho State University	1		Helsinki University (Finland)	1		University of Plymouth (United Kingdom)
2		Lehigh University	1		Heriot-Watt University (United Kingdom)	2		University of Queensland (Australia)
1		Loma Linda University	2		INRS-Eau, Université du Québec (Canada)	1		University of Regina (Canada)
1	1	Massachusetts Institute of Technology	3		Institute of Biology of the Southern Seas (Ukraine)	1		University of Rome (Italy)
3		Massachusetts Institute of Technology/WHOI	2		Institute of Oceanology PAS (Poland)	1		University of Sao Paulo (Brazil)
3		Michigan State University	1		James Cook University (Australia)	1		University of South Bohemia (Czech Republic)
2		Michigan Technological University	2		Kosztuh University (Hungary)	2		University of Southampton (United Kingdom)
1		Mississippi State University	1		Kyoto University (Japan)	1		University of Stockholm (Sweden)
3		North Carolina State University	1		Lancaster University (United Kingdom)	1		University of Sydney (Australia)
1	1	Ohio State University	1		Linköping University (Sweden)	3		University of Tasmania (Australia)
1		Old Dominion University	1		Liverpool University (United Kingdom)	1		University of Technology (Australia)
1		Oregon State University	1		Ludwig Maximilian University Munich (Germany)	2		University of Tokyo (Japan)
2		Rutgers, the State University of New Jersey	3		Lund University (Sweden)	1	1	University of Ulster (United Kingdom)
1		Stanford University	1		McGill University (Canada)	1		University of Victoria (Canada)
1		State University of New York at Buffalo	1		Memorial University of Newfoundland (Canada)	1		University of Vienna (Austria)
3		State University of New York at Stony Brook	1		Monash University (Australia)	1	1	University of Wales at Swansea (United Kingdom)
4		Texas A&M University	1		NERC (United Kingdom)	1		University of Warwick (United Kingdom)
1		University of Alabama	1		Netherlands Institute for Ecology (Netherlands)	1		Uppsala University (Sweden)
1	1	University of California at Davis	1		Netherlands Org for Sci Research (Netherlands)	1		Xiamen University (China)
1		University of California at Irvine	1		Norwegian Polar Institute (Norway)	1		York University (Canada)
7		University of California at San Diego/SIO	1		Ocean University of Qingdao (China)	1		Zoological Institute (Russia)
5		University of California at Santa Barbara	1		Paul Sabatier University (France)	49	67	Total, Institutions outside the U S
1		University of Colorado	2		Queen's University (Canada)			
2		University of Connecticut	1		Roskilde University (Denmark)			
1		University of Dayton	1		Sao Paulo University (Brazil)			
1		University of Delaware	1		Seoul National University (South Korea)			
1	2	University of Georgia	1		Stockholm University (Sweden)			
4		University of Maryland at College Park	1		Technical University of Munich (Germany)			
1		University of Maryland	1		Ume University (Sweden)			
1		University of Massachusetts Boston	1		Universidad de la Republica (Uruguay)			
1		University of Miami	1		Universidade Federal Fluminense (Brazil)			
1		University of Michigan	1		Universitaires Notre-Dame de la Paix (Belgium)			
1		University of Montana	1		Universite d'Aix-Marseille II (France)			
1		University of Nevada at Reno	1		University Libre de Bruxelles (Belgium)			
1		University of New Hampshire	1		University Lisbon (Portugal)			
1		University of New Mexico at Albuquerque	2		University of Alberta (Canada)			
3		University of North Carolina at Chapel Hill	1		University of Amsterdam (Netherlands)			
2		University of Notre Dame	1		University of Barcelona (Spain)			
2		University of Rhode Island	8		University of Bremen (Germany)			
1		University of South Carolina	1		University of British Columbia (Canada)			
1		University of South Florida	1		University of Cologne (Germany)			
1		University of Southern California	1		University of Copenhagen (Denmark)			
2		University of Southern Mississippi	1		University of Freiburg (Germany)			
1		University of Texas at Austin	1	2	University of Groningen (Netherlands)			
1		University of Washington	2		University of Hamburg (Germany)			
2		University of Wisconsin at Madison	1		University of Helsinki (Finland)			
2		University of Wisconsin at Milwaukee	1		University of Hong Kong (Hong Kong/China)			
1		Utah State University						
32	73	Total, U S Institutions			Continued			

Participants were asked to evaluate their sense of the job market at the time they registered their dissertation, 0-21 months post degree. This was the first time the question was asked of the entire group. Numerical ratings of 1-5 were assigned to the 5 categories (Excellent, Good, Neutral/Fair, Poor and Hopeless). A rating of 3.0 is neutral, while anything larger is negative, smaller is positive.

Sample sizes were too small for meaningful statistics, but it is interesting to note that around the world, graduates were on average more positive than negative. Responses indicate that overall, the market is slightly on the positive side of neutral.

No one considered the market "hopeless" and only a few gave a rating of "bad". Canadians were most positive (average score of 2.4), followed by Americans (2.6), Australians/New Zealanders (2.6), Eastern Europeans (2.6), Non-Americans with U.S. degrees (2.7), South Americans (2.9), Asians (3.0) and Western Europeans (3.0).

## **IMPACT**

The DIALOG Program is a long-term investment in human resources and science infrastructure. Direct and indirect results should benefit the aggregate research community, as well as our society, which increasingly depends on research results for understanding and managing aquatic systems and resources. The most interesting and important questions in aquatic and other sciences today are increasingly interdisciplinary. In addition, we find that our scientific community and society as a whole are increasingly global, interdependent, and interactive. Therefore the very concept of the DIALOG program is pertinent and timely as it facilitates the vital exchange of knowledge, ideas, and science that is necessary in this new scientific climate and global community. The symposium, in particular, brings together scientists, at a pivotal point in their research careers, from across the full spectrum of biologically relevant aquatic science, from a variety of scientific backgrounds, from various institutions, and from different countries and cultures. This dynamic mix then participates in an intensive seven-day symposium where all participants gain an overview of the work of the others and are exposed to different ways of thinking about and conducting research. The collegial bonds and lines of communication formed will remain throughout their professional careers to sustain, stimulate, and enhance their work. The scientific community and the general population benefit from the perspectives these "new" scientists bring back to their home institutions (and countries) and then go on to share with their students and colleagues.

## **TRANSITIONS**

1. Participants in the DIALOG symposia have been involved in interdisciplinary (including some international) research collaborations; an international student exchange program at two institutions; the organization of several workshops and meeting sessions; and the ongoing communication throughout the entire group about research, education and science policy issues via an electronic distribution list.
2. The dissertation compilation (available on the web site and compiled into a printed publication after each symposium) has been and is continuing to be used by journal editors and program officers to identify reviewers; by meeting organizers to identify speakers and session chairs; by scientists and administrators to get an overview of the latest research and to identify potential postdoctoral researchers and job applicants; and by fellow students, researchers, and new entrants to the aquatic science community.

3. The demographic information is providing a profile of the newest entrants to the aquatic science community--their gender, age, ethnicity, citizenship, Ph.D.-granting institutions and subsequent employers, and disciplinary interests. This information will enable a variety of interest groups to better track the aquatic science community (which has been difficult to profile, due to the large number of degree-granting institutions, departments in which an aquatic scientist might reside, and variety of key words under which aquatic science falls in general science databases).

## **RELATED PROJECTS**

Symposium participation is limited due to time limitations and the breakdown in group dynamics that occurs. DIALOG has been on a biennial symposium schedule. The DIALOG IV symposium will take place October 14-19, 2001 and DIALOG V is scheduled for October, 2003. Check <http://aslo.org/phd.html> for details.

Due to the popularity of the program and recent increases in numbers, the NOAA Coastal Ocean Program is funding a "pilot" symposium to test the concept of holding annual symposia, with the traditional DIALOG symposia alternating with a symposium targeting estuarine and coastal scientists. The estuarine/coastal symposium is sponsored by Whitman College and the Estuarine Research Federation (ERF). Travel support for European participants will be requested from the European Commission.

The ERF symposium would focus on graduates with career interests in research and societal issues (education, policy, management) of Great Lakes, estuarine or coastal systems. The symposium is centered on coastal and estuarine scientists, but limnologists whose work pertains to coastal areas are invited to apply. Information about the estuarine and coastal symposium will be available on the ASLO website (<http://www.aslo.org/dialog.html>) and on the Estuarine Research Federation's website (<http://www.erf.org>).

Ph.D. recipients are encouraged to register their Ph.D. dissertation as soon as they graduate so they can get into the dissertation registry and participate in the e-mail distribution list.

## **PUBLICATIONS**

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Weiler, C.S., Dissertation Initiative for the Advancement of Limnology and Oceanography: DIALOG III program report. ASLO Bulletin. Vol. 9(2), (2000), p. 6.

Weiler, C.S., Congratulations recent Ph.D. recipients!, ASLO Bulletin, vol. 9(2), (2000), p. 10.

Weiler, C.S. and S.E. Beaulieu and other DIALOG III participants. Perspectives on graduate education experiences in aquatic science. ASLO Bulletin. Vol. 9(2), (2000), p. 20.

Weiler, C.S., Congratulations recent Ph.D. recipients! ASLO Bulletin. Vol. 10(1), (2001), p. 8.

Weiler, C.S., DIALOG dissertation compilation: Congratulations recent Ph.D. recipients! ASLO Bulletin. Vol. 10(2), (2001), p. 15.