

**Promoting Sustainable Networks of Women Scientists in the US and Latin America for
Addressing Issues of Environmental Hazards:
A Report on Three COACh Sponsored Workshops**

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May 13, 2016

From 2011 to 2016 the National Science Foundation provided funds to develop and study the impact of a grass-roots, research-based network to assist in the development of the intellectual capacity to lead and sustain efforts to understand, anticipate and mitigate the effects of environmental hazards, including those amplified by climate change, in Latin America and the Caribbean. The major focus of network-building was the geosciences while also integrating economists and other social scientists in areas of risk assessment, economics of hazard preparedness and response, and human behavior related to environmental hazards.¹

To help attain this goal three workshops were held with women scientists from all regions of the Americas. The first, focused on seismological hazards and involving both volcanologists and seismologists, was held in the fall of 2012 in Santiago, Chile.² The second and third, both of which focused on hydrological issues, were in Buenos Aires, Argentina in fall 2013 and in Montego, Jamaica in fall 2014. A total of 39 women scientists participated in the meetings, nine of whom attended two of the events.³ Each of the workshops had from 15 to 18 participants, representing a wide range of locales in the Western Hemisphere. Six were from the Caribbean region, five from Central, 13 from South America, and 15 from the United States. They also represented a range of specialties. The largest single group listed a specialty in hydrology, followed by those who listed geology or some variant of the term, then seismology, disaster and risk management, and volcanology.

The remainder of this report examines data gathered from the participants. The first section reports results from a questionnaire given to participants before attendance that asked about their career-related concerns. The second major section describes the format of the workshop and briefly discusses plans of participants that emerged at that time. The third section reports results of short questionnaires given to participants immediately after the workshop ended to solicit their views on the event and its potential impact on their career-related activities. The fourth section examines data on the extent to which participants' professional networks changed from before the workshop to after the workshop, and the final section summarizes the

¹ NSF Grant Number 1140205, G. Richmond Principal Investigator

² A separate report, "Developing International Networks for Women Scientists: Views of Participants Regarding a COACh Sponsored Workshop," J. Stockard, December, 2012, reported on the Chile conference.

³ Excluded from these counts are the organizers and participants who did not specialize in fields related to environmental hazards but who provided other information important for the participants or organizational and staff support.

participants' reflections, months to years after the workshops ended, on their impact as well as insights regarding factors that could enhance collaborative work across regions.

Pre-Workshop Views and Concerns

All participants were asked to complete a survey that asked about their careers and experiences with mentorship and networking either prior to attendance or while they were at the workshop. Thirty attendees completed the survey: 14 who attended the Chile workshop, 11 from the Argentina workshop, and 5 from the Jamaica workshop. The lower numbers for Jamaica probably reflect the fact that several of the attendees at that meeting had been at earlier workshops and already completed the form.

Characteristics of Attendees

The respondents were a diverse group. They ranged in age from 31 to 71, with an average age in the late 40s. About two-thirds were currently married or partnered. Only about half of the attendees had children, usually two or fewer. The age of the youngest child ranged from 2 years to 35, with a mean of 14.5. About four-fifths of the respondents had a PhD as their terminal degree. They received their terminal degree over a broad range of years – from 1973 to 2013, on average in 1999. Slightly more than half reported getting their degree from an institution in a highly developed country (U.S., Canada, Europe or Japan). The remainder received their degrees in Latin America, including the Caribbean, or India. They held a variety of current positions, ranging from academic positions as professors or lecturers to administrative posts, research fellows, and graduate students or post-doctoral fellows.

Career Satisfaction

A series of 14 questions asked attendees about the extent to which they were satisfied with various aspects of their career. Responses could range from 1, indicating very dissatisfied, to 5, indicating very satisfied. Table 1 reports descriptive statistics for each of the measures, ordered by the average degree of satisfaction. Attendees were most satisfied with the flexibility of their work, their professional networks outside their institution, mentoring they received from others in the field and their access to scholarly material, with average scores above 3.7. They were least satisfied with mentoring from others in their department and support for maintenance and repair of their research equipment.

Given the diverse nature of the group it seemed important to examine the extent to which views might be associated with various characteristics of the respondents. Thus variations in responses were examined across three variables: 1) the year in which attendees received their degree, differentiating those who received their highest degree in 2001 or earlier from those receiving the degree in 2005 or later (none had degrees between 2001 and 2005); 2) academic specialty, differentiating those with specialties in the geological sciences from those with other specialties; and 3) where attendees received their highest degree, distinguishing those who attended a school in highly developed countries such as the US, Canada, Europe and Japan,

from those who received their degree in other areas of the world. While tests of significance adjust for sample size, readers should be cautioned that the groups involved are small, so results should be interpreted cautiously.⁴ Nevertheless, it was interesting to note that the attendees who had received their degrees more recently were significantly less satisfied with their workload, their flexibility to choose their work and their job overall. The associated effect sizes were all quite large. Those who received their terminal degrees outside the U.S., Canada, Europe, or Japan were significantly less likely to be satisfied with their professional networks, mentoring from others and the ability to choose their work projects. Again, the effect sizes were substantial. (See Table 2). The former set of differences probably reflect the greater power and ability to control one's work that comes with seniority. The latter set of differences, especially those regarding mentoring, could be seen as providing important justification for the workshops. There were no differences by academic specialty.⁵

Mentorship and Career Support

Another set of questions asked respondents about the extent to which they could turn to others for professional advice. Almost all had at least one person they felt they could turn to for advice regarding teaching, research, career advancement and/or relations with colleagues, although there was a fair amount of variability. Respondents were most likely to report that they could ask advice from someone in their field and least likely to believe they could ask people within their institutions who were not in their department. Responses regarding each source of advice were aggregated to a scale. There were no differences in these scale scores by when respondents obtained their degree, their specialty area, or where they got their degree (Table 3).

The majority of the respondents (23/29) reported that they had mentored others, usually both men and women. Their mentees were most often graduate students or, somewhat less often, post-doctoral fellows and junior faculty. Support was most often given for research, although a majority also reported giving support related to teaching, career advancement, and relationships with colleagues.

Networking Activities

Finally, the pre-workshop questionnaire asked about the frequency in which they engaged in 14 different types of networking activities. Table 4 lists these in order of frequency that were used. While the variation in frequency among the items was minimal, the approaches most often reported were taking on work tasks to increase recognition with one's institution, contacting people about possible job vacancies, and participating in social activities with colleagues. Activities that were least often used were talking to people at conferences that one didn't know

⁴ The questionnaires did not ask in which country respondents were employed.

⁵ To help minimize the probability of reporting differences that occurred by chance, results of variations across groups were only noted if there were 2 or more significant differences within a set of comparisons (e.g. across year of degree, across place of degree, or across specialties).

or knew only slightly and taking on work tasks to increase recognition outside one's institution. There were no differences in responses by year of degree or the location of the degree, but seven significant differences between those with specialties in geological sciences and others. In all but one of these comparisons the geological scientists were less likely to use a networking strategy (Table 5). The most common reasons for not engaging in networking activities were not believing "I have much to offer other people" and not having "needed" social skills. The least most common reason, by far was not having enough time and not feeling that it was needed. (Table 6).

Issues of Concern

The survey ended with three open-ended questions. The first was, "When you think about advancing in your science career, what types of issues are of most concern to you?" Twenty of the respondents provided answers, with two people having answers that fell into two of the coded categories. The most common issues mentioned involved those related to doing well in their careers, publishing, and being recognized (n=12). This was followed by finding time to work on projects, including balancing career and family obligations (n=7), and issues of funding either for their own research and career support or for a specific project (n=4). The second open-ended question asked, "What types of things are you most interested in learning during the ... workshop?" Again, 20 people answered this question, with 5 giving answers that fell into two categories. The most common response was networking, which was specifically mentioned by 11 people. This was followed by learning about experiences of other women and career advancement skills (n=5), about funding opportunities and other opportunities for career advancement (n=4), and work in countries other than their own (n=3). Least often mentioned was learning about substantive issues that were the topic of the workshop (n=2), perhaps because the women were already experts in the fields. The final open-ended question was, "Is there anything else about your career experiences that you wish to add?" Seven women added responses. Three specifically talked about issues related to gender inequities in their careers, and one said gender inequity had not been an issue during her career. Three others discussed substantive issues related to gender or the topic of the conference.

The Format of the Workshops

The workshops all involved a similar format. They began with a reception and dinner on the night that people arrived, providing a chance for people to begin to meet each other. The morning of the first full day was devoted to more detailed introductions with each participant providing an overview of their work in a few minutes. (Copies of the Power point slides were given to all in attendance.) There were a few (usually two) substantive talks from participants regarding work in the area and a presentation from one of the social scientists who works with COACH on research regarding networking and scientific advancement. Breakout groups were interspersed throughout the schedule, with the topics addressed becoming increasingly more focused. They moved from talking about general issues that needed to be addressed to, on the second day, discussions of possible collaborative projects. Participants were also asked to

reflect upon the ways in which more expansive networks could help their scientific agendas. Feedback was solicited from attendees at the end of the first full day and sometimes resulted in modifying the content of the next day.

As common interests were identified attendees were increasingly grouped by substantive interests. Each workshop resulted in groups of people having plans for future collaborations. For instance, in Argentina one group of participants developed plans for a collaborative paper on trends in precipitation with plan. Other collaborative projects identified in Argentina involved an analysis of transboundary watersheds in Central America and application for PEER funds from US AID to support collaborative research.

Post-Workshop Evaluations

Participants in Chile and Jamaica were asked to complete short surveys immediately after the end of the workshops that asked their perceptions of the event and ways in which it might affect them. Twelve of the Chile participants and ten of the Jamaica participants provided feedback.⁶ In general, virtually all of the responses given by the participants indicated that they had positive views regarding their experience. For instance, when asked the extent to which the workshop had met its goals of supporting and facilitating network formation, 17 of the 22 respondents said “a great deal” and five said “some.” The Chilean attendees were asked specific questions about activities related to networking and the extent to which they planned to change their activities in the coming months. A majority indicated that they were more likely to talk to people they didn’t know or knew only slightly at conferences and events, to send a copy of their work to important people in their field, get in touch with work contacts they haven't heard from for some time in order to maintain a relationship with them, take on work tasks or roles that would get them better known within their institution, to make electronic or phone contact with important people in their field to discuss research, and to ask someone they knew to introduce them to an important person in the field. There were no areas in which they planned to have less frequent activities.

An open-ended question asked both the Chilean and Jamaica attendees if they had “learned things or gained experiences at the workshop that will be especially helpful to you in the months to come.” Eighteen of the answered this question, and they mentioned a total of 27 different aspects. Most often mentioned was learning things that could help in their research endeavors (n=10) as well as material related to career advancement and management (n=10). Seven of the comments specifically dealt with the expansion of their professional networks and consulting in the future with those they had met at the workshop.

A series of closed ended questions asked participants in both workshops about the extent to which attending the workshop helped them “expand the networks of people” with whom they could interact in a variety of contexts. The responses are summarized in Table 7, with results

⁶ Results from the Chilean participants are summarized in the 2012 report on that event and helped shape slight revisions to the format of the two later workshops.

ordered from the areas where networks were most often expanded to those that were least affected. Over four fifths of the respondents said that their networks with people in other countries were expanded “a great deal,” and three-fifths gave this response regarding people in scientific specialties other than their own. The most common response for queries regarding networks to provide career advice, help in meeting others, information for their work organization, and personal support in career decisions was “somewhat.” Of the 123 responses to this set of questions, only 4 were in the “only a little” or “not at all” categories. All of the “not at all” responses came from one senior, US-based woman.

Changing Networks

Socio-metric data regarding the attendees’ professional networks were gathered from participants in all three workshops. For attendees at the Chilean workshop an internet-based survey was sent to all attendees approximately 6 months after the workshop. It asked about the extent to which they had professional contact with other workshop attendees before the meeting and the extent to which they had been in contact since the meeting. For the Argentina and Jamaica meetings information on pre-workshop contact was gathered at the time of the workshop, and data on post-workshop contacts were gathered via an internet-based survey about one year after each workshop. While all attendees provided pre-workshop information for Argentina and Jamaica, only 11 of the Chilean attendees responded to the e-mail request and provided data. The response rate was even smaller for the one-year follow up surveys, with eight people responding from the Argentina meeting and four from the Jamaica meeting. Nevertheless, the socio-metric data support the survey results and indicate that the professional networks of the attendees were stronger after the workshops. Two methods were used to analyze the data: examination of graphs depicting the network ties and summary descriptive statistics of the networks and ties.

Graphs that depict the relationships between the attendees in the Chile workshop before attending the meeting are given in Figures 1 and 2. Figure 1 depicts relationships for those reporting they had met other attendees previously, and Figure 2 depicts relationships among those who had corresponded with each other. Each of the nodes is labeled with an identification number that also indicates region where the attendee works (e.g. LA1 for Latin America respondent one, US1 for United States respondent one). Both graphs indicate that most of the professional interactions before the workshops had been within-region. For instance, the circle of interactions in the left side of both figures includes only one US respondent (number 3); all the rest are from Latin America. The right side of the figures include the other three US respondents. Two of these had met one of the Latin America attendees (LA3, see Figure 1), but professional correspondence had occurred only among the three US attendees.

Figure 3 shows the graph depicting correspondence networks for the Chilean attendees 6 months after the workshop and shows how the gap between the two regions declined over the time period. While relationships were still more common within regions, the cross-regional ties

were more numerous, at least when the data regarding professional correspondence is examined. Table 8 reports density of the networks depicted in the figures. Density is the ratio of the actual number of ties in a network to the total possible number of ties. The first line in the table compares the density of the graph depicting ever having met another before attending the workshop (Figure 1) with having professional correspondence in the months after the workshop (Figure 3). The second line compares densities of the two figures examining professional correspondence (Figures 2 and 3). The density values are equal for the first comparison. But in the second comparison the density post-workshop is about twice that of the pre-workshop value. In other words, these results suggest that the attendees were much more likely to have corresponded with others regarding professional matters after the workshop than before.

Figure 4 depicts the networks before attendance at the Argentine workshop. It shows the extent to which attendees had ever met and show relationships for the entire group. Most of the attendees knew only one other attendee prior to the workshop. Again, there was a substantial divide in the network. But, in contrast to the Chile workshop, the two groups (seen on the left and right of the diagram) both involved attendees from multiple locales. The network on the right included 2 people from the US and four from South America, while the network on the left included attendees from the US, South America, Central America, and the Caribbean. The density of this network was quite low (.08), reflecting the preponderance of only dyadic relationships.

Figure 5 shows networks reported in the one-year follow-up for the Argentina participants, focusing on the extent to which the respondents had any professional contact over the time period. Of the 8 people who responded only two had indicated any pre-workshop acquaintance with each other (a density of .04). But, as shown in Figure 5, professional contacts appeared to have increased markedly after the workshop. The proportion with only one tie was substantially smaller than before the workshop and the overall density of the workshop had increased markedly to .39.

Figure 6 depicts the extent of any pre-workshop professional contact for attendees at the Jamaican workshop. Two of the attendees knew no one at the workshop before that time and all the other connections involved dyads. No one reported acquaintance with more than one person. The post-workshop data, involving the four attendees who responded to the survey, are in Figure 7. Prior to the workshop only two of the four people had met. Yet, one year post-workshop all of these attendees had professional contact with at least two of the other people, resulting in a density of .75. It should be noted, however, that three of the four people were based in the United States.

Participants' Post-Workshop Reflections

The follow-up questionnaires that were sent from 6 months to a year after the workshops included several open-ended questions that asked attendees to reflect on the workshops, and

their comments are summarized below. In addition, in December 2015 ten women who had attended one or more of the workshops gathered at the annual meetings of the American Geophysical Union, and their reflections are also summarized.

Follow-Up Questionnaires

The first question in the follow-up questionnaires, asked of only the attendees at the Argentina and Jamaica workshops, was, “Please share whether there was anything you learned at the ... workshop that has been helpful to you in the past year.” Eleven of the 12 people responded, with one person giving two separate thoughts. The most common answers involved increased skills in handling interactions at work and expanding their networks, both of which were mentioned by five people. Two other people mentioned learning something substantive related to their area of specialty.

The next question, asked of attendees at all workshops was, “What types of post-workshop interactions have been most helpful for you?” There were a total of 26 responses to this query. The most common response, by far, was related to contacting others about specific projects, ideas, issues or events (n=14). Nine others, none of whom had made such specific contacts, mentioned that it was good to know that the network was there and someone that they could talk to as needed. Only three people said that they hadn't felt a need to contact others or that their attempts at contacts had not worked out.

When asked “What can COACH do to help keep the network developed in ... strong and productive?” the most common response (16 of the 29 comments) involved electronic communications, including e-mails, web page, and social media, such as Facebook. Four mentioned holding follow-up meetings at conferences, two suggested expanding the network by adding more people or other disciplines, one mentioned having more bilingual materials, and three gave positive, but non-specific comments. In addition, three people, all from the Argentina workshop, where plans for a specific project did not materialize, made negative comments focusing on the lack of follow-up activities of participants.

The final question simply asked participants to “Please share any thoughts you have about your experience at the workshop or in the subsequent months that might help COACH as we prepare for other workshops.” The 21 responses were varied. Six people specifically commented on their expanded networks and five gave positive, but non-specific comments. Three people suggested having smaller sub-groups or a more focus on specific disciplinary areas. Two, both at the Chile workshop, commented on the value of interactions with the community. Three themes were presented by one person each: having more time for individuals to report on their research, having more support for those who were not quite as fluent in English as others, and including leadership training as part of the workshop. Two other participants, both of whom had attended the Argentine workshop, commented on issues regarding attendees following up on tasks they had agreed to do.

Follow-Up Meeting at 2015 AGU Conference

The 2015 meeting at the AGU included attendees from all three workshops. A short program included presentation of some of the data given in this report and presentation of a poster developed by one of the attendees that looked at cross-national scientific collaborations. This was followed by dinner and a discussion of the impact of their workshop experiences on their careers and suggestions for other workshops.

The attendees at the 2015 AGU meeting had suggestions for other workshops that were similar to those given in responses to the follow-up questionnaires. They stressed the importance of follow-up meetings at conferences to reinforce connections, perhaps at yearly intervals and at a variety of disciplinary area meetings. They also mentioned the importance of continuing communications through the website and e-mail communications. As a way to promote interactions, future workshops could have a more narrow focus, bringing together people with very similar interests or facilitating sub-groups with similar interests. In addition, more extensive information about other attendees could be provided to participants before the start of the workshops.

The AGU attendees reported that none were involved in collaborative projects that were a direct result of their workshop attendance, although some were part of a research proposal, stemming from the Chilean workshop that had not been funded. Others noted efforts to develop a collaborative project from the Argentine workshop that had not materialized. The attendees suggested that a variety of factors might have contributed to the fact that concrete projects had not yet developed. A major factor was the very heavy obligations that attendees had in their daily lives and the fact that pressing projects involved areas other than those covered in the workshops. Another reason involved the diversity of the groups. While there were similarities in interests at each workshop, which could promote constructive interactions and communications, these might not have been sufficient to produce collaborations on research projects. Finally, the attendees noted that the length of the workshops wasn't sufficient to provide the basis for developing long-lasting collaborations.

At the same time, the attendees stressed that they had gained a great deal from their experiences. Examples included help with publications, introductions to others, advice on issues such as research funding, and increased self-confidence. They also noted that the expanding networks they had developed would continue to provide benefits into the future, suggesting that the workshops had "planted the seeds" that could provide the basis for enhanced productivity for the participants. Based on her own observations, the author of this document agrees with this statement. The women at the 2015 meeting seemed sincerely pleased to see each other, engaging in thoughtful conversations, and making plans for continued interactions and meetings. In addition, the participants in the Chilean workshop have continued, four years after they first met, to correspond with each other, regularly sending holiday greetings as well as updates on professional matters. The warmth of their interactions and their interest and caring for each other appear, to this observer, to reflect the trust and

mutual confidence that are a necessary basis for productive scientific collaborations and bode well for future work linking the region.

Table 1

Average Satisfaction with Career-Related Areas (1=Very Dissatisfied, 5 = Very Satisfied)

	<u>Mean</u>	<u>SD</u>	<u>N</u>
Flexibility to choose and work on projects within your own interests ^{a, b}	4.00	1.14	30
Your professional network outside of your institution/lab	3.93	1.08	30
Mentoring that you receive from others in the field as a whole ^b	3.76	0.99	29
Your access to journals and other scholarly materials	3.73	1.20	30
Your workload ^a	3.55	1.09	29
Your job, overall ^a	3.54	1.23	28
Recognition of your accomplishments by others	3.50	1.17	30
Your department's support for balancing work and family life	3.50	1.31	30
Your access to supplies and equipment	3.27	1.17	30
Your productivity	3.26	0.98	27
The way you balance work and family life	3.23	1.28	30
Your salary	3.13	1.25	30
Mentoring that you receive from others in your department	2.90	1.23	29
Support for maintenance and repair of your research equipment	2.70	1.21	30

Note: Superscript of a indicates significant differences ($p \leq .05$) by year of degree, b indicates significant differences by where received degree

Table 2

Average Satisfaction by Year of PhD and Place Earned Degree, Selected Variables

<i>Differences by Year of Highest Degree</i>					
	<u>Average</u>				
	<u>2001 or Earlier</u>	<u>2005 or Later</u>	<u>t</u>	<u>prob</u>	<u>Effect Size</u>
Difs by year of degree					
Workload	4.09	3.17	2.14	0.04	0.82
Flexibility to choose and work on projects within your own interests	4.64	3.58	2.39	0.03	0.91
Your job overall	4.44	3.08	2.93	0.01	1.10
<i>Differences by Locale of Institution of Highest Degree</i>					
	<u>Average</u>				
	<u>Developing World</u>	<u>Highly Developed</u>	<u>t</u>	<u>prob</u>	<u>Effect Size</u>
Your professional network outside of your institution/lab	3.54	4.24	-1.82	0.08	-0.65
Mentoring that you receive from others in the field as a whole	3.31	4.12	-2.4	0.02	-0.82
Flexibility to choose and work on projects within your own interests	3.54	4.35	-2.03	0.05	-0.71

Note: Items are listed only if the probability associated with the difference between the groups was significant at .10 or less and if there were two or more significant differences within a set of comparisons. Effect sizes are Cohen's d, which is equal to the difference of the means divided by the common standard deviation. Values of .60 or higher are typically considered large. There were 11 respondents who reported that they obtained their terminal degree in 2001 or earlier and 12 who obtained their degrees in 2005 or later. There were 13 respondents who obtained their terminal degree in the developing world and 17 who obtained their terminal degree in a highly developed nation. Twelve respondents specialized in geological sciences and 17 in other fields.

Table 3

Advice Available by Type and Source

<i>Advice from Departmental Colleagues Regarding</i>					
	<u>Mean</u>	<u>SD</u>	<u>Min.</u>	<u>Max.</u>	<u>N</u>
Teaching	2.50	1.07	1	5	26
Research	2.63	1.01	1	4	27
Career Advancement	2.54	1.17	1	5	28
Relationships with Colleagues	3.17	1.14	1	5	29
Summed Scale	2.72	0.80	1.25	4.25	29
<i>Advice from Colleagues in Rest of University/Institution Regarding</i>					
	<u>Mean</u>	<u>SD</u>	<u>Min.</u>	<u>Max.</u>	<u>N</u>
Teaching	1.81	1.11	1	4	27
Research	2.52	1.09	1	5	29
Career Advancement	2.00	1.00	1	4	29
Relationships with Colleagues	2.83	1.36	1	5	29
Summed Scale	2.31	0.95	1.00	3.75	29
<i>Advice from Colleagues in Field at Other Universities/Institutions Regarding</i>					
	<u>Mean</u>	<u>SD</u>	<u>Min.</u>	<u>Max.</u>	<u>N</u>
Teaching	2.44	1.42	1	5	27
Research	3.48	1.01	2	5	27
Career Advancement	2.93	1.33	1	5	28
Relationships with Colleagues	3.61	1.34	1	5	28
Summed Scale	3.12	1.10	1.25	5	28

The questions were worded: "Of the colleagues in your immediate department, how many do you turn to for advice regarding: teaching, research, career advancement, relationships with other colleagues;" "Of colleagues in the rest of your university/institute, how many do you turn to for advice regarding" the same four areas, and "Of colleagues in your field that work for other universities/institutions, how many do you turn to for advice regarding" the same four areas. Possible responses were none (coded 1), one (coded 2), 2 to 3 (coded 3), 4 to 5 (coded 4) and 6 or more (coded 5). The scales were created by summing and averaging values within each area. Coefficient alphas were .74 for the scale regarding departmental advice was .74, .85 for the scale regarding advice from other areas of the home institution; and .87 for the scale regarding advice from others in the field.

Table 4

Extent to Which Respondents Participate in Networking Activities, Descriptive Statistics

<u>Variable</u>	<u>Mean</u>	<u>Std. Dev.</u>
Take on work tasks or roles that get you better known within your university/institution	2.88	0.71
Contact people who have (or may have) job vacancies in order to talk about possible opportunities	2.78	1.15
Participate in social activities with work colleagues	2.74	0.81
Get in touch with work contacts you haven't heard from for some time, in order to maintain a relationship with them	2.73	0.78
Ask other people for feedback about their perceptions of you and/or your work	2.69	0.84
Ask people for their advice or suggestions about your career	2.69	0.74
Send a copy of your work to important people in your field	2.67	1.07
Make electronic or phone contact with important people in your field to discuss research	2.59	0.84
Use electronic social networking, message boards, etc. to make new work contacts.	2.59	0.97
At conferences or seminars, get yourself noticed by important people in your field	2.56	0.80
Use electronic social networking, message boards, etc. to develop existing work contacts	2.56	0.97
Ask someone you know to introduce you to an important person in your field	2.52	0.98
At conferences or seminars, talk to people you don't know, or know only slightly	2.48	0.85
Take on work tasks or roles that get you better known outside your university/institution	2.42	0.70

Responses were coded 1 for "scarcely at all," 2 for "a little," 3 for "quite a lot," and 4 for "very much." Answers to all questions ranged from 1 to 4, except for the question regarding asking "people for their advice or suggestions about your career," which ranged from 2 to 4. Sample size for each question ranged from 26 to 27.

Table 5

Frequency of Networking Activities by Specialty in Geological Sciences

	<u>Average</u>		Effect Size	t	<u>prob</u>
	<u>Other Specialty</u>	<u>Geol. Sciences</u>			
Take on work tasks or roles that get you better known within your university/institution	3.12	2.56	0.80	2.08	0.04
Contact people who have (or may have) job vacancies in order to talk about possible opportunities	3.29	1.67	1.41	4.62	0.001
Send a copy of your work to important people in your field	3.12	1.67	1.45	4.34	0.002
Use electronic social networking, message boards, etc. to make new work contacts.	3.06	1.67	1.40	4.60	0.0001
Use electronic social networking, message boards, etc. to develop existing work contacts	3.00	1.78	1.23	3.68	0.00
Ask someone you know to introduce you to an important person in your field	2.82	1.78	1.09	3.10	0.005
At conferences or seminars, talk to people you don't know, or know only slightly	2.29	3.00	-0.88	-2.28	0.03

Note: Effect sizes are Cohen's d, which is equal to the difference of the means divided by the common standard deviation. Values of .60 or higher are typically considered large. There were 12 who indicated a specialty in geological sciences and 17 in other fields, although the number of respondents varied from one item to another

Table 6

Reasons for Not Engaging in Networking Activities

<u>Variable</u>	<u>Mean</u>	<u>Std. Dev.</u>
I don't believe I have much to offer other people	3.04	0.86
I don't have the social skills needed for this kind of thing	3.00	0.85
Ethical concerns	2.91	1.12
I have more important things to do	2.88	1.07
I don't feel sufficiently self-confident	2.81	0.96
I don't feel I need to	2.77	1.14
I don't have time to do it	2.59	0.64

N for each item ranged from 24 to 26. Responses ranged from 1 = strongly disagree to 4 = strongly agree.

<i>Extent to Which Attending the Workshop Helped Expand Networks</i>			
People that:	<u>A Great Deal</u>	<u>Somewhat</u>	<u>A Little or Not at All</u>
Are from countries other than your own	86%	10%	5%
Are in scientific specialities other than your own	62%	38%	0%
You can ask for important information for your work organization	33%	48%	19%
You can ask for personal support in career decisions	29%	57%	14%
You can ask for career advice	26%	68%	5%
You can ask for help in meeting other people	20%	70%	10%

Note: Four responses, out of a total of 123, fell in the "not at all category." Three of these four came from a senior woman from the U.S who attended the Chilean workshop.

<i>Density of Networks - Pre and Post by Site</i>				
<u>Groups in Comparison</u>	<u>Pre-Workshop</u>	<u>Post-Workshop</u>	<u>N-Pre</u>	<u>N-Post</u>
Chile - Pre Ever Met, Post Corresponded	0.24	0.24	11	11
Chile - Pre Corresponded, Post Corresponded	0.13	0.24	11	11
Argentina - Pre Ever Met, Post Corresponded	0.08	0.39	16	8
Argentina - Pre Ever Met, Post Any Professional Contact	0.04	0.39	8	8
Jamaica - Pre Ever Met, Post Corresponded	0.12	0.75	12	4
Jamaica - Pre Ever Met, Post Any Professional Contact	0.17	0.75	4	4

Note: The density is calculated as the number of actual ties divided by the number of potential ties. The number of potential ties = $n*(n-1)$, where n is the number of people in the group. Ties may be unidirectional.

Figure 1: Network Ties – Pre-Workshop – Chile – Ever Met

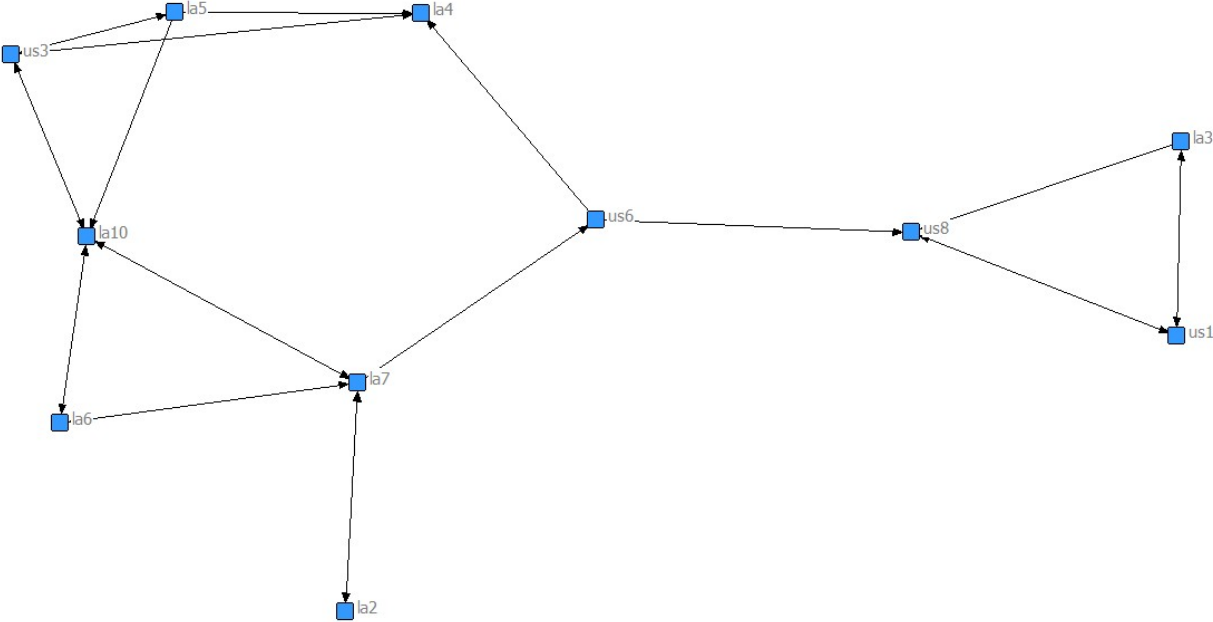


Figure 2: Network Ties – Pre-Workshop – Chile – Ever Corresponded



Figure 3: Network Ties – Post-Workshop – Chile – Corresponded

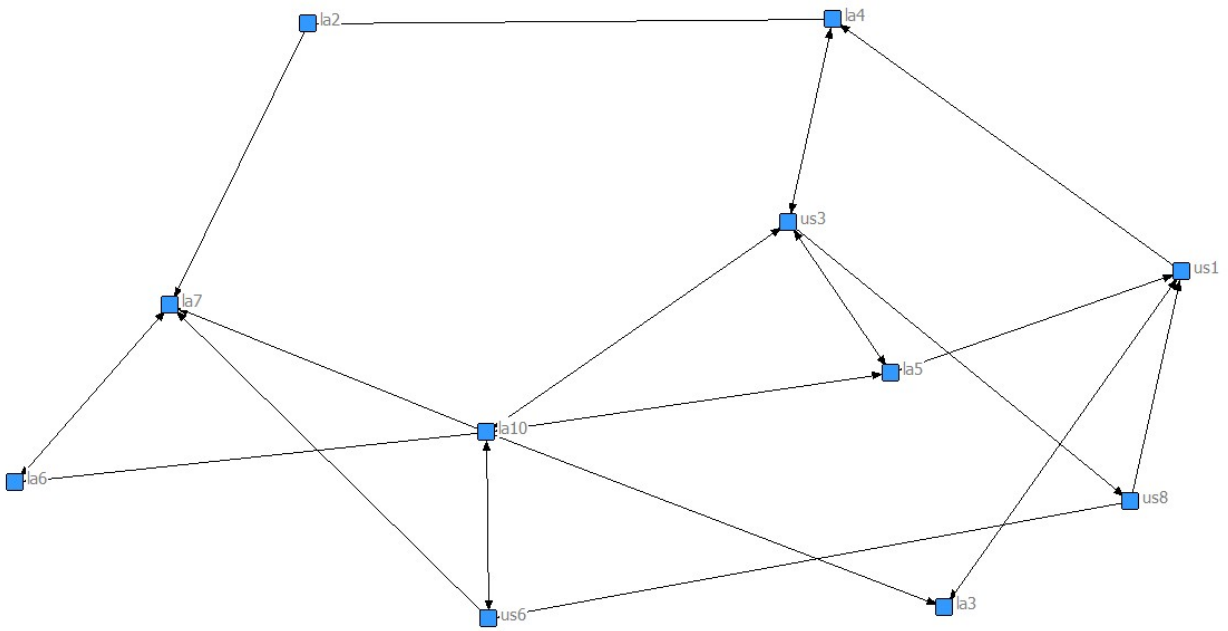


Figure 4: Network Ties – Pre-Workshop – Argentina – Ever Met

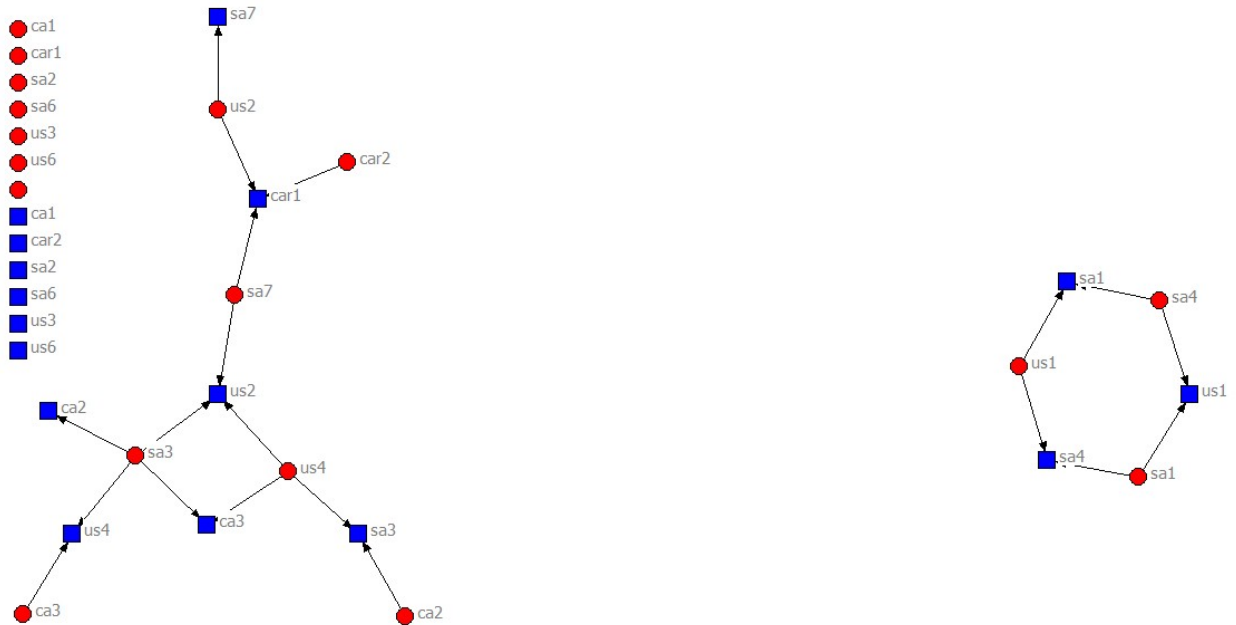
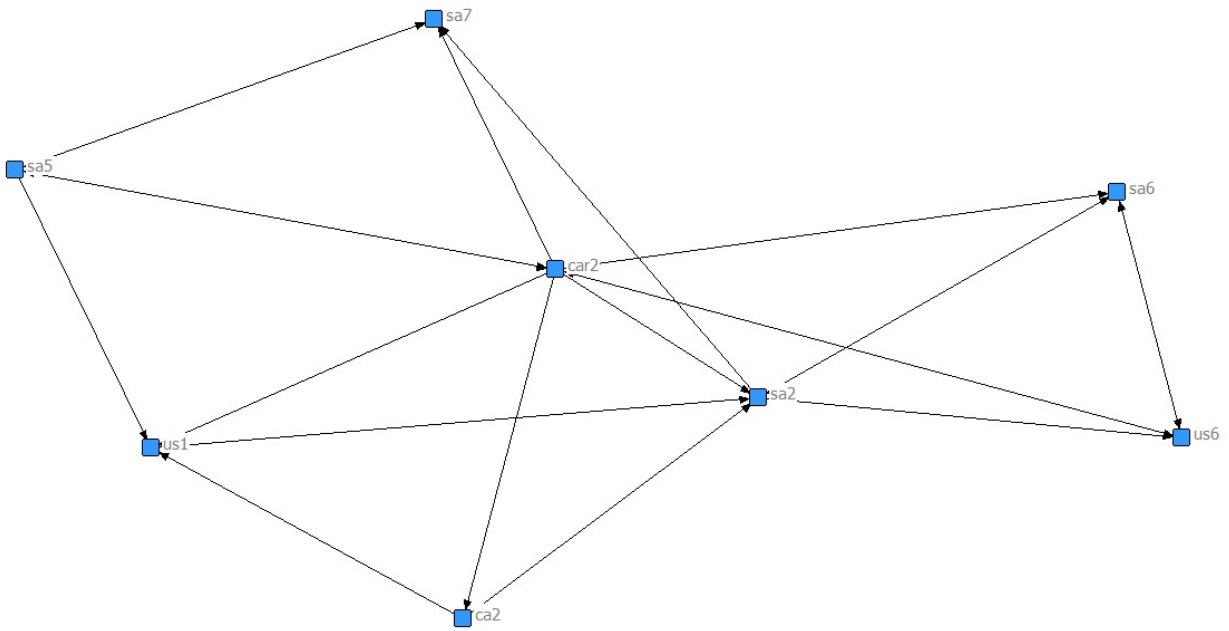


Figure 5: Network Ties – Post-Workshop – Argentina – Professional Contact



Note: Pre-workshop only two of the eight respondents had met previously (SA5 and SA7).

Figure 6: Network Ties – Pre-Workshop – Jamaica – Any Professional Contact

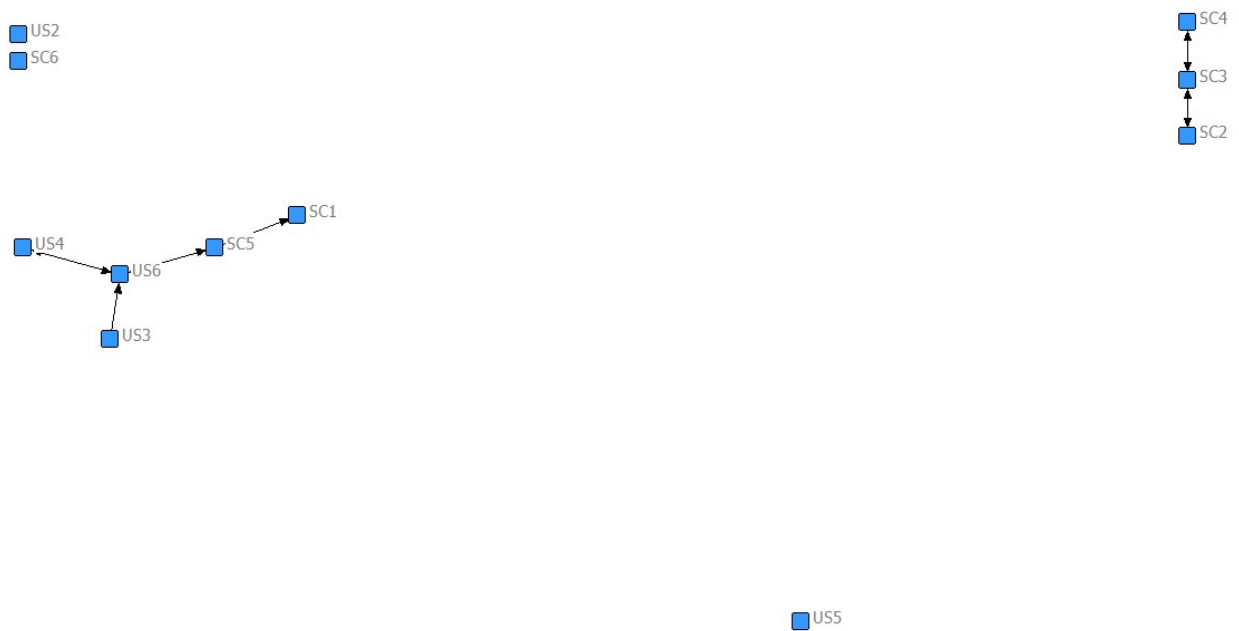
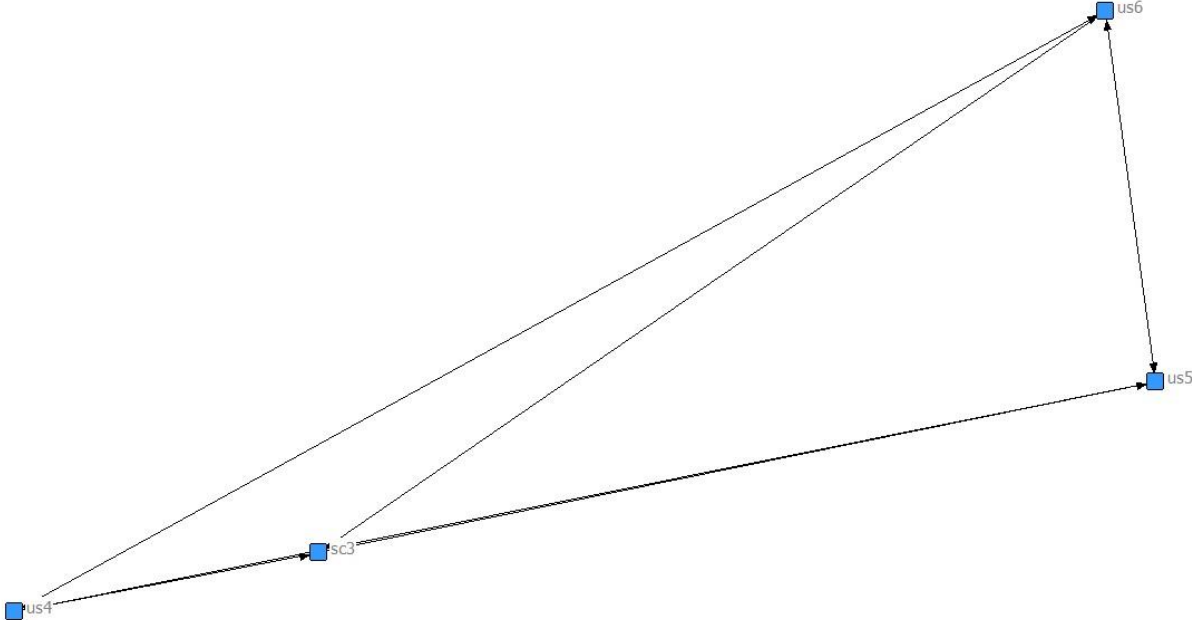


Figure 7: Network Ties – Post-Workshop – Jamaica – Professional Contact



Note: Pre-Workshop only two of the four respondents (US4 and US6) had met each other.