2019 IRIS Summer Internship Evaluation Summary

For
IRIS

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> "Do you want highly skilled, talented, driven, diverse undergraduates to help you with research? Get an IRIS intern!"
>
> 2020 IRIS Mentor

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Executive Summary

- The 2019 program had a total of 15 interns and 13 Mentors
- 11 Mentors completed the post program survey, 11 interns completed the post internship survey

Mentors

- Mentors reported learning about the IRIS Undergraduate Internship Program through email (45%), a colleague (27%) and from being a mentor previously (27%)
- 100% of the mentors agreed or strongly agreed that throughout the internship they monitored the progress of their intern using the goals and adjusted them with the intern when necessary
- 100% Of the mentors reported being likely or very likely to participate in the program again in the future
- 100% Would also recommend IRIS's internship program to a colleague telling them it is a "well-structured program," "a good experience for both parties," and "Do you want highly skilled, talented, driven, diverse undergraduates to help you with research? Get an IRIS intern!"
- Mentors felt the Self-Reflection Guide was somewhat useful (29%), moderately useful (43%), and extremely useful (14%)

Interns

- In the development of a cohort, it is important for the members to develop relationships. To that end, 100% Of interns agreed or strongly agreed that there are feelings of unity and togetherness among the group, that they enjoy communicating with the members of the group, that the group atmosphere is comfortable, and that some of the group members could become my friends
- 81% Of interns felt connected to the other IRIS interns in a beneficial way while fewer felt connected to other undergraduate students at my mentor's institution in a beneficial way (18% agree and 18% strongly agree). Additionally, after orientation, all of the interns (100%) agreed or strongly agreed that the group members spent time getting to know one another and that the group atmosphere was comfortable
- Interns reported being fairly likely (17%) and extremely likely (50%) that they would stay in-touch with fellow interns
- As a result of participating in the summer IRIS internship, interns increased their desire to pursue a career in geophysics or seismology a little (25%) or a lot (50%)
- Interns reported increases in science identity measures including feeling their knowledge of, and ability to use, the technologies to collect and study geophysical data increased a lot (83%), their ability to gather, manage and convey scientific information increased a lot (75%), their understanding of the process of scientific inquiry increased a lot (67%), and their ability to defend a scientific argument increased a lot (67%)
- While interns were divided on their likely hood that they would consider their mentor as a graduate advisor when applying for graduate school with 33% disagreeing, 17% feeling undecided, 33 agreeing, most felt the mentoring provided was effective (9%) or very effective (82%)
- Interns also felt that their personal development is at least as important to my mentor as producing science results (36% agree and 64% strongly agree), that their mentor

encouraged and enabled them to pursue their interests (18%, 73%), and that their mentor was interested in what I wanted to do with my education and career (27%, 64%)

- All of the interns agreed (55%) or strongly agreed (45%) that they were adequately prepared to attend the Fall AGU meeting
- Interns found it valuable (9%) or very valuable (91%) to attend AGU as part of the internship program
- Overall, interns felt that this internship was one of the best learning experiences they have ever had (17% agree, 75% strongly agree), that they can easily apply the information/skills they learned during the internship to their future career goals (17%, 83%), that technical/scientific assistance and guidance from the mentor, their graduate students or other staff was readily accessible throughout the internship (25%, 67%), and that their work this summer contributed in a meaningful way to the overall success of the mentor's research (25%, 58%)

Orientation

- Interns felt significantly more prepared for their internship after their orientation experience
- Post orientation, interns were better informed about the variety of careers available in seismology/geophysics, what courses they have to take to become a seismologist/geophysicist, and the graduate school application process
- For the interns, the most important reasons for deciding to participate in the summer research experience were wanting to learn more about what it is like to be a researcher (73% extremely important), wanting a hands-on experience to reinforce what they learned in class (64% extremely important), and thinking it would be fun (82% extremely important)
- When applying to participate in the IRIS Undergraduate Internship Program, interns felt the most important reasons were that the research topics sounded interesting (73% extremely important) and wanting to do something different (55% extremely important)

Self-Reflection Guide Tool

- Most interns reported that they completed the self-reflection guide together with their mentor (60%)
- At the beginning of the internship, interns and their mentor made use of the self-reflection guide for discussion (80%). Mid-internship, the guide was completed by the intern and mentor together (40%) or not completed (40%). At the end of the internship, the guide was completed by the intern and mentor together (60%)
- Interns found that the mentoring rubric provided them with a structure for discussing their progress with others (60% agree, 10% strongly agree), that the mentoring rubric helped illuminate areas that needed improvement and areas where growth occurred (40%, 20%), that they found the mentoring rubric to be a beneficial resource for the mentoring process (50%, 10%), and that the mentoring rubric encouraged them to engage in purposeful reflection this summer (50%, 10%)

Recommendations

- Insure that the mentors receive aggregate feedback from all the interns regarding their experiences

- Encourage mentors to engage their interns in projects that are interesting or creative when possible to help sustain their interest and engagement
- Help mentors make their intern aware of their accomplishments
- Offer suggestions and tools to mentors on how they can improve their mentoring skills
- Share the intern feedback with the mentors
- Capture metrics from Snapchat if possible
- Insure all interns complete all evaluation surveys
- Some interns seem to have been left out of the group communications or were not aware of them. Insure all interns are aware of and are invited to participate in group communications
- Develop a longitudinal method for tracking intern degree and career choices
- With 75% of the interns feeling only somewhat prepared, some additional help may be needed during orientation
- Interns could use some additional support in preparing for the GRE
- Very few interns found a recommendation from another student important in their decision to participate in IRIS. This may be an avenue to engage more students in the future
- More could be done to help the interns feel part of a community of scientists during orientation
- Encourage all mentors and interns to review the guide together
- Introduce the guide during orientation to help interns be more comfortable with it
- Show interns how engaging with the guide can help them during their summer internship
- Streamline instruments to reduce the time burden while enhancing the value of the data gathered

Recommendations for Success Metrics

- Track any and all methods used to attract ethnic minorities and those traditionally underrepresented to the program
- Track the intended and actual career and graduate school paths of interns
- Have interns share their sense of connectedness though a revised orientation survey as well as through a revised post-internship survey both to include more specific questions about their utilization of the designated group tool as well as other ways to enhance their interconnectedness

Success Metric Summary

Outcome	Evaluation	Success Metric
1. The internship program will attract a more diverse population	Applicants' racial, ethnic and gender responses will be collected as part of the application process	The average percentage of applications from racial and ethnic minorities will comprise at least 15% of the applicant pool while the average percentage of female applicants will comprise 50% of the pool

Findings

- There were a total of 98 applicants considered for the 2019. Of those, 55% self-identified as female, 11.2% self-identified as underrepresented minority.

2. The internship program will encourage a more diverse population	Survey of accepted interns measuring gender, race and ethnicity	Population of interns accepted to the program will average at least 20% of participants from communities traditionally underrepresented

Findings

- Of the selected interns, 54% self-selected as female and 11.2% self-identified as underrepresented minority

3. Program alumni will seek geoscience careers	Long range tracking of the education and careers of alumni	75% of alumni will attend graduate school in a geoscience field and/or geoscience careers

Findings

- As a result of this internship, 75% of interns reported an increase in their desire to pursue a career in geophysics or seismology
- As a result of this internship, 66% interns plan to seek a career in a field of geophysics or seismology

4. Interns will feel and demonstrate a beneficial connectedness	Perception data collected as part of the follow-up survey, and analysis of transcripts	80% of interns will agree or demonstrate they were connected in a beneficial way to the other interns

Findings

- Interns reported being somewhat likely (25%), fairly likely (17%), and extremely likely (50%) to stay in-touch with fellow interns over the summer
- During their internship, the interns agreed (45%) or strongly agreed (36%) that they felt connected to other IRIS interns in a beneficial way.

2019 IRIS Summer Internship Evaluation Summary

Mentor Overall - Summary & Recommendations

Summary

- Mentors reported learning about the IRIS Undergraduate Internship Program through email (45%), a colleague (27%) and from being a mentor previously (27%)
- For mentors, the decision to host an intern for the summer was dependent on the overall reputation of the program (91% fairly important or extremely important), the quality and preparedness of the interns (82%), support for the intern to present their summer research at AGU (82%), diversity of the interns (81%), and support for the interns to attend the one-week orientation prior to starting their internship (81%).
- 100% of the mentors agreed or strongly agreed that throughout the internship they monitored the progress of their intern using the goals and adjusted them with the intern when necessary, 91% agreed or strongly agreed that they created clearly stated, written goals for the internship, 82% agreed or strongly agreed that the selection committee provided them with a well-qualified undergraduate to work with for the summer, and 82% agreed or strongly agreed that overall, hosting an intern this summer was beneficial to them and a worthwhile use of their time
- 100% Of the mentors reported being likely or very likely to participate in the program again in the future
- 100% Would also recommend IRIS's internship program to a colleague telling them it is a "well-structured program," "a good experience for both parties," and "Do you wanted highly skilled, talented, driven, diverse undergraduates to help you with research? Get an IRIS intern!"
- Mentors offered advice for future mentors including having realistic goals, setting realistic targets, getting in touch with the intern before they arrive, and involve them in an interesting project that you have wanted to work on
- Most (64%) of the mentors reported using the Self-Reflection Guide as part of the mentoring process during the summer discussing it with their intern once (29%), twice (29%) or three times (43%) and most often at the middle of the summer (50%)
- Mentors felt the Self-Reflection Guide was somewhat useful (29%), moderately useful (43%), and extremely useful (14%)
- When rating the different aspects of the Self-Reflection Guide, the mentors felt most strongly that the Self-Reflection Guide helped illuminate areas that needed improvement and areas where growth occurred (57% agreed, 29% strongly agreed) and provided them with a structure for discussing their intern's progress with them (71% agreed, 14% strongly agreed)
- Mentors are interested in receiving aggregate feedback from all the interns regarding their experiences

Recommendations

- Encourage mentors to engage their interns in projects that are interesting or creative when possible to help sustain their interest and engagement
- Help mentors make their intern aware of their accomplishments

- Offer suggestions and tools to mentors on how they can improve their mentoring skills
- Share the intern feedback with the mentors

Data Reporting

From which of the following sources did you FIRST find out about the IRIS Undergraduate Internship Program? (N=11)

	N	%
I have mentored previously	3	27%
A colleague discussed the program with me	3	27%
Personal contact with the program coordinator	0	0
Email notice (e.g. IRIS Bulkmail)	5	45%
NSF's Website	0	0
IRIS's Website	0	0
Google or other search engine	0	0
Social networking site (e.g. Facebook)	0	0

Other (please specify)

- *I was an intern previously*

How important was each of the following in your decision to host an intern this summer? (If an item does not apply to you, please select the "not important" category) (N=11)

	Not important	Somewhat important	Fairly important	Extremely important
Overall reputation of the program	9%	0	36%	55%
Quality and preparedness of the interns accepted into the program	0	18%	18%	64%
The opportunity to work with students from outside my own institution	0	27%	36%	36%
Diversity of the interns	9%	9%	36%	45%
The opportunity to conduct preliminary work on an unfunded project	18%	27%	27%	27%
The opportunity to accelerate work on funded projects	36%	27%	9%	27%
Support for the intern to attend a one-week orientation prior to traveling to their host site	9%	9%	45%	36%
Support for the intern to present their summer research at AGU or other conference	0	18%	27%	55%

Other (please specify)

- *Opportunity for mentoring experience as a postdoc.*

Participant Perceptions

Directions: Please read each of the following statements carefully. Then select the statement which best matches your level of agreement. (N=11)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
The internship selection committee provided me with a well-qualified undergraduate to work with for the summer.	0	0	18%	27%	55%
I created clearly stated, written goals for the internship.	0	0	9%	55%	36%
Throughout the internship I monitored the progress of my intern using these goals and adjusted them with the intern when necessary.	0	0	0	45%	55%
I was aware that my intern kept a blog as part of the internship program and I occasionally looked at it.	0	9%	9%	45%	36%
My intern's summer work made meaningful contributions to my ongoing research portfolio.	0	9%	9%	45%	36%
Overall, hosting an intern this summer was beneficial to me and a worthwhile use of my time.	0	0	18%	27%	55%

How likely are you to participate in the program again in the future? (N=11)

	Extremely unlikely	Unlikely	Likely	Extremely likely
Response	0	0	36%	64%

What would increase the likelihood of your future participation?
NA

Would you recommend IRIS's internship program to your colleagues?
100% = "Yes"

Please describe what prevents you from recommending this program to colleagues?
NA

What would you say when recommending IRIS's internship Program to your colleagues?

- *Do you wanted highly skilled, talented, driven, diverse undergraduates to help you with research? Get an IRIS intern!*

- *The IRIS intern program is a great opportunity for young scientists to get exposure to doing research. In supporting it, you are helping train the next generation of geoscientists.*
- *Well structured yet flexible, and consistently well-managed. The best REU program I know.*
- *Good experience for both parties.*
- *Internship allows enough time to make significant progress on a research project, students are well prepared and it is my belief that the internship does an excellent job of professional development for the interns.*
- *The intern receives a week of training prior to their internship that can bring them from zero to 60, as well as providing them a cohort in which to network and support each other.*
- *A great opportunity to promote your research. A great tool to recruit new graduate students.*
- *A great opportunity to work with a very talented and enthusiastic undergraduate student.*
- *Don't take an intern without computing or programming experience.*
- *It's great opportunity to host a very good undergraduate student, liven up your research group over the summer and try to recruit new people to pursue higher education in geophysics and seismology.*
- *An opportunity to train, recruit and collaborate with young scholars.*

What concrete advice/tips would you give to faculty that will mentor the next cohort of students?

- *Have realistic goals, check in with them, form a support group by relying on your graduate students/postdocs to help mentor them as well.*
- *The internship goes by very fast so it is best not to have the project goals be too open ended or ambitious. Set realistic targets that the intern is aware of, and try to stick to them.*
- *Be sure that their institution can host J1 Interns. This isn't a standard consideration and requires a separate application by the institution. If not, work to get the application in as quickly as possible, so the student application can be completed in time.*
- *Select an intern with adequate background for the project.*
- *Set reasonable expectations and have a clearly defined project with achievable goals.*
- *Give them a project that is interesting, maybe something you've thought about a little but hadn't had time to really dig into. It levels the playing field a bit because you may need to catch up on the same reading you assign your intern, and it gives you an excuse to finally follow up on that loose thread. It can also lead to some really interesting follow on projects.*
- *Be willing to adjust expectations, embrace the strengths of the intern, introduce interns to current grad/ugrad students/post-docs to gain insight into grad school and research expectations.*
- *Get in touch with the student before they arrive to find out their background and experiences.*
- *Give them small daily tasks and keep it somewhat formal to pressure them to learn enough of the basics (e.g. computing) in order to function and make progress in the working environment they'll be in.*

- *Make sure to build in time in your daily/weekly schedule for working on the intern project. Have some low-hanging fruit and "canned" projects ready to go with the intern arrives.*
- *Have clearly defined goals with semi-weekly milestones*

My intern and I used the Self-Reflection Guide as part of the mentoring process during the summer? (N=11)

	N	%
Yes	7	64%
No	4	36%

Please briefly describe why you did not use the Self-Reflection Guide.

- *I forgot about it.*
- *I typically do, but for some reason it must have slipped beneath both of our radars because there was no mention of it during the summer.*
- *We covered the material in the guide, but did not formally use this document*
- *I honestly forgot about it in the shuffle of field work and travel. I plan to modify and use it with my current undergraduate and graduate researchers*.

How many times did you and your intern discuss Self-Reflection Guide during the summer? (N=7)

	N	%
1	2	29%
2	2	29%
3	3	43%

Other (please specify)
NA

Which of the following apply to when you and your intern discussed the Self-Reflection Guide (select all that apply)? (N=10)

	N	%
At the beginning of the summer?	2	20%
Around the middle of the summer?	5	50%
At the end of the summer?	2	20%

Other (please describe)

- *We discussed progress and aims throughout the summer but not always with respect to the self-reflection guide.*

Overall, how useful do you feel the Self-Reflection Guide was to the mentoring process? (N=7)

	Not at all useful	Slightly useful	Somewhat useful	Moderately Useful	Extremely useful
Response	0	14%	29%	43%	14%

Please read each of the following statements carefully. Then select the statement which best matches your level of agreement. (N=7)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
The Self-Reflection Guide helped illuminate areas that needed improvement and areas where growth occurred.	0	14%	0	57%	29%
The Self-Reflection Guide provided a concrete way to assess my intern's progress during the summer.	0	29%	14%	57%	0
The Self-Reflection Guide was a beneficial resource for the mentoring process.	0	14%	29%	29%	29%
The Self-Reflection Guide provided mechanisms for me to focus on developing the intern's career capabilities.	0	14%	29%	43%	14%
The Self-Reflection Guide provided me with a structure for discussing my intern's progress with them.	0	14%	0	71%	14%
The Self-Reflection Guide and meetings motivated my mentoring during the summer.	0	29%	14%	29%	29%
I looked forward to completing the Self-Reflection Guide and discussing it with my intern.	0	29%	29%	14%	29%
I plan to use the Self-Reflection Guide (or a modified version) with other students in the future.	0	29%	14%	57%	0

What would you change about the Self-Reflection Guide to increase its usefulness?

- *It's good as is*
- *Nothing I can see.*
- *No change is needed.*
- *It is just a bit clunky. We want to show progress towards these skills but it may be hard to fit visible progress into one of these categories especially during such a short span of time. One that I like and that made sense for a short summer project is "Figuring out the next step in a research project." This is something we did a lot. The intern has to decide what to do next every day of the project. Whereas something like "Formulate a research question that could be answered with data." we only really did towards the beginning, because the later time was working through the other steps with that one research question.*
- *I would add a column for the mentor to comment.*

- *Nothing*

How effective did you feel as a mentor this summer? (N=11)

	N	%
Not at all effective	0	0
Not very effective	0	0
Effective	10	91%
Very effective	1	9%

Please indicate the reasons for your feelings

- *She did outstanding work, and independently learned many concepts and tools. I saw real growth from the start to the finish*
- *I think that my intern learned some valuable skills that she was not previously exposed to, such as python programming and the basics of reflection seismology. She seemed to be excited by the work and wants to apply to grad school to do something similar.*
- *It was a new area for me, so there were some frustrations in terms of software compilation. But, on the other hand, this helped the student become more independent*
- *While my intern did a fantastic job with their research, I struggled to connect with them in a meaningful way. Offers to do field work (with me or with others) was met with little enthusiasm, as well as the offer to pay for travel to the SAGE/GAGE meeting so that they could explore interests outside of their research project. I honestly believe that the student was not particularly happy with the placement at my university and this contributed to the seeming lack of enthusiasm.*
- *I think I can do better, especially towards the end where the project needs to start drawing down into some conclusions. It would have been helpful to do even a short, rough draft of the AGU poster, for instance. However I do think all the preparation I did in outlining a finite, short-duration project contributed to the amount of work that got done during those few short months.*
- *Intern completed all tasks that we set out to complete. I was very pleased with the interns progress, capabilities and motivation.*
- *It was a new experience to mentor an undergraduate working with me full time.*
- *I spent a lot of time with my intern, but it was mostly teaching them computing and programming basics and not science. I think the internship was useful to them, they learned quite a bit of 'how', but not so much 'what'.*
- *I think I set my intern up with a cool lab/research project as well as a very fun and interesting field project. The research was a little open ended, so I'll have to rethink how to better set up the student for success, results-wise, in the future.*

Please read each of the following statements carefully and select the choice that best describes your level of agreement with the statement. (N=11)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
If undergraduate interns are unaware of their accomplishments it may be due to inadequate mentoring.	0	0	9%	64%	27%

Effective mentoring can help undergraduate interns make developmental progress.	0	0	0	45%	55%
I am able to use assessment to assist undergraduate interns in observing their own professional growth.	0	0	18%	64%	18%
I am not sure how to work with undergraduate interns to identify a starting point for their professional growth.	9%	91%	0	0	0
I am not very effective in monitoring my undergraduate intern's professional growth.	27%	64%	9%	0	0
I wonder if I have the skills necessary to be an effective mentor.	18%	55%	18%	9%	0

At the end of the summer, I would be interested in receiving aggregate feedback from all the interns regarding their experiences (e.g. completed survey etc.). (N=11)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Response	0	0	9%	55%	36%

Please provide any additional comments that you feel will help the IRIS Undergraduate Internship Program continue to improve.

- *You are doing great work. This is a wonderful program, keep it up.*
- *This was my first time as a mentor and my experience was very positive, so I don't have anything to add here.*
- *Keep the international part - it's well worth the extra effort.*
- *Have the interns fill out a short survey to convey their level of Unix and programming knowledge.*

What is your gender? (N=10)

	N	%
Male	5	50%
Female	5	50%

What is your ethnicity? (N=10)

	N	%
Hispanic or Latino	1	10%
Not Hispanic or Latino	9	90%

What is your race? Mark one or more races to indicate what race you consider yourself to be. (N=9)

	N	%

White	8	89%
Black or African American	1	11%
Asian	0	0
American Indian and Alaska Native	0	0
Native Hawaiian or Other Pacific Islander	0	0

What is your disability status? (N=10)

	N	%
Visual Impairment	0	0
Hearing Impairment	0	0
Mobility/Orthopedic Impairments	0	0
None	10	100%

Other (please specify)
NA

Intern Post Internship Survey Summary

Development of Cohort

- A total of 11 interns completed the post internship summary
- Interns felt satisfied (36%) and very satisfied (55%) with their relationship with other IRIS interns
- 100% Of interns agreed or strongly agreed that there are feelings of unity and togetherness among the group, that they enjoy communicating with the members of the group, that the group atmosphere is comfortable, and that some of the group members could become my friends
- 81% Of interns felt connected to the other IRIS interns in a beneficial way while fewer felt connected to other undergraduate students at my mentor's institution in a beneficial way (18% agree and 18% strongly agree)
- Interns were overall satisfied (54%) or very satisfied (36%) with Slack as a tool for group communication while interns used Slack to primarily "check-in" with the rest of the interns (91%) or to discuss programmatic issues with the program facilitator and other interns (45%)
- Interns also used Snapchat (70%) to stay in contact with the other interns because it was convenient (67%)

Recommendations

- Capture metrics from Snapchat if possible
- Insure all interns complete all evaluation surveys
- Some interns seem to have been left out of the group communications or were not aware of them. Insure all interns are aware of and are invited to participate in group communications

All data

How satisfied were you with your relationship with the other IRIS interns? (N=11)

	Very unsatisfied	Unsatisfied	Undecided	Satisfied	Very satisfied
Response	0	0	(9%)	(36%)	(55%)

Please read each of the following statements carefully and select one of the five alternatives that most closely matches your feelings about the IRIS Interns

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Group members communicated with one another during the summer	9%	9%	0	45%	36%
There are feelings of unity and togetherness among the group	0	0	0	73%	27%
Group members make me feel like part of the group	0	9%	0	54%	36%
We can say anything in the group without having to worry	0	36%	0	54%	9%
I enjoy communicating with the members of the group	0	0	0	73%	27%
The group atmosphere is comfortable	0	0	0	64%	36%
Some of the group members could become my friends	0	0	0	45%	55%

During the summer, I felt like I was connected to the other IRIS interns in a beneficial way. (N=11)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Response	0	0	18%	45%	36%

In the space below, describe any benefits you experienced from being connected to the other IRIS interns

- *Even though we were largely far away from one another, we had a sense of community, especially as we were all working on developing our various research projects and preparing for AGU.*
- *Programming help*
- *It was nice to see familiar faces at AGU and hear about the issues/ successes with other people's projects.*
- *Share experiences.*
- *It just was nice knowing there were other people going through a similar situation that I was.*
- *I was placed with another intern for the Summer. This was a huge boon to my experience. It made the work easier as I had another intern to bounce ideas off and it was more fun as I had someone to hang out with outside of the lab.*

During the summer, I felt like I was connected to other undergraduate students at my mentor's institution in a beneficial way.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Response	9%	18%	36%	18%	18%

Describe any benefits you experienced from being connected to the other undergraduate students at your mentor's institution.

- *Since it was the summer, there weren't any other undergraduate students there, at least as far as I was aware. However, I did build relationships with several graduate students in the department.*
- *Not many undergrads at institution to connect with since it was the summer term. That's where the relationship came in with the other interns to support one another.*
- *As it was the summer, there were not many other undergraduate students at my mentor's institution.*
- *I did not meet many undergraduate students at my mentor's institution*
- *I didn't meet any undergrads, but the graduate students I met were very friendly and I enjoyed talking to them and hanging out outside of work.*
- *I could ask questions that I did not want to ask my mentor.*
- *I met no other undergrads at my host institution despite trying to.*

Select your uses for Slack throughout the program (choose all that apply) (N=11)

	N	%
to "check-in" with the rest of the interns	10	91%
to discuss research or scientific topics with other interns or the alumni mentor	3	27%
to discuss programmatic issues with the program facilitator and other interns	5	45%
to interact socially with the other interns about things not directly related to the internship	2	18%
I didn't participate in the Facebook group	1	9%

Other (please specify)

- *To ask IRIS specific questions*

Overall, were you satisfied or dissatisfied with Slack as our tool for group communication?

	Very unsatisfied	Unsatisfied	Neither satisfied or unsatisfied	Satisfied	Very satisfied
Response	0	0	9%	54%	36%

Briefly describe what you liked about the Slack, didn't like, or what could be done differently to make it more useful.

- *I liked that I could find tools to get started with gmt, and the support of other interns.*

- *I liked it for group announcements and the different tabs for different topics*
- *Slack was very helpful for those that didn't have social media like Snapchat. However, most of us used Snapchat over Slack to communicate.*
- *Liked the different channels to ask different questions.*
- *I thought slack was a useful.*
- *It was good for dispersing general information, but not a good platform for social messaging -- not sure why though, there is nothing intrinsically bad about it. It just feels more formal.*
- *It was a great way to communicate with other interns*
- *I liked how the Slack was a private message board for just the interns. It was also helpful to know where to look for updates.*
- *I think slack is very clean method of communication.*
- *The issues with slack I had were mainly because I am bad with technology like slack and had a lot of issues joining the various threads*

Did you use tools besides Slack to stay in contact with the other interns? (N=11)

	N	%
Yes	7	64%
No	4	36%

Which tool(s) did you use to stay in contact with the other interns throughout the program? (N=10)

	N*	%
Text chats	3	30%
Snapchat	7	70%
Instagram	2	20%
Email	1	10%

*Two "other" responses indicated the use of multiple platforms and were added to the Ns

What was the most important feature of the tools that you selected above that made you want to use it? (N=9)

	N	%
Convenience	6	67%
Popularity	1	11%
Usability	1	11%

Other (please specify)

- *That's just what the rest of the interns were using. It probably would not be my preferred platform, but it worked.*

Career Pathways

- As a result of participating in the summer IRIS internship, interns increased their desire to pursue a career in geophysics or seismology a little (25%) or a lot (50%)

- Interns reported that as a result of their internship, they plan to seek a career in a field of geophysics or seismology (33% agree, 33% strongly agree)
- Most interns (58%) plan to attain a PhD

Recommendation

- Develop a longitudinal method for tracking intern degree and career choices

All data

As a result of this internship, my desire to pursue a career in geophysics or seismology has…

	Decreased	Remained the same	Increased a little	Increased a lot
Response	0	25%	25%	50%

As a result of this internship, I plan to seek a career in a field of geophysics or seismology.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Response	0	8%	25%	33%	33%

What is the highest degree you expect to eventually attain?

	N	%
PhD	7	58%
MD	1	8%
Masters	2	17%
Undecided	2	17%

Science identity

- As a result of their internship, interns felt their knowledge of, and ability to use, the technologies to collect and study geophysical data increased a lot (83%), their ability to gather, manage and convey scientific information increased a lot (75%), their understanding of the process of scientific inquiry increased a lot (67%), and their ability to defend a scientific argument increased a lot (67%)
- Interns reported feeling that their family thinks of me as a "science person" (83% exactly true), that their teachers/instructors think of me as a "science person" (75%), that their friends think of me as a "science person" (67%), and that, if they want to, they can become a geophysicist (67%)

All data

As a result of this internship...

	Decreased	Remained the same	Increased a little	Increased a lot
My ability to gather, manage and convey scientific information has	0	0	25%	75%

My understanding of the process of scientific inquiry has	0	0	33%	67%
My ability to design and conduct scientific investigations has	0	0	50%	50%
My ability to defend a scientific argument has	0	0	33%	67%
My knowledge of, and ability to use, the technologies to collect and study geophysical data has	0	0	17%	83%
My ability to use scientific literature and media to broaden my knowledge has	0	0	58%	42%

How true is each of the following statements?

	Not at all true	Hardly true	Moderately true	Exactly true
I feel like I fit in the geophysics community	0	0	75%	25%
My family thinks of me as a "science person"	0	0	17%	83%
My friends think of me as a "science person"	0	0	33%	67%
My teachers/instructors think of me as a "science person"	0	0	25%	75%
I have come to think of myself as a geophysicist	0	17%	67%	17%
The work of a geophysicists is appealing to me	0	8%	42%	50%
If I want to, I can become a geophysicist	0	0	33%	67%

Mentoring

- Interns were divided on their likely hood that they would consider their mentor as a graduate advisor when applying for graduate school with 33% disagreeing, 17% feeling undecided, 33 agreeing
- Interns found it helpful to have the alumni mentor available to answer questions and post comments on the blogs and the Facebook group and that the alumni mentor served a positive role in my summer experience
- Interns felt the mentoring provided was effective (9%) or very effective (82%)
- Interns reported their mentors treated them with respect (9% agree, 82% strongly agree), that they could trust their mentor (36%, 55%), and that they liked being around their mentor (45%, 45%)
- Interns also felt that their personal development is at least as important to my mentor as producing science results (36% agree and 64% strongly agree), that their mentor encouraged and enabled them to pursue their interests (18%, 73%), and that their mentor was interested in what I wanted to do with my education and career (27%, 64%)

- Interns felt that they were able to use self-assessment to observe their professional growth (73% agree, 27% strongly agree), that they plan to set goals for their professional growth and monitor them periodically (73%, 18%), that they can easily articulate skills that are important for a scientific researcher to develop (55%, 27%), and that they are able to recognize improvement in their professional development (73%, 27%)

I will consider my mentor as a graduate adviser when applying for graduate school.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Response	8%	33%	17%	33%	8%

Briefly describe the impact this internship had on your future academic and professional plans.

- *Through the internship I got the opportunity of working in a research project of my interest. That helped me to reinforce my intentions to continue in the research field. Also, helped me to choose the institution where I could continue with my research.*
- *IRIS has provided insight as to what is expected of student who pursue a career as a geophysicist. The program has introduced and improved my skills technology used by geophysicists and solidified my decision to follow this career path.*
- *This internship helped me to realize my love of research, and strengthen my decision to pursue a graduate degree.*
- *This internship helped me to learn what the life of a researcher was like and how I would like to go more into the geophysics or earthquake hazards side than the seismology side. It helped me to figure out that I would like to pursue at least a master's degree.*
- *It helped me decide how I wanted to continue my education and the career path I want to pursue.*
- *This internship gave me a good background into geophysics.*
- *The internship provided me the opportunity explore the field of geophysics. It also allowed me to meet and form relationships with others in this field, which I believe will greatly aid my future academic and professional plans.*
- *Definitely made me further consider going to grad school and prior to the internship I would not have considered seismology for a degree -- now I will consider it more so, but also may decide to go into another field of the geosciences, or do something else.*
- *It was the best learning experience I had.*
- *This internship gave me much more experience doing research and feel more comfortable pursuing research. It more or less just was a very encouraging experience.*
- *Without this internship it is unlikely that I would have considered or attempted a career in geophysics and seismology.*
- *The orientation for the internship was one of the most inspirational and educational and well run things I have ever done. However, my mentoring/host institution situation was so sub-par that I feel I am pursing grad school in geophysics in spite of my internship, not because of it.*

Please read each of the following statements carefully and select the choice that best describes your level of agreement with the statement.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
It was helpful to have the alumni mentor available to answer questions and post comments on the blogs and the Facebook group.	9%	0	9%	27%	55%
Overall, I felt the alumni mentor served a positive role in my summer experience.	0	0	18%	27%	55%

Briefly describe the role, if any, the alumni mentor played in your summer experience, and/or how the alumni mentor could have been more helpful to you during the summer.

- *Helped me reviewing my AGU abstract*
- *She was very encouraging and knowledgeable. I felt like I could come to her with questions.*
- *It was helpful to have someone who had gone through this experience before and could provide advice and useful feedback.*
- *It was nice to have someone who had recently been through the same experience as us. They were able to give us advice that other advisers might not have thought of or remembered.*
- *Nice to have someone to communicate and get feedback from specifically to the AGU abstract.*
- *Listening to their experience was helpful for my summer experience.*
- *It seems like Neela did a good job. My mentor was very responsive though, so I didn't feel like I needed to reach out to her for help or questions.*
- *No role*
- *Because they had already went through the program, they gave us insight into what we could expect from the internship. This helped ease my mind as I began my internship.*
- *The alumni mentor was excellent. They gave helpful feedback on my abstract as well as a fellowship I applied for after the internship.*
- *Because my mentor was absent, the alumni mentor played a really crucial role in my success*

How effective was the mentoring provided by your science mentor?

	Not effective	Undecided	Effective	Very effective
Response	9%	0	9%	82%

Please read each of the following statements carefully and select the choice that best describes your level of agreement with the statement.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
My mentor treated me with respect.	0	9%	0	9%	82%

My mentor talked to me in ways I don't like.	82%	18%	0	0	0
When my mentor gave me advice, it made me feel stupid.	64%	36%	0	0	0
I felt I could trust my mentor.	9%	0	0	36%	55%
I wish my mentor asked more about what I thought.	36%	36%	18%	0	9%
I liked being around my mentor.	0	9%	0	45%	45%

Please read each of the following statements carefully and select the choice that best describes your level of agreement with the statement.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
My personal development is at least as important to my mentor as producing science results.	0	0	0	36%	64%
My mentor encouraged and enabled me to pursue my interests.	9%	0	0	18%	73%
My mentor was interested in what I wanted to do with my education and career.	0	9%	0	27%	64%
My mentor did not actively help me achieve my goals.	64%	36%	0	0	0

Please read each of the following statements carefully and select the choice that best describes your level of agreement with the statement.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I feel that I am able to use self-assessment to observe my professional growth.	0	0	0	73%	27%
In the future, I plan to set goals for my professional growth and monitor them periodically.	0	0	9%	73%	18%
Self-assessment is not an important component of learning and professional development.	18%	64%	9%	0	9%
I can easily articulate skills that are important for a scientific researcher to develop.	0	0	18%	55%	27%
I have difficulty identifying the scientific skills that I possess.	18%	55%	27%	0	0

I am able to recognize improvement in my professional development.	0	0	0	73%	27%

What suggestions do you have for your mentor that might enhance the experiences of future students? (Reminder: To maintain anonymity, responses to this question will only be presented in aggregate)

- *Stating short time goals for the development of the project*
- *None, I had a great experience.*
- *Communicating expectations of when things should be done on both sides.*
- *I do not have any suggestions. My mentor's advice was very helpful and I wouldn't change anything.*
- *Helpful to ask the intern their ideas first for what to next in the project.*
- *The only suggestion I may have would be to provide more reading materials.*
- *It's a balance between being hands off and hands on. Allowing an intern to explore and figure out the research on their own is important for development of confidence and critical thinking, but it is also important to show enough guidance and support that the project isn't overwhelming. I think that meeting at least several times a week to give status updates was helpful for me. Additionally, I made short presentations every few weeks, so that I could reflect on what I had accomplished so far. I thought my mentor did a great job with the balance.*
- *None*
- *Respond quickly when bugs are found in code you wrote.*
- *Be cognizant about whether the length of the internship aligns with the scope and goals of the project.*
- *Be present and take an interest in the student's life*

AGU

- All of the interns agreed (55%) or strongly agreed (45%) that they were adequately prepared to attend the Fall AGU meeting
- Interns found it valuable (9%) or very valuable (91%) to attend AGU as part of the internship program
- Attending AGU was valuable because it allowed interns to strengthen their connections with the other IRIS interns (100%), exposed them to a range of research (100%), enabled networking opportunities with potential graduate school advisors (100%), and it allowed them to showcase the results of their summer's work (91%)
- Interns felt attending AGU would have been more valuable if they were able to go for the entire week, manage their schedules better, and being more prepared

All data

I felt adequately prepared to attend the Fall AGU meeting. (N=11)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Response	0	0	0	55%	45%

How valuable was it for you to attend AGU as part of the internship program?

	Not at all valuable	Little value	Undecided	Valuable	Very valuable
Response	0	0	0	9%	91%

Attending AGU was valuable because... (N=11)

	N	%
it allowed me to strengthen my connections with the other IRIS interns.	11	100%
it exposed me to a range of research.	11	100%
it allowed me to showcase the results of my summer's work.	10	91%
it enabled networking opportunities with potential graduate school advisors.	11	100%
it enabled networking opportunities with graduate students.	7	64%
it enabled networking opportunities with other undergraduate students.	4	36%
it exposed me to a range of career options outside academia.	3	27%
it helped me feel like I fit into a geophysics career.	8	73%

Other(s) - Please describe

- *It made me feel like I am part of a scientific community.*

Please describe what would have made attending AGU more valuable?

- *Attending the entire week of the meeting. I couldn't explore many stands and most of the intern's poster presentations.*
- *I sort of wish I had been better prepared for it personally, but I'm also not sure there was really any way to prepare for it better than I did.*
- *Nothing that I can think of. I found it very valuable.*
- *I think attending AGU and all the help leading up to prepare for it was all that was needed.*
- *Not having been there before, it was hard to understand what it was going to be like to be at AGU. Having been there, I see how it is hard to describe without attending.*
- *I thought AGU was a very valuable experience, the only thing that could have made it more valuable was perhaps managing my schedule better.*
- *I wish it wasn't during exams.... not that anyone can change that.*
- *Nothing, it was a great experience*
- *If I had been more ready myself. At the time I had only been in contact with one graduate advisor, so I only ended up meeting two potential advisors.*
- *I cannot think of anything at this point.*
- *AGU was already a really valuable experience*

Other/overall Perceptions

- Overall, interns felt that this internship was one of the best learning experiences they have ever had (17% agree, 75% strongly agree), that they can easily apply the

information/skills they learned during the internship to their future career goals (17%, 83%), that technical/scientific assistance and guidance from the mentor, their graduate students or other staff was readily accessible throughout the internship (25%, 67%), and that their work this summer contributed in a meaningful way to the overall success of the mentor's research (25%, 58%)

- In retrospect, interns reported that they felt the orientation was an important aspect to helping them feel part of a community of interns (83% strongly agree)
- Interns felt that making connections to the other interns and feeling like they were part of a community was an important part of the orientation
- Interns used their blog in a variety of ways including using their blog as a tool to monitor their own understanding of my project and other interns' blogs as a way to keep track of how their summers were going and to stay connected
- Interns also found the weekly prompts important to motivate them to maintain their blog

Please read each of the following statements carefully and select the choice that best describes your level of agreement with the statement.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Details and logistics about the internship program were clearly explained or someone was available to answer my questions.	0	0	0	50%	50%
I created "my own" written goals for what I wanted to get out of the internship.	0	8%	8%	58%	25%
Throughout the internship I monitored my progress towards "my own" goals and adjusted them when necessary.	0	0	8%	67%	25%
My mentor provided (in-person or via the internship facilitator) clearly stated written goals for my internship.	8%	0	8%	50%	33%
Throughout the internships I monitored my progress using the mentor's goals and adjusted them with the host PI when necessary.	8%	0	17%	50%	25%
My work this summer contributed in a meaningful way to the overall success of the mentor's research.	0	17%	0	25%	58%
Technical/scientific assistance and guidance from the mentor, their graduate students or other	8%	0	0	25%	67%

staff was readily accessible throughout the internship.					
I can easily apply the information/skills I learned during the internship to my future career goals.	0	0	0	17%	83%
Overall this internship was one of the best learning experiences I have ever had.	8%	0	0	17%	75%

In retrospect,

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I felt the orientation helped to prepare me for the research I did this summer.	0	17%	17%	25%	42%
I felt the orientation prepared me to get the most (e.g. learning) out of my summer internship.	0	17%	8%	25%	50%
I felt the orientation was an important aspect to helping me feel part of a community of interns.	0	0	17%	0	83%

Briefly describe other ways the orientation week helped to prepare you for your summer internship.

- *I didn't attend the orientation week*
- *The orientation was a great tool for introducing students to the software programs, field work, and terminology that they would encounter at the locations they interned at over the summer.*
- *The orientation helped me feel a lot more comfortable about my place in the internship program, and that I was qualified and prepared for the rest of the summer.*
- *Building a community with the other interns was incredibly important to me because they were the ones who could understand the experience I was going through and what I was struggling with. Also having a strong cohort helped with not being overwhelmed at the AGU conference. I could turn to others who had been there before and have others who understood both how exciting and exhausting it is. The UNIX tutorials also greatly helped me for my internship.*
- *Going into the orientation, I knew nothing about geophysics and my physics background was not the strongest because I didn't have any plans to pursue a career in physics. The orientation was a good crash course.*
- *Nice to get to know the other interns before we all left for our separate ways over the summer.*
- *For me, getting to know the other interns and meeting different people in various different jobs within the field of geophysics and seismology was the most beneficial experience.*

- *The orientation allowed us to meet the other interns which was interesting and made it so our blogs weren't read by complete strangers. I didn't feel like most of what I learned there was relevant to my project though.*
- *It could be a week longer*
- *It served a nice introduction/refresher to seismology as a field.*
- *It gave me a better sense of the steps I had to take to pursue geophysics as a career after the internship.*
- *It gave me background that was crucial to my learning. And helped me make connections with the interns.*

Please read each of the following statements carefully and select the choice that best describes your level of agreement with the statement.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I used my blog as a tool to monitor my own understanding of my project.	9%	27%%	0	64%	0
I used my blog as a tool to get feedback from the other interns and/or the alumni mentor.	9%	27%	27%	36%	0
I used my blog as a tool to keep my host informed of my progress and thinking on my summer research.	9%	64%	9%	18%	0
I used other interns' blogs as a way to keep track of how their summers were going and to stay connected.	0	0	9%	64%	27%
I found that comments on my blog were important to motivate me to maintain my blog.	18%	9%	36%	36%	0
I found that the weekly prompts were important to motivate me to maintain my blog.	0	0	9%	55%	36%

Briefly describe the role of the blog in your summer internship. Responses could include details about how you used the blog, what you liked and didn't like about the blogs, what kept you posting more frequently or what could be changed to make the blogs a more useful tool.

- *I liked the idea of writing a blog and sharing experiences with the rest of the interns, but as I was out of phase with them, I didn't feel so much motivation in working on it.*
- *I enjoyed getting to show my progress to the other interns and whomever else might be reading my posts.*
- *The blog helped to document the many different parts of a research project and keep track of them. I personally dislike blogging so this was a struggle for me to stay on top of it but having positive feedback from Neala and other interns was helpful.*
- *The blog helped me maintain my progress with my written goals for the summer.*

- *Nice to have a break from research sometimes to work on or read other blogs.*
- *Overall, I thought the blogs were useful to track my progress over the summer. The thing I enjoyed most about the blogs was reading the other interns blogs and hearing about their experience.*
- *I think there should be one fun/weird question in the prompt to make it a little more interesting to write about. I liked doing the blog, but I don't think that it contributed toward making me do better research. It was fun to read other interns blogs though just to keep tabs on their projects.*
- *It did not burn any benefits. It was uncomfortable, I feel it should be optional.*
- *The blog helped me realize the progress I was making as well as allow me to put some of the fun things we were doing into it.*
- *The blog gave the internship a more official feel to it. I enjoyed writing the blogs and reflecting on my experiences. In addition, reading the blogs motivated me to apply for IRIS.*
- *I think more room for open ended reflection in the prompts would have been useful*

Please provide any other comments or suggestions that you feel will help the IRIS Undergraduate Internship Program continue to improve.

- *Great program to be a part of*
- *Overall a good experience; I really enjoyed the research, my mentor was great, and AGU was a blast. I think this is a cool program. However, I never felt a very strong connection with most of the other interns. As a shy person, I did not feel very motivated to make friends when I knew I would not see them for the rest of the summer.*
- *Allow students from the Southern Hemisphere to participate.*

Orientation Event - Summary & Recommendations

Summary

- Interns felt significantly more prepared for their internship after their orientation experience
- Post orientation, interns were better informed about the variety of careers available in seismology/geophysics, what courses they have to take to become a seismologist/geophysicist, and the graduate school application process
- The majority of interns (63%) felt they knew nothing (18%) or very little (45%) about preparing for the GRE
- Interns discussed their academic/career plans with their professors (100%), undergraduate students (82%) and academic advisors (82%)
- All of the interns are considering attending graduate school (100%)
- Interns reported being very interested (73%) in a career in the geosciences and a career in geophysics/seismology (54%)
- For the interns, the most important reasons for deciding to participate in the summer research experience were wanting to learn more about what it is like to be a researcher (73% extremely important), wanting a hands-on experience to reinforce what they

learned in class (64% extremely important), and thinking it would be fun (82% extremely important)

- When applying to participate in the IRIS Undergraduate Internship Program, interns felt the most important reasons were that the research topics sounded interesting (73% extremely important) and wanting to do something different (55% extremely important)
- To help them be more connected to other IRIS interns, they felt having more opportunities during the orientation, meeting in person to enhance networking, leaning more about interns' personal interests, sharing both internship and non-internship updates during the summer, and offering a way for them to continue to stay connected after their summer experience
- Interns report that they derive a great deal of personal satisfaction from working on a team that is doing important research (18% agree, 55% strongly agree)
- Interns felt most confident using technical skills (use of tools, instruments, and/or techniques) (36% confident, 45% very confident), using scientific literature and/or reports to guide research (45%, 36%), using science language and terminology (45%, 27%), and relate results and explanations of research to the work of others (55%, 27%)
- Post orientation, interns felt the orientation was well organized (100% agree or strongly agree), that the amount of time devoted to the careers and the culture of science to be appropriate (100%), and that they found the relative amount of time devoted to discussing how to maximize my summer research experience to be appropriate (100%)
- Interns felt the best parts of the orientation were the fieldwork (67%), fieldtrip to Magdalena fieldstrip and observatory (58%) and Sn Lorenzo/Career panel (58%)
- As a result of their orientation, interns felt their awareness of the scope of seismological research increased (25% a little, 75% a lot), understanding of how to respond to issues of harassment/discrimination (42%, 58%), and understanding about how to get the most out of my internship this summer (33%, 67%)
- All of the interns (100%) agreed or strongly agreed that the group members spent time getting to know one another and that the group atmosphere was comfortable
- Interns reported being fairly likely (17%) and extremely likely (50%) that they would stay in-touch with fellow interns

Recommendations

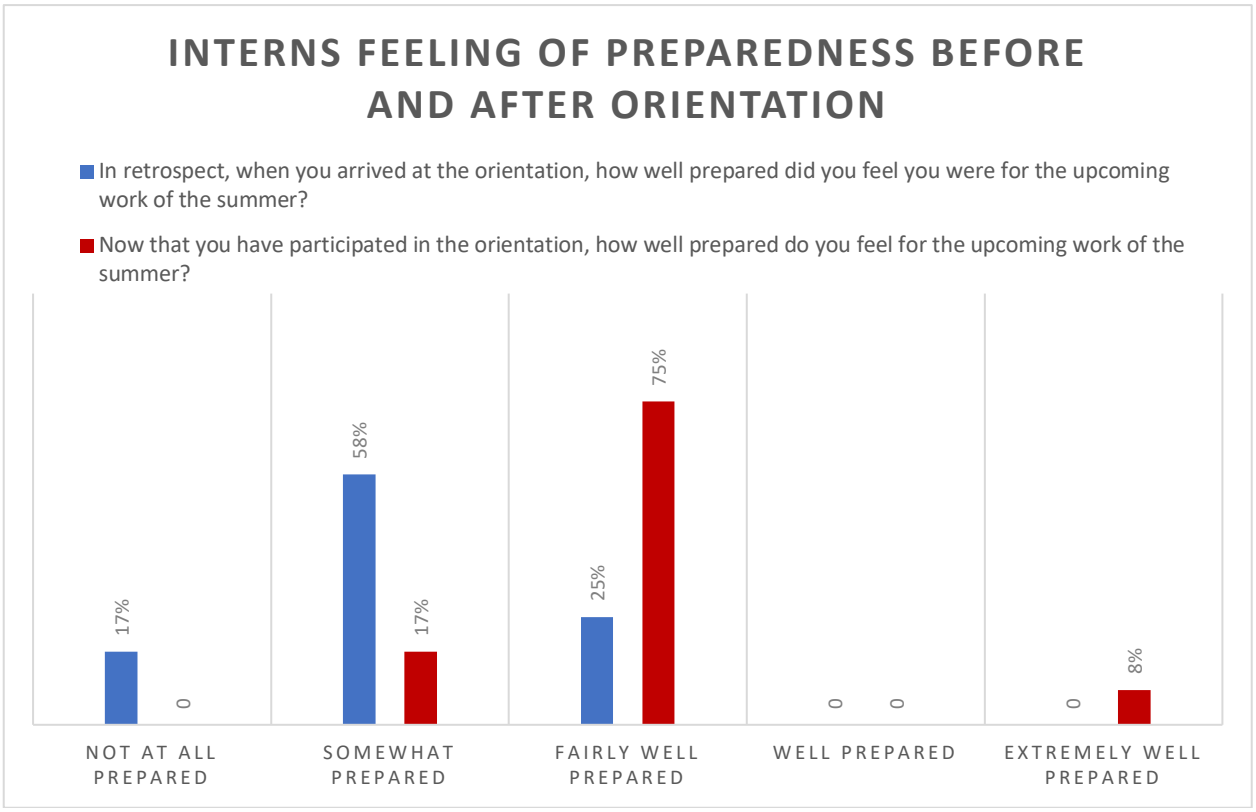
- With 75% of the interns feeling only somewhat prepared, some additional help may be needed during orientation
- Interns could use some additional support in preparing for the GRE
- Very few interns found a recommendation from another student important in their decision to participate in IRIS. This may be an avenue to engage more students in the future
- More could be done to help the interns feel part of a community of scientists during orientation

All data

Preparation before and after orientation (N=12)

	Not at all prepared	Somewhat prepared	Fairly well prepared	Well prepared	Extremely well prepared

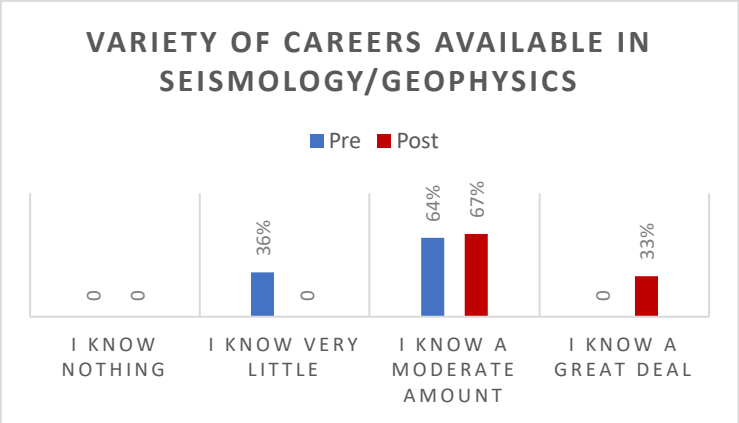
In retrospect, when you arrived at the orientation, how well prepared did you feel you were for the upcoming work of the summer?	17%	58%	25%	0	0
Now that you have participated in the orientation, how well prepared do you feel for the upcoming work of the summer?	0	17%	75%	0	8%

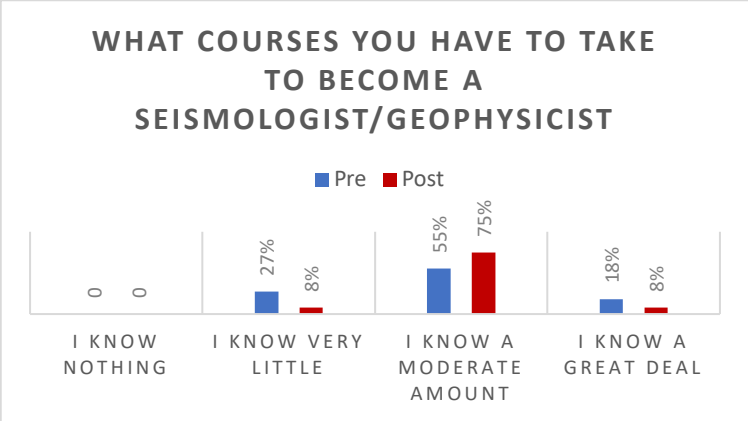


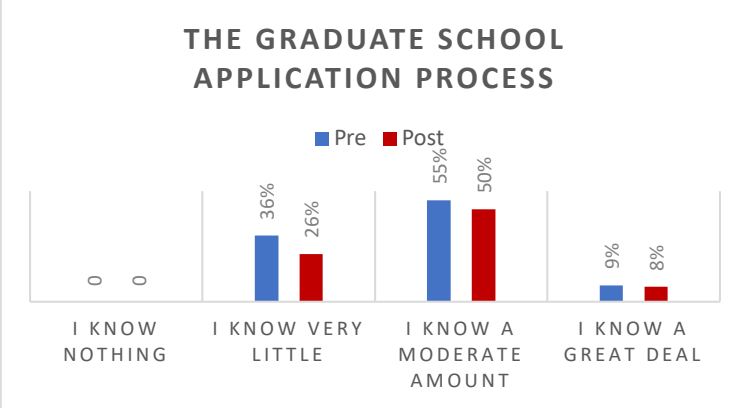
How much do you know about each of the following?

	I know nothing		I know very little		I know a moderate amount		I know a great deal	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Variety of careers available in seismology/geophysics	0	0	36%	0	64%	67%	0	33%
What courses you have to take to become a seismologist/geophysicist	0	0	27%	8%	55%	75%	18%	8%

The graduate school application process	0	0	36%	16%	55%	50%	9%	33%







	I know nothing	I know very little	I know a moderate amount	I know a great deal
Preparing for the Graduate Record Examination (GRE)	18%	45%	27%	9%

How many undergraduate students do you personally know that are interested in geophysics and/or seismology?

	N	%
None	2	18%
1-2	4	36%
3-4	1	9%
5 or more	4	36%

Who have you discussed your academic/career plans with at your college university? Choose all that apply.

	N	%
Undergraduate students	9	82%
Graduate students	5	45%
Professors	11	100%
Academic advisors	9	82%
Career services	2	18%

Other (please specify)
NA

Are you considering attending graduate school?

	N	%
Yes	11	100%
No	0	0

What is the highest degree you expect to eventually attain?

	N	%
Undecided	2	18%
Master's (MA, MS, or MBA)	4	36%
PhD	5	45%

Other (please specify)
NA

Please indicate your degree of interest in the following.

	Not at all interested	Slightly interest	Moderately interested	Interested	Very interested
A career in the geosciences	0	0	18%	9%	73%
A career in geophysics/seismology	0	9%	9%	27%	54%

In the space below, please describe factors that have most strongly influenced your academic and career aspirations?

- *Being inspired by research experiences and by research and academic mentors.*
- *Taking a geoscience class randomly sophomore year - doing research with my professor*

- *I watched my brother go through the grad school process for his PhD in neuroscience and it made me think that if he can do something like that then I can as well. Also, My academic advisor strongly encouraged me to attend grad school.*
- *Enjoyment and interest in coursework and experiences with professors*
- *The classes I have taken at my undergraduate institution.*
- *I am curious to learn how the planet works in addition to work on sciences that can affect people's everyday lives.*
- *Pervious research experiences plus the relationships I have formed with my graduate student course TAs have most strongly influenced my academic and career aspirations*
- *The classes I've taken and the professors and people I've talked to have had a strong influence on helping me decide on geoscience research.*

How important was each of the following in your decision to participate in research this summer? (If an item does not apply to you, please select the "not important" category)

	Not important	Somewhat important	Fairly important	Extremely important
I wanted to know if science was for me.	45%	9%	27%	18%
I wanted to learn more about what is like to be a researcher.	9%	18%	0	73%
I wanted to know if going to grad school in science was for me.	27%	9%	27%	36%
I wanted hands-on experiences to reinforce what I learned in class.	0	18%	18%	64%
I needed to fulfill my school's requirements for research.	100%	0	0	0
I thought it would help me get in to graduate school or get a job.	9%	18%	45%	27%
I thought it would be fun.	0	9%	9%	82%

How important was each of the following in your decision to apply to/participate in the IRIS Undergraduate Internship Program?(If an item does not apply to you, please circle the “not important” category.)

	Not important	Somewhat important	Fairly important	Extremely important
I wanted to know if geophysics was for me.	27%	9%	36%	27%
I love geophysics and wanted to work in it.	18%	0	36%	45%
The research topics sounded interesting.	0	0	27%	73%
I wanted to do something different than what I had done before.	0	18%	27%	55%
A fellow student I know recommended it.	64%	18%	18%	0
A faculty member/researcher I know recommended it.	9%	27%	45%	18%

The reputation of the IRIS Consortium	36%	9%	45%	9%
The amount of stipend and support package (orientation, AGU Conference, etc.).	9%	36%	45%	9%
The geographic location of the project was appealing.	27%	27%	45%	0

Please describe any other important factors in the space below.

- *Opportunity to meet other students interested in seismology/geophysics since there aren't very many at my undergraduate institution.*

How important is it to have an opportunity to...

	Of little importance	Moderately important	Important	Very important
become connected to the other IRIS interns this summer?	9%	0	55%	36%
remain connected with the other IRIS interns over the summer?	9%	27%	55%	9%

To help us better understand what "connected" in the question above means to you, please describe several actions that you or the other interns would engage in that would demonstrate this connectedness.

- *To me getting connected means getting to know each other during orientation to learn more about each other's research interests and activities as well as making personal connections. Further into the internship I hope that this personal and academic relationship would remain as we connect through email, blog posts or messaging in order to answer questions or provide support during this unique experience.*
- *Well considering the distance we will be apart from each other in most cases limits things like meeting up, most of the what would be considered connectedness would come from social media platforms like Facebook or Groupme. That said if given the opportunity to meet up with someone several times over the summer I would take that chance as networking goes a long way.*
- *Learning other interns' interests, hobbies, likes, and dislikes. Learning about where other interns come from. Finding common ground with fellow interns. Getting to the point where if I happened to be in the city where another intern (in particular the intern is the same research group as me) was living in future it would be natural to meet-up for a drink.*
- *Communicate about our work but also about non-work activities throughout the summer.*
- *Discuss project details and other science related topics, as well as remaining connected socially if I develop friendships with my fellow interns during orientation.*
- *Continuing communication via text/email on a regular basis to continue to share our experiences, discuss the grad school process, etc., in addition to making arrangements to meet up when we go to similar conferences or visit grad schools at the same time.*
- *Reaching out when frustrations and road blocks are faced, but also celebrate each other little victories*

- *To remain connected, I would think we would have some method of ongoing communication, like a group text chat. The method by which we continue to stay in contact isn't super important, just as long as we continue talking to each other.*

Rate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
My family thinks of me as a "science person"	0	9%	0	45%	45%
My friends think of me as a "science person"	0	9%	0	55%	36%
In general, being a scientist is an important part of my self-image.	0	9%	9%	73%	9%
I have a strong sense of belonging to the community of scientists.	0	9%	27%	64%	0
Being a scientist is an important reflection of who I am.	0	9%	28%	64%	9%
I have come to think of myself as a 'scientist.'	0	9%	36%	27%	27%

Rate the degree to which you agree or disagree with the following statements concerning your sense of yourself as a scientist who undertakes research activities.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have a strong sense of belonging to the community of scientists.	0	9%	27%	64%	0
I derive a great deal of personal satisfaction from working on a team that is doing important research.	0	0	27%	18%	55%
I have come to think of myself as a scientist.	0	9%	18%	55%	18%
I feel like I belong to the field of science.	0	9%	9%	45%	36%
The daily work of a scientist is appealing to me.	0	0	9%	73%	18%
If I want to, I can become a geophysicist.	0	0	0	55%	45%

Please rate your confidence in your ability to successfully execute the following tasks.

	Not at all confident	Somewhat confident	Confident	Very confident	Absolutely Confident
Use technical skills (use of tools, instruments, and/or techniques).	9%	9%	36%	45%	0
Use science language and terminology.	0	27%	45%	27%	0
Generate a science research question to answer.	0%	55%	9%	27%	0
Figure out what data/observations to collect and how to collect them.	9%	36%	27%	27%	0
Figure out/analyze what data/observations mean.	9%	36%	27%	27%	0
Create explanations for the results of a research study.	18%	36%	27%	18%	0
Use scientific literature and/or reports to guide research.	9%	9%	45%	36%	0
Relate results and explanations of research to the work of others.	0%	9%	55%	27%	9%
Develop theories (integrate and coordinate results from multiple studies).	9%	45%	36%	9%	0
Report research results in a poster presentation.	0	27%	36%	36%	0
Report research results in a written paper.	9%	36%	27%	27%	0
Generally function as a scientist in a research activity.	9%	36%	27%	27%	0

POST

Please read each of the following statements carefully and select one of the five choices that most closely matches your feelings. (N=12)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
The orientation was well organized and facilitated.	0	0	0	33%	67%
I anticipate that I will be able to apply the information/skills learned at the orientation to my summer research.	0	8%	8%	33%	50%

I found the amount of time devoted to the careers and the culture of science to be appropriate.	0	0	0	58%	42%
I found the balance between time devoted to geophysics labs (fieldwork and computer work) and geophysics lectures to be appropriate.	0	0	17%	75%	8%
I found the relative amount of time devoted to discussing how to maximize my summer research experience to be appropriate.	0	0	0	67%	33%

Which of the following were among the BEST parts of the orientation? (Please select at least one but no more than three items)

	N	%
Being part of a group of interns	5	42%
Fieldwork (broadband install Monday)	2	17%
Fieldwork (refraction experiment Wednesday)	8	67%
PASSCAL Tour	0	0
Fieldtrip - Magdalena fieldtrip & observatory tour	7	58%
Anti-harassment/discrimination training	1	8%
Mineral museum visit	1	8%
Classroom/Lab work	0	0
Interactions with other interns	2	17%
Interactions with orientation staff	0	0
San Lorenzo/Career panel	7	58%
Learning how to get the most out of my internship	0	0
Learning what grad school is like	2	17%
The geographic location	0	0

Other best parts (please specify)
NA

Which of the following were among the WORST parts of the orientation?(Please select at least one but no more than three items)

	N	%
Being part of a group of interns	0	0
Welcome/Social evening on first night	1	8%
Fieldwork (broadband install Monday)	0	0
Fieldwork (refraction experiment Wednesday)	0	0
PASSCAL Tour	1	8%

Fieldtrip - Magdalena fieldtrip & observatory tour	0	0
Anti-harassment/discrimination training	0	0
Mineral museum visit	1	8%
Classroom/Lab work	4	33%
Interactions with other interns	0	0
Interactions with orientation staff	0	0
San Lorenzo/Career panel	0	0
Learning how to get the most out of my internship	1	8%
Learning what grad school is like	1	8%
The geographic location	0	0

Other worst parts (please specify)

- *I think a lot of the classroom/lab work felt very rushed*
- *Probably just having to spend long periods of time in windowless rooms*
- *I felt that the analysis of the refraction experiment on Wednesday could have gone smoother. I felt that We were given more freedom for the analysis than was helpful for many of us.*
- *Not enough free time!*

As a result of the orientation, I feel my…

	Remained about the same	Increased a little	Increased a lot
awareness of the scope of seismological research has	0	25%	75%
understanding of seismic data collection (station install and active source collection) has	8%	25%	67%
understanding of Earth structure has	25%	58%	17%
understanding of Earthquakes (location, magnitude, elastic rebound, relation to plate tectonics, focal mechanisms) has	25%	33%	42%
understanding of Reflection and Refraction theory (reflection coefficient, attenuation, resolution, etc.) has	17%	50%	33%
understanding of Matlab has	17%	67%	17%
awareness of seismological techniques (Waveform cross correlation, Tomography, Shear-wave splitting, Tomography, etc.) has	8%	58%	33%
ability to analyze reflection and refraction data has	25%	58%	17%
ability to use Seismic Unix has	25%	42%	33%
understanding of the composition of a seismogram has	17%	42%	42%
understanding of how to respond to issues of harassment/discrimination has	0	42%	58%
understanding about how to get the most out of my internship this summer has	0	33%	67%

The faculty at the orientation are interested in your feedback on their instruction. Please indicate your perception of their instruction for each category.

Dave Thomas (N=10)

	Too slow	Just right	Too fast
Delivery of information		90%	10%
	Fair	Good	Vary good
Overall Quality		75%	25%

Sue Bilek (N=10)

	Too slow	Just right	Too fast
Delivery of information	10%	90%	
	Fair	Good	Vary good
Overall Quality		50%	50%

Neala Creasy (N=12)

	Too slow	Just right	Too fast
Delivery of information	8%	92%	
	Fair	Good	Vary good
Overall Quality		33%	67%

Michael Hubenthal (N=12)

	Too slow	Just right	Too fast
Delivery of information	8%	92%	
	Fair	Good	Vary good
Overall Quality			100%

Tolu Olugboji (N=11)

	Too slow	Just right	Too fast
Delivery of information		82%	18%
	Fair	Good	Vary good
Overall Quality	11%	44%	44%

Akram Mostafanejad (N=9)

	Too slow	Just right	Too fast
Delivery of information		67%	33%
	Fair	Good	Vary good
Overall Quality	25%	63%	13%

Juan Lorenzo (N=12)

	Too slow	Just right	Too fast
Delivery of information		75%	25%
	Fair	Good	Vary good
Overall Quality	11%	44%	44%

Ada Dominguez (N=12)

	Too slow	Just right	Too fast
Delivery of information	8%	92%	
	Fair	Good	Vary good
Overall Quality		56%	44%

What suggestions do you have for improving the orientation agenda?

- *I would try to make the evening "lectures" a little one interactive*
- *It was difficult to have a class after the field trip since everyone was exhausted. The breaks worked into the lectures and schedule seemed like the right amount to me*
- *perhaps spend more time at the observatory or going after morning lectures.*
- *It would have been nice to have more time to hike on the Magdalena crest trail. Also I far preferred being in the room in the building next to the dorms rather than the rooms in the building across campus, it was just more comfortable when we were doing lectures in there.*
- *More Free Time!*
- *I would give more time to the hike we did. It really wasn't given very much time.*

Please read each of the following statements carefully and select one of the choices that most closely matches your feelings.

	Strongly disagree	Slightly Disagree	Slightly agree	Agree	Strongly agree
Group members spent time getting to know one another	0	0	0	50%	50%
There are feelings of unity and togetherness among the group	0	0	17%	50%	33%
Group members make me feel like part of the group	0	0	8%	50%	42%
We can say anything in the group without having to worry	8%	17%	25%	33%	17%
I enjoyed spending time with the members of the group	0	0	8%	33%	58%
The group atmosphere is comfortable	0	0	0	67%	33%
Some of the group members could become my friends.	0	0	8%	33%	58%

How likely are you to stay in-touch with your fellow interns over the summer

	Not likely	Somewhat likely	Fairly likely	Extremely likely
Response	8%	25%	17%	50%

What else, if anything, would you like to communicate about the orientation that we may have overlooked?

- *With it all said and done, it was excellent!*
- *Thank you for doing the training. Things like that should be a staple in every program. It is important work*
- *I really liked the snacks during lectures, activities, etc. The computer lab was a difficult room for lectures, as we were very spread out, and it is hard to see the screen everywhere in the room, just not an efficient layout (not sure this can be fixed, but just wanted to communicate it).*

Self-Reflection Guide Tool - Summary & Recommendations

Summary

- Most interns reported that they completed the self-reflection guide together with their mentor (60%)
- At the beginning of the internship, interns and their mentor made use of the self-reflection guide for discussion (80%)
- Mid-internship, the guide was completed by the intern and mentor together (40%) or not completed (40%)
- At the end of the internship, the guide was completed by the intern and mentor together (60%)
- Interns found that the mentoring rubric provided them with a structure for discussing their progress with others (60% agree, 10% strongly agree), that the mentoring rubric helped illuminate areas that needed improvement and areas where growth occurred (40%, 20%), that they found the mentoring rubric to be a beneficial resource for the mentoring process (50%, 10%), and that the mentoring rubric encouraged them to engage in purposeful reflection this summer (50%, 10%)
- Interns felt the guide would have been more beneficial if they could have reviewed it with their mentor, that it was not beneficial at all, and that they should have paid more attention to it

Recommendations

- Encourage all mentors and interns to review the guide together
- Introduce the guide during orientation to help interns be more comfortable with it
- Show interns how engaging with the guide can help them during their summer internship

All data

Which of the following best describes how the Self-Reflection Guide was completed at the beginning of the internship? (N=10)

	N	%
No one completed the self-reflection guide	2	20%
My mentor and I completed the self-reflection guide together	6	60%
I was the only one who completed the self-reflection guide	1	10%

Other (please specify)

- *I completed the self-reflection guide, then we talked about it together*

At the beginning of the internship, did you and your mentor make use of the self-reflection guide for discussion? (N=10)

	N	%
Yes	8	80%
No	2	20%

Which of the following best describes how was the self-reflection guide was completed at the middle of the internship? (N=10)

	N	%
No one completed the self-reflection guide	4	40%
My mentor and I completed the self-reflection guide together	4	40%
I was the only one who completed the self-reflection guide	2	20%

Other (please specify)
NA

In the middle of the internship, did you and your mentor make use of the self-reflection guide for discussion?

	N	%
Yes	4	40%
No	6	60%

Which of the following best describes how was the self-reflection guide was completed at the end of the internship?

	N	%
No one completed the self-reflection guide	3	30%
My mentor and I completed the self-reflection guide together	6	60%
I was the only one who completed the self-reflection guide	1	10%

Other (please specify)
NA

At the end of the internship, did you and your mentor make use of the self-reflection guide for discussion?

	N	%
Yes	5	50%
No	5	50%

Please reach each of the following statements carefully. Then select the statement which best matches your level of agreement. (N=10)

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree

I found the mentoring rubric to be a beneficial resource for the mentoring process.	10%	0	30%	50%	10%
The mentoring rubric helped illuminate areas that needed improvement and areas where growth occurred.	10%	0	30%	40%	20%
The mentoring rubric provided a concrete way to assess my progress during the summer.	10%	10%	20%	40%	20%
The mentoring rubric provided me with a structure for discussing my progress with others.	10%	0	20%	60%	10%
I felt that the mentoring meetings, to discuss the rubric with my mentor were beneficial for the mentoring process.	10%	0	30%	40%	20%
The mentoring rubric and meetings motivated me during the summer.	10%	20%	40%	20%	10%
I looked forward to completing the rubric and discussing it with my mentor.	20%	10%	40%	30%	0
The mentoring rubric encouraged me to engage in purposeful reflection this summer.	10%	0	30%	50%	10%

Please describe the benefits (if any) that you felt that you received from using the self-reflection guide.

- *It helped to make expectations clear so I knew where I should be at and where I was working towards and my mentor could help me get there.*
- *It was very helpful to lay out a plan then follow through with it.*
- *Nice to think about specific skills I wanted to improve on this summer.*
- *Provides a window for discussion that then leads to more specific discussion of progress/ flaws.*
- *No benefits*
- *It gave me a way to 'quantify' how I felt I was doing in specific areas.*
- *I think it prompted reflective discussion between my mentor and I. That is a valuable impact.*
- *It is nice to provide structure to how to evaluate oneself*

Please describe what would have made the self-reflection guide more beneficial to you?

- *Reviewing it with my mentor*
- *None that I can think of*

- *It was good*
- *Not sure*
- *I didn't find any benefits from the self-reflection guide.*
- *If the categories were described a bit more specifically.*
- *I think I should have paid more attention to it during the middle of my internship.*
- *Actually getting to do it with my mentor*