

## Overview of the Advanced Study Institute: Field Studies of Convection in Argentina program

- ASI program was conducted in Argentina for 21 days in conjunction with the RELAMPAGO field campaign
- Supported the participation of 16 highly motivated and diverse graduate students from the U.S. who had *NOT* previously participated in field work
- Provided a dynamic and highly collaborative international research experience by focusing on five **key elements**:
  1. Intensive field research with active field campaign instrumentation platforms under the guidance of the instrument PIs
  2. Recruitment of a diverse set of graduate students who would not otherwise have opportunities to participate in intensive field research
  3. An ASI curriculum focused on scientific understanding of cloud and mesoscale processes of the atmosphere and professional/academic development topics
  4. Outreach to the local K-12 schools and organized cultural activities
  5. Building a collaborative international research network between the U.S., Argentina, and Brazil to promote weather and climate research.

### Overall program goals:

- Increase motivation and improve self-confidence of students to participate in scientific research and field work
- Increasing retention in STEM graduate programs and advancing the careers of students from underrepresented groups.



Figure 1. ASI-FSCA program participants and leadership team in front of a mobile DOW radar during RELAMPAGO.

## ASI Student Objectives

### 1. Enhance basic knowledge on cloud and mesoscale processes and mountain meteorology

- Conducted scientific lectures from both invited scientists and RELAMPAGO PIs



Figure 2. Dr. Larry Carey giving a lecture on lightning.

### 2. Participate in a major international field campaign

- Students learned about the field campaign science, participated in daily science and forecast briefings, and visited key instrument platforms during the program



Figure 4. Photographs from the ASI students in the field taking measurements during RELAMPAGO.

### 4. Develop advanced professional development skills for transitioning to the next stage of their careers

- Lectures/activities on professional development topics included:
- Stress management and culture shock, building a supportive network, science communication, how to build this experience into your CV, etc.

### 5. K-12 Local Community Outreach

- Allowed for cultural exchanges and the students were able to teach the science they learned to students!



Figure 3. ASI students visiting the DOE G1 aircraft in Rio Cuarto, Argentina.

### 3. Operate and collect data from an instrument platform

- Students were placed with RELAMPAGO instrumentation teams to participate in data collection for the following platforms:
- Mobile and fixed radars, mesonets/soundings, hydrometeorology streamflow measurements, lightning instruments, CACTI observations, operations center data analysis, etc.



Figure 5. Photographs from the ASI students participating in K-12 outreach events.

## ASI-FSCA Program Evaluation

- Post-ASI survey responses give insights into progress toward the student learning objectives:

How much did you gain in the following areas as a result of your ASI participation?						
	None (n)	A little (n)	Moderate (n)	Good (n)	Great (n)	N/A (n)
Writing scientific reports or papers	0	6	1	1	0	0
Giving oral presentations	0	0	4	3	1	0
Defending an argument when asked questions	1	2	1	3	1	0
Explaining my project to people outside my field	0	0	2	2	4	0
Keeping a detailed lab notebook	2	0	4	1	1	0
Conducting observations in the lab or field	0	0	0	1	7	0
Using statistics to analyze data	2	2	3	0	1	0
Calibrating instruments needed for measurement	2	0	3	1	1	0
Understanding journal articles	2	3	2	0	1	0
Conducting database or internet searches	0	4	1	1	2	0
Managing my time	0	0	3	3	2	0

Please indicate your agreement with the following statements:					
	Strongly disagree (n)	Disagree (n)	Neither (n)	Agree (n)	Strongly agree (n)
The Advanced Study Institute (ASI) lived up to my expectations	0	0	0	1	7
The content of the ASI was relevant to me	0	0	0	1	7
The ASI activities stimulated my learning	0	0	0	1	7
The ASI activities gave me sufficient practice and feedback	0	0	0	2	6
I will be able to use what I learned in this ASI	0	0	0	1	7
The ASI was a good way for me to learn this content	0	0	0	1	7

- Overall, the students reported high satisfaction with the ASI-FSCA program, improved science communication skills, valuable networking opportunities, and greater confidence in discussing science with others and collecting data
- Some quotes from the surveys (most valuable aspects of the ASI program):
  - “The field experience and networking among peers and other scientists.”
  - “Collecting data in the field and networking. The ability to see atmospheric processes that I’ve only read about and discussing them with mentors who are experts in the field.”
  - “The field experience as well as the professional networking. Networking can happen at conferences but it does not compare to the level at which you can get to know someone during a multiple week field campaign.”
  - “Ability to be out in the field to observe and collect data from unique storms. I’ve never been able to do this and I’ve always wanted to.”

## Funding

Funding is provided by the National Science Foundation grant OISE-1828935.