



# Engagement and training in radar meteorology and engineering

## Lessons from NSF NCAR's workforce development programs

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NSF NCAR EdEC



EdEC leads the education mission of NSF NCAR by engaging, training, and providing educational development opportunities for the next generation of scientists and engineers, the broader Earth system science community, and the general public.



# The Center of Excellence for Education, Engagement & Early - Career Development (EdEC) leads the delivery of NSF NCAR's education and training mission.

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## Public Engagement

Lectures, field campaign support, documentaries, traveling exhibits

## Future Workforce

Undergraduate, graduate, and postdoctoral programs

## Faculty Programs

Collaborations with researchers in the university community

## Early - Career Development

Resources and training for career development of NSF NCAR staff

## Evaluation & Education Research

Lead or advise on project evaluation and research

**Collaborate with us on projects or proposals!**

[edec.ucar.edu/collaborate](http://edec.ucar.edu/collaborate)

- with - us

# Support of field work



## Open House/Media Day

Arrange for and conduct tours of instruments

## Local School Visits

Organize and lead visits with local schools and universities

## Livestream

Conduct virtual tours and interviews with field project personnel

## Project Videos/Brochures

Create informative promotional videos and handouts of field campaign research

## Education Research

Brainstorm new learning opportunities for each field campaign



# Workforce training

We prepare future scientists and engineers through programs for students and postdocs that strengthen connections among education and research institutions in the Earth system sciences .

## Undergraduate Students



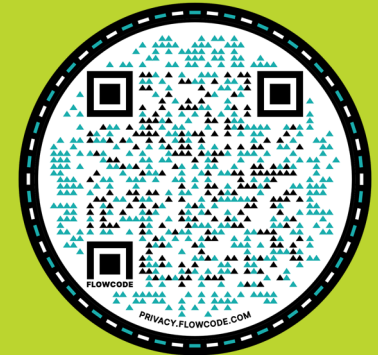
## Graduate Students




## Postdoctoral Researchers



## Undergraduate, Graduate & Postdoc Opportunities





## NSF NCAR training supports collaboration across the Earth system sciences, engineering, computer, and data science.

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- Developing the next generation of radar scientists and engineers requires an accessible, multi - institutional ecosystem focused on practical, interdisciplinary skills.
- This cross - disciplinary approach can help students and postdocs understand the full end - to - end radar data life cycle and ensures a capable workforce ready for future challenges in the radar community.



# Pathways in action: Anna del Moral Mendez at NSF NCAR



## ASP Graduate Visitor Program (March - August 2019)

- Participation in RELAMPAGO project (Argentina, 2018)
- Collaboration NCAR - CSU
- Collaboration with CSWR for Tornadic Winds: In situ and Radar observation at Low levels (TWIRL) and Hurricanes at Landfall (HaL) projects (2019)

## ASP Postdoctoral program (2021 - 2023)

- Collaboration in Propagation, Evolution, and Rotation in Linear Storms (PERiLS) project (2022)
- East Africa radar capacity building opportunities through WMO (2023 - 2024)

## Currently a Scientist at the Earth Observing Laboratory (EOL) (since 2024)



RELAMPAGO  
(Argentina, 2018)



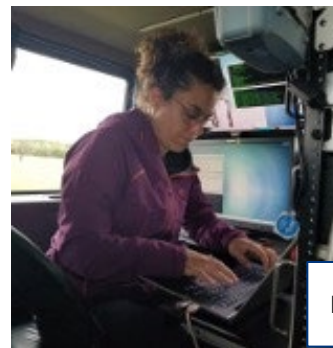
PERiLS (U.S., 2022)



S-Pol (Boulder, 2025)



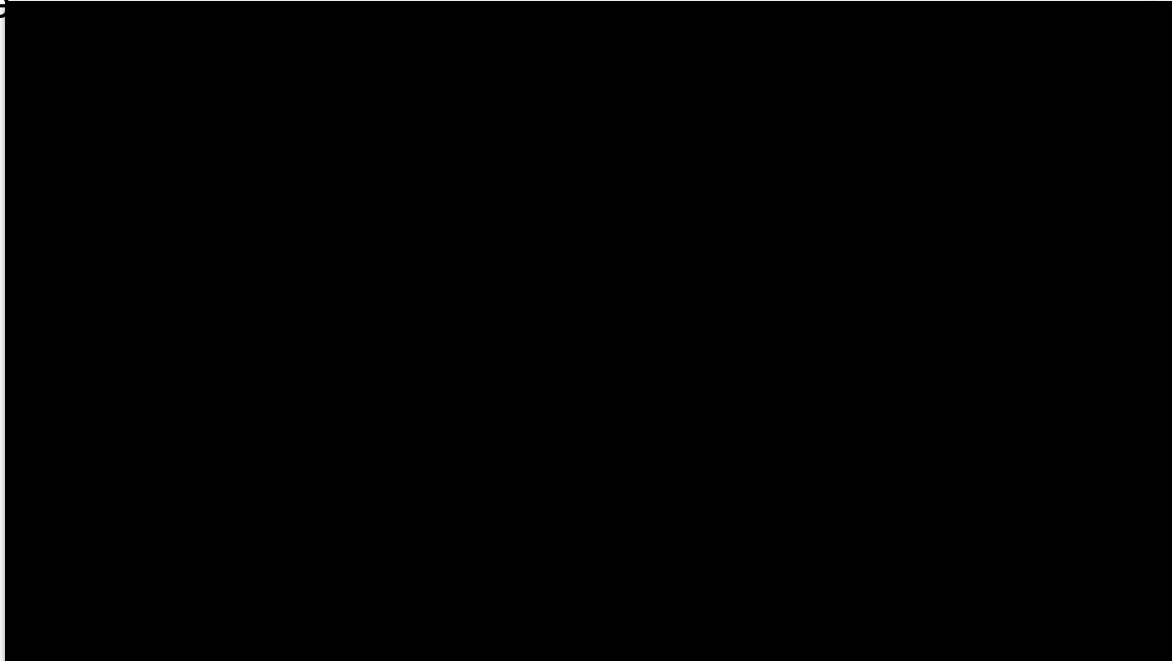
WMO SWFP  
radar training  
(Rwanda, 2023)



# Hands - on training during field work



EdEC supports student and early - career training in field campaigns, providing real - world, hands - on experience and strengthening the connection to Earth System Science



# Education research can inform informal training

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Field Campaigns provide unique experiential observational and learning opportunities but have not been studied extensively to inform pedagogy .

Questions to consider:

- How do we ensure that student learning occurs?
- How do we maximize success, as participating students depend on data collected during the campaign for graduation?
- How do we ensure inclusion and access for a broad range of learners in field campaigns?



*Rasmussen et al. (2021)*

# A community call for education research

In May 2025 observationalists and education researchers came together to formulate a plan for informing informal learning in field settings:

- A Vision for Integrating Physical Science and Education Research in Field Settings
- Short-Term Pathways and Long-Term Aspirations
- Strengthening Integration Between Education Researchers and Field Campaign Scientists
- Sustaining a Community of Practice: Communication, Connection, and Continuity

**BAMS**  
Meeting Summary

## Improving Educational Experiences in Atmospheric Science Field Campaigns through Partnerships between Observational Scientists and Education Researchers

Rebecca Haacker,<sup>a</sup> Melissa A. Burt,<sup>b</sup> Dawn Kopacz,<sup>c</sup> Peggy McNeal,<sup>d</sup> Kathy Quardokus Fisher,<sup>a</sup> and Emily V. Fischer<sup>e</sup>



**KEYWORDS:**  
Atmosphere;  
North America;  
Education

### A Community Workshop on Improving Educational Experiences in Atmospheric Science Field Campaigns

**What:** "Educational Experiences in Atmospheric Science Field Campaigns: A Community Workshop." We held a workshop to bring together experts across atmospheric sciences, field operations, education research, and social science to assess how atmospheric field campaigns support student learning, explore stronger integration between physical science and education research, and determine the necessary infrastructure to build and sustain a community of practice.

**When:** 28–30 May 2025

**Where:** Colorado State University, Fort Collins, Colorado

[Link to the statement](#)



## NSF Track 1 Proposals

Scan, collect and analyze S - Pol datasets for radar, remote sensing, instrumentation, mesoscale met, boundary - layer met courses

## S- Pol from Previous Field Campaigns

Free access to existing S - Pol datasets for premier polarimetric radar data quality

## MTEC

Combining cutting - edge research instruments with robust educational programming



Thank you! Please contact us to discuss how we can support your education and training goals.

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Collaborate with us on projects or proposals!  
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