



International Resilience Lab

FY2025 Report



THE UNIVERSITY OF ARIZONA
ARIZONA INSTITUTE FOR RESILIENCE

International
Resilience Lab

Message from the International Resilience Lab

The University of Arizona (U of A) is well positioned to be a leader in resilience research in and around Arizona and abroad. With food insecurity rising around the globe, climate changes driving recurrent humanitarian crises, and a widening information resource divide, both new insights and a new generation of creative and collaborative researchers are needed. In 2021, The Arizona Institute for Resilience (AIR) made a strategic investment to develop a program that would harness the talent of U of A faculty, students, and researchers to form partnerships to address some of the world's most pressing social and environmental challenges. We present the second Annual Report of this initiative, representing the International Resilience Lab (IRL) during fiscal year 2025 (FY25), from July 1, 2024–June 30, 2025.

In February 2025, the Trump Administration initiated a review of federal grant funding, with particular emphasis on funded projects related to foreign assistance, climate change, and topics broadly categorized as promoting “diversity, equity, and inclusion.” The resulting funding cancellations have deeply impacted higher education institutions across the United States, including the University of Arizona. With a large proportion of recent funding coming from the now-dissolved United States Agency for International Development (USAID), the International Resilience Lab has been hard hit by the funding changes. A brief summary of the impacts is provided below, including loss of personnel.

IRL had three projects and programs terminated:

1. The Humanitarian Assistance and Technical Support (HATS) Program
2. The Climate Adaptation Research Program (CARP)
3. The Enhancing Evidence for Humanitarian Action in the Face of Climate Change (EEHA) Research Project

Collectively, the three programs and projects listed above had to return about 8 million dollars in already awarded funds to the U.S. Government. The CARP program alone was forced to cancel nearly 100 research projects in two dozen countries that involved approximately 200 researchers, most of whom were early career scholars. The EEHA project was implementing three pilot studies in Kenya and Bangladesh to test new methods of data collection and analysis to assess the long-term impacts of short-term humanitarian investments. These pilots reflected the culmination of two years of research and partnership building and were also summarily terminated. Finally, and critically, three core members of IRL lost 100% of their funding and their positions at the University of Arizona.

This is undoubtedly a difficult moment for many people who had put tremendous passion and purpose into advancing the world's collective mission to minimize disasters, climate impacts, poverty, and food insecurity, among other challenges. Most importantly, it is a difficult moment for individuals and communities across the world who are bearing and will bear the brunt of these challenges. While new ideas and visions may create opportunities for progress, it is unassailably true that resilience-focused partnerships between Global North and South institutions are mutually beneficial and a pathway for a better world. In fact, if there is ever a moment to double down on this belief, it is now.





IRL Mission and Vision

IRL is a group of researchers with diverse disciplinary expertise who have a common commitment to advancing resilience, climate adaptation, and disaster risk reduction in international contexts. IRL envisions a reality where solutions to global social and environmental challenges are developed through collaborative, socially engaged, and culturally appropriate scientific research. IRL believes that this type of research contributes to making the world more resilient and sustainable and can support transformative change. The mission of IRL is to collaboratively lead and facilitate socially engaged research and collaboration between the U of A and local and global partners.

IRL Goals

1. **Produce cutting-edge research and scholarship on resilience, climate adaptation, and disaster risk reduction in international contexts.**

IRL accomplishes this goal by (1) collaboratively leading socially engaged research projects; (2) promoting inter- and transdisciplinary collaboration, knowledge exchange, and educational opportunities for faculty, staff, and students at the U of A; and (3) partnering with higher education institutions in the Global South.

2. **Catalyze and support a community of U of A faculty, students, and researchers to advance academic and educational opportunities related to resilience, climate adaptation, and disaster risk reduction in international contexts.**

IRL accomplishes this goal by developing community events and platforms where individuals can connect and collaborate on relevant academic and educational initiatives; connecting faculty, students, and researchers at the U of A to opportunities to obtain funding for socially engaged research; and managing information and knowledge exchange among network members and academic units.



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IRL Team

IRL Core Researchers and Staff



Zack Guido

Director, International Resilience Lab; Associate Research Scientist, Arizona Institute for Resilience



Erica Goto

Research Scientist, International Resilience Lab, Arizona Institute for Resilience



Birtukan Atinkut Asmare

Postdoctoral Researcher, Arizona Institute for Resilience



Corrie Hannah

Assistant Research Professor, Arizona Institute for Resilience



Stefanie Herrmann

Research Scientist, International Resilience Lab, Arizona Institute for Resilience



Sarah Clark

Program Manager, International Resilience Lab, Arizona Institute for Resilience



Julia Davies

Research Scientist, Climate Adaptation Research Program (CARP) Africa and Pacific Islands



Sonia Delphin-Perez

Research Scientist and Program Coordinator, Climate Adaptation Research Program (CARP) Latin America and the Caribbean

U of A Graduate and Undergraduate Staff and Researchers

Anita Lum Amaanwi Wanki – RISE Intern, Master's in Public Administration+
Connor McKay – RISE Intern, Master's in Public Administration+
Diana Wanjiru Githu – PhD, Arid Lands Resource Sciences
Elham Chelabi – RISE Intern, PhD, College of Education+
Harshit Khatwani – RISE Intern, Bachelor's of Arts in Journalism, Global Studies, & Political Science
Kendra Martinez – Master's in Public Health+
Laura McCann – PhD, School of Government and Public Policy+
Prashanti Sharma – PhD, School of Geography, Development, and Environment
Rediet Tadele – PhD, School of Government and Public Policy+
Tamutswa Mahari – PhD, Department of Communication+
Zayyan Essani – Bachelor's of Science in Computer Science+

U of A Research Collaborators

Alex Braithwaite – School of Government and Public Policy
Anna Josephson – Agricultural & Resource Economics
Beth Tellman – School of Geography, Development, and Environment
Greg Collins – Arizona Institute for Resilience
Jeff Michler – Agricultural & Resource Economics
Rohit Mukherjee – School of Geography, Development, and Environment
Tim Finan – Bureau for Applied Research in Anthropology
William K. Smith, School of Natural Resources and the Environment

+ Students participating in CARP and HATS

Organizational Affiliations of External Collaborators

- American Cancer Society, United States
- Auckland University of Technology, New Zealand
- CARE Bangladesh, Bangladesh
- Caribbean Coastal Ocean Observing System, Puerto Rico, United States
- Caribbean Institute for Meteorology and Hydrology, Barbados
- Consejo Superior Universitario Centroamericano, Guatemala
- Cornell University, United States
- George Washington University, United States
- Independent Researcher, India
- Ministry of Agriculture, National Agricultural Information Services (NAIS), Zambia
- Ministry of Agriculture, Zambia Agriculture Research Institute, Zambia
- PERIPERI U and Stellenbosch University, South Africa
- São Paulo Research Foundation (FAPESP), Brazil
- TANGO International, United States
- University of Miami, United States
- University of Puerto Rico, Comprehensive Cancer Center, United States
- University of Puerto Rico, Medical Sciences Campus, United States
- University of South Florida, United States
- University of Victoria, Geography, Canada
- University of Victoria, Pacific and Asian Studies, Canada
- University of the Virgin Islands Caribbean Exploratory Research Centre, United States
- US Forest Service Rocky Mountain Research Station, United States
- US Geological Survey, United States
- USAID Monitoring and Evaluation Team, United States
- World Food Program Kenya, Kenya



IRL Achievements by the Numbers

IRL’s activities and impact between July 1st 2024 and June 30th 2025

Produce cutting-edge research and scholarship on resilience, climate adaptation, and disaster risk reduction in international contexts.

Collaboratively lead socially engaged research projects and programs



Individual research projects
6

Multi-project research programs
3

Average number of non-IRL partners per research project¹
3.7

Total non-IRL partners for projects and programs
71

Promote inter- and transdisciplinary collaboration, knowledge exchange, and educational opportunities for faculty, staff, and students at the University of Arizona.



U of A faculty and staff research collaborators
7

Non-U of A academic collaborators
44

Non-academic collaborators²
20

U of A student collaborators³
9

Partner with higher education and other institutions in the Global South



Global Regions we’ve worked with in FY24:

The Caribbean · Central America · South America · Africa · South Asia · The Pacific

¹ This number does not include IRL research programs HATS, CARP, and CARIB-CARES.
² Non-academic collaborators are research partners from organizations whose primary focus is not research, such as partners from NGOs, community groups, government organizations, etc
³ IRL did not financially support any of these graduate students for their collaboration. Nine of the graduate students received funding from BARA, CARP funding, or the RISE Internship program.

Catalyze and support a community of University of Arizona faculty, students, and researchers to advance academic and educational opportunities related to resilience, climate adaptation, and disaster risk reduction in international contexts.

Developing community events and platforms where individuals can connect and collaborate on relevant academic and educational initiatives.



Total event registrants

103

Connecting faculty, students, and researchers at the University of Arizona to opportunities to obtain funding for participation in socially engaged research consultation initiatives sponsored by IRL's university and industry partners.



Faculty, staff, and students
at U of A connected to funding
(includes IRL core researchers and staff)

24

Funding sources:

Caribbean Institute for Meteorology and Hydrology

Social Sciences & Humanities Research Council

**US Agency for International Development –
Bureau for Humanitarian Assistance**

US National Institutes of Health National Cancer Institute

**US Department of Agriculture Forest Service –
Rocky Mountain Research Station**

**NASA Earth Science Division –
Earth Surface Mineral and Dust Source Investigation**

Managing information and knowledge exchange among network members and academic units.



U of A faculty, staff, and researchers with
at least 29
different affiliations across campus
have attended at least one IRL event.

IRL Research Areas and Societal Impact

Arizona Institute for Resilience (AIR) Themes

IRL’s projects and programs advance the areas of emphasis for IRL’s parent institute, AIR, by working on projects and programs that:

- 1 Develop strategies for people living in **arid lands** to adapt to a hotter, drier world
- 2 Enhance mitigation and adaptation to **climate**
- 3 Promote collective well-being across cultures in diverse **communities**
- 4 Design efficient and equitable solutions for **energy**
- 5 Foster **environmental** resilience
- 6 Advance sustainable **water** management

AIR Theme	Number of relevant Projects/Programs
Arid Lands	2
Climate	4
Communities	2
Energy	0
Environment	2
Water	0

Societal Impacts Framework

IRL seeks to connect empirically generated evidence to decision-making. Thus, impact is broadly construed and produces traditional academic outputs, like peer review articles and academic presentations, but is fundamentally oriented toward decision-making. We strive for our impact in a multifaceted way, focusing on 6 measures of societal impact:

- 1 **Instrumental Applications:** the research led to tangible changes to plans, decisions, practices, or policies.
- 2 **Conceptual Impacts:** the research contributed to changes in people’s knowledge about or awareness of an issue.
- 3 **Connectivity Impacts:** the research led to new or strengthened relationships, partnerships, or networks that endure after the project ends.
- 4 **Social Impacts:** the research has resulted in beneficial impacts to society.
- 5 **Higher Education Impacts:** This research contributed to improvements to the structure, function, or attitudes within higher education (including improvements focused on cultural changes in higher education, making spaces more welcoming of diverse faculty, students, and knowledge.)

Type of Impact	Number of Projects/Programs
Instrumental Applications	0
Conceptual Impacts	4
Capacity Building Impacts	2
Connectivity Impacts	4
Social Impacts	0
Higher Education Impacts	1

6 The Societal Impacts Framework was developed by [Alison Meadow](#) and [Gigi Owen](#) at the U of A.



Research Programs

The Caribbean Cancer Research Center on Environmental and Natural Hazards (CARIB-CARES)

Summary

Extreme weather events in the Puerto Rico and U.S. Virgin Islands (the U.S. Caribbean) have routinely demonstrated how interdependencies in critical infrastructure systems generate severe adverse impacts on the health and wellbeing of the populace. This center focuses on how extreme events cascade through the cancer care continuum (the various stages from cancer etiology, prevention, early detection, diagnosis, treatment, survivorship, and end of life) creating adverse outcomes that have been seldom studied in the past. Led by the University of Puerto Rico and the University of the Virgin Islands, this center represents a major transdisciplinary collaborative research activity to develop, support, and sustain education, capacity building, research, and adaptation capacities to help mitigate the impact of extreme events on cancer prevention and control and health disparities in the U.S. Caribbean. In specific, the project seeks to:

- Form a regional knowledge-action network of researchers, physicians, stakeholders, community members, and institutions;
- Increase the number of students and researchers from the Caribbean conducting research on the impact of extreme weather events on cancer;
- Establish a Community Coalition of Partners to develop and strengthen sustainable strategic collaborations with stakeholders and community partners, including academic, nonprofit, community- and government-based organizations to promote scientific and community-focused activities, and;
- Provide capacity-building activities for community members, cancer-care providers, students, and faculty on climate, cancer, and health.

CARIB-CARES is one of 21 exploratory research centers around the U.S. funded by the U.S. National Institutes of Health (NIH). This center, in particular, is funded by the NIH's National Cancer Institute (NCI) for three years with aims to grow into a larger, self-sustaining research and community-engagement center.

Duration and Funding

2024–2027 | \$3,431,581.00 | U.S. National Institutes of Health National Cancer Institute

Key FY2025 Achievements

- Establishment of several working groups to explicitly engage community-based organizations, government groups, and other relevant stakeholders in both the Virgin Islands and Puerto Rico; 20 total stakeholder organizations have been engaged.
- Webinar: Dr. Zack Guido, “Communicating climate and weather risks: what the science says”, April 11th, 2025
- Presentations: “[CARIB-CARES: The first exploratory research center addressing the intersection of climate and the cancer control continuum](#)”, Ana Patricia Ortiz, Polaris Torres, Noreen Michael; Nancy Cardona-Cordero, Marievelisse Soto-Salgado, LaVerne Ragster; Leticia Nogueira, Frank Muller-Karger, Zack Guido, Tracy Crane, Pablo Méndez-Lázaro, AACR annual meeting 2025, April 25–30, 2025, Chicago, Illinois

IRL Researchers and Research Collaborators

Zack Guido, IRL

Sarah Clark, IRL

Ana P. Ortiz – University of Puerto Rico Comprehensive Cancer Center

Noreen Michael – University of the Virgin Islands Caribbean Exploratory Research Centre

Pablo Méndez-Lázaro – University of Puerto Rico Medical Science Campus

Frank Muller Karger – University of South Florida

LaVerne Ragster - University of the Virgin Islands Caribbean Exploratory Research Centre

Leticia Nogueira – American Cancer Society

Marievelisse Soto-Salgado – University of Puerto Rico Comprehensive Cancer Center

Nancy Cardona-Cordero – University of Puerto Rico Comprehensive Cancer Center

Tracy Crane – University of Miami

Bridgette Troche – University of Puerto Rico Medical Science Campus

Claudia Boneu – University of Puerto Rico Medical Science Campus

Diana Claxton – University of the Virgin Islands Caribbean Exploratory Research Centre

Erick Suárez – University of Puerto Rico Comprehensive Cancer Center

Leidi Garabito – University of Puerto Rico Comprehensive Cancer Center

Lenulisy Rosado – University of Puerto Rico Comprehensive Cancer Center

Melanie Diaz – University of Puerto Rico Medical Science Campus

Polaris Torres – University of Puerto Rico Comprehensive Cancer Center

Carlos Santos-Burgoa – George Washington University

Erole McLean Hobdy – University of the Virgin Islands

Patricia Chardón – Caribbean Coastal Ocean Observing System

James Shultz – University of Miami

Maria Cristy – American Cancer Society

CARIB-CARES Lead Organizations



Other Partner Organizations



The CARIB-CARES team gathered in San Juan, Puerto Rico for the center's first Annual Meeting in August 2025.

Climate Adaptation Research Program (CARP)*

Years of implementation

CARP Pilot: 2022–2024

Extended CARP: 2023–2025

CARP was terminated in April 2025 from funding recissions made by the U.S. Government

The Program

The [Climate Adaptation Research Program](#) (CARP) aimed to improve disaster preparedness and planning through applied and localized research on climate adaptation and Disaster Risk Reduction (DRR) in the Global South. CARP promoted a new generation of early career researchers who focused on applied climate adaptation research on the impacts and implications for disaster risk reduction (DRR) policies and strategies. The University of Arizona co-implemented the program with strategic regional partners in Africa, Latin America and the Caribbean (LAC), and the Pacific Islands. This program was made possible by the generous support of the American people through the US Agency for International Development (USAID), more specifically the [Bureau of Humanitarian Assistance](#) (BHA). The USAID administered the U.S. foreign assistance program providing economic and humanitarian assistance in more than 80 countries worldwide.

CARP had the following objectives:



Establish a cross-regional program: CARP sought to engage scholars from several Higher Education Institutions in Africa, Latin America and the Caribbean, and the Pacific Islands.



Provide funding and technical support: Scholars received research funding and technical guidance on applied research methods and stakeholder engagement to inform localized climate adaptation and DRR solutions, strategies, and policies.

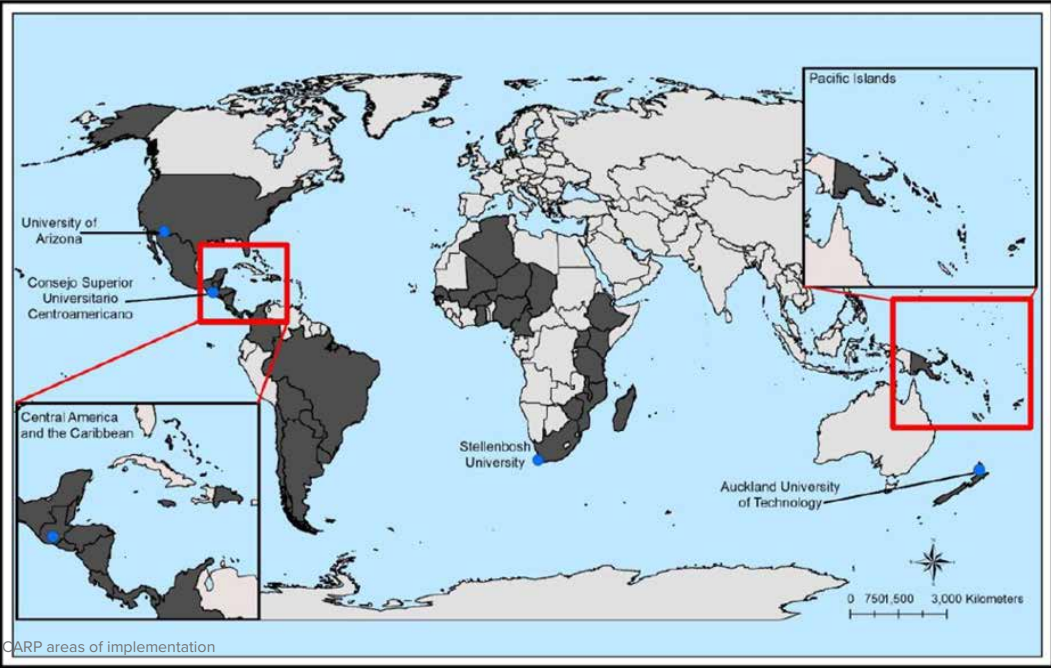


Create knowledge exchange opportunities: CARP fostered peer learning and knowledge sharing by hosting an interactive online webinar series and collaborative in-person workshops.



Build a community: CARP aimed to create an active global community of scholars, practitioners, and decision-makers engaged in the effort to meet the challenges of climate change adaptation and DRR.

CARP initiated its activities in Africa as a two-year program (2022–2024), and in 2023 was expanded to the LAC and Pacific Islands regions for an additional five years. The University of Arizona implemented CARP in partnership with Stellenbosch University (Africa), the Consejo Superior Universitario Centroamericano (CSUCA, LAC), and Auckland University of Technology (AUT, Pacific).



CARP Management Team

Corrie Hannah, IRL
Tim Finan, Professor Emeritus, Anthropology
Julia Davies, IRL
Sonia Delphin, IRL

Other collaborators

Erica Goto, IRL
Connie McManus, São Paulo Research Foundation (FAPESP)

Regional Partners



Humanitarian Assistance Technical Support (HATS)*

Years of implementation

2019–2025

HATS was terminated in April 2025 from funding recissions made by the U.S. Government

Situated in the Bureau for Applied Research in Anthropology (BARA) in the School of Anthropology, HATS was a global initiative at the University of Arizona that was designed to support the U.S. Government's commitment to prepare for and respond to international humanitarian disasters.

University of Arizona technical staff supported the USAID's Bureau for Humanitarian Assistance in the areas of Hydrometeorological Hazards, Economic Recovery & Market Systems, and Humanitarian Coordination & Information Management. At the same time, HATS engaged with a diverse and interdisciplinary pool of University of Arizona faculty, students, and staff in finding innovative strategies and solutions to reduce global disasters' causes and impacts through research and learning opportunities.

HATS regularly hosted in-person and virtual seminars and also maintained a HATS graduate team that has engaged in research on topics relevant to disaster risk management and humanitarian assistance. HATS also engaged with the Educational Initiatives team at the Arizona Institute for Resilience to host four RISE interns and contributed content to the design of the International Development and Humanitarian Assistance course for the International Development emphasis of the Master's in Resilience Practice program to be launched in AIR in 2025.

The pilot of the Climate Adaptation Research Program (CARP) from 2022–2024 was also established through HATS as a funded modification to the grant.

Funding

\$7,891,289 | USAID Bureau for Humanitarian Assistance

IRL Researchers and Research Collaborators

Corrie Hannah, IRL

Julia Davies, IRL

Tim Finan, Professor Emeritus, Anthropology

University of Arizona BHA Faculty

Ayse Sezin Tokar – USAID Focus Area, Hydrometeorological Hazards

Laura Meissner – USAID Focus Area, Economic Recovery & Market Systems

Rhonda Stewart – USAID Focus Area, Humanitarian Coordination & Information Management

HATS & CARP Student Team

Laura McCann – PhD, School of Government and Public Policy

Kendra Martinez – Master's in Public Health

Zayyan Essani – Bachelor's of Science in Computer Science

Tamutswa Mahari – PhD, Department of Communication

Rediet Tadele – PhD, School of Government and Public Policy

Elham Chelabi – RISE Intern, PhD, College of Education

Connor McKay – RISE Intern, Master's in Public Administration

Anita Lum Amaanwi Wanki – RISE Intern, Master's in Public Administration

A black and white photograph of a cornfield, viewed from a low angle looking up at the stalks. The stalks are filled with long, pointed leaves and several tassels are visible. A semi-transparent dark red rectangular overlay covers the right half of the image. The text "Research Projects" is centered within this red area in a white, sans-serif font.

Research Projects

Photo: Zack Guido

Are Small Scale Farmers Losing Confidence in Weather Forecasts in Tanzania?

Accurate weather prediction is one of the 20th century's most significant achievements, saving lives, protecting property, and guiding risk management globally. Annual investments in weather and climate services amount to tens of billions of dollars, delivering returns far exceeding their cost. Despite these advances, small-scale farmers in the Global South often underuse weather forecasts, exacerbating food insecurity and reduced agricultural productivity in these vulnerable communities. Over the past 30 years, research has prioritized seasonal climate forecasts (SCF) over daily weather forecasts, even though SCFs are less accurate and less impactful for farmers' daily decision-making. To address this gap, this study investigates why farmers do or do not use weather forecasts

Duration and Funding

2025–2026 | Internal Funding

Key FY2025 Achievements

- Focus groups in four districts to support the development of the phone surveys.
- Development of a culturally appropriate data collection tool for phone surveys.
- Preparation for data collection and analysis set to begin August, 2025.

IRL Researchers and Research Collaborators

Erica Goto, IRL
Zack Guido, IRL
Sarah Clark, IRL
Stefanie Herrmann, IRL and SNRE
Birtukan Asmare, IRL



Photo: Zack Guido

Enhancing Evidence for Humanitarian Action in the Face of Climate Change (EEHA)*



Years of implementation

2022–2025 | EEHA was terminated in April 2025 in funding recissions made by the U.S. Government

The Bureau for Humanitarian Assistance (BHA) within USAID addresses disasters and humanitarian crises around the world through its emergency programming. Typically, emergency funding is channeled through projects that have a short life span—usually one to two years in duration. Many emergency interventions, however, are designed and intended to produce changes that extend far beyond the life of the project. For this reason, the impacts of the interventions, such as organizational changes that enhance disaster risk reduction, are not documented, limiting both the communication of benefits and the programmatic learning that would inform future endeavors

EEHA was a USAID-funded project aiming to improve humanitarian investments in early warning, disaster risk reduction, and climate adaptation. EEHA had the goal of capturing evidence of longer-term benefits from short-term interventions by developing new indicators and methods to better assess the effectiveness of humanitarian programs. Core components of the project involved a systematic review of USAID emergency program documents, assessments of recent programs in Kenya and Bangladesh, and 3 pilot projects to test indicators and methods.

Funding

\$999,997 | USAID Bureau for Humanitarian Assistance

Key FY2025 Achievements

- Workshop in Bangladesh: “Signals of Change: A Collective Action Approach to Designing Research on Collective Action Pathways.” Dates: Jan. 7–8, 2025; about 20 people attended both days.
- Design and initiation of three research pilots: one that uses participatory methods to develop indicators to measure the capacity for collective action in the context of Bangladesh, one that uses a recurrent survey in Kenya to explain behaviors related to household asset protection and livelihood diversification, and a third that uses remote sensing to assess changes in agriculture area and intensity.

Cancellation Note

- EEHA was directed to pause all work in mid-February coinciding with the Trump Administration’s review of foreign assistance. The project was subsequently terminated in April.
- Cancellation of this project resulted in the loss of research funding and several years of research effort, including the three research pilots.

IRL Researchers and Research Collaborators

Zack Guido, IRL
Erica Goto, IRL
Corrie Hannah, IRL
Jeff Michler, Agricultural and Resource Economics
Anna Josephson, Agricultural and Resource Economics

Osaretin Olurotimi, Agricultural and Resource Economics
Alex Braithwaite, School of Government and Public Policy
Beth Tellman, School of Geography, Development, and Environment
Tim Finan, Anthropology
Greg Collins, Arizona Institute for Resilience

Diana Githu, Arid Lands Resource Science
Prashanti Sharma, School of Geography, Development, and Environment
Rohit Mukherjee, School of Geography, Development, and Environment
Tim Frankenberger, TANGO International (Tucson)

Healing Forests: Mapping Biodiversity and Multispecies Relations in Northeast India



Amid COVID-19, Khasi traditional healers (nongsumar) drew on ancestral knowledge from the 1918 flu pandemic to combat the virus but faced challenges due to habitat loss from deforestation and mining. This research explores the connection between traditional healthcare, wounded ecosystems, and forest-reliant Indigenous communities. It investigates how Khasi nongsumar manage medicinal plants, nurture future knowledge keepers, and restore forest biodiversity. Through community-based participatory research, the study conducts biodiversity audits, maps forest degradation, and develops tools to address biodiversity loss. The goal is to create decolonial maps and strategies for holistic ecosystem management, involving Khasi trainees and students.

Duration and Funding

2023–2026 | \$54,620.97 (Grant received as \$74,984.00 Canadian Dollars)

Social Sciences and Humanities Research Council

Key FY2025 Accomplishments

- Two focus groups were conducted with local nongsumar to understand forest use and changes.
- Eleven interviews were conducted with local nongsumar to understand forest use and changes.
- Two forest visits were conducted with local nongsumar to understand forest use and changes.
- Conference presentations: “Thirsty Plants: Khasi Traditional Healer’s Perspectives on Climate Change” at the Development Studies Association (DSA) Conference Paper | June 25, 2025
- Invite to submit full proposal for Tropical Forests call from Belmont Forum



IRL Researchers and Research Collaborators

Erica Goto, IRL

Sarah Clark, IRL

Harshit Khatwani, University of Arizona, Journalism, Global Studies, & Political Science

ann-elise lewallen, University of Victoria, Pacific and Asian Studies

Jane Warjri, Independent Researcher in India

Pulljohn Wañniang, research assistant in India

Indigo Underwood, University of Victoria, Geography

Mapping Biocrust Community Composition and Functional Diversity Across Global Drylands



This research project deals with biocrusts, thin layers of living organisms like cyanobacteria, mosses, and lichens that form on the soil surface in dry areas all over the world. While biocrusts fulfill important ecological and climate functions—preventing erosion, improving soil health, capturing CO₂, regulating water cycling in dry environments—we know little about their spatial extent and response to global change, in part because we cannot use many of our existing multispectral remote sensing tools for assessing biocrust communities to the same degree we can for vascular plants. This project integrates data from the hyperspectral Earth Surface Mineral Dust Source Investigation (EMIT) sensor and other complementary satellite observation records to better map and understand biocrust community composition and functional diversity across drylands.

The objectives of the project are to:

1. Develop a biocrust hyperspectral library across multiple spatial scales;
2. Quantify critical biocrust functional traits through new measurements at core research sites;
3. Map biocrust community composition and function at local, regional and global scales

Duration and Funding

2024–2027 | \$559,338.00 | NASA Earth Science Division, Earth Surface Mineral and Dust Source Investigation



Key FY2025 Achievements

- Two field visits to the Colorado Plateau to collect spectroscopic field measurements of different biocrust types and soil backgrounds
- Conference presentations: (1) Integration of NASA EMIT, Drone, and Ground-based Observations Toward a Multiscale Characterization of Biological Soil Crust Communities of the Colorado Plateau (Poster presentation – Fall Meeting of the American Geophysical Union 2024), (2) Multi-scale hyperspectral and thermal imaging reveals a novel biocrust degradation—climate warming amplification feedback (Oral presentation – Fall Meeting of the American Geophysical Union 2024)
- Academic paper in preparation on mapping biocrust presence and abundance in Arches National Park using EMIT and field spectroscopic data

IRL Researchers and Research Collaborators

Stefanie Herrmann, IRL

William K. Smith, SNRE

Sasha Reed, US Geological Survey

Miguel Villarreal, US Geological Survey



Enhancing Climate Resilience in the Caribbean through the Improvement of Caribbean Climate Outlook Forums (CariCOF)



The Caribbean Climate Outlook Forum (CariCOF) is a key platform for integrating climate forecasts into risk planning in the Caribbean. One of 21 regional climate outlook forums globally, CariCOF includes training on seasonal and sub-seasonal forecasting and a workshop connecting climate service providers with decision-makers. Held biannually since 2012, CariCOF has met 23 times, mostly in person. This research project investigates how CariCOF has influenced sectoral climate risk decision-making and evolved to meet the region’s growing demand for climate information.

As part of this evaluation, the research team attended the May 2024 CariCOF in Georgetown Guyana to conduct stakeholder interviews and host a participatory workshop session. An online survey followed (in July and August) that was completed by 115 people. Work during FY2025 has focused on data analysis and writing.

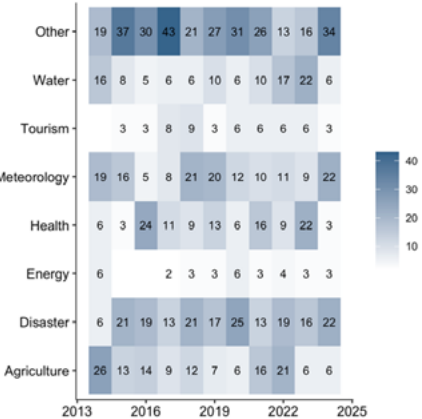
Duration and Funding

2024 | \$67,990.00 | Caribbean Institute for Meteorology and Hydrology (CIMH)

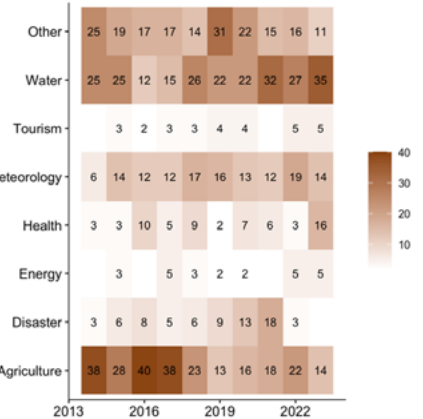
Key Achievements

- Lead a participatory workshop session during May 2024 CariCOF in Guyana
- Conducted in-person and online interviews with members of the CariCOF network
- Designed and collected survey data of 115 members of the CariCOF network
- Presentations of study results during the CariCOF and Meteorologist Trainings in November 2024.
- Report: full evaluation report prepared for CIMH, including impact assessment and recommendations for forum design.
- Academic paper in preparation.

Wet CariCOF: Sector Percentage in Each Year



Dry CariCOF: Sector Percentage in Each Year



IRL Researchers and Research Collaborators

Erica Goto, IRL
Zack Guido, IRL
Sarah Clark, IRL
In partnership with researchers at the Caribbean Institute for Meteorology and Hydrology

Quantifying Critical Fuel Thresholds

This project addresses the urgent need to reduce wildfire risk across the western United States, especially in non-forest areas where fast-growing grasses can quickly become dangerous fuel. While most wildfire prevention efforts focus on forests, much of the land that burns each year is actually grassland or shrubland—often made worse by invasive grasses that dry out and catch fire easily.

To support the Wildfire Crisis Strategy, which aims to treat up to 50 million acres of land over the next decade, this project will help fire managers figure out where and when wildfire risk is highest so they can take action before fires start. To this end, the goals of this project are to:

- 1. Quantify the critical fuel threshold for each grassland and shrubland vegetation type in the western US.
- 2. Use descriptive statistics to identify abiotic drivers (primarily surface meteorology and soils) that produce critical fuel quantities.

The project uses remote sensing data of biomass, vegetation composition data and weather data to create maps of fuel thresholds and fuel risk models to make wildfire prevention more timely, targeted, and cost-effective.



Duration and Funding

2024–2026 | \$210,026.00 | USDA Forest Service, Rocky Mountain Research Station

Key FY2025 Achievements

IRL Researchers and Research Collaborators

Stefanie Herrmann, IRL
Matthew Reeves, US Forest Service Rocky Mountain Research Station
William K. Smith, SNRE



A dramatic seascape with a storm brewing over the ocean under a heavy, cloudy sky. The sky is filled with large, dark, and textured clouds, with some lighter patches where the sun might be breaking through. The ocean is a deep blue-grey, with white foam from breaking waves visible in the foreground. The horizon line is straight and divides the image roughly in half.

Community Building Events and Activities

Photo: Zack Guido

Community-Building

A core goal of the International Resilience Lab is to catalyze and support a community of University of Arizona faculty, students, and researchers to advance academic and educational opportunities related to resilience, climate adaptation, and disaster risk reduction in international contexts. As mentioned previously in this report, one mechanism by which we accomplish this is by developing community events and platforms where individuals can connect and collaborate on relevant academic and educational initiatives.

Such events and platforms function to strengthen connections across the University, bring external speakers to the U of A, inspire novel research collaborations, and support information and knowledge exchange among network members and academic units. Below we share the community building activities that IRL hosted or co-sponsored for the U of A community in FY2025.

This year, our events had a strong focus on building understanding, strategies, and coalitions to continue impactful research in the areas of climate adaptation, disaster risk reduction, and international development under drastic changes to U.S. federal funding, and its cascading effects on foundation funding. Our community-building efforts in FY2025 include the formation of two new interdisciplinary working groups at the University of Arizona that will meet in the Fall 2025 and Spring 2026 semesters to develop novel academic products on mutually identified topics of interest in climate adaptation and international development.



Making Sense of the Drastic Change in U.S. Foreign Assistance

Date: March 28th, 2025
Number of Registrants: 82



Purpose and Summary: International Resilience Lab hosted Eric G. Postel for a talk and Q&A session on “Making Sense of the Drastic Change in U.S. Foreign Assistance.” Eric G. Postel served as one of the most senior officials at USAID during the Biden and Obama Administrations, most recently serving as Senior Advisor to the USAID Administrator until January 2025. In this talk, Postel spoke to University of Arizona students, faculty, and staff about what was happening at USAID and the implications of the recent changes for foreign assistance and research funding and project implementation.

Affiliation	# Registrants
Arizona Institute for Resilience	8
College of Social and Behavioral Sciences	5
School of Journalism	1
School of Government and Public Policy	3
Agricultural and Resource Economics	1
Arizona International	3
College of Agriculture, Life, and Environmental Sciences	3
School of Anthropology	3
Department of Political Economy & Moral Science	1
Mel and Enid Zuckerman College of Public Health	31
Research Development Services	1
School of Geography, Development, and Environment	8
College of Humanities	2
Religious Studies	1
UA Cancer Center	1
College of Education	2
Research Innovation and Impact (now Office of Research and Partnerships)	1
College of Medicine	2
Arid Lands Resource Sciences	1
University Libraries and Health Sciences Library	4
Provost Business Office	1
Southwest Center on Resilience for Climate Change and Health (SCORCH)	1
School of Plant Sciences	1
Health Sciences	1
Non-University of Arizona	6

Dialog on Global Engagement: Pursuing Resilience and International Development Research in a Radically Changed Funding Landscape

Date: May 6th, 2025
Number of Registrants: 22

Purpose and Summary: This dialog was organized to provide space to discuss pathways to continue to build and support international partnerships, research, and engagement to answer globally pressing questions in the face of a radically changed federal funding landscape. This event presented an opportunity for interested researchers and students to share ideas informally on being proactive in the time of DOGE by creating new partnerships, pursuing new sources of funding, finding new ways to advance important areas of research, and others. The discussion resulted in the formation of two interdisciplinary working groups. More detail on those groups is provided below.

Affiliation	# Registrants
Arizona Institute for Resilience	4
College of Social and Behavioral Sciences	3
School of Journalism	1
School of Government and Public Policy	1
Agricultural and Resource Economics	1
Arizona International	1
Department of Environmental Science	2
College of Agriculture, Life, and Environmental Sciences	1
School of Natural Resources and the Environment	2
Lovejoy Center	1
Anthropology	2
School of Global Studies	1
Department of Political Economy & Moral Science	1
Mel and Enid Zuckerman College of Public Health	2
Research Development Services	1
School of Geography, Development, and Environment	1
Non-University of Arizona	1

Interdisciplinary Working Groups

During the “Dialog on Global Engagement” event on May 6th, 2025, participants identified a strategy to build meaningful, novel collaborations across campus to advance research on resilience, climate adaptation, and international development and work towards the identification of new funding opportunities: the formation of new interdisciplinary working groups. Following that event, IRL used participant input and a series of campus-wide surveys to identify two broad topics of interest for these working groups: (1) Resilience Frontiers for Weather and Climate Forecasts and (2) Collaborative and Context-Specific Research for Climate Adaptation.

These working groups will meet during the Fall 2025 and Spring 2026 semesters, bringing together diverse groups of University of Arizona faculty, students, and staff (along with a few external partners) to co-develop an academic product. Depending on each group’s interest, this may take the form of an academic paper, an article for a popular media outlet, a white paper, or another suitable format. IRL will coordinate the groups, but members will collectively determine the group’s specific objectives, scope, and desired outputs. More information on the working group topics can be found on the following pages.



Resilience Frontiers for Weather and Climate Forecasts

The ability to skillfully predict weather and climate conditions from days to seasons is one of society's most significant scientific achievements. Forecasts have saved lives, protected property, and informed risk management across nearly every sector worldwide. Yet, despite these benefits, large portions of the global population either lack access to this information, choose not to use it, or misinterpret it, sometimes with serious consequences. Understanding the drivers of use, non-use, and misuse remains an active area of research. At the same time, new tools emerging from generative AI offer promising opportunities to advance both the technical aspects of forecasting and the human dimensions of information use, while also introducing new and complex challenges and risks.

Potential Questions to Explore:

- What are the frontiers of weather and climate forecasting for advancing resilience objectives?
- How can AI play a role in making weather and climate information more accurate, usable, and equitable?

Working Group Member Affiliations:

University of Arizona

- Agricultural Resource Economics
- Arizona Institute for Resilience
- Department of Environmental Science
- School of Health Professions
- School of Natural Resources and the Environment

Non-University of Arizona

- Mercy Corps

Collaborative and Context-Specific Research for Climate Adaptation

This workgroup will explore the societal impacts of climate adaptation measures and strategies in different communities. A component of this will be to examine how different types of research partnerships (transdisciplinary, university-university, south-south, community-engaged, "citizen"-science, etc.) have been used to address climate adaptation questions across contexts and cultures. We will look at the benefits and tradeoffs of various climate adaptation and research partnership measures and strategies to drive equitable and resilient futures.

Potential Questions to Explore:

- Are implemented climate adaptation projects really having an impact? What kind of impact and for whom?
- How effectively do different types of partnerships allow for equitable and context-sensitive research?
- What types of power relationships need to be considered when engaging in different types of research partnerships?
- What factors lead to lasting partnerships?
- What types of partnerships are most resilient to funding changes?

Working Group Members and Affiliations:

University of Arizona

- Arid Lands Resource Sciences
- Arizona International
- Center for Higher Education Studies
- College of Agriculture, Life, and Environmental Sciences
- College of Medicine
- College of Nursing
- Department of Environmental Science
- Heat Resilience Initiative
- Human Rights Practice
- Indigenous Resilience Center
- Mel and Enid Zuckerman College of Public Health
- School of Anthropology
- School of Architecture
- School of Geography Development and Environment
- School of Natural Resources and the Environment
- Tumamoc Desert Laboratory

Non-University of Arizona

- TANGO International

Annex 1: General IRL Program/Project Information

Project/Program Name	Beginning– Projected End	Funder	Total Funding	Funding kept at U of A	Countries of focus	Core team members ⁴
<u>The Caribbean Cancer Research Center on Environmental and Natural Hazards (CARIB-CARES)</u>	09/2024–08/2027	United States National Institutes of Health National Cancer Institute	\$3,431,581.00	\$171,889.00	The U.S. Caribbean (Puerto Rico and the U.S. Virgin Islands)	Zack Guido – University of Arizona (IRL) Sarah Clark – University of Arizona (IRL) Ana P. Ortiz – University of Puerto Rico Comprehensive Cancer Center Noreen Michael – University of the Virgin Islands Caribbean Exploratory Research Centre Pablo Méndez-Lázaro – University of Puerto Rico Medical Science Campus Frank Muller Karger – University of South Florida LaVerne Ragster – University of the Virgin Islands Caribbean Exploratory Research Centre Leticia Nogueira – American Cancer Society Marievelisse Soto-Salgado – University of Puerto Rico Comprehensive Cancer Center Nancy Cardona-Cordero – University of Puerto Rico Comprehensive Cancer Center Tracy Crane – University of Miami Bridgette Troche – University of Puerto Rico Medical Science Campus Claudia Boneu – University of Puerto Rico Medical Science Campus Diana Claxton – University of the Virgin Islands Caribbean Exploratory Research Centre Erick Suárez – University of Puerto Rico Comprehensive Cancer Center Leidi Garabito – University of Puerto Rico Comprehensive Cancer Center Lenulisy Rosado – University of Puerto Rico Comprehensive Cancer Center Melanie Diaz – University of Puerto Rico Medical Science Campus Polaris Torres – University of Puerto Rico Comprehensive Cancer Center Carlos Santos-Burgoa – George Washington University Erole McLean Hobdy – University of the Virgin Islands Patricia Chardón – Caribbean Coastal Ocean Observing System James Shultz – University of Miami Maria Cristy – American Cancer Society
Quantifying Critical Fuel Thresholds	2024–2026	USDA Forest Service, Rocky Mountain Research Station	\$210,026.00	\$210,026.00	United States	Stefanie Herrmann – University of Arizona (IRL and SNRE) Matthew Reeves – US Forest Service Rocky Mountain Research Station William K. Smith – University of Arizona (SNRE)
Mapping Biocrust Community Composition and Functional Diversity Across Global Drylands	03/2024–03/2027	NASA Earth Science Division, Earth Surface Mineral and Dust Source Investigation	\$559,338.00	\$559,338.00	Global	Stefanie Herrmann – University of Arizona (IRL and SNRE) William K. Smith – University of Arizona (SNRE) Sasha Reed – US Geological Survey Miguel Villarreal – US Geological Survey
Are Small Scale Farmers Losing Confidence in Weather Forecasts in Tanzania?	2025–2026	Internal Funding	N/A	N/A	Tanzania	Erica Goto, – University of Arizona (IRL) Zack Guido – University of Arizona (IRL) Stefanie Herrmann – University of Arizona (IRL and SNRE) Birtukan Asmare – University of Arizona (IRL) Sarah Clark – University of Arizona (IRL)

⁴ The order in which Core Team members appears does NOT relate to their level of contribution. For the purposes of this report, we list the IRL team members first (in blue) and then the remaining team members alphabetically. Full affiliations for IRL team members are given on page 3 of this report.

Project/Program Name	Beginning– Projected End	Funder	Total Funding	Funding kept at U of A	Countries of focus	Core team members ⁷
<u>Climate Adaptation Research Program</u>	10/2023–09/2028	United States Agency for International Development	\$10,338,213.00	\$4,110,014.00	Potential scope of countries across full project (not all relevant to FY 23): Angola, Algeria, Burkina Faso, Cameroon, Cape Verde, Chad, Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, São Tomé and Príncipe, Senegal, South Africa, Tanzania, Uganda, Zimbabwe, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Uruguay, Anguilla, Antigua and Barbuda, Barbados, The Bahamas, Belize, British Virgin Islands, Cayman Islands, Dominica, Dominican Republic, Grenada, Jamaica, Monserrat, Saint Lucia, St. Kitts & Nevis, St. Vincent & the Grenadines, Turks and Caicos, Trinidad and Tobago, Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, New Zealand, Papua New Guinea, Tokelau, Tonga, Tuvalu, Vanuatu, Samoa, Solomon Islands, Western Samoa	Corrie Hannah – University of Arizona (IRL) Julia Davies – University of Arizona (IRL) Sonia Delphin-Perez – University of Arizona (IRL) Erica Goto – University of Arizona (IRL) Tim Finan – University of Arizona, Bureau for Applied Research in Anthropology Stellenbosch University Centre for Collaboration in Africa PERIPERI-U Network Consejo Superior Universitario Centroamericano Auckland University of Technology São Paulo Research Foundation (FAPESP)
<u>Enhancing Climate Resilience in the Caribbean through the Improvement of Caribbean Climate Outlook Forums (CariCOF) Project</u>	05/2024–09/2024	Caribbean Institute for Meteorology and Hydrology (CIMH)	\$67,990.00	\$44,092.00	Caribbean countries: Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Cayman Islands, Cuba, Curacao, Dominica, Dominican Rep, Grenada, Guyana, Haiti, Jamaica, Martinique, Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Maarten, St. Vincent & the Grenadines, Trinidad & Tobago, Turks and Caicos, Suriname	Erica Goto – University of Arizona (IRL) Zack Guido – University of Arizona (IRL) Sarah Clark – University of Arizona (IRL)
<u>Enhancing Evidence for Humanitarian Action in the Face of Climate Change</u>	10/2022–09/2025	USAID Bureau of Humanitarian Assistance	\$999,977.00	\$824,586.00	Kenya, Bangladesh	Zack Guido – University of Arizona (IRL) Corrie Hannah – University of Arizona (IRL) Erica Goto – University of Arizona (IRL) Tim Finan – University of Arizona, Bureau for Applied Research in Anthropology Alex Braithwaite – University of Arizona, School of Government and Public Policy Jeff Michler – University of Arizona, Agricultural & Resource Economics Anna Josephson – University of Arizona, Agricultural & Resource Economics Beth Tellman – University of Arizona, School of Geography, Development, and Environment Greg Collins – University of Arizona, Arizona Institute for Resilience Prashanti Sharma – University of Arizona, School of Geography, Development, and Environment Rohit Mukherjee – University of Arizona, School of Geography, Development, and Environment Diana Githu – University of Arizona, School of Natural Resources and the Environment Tim Frankenberger – TANGO International Karyn Fox – TANGO International
<u>Healing forests: Mapping biodiversity and multispecies relations in northeast India</u>	11/2023–11/2025	Social Sciences and Humanities Research Council	\$54,620.97 ⁵	0	India	Erica Goto – University of Arizona (IRL) Sarah Clark – University of Arizona (IRL) ann-elise Lewallen – University of Victoria, Pacific and Asian Studies Jane Warjri – Independent Researcher, India Pulljohn Wañiniang – Research assistant in India Indigo Underwood – University of Victoria, Geography Harshit Khatwani – University of Arizona, Journalism, Global Studies, & Political Science
<u>Humanitarian Assistance Technical Support</u>	01/2020–12/2024	United States Agency for International Development	\$6,846,028.00	\$5,289,602.00	South Africa, Tanzania, Uganda, Kenya, Ethiopia, Algeria, Cameroon, Senegal, Ghana, Mozambique, Madagascar, Nigeria, Burkina Faso	Corrie Hannah – University of Arizona (IRL) Julia Davies – University of Arizona (IRL) Tim Finan – University of Arizona, Bureau for Applied Research in Anthropology Nico Elema – Stellenbosch University, Centre for Collaboration in Africa Alberto Franciolo – PERIPERI U and Stellenbosch University Eunison Mugamu – PERIPERI U and Stellenbosch University Sezin Tokar – USAID Focus Area, Hydrometeorological Hazards Laura Meissner – USAID Focus Area, Economic Recovery & Market Systems Rhonda Stewart – USAID Focus Area, Humanitarian Coordination and Information Management

⁵ Grant received as \$74,984.00 Canadian Dollars