

# Extreme Events Institute

## Research Programs

### EEl and the UNISDR “ARISE”



#### Research Lead: Dr. Richard Olson

ARISE, the UNISDR Private Sector Alliance for Disaster Resilient Societies, is a network of private sector entities, whose members commit to align with the United Nations Sendai Framework for Disaster Risk Reduction 2015-2030, with the overall goal to create disaster resilient societies. EEl's role with ARISE is to help create and/or strengthen disaster risk management (DRM) courses and modules in (a) university-level curricula, particularly at the M.A./M.S./M.B.A. levels, and (b) training programs for small and medium enterprises (SMEs).

### Florida Public Hurricane Loss Model (FPHLM)



#### Research Lead: Dr. Shahid Hamid

The Florida Public Hurricane Loss Model (FPHLM) is the state's only certified and transparent method of determining annual expected insured and probable maximum losses (PML) from hurricanes, which is crucial in helping the State of Florida set windstorm insurance rates. In the coming year with the FPHLM, Florida will be the first state to combine wind, storm surge, and flood risks in a single public model capable of assessing PML. The model also allows for “stress tests” of insurance companies and to quantifying the economic benefits of hurricane mitigation.

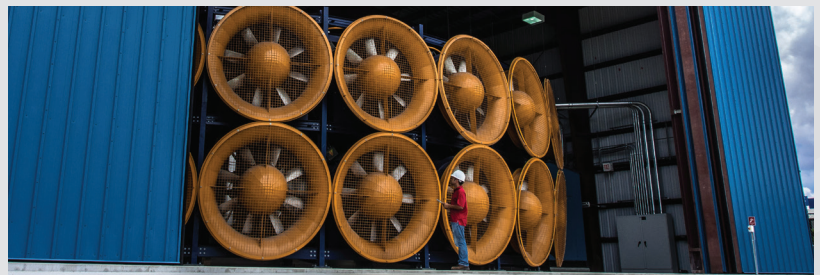
### The EEl Disaster Resilience in the Americas Program (DRCAP)



#### Research Lead: Dr. Juan Pablo Sarmiento

In September 2016 the United States Agency for International Development, Office of U.S. Foreign Disaster Assistance (USAID/OFDA) awarded a three-year Cooperative Agreement to FIU for the Disaster Resilience in the Americas Program (DRCAP). The program is helping advance disaster risk reduction (DRR) by addressing existing risks in Latin America and the Caribbean (LAC) and by confronting the drivers of new risk, in addition to developing capabilities and mechanisms for increasing resilience.

### Wall of Wind™ (WOW)



#### Research Lead: Dr. Arindam Gan Chowdhury

The FIU Wall of Wind™ (WOW) is the largest and most powerful university research facility of its kind and is capable of simulating a Category 5 hurricane. In October 2015, the U.S. National Science Foundation (NSF) designated the WOW as one of the nation's seven major “Experimental Facilities” under the Natural Hazards Engineering Research Infrastructure (NHERI) program. The WOW is now playing a key role improving the understanding of wind effects on buildings and civil infrastructure and helping prevent high wind events from becoming community disasters.

### Storm Surge Modeling



#### Research Lead: Dr. Keqi Zhang

Storm surges, large waves, and freshwater flooding are the major causes of human and property losses from hurricanes. Responding to this risk, EEl researchers have developed the Coastal and Estuarine Storm Tide (CEST) and the Fully Adaptive Storm Tide (FAST) models for simulating storm surge flooding. FIU's research in partnership with the National Hurricane Center and other federal agencies is being used to enhance coastal inundation mapping for future domestic and international hurricane forecasts.



## The Solution

FIU's Extreme Events Institute is programmatically built around an equation:

$EmR/DR/CatR = H + Ex \times V$ ,  
where the risk (R) of an emergency (Em), a disaster (D), or a catastrophe (Cat) is a function of an area's or community's hazard (H) plus its human, economic, infrastructure, and environmental asset exposures (Ex) to those hazards — but crucially, the susceptibilities to harm or vulnerabilities (V) of those exposures.

“Either we  
reduce risk,  
or risk will  
reduce us.”

## MISSION

The Extreme Event Institute's (EEI) mission is multi-hazard research synergy across disciplines to reduce human and economic losses from disasters, and to help sustain FIU's Carnegie "Research 1" status.

By their very nature, extreme events cross traditional academic boundaries and require trans-disciplinary research and knowledge application. EEI programs include faculty and researchers from the social and behavioral sciences, engineering, computer science, earth and atmospheric sciences, business, public health, public administration, and management.