

January 12, 2013

Expression of Interest: IRDR Center of Excellence

Submitted by Dr. Susan L. Cutter

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Name: IRDR Center of Excellence in Vulnerability and Resilience Metrics

Organization: The Hazards & Vulnerability Research Institute (HVRI) at the University of South Carolina is requesting this specialized ICoE to support the data and integrated research program on vulnerability and resilience. HVRI is an institute within the College of Arts and Sciences at the University of South Carolina. The Hazards & Vulnerability Research Institute is an interdisciplinary research and graduate and undergraduate training center focused on the development of theory, data, metrics, methods, applications, and spatial analytical models for understanding the emergent field of hazard vulnerability science. In addition to basic research, the Institute facilitates local, state, and federal government efforts to improve emergency preparedness, planning and response and disaster resilience through its outreach activities. These activities include providing technical assistance to and translational products for the practitioner community as well as training emergency managers in GIS applications. Partnerships with federal, state, and local emergency managers will continue as an important component of the Institute's purpose and mission.

Key Personnel: HVRI is led by a Director (Dr. Susan L. Cutter) with a complement of 30 faculty, staff, and affiliated researchers who work with HVRI on various projects. The disciplines of the researchers include geography, geographic information science, remote sensing, engineering, computer science, biology, public health, business, history, journalism, psychology, and gender studies. In addition to Dr. Cutter, key full time personnel include Dr. Christopher Emrich, Research Assistant Professor, and Ms. Charlie Faucette, Administrative Assistant. The full-time personnel work collaboratively with the broader research staff to develop proposals, conduct research, and produce high quality publications in the areas of integrated research. In addition, HVRI fully or partially supports 13 doctoral students who also provide additional scientific research capacity.

Funding Sources: HVRI is funded through a combination of state funds (from the College of Arts and Sciences) and through extramural research grants. These competitive grants have been secured from the National Science Foundation, NOAA, NASA, South Carolina Emergency Management/FEMA, US Army Corps of Engineers, Department of Homeland Security, Florida Department of Health, among others.

Linkages: HVRI is an internationally recognized center which disseminates both data (such as the SHELDUS hazard event and loss database for the US), and research results to the broader international community. HVRI routinely has visiting scholars and students from all over the world who come for short-term study. HVRI researchers have also provided intensive courses on vulnerability metrics to students at the Risk Institute (University of Lisbon). For the last four years, Dr. Cutter has served as the MunichRe Foundation Chair in Social Vulnerability and provided instruction and mentoring in the MunichRe Summer Academy (sponsored by the Environment and Human Security Programme at the UN University in Bonn with funding from MunichRe). This academy provides a one-week summer intensive course on social vulnerability to an average of 20 doctoral students from all over the world, and in its

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seven year run, has developed a cadre of over 120 professionals engaged in integrated disaster research. Nationally, HVRI is linked with other hazard U.S.-based research centers (Natural Hazards Center at the University of Colorado, Boulder; Hazard Reduction and Recovery Center at Texas A&M University; Disaster Research Center at the University of Delaware) through joint projects, information exchanges, and cooperation on national panels and studies related to disasters. For example, Susan Cutter serves on the Advisory Committee for the Natural Hazards Center in Boulder, Colorado.

Professional Activities (last five years): The activities for the past five years have been focused in three broad areas of disaster research: understanding the spatial and temporal patterns of recovery along the Mississippi Gulf Coast in a quasi-FORIN type analysis; enhancement of the Social Vulnerability Index; and the development of disaster resilience metrics. Each of these endeavors involves integrated research involving multiple disciplines and more importantly stakeholders. We have been instrumental in working with federal, state, and local governments to employ the social vulnerability index, for example, as a means for assessing resource allocations for mitigation and recovery priorities. At the same time, we have worked collaboratively with other non-US research groups to develop customized versions of the social vulnerability index (e.g. Norway, Portugal), and more recently Brazil and China. HVRI has hosted scholars from Seoul National University, the Norwegian University of Science and Technology, and the United Nations University in Bonn for professional study visits. This year, we are hosting three pre-doctoral scientists for short and long term (academic year) visits. These students come from the University of Lisbon, Pontifical Catholic University of Parana, Curitiba, Brazil and Beijing Normal University, China study. Lastly, the professional activities of the HVRI have included the publication of 45 peer reviewed scientific papers (<http://webra.cas.sc.edu/hvri/education/publications.aspx>) with results made widely available. Databases on disaster losses for the United States (<http://sheldus.org>) and methodologies for constructing the social vulnerability index (<http://sovius.org>) are also widely disseminated.

Vision and Plan for Incorporating IRDR Objectives: The overall vision of the ICoE is to develop the science-based models, methods, and metrics that provide empirically-based support for disaster risk reduction policies and practices. This vision will be implemented in a number of ways. First, the ICoE will support the IRDR objectives of characterizing vulnerability through empirical measurements. Such measurements include geospatial models that link social vulnerability, hazard and exposure at a variety of spatial scales; baseline indicators of community resilience; and social vulnerability metrics that facilitate comparing places over time and across space. Examples of existing metrics include the Social Vulnerability Index (or SoVI), the Baseline Resilience Indicators for Communities (BRIC), the Integrated Hazard Assessment Tool (IHAT), the latter being a web-based multi-hazard mapping application. The ICoE plan is to expand and improve such metrics and models for use in other regions, and to work collaboratively to develop new approaches. A second IRDR objective is to reduce and curb losses through knowledge-based actions derived from sound understanding of the patterns of economic and human losses. Here the ICoE can provide leadership in improving sub-national hazard event and loss databases. HVRI already has developed and maintains a U.S. database, SHELDUS, and the experiences and knowledge in the construction, implementation, and maintenance of that database can serve as a prototype for other nations. Finally, our vision is to continue to build capacity by training the next generation of disaster scientists, objectives of both IRDR and HVRI. The plan is to encourage students (pre- and post-doctoral) and scientists for short term study visits.

Given the resource constraints, the vision of the ICoE for Vulnerability and Resilience Metrics will be to provide some baseline support for three of the working groups of IRDR—DATA, AIRDR, and FORIN. This support would consist of science inputs into DATA and AIRDR such as the development of data catalogs,

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experimentation with peril classes and their comparability across databases, development of a bibliographic database on integrated research. In the case of FORIN, the ICoE could support the development of an inventory of FORIN studies or a small meeting of key researchers. The ICoE is not designed to completely support the working groups in their activities, but rather to help facilitate the science behind the working group efforts.

Funding and Other Support: The Dean of the College of Arts & Sciences will provide a recurring commitment of \$75,000 annually to support the ICoE should it be so designated by IRDR. These funds will be used to directly support the mission and objectives of IRDR generally, and more specifically to support the research and networking of the IRDR working groups—DATA, FORIN, and AIRDR. In this respect, the ICoE can also serve as a mini program office for these working groups. Additional funds to support the working groups might be procured through project-specific grants and funding.

Implementation: The ICoE on Vulnerability and Resilience Metrics will be headed by a Director (Dr. Susan L. Cutter). It will have a 5-7 person international advisory board to be established in consultation with the IRDR Scientific Committee and the University of South Carolina. At least two of the members of the advisory board will be from the United States and represent other large disaster centers; and at least one additional member will be from the IRDR Science Committee. In this way, the advisory committee will be linked to both domestic and international research efforts as well funding sources. If approved (before May 15, 2013) the ICoE can be fully supported, staffed, and operational immediately.

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28 January 2013

Dear Dr. Cutter,

The IRDR Science Committee has reviewed your proposal to establish an IRDR International Centre of Excellence (ICoE) on Vulnerability and Resilience Metrics. It is my pleasure to inform you that your proposal has been approved. The IRDR Science Committee and International Programme Office look forward to working closely with you to build and promote the ICoE and IRDR activities for the benefit of all involved.

Please keep us informed when the establishment moves forward.

Sincerely,



Jane E. Rovins
Executive Director

Integrated Research on Disaster Risk International Programme Office, on behalf of the
Integrated Research on Disaster Risk Scientific Committee