

# Assessment of Integrated Research on Disaster Risk (AIRDR)

November 2013  
Sanya, China



UNIVERSITY OF  
SOUTH CAROLINA



# Progress

- Completed preliminary assessment of integrated research
- IPO submitted proposals for funding
- Will complete and submit article in next three months



# Reviewed Journal Outlets

Reviewed: 35

Title	Comment
Applied Geography	
CiiNii Journal / Journal of Natural Disaster Science	
Climatic Change	
Disaster Prevention and Management	
Disasters	
Environment and Planning B: Planning and Design	limited disasters
Environment and Planning C: Government and Policy	limited disasters
Environment: Science and Policy	
Environmental Hazards	
Global Environmental Change	
Global Environmental Change Part B: Environmental	Same as Environmental Hazards
International Journal of Disaster Risk Reduction	
International Journal of Disaster Risk Science	
International Journal of Mass Emergencies and Disasters	
Journal of Climate	
Journal of Coastal Research	
Journal of Integrated Disaster Risk Management, The	
Journal of Urban Affairs	not enough disasters
Mitigation and adaptation strategies for global change	
Natural Hazards	
Natural Hazards and Earth System Sciences (NHESS)	
Natural Hazards Review	
Population and Environment	
Progress in Human Geography	
Qualitative Research	limited disasters
Risk Analysis	
Risk Management	
Social Science Journal, The	limited disasters
Social Science Quarterly	limited disasters
Social Science Research	limited disasters
Sustainability	
Urban Affairs Quarterly (International Journal of Urban and	not enough disasters
Urban Affairs Review	not enough disasters
Urban Studies	not enough disasters
Weather, Climate and Society	

Not Reviewed: 29

Ambio
Bulletin of the American Meteorological Society
Coastal Management
Climate Research
Current Opinion in Environmental Sustainability
Disaster Advances
Environment International (A Journal of Environmental
Earthquake Spectra
Human and Ecological Risk Assessment: An International
International Journal of Disaster Resilience in the Built
International Journal of Emergency Management
International Journal of Health Geographics
International Social Science Journal
Jamba
Journal of Contingencies and Crisis Management
Journal of Emergency Management
Journal of Environmental Planning and Management
Journal of Homeland Security and Emergency Management
Journal of Risk Research
Land Tenure Journal
Nature
Nature Climate Change
Physical Geography
Proceedings of the National Academy of Sciences
Risk Abstracts
Science
Society & Natural Resources
Water, Science, Technology
Water Resources Research



# Methodology

## 1. Content Analysis

- Peer-reviewed academic journals (reviewed 35 out of 64)
- 1999 to present
- English language
- Retrieved abstracts and full text for all pubs (Endnote)
- Exclusion of war, technological hazards, physics of climate change, and HIV/AIDS

Collected references: 878



# Methodology

## 2. Identification of Seminal Papers outside of reviewed journals

- 58 keyword searches on *Web of Science* (WOS)

Sample keywords:

“disaster and adaptation ”

“disaster and engineering”

“disaster and vulnerability”

- Resulted in 78 seminal publications (1993-2011) of which only 9 seminal works were identified during Step #1
- Added to EndNote library

Total: 956 references



# Methodology

3. Classification of 956 references based on:
  - Study Area, Discipline
  - Number of Authors
  - Authors' Country of Publication
  - Authors' affiliation (i.e., academic, governmental, etc.)
  - Keywords
  - Use of EndNote and Nvivo 10 for analytical purposes



# RESULTS OF CONTENT ANALYSIS







# Classification: Study Area

- 757 case studies (representing 96 different countries)
- 161 conceptual studies
- 60 global studies
- 29 regional studies

Region	Count
Europe	14
Caribbean	5
South/Central America	4
Asia	3
Africa	3
(SIDS	2)

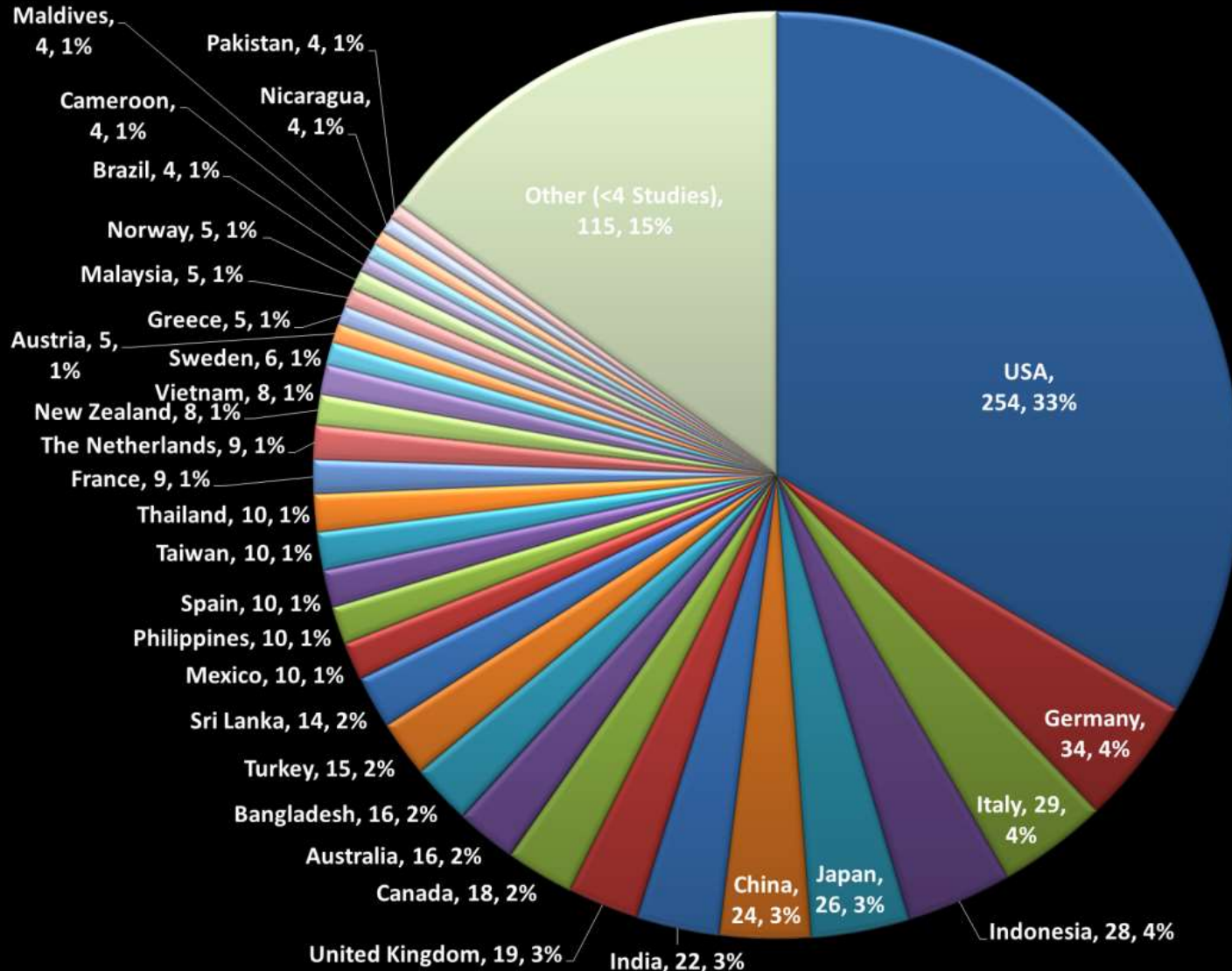


# Study Areas (757 publications)

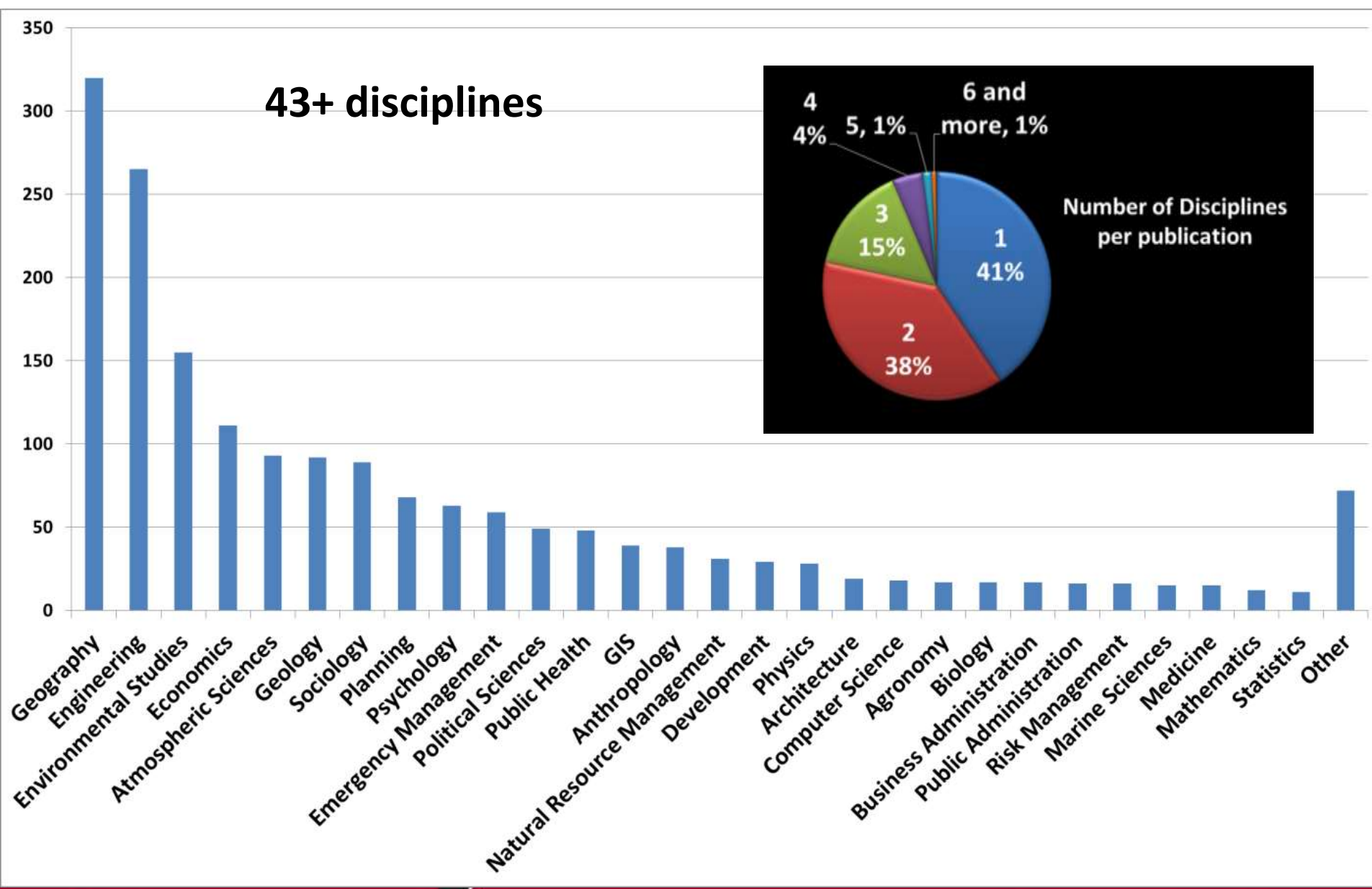
Region	Study Coverage (out 757 studies)	Spatial Coverage
North America	37%	100%
Asia	25%	59%
Europe	21%	50%
Sub-Saharan Africa	4%	33%
Middle East, North Africa and Greater Arabia	4%	39%
Australia and Oceania	4%	47%
Central America and the Caribbean	3%	33%
South America	2%	42%



# Study Area by Country



# Authorship: Discipline Diversity



# Authorship: Authors' Countries

Region	Study Coverage (out 2010 authors)	Spatial Coverage
North America	41%	100%
Europe	34%	54%
Asia	13%	59%
Australia and Oceania	6%	27%
Middle East, North Africa and Greater Arabia	3%	39%
Sub-Saharan Africa	1.5%	27%
South America	0.7%	33%
Central America and the Caribbean	0.6%	29%



# Partnerships

<b>Collaborations (out of 956 publications)</b>	<b>Count</b>	<b>Percentage</b>
<b>Purely academic</b>	<b>543</b>	<b>57%</b>
<b>Purely governmental organizations</b>	<b>75</b>	<b>8%</b>
<b>Purely private companies</b>	<b>14</b>	<b>2%</b>
<b>Purely non-profit organizations</b>	<b>10</b>	<b>1%</b>
<b>Academic collaborations w/ governmental, non-profit or private entities</b>	<b>288</b>	<b>30%</b>
<b>Governmental collaborations w/ non-profit or private entities</b>	<b>18</b>	<b>2%</b>



# Studied Disasters

Event	Counts
2005 Hurricane Katrina	29
2004 Indian Ocean Tsunami	20
2005 Hurricane Rita	6
2008 Sichuan Earthquake	5
1998 Hurricane Mitch	4
2010 Haiti Earthquake	3
2011 Tohoku Earthquake	3
1995 Kobe Earthquake	3



# Studied Hazard Types

Hazard Type	Count
Floods	187
Earthquake	119
Tropical Cyclone	91
Tsunami	48
Landslide (incl. avalanche, rockfall, etc.)	45
Drought	35
Volcano	28
Sea-level rise	24
Storm Surge	19
Wildfire	16
Flash floods	10
Tornado	10
All-hazards	5





# Key Topics

- Risk perception and communication
- Projected impacts of Climate change
- Social vulnerability
- Adaptation and adaptive capacity
- Risk assessments
- Decision-making and heuristics (organisational and individual)
- Loss estimation
- Coastal and urban issues



# Key Methods

- Surveys, questionnaires, and interviews
- Extended literature reviews
- Scenarios and forecasts/projections using GIS, remote sensing, and engineering techniques for hazard, risk, and (climate) impact assessments
- Indexing and indicator techniques
- Quantitative methods (e.g., regressions, probabilistic models, etc.)



# Findings

- Main study areas: North America and Europe
- Authorship from Latin America is very low (even lower than Sub-Saharan Africa)
- Regions requiring additional focus
  - Sub-Saharan Africa
  - Oceania, Caribbean, and SIDS
  - Latin America



# Findings (cont.)

- Nearly  $\frac{3}{4}$  of publications have 3 or fewer authors
- Authors with 3 or more distinctly different backgrounds are rare
- Sole academic authorships dominates although there are many collaborations



# Findings (cont.)

- Qualitative studies dominate
- Definition of risk and application of risk assessments varies largely (e.g., vulnerability as exposure, social vulnerability, impacts)
- Recovery frequently interpreted as reconstruction
- Significant conceptual advancements in fields of vulnerability, adaptation and resilience



# Conceptual Gaps

- International comparisons – multi-country studies are rare
- Longitudinal studies
  - Lessons learned from past events (not just one event)
  - Changes over time (e.g., land use, demographics, etc.)
- Lack of evaluating and/or validating methodologies and frameworks

# Conceptual Gaps (cont.)

- Ethical and justice issues
- Major disasters in developing countries (e.g., Haiti earthquake)
- Root causes of vulnerability (e.g. colonialism, segregation, corruption, etc.)
- Data and model quality
- Meta-analyses
- Climate change attribution

# Methodology

## 4. Bibliographic Network Visualization

- Not based on previously collected references
- New Networks generated through Web of Science
- Visualization of networks through
  - HistCITE, developed by Eugene Garfield
  - VOSviewer, developed by Nees Jan van Eck and Ludo Waltmann

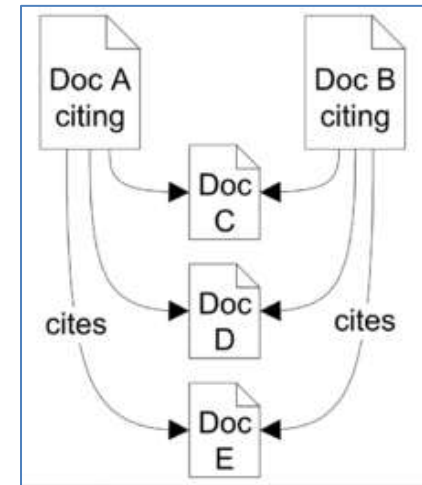
Total Web of Science/Network references: 10,600



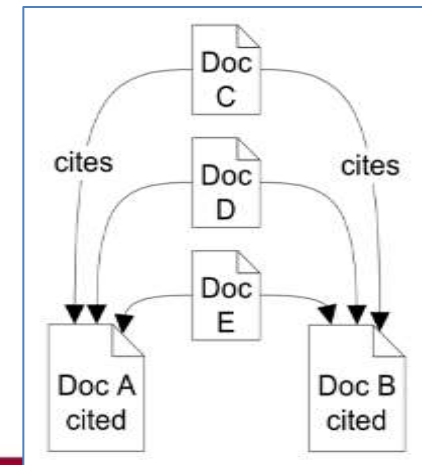


# Bibliographic Networks

- Bibliographic Coupling
  - Looks at outgoing citations
  - Indicator of “closeness” of publications
  - Retrospective, does not change over time
- Co-Citation
  - Looks at incoming citations
  - Papers are cited together
  - Indicator of semantic relationship
  - Forward-looking, can change over time and indicate change/evolution over time



Gipp and Beel 2009



# RESULTS OF NETWORK VISUALIZATION









# Findings: Bibliographic Networks

- Extensive work in psychology, public health (including disaster medicine), business continuity, and tourism literature published in largely different journals
- Key organizations: Chinese National Academy of Sciences and North American universities
- Key references: American Psychiatric Association (1994), Norris (2002), Blaikie et al. (1994),
- Key publication outlets: *Natural Hazards, Disasters, Disaster Medicine and Public Health Preparedness*



## Publication in Progress

“Integrated Research on Disaster Risk:  
Is it really integrated?”

by Melanie Gall, Khai Nguyen and  
Susan L. Cutter

*International Journal of Disaster Risk Reduction*  
(potential outlet)

