

Need for Harmonization of Disaster Loss and Damage Data

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IRDR – Integrated Research on Disaster Risk

- Decadal research program co-sponsored by ICSU, ISSC, & UNISDR (2009-2019)



- Three research objectives: 1) **characterize hazards, vulnerability, risk**; 2) **understand decision-making** in complex and changing risk contexts; 3) **reduce risk and curb losses** through knowledge-based actions
- Global research network: International Centres of Excellence (ICoE), National IRDR Committees, International Programme Office (Beijing), MoU with other institutions/programs for joint activities
- Four major projects:
 - FORIN—Forensic Investigations of Disasters
 - RIA—Risk Interpretation and Action
 - AIRDR—Assessment of Integrated Research on Disaster Risk
 - DATA—Disaster Loss Data and Impact Assessment

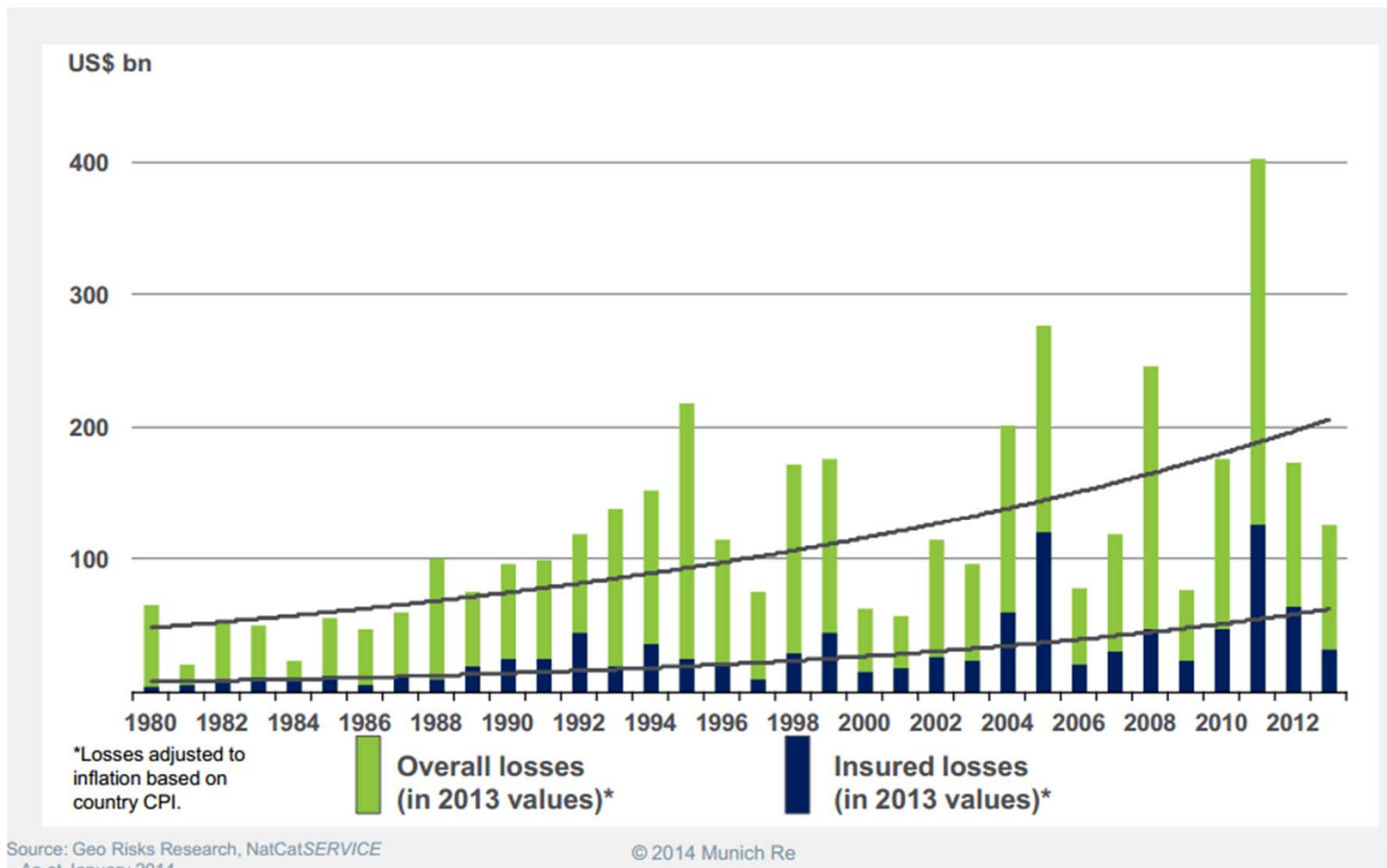


Disaster losses are increasing....

Global Natural Catastrophe Update

Loss Events Worldwide 1980 – 2013

Overall and insured losses

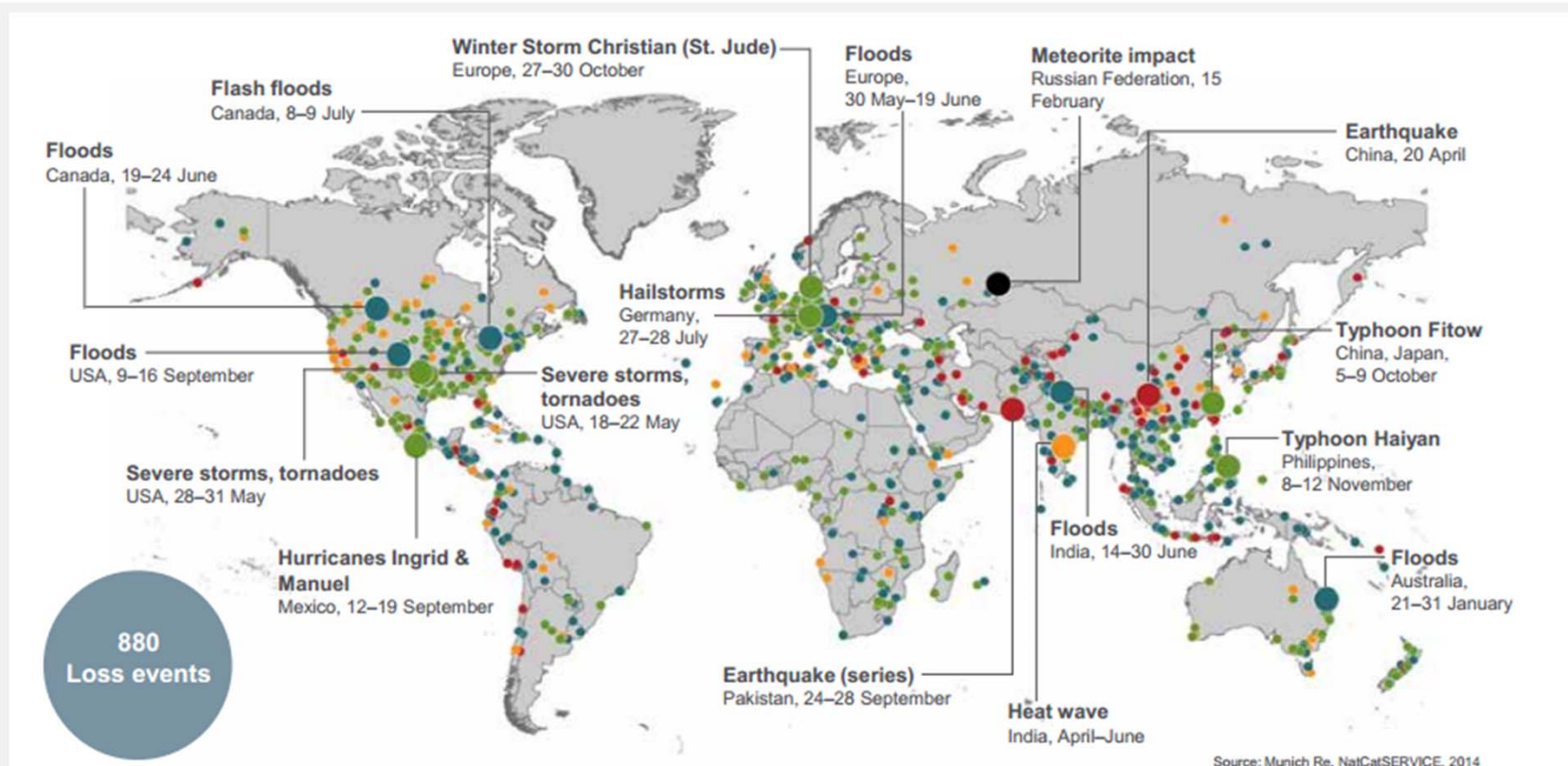


Losses not evenly distributed geographically, or by hazard type

Global Natural Catastrophe Update

Loss Events Worldwide 2013

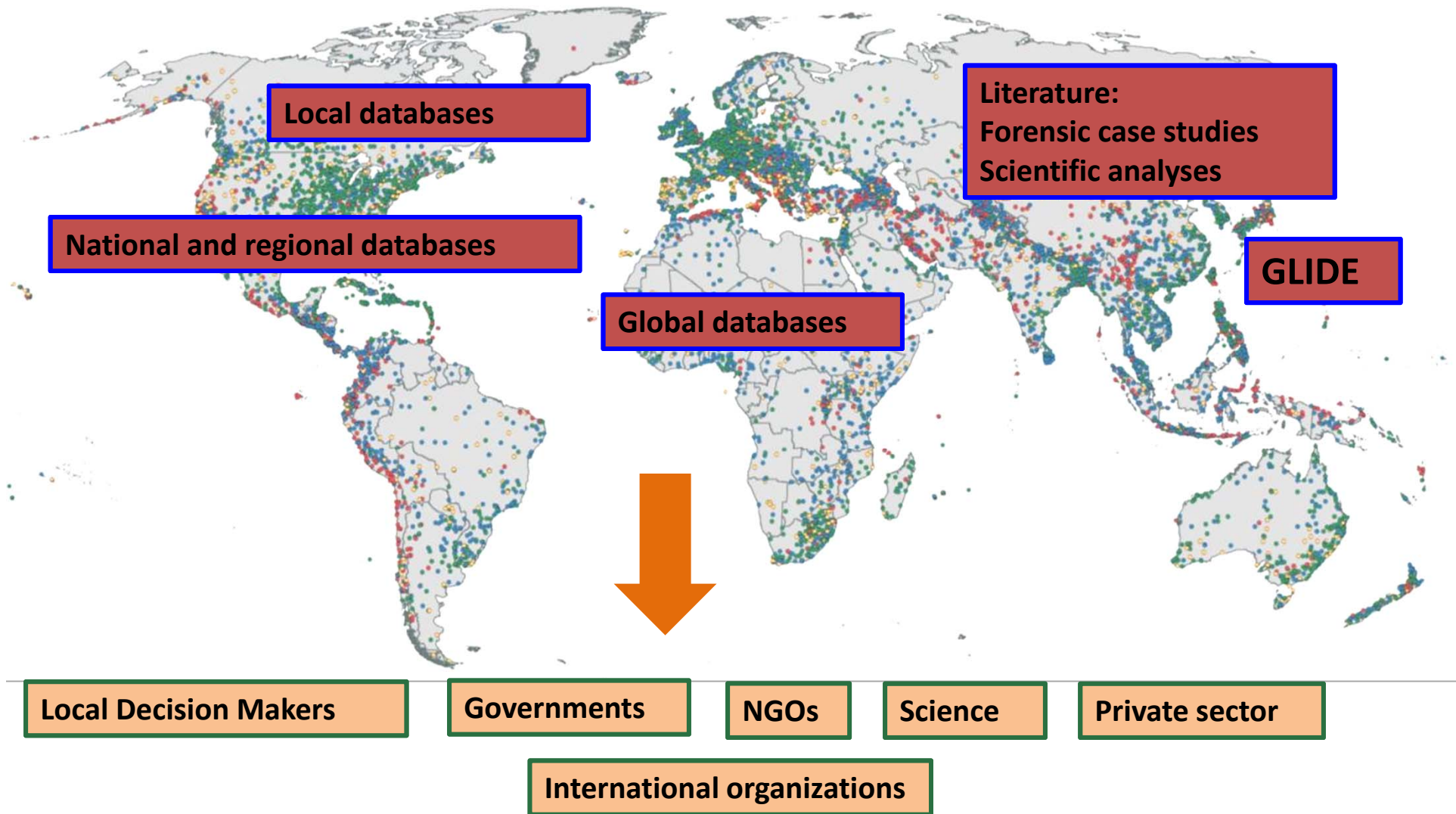
Geographical overview



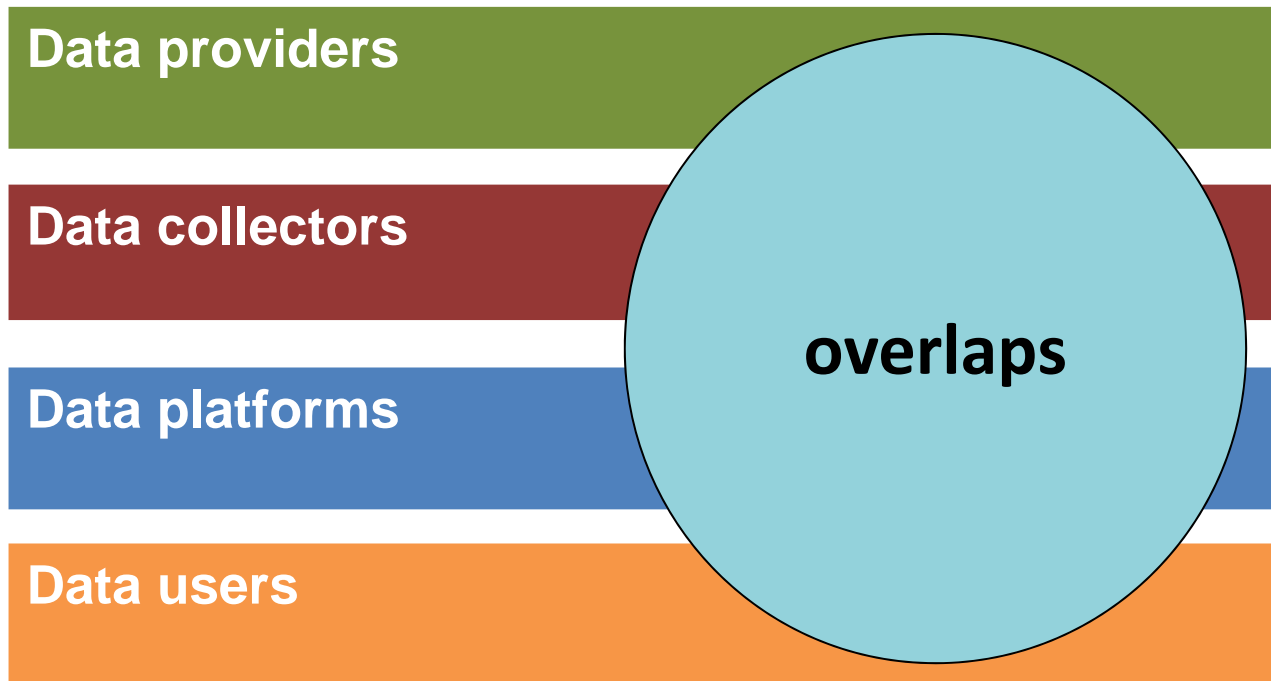
Source: Munich Re, NatCatSERVICE, 2014

- Natural catastrophes
- Selection of significant loss events
- Geophysical events (earthquake, tsunami, volcanic activity)
- Meteorological events (storm)
- Hydrological events (flood, mass movement)
- Climatological events (extreme temperature, drought, wildfire)
- Extraterrestrial events (Meteorite impact)

Data landscape is complex.....



Involving many different actors



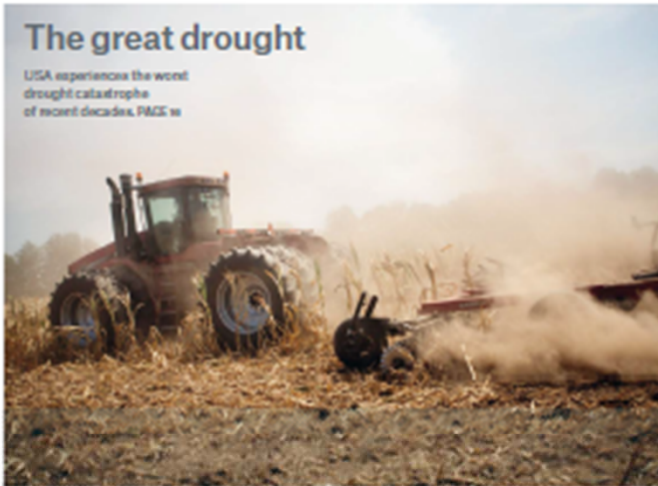
Each with their own data needs and measurement methods

TOPICS GEO

Natural catastrophes 2012
Analysis, assessments, positions
2012 issue

The great drought

USA experiences the worst
drought catastrophe
of recent decades, PMZ 11



Hurricane Sandy
Record storm surge
along US East Coast

In Focus
Russia - A land of
extremes

NatCatSERVICE
Overview of natural
catastrophes 1990-2012

GAR

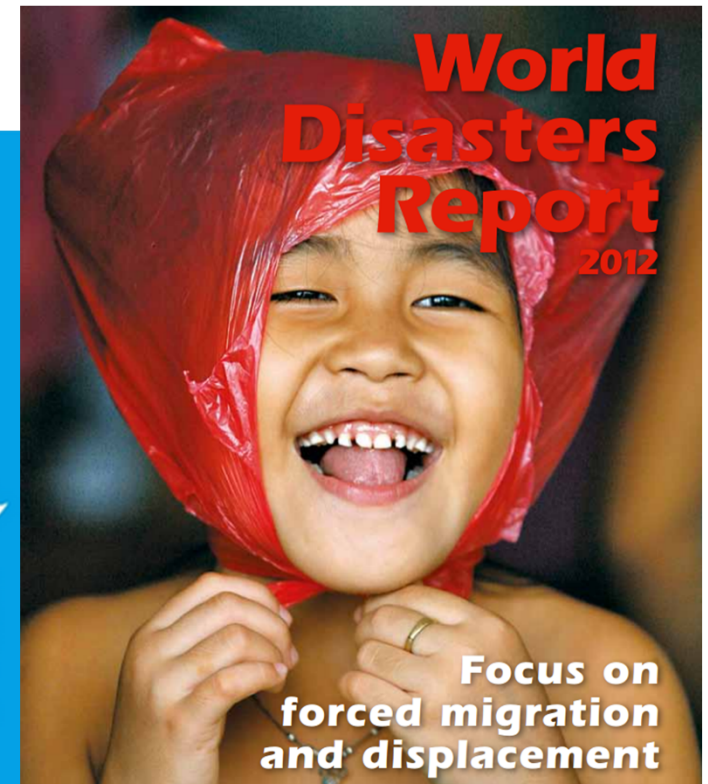
Global Assessment Report
on Disaster Risk Reduction



2013

From Shared Risk to Shared Value:
The Business Case for Disaster Risk Reduction

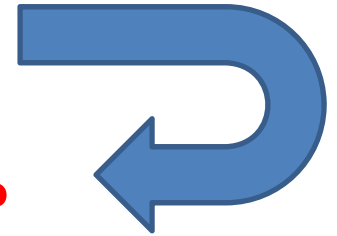
Munich RE 



Why does this matter?

- Not all losses counted the same way
- Not all hazards included
- Attribution to specific causal agents lacking
- Inability to compare losses across databases

Which database to believe?



NOAA Billion dollar weather disasters: \$148.8b

Presidential disaster declarations: \$103b

MunichRe: \$200b losses, \$105b insured losses

Swiss Re: \$47b (for insurance sector)

AIR Worldwide: \$52b (for flood damage)

Working Group on Disaster Loss Data and Impact Assessment (DATA)

- Identify quality of existing data and data needs for improving integrated disaster risk management
- Bring together loss data stakeholders to identify common issues and develop synergies
- Develop standards/protocols to minimize data uncertainty
- Define “losses” and create transparent methodologies for assessing them
- Advocate for loss data at sub-national geographies
- Educate users on database biases and data interpretation

DATA is about improving the infrastructure of disaster of loss data globally and locally

Co-Chairs:

Susan L. Cutter, University South Carolina

Daniele Ehrlich, EU Joint Research Centre

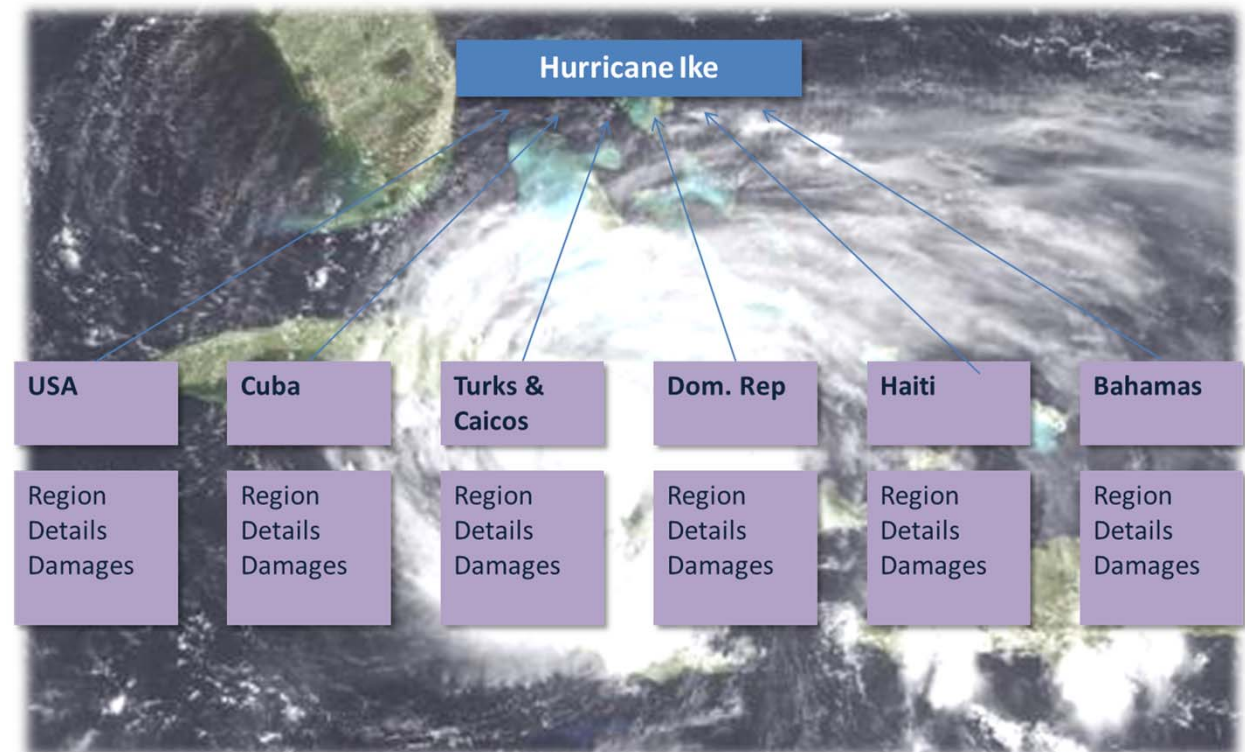
Sisi Zlatanova, Delft University

Project Members:

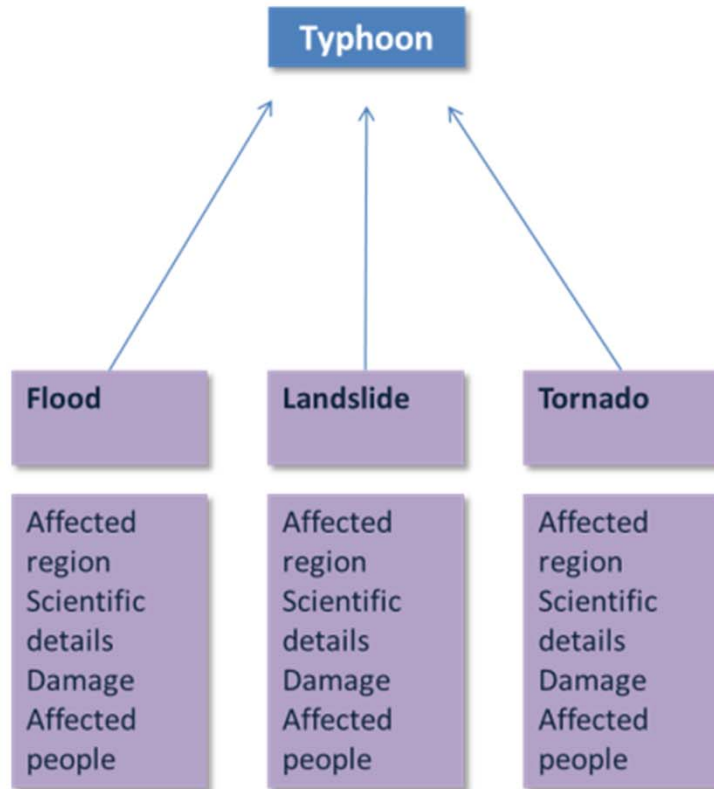
Bob Chen, CIESIN (Columbia University); **Regina Below**, CRED (University of Louvain)
Lucia Bevere, Sigma (SwissRe); **Jan Eichner**, NatCatService (MunichRe); **Julio Serje**,
DesInventar (UNISDR); **Adam Smith**, NCDC/NOAA; **Wei-Sen Li**, National S&T Center
for Disaster Reduction ; **Maria Patek**, Austrian Government; **Frederic Zanetta**, IFRC
Ricardo Zapata Marti, Eclac Cepal; **Francis Ghesquiere**, World Bank

IRDR-DATA

- Established in Oct 2012
- Identification of specific needs
 - Numbering of events system
 - Peril/hazards classification
 - Human impacts measurement
 - Methodologies for economic loss assessment
 - Sub national data base construction guidance

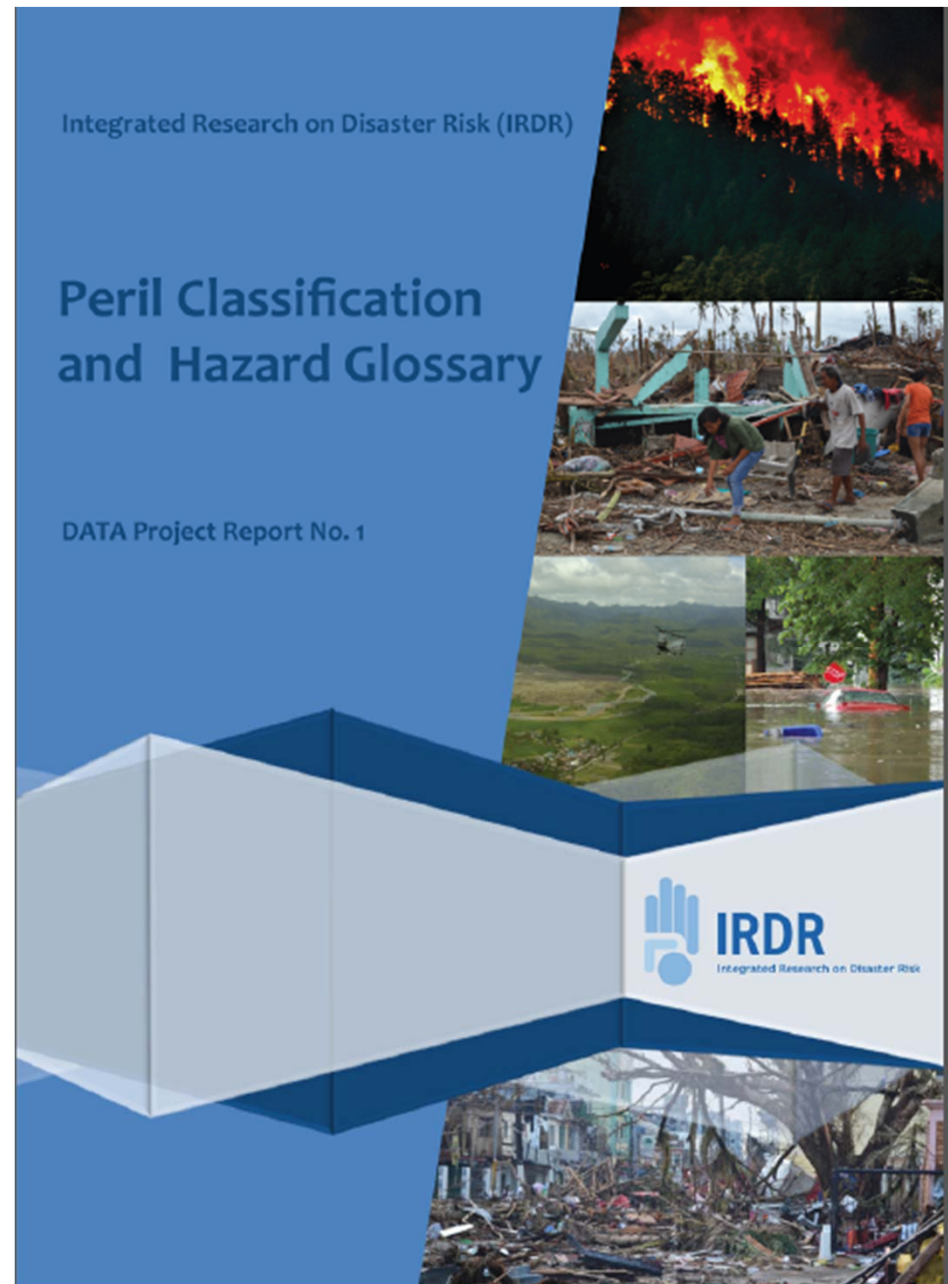


Harmonizing Peril Classification

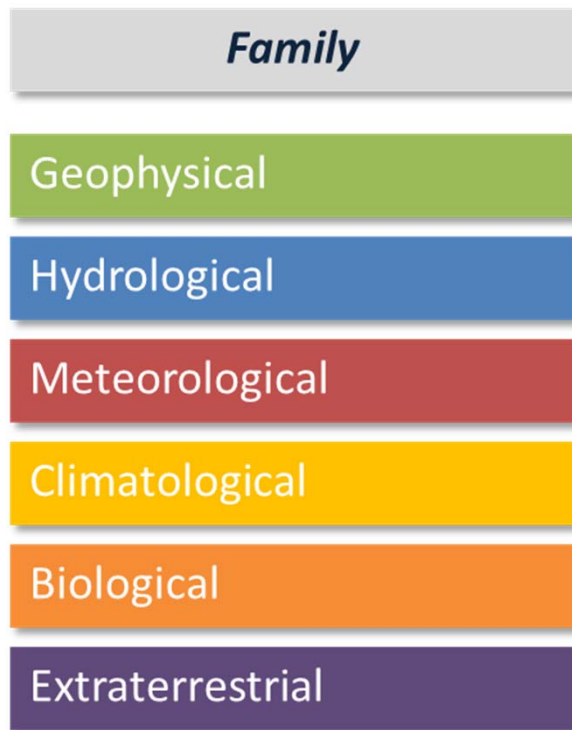


Peril classification published (March 2014)

- Guidelines on event classification
- Unified terminology for operating loss databases ONLY
- NOT a comprehensive list of perils or hazards
- Serves multiple types of databases from local to global
- Schema incorporates top-down and bottom approaches



Classification Schema: General to Specific



Family	Main Event	Peril
Geophysical	Earthquake Mass Movement Volcanic Activity	Ash Fall Fire following EQ Ground Movement Landslide following EQ Lahar Lava Flow Liquefaction Pyroclastic Flow Tsunami
Hydrological	Flood Landslide Wave Action	Avalanche: Snow, Debris Coastal Flood Coastal Erosion Debris/Mud Flow/Rockfall Expansive Soil Flash Flood Ice Jam Flood Riverine Flood Rogue Wave Seiche Sinkhole
Meteorological	Convective Storm Extratropical Storm Extreme Temperature Fog Tropical Cyclone	Cold Wave Derecho Frost/Freeze Hail Heat Wave Lightning Rain Sandstorm/Dust storm Snow/Ice Storm Surge Tornado Wind Winter Storm/Blizzard
Climatological	Drought Glacial Lake Outburst Wildfire	Forest Fire Land fire: Brush, Bush, Pasture Subsidence
Biological	Animal Incident Disease Insect Infestation	Bacterial Fungal Parasitic Prion Viral
Extraterrestrial	Impact Space Weather	Collision Energetic Particles Geomagnetic Storm Radio Disturbance Shockwave

Disaggregation

Classification Schema: Specific to General

Peril	Main Event	Family
Airburst	Earthquake	Geophysical
Ash Fall	Mass Movement	Hydrological
Avalanche: Snow, Debris	Volcanic Activity	Hydrological
Bacterial Epidemic	Flood	Meteorological
Coastal Erosion	Landslide	Meteorological
Coastal Flood	Wave Action	Climatological
Cold Wave		Climatological
Collision	Convective Storm	Biological
Debris/Mud Flow/Rock Fall	Extratropical Storm	Biological
Derecho	Extreme Temperature	Extraterrestrial
Energetic Particles	Fog	Extraterrestrial
Expansive Soil	Tropical Cyclone	
Fire following EQ	Drought	
Flash Flood	Glacial Lake Outburst	
Forest Fire	Wildfire	
Frost/Freeze	Animal Incident	
Fungal Epidemic	Disease	
Geomagnetic Storm	Insect Infestation	
Ground Movement	Impact	
Hail	Space Weather	
Heat Wave		
Ice Jam Flood		
Lahar		
Land Fire: Brush, Bush, Pasture		
Landslide following EQ		
Lava Flow		
Lightning		
Liquefaction		
Parasitic Epidemic		
Prion Epidemic		
Pyroclastic Flow		
Radio Disturbance		
Rain		
Riverine Flood		
Rogue Wave		
Sandstorm/Dust Storm		
Seiche		
Shockwave		
Sinkhole		
Snow/Ice		
Storm Surge		
Subsidence		
Tornado		
Tsunami		
Viral Epidemic		
Wind		
Winter Storm/Blizzard		

Peril
Ash Fall
Fire following EQ
Ground Movement
Landslide following EQ
Lahar
Lava Flow
Liquefaction
Pyroclastic Flow
Tsunami
Avalanche: Snow, Debris
Coastal Flood
Coastal Erosion
Debris/Mud Flow/Rockfall
Expansive Soil
Flash Flood
Ice Jam Flood
Riverine Flood
Rogue Wave
Seiche
Sinkhole
Cold Wave
Derecho
Frost/Freeze
Hail
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Lightning
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Sandstorm/Dust storm
Snow/Ice
Storm Surge
Tornado
Wind
Winter Storm/Blizzard

Forest Fire
Land fire: Brush, Bush, Pasture
Subsidence
Bacterial
Fungal
Parasitic
Prion
Viral
Collision
Energetic Particles
Geomagnetic Storm
Radio Disturbance
Shockwave

Aggregation

Glossary to Guide Classification

Term	Definition
Airburst	An explosion of a comet or meteoroid within the Earth's atmosphere without striking the ground.
Animal Incident	Human encounters with dangerous or exotic animals in both urban and rural environments.
Ash Fall	Fine (less than 4 mm in diameter) unconsolidated volcanic debris blown into the atmosphere during an eruption; can remain airborne for long periods of time and travel considerable distance from the source.
Avalanche	<p>A large mass of loosened earth material, snow, or ice that slides, flows or falls rapidly down a mountainside under the force of gravity.</p> <p>Snow Avalanche: Rapid downslope movement of a mix of snow and ice.</p> <p>Debris Avalanche: The sudden and very rapid downslope movement of unsorted mass of rock and soil. There are two general types of debris avalanches - a cold debris avalanche usually results from an unstable slope suddenly collapsing whereas a hot debris avalanche results from volcanic activity leading to slope instability and collapse.</p>
Bacterial Disease	An unusual increase in the number of incidents caused by the exposure to bacteria either through skin contact, ingestion or inhalation. Examples include salmonella, MSRA, and cholera, among others.
Biological Hazard	A hazard caused by the exposure to living organisms and their toxic substances (e.g. venom, mold) or vector-borne diseases that they may carry. Examples are venomous wildlife and insects, poisonous plants, and mosquitoes carrying disease-causing agents such as parasites, bacteria, or viruses (e.g., Malaria).
Coastal Erosion	The temporary or permanent loss of sediments or landmass in coastal margins due to the action of waves, winds, tides, or anthropogenic activities.
Climatological Hazard	A hazard caused by long-lived, meso- to macro-scale atmospheric processes ranging from intra-seasonal to multi-decadal climate variability.
Coastal Flood	Higher-than-normal water levels along the coast caused by tidal changes or thunderstorms that result in flooding which can last from days to weeks.
Cold Wave	A period of abnormally cold weather. Typically a cold wave lasts two or more days and maybe aggravated by high winds. The exact temperature criteria for what constitutes a cold wave vary by location.

Where are we now?

- Reconciling existing data bases to peril classes more difficult than expected, but being undertaken by all primary database providers (EM-DAT, Swiss Re, MunichRe, UNISDR-DesInventar, SHELDUS)—should be done by end of 2014
- Revise peril classification based on WMO, WHO, UNESCO review and implementation test
- Joint session with EU Loss Data Technical Workshop (implement peril classification; trying to establish minimum common fields for loss reporting at EU level)

Next Steps

✓ Peril/hazards classification

■ Numbering of events system

- Work with Asian Disaster Reduction Center (ADRC) to enhance GLIDE (Global Identifier number) system

■ Human impacts measurement

- Will provide conceptual framework for human impacts based on CRED/MunichRe/SwissRe white paper using simplified schema and definitions—should be done by December 2014
- Identified need to draft guidance and standardized indicators and definitions of economic losses

■ Methodologies for economic loss assessment

- Develop guidance for normalization options/procedures when displaying loss information, uncertainty in loss data

■ Sub national data base construction guidance

- IRDR DATA to take the lead in providing a methodological framework for compiling future loss databases—minimum requirements for temporal and spatial coverage, input variables based on JRC proposal
- Assist nations in building sub-national disaster loss databases

For more information contact:

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IRDR web site: <http://www.irdrinternational.org>

IRDR
Integrated Research on Disaster Risk

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The IRDR **Peril Classification and Hazard Glossary** "is a standard hazard terminology as well as peril classification for operational use in loss databases... The peril glossary offered in this document provides guidelines on event classification and a unified terminology for operating loss databases only."

Click the arrow (top left) to go to the IRDR **Peril Classification and Hazard Glossary**.

Recent News

- New Executive Director of IRDR appointed
June 20, 2014
- Big Data for International Scientific Programmes: A Statement of Recommendations and Actions
June 17, 2014
- IRDR Conference Closing Summary, Outcomes, and Way Forward
June 9, 2014
- FORBES tells IRDR Conference Audience to manage Water Scarcity as a Disaster
June 8, 2014

IRDR Publications

Integrated Research on Disaster Risk (IRDR) is a decade-long research programme co-sponsored by the International Council for Science (ICSU), the International Social Science Council (ISSC), and the United Nations International Strategy for Disaster Reduction (UNISDR). It is a global, multi-disciplinary approach to dealing with the challenges brought by natural disasters, mitigating their impacts, and improving related policy-making mechanisms.

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