Asia-Pacific
Economic Cooperation

2009/TFEP/WKSP/003

The Future Perspectives in Capacity Building by Science and Technology

Submitted by: Chinese Taipei

APEC 2009
Singapore

Workshop on the Framework of Long-Term Capacity Building for Disaster Risk Reduction in APEC
Taipei, Chinese Taipei
30 November – 1 December 2009

National Science Council

The Future Perspectives in Capacity Building by Science and Technology

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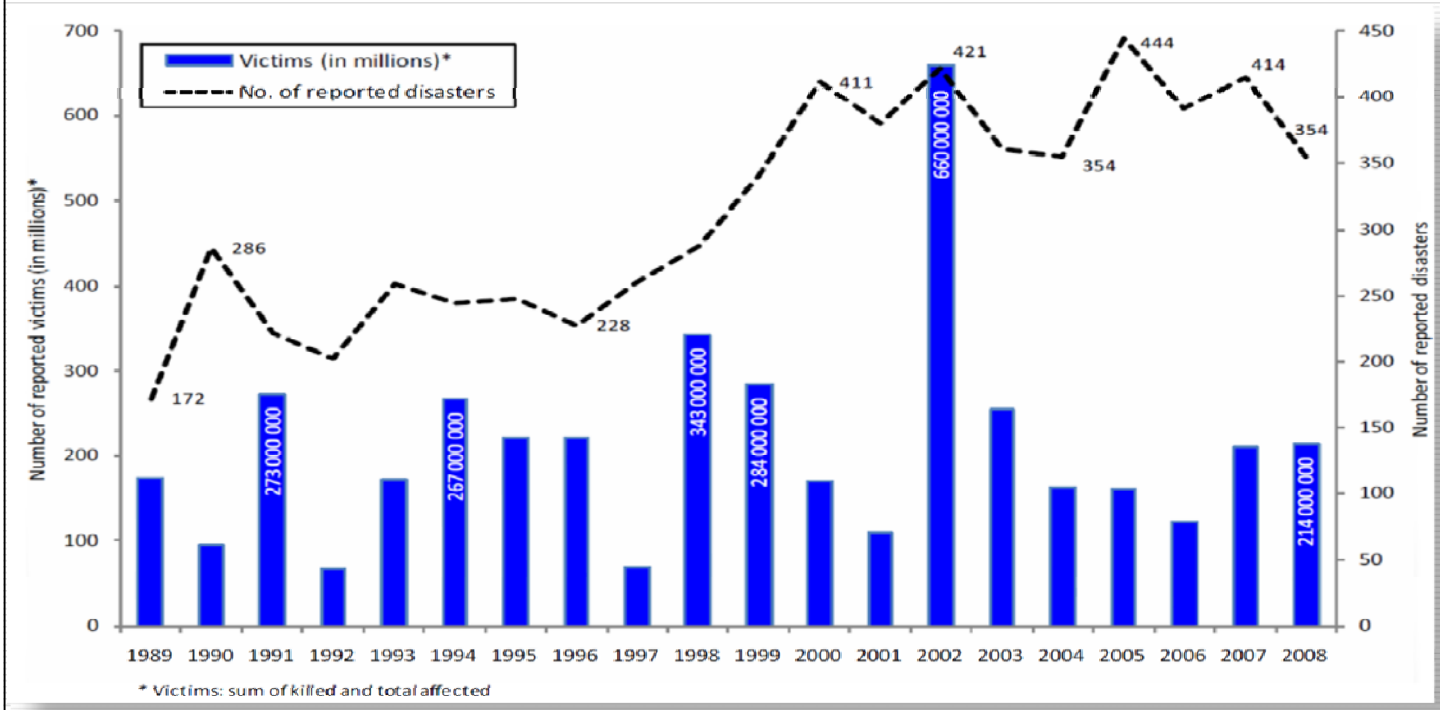
2009/11/30

Outline

- Tendency of natural disasters in APEC region
- Chinese Taipei's experience to share
- Future work
- Summary

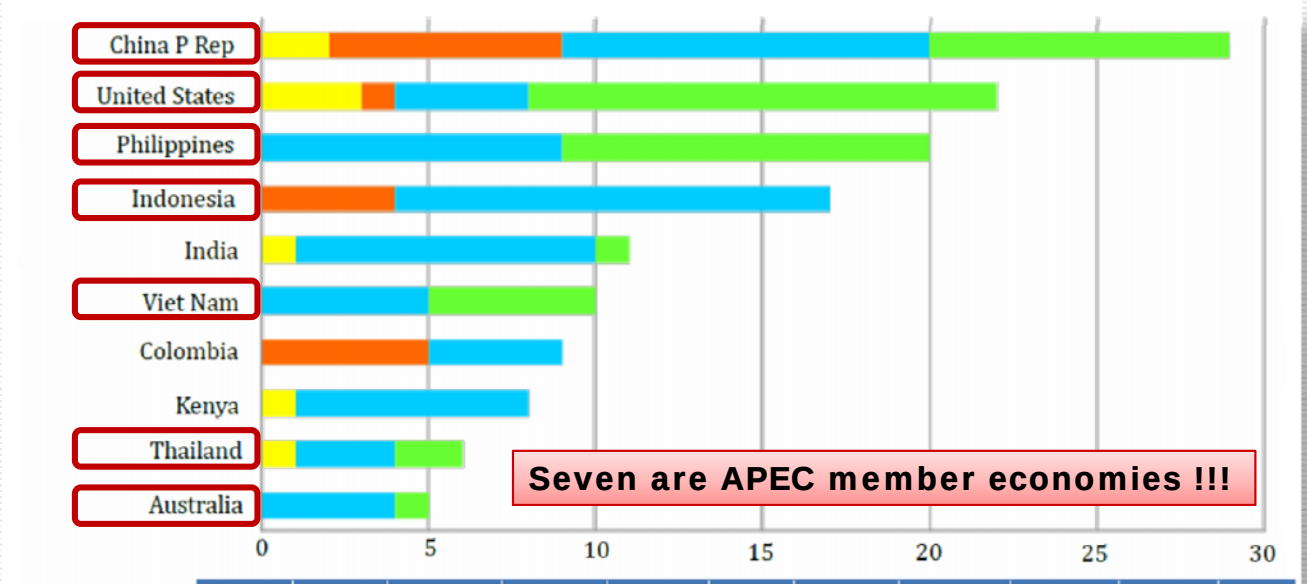
Tendency of Natural Disasters in APEC region

Global trend of natural disasters in occurrence and victims



Source: Annual Disaster Statistical Review: Numbers and Trends 2008,CRED, Brussels

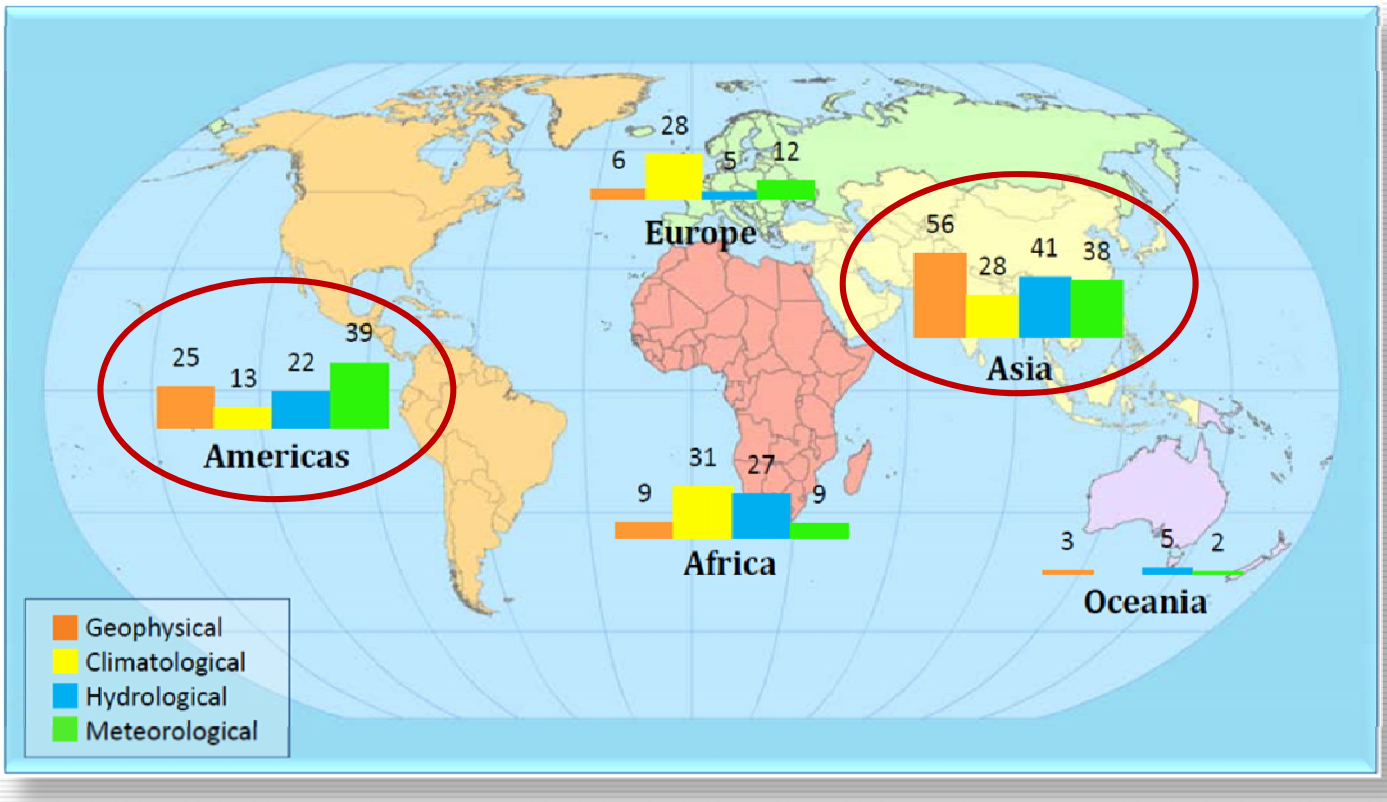
Top 10 spots by number of reported events in 2008



	China P Rep	United States	Philippines	Indonesia	India	Viet Nam	Colombia	Kenya	Thailand	Australia	Total
Climatological	2	3	0	0	1	0	0	1	1	0	8
Geophysical	7	1	0	4	0	0	5	0	0	0	17
Hydrological	11	4	9	13	9	5	4	7	3	4	69
Meteorological	9	14	11	0	1	5	0	0	2	1	43
Total	29	22	20	17	11	10	9	8	6	5	137

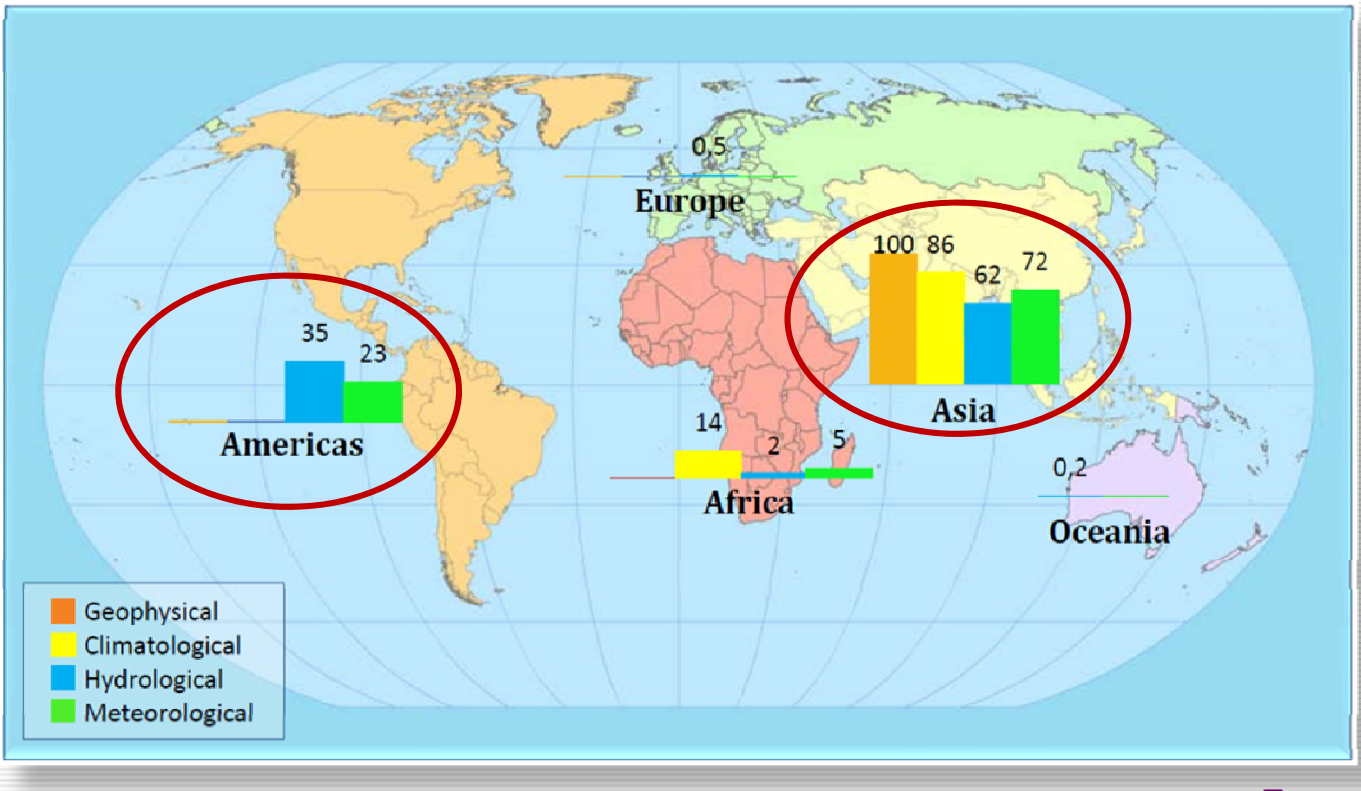
Source: Annual Disaster Statistical Review: Numbers and Trends 2008,CRED, Brussels

Percent share by disaster sub-group by continents in 2008



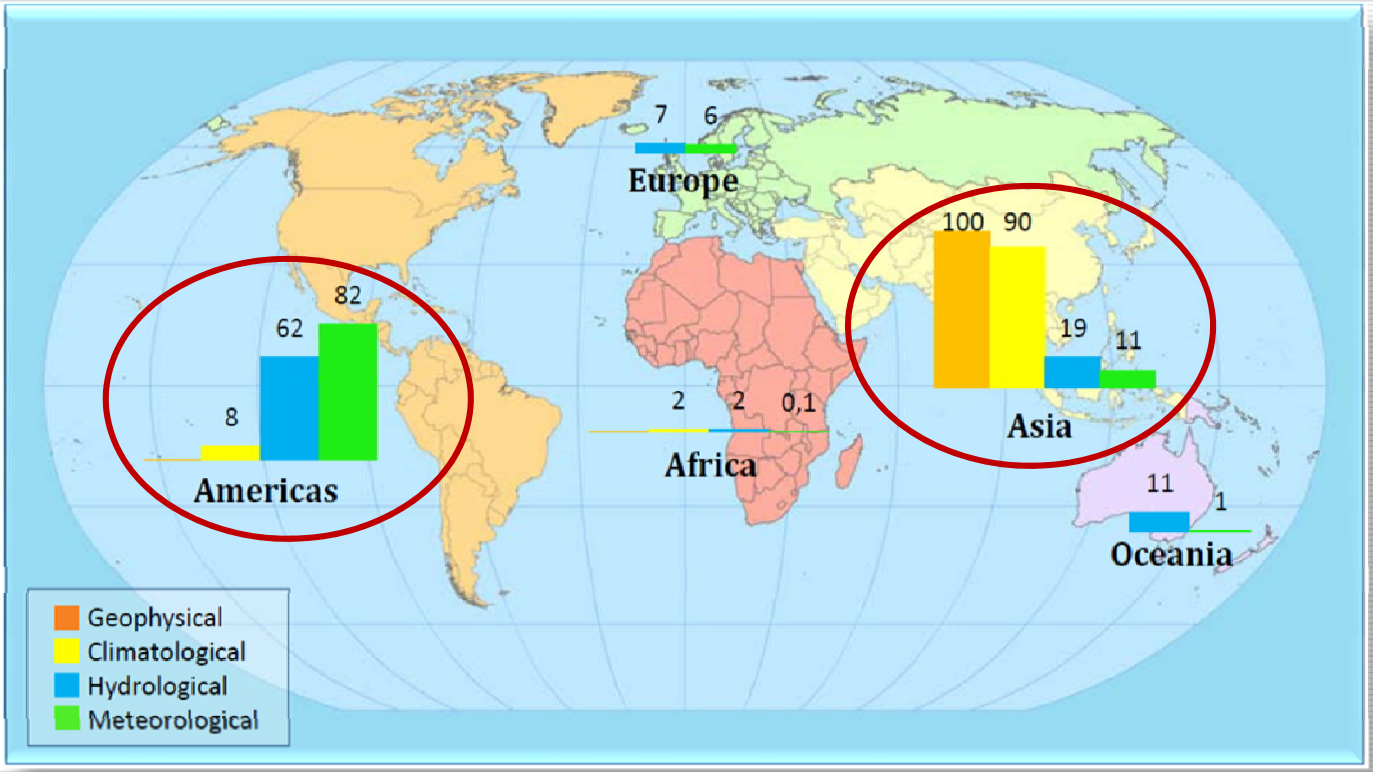
Source: Annual Disaster Statistical Review: Numbers and Trends 2008,CRED, Brussels

Percent share of victims by disaster sub-group by continents in 2008



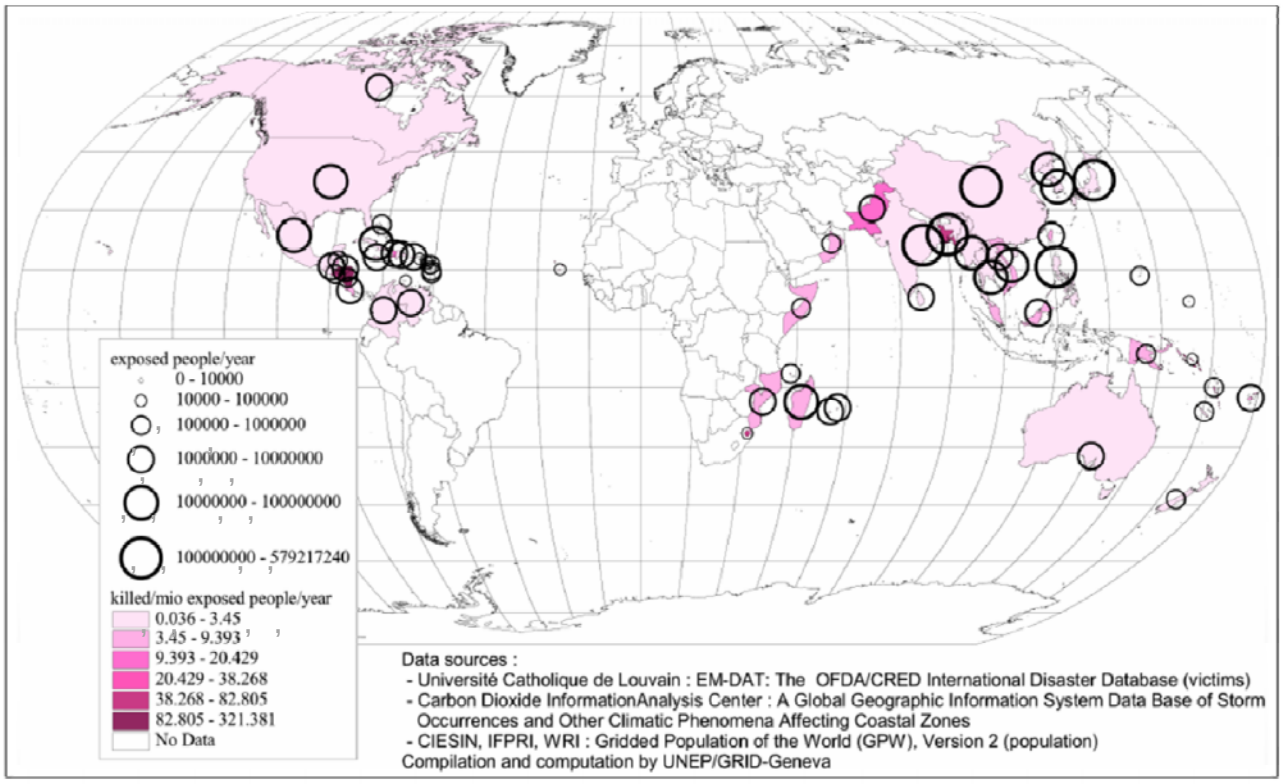
Source: Annual Disaster Statistical Review: Numbers and Trends 2008,CRED, Brussels

Percent share of economic damages by disaster sub-group by continents in 2008

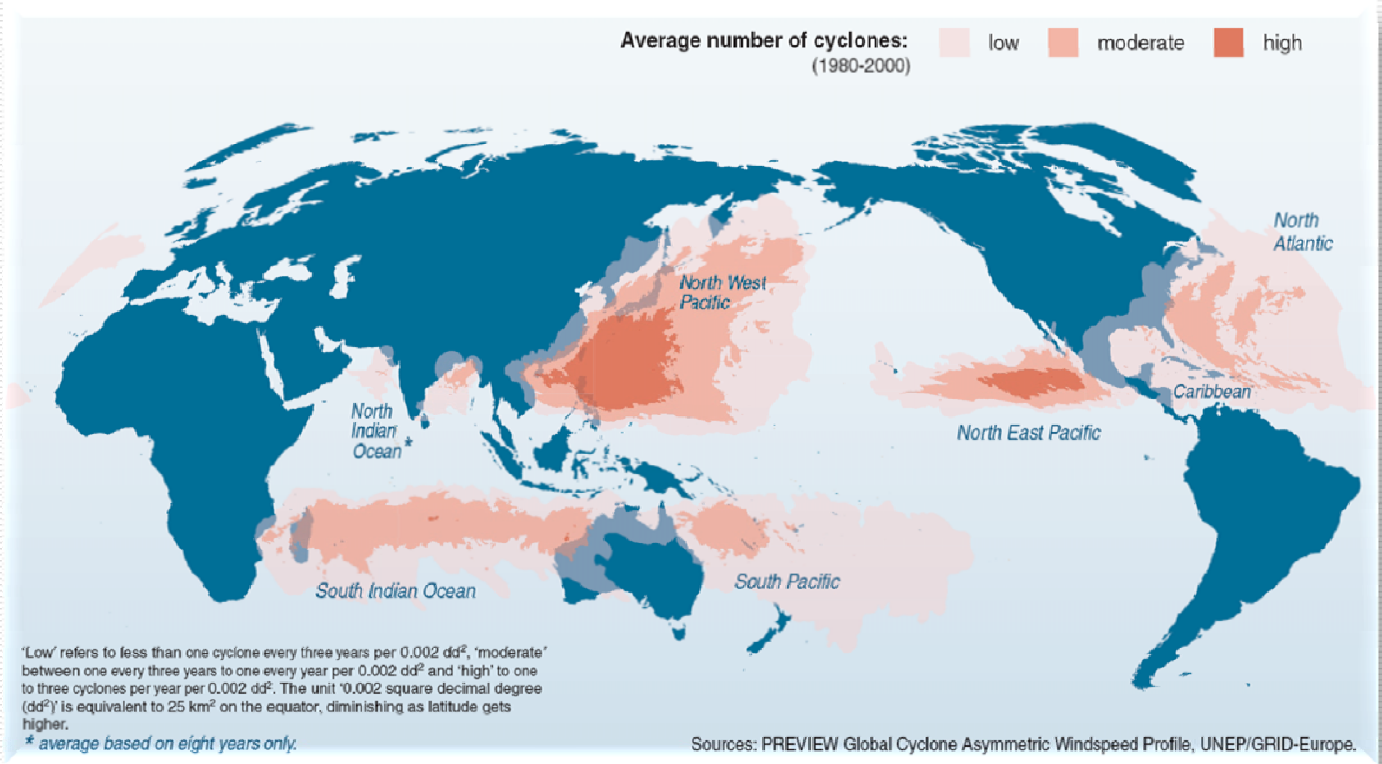


Source: Annual Disaster Statistical Review: Numbers and Trends 2008,CRED, Brussels

Map of vulnerability and physical exposure to cyclones



Tropical cyclone risk



Chinese Taipei's Experience to Share

-Disaster Reduction Research

Disaster reduction research

Supporting Research and Technology development

1	*3-stage program on disaster reduction*	1982-1997	☐USD 2.46 million dollars ☐1982-1997 [15years] ☐1000 researchers
2	*National Science & Technology Program for Hazard Mitigation (NAPHM)*	1998-2006	☐ USD 33.3 million dollars ☐1998-2006 [8years] ☐ More than 1200 projects
3	*Program for enhancing innovation and Implementation of disaster reduction*	2007-2010	☐ USD 34.1 million dollars ☐2007-2010 [4years] ☐223 projects ☐17 units participated

Topics, projects and investment for disaster reduction research in recent years

Sustainable Development Research Committee(1999~2006)

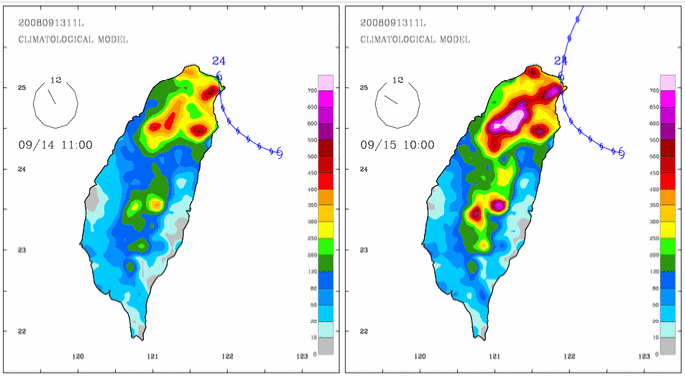
Topics	Projects	Researchers
Meteorology	334	total 1,317 projects
Flood	291	
Slope land	278	
Earthquake	76	2,823 researchers
System and Socio-Economical	338	

Capital investment in 2009: 17.7 million $USD

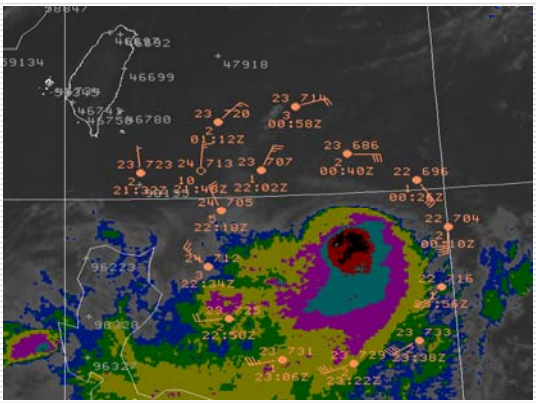
Improvement of forecasting on typhoons

Application and Implementation

Typhoon Rainfall forecasting

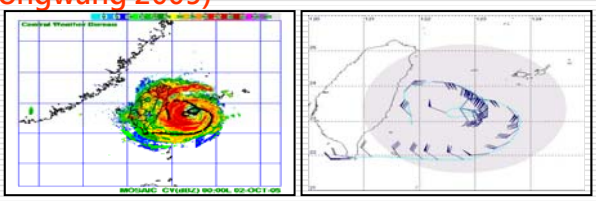


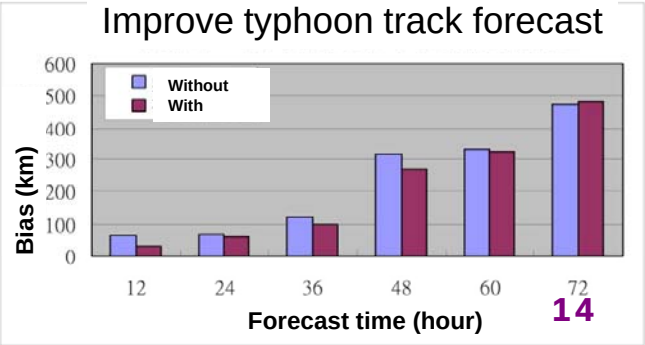
Dropsonde Observation



Aerosonde (unmanned plane)

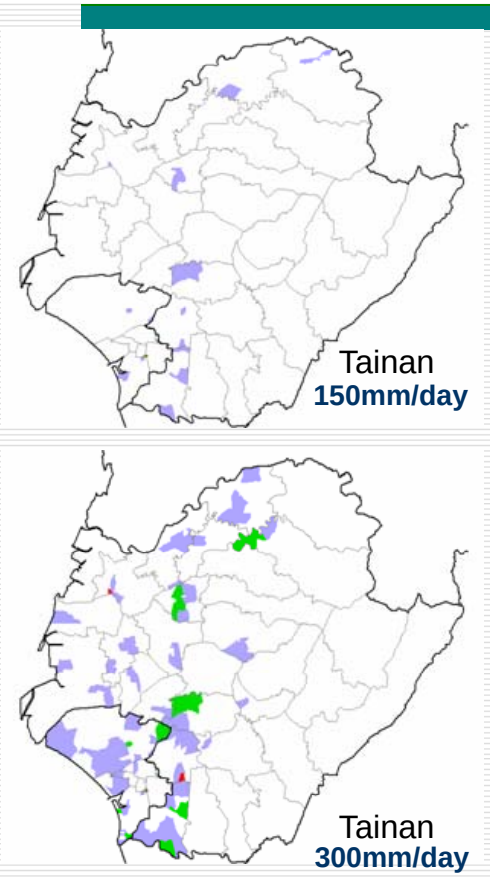
Successfully get the typhoon information by flying through typhoon center (Typhoon Longwang 2005)



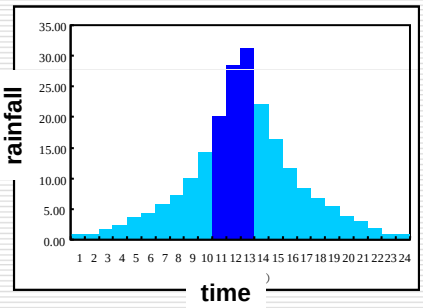


Inundation potential map

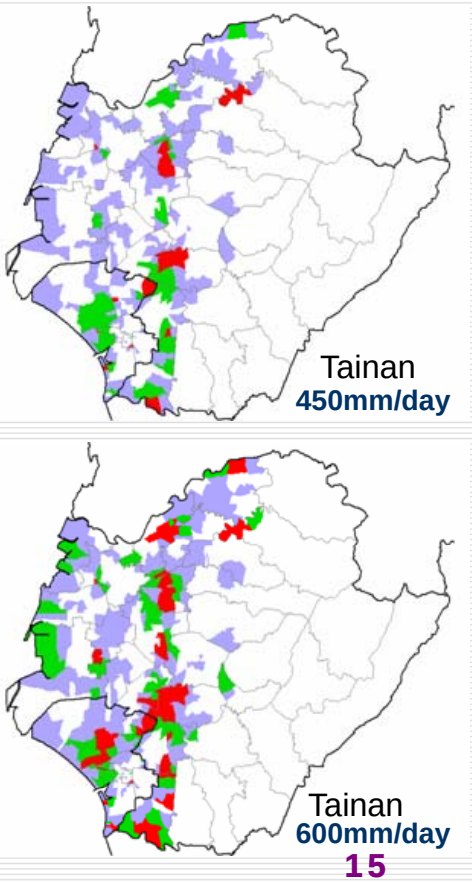
Application and Implementation



- Base on precipitation
- Simulate inundation potential of Tainan



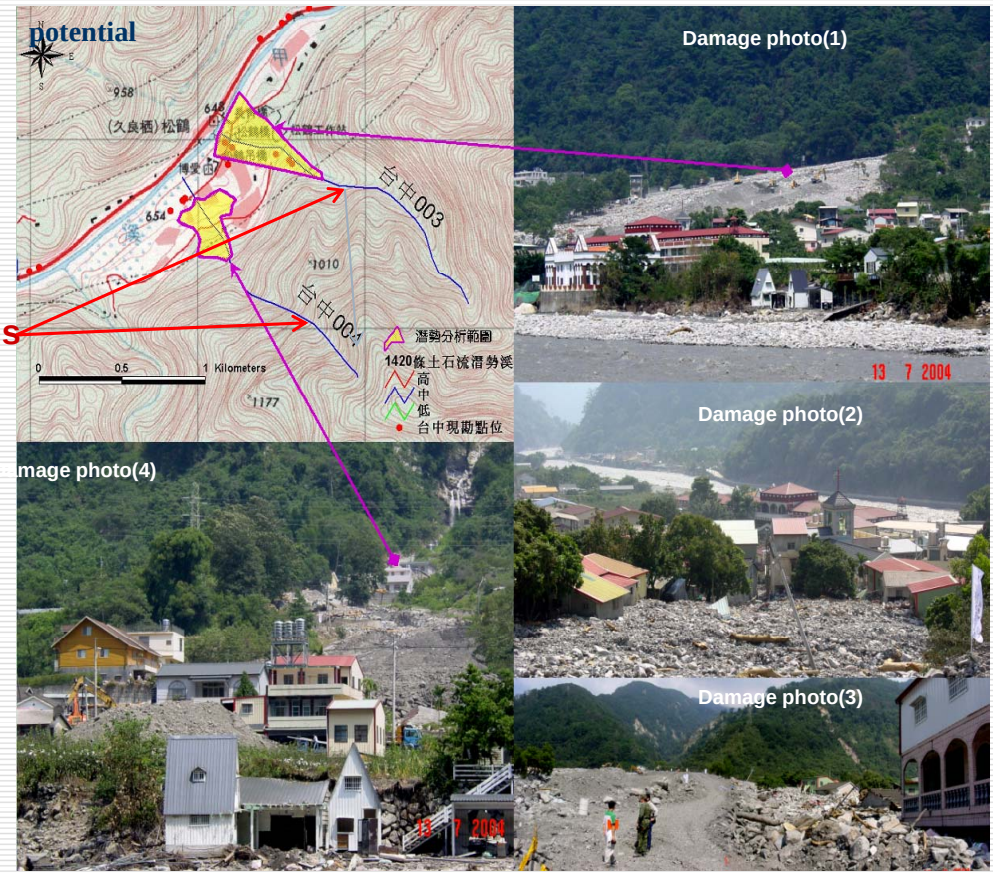
Level	Average depth
	0.5 m~ 1.0m
	1.0 m~ 1.5m
	1.5 m



Hazard map for debris flow

Application and Implementation

Debris flow hazardous streams



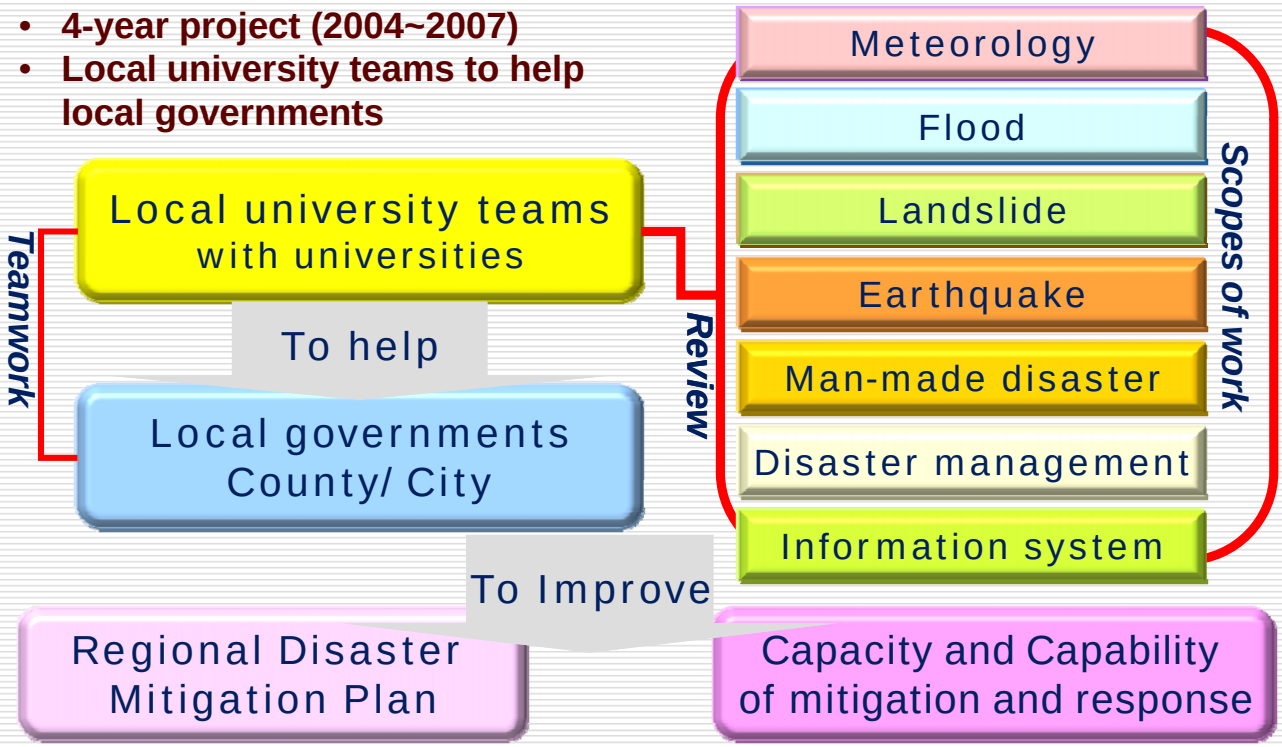
Hazard map for debris flow

Improvement of framework and mechanism

Empowering the Local-level's Capability for Disaster Reduction

Application and Implementation

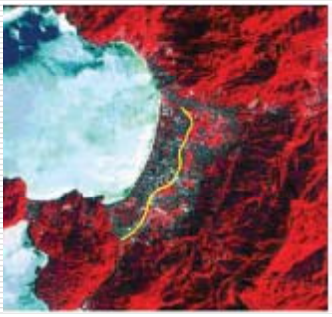
- 4-year project (2004~2007)
- Local university teams to help local governments



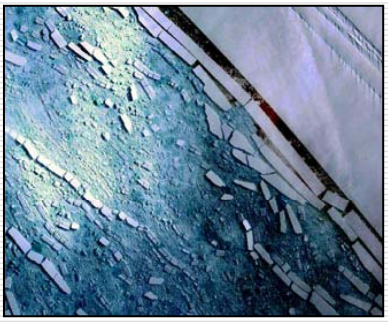
Applications of Formosat-2 satellite images

Other Important Achievements

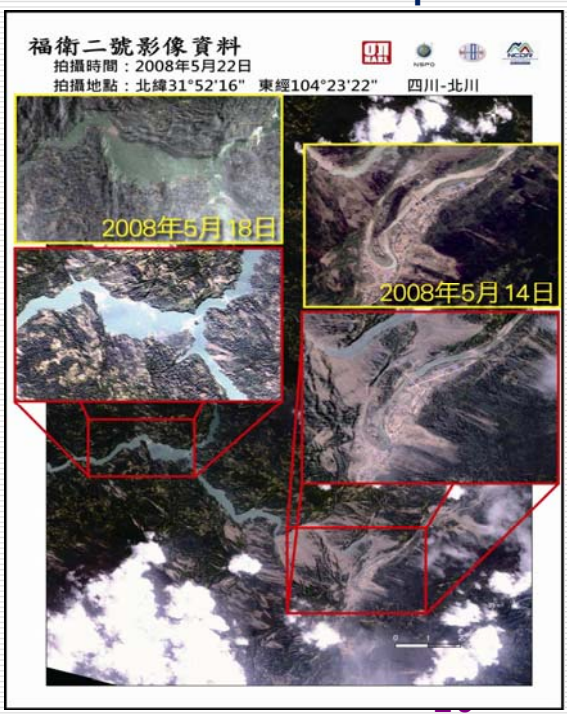
South Asia tsunami



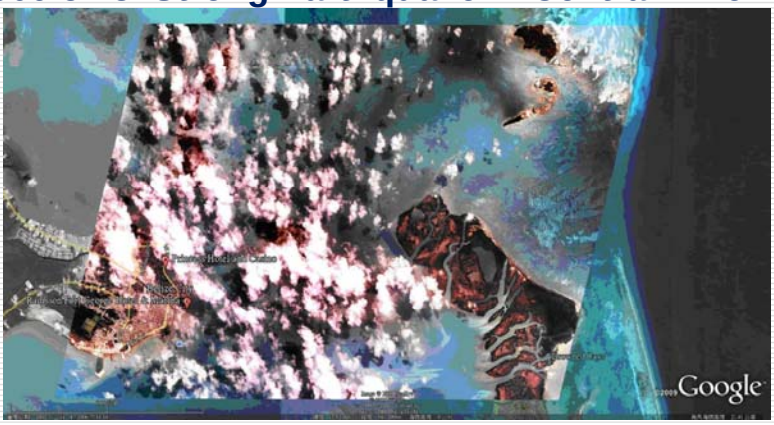
Antarctic ice shelf collapse



2008 Sichuan earthquake

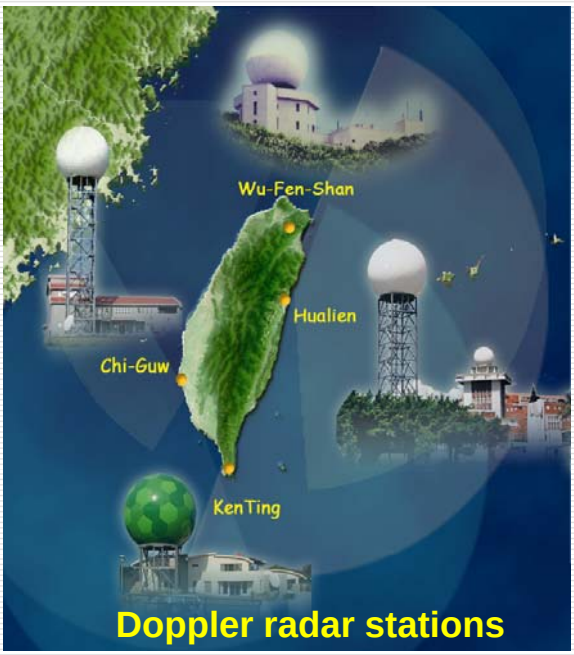


2009.5.28 Strong Earthquake in Central America

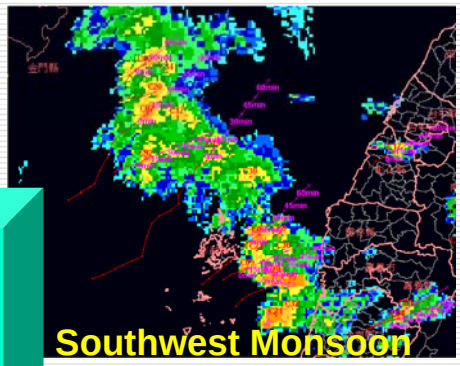


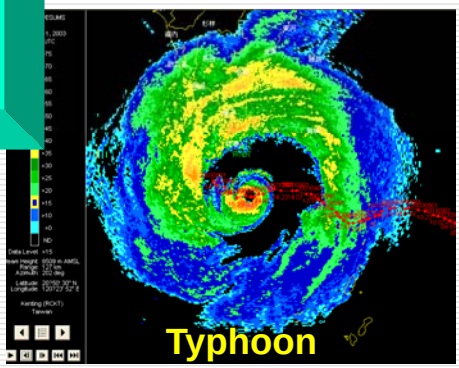
QPESUMS severe weather monitoring system

Other Important Achievements



Data analysis
Storm analysis
Storm tracking
Rainfall estimate
Historical case
...





Quantitative Precipitation Estimation and Segregation Using Multiple Sensors

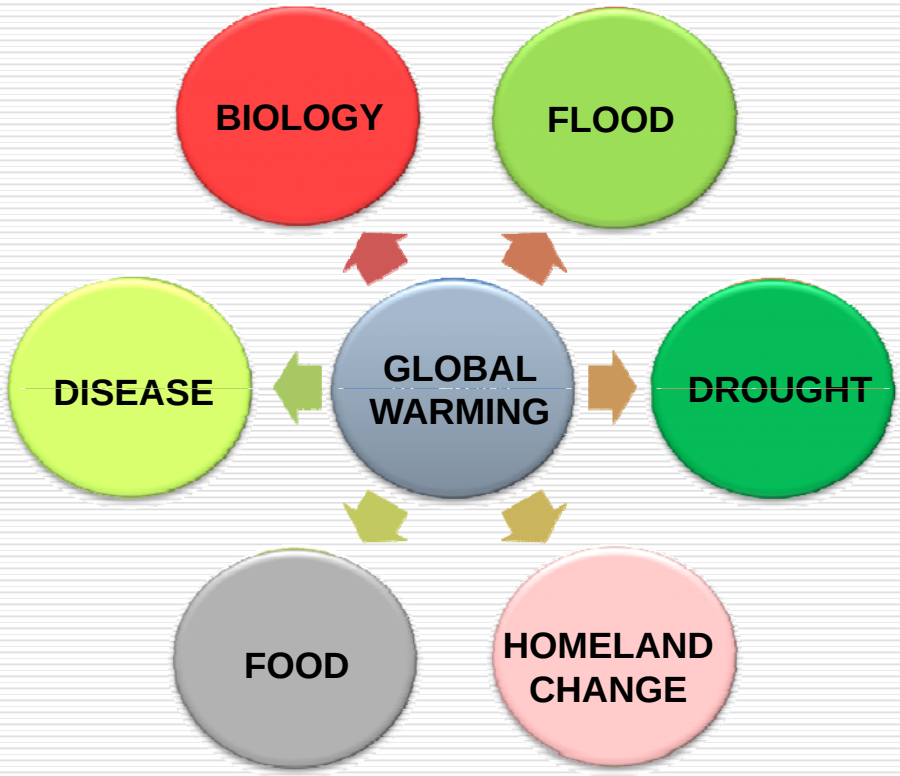
Achievements through science and technology

1	Legislation	*Specific Law will help to conduct all necessary measures, policies and plans for reduction, preparedness, response and recovery.*
2	Teamwork	*Cooperation and collaboration from inter- and intra- government sectors will be the solid foundation to implement plans and response.*
3	Bottom-up	*Local government and community need the empowerment from central government and require a well-defined regional plan.*
4	Technology	*Academic supports and research results with practical concerns and fulfilled implementation will provide the best reference of policy making.*

Future works

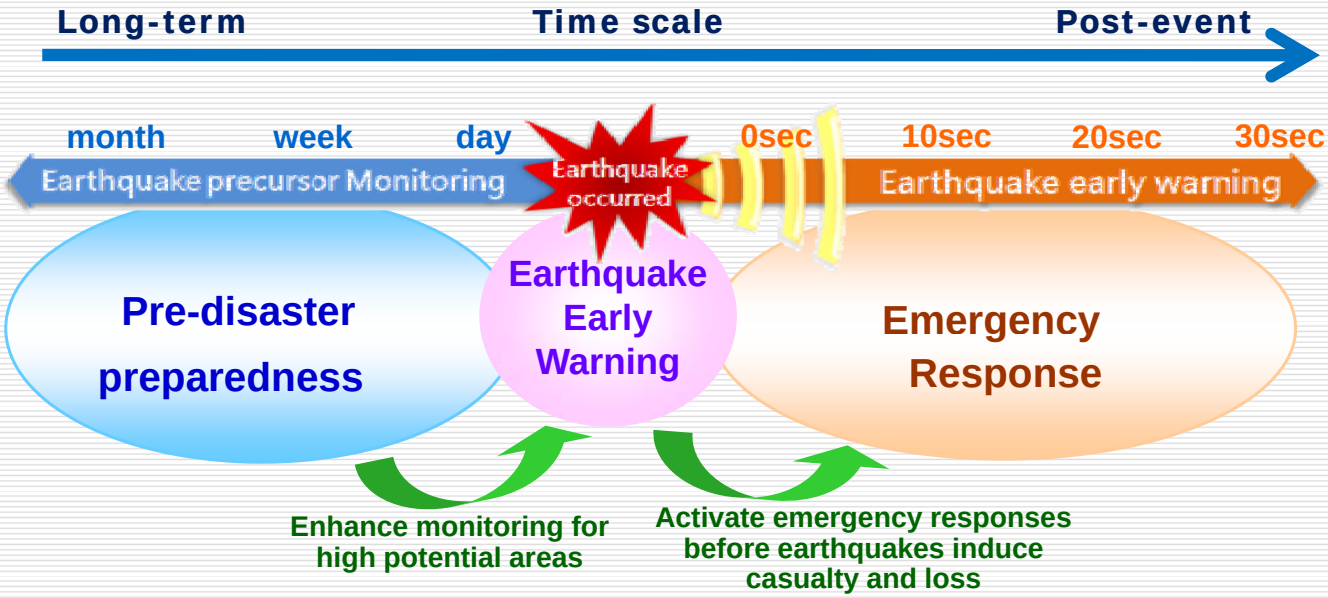
Impacts and adaptation strategy of global warming

Future work



Promotion of earthquake early warning and monitoring

Future work



Summary

- Continually Supporting Disaster reduction R&D development
  - Enhancing regional cooperation and collaboration on disaster risk reduction
  - Impact and adaptation research of climate change
  - Information sharing and dissemination
  - Disaster risk research

Thank You