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Organisation
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pour l'éducation,
la science et la culture

Preventing Disasters using an Interdisciplinary Approach

Unit for Disaster Risk Reduction

UNESCO (The United Nations Educational, Scientific and Cultural Organization)

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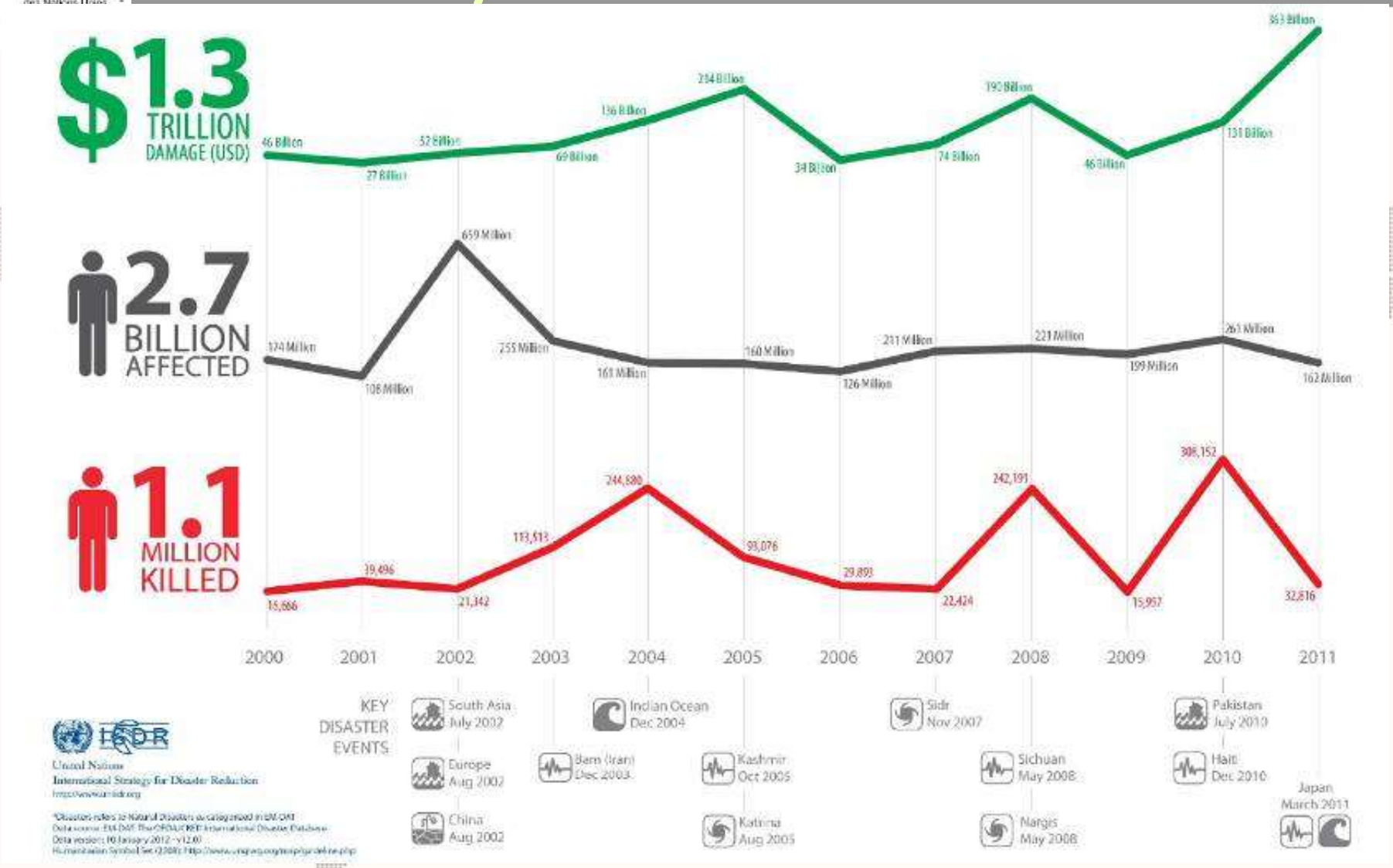
Organisation des Nations Unies

Economic and Human Impact of Disasters in the last 12 years



United Nations International Strategy for Disaster Reduction

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Disasters

- Know no borders
- Disaster risk management requires capacities at all levels: institutions, decision-makers, professionals and practitioners at national and local levels.
- It also involves multidisciplinary, inter-institutional and multisectoral perspectives as a subject of the socio-economic development.

Hazard Types

Disasters associated with natural events | Disasters associated with technological accidents | Disasters of a conflictual origin

1. Geological disasters

- Earthquakes
- Tsunamis
- Volcanic eruptions
- Landslides

Hazard Types

Disasters associated with natural events | Disasters associated with technological accidents | Disasters of a conflictual origin

2. Hydrological disasters

- Floods
- Limnic eruptions
- Avalanches

Hazard Types

Disasters associated with natural events | Disasters associated with technological accidents | Disasters of a conflictual origin

3. Meteorological disasters

- Blizzards
- Cyclonic storms (hurricanes)
- Droughts
- Hailstorms
- Heat waves / Cold waves
- Tornadoes
- Forest and bush fires

Mapping UNESCO's Programmes and Projects

UNESCO's Actions for Disaster Reduction

Long-term Goals:

- Observation and early warning networks of natural hazards
- Hazard risk mapping / assessment / monitoring
- Disaster-resistant building codes
- Earthquake resistant non-engineered construction
- Education for disaster reduction;
- Comprehensive safe school framework
- Promotion of public awareness through communication
- Protection of cultural monuments and sites
- Social dimensions and ethics of disasters

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UNESCO Scientific Programmes

- Natural Sciences
  - International Hydrological Programme (IHP)
  - Man and the Biosphere Programme (MAB)
  - International Engineering Initiative
  - International Geosciences Programme (IGCP)
  - Intergovernmental Oceanographic Commission (IOC)

- Social and Human Sciences
  - Management of Social Transformations (MOST) Programme

International Flood Initiative

International Centre for Water Hazard and Risk Management (ICHARM)

Tsukuba, Japan

Global Center of Excellence for Water Hazard and Risk Management

ICHARM

International Centre for Water Hazard and Risk Management under the auspices of UNESCO

- **Flood resilience**
- **Floating buildings**
- **Redesigning urban areas**

- Flood warning
- Developing flexible, appropriate software tools for real-time flood prediction
- Examining the effect of climate on flood prediction tools
- Using SMS messaging to deliver flood warning by location

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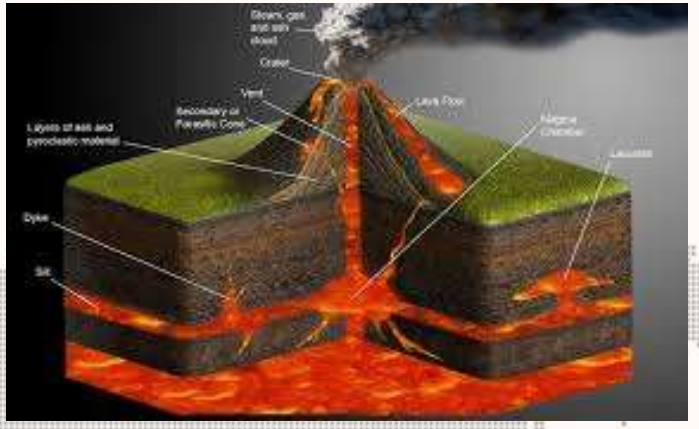
Geohazards

- Earthquakes
- Landslides
- Tsunamis
- Volcanoes



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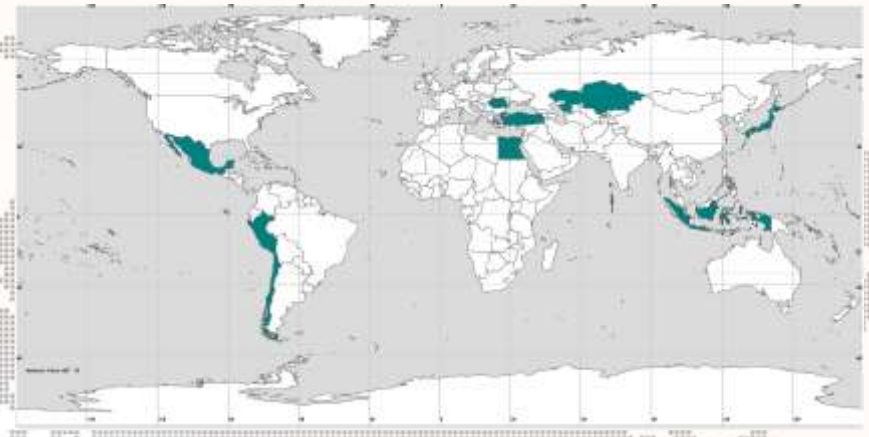
UNESCO - IPRED

- **I**nternational **P**latform for **R**educing **E**arthquake **D**isasters



IISEE International Institute of Seismology and Earthquake Engineering

Building Research Institute B R I

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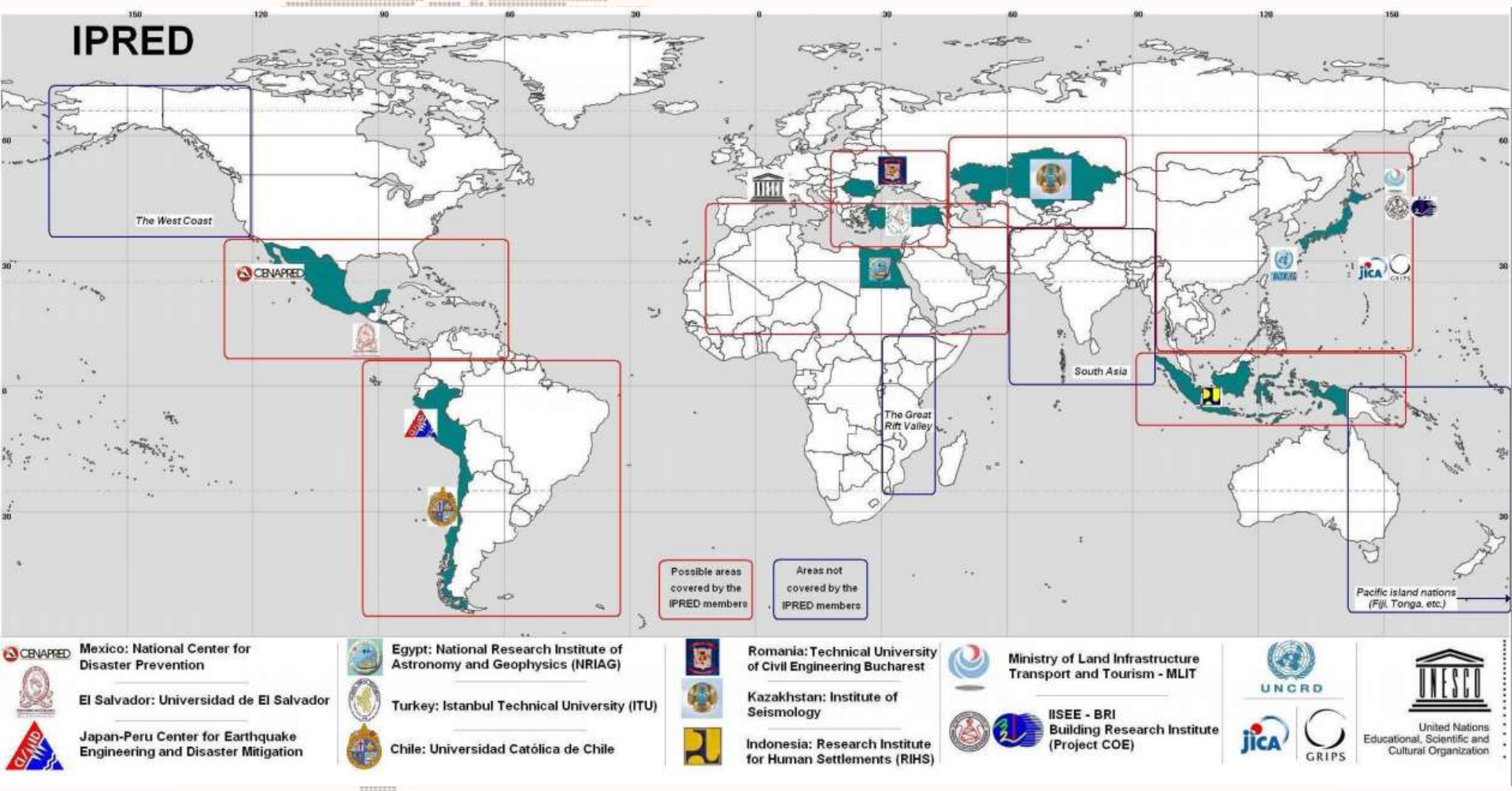
IPRED - Earthquakes



International Platform for Reducing Earthquake Disasters

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IPRED - Earthquakes

- **Priority 1: Understanding disaster risk**
  - Strengthening capacities for Disaster Risk Reduction via technical training materials and research activities in disaster risk reduction
  - Sharing Data/Information for Disaster Risk Reduction by sharing engineering data on structural testing and soil properties.
  - Technology development for Disaster Risk Reduction by developing and promoting ground motion observation network and data sharing. It has developed a search system for strong motion data (avail: Japan, Peru and Romania)

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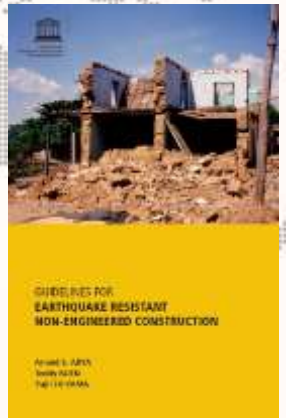
IPRED - Earthquakes

- **<u>Priority 2: Strengthening governance and institutions to manage disaster risk</u>**
  - Policy recommendations for Seismology and Structural Engineering by preparing technical documents that serve national and local governments to better prepare and mitigate the risk related to earthquake risk (i.e. IPRED published guideline for non-engineered construction.



IPRED - Earthquakes

- **Priority 3: Investing in economic, social, cultural, and environmental resilience**
  - Raising Awareness for Disaster Risk Reduction
  - UNESCO-IPRED holds an International workshop to raise awareness on earthquake Disaster Risk Reduction every year since 2008 in IPRED member countries. Researchers, policy makers, students, academics are invited for the workshop. Every year IPRED chooses the topics that reflects the recent catastrophes

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IPRED - Earthquakes

- **<u>Priority 4: Enhancing preparedness for effective response, and building back better in recovery and reconstruction</u>**
  - UNESCO-IPRED establishes a system to dispatch experts to an earthquake stricken country in order to carry out post-earthquake field investigations and draw lessons for future risk reduction (Van, Turkey in 2011 and Bohol Philippines in 2014).

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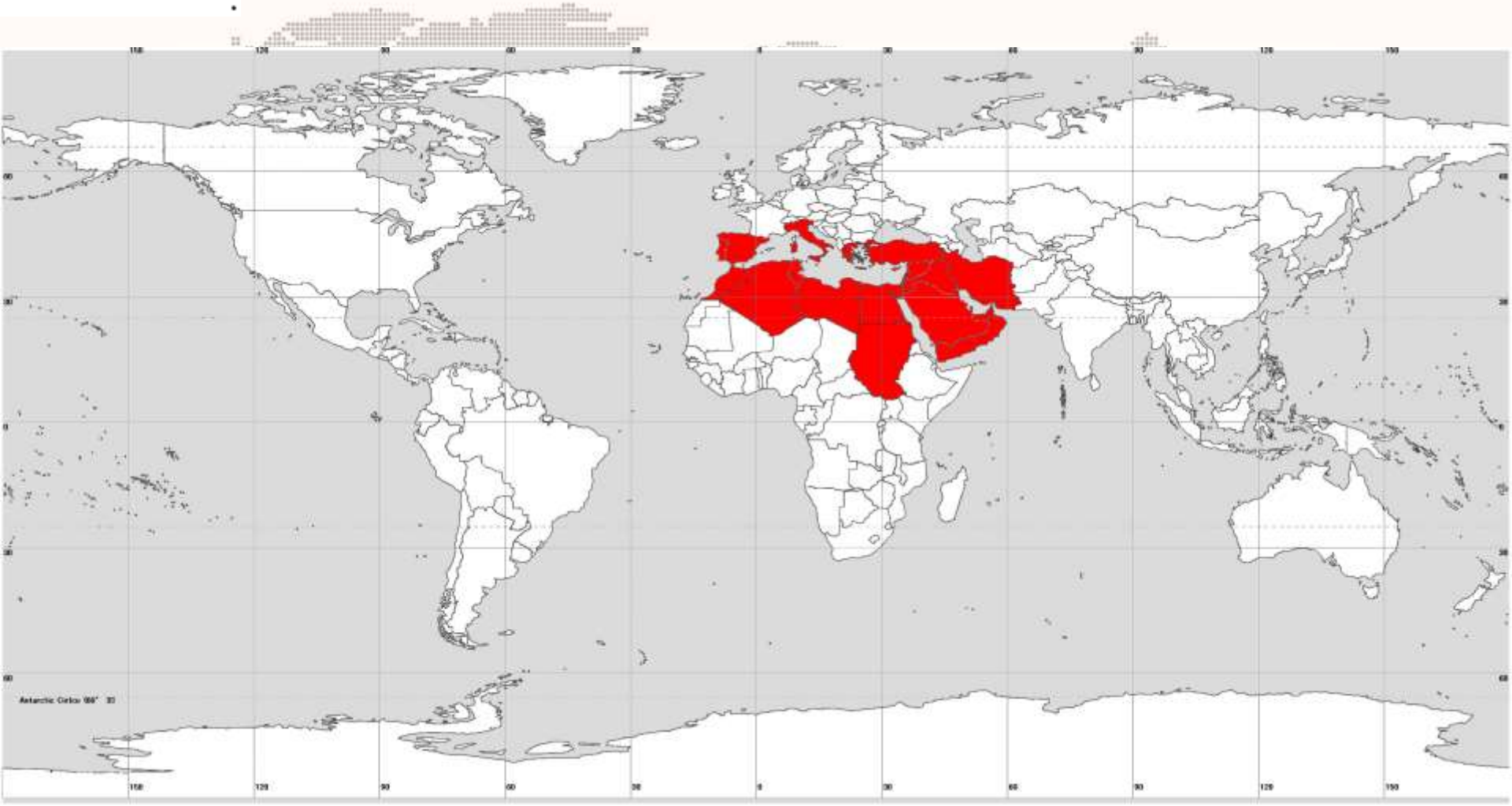
USGS
science for a changing world

RELEMR - Earthquakes



Reducing Earthquake Losses in the Extended Mediterranean Region

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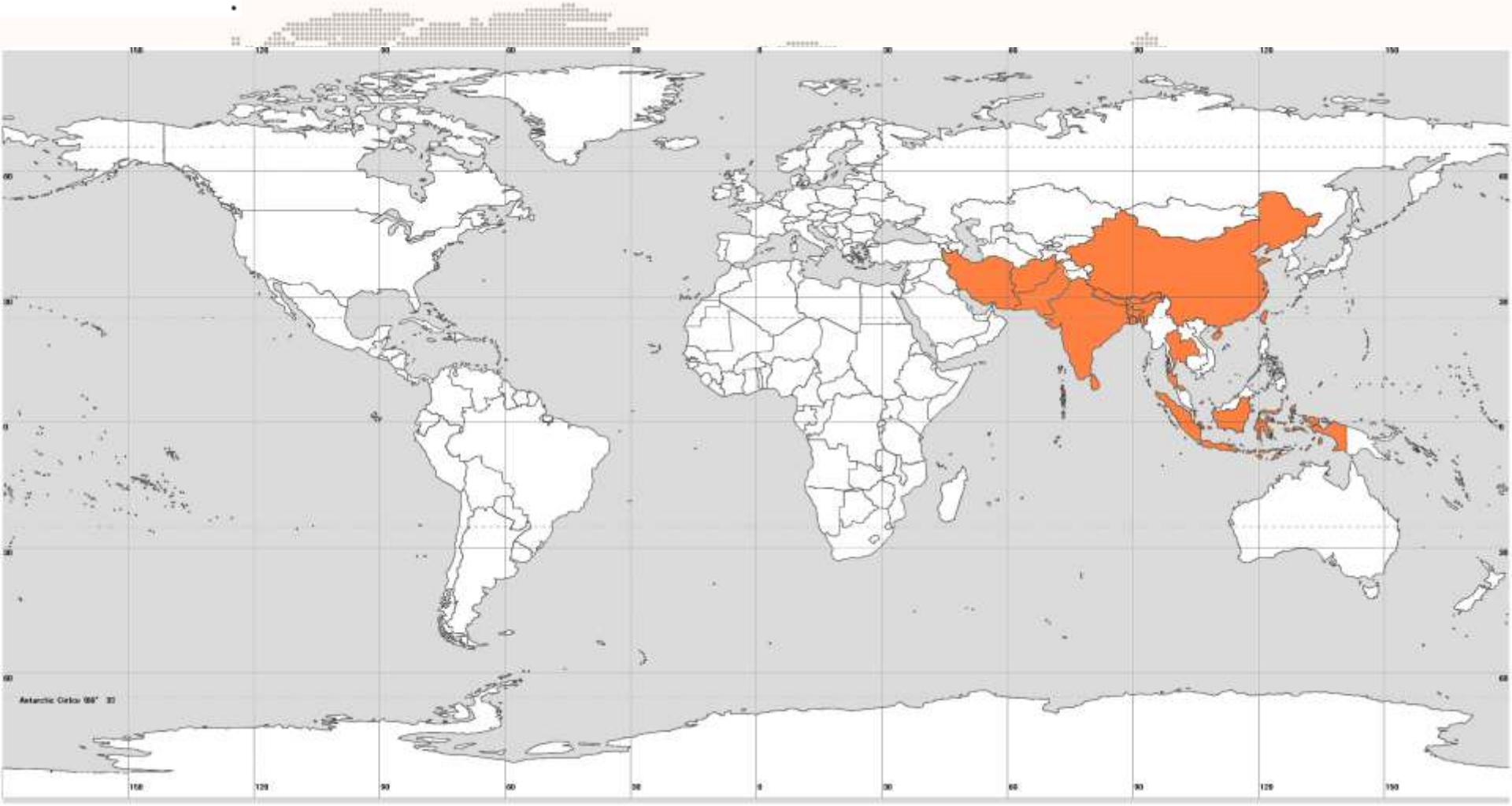
RELSAR - Earthquakes



Reducing Earthquake Losses in the South Asia Region

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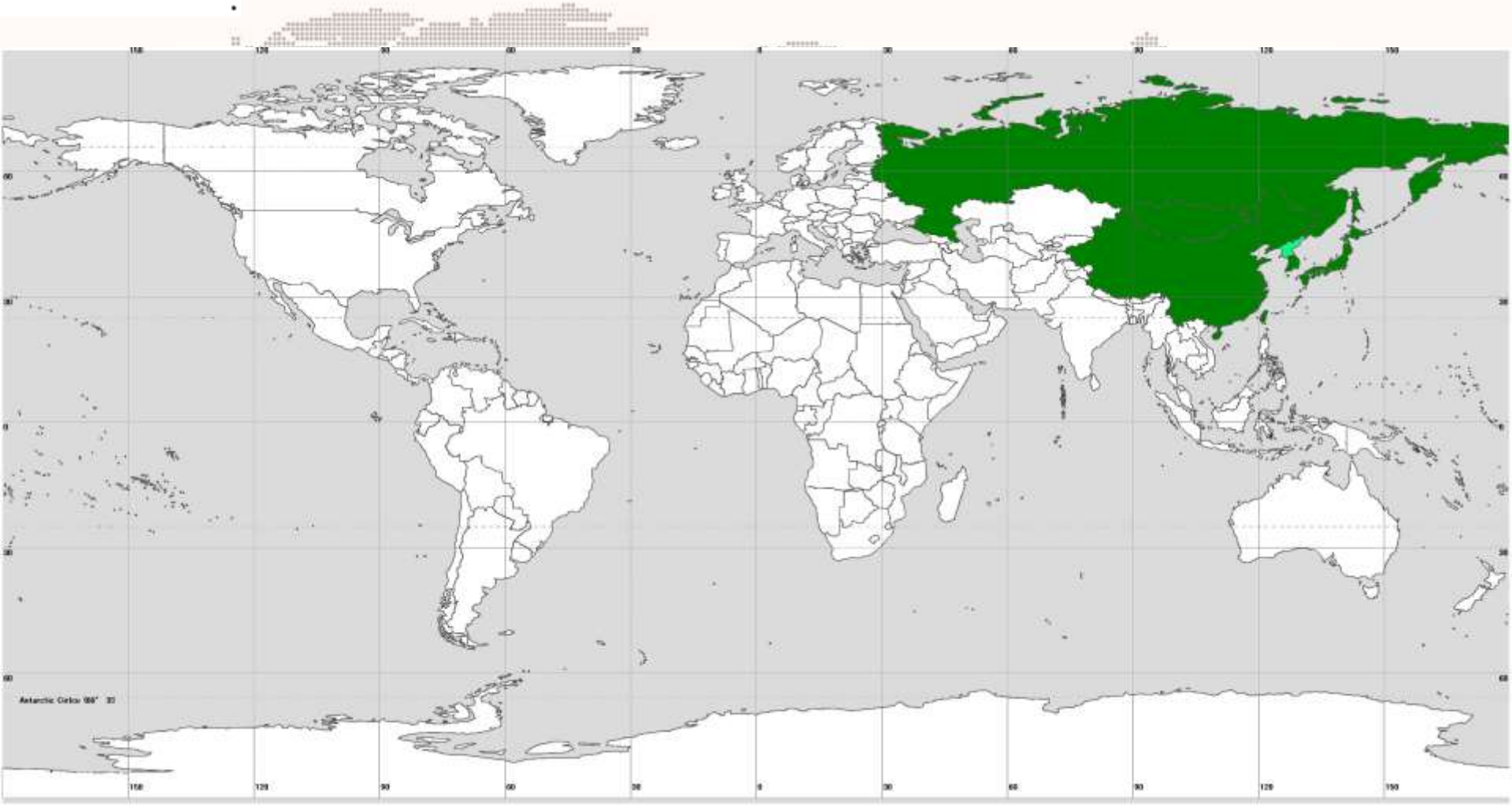
RELNAR - Earthquakes



Reducing Earthquake Losses in the Northeast Asia Region

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REL networks

1. Coda Magnitudes
2. Improve earthquake location using multiple datasets from different countries
3. Training in approaches to improve seismic data estimates
4. Probabilistic seismic hazard assessment (PSHA)
5. Engineering issues
6. Production of regional seismicity maps
7. Training courses in PSHA, HAZUS, David Boore's Ground Shaking, strong-motion seismology and other software have been given.
8. Applications of the HAZUS-MH Earthquake Loss Estimation Model.

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REL networks

1. Protection of Historical Sites
2. Open Source Software
3. Tsunamis warning
4. Paleo-seismicity
5. Earthquakes early warning systems
6. Site effects
7. Real-time data exchange
8. Regional Cooperation

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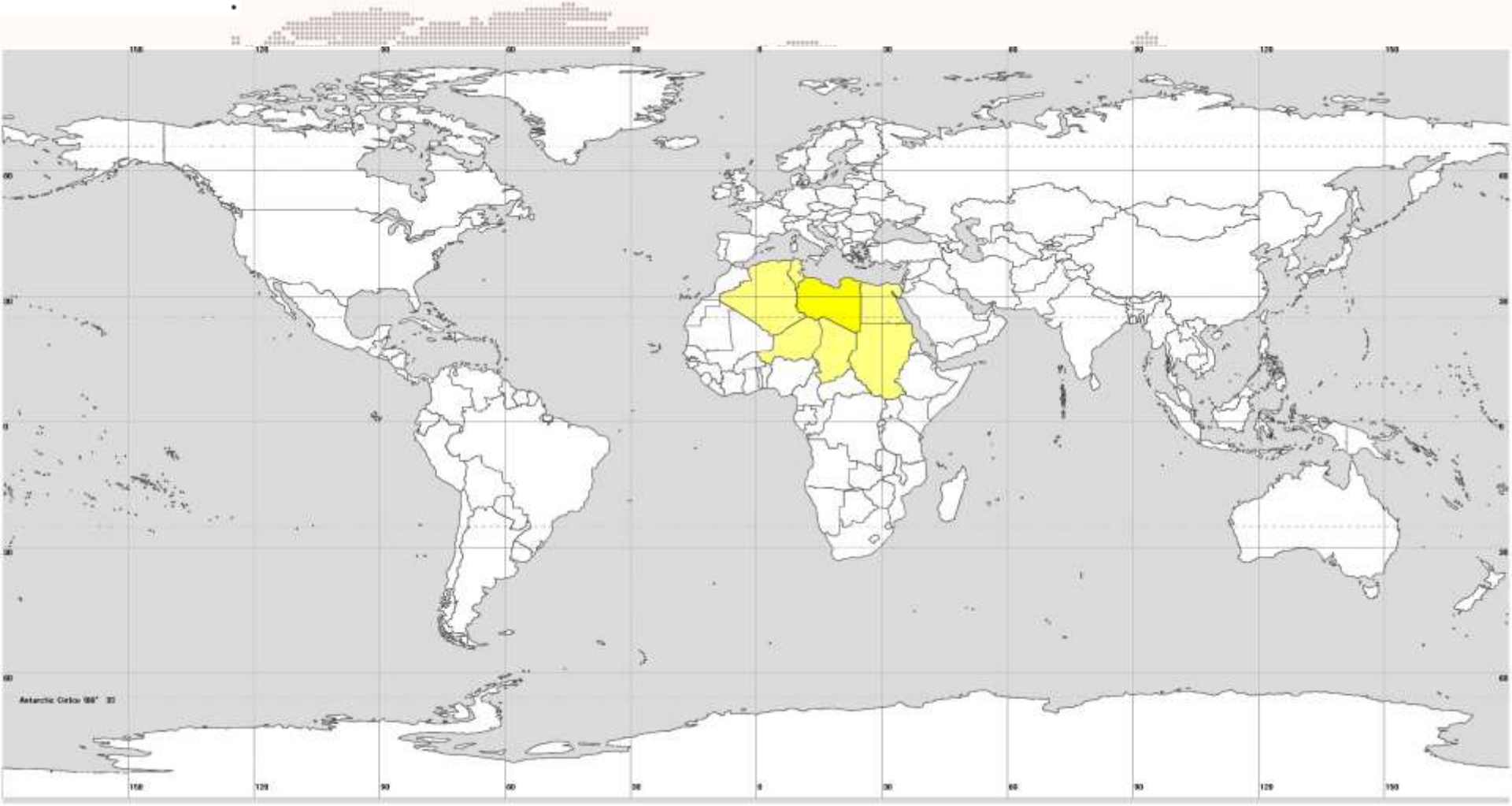
Libyan Center for
Remote Sensing
& Space Science

المركز الليبي
للاستشعار عن بعد
وعلوم الفضاء

LNSN - Earthquakes



Libyan National Seismological Network – National project with regional vocation

Establishment of the Libyan National Seismological Network

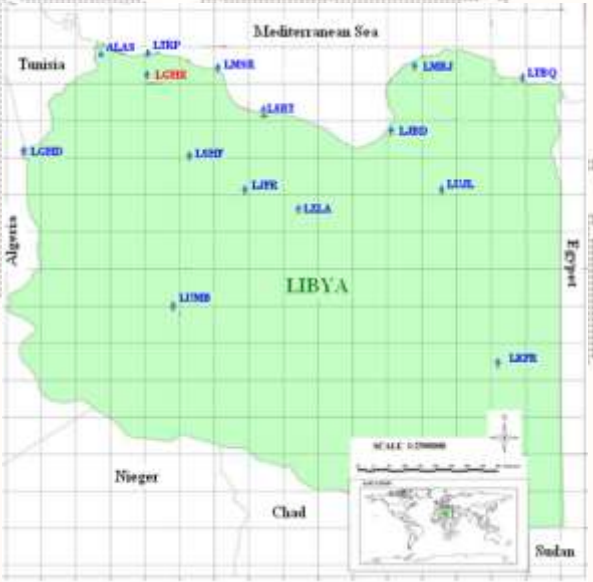
Capacity Building

- Capacity building activities for the LCRSSS staff in Libya and abroad
- Degree-oriented training, in Libya and abroad, and participation in regional and international workshops of Libyan scientist
- Preparation and development of national and/or regional workshops in Libya on subjects of interest for the LCRSSS and the Libyan scientist community.

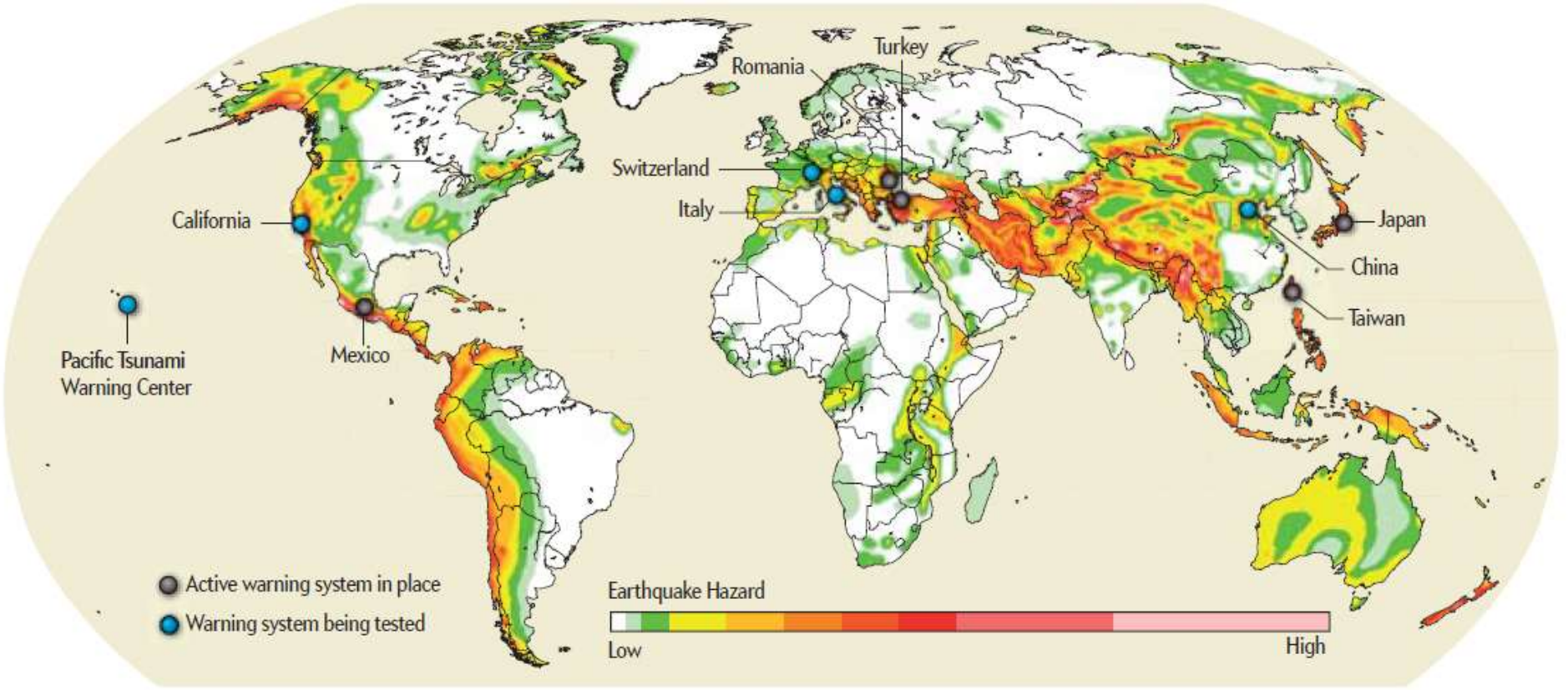
Equipment

Related to the operation of 15 stations (very broadband, broadband, and short period), including, Digital National Seismological Network and a Central Data Processing Center:

-Seismometers; accelerometers; etc



EARTHQUAKE EARLY WARNING SYSTEMS



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  - International Geosciences Programme (IGCP)
  - Intergovernmental Oceanographic Commission (IOC)

- Social and Human Sciences
  - Management of Social Transformations (MOST) Programme

2014

All about IGCP

Photo: Martin Mergili

IGCP International Geoscience Programme

Science
People
Collaboration
Innovation

http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/international-geoscience-programme/igcp-projects/

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IUGS UNESCO

IUGS International Union of Geological Sciences

International Geoscience Programme

Historic perspective

The beginning:

- **1961**: Establishment of the International Union of Geological Sciences (IUGS)
- **1964**: UN-proclaimed International Geophysical Year
  - Dr. H.J. Harrington (Australia)
- **1965**: A committee of young geologists (35-45 yrs old)
- **1968**: Budapest (Hungary)
- International Geological Congress (IGC)
- International panel was set up: UNESCO's support
- **1972**: Montreal (Canada), IGC
- Formal acceptance of UNESCO
- Naming of the programme:

IGCP- International Geological Correlation Programme

IGCP (1972-2005): International Geological Correlation Programme

Main objectives: geological correlation

IGCP (2006-today): International Geoscience Programme

"Earth Science in Service of Society"

Main objectives:

…

International Geoscience Programme

2005/2006: IGCP Reform process

- New Name
- Revised mission of IUGS
- Changes within UNESCO (interdisciplinary approach, sustainable development focus)
- New demands from the stakeholders and society

International Geoscience Programme

Main objectives:

- promote exchange of ideas, data and techniques among earth scientists around the globe

- improve capacity to exchange knowledge

- profit from the framework of the international working groups, science networks: developing and developed

- encourage and assist the training of earth scientists (capacity building), especially in less privileged nations

- to promote sustainable utilization of earth resources

International Geoscience Programme

IGCP Theme Groups after 2006

- **Earth Resources**: Sustaining our society
- **Global change**: Evidence from the geological record
- **Geohazards**: Mitigating the risks
- **Hydrogeology**: Geoscience of the water cycle
- **Geodynamics**: Deep Earth - Control our environment

International Geoscience Programme

2014

A total of 27 projects remain ongoing
A total of 5 new project proposals received

Geodynamics	0	5
Geohazards	2	6
Global Change	3	11
Earth Resources	0	2
Hydrogeology	0	3

International Geoscience Programme

Geohazards: Mitigating the risks

IGCP 585-E-MARSHAL: Earth's continental MARgins

IGCP 588-Preparing for coastal change

IGCP 594-Impact of Mining on the Environment in Africa (*SIDA Funds*)

IGCP 601-Seismotectonics and Seismic Hazards in Africa (*SIDA Funds*)

IGCP 606-Adressing Environmental and Health Impacts (*SIDA Funds*)

International Geoscience Programme

IGCP strong points

1. **IGCP is the only long-term Research and Capacity Building Geoscience Programme in the UN System**
2. **Programme at UNESCO (1997&2003 review)**
3. **joint cooperation UNESCO & International Union of Geological Sciences (IUGS)**
4. **42 years networking among international research groups**
5. **a multiple number of countries are involvement per project, scientists from almost all member states of UNESCO (truly global programme)**

International Geoscience Programme

IGCP strong points

6. Bottom-up operation style, scientists in the driver's seat

7. quality assessment by IGCP Scientific Board
   50 members across five theme groups,
   annual peer review of projects,
   quality control of projects and project's products (e.g. journals papers, maps, models, databases)

8. Multiplyer effect due to the IGCP accreditation

2014

International Geoscience Programme

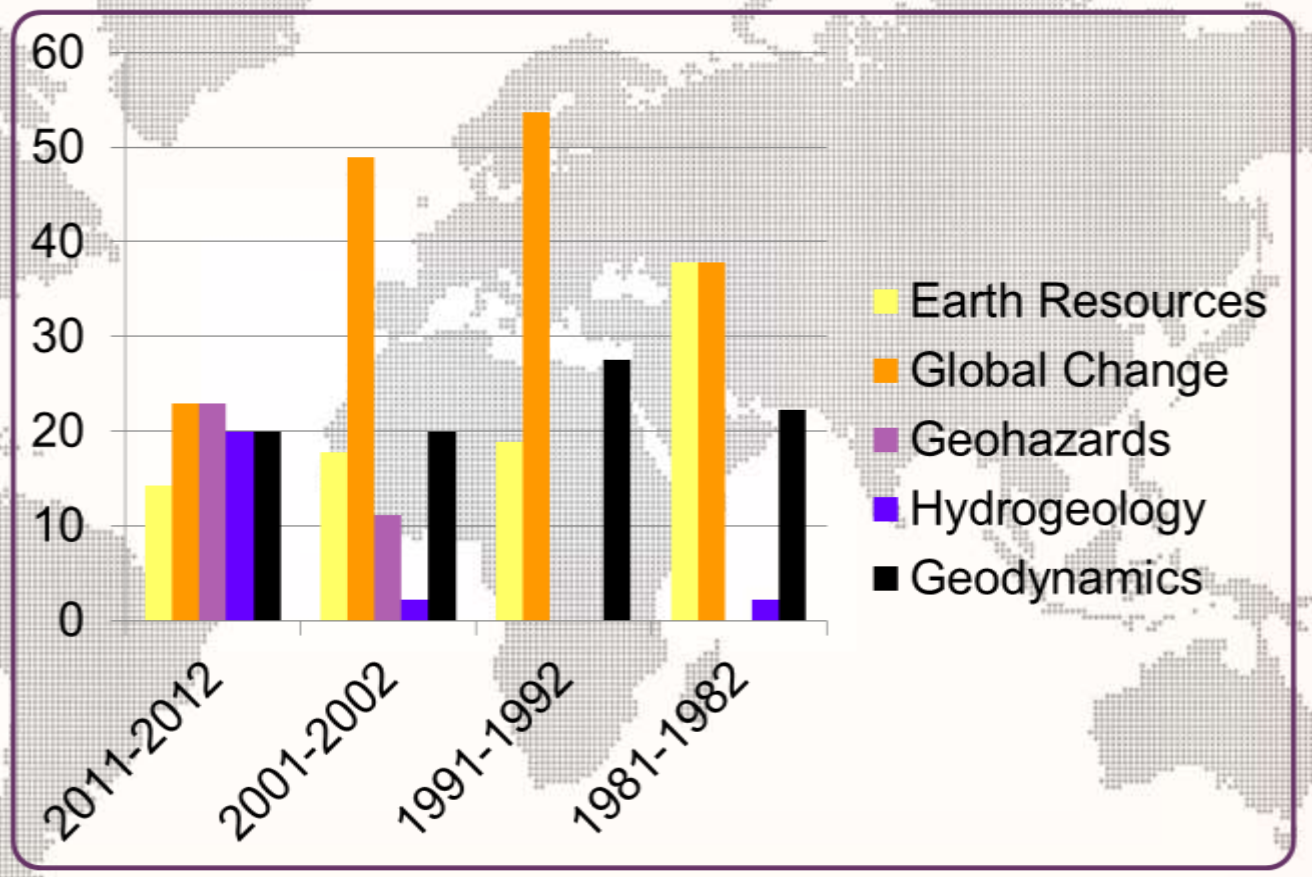
IGCP operates by providing small "seed funding" grants, typically between $5,000 - $10,000 per year, across 5 years, donated by UNESCO, IUGS and extra-budgetary sources.

International Geoscience Programme

- Currently scientists from 105 countries work together, we have 27 projects running which exchange knowledge and methodologies on Earth Science-related problems of global importance.

IGCP projects

Themes



2014

Study & Survey of Past IGCP projects & project leaders

Discussions are ongoing within UNESCO on a re-focussed IGCP together with “UNESCO Global Geoparks” under a common, overarching programme that will encourage synergies and cooperation between both activties

International Geosciences and Geoparks Programme

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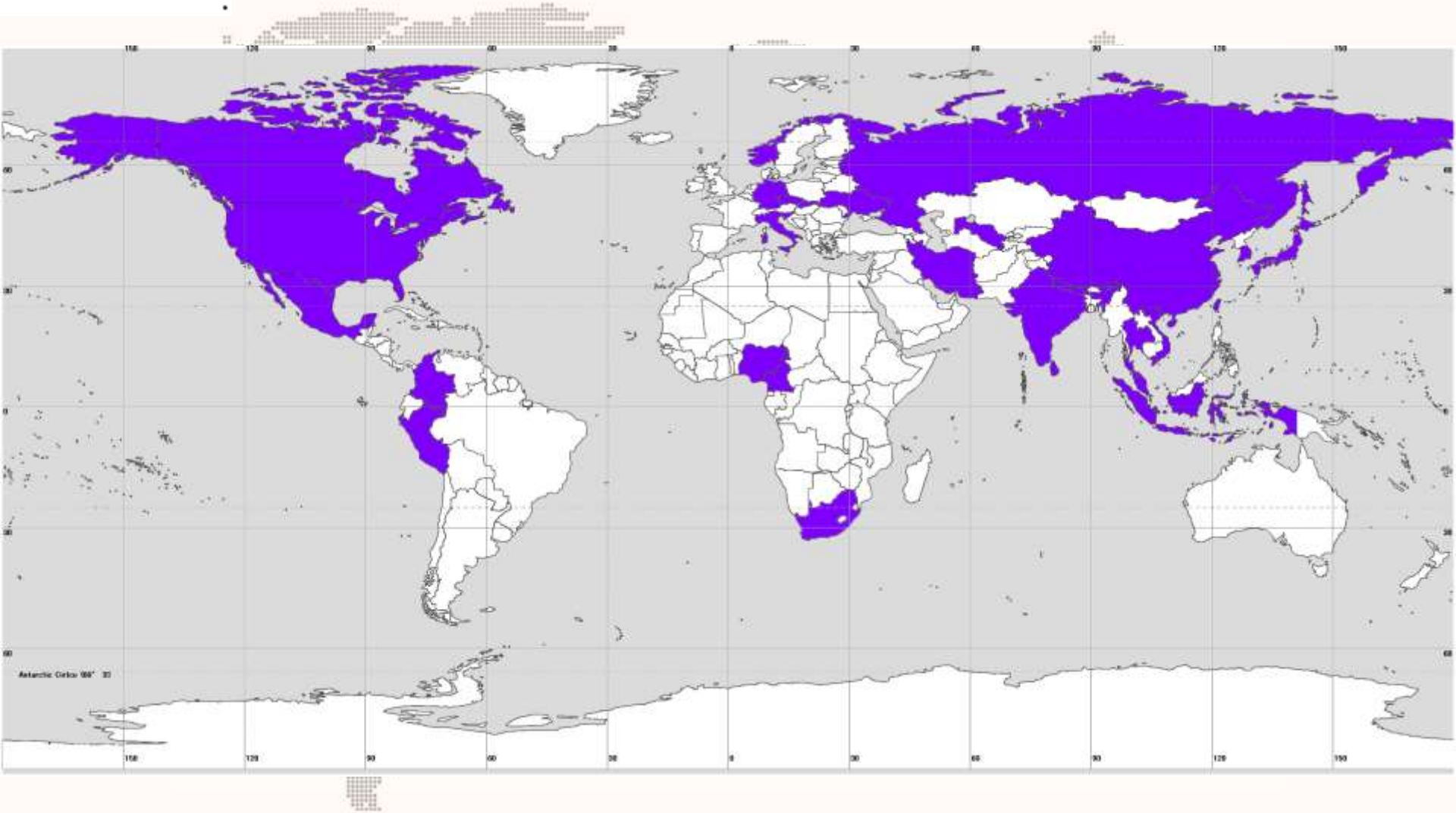
ICL - Landslides



International Consortium on Landslides

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IHP VIII: Water Security

- Theme 1: Water-related Disasters and Hydrological Changes
- Theme 2: Groundwater in a Changing Environment
- Theme 3: Addressing Water Scarcity and Quality
- Theme 4: Water and Human Settlements of the Future
- Theme 5: Ecohydrology, Engineering Harmony for a Sustainable World
- Theme 6: Water Education, Key to Water Security

IHP VIII: Water Security

Implementation Matrices for Theme 1 Focal Areas

- Focal Area 1.1: Risk management as adaptation to global changes.
- Focal Area 1.2: Understanding coupled human and natural processes.
- Focal Area 1.3: Benefiting from global and local Earth observation systems.
- Focal Area 1.4: Addressing uncertainty and improving its communication.
- Focal Area 1.5 – Improve scientific basis for hydrology and water sciences for preparation and response to extreme hydrological events

ICL history, a UNESCO perspective

- **Established in 2002 following a UNESCO-IUGS IGCP Project No.425 “Landslide Hazard Assessment and Cultural Heritage“**
- **UNESCO supported the writing of the 2002 Kyoto Declaration which established the International Consortium on Landslides**
- **UNITWIN (University Twining and Networking) Cooperation Programme on Landslide risk mitigation for society and the environment; Kyoto University; March 2003.**

ICL history, a UNESCO perspective

- **“Landslides”: Journal of the International Consortium on Landslides was founded in 2004**
- **The International Programme for Landslides (IPL) was founded by adopting the 2006 Tokyo Action Plan together with 7 global stakeholders.**
- **ICL was approved to be a NGO having operational relations with UNESCO in April 2007. It was reclassified as an NGO with a consultative partnership with UNESCO in March 2012.**

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Role of Science

- Disasters can be mitigated by cost-effective engineering works
- Low-cost technology engineering design should be available, especially in the developing world.
- International guidelines and methodologies should be developed and disseminated effectively and technology transfer should be encouraged

Role of Science

- **Early Warning Systems** based on strong social approach for system sustainability
  - Social investigation to establish the needs of the community
  - Consensus from the community
  - Simple and low cost monitoring equipment
  - Training of focal points in the community for both transfering the signal and evacuation stages

Role of Science

- **<u>Science based development planning and preparedness</u>**
- Good scientific research is being conducted.
- We need to move forward in two ways
  - Operationalize research and make it practical and easy to use by communities
  - Utilize a multidisciplinary approach in the way we deal with hazards, as the norm and not the exception

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Role of UNESCO

- **The assessment and continuous monitoring of hydrological cycles at all scales**
- **Further research from IGCP and its pillar on geohazards**
- **Develop more programme linkages and synergies within the framework of IHP initiatives such as the International Flood Initiative (IFI), the International Sediment Initiative (ISI), IHP Snow and Ice network, IGCP.**

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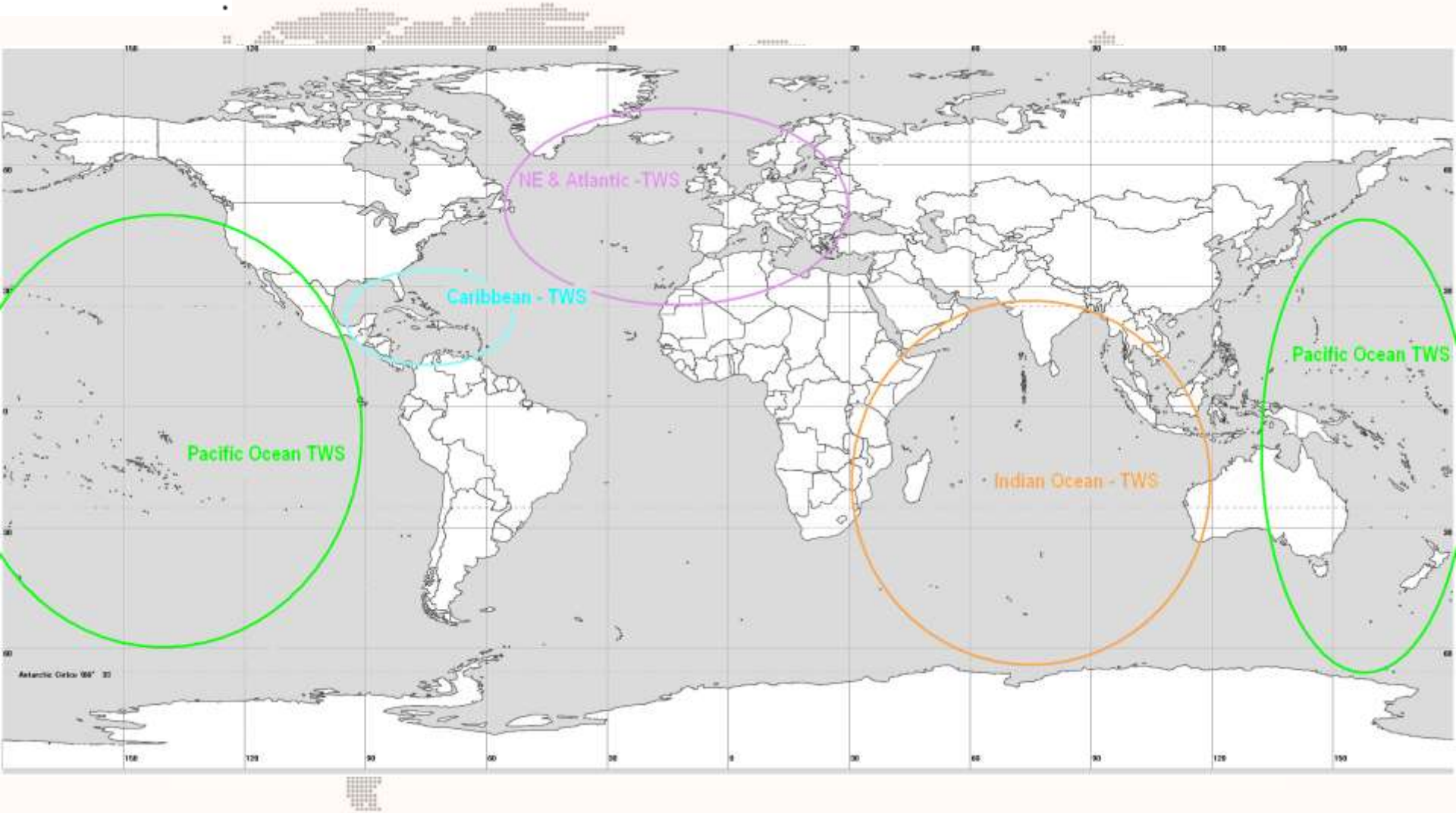
Tsunami Warning Systems



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Where the First Wave Arrives in Minutes

Indonesian Lessons on Surviving Tsunamis near Their Sources

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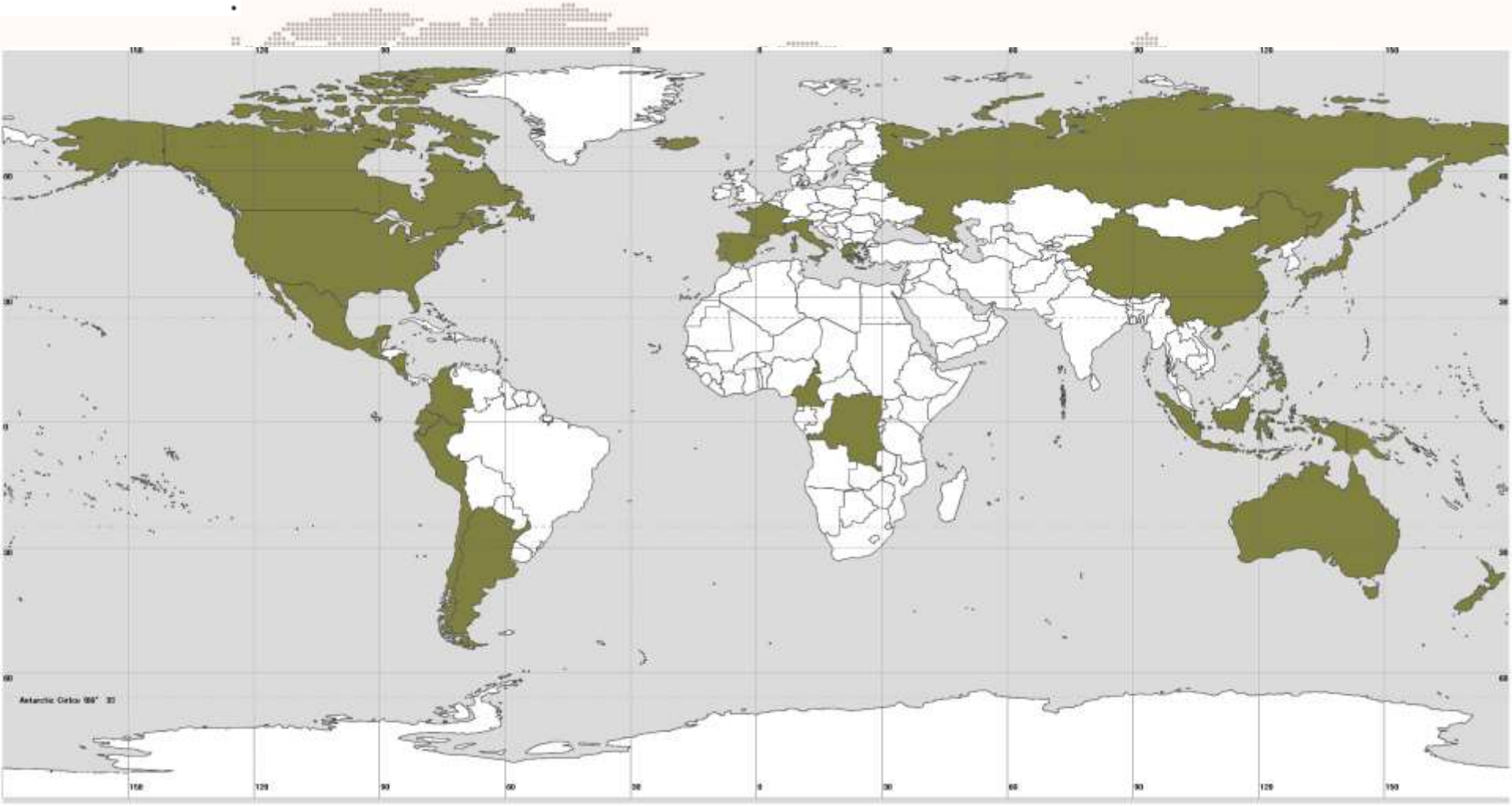
IMEWS - Volcanoes



Volcanoes - International Monitoring Early Warning System

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Support for the study of geo hazards within the framework of the geosciences Initiatives African Region

- to improve the awareness and the understanding of, and the preparedness for geohazards
- to be included and specifically addressed in the study of Earth science in the Africa universities.

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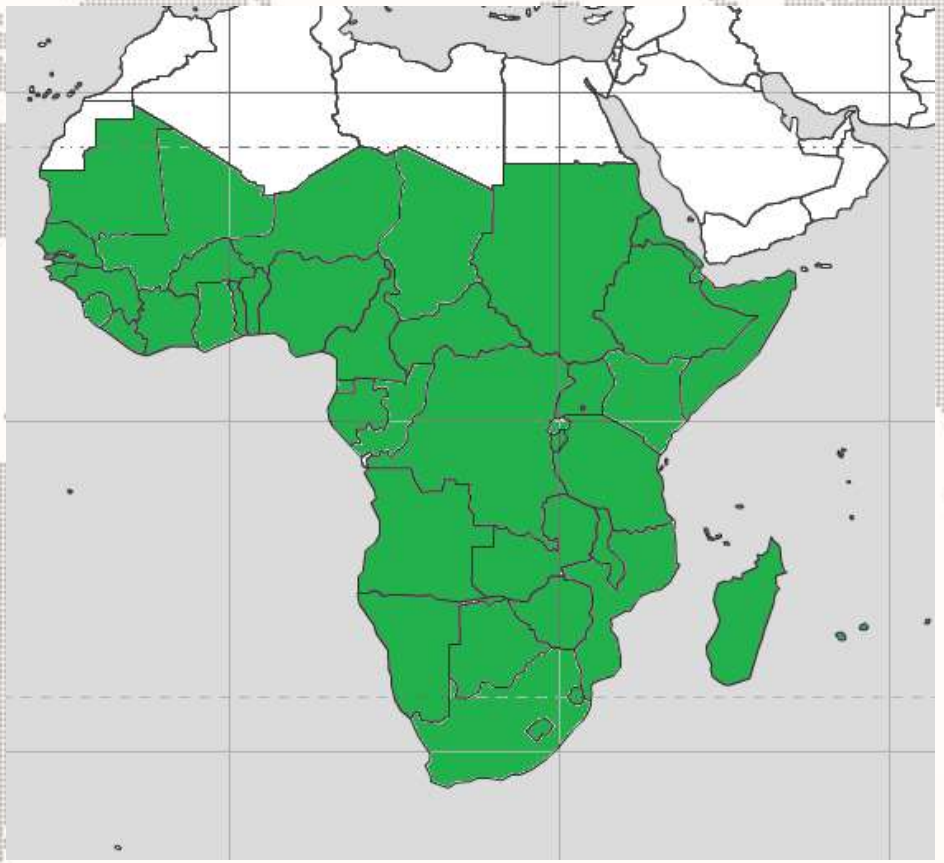
DRR Activities

Sub-Saharan Africa



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Africa Flood and Drought Monitor

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Africa Flood and Drought Monitor

- Drought is one of the leading impediments to development in Africa, dominated by rain-fed agriculture and particularly susceptible to climate variability.
- Recurring drought conditions, climate change and population pressures exacerbate this situation
- Alleviating the impacts of drought across sub-Saharan Africa requires a transition from crisis management to risk management and reduction

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Africa Flood and Drought Monitor

- Princeton and UNESCO: experimental flood and drought monitoring system
- Merges climate predictions, hydrological models and RS data to rapidly make available drought information in particular for remote areas
- Provides real-time evaluations of terrestrial water cycle and assessment of drought conditions
- Partnership with African collaborators for operational usage (AGRHYMET and ICPAC)

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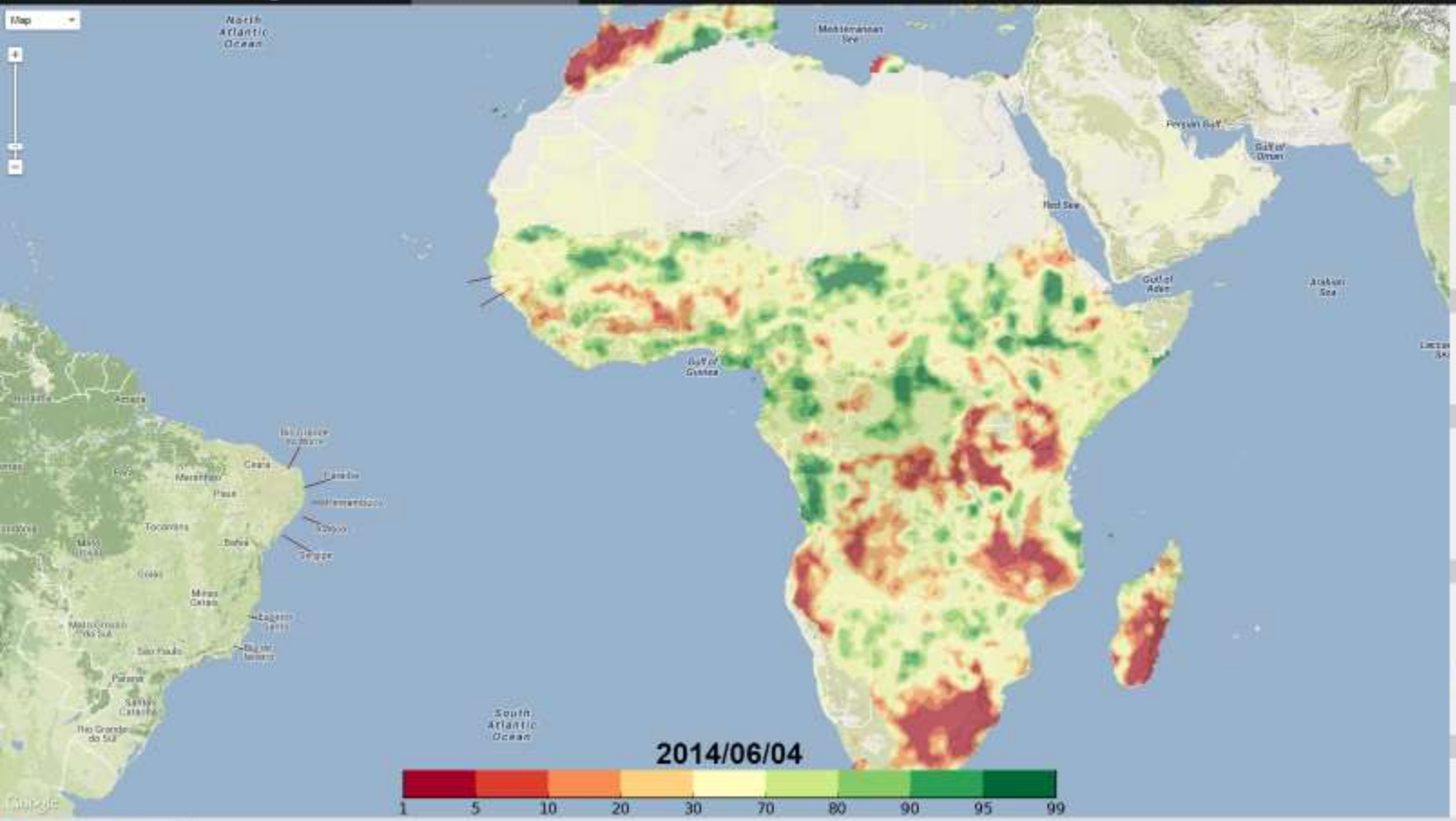
stream.princeton.edu/AWCM/WEBPAGE/interface.php?locale=en

African Flood and Drought Monitor | Interactive Interface | Basic Interface | Tutorial | Feedback



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Africa Flood and Drought Monitor

- Three main parts:
  - Historic reconstruction of water cycle 1950-2010 (climatology basis)
  - Real-time monitoring 2011-present (RS precipitation and model analysis, augmented by RS data on soil moisture and vegetation indices, tracking drought conditions)
  - Seasonal forecast (based on US climate prediction data, bias-corrected and downscaled)

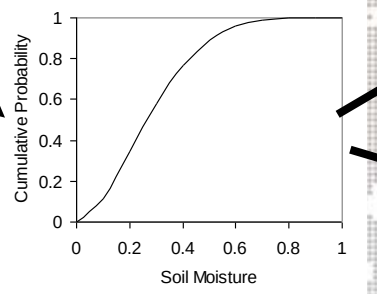
Development of Global Real-Time Drought Monitoring

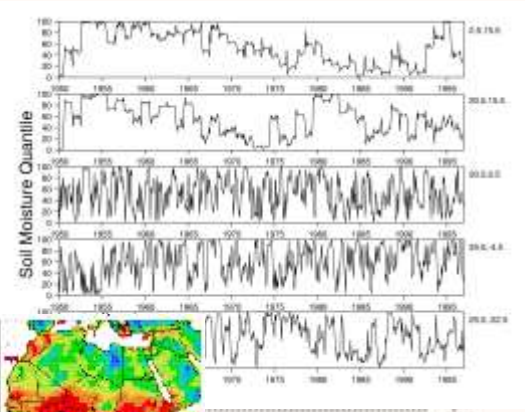
1) Retrospective Simulation -- DONE

2) Calculate Soil Moisture Index -- DONE

3) Historical Drought Analysis -- DONE

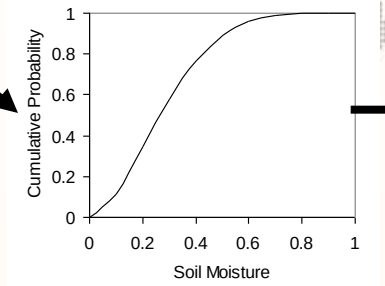
Historic soil moisture

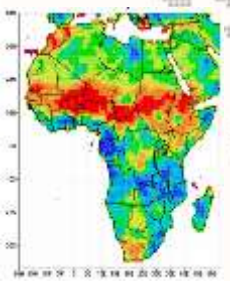




4) Real-time Drought Analysis – NEED REAL-TIME FORCINGS

Realtime soil moisture





GTS observations

ECMWF analysis

Satellite observations (NASA, ESA, JAXA)

(PERSIANN dataset)

Princeton University

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Africa Flood and Drought Monitor

- Priority is given to sub-region institutions: AGRHYMET in West Africa and ICPC in Eastern Africa
- Datasets used in the region compared to the observations
- Coherence of soil moisture pattern from the monitor compared to other sources used by sub-regional centres
- Comparison with discharge indexes of main rivers in the sub-regions
- Once tested and validated, the monitor could be used as a complement tool for the monitoring of the rainy season by the centres and countries

Africa Flood and Drought Monitor

- http://stream.princeton.edu/AWCM/WEBPAGE/index.php?locale=en

Pakistan Flood Risk Management

© UN Photo\Evan Schneider
A view of heavy flooding caused by monsoon rains in Punjab Province, near the city of Multan, Pakistan.

Project: Strategic Strengthening of Flood Warning and Management Capacity of Pakistan

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WMO

UNITED NATIONS UNIVERSITY

International Strategy for Disaster Reduction

Pakistan Flood Risk Management

Pakistan suffered its most severe floods in living history in 2010.

In 2011, UNESCO in collaboration with the Gov't of Pakistan and other partners, and with JICA support, launched effort to upgrade the flood forecasting and early warning systems of Pakistan and to conduct risk mapping of flood plains along the Indus River.

- to reduce the human and socioeconomic impacts of flooding in Pakistan,
- to improve the social, economic, and ecological benefits of floods, and
- to foster safer human settlements near flood plains.

Problem revealed by the flood 2010 and counter measures taken

Upper Indus

There was limited or no flood forecasting ability for the areas severely damaged by the floods

Flood forecasting including upper-Indus will be introduced by a new system utilizing satellite data（A1)

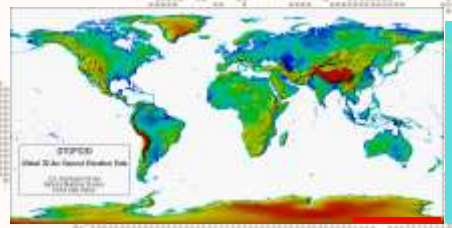
Lower Indus

The flood devastated the areas where had no inundation experience in the past

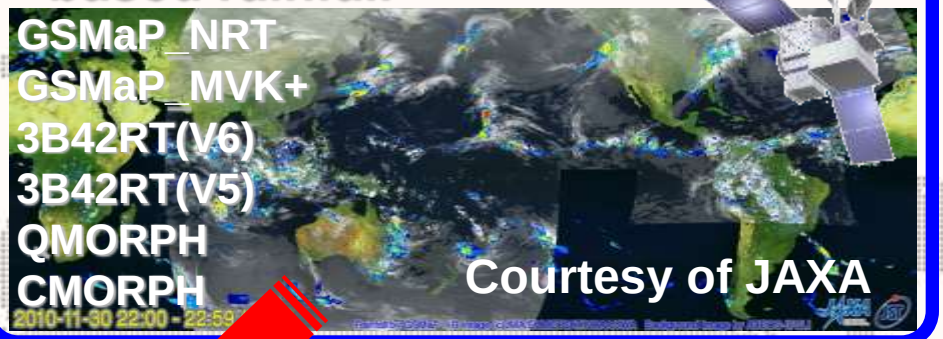
Updating flood hazard maps in lower Indus to cover the new inundated areas（A2)

Integrated Flood Analysis System (IFAS) components

Global Geological data for modeling Elevation data, Land use data, etc.



Ground rainfall and Satellite-based rainfall

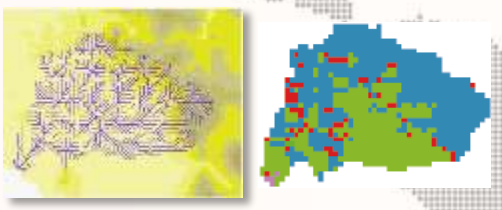


input

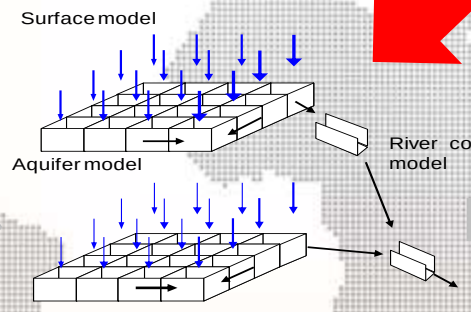
input

IFAS

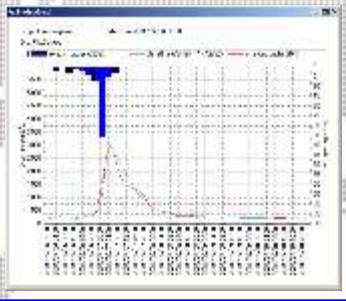
Model creation



Run-off analysis



River discharge, Water level,



Judge by River management authorities

Reach to the warning level

Alert message by E-mail and on the display

Evacuate from dangerous areas

Integrated Flood Analysis System

Flood forecasting system using satellite data

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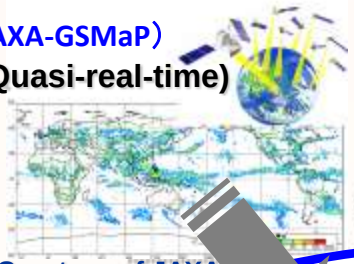
Rainfall observation by satellite

Satellite-based rainfall data

(JAXA-GSMaP)

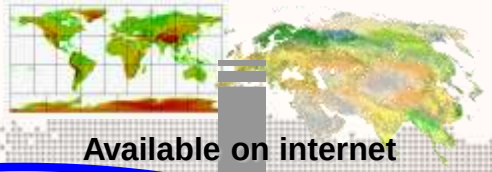
(Quasi-real-time)



Courtesy of JAXA

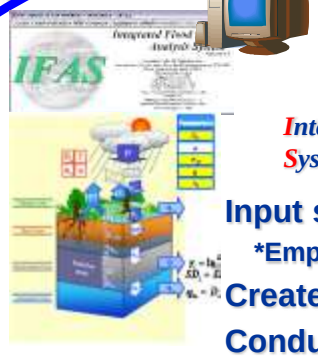
Satellite information of basin features

(Elevation, Land use, Geology)



Available on internet

Rainfall observation by rain gauge



IFAS

Integrated Flood Analysis System

User friendly display

Input satellite rainfall

*Empirical self-correction method is also applicable.

Create runoff analysis model with GIS

Conduct runoff analysis/forecast calculation

Flow/water level

Flood forecasting/warning

Promoting safe evacuation

Reduce/Prevent flood damage

Current situation in developing countries

Lack of rainfall data

Lack of river survey data

Lack of analysis tool

→ Costly and time-consuming

Difficult to approach system development

IFAS enables flood forecasting in areas even with insufficient ground-based observation facilities.

ICHARM supports local engineers to improve accuracy of IFAS by constructing and enhancing a ground-based observation network by degrees.

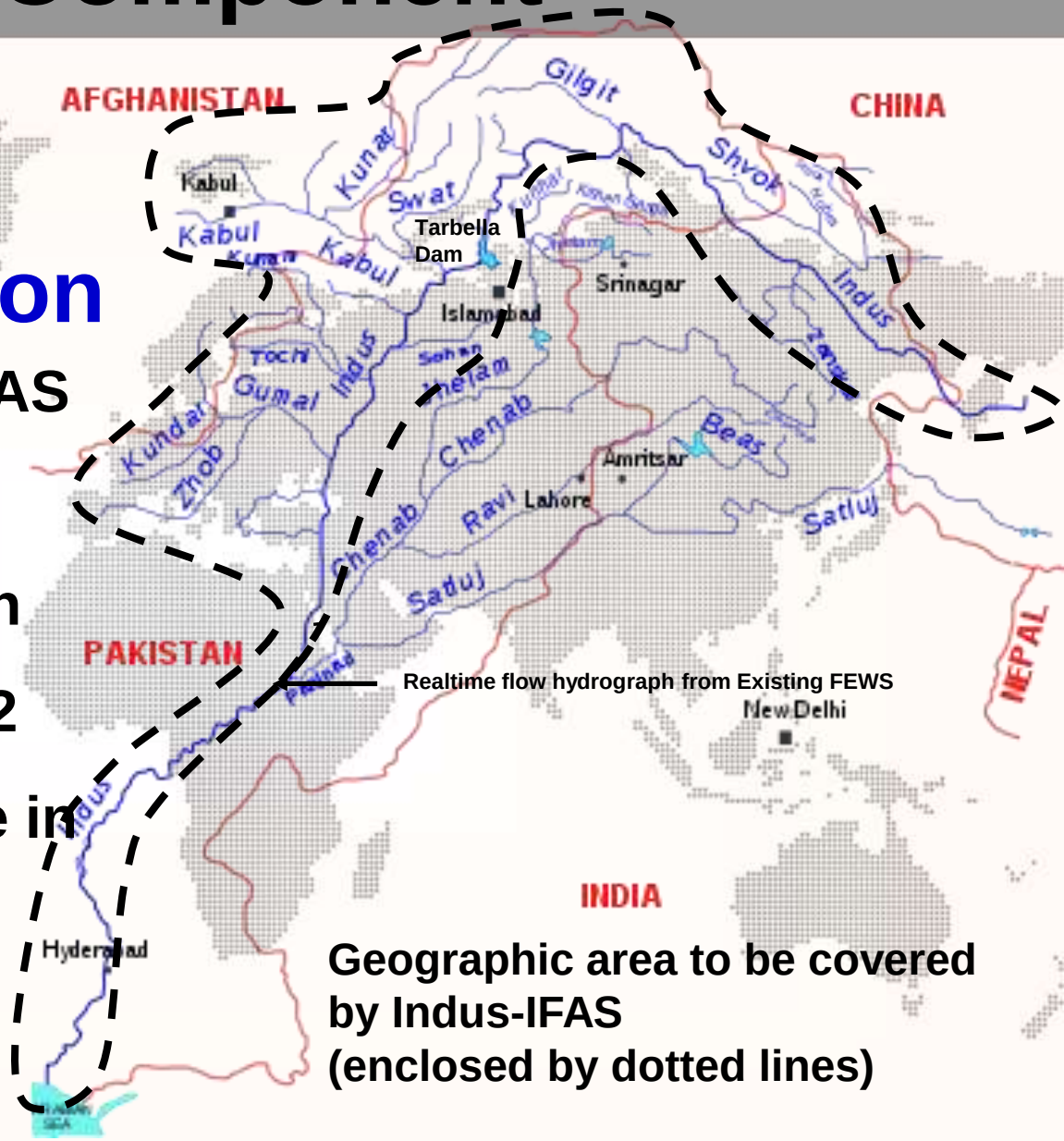
Buidling capacity of local professionals in flood forecasting and early warning systems

Project Component

A1

IFAS Introduction

- A proto type Indus-IFAS has been developed in collaboration with the government of Pakistan
- Test operation in 2012
- Validation and update in 2013



Geographic area to be covered by Indus-IFAS (enclosed by dotted lines)

IFAS

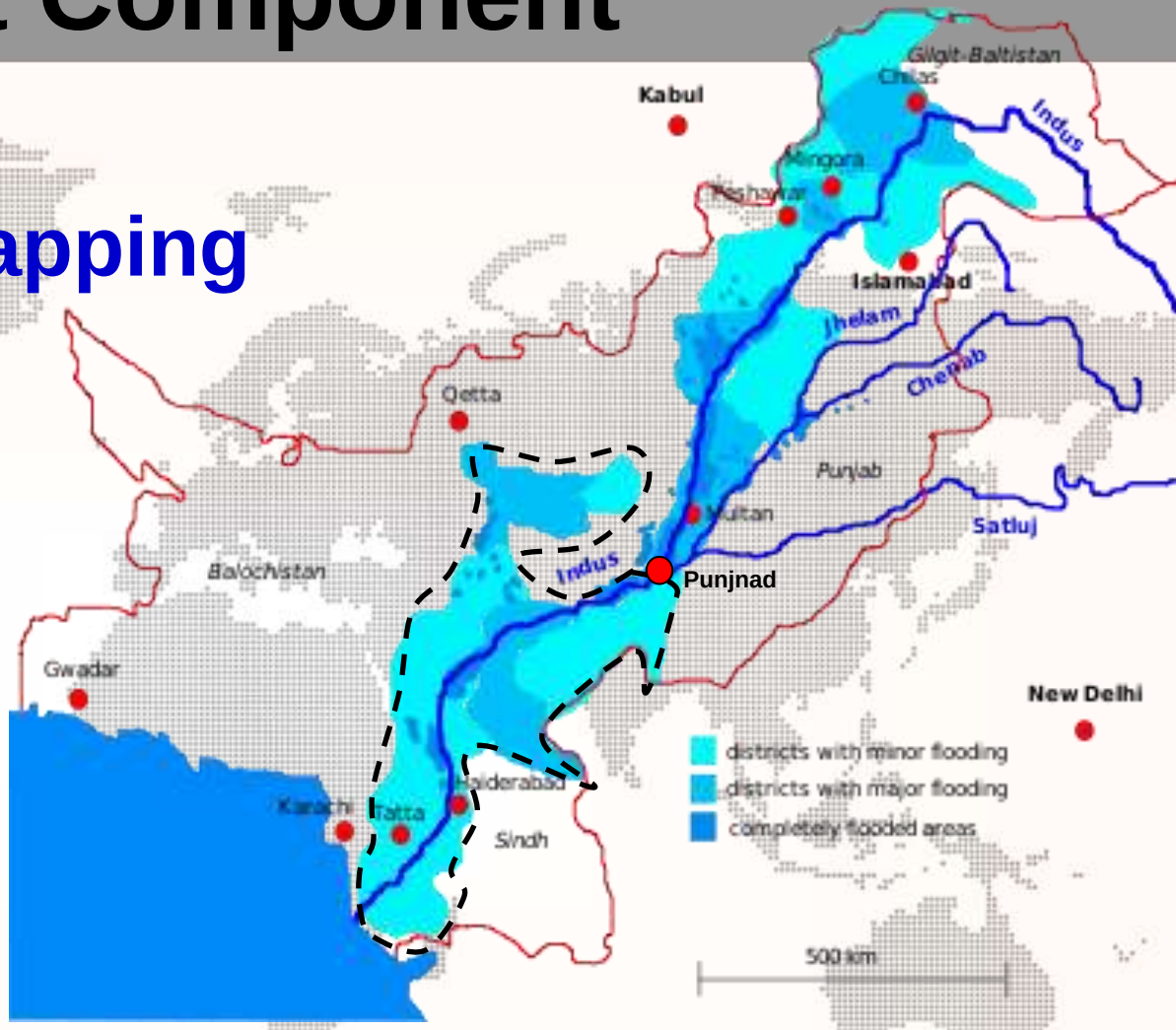
Integrated Flood Analysis System

Project Component

A2

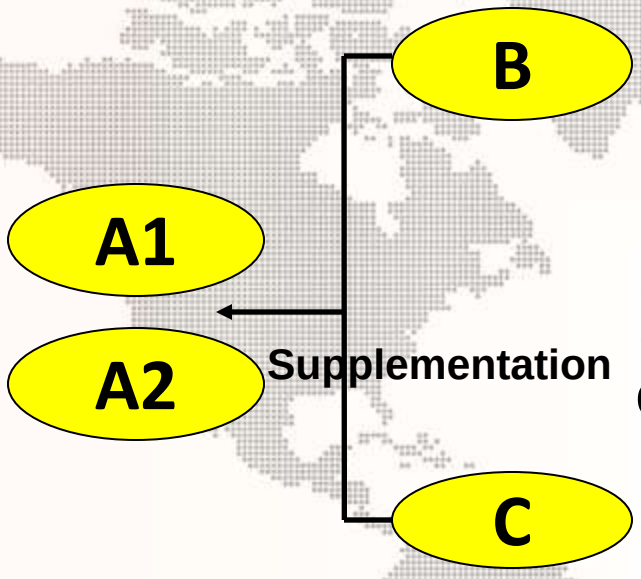
Flood Hazard Mapping

- Update flood hazard maps by using satellite data
- Cover lower Indus including newly affected areas by the flood 2010



Proposed Flood Hazard Mapping Area (enclosed by dotted lines)

Project Component



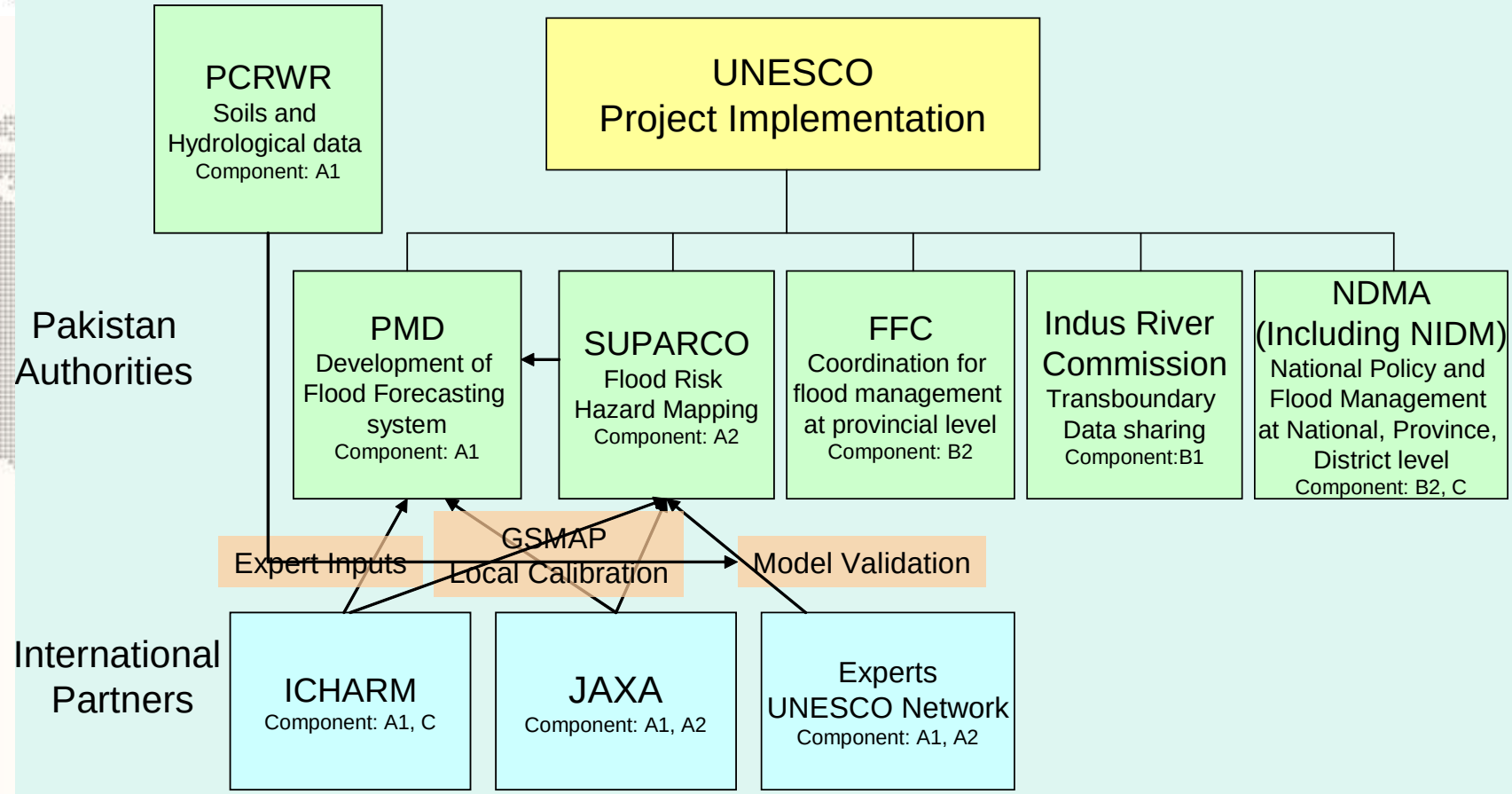
Software Platform for Transboundary and domestic data sharing

- Parameter improvement and enhanced utilization of IFAS

Human Capacity Development

- Capacity development for IFAS introduction and flood hazard mapping, as well as for their sustainable use

Implementation Framework



PMD Pakistan Meteological Department

SUPARCO Pakistan and Upper Atmosphere Research Commission

FCC Federal Flood Commission

NDMA National Disaster Management Authority

NIDM National Institute of Disaster Management

ICHARM International Centre for Water Hazard and Risk Management under the auspices of UNESCO

ICIMOD International Centre for Integrated Mountain Development

JAXA Japan Aerospace Exploration Agency

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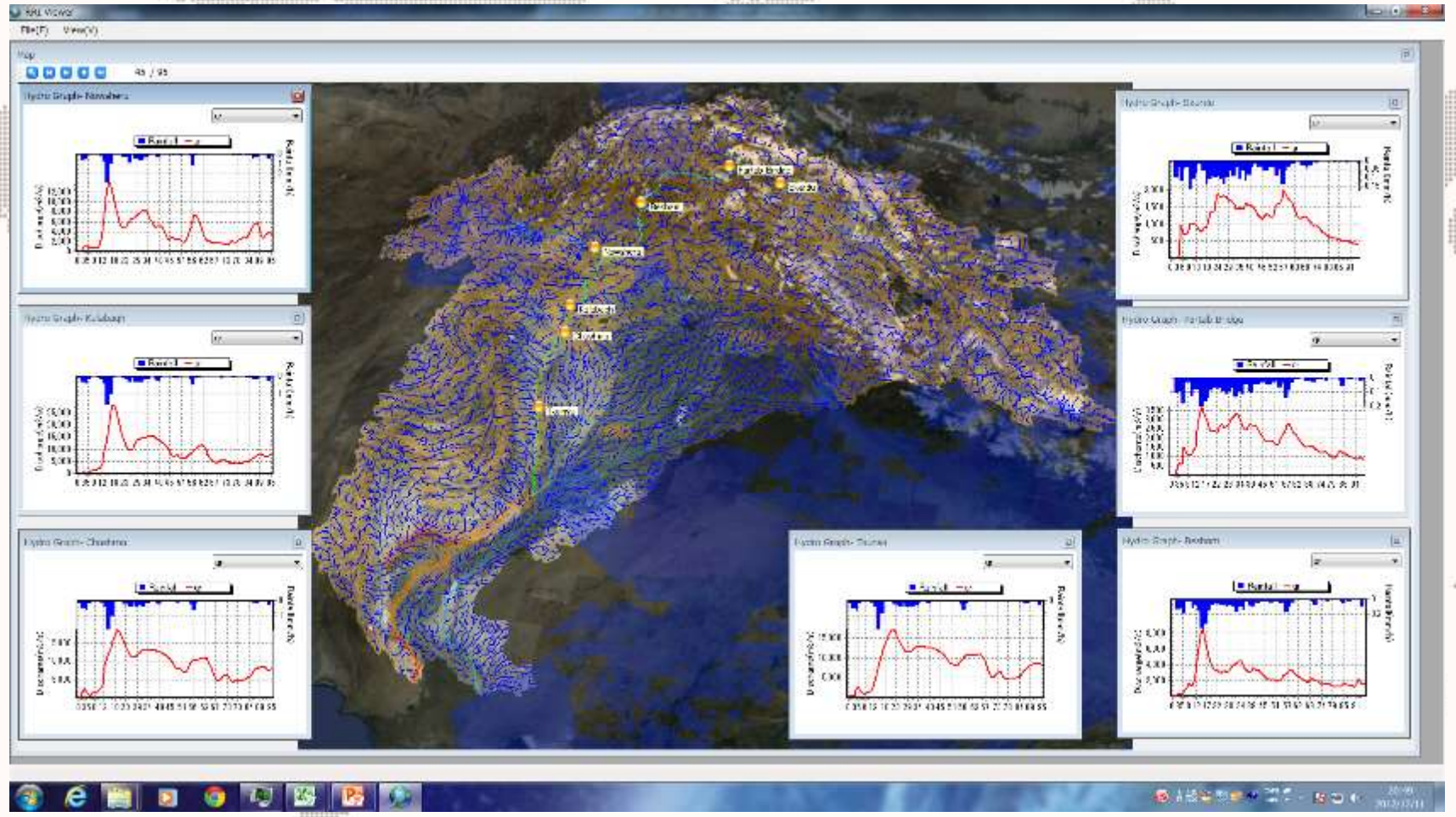
pour l'éducation,
la science et la culture

Indus-IFAS Delivered to Pakistan Meteorological Department



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Project Achievements

- Prototype hydrologic and hydraulic models have developed in partnership with PMD and SUPARCO
- Successful completion of 5 master students from PMD and SUPARCO who studied at the ICHARM a Category 2 Centre under the auspices of UNESCO
- A knowledge platform to sharing data in Pakistan and with the neighbouring countries is ready
- International Training Workshops of Stakeholders Capacity Building in Flood Warning and Management, (participants included senior flood managers from all provinces including NDMA, PDMA, DDMA, irrigation departments, universities, NGOs etc)
- 13 senior Pakistan water managers trained in Japan

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Project Achievements

- Collaboration with the Pakistan Council for Water Resources Research (PCRWR) on data collection and modelling analysis to improve the flood forecasting models
- International Workshop on Accuracy and Reliability of Flood Forecasting Models by Use of Remote Sensing Techniques, 17-18 July, 2012, Lahore Pakistan
- Specialized training for mid level water and flood managers on Flood Risk Mapping using Spatial Technologies, 10-15 December 2012, Islamabad Pakistan
- International Workshop on Flood Risk Mapping Using Spatial Technologies, 13-14 December, 2012, Islamabad Pakistan

Aiming for Regional Spinoffs

- Extend training benefits to Afghanistan facing similar issues in its north western rivers
- Afghan Met and Flood Management experts to be trained at through dedicated education modules developed by UNESCO and ICHARM
- Setup top down models of selected river basins in Afghanistan using Pakistan expertise

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FLOODIS

- FLOODIS is a collaborative EU-funded project, providing a flood information service that aims at better addressing and mitigating crisis situations arising before, during and after heavy flooding.

- FLOODIS will utilize services like GIO-EMS (GMES/Copernicus European Emergency Service) and EFAS (European Flood Awareness Service), to produce alert and management information on occurring flood events with high-accuracy, location-based information

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FLOODIS

- The main aim is to develop and implement **a mainstream oriented disaster alert and information platform for "flood events"** with four main components:
  - A web-based data management and support system to ingest and elaborate information and precisely geolocate users' information through the EGNOS/EDAS services,
  - An interface system to receive Earth Observations imagery and data from the EMS and utilize a novel flood forecast model based on EO data and on-field user-generated information,
  - A professional application for emergency response teams to support the emergency event management, and
  - A smart phone application for citizens, with which users can contribute to the system ("human sensors") and receive alerting information.

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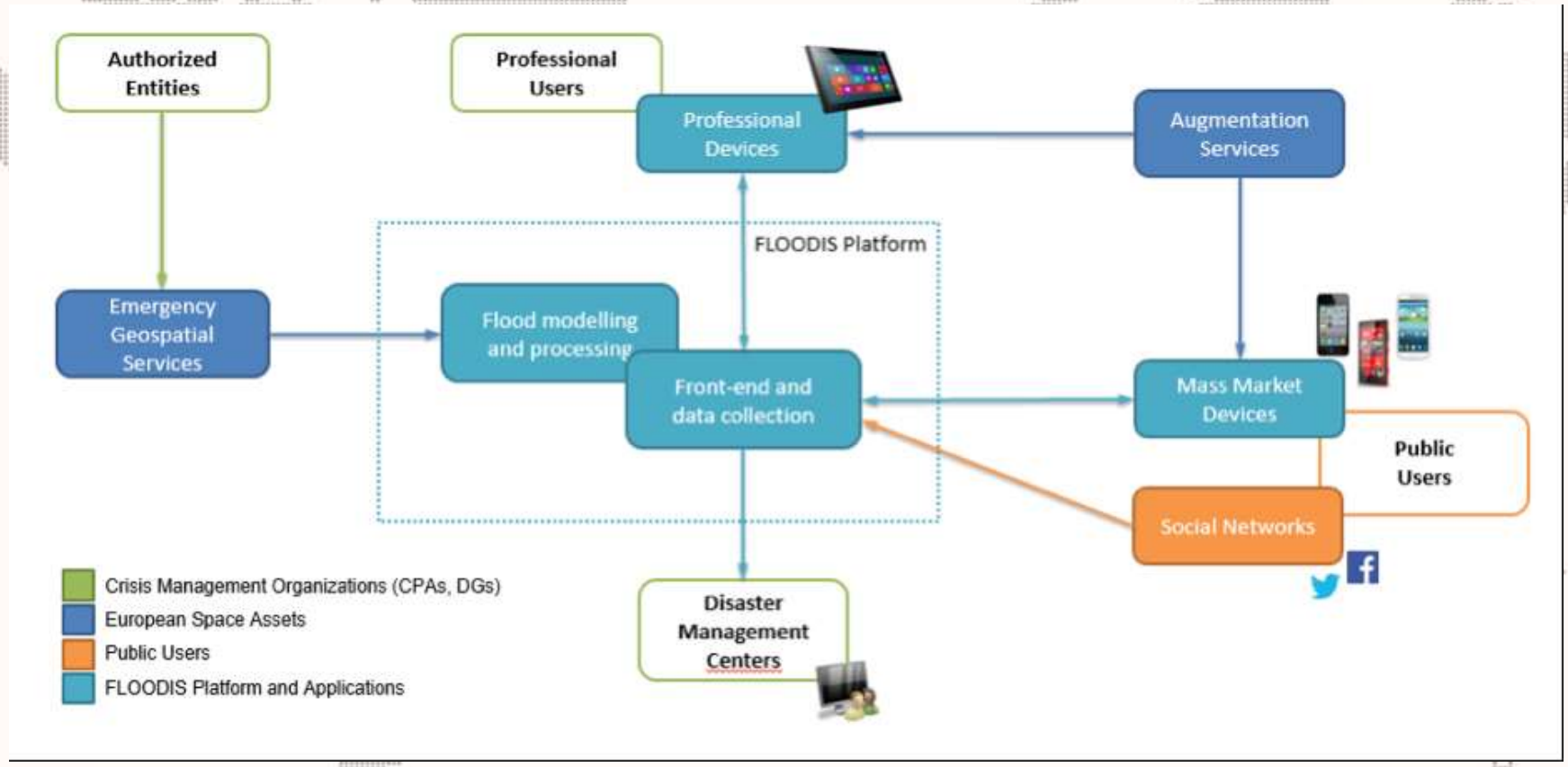
FLOODIS workflow



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FLOODIS innovation

- Users will be able to send back information on the actual situation 'in the field' (e.g. text information and pictures of flooded infrastructure) to the FLOODIS back-end system for ingestion and subsequent dissemination to all other users.

- As such, it will serve to provide up-to-date local information to Disaster Management Centres (DMCs), Civil Protection Agencies (CPAs), Emergency Response Units (ERUs) as well as affected citizens.

Groundwater Resources Investigation for Drought Mitigation in Africa Programme

DROUGHT HORN OF AFRICA

- Operational Regional Drought early warning system
- A Regional Groundwater Resources Database:
  - Collection of ancillary data
  - Advanced hydrogeological survey utilizing both optic and radar image analysis
- Provision of water to vulnerable populations through wells/boreholes drilling
- A critical mass of scientists
- A set of drought response policies for managing groundwater in emergency situations

Groundwater Resources Investigation for Drought Mitigation in Africa Programme

pour l'éducation,
la science et la culture

Enhancing Natural HAzards resilience iN South America (ENHANS)

Unit for Disaster Risk Reduction

UNESCO (The United Nations Educational, Scientific and Cultural Organization)

United Nations
Educational, Scientific and
Cultural Organization

South America

ENHANS: Objectives

The specific objectives of the project are:

- To develop and implement methods and tools to tackle rapidly varying vulnerability and risks within a common framework
- To train a critical mass of experts to utilize and further develop the tools
- To test the utilization of these tools and calibrate them in the local conditions
- To raise awareness among communities and reduce their risk from natural hazards
- To promote regional cooperation

ENHANS: Components

- Component 1: Methodology for assessing the socio-economic risk utilizing remote sensing technology as well as in situ techniques.
- Component 2: Provide a bottom up approach to assessing communities' resilience to hazards

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DIPECHO Project: Learning and Preparedness for Tsunamis

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la Ciencia y la Cultura

PREPARADOS PARA UN TSUNAMI

Fortalecimiento del
Sistema Regional de Alerta
ante Tsunami en Chile,
Colombia, Ecuador y Perú

- Learning and Preparedness for Tsunamis

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DIPECHO Project: Strengthening EWS in Central America from a multi-threat perspective

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- Inventory and diagnostic of EWS in Central America.
- Study of EWS legal frameworks and procedures.
- Validation of the "Manual on EWS Regional Flood" (produced by the OAS).
- Guidelines for the design and sustainability of EWS to Landslides / Mudslides
- Development of educational materials on EWS for the Ministries of Education.
- Incorporation of EWS in the formal school curriculum of each country.
- Awareness workshops and training aimed at authorities and officials from the ministries of education in the subject EWS.
- Support national efforts to commemorate the International Day for Disaster Reduction

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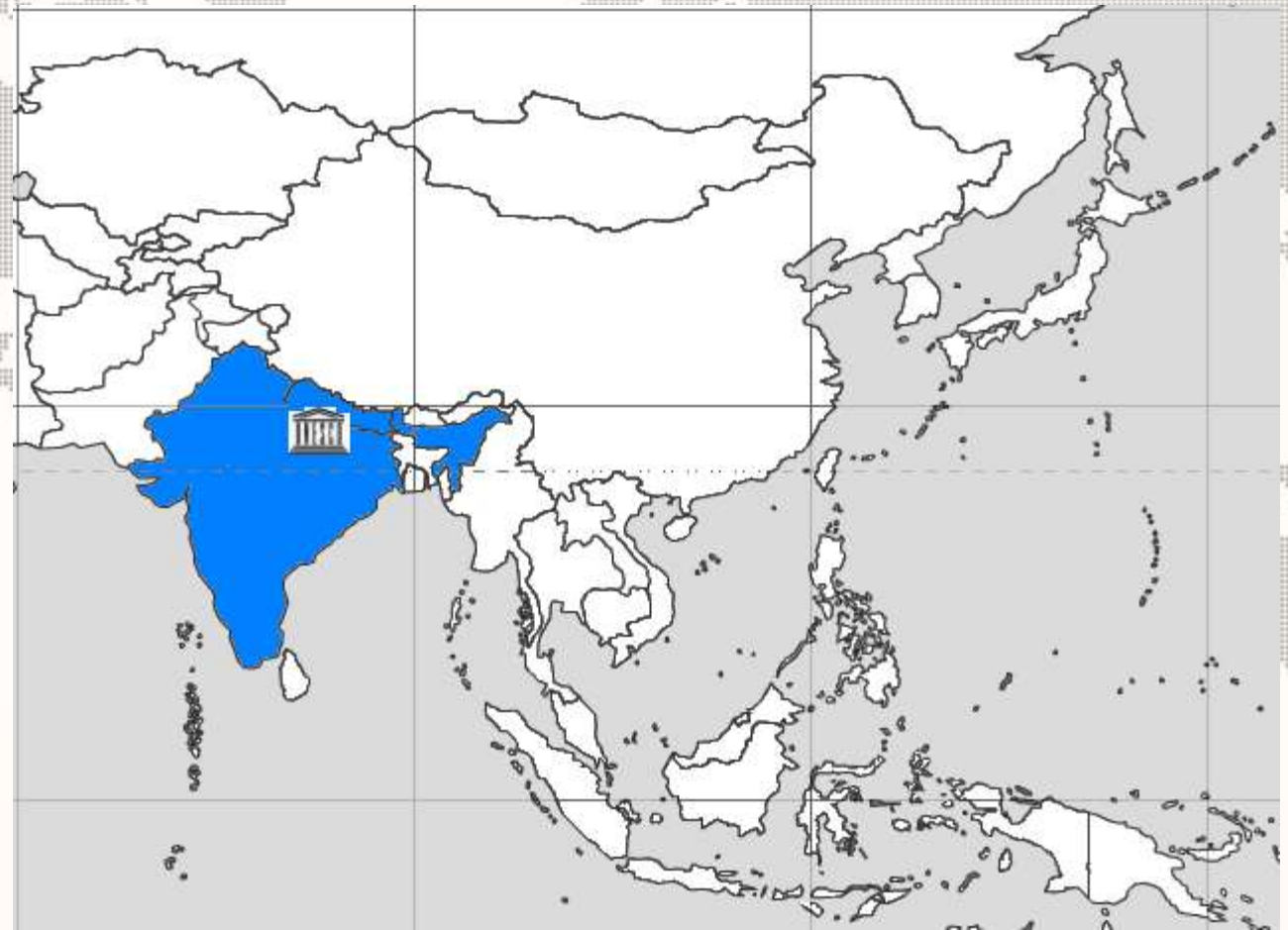
DRR Activities: Kathmandu Office, Nepal and New Delhi Office, India



- Establishment of Multi-parametric Earthquake Monitoring Stations in Nepal
- Preparedness for Flood Risk Reduction through Mapping and Assessing Risk and Management Options and Building Capacity in Lal Bakaiya Watershed, Nepal
- Improving Human Security through Better Understanding of Flood Mechanism in the Himalayas: A Pilot Project for Flash Flood Management in the lesser Himalayas of South Asia

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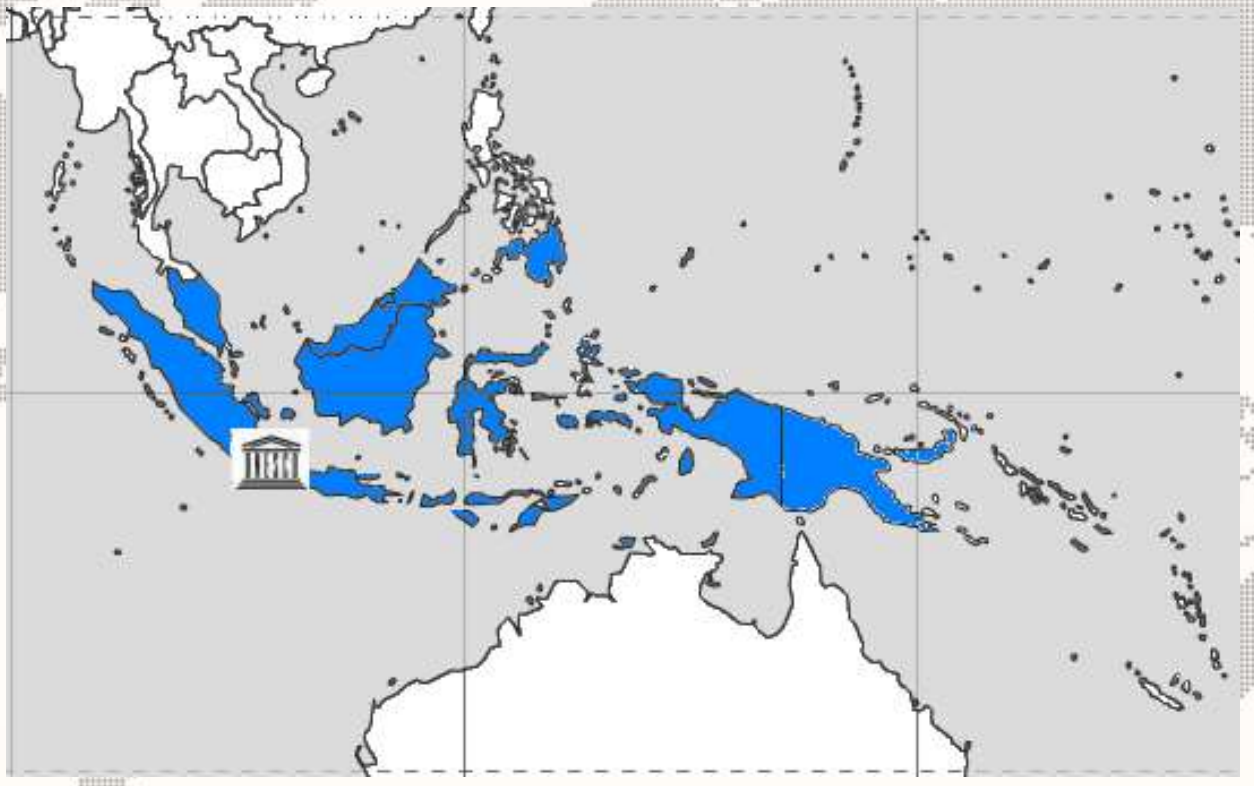
DRR Activities: Jakarta Office



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Education Package "Earthquake Preparedness Programme for School"

UNESCO Office, Jakarta – PMB/ITB - UN/ISDR

Reinforce the school community group in disaster preparedness

1. **Development Kit for Teachers**
2. **Learning Materials for Teachers**
3. **Worksheet for Students**

Involvement in ISDR School campaign and their projects on EDDR

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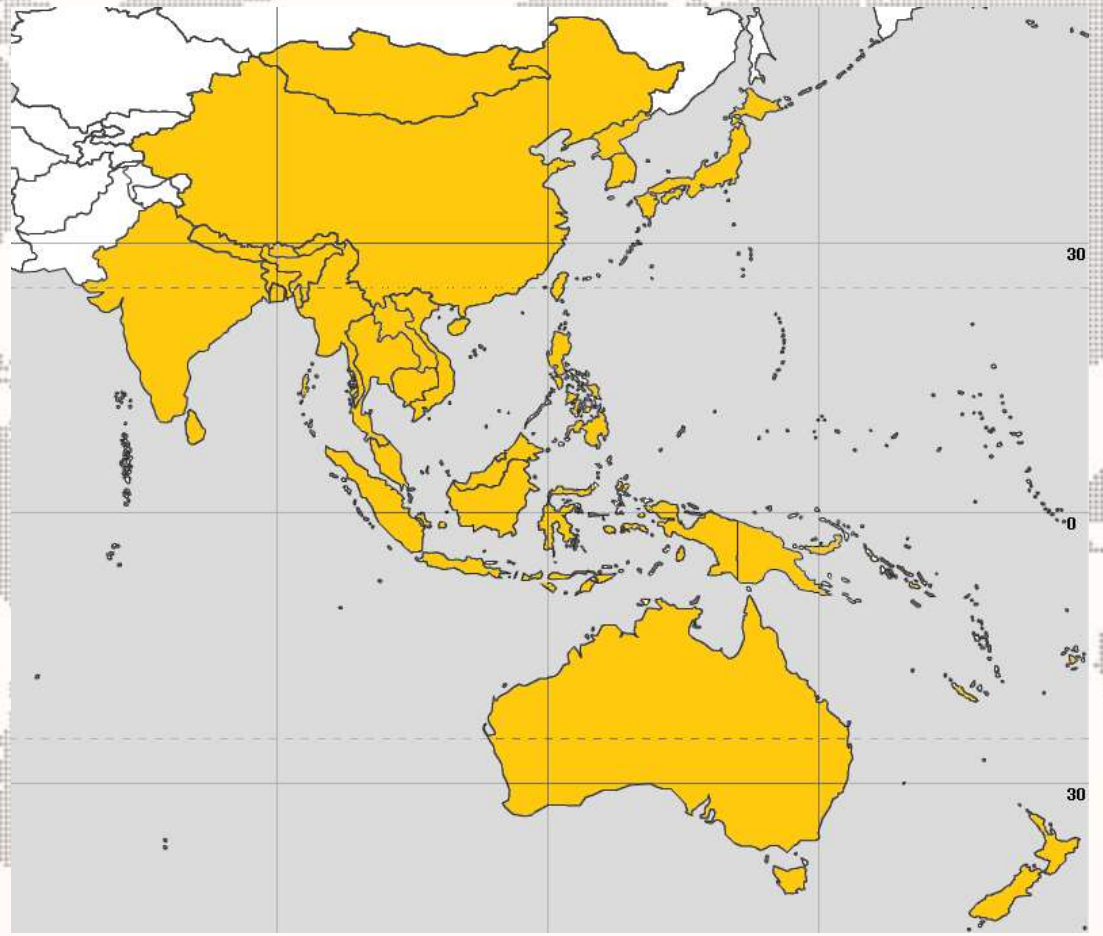
des Nations Unies
pour l'éducation,
la science et la culture

UNESCO Bangkok
Asia and Pacific Regional Bureau for Education



Education for Natural Disaster Preparedness in the Context of ESD

UNESCO Bangkok

Take stock of ongoing ENDP activities at the country level

Conduct situational analyses in the following proposed countries to identify and address gaps and needs:

China	Japan
India	Indonesia
Philippines	Sri Lanka
Thailand	Vanuatu

1. Development of an ENDP materials website
2. Regional Workshop on Education for Disaster Risk Reduction for Sustainable Development
3. Curriculum recommendations

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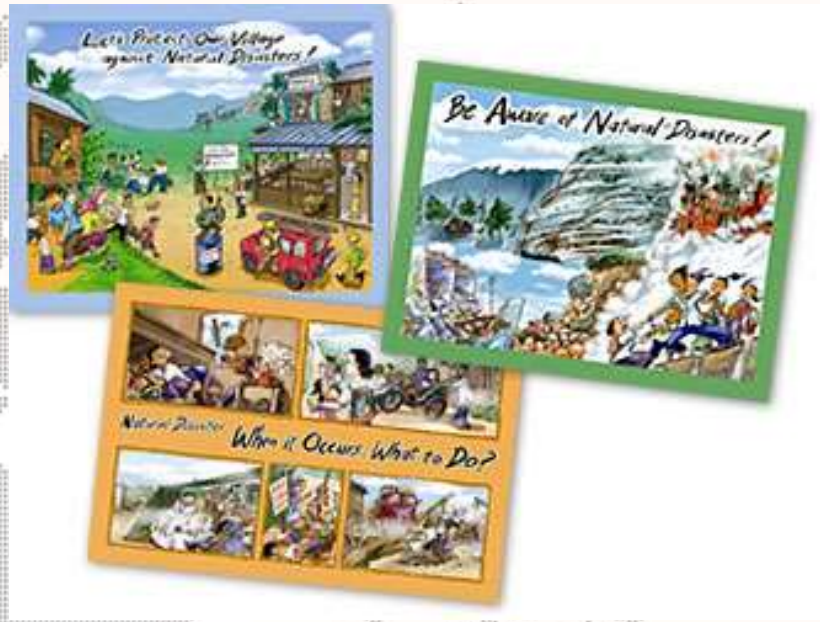
Asia-Pacific Cultural Centre for UNESCO

Programmes and materials in Disaster Reduction and Preparedness



ACCU
Asia/Pacific Cultural Centre for UNESCO

United Nations
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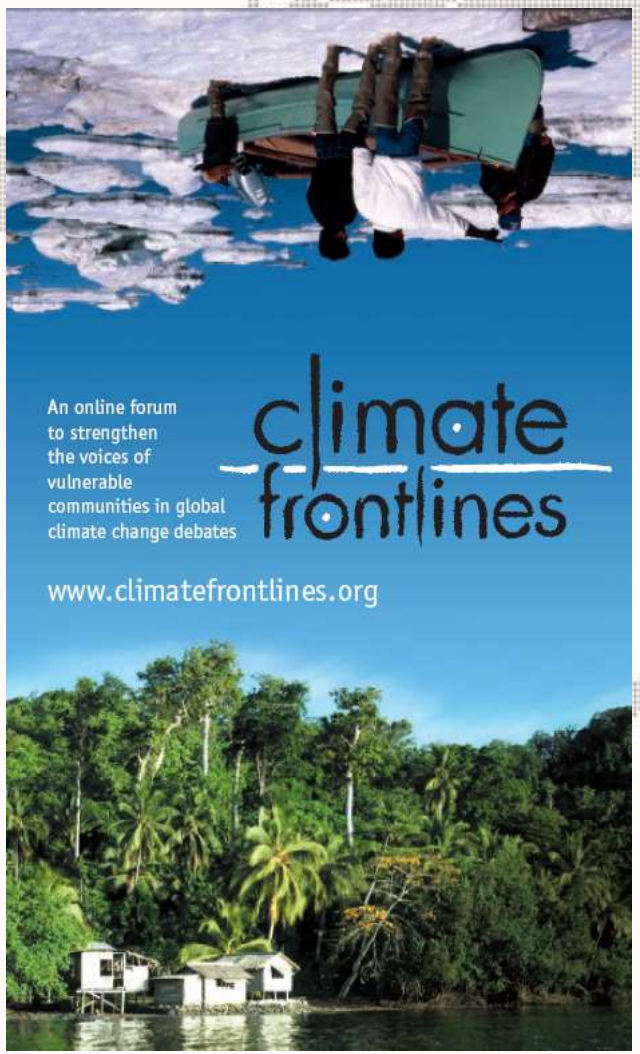
UNESCO - Indigenous



Indigenous
Knowledge

ESD-DRR

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Hyogo framework for action 2005-2015

Priority No 3:

Knowledge, innovation and education - Building a culture of resilient communities

"the integration of disaster risk reduction as an intrinsic element of the UN Decade of Education for Sustainable Development",

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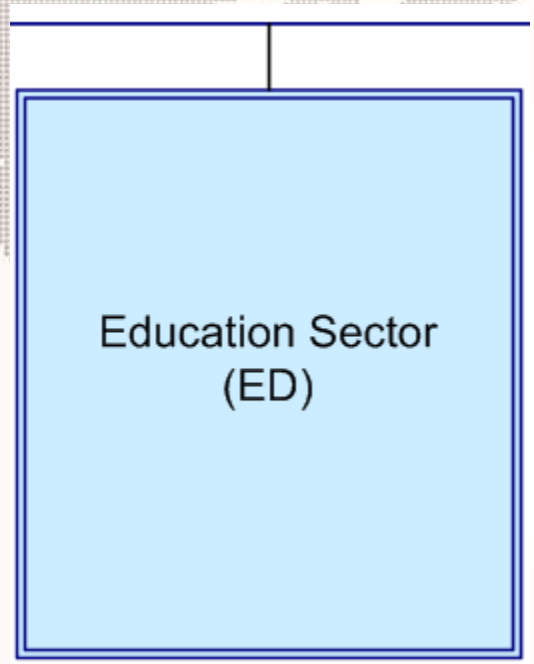
Cultural Organization

Education Sector



- Education for All (EFA)
- UN Decade of Education for Sustainable Development 2005 – 2014

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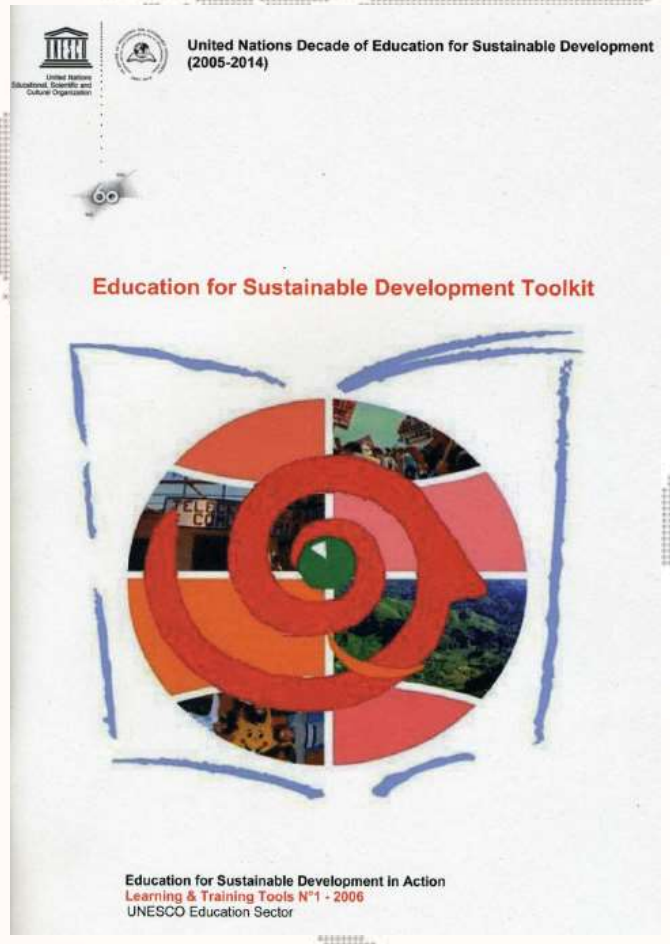

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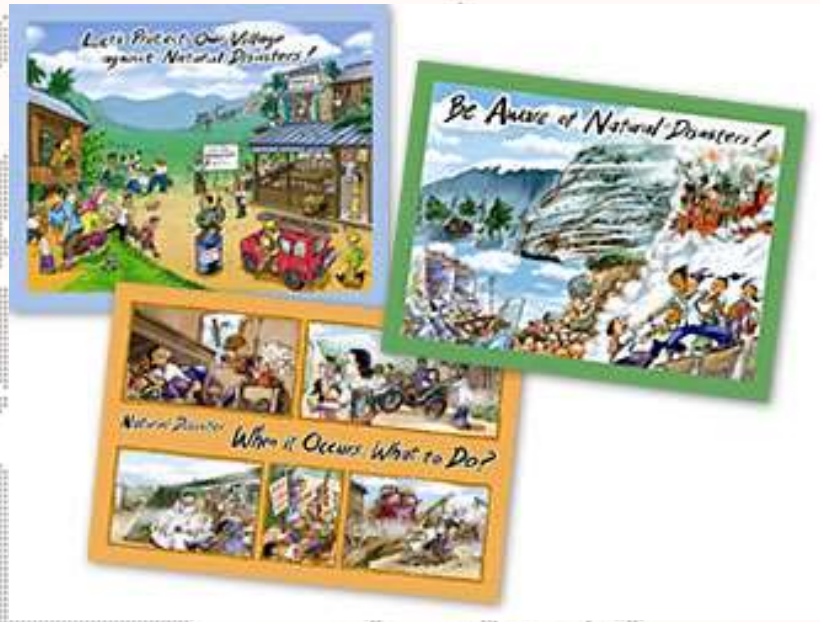
Asia-Pacific Cultural Centre for UNESCO

Programmes and materials in Disaster Reduction and Preparedness



ACCU
Asia/Pacific Cultural Centre for UNESCO

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Web-Tools

Teaching and learning for a sustainable future

a multimedia teacher education programme

Themes and Modules

UN Decade of Education for Sustainable Development

Getting Started in TLSF

Curriculum Rationale

Sustainable Development Across the Curriculum

Interdisciplinary Curriculum Themes

Teaching & Learning Strategies

Dissemination & Training Toolbox

Credits & Acknowledgements
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Challenges

School Safety

4 PILLARS:

1) **School Disaster Management**
2) **Safe School Facilities**
3) **Disaster Prevention Education**
4) **Continues Assessments**

Multi-sectoral

(ED, SC, SHS, CLT, CI)

UN Interagency

(UNISDR, Unicef, WB, etc)

DRR Community

(Plan, Save the Children, INEE)

Example activities :

- Baseline study on school safety activities worldwide
- Methodology for assessing school safety
- School safety index
- Guidelines for strengthening school safety
- Implementation of school safety measures:
  i.e.: (soft -> emergency plans)
  (hard -> retrofitting)

VISUS app

Elementary scenarios
Reconoissance
CHARACTERIZATION TOOL

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EL SALVADOR APPLICATION

VISUS OUTPUT PREVIEW

BUILDING ASSESSMENT

WARNINGS: WHAT AND WHERE

CHARACTERIZATION LIST OF THE SEISMIC SAFETY OF SCHOOLS

ADMINISTRATOR CONCERNS

WHICH SCHOOL NEEDS TO BE ADEQUATE FIRST?

WHY?

WHAT KIND OF INTERVENTIONS ARE NECESSARY?

HOW MUCH DOES THE RETROFITTING COST?

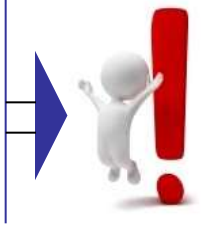
HOW MANY INTERVENTIONS ARE FEASIBLE WITH THE AVAILABLE RESOURCES?

HOW SHOULD WE COMMUNICATE THE RISK LEVEL TO PEOPLE?

SCHOOL ID	SCHOOL TYPOLOGY	STRUCTURAL PERFORMANCE CLASS	INTERVENTION REQUIREMENT ROSE	VISUS SAFETY STARS	COSTS (K€)
GO 000 XXX	Preschool			★★★★★	0
GO 000 XXX	Preschool			★★★☆☆	Technical verification
GO 000 XXX	Primary school			★★☆☆☆	47÷63
GO 000 XXX	Secondary school			★★☆☆☆	1.380÷1.870
GO 000 XXX	High school			★☆☆☆☆	2.300÷3.150
PN 000 XXX	Primary school			★★☆☆☆	920÷1.250

VISUS

KEYS FOR ANSWERS



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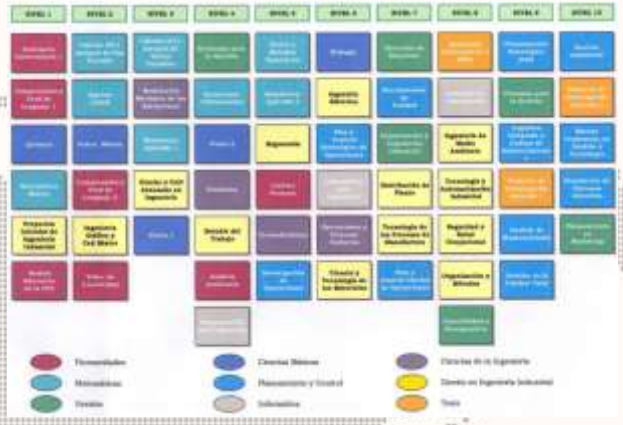
DRR integration into curricula

1. A comprehensive mapping that captures key national experiences and good practices with regards to integration of DRR in school curriculum



2. A guidance for governments, ministries and partner agencies and organizations to effectively integrate DRR in curricula. It will draw from previous experiences and further DRR agenda through curriculum enhancement.

unicef

TPK

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Minimum Standards for Education: Preparedness, Response, Recovery.

Notes d'orientation pour
La construction d'écoles plus sûres

Dispositif mondial de réduction des catastrophes et de relèvement (GFDRR)

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des Nations Unies
pour l'éducation,
la science et la culture

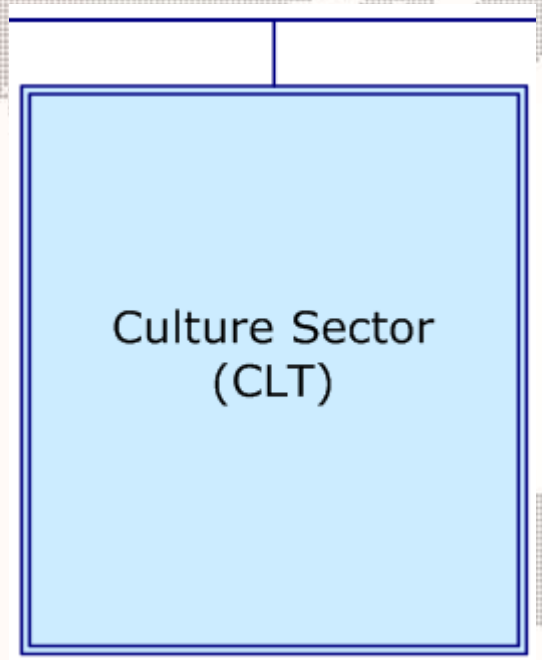
INEE

THE WORLD BANK

United Nations
Educational, Scientific and
Cultural Organization

Culture Sector

- World Heritage



Protecting, safeguarding and managing the tangible and intangible heritage

United Nations
Educational, Scientific and
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UNESCO's response to

Natural disaster

To protect educational buildings and cultural heritage

Landslides, Machu Pichu, Peru

International Programme on Landslides supported by UNESCO

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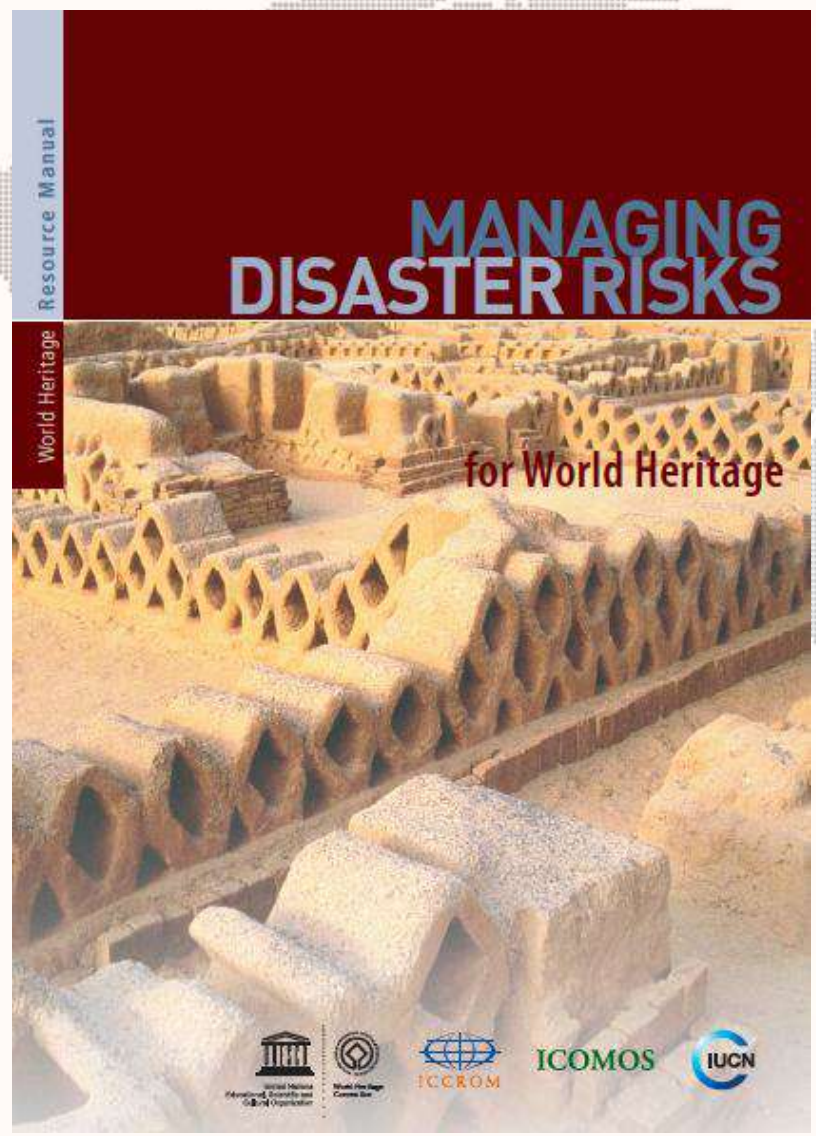

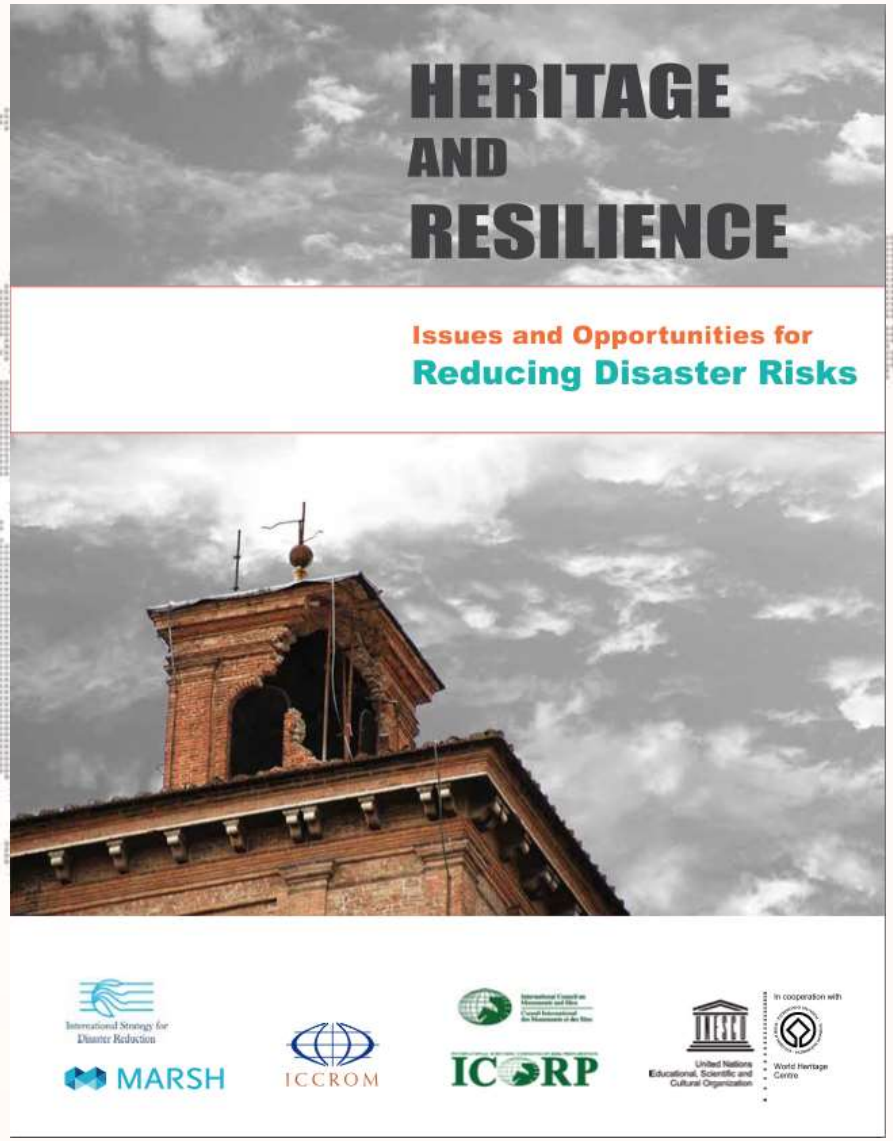

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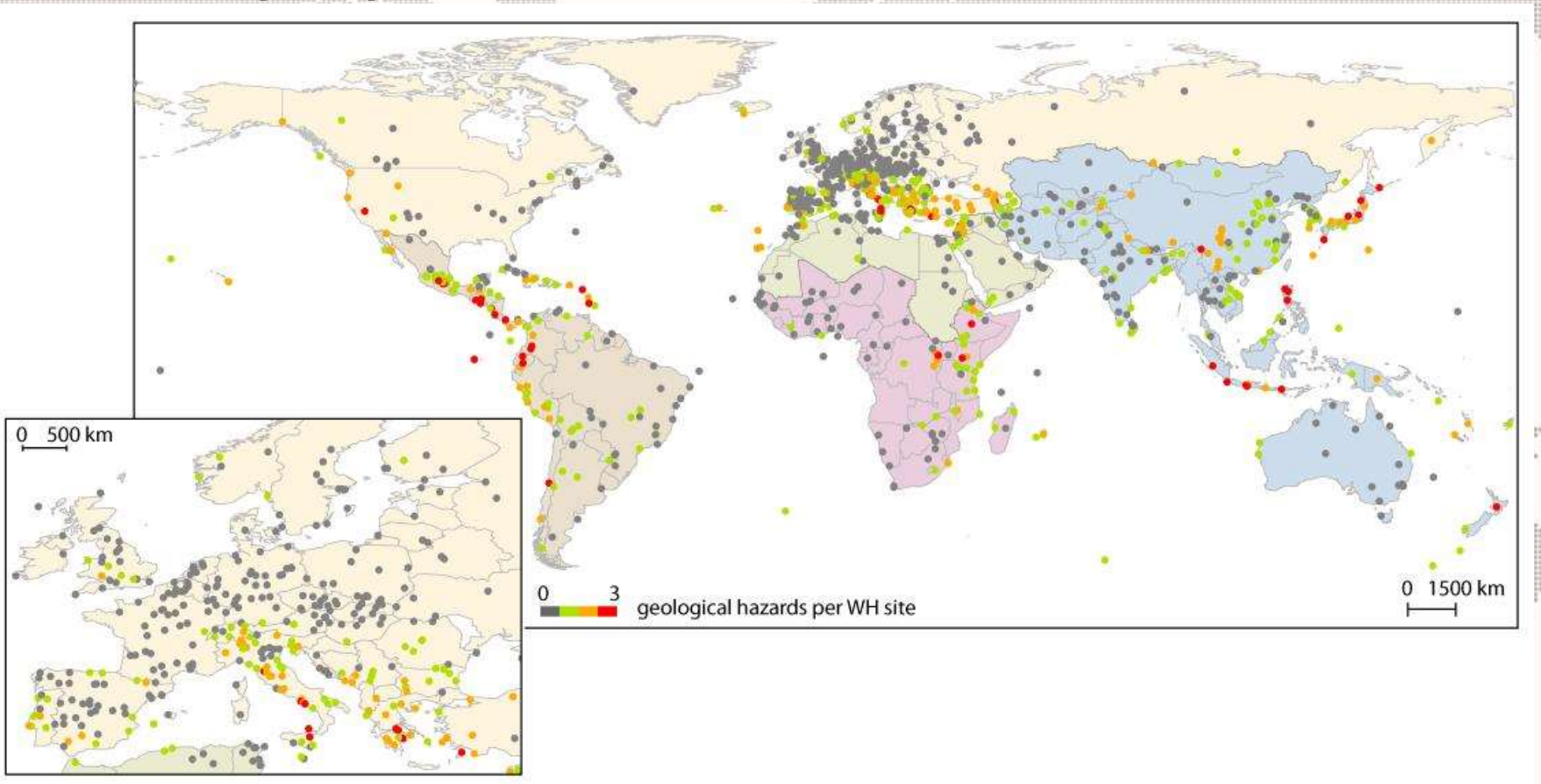
DRR & Culture

- Disaster risk at World Heritage sites: are we prepared



UNISDR – Thematic Platforms

- Global Alliance for Resilience and DRR in Education; Chair & Secretariat
- IPRED; secretariat
- Global Task Force on Building Codes; secretariat
- PEDRR; co-chair