Disaster Reduction and Enhancing Education for Sustainable Development

Priority area

in the

Hyogo framework for action, 2005-2015

(outcome of Kobe Conference)

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

Ministerial Level Earth Observation Summit Process

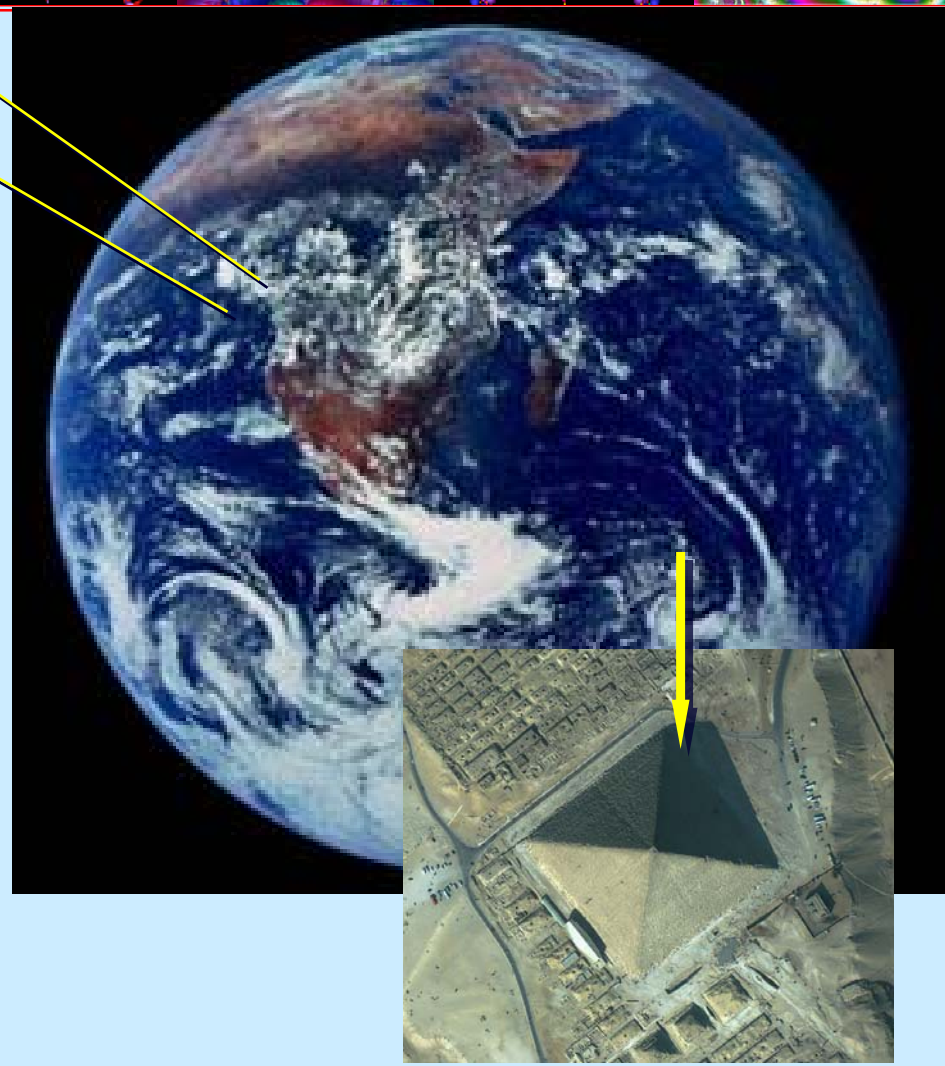
- Way Forward -

III[rd] Summit:

Ministers adopted

the Plan for the creation of a Global Earth Observation System of Systems (GEOSS) over the period of 2005-2015, and identify the necessary human, budgetary, scientific and technological resources for the implementation of GEOSS.

17 February 2005, Brussels



Satellite IKONOS (at 600 km altitude)

May 15 2003

“ Education - in all its forms and at all levels - is not only an end in itself but is also one of the most powerful instruments we have for bringing about the changes required to achieve sustainable development. ”

Koïchiro Matsuura,
Director-General of UNESCO

« The best defense against disaster is a well informed community »

Franklin Mc Donald, Director Natural Resources Conservation Authority, Government of Jamaica

3 pillars of Sustainable Development
valid for disaster reduction

- Social perspectives
- Environmental perspectives
- Economic perspectives

With culture as an underlying dimension

Education for disaster reduction

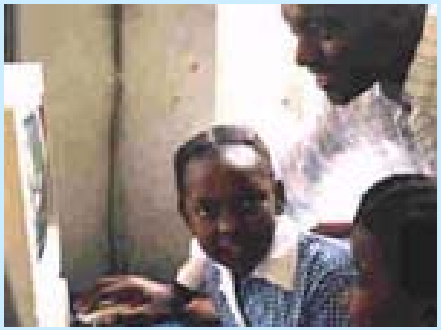
to accelerate the progress of societies toward disaster resilience

A process in which individuals gain awareness of their environment and acquire **knowledge, skills, values, experiences**, and also the **determination**, which will enable them to act - individually and collectively - to cope with disasters.

Education for disaster reduction

Objectives

Knowledge - to help individuals, groups and societies gain a variety of experiences in, and a basic understanding of, the knowledge and action competencies required for disaster reduction



UNESCO Developed Disaster Reduction Programmes on Geological Water Ocean Related Hazards

1980
El-Asnam Algeria

10 October, 13:24, 15 Km east of El-Asnam, Ms=7.3 ;focal depth = 10 Km

One of the 85 destroyed schools

3000 people killed, 8500 injured, 480,000 homeless

30,000 housing units destroyed, 60,000 damaged

economic losses:more than US$4 billion

archeological sites damaged

1983

Arab Fund for Economic and Social Development
Islamic Development Bank
UNESCO

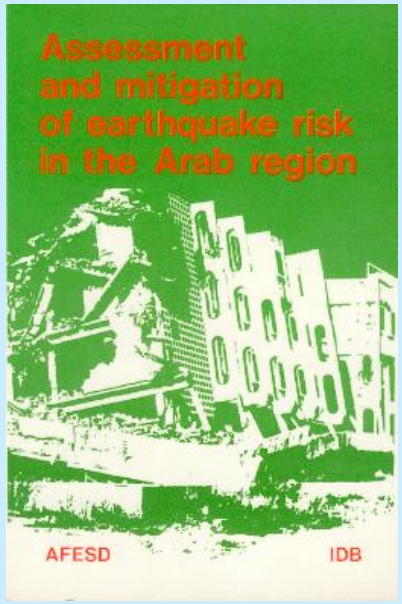
Algeria

Egypt

Irak

Jordan

Lebanon



Libya

Morocco

Syria

Tunisia

Sudan

1984-2005

UNESCO implements the training and technical assistance components of the PAMERAR projects in Tunisia, Morocco, Syria

PAMERAR results

Capacity building for earthquake risk reduction

more than 3500 person-days of training provided for scientists, engineers and technicians, more than 40 missions of technical assistance organized

Development of seismic networks

300 seismometers and accelerometers installed in Morocco, Tunisia, Iraq, Yemen, Jordan, Syria and Egypt

Earthquake provisions to building codes

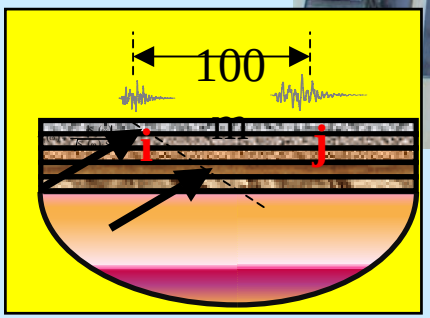
in Algeria, Jordan, Morocco and Tunisia

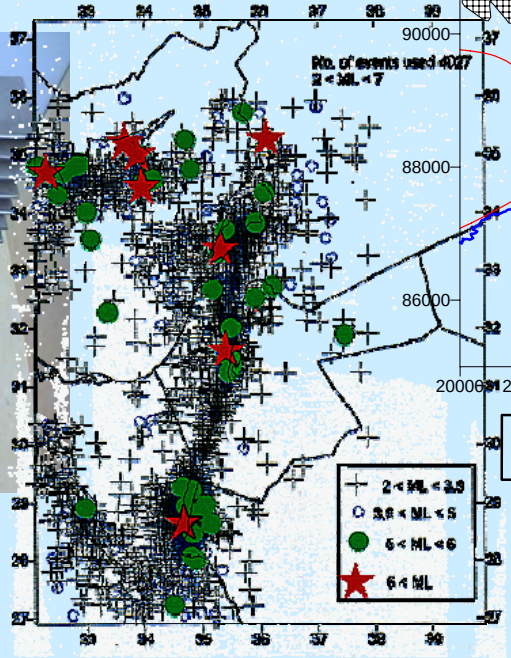
Continuing learning, international exchanges

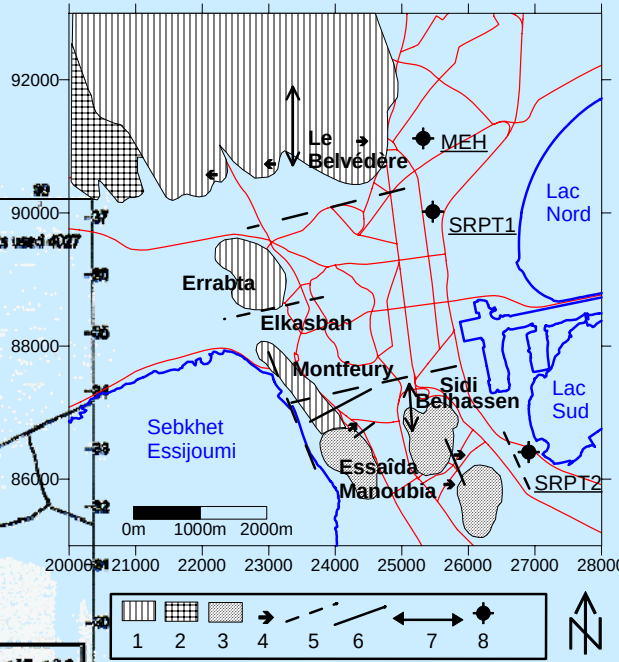
UNESCO Programme - Reducing Earthquake Losses in the Eastern Mediterranean Region

ALGERIA, CYPRUS, EGYPT, GREECE, ISRAEL, IRAN, JORDAN, LEBANON, LIBYA, WEST BANK AND GAZA STRIP, MOROCCO, OMAN, SAUDI ARABIA, SYRIA, TUNISIA,TURKEY, YEMEN

more than 20 International Workshops to improve and share seismic data for the adoption of policies and actions of sound planning land-use and construction techniques



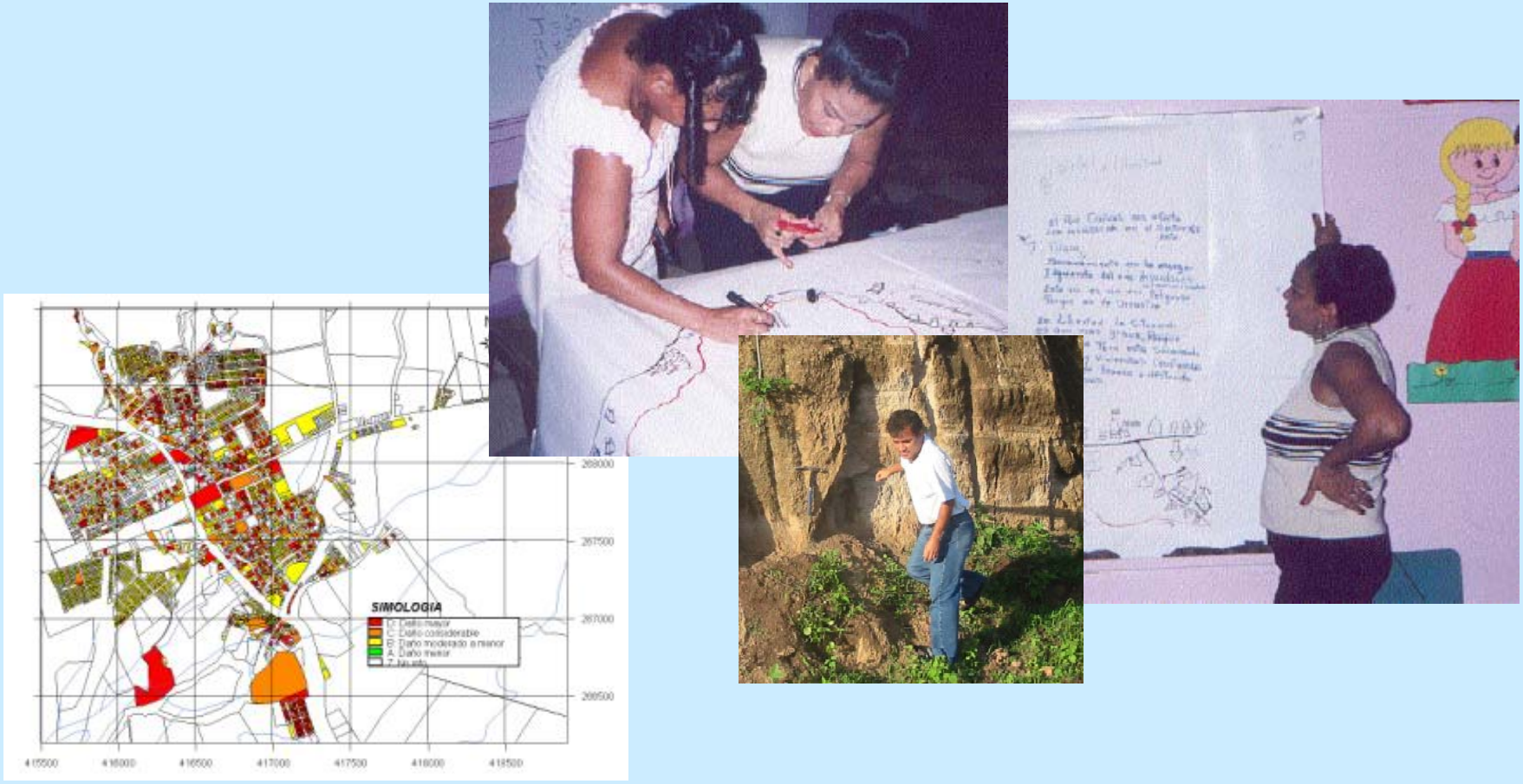




RAP-CA / COSTA RICA

Earthquakes

REINFORCEMENT OF INFORMATION ANALYSIS AND PROCESSING CAPACITY FOR NATURAL RISK REDUCTION AT THE MUNICIPALITY LEVEL USING GEOGRAPHICAL INFORMATION SYSTEMS TOOLS, MUNICIPALITY OF CANAS, COSTA RICA.

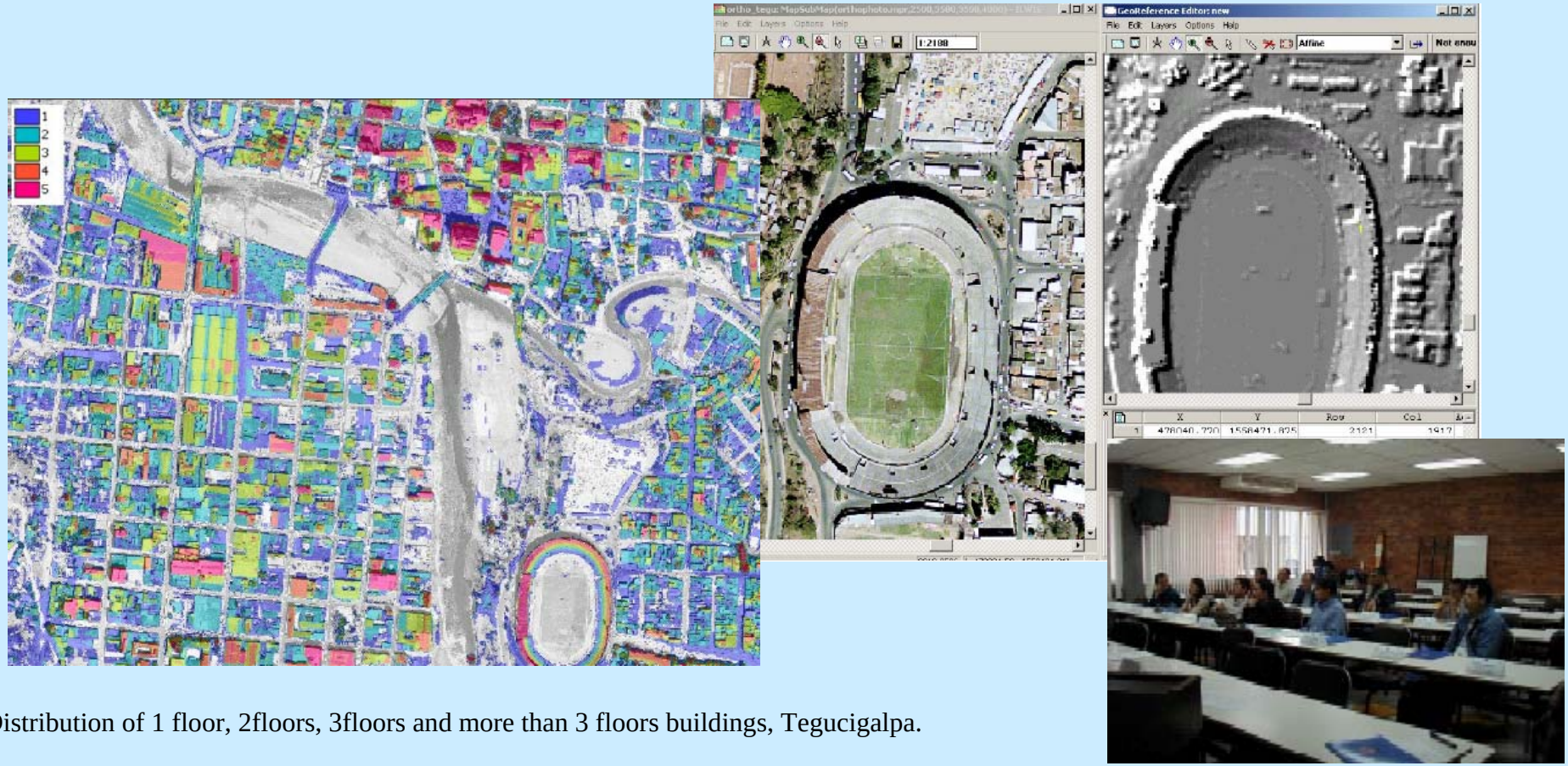


Seismic Risk map of the city of Canas (in case of earthquake of VIII MM intensity)

RAP-CA / Honduras

Floods, landslides

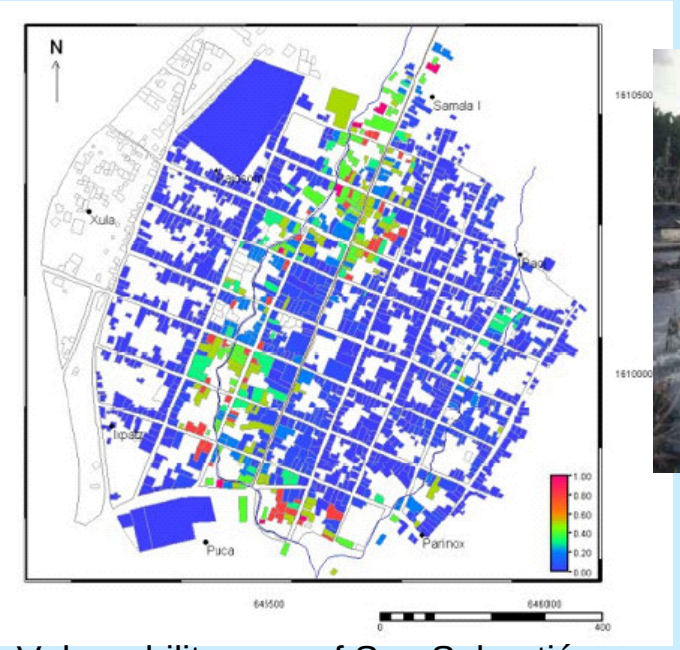
“GEOGRAPHICAL INFORMATION SYSTEM (GIS) DEVELOPMENT FOR NATURAL DISASTER AWARENESS AND PREPAREDNESS FOR EMERGENCIES”



Distribution of 1 floor, 2floors, 3floors and more than 3 floors buildings, Tegucigalpa.

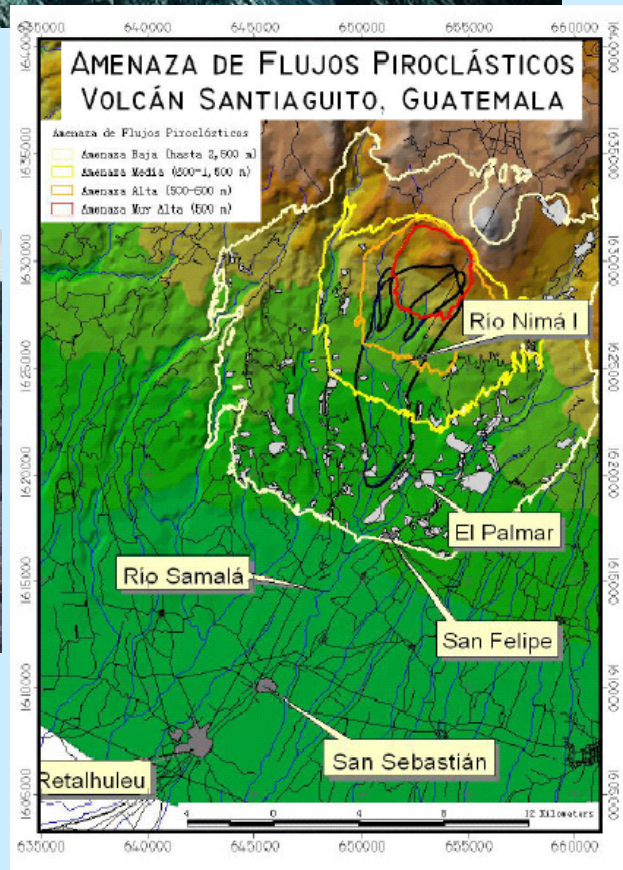
RAP-CA / Guatemala
Volcanic eruptions
Pyroclastic flows
Flash floods

« ZONIFICACIÓN DE AMENAZAS NATURALES EN LA CUENCA DEL RÍO SAMALÁ Y ANÁLISIS DE VULNERABILIDAD Y RIESGO EN LA POBLACIÓN DE SAN SEBASTIÁN RETALHULEU. »



Vulnerability map of San Sebastián Retalhuleu

Pyroclastic flows,1983



Natural Disaster Reduction

an interdisciplinary approach

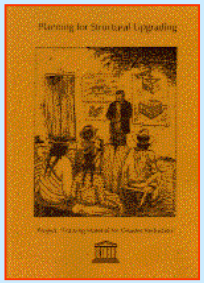
DISSEMINATION OF INFORMATION

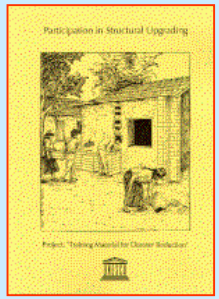
TRAINING MATERIALS

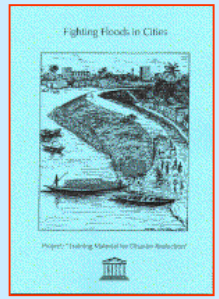
- **Training Manual on Volcanic Disaster Reduction, 1998**
  This manual aims at providing professionals who are mainly involved in national civil defense, urban and countryside development, with the necessary background on volcanic disaster mitigation. This material is a joint effort and collaboration of UNESCO and the

  Philippine Institute of Volcanology and Seismology (PHIVOLCS).

- **Training materials for disaster reduction, 1995.** *Four multidisciplinary training modules address two natural hazards : earthquakes and floods. These modules, which are meant for professionals in the civil service and staff of non-governmental organizations, are tools which trainers can select from and combine parts of special interest in an unlimited way. This project has been funded by the governments of the Netherlands, Denmark and Belgium.*

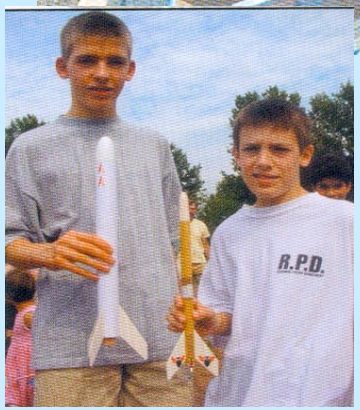




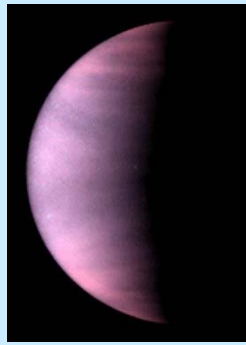


SPACE EDUCATION PROGRAMME (SEP)

Space as an educational and research tool:
an innovative approach to science education



Enhance space subjects and disciplines in schools and universities, particularly in developing countries



Partners: space agencies, space industries, space-related IGOs, NGOs and associations

UNESCO Programmes

Science — Culture of prevention

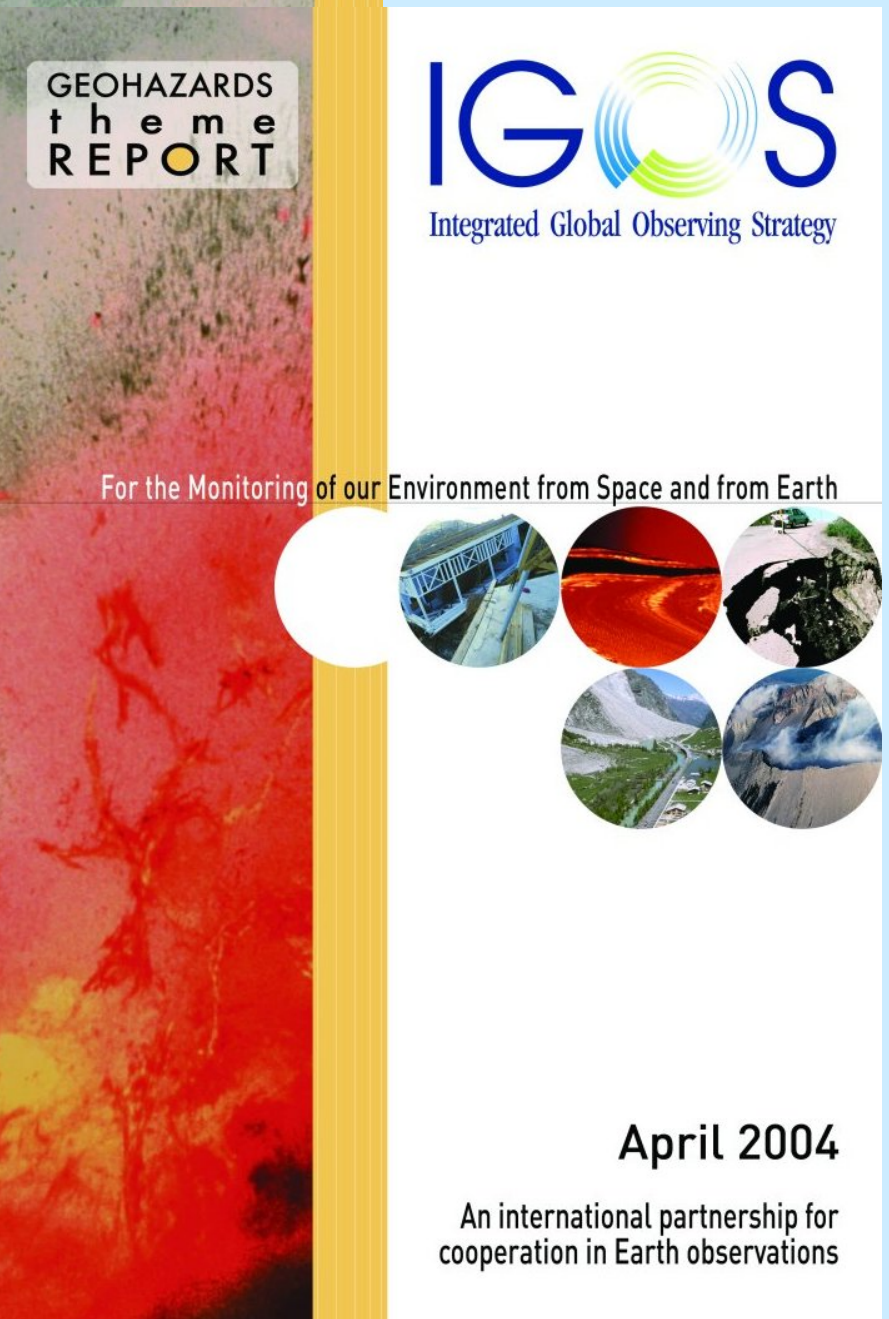
- IGCP, GARS, International Charter on Space and Major Disasters
- Modelling, monitoring, forecasting, and early warning systems

Education — Better informed public

- Space Education Programme, Commissions, books and guides

Cultural — Protected world heritage

- Expert Missions, Convention, UNESCO/ESA Open Initiative



- Context, scope and strategic objectives
- Beneficiaires, stakeholders and user needs
- Required observations and key systems
- Integration issues
- Filling the gaps
- Implementation plan and commitments to act

Most required observations

Four common observational requirements

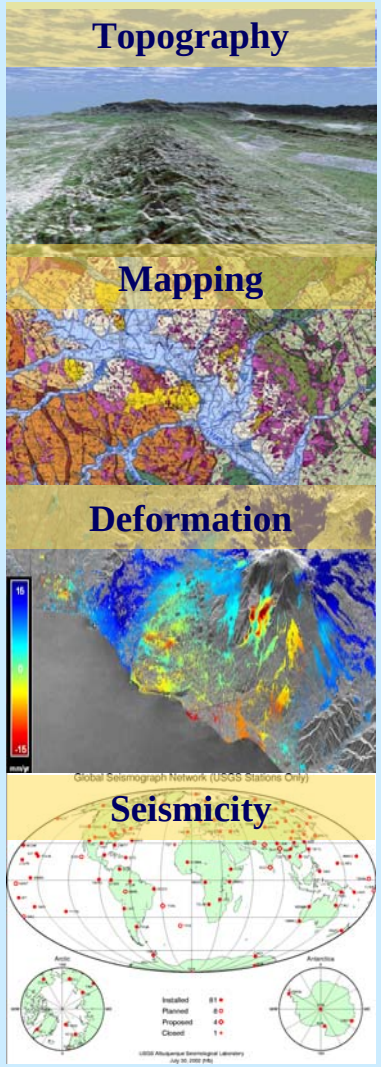
Baseline Topography

- Baseline against which to measure change
- Modelling of gravity process, visualisation

- **Baseline Mapping**
  - Geology, structure, soils, faults, fractures
  - Regional to local scales

- **Deformation Monitoring**
  - Sudden change (catastrophic events)
  - Gradual (on going processes, precursors)

- **Seismic Monitoring**
  - Seismic magnitude
  - Depth and location in the subsurface



Gap analysis

- **Existing Observations**
  - e.g. No global high resolution topographic dataset
- **Key Observation systems**
  - e.g. lack of continuity of L and C band INSAR
- **Data Management**
  - e.g. Too few archives are visible and fit for purpose
- **Integration and Modelling**
  - e.g. In-situ and EO integration happens rarely
- **Building the Geohazards Community**
  - e.g. No global mechanism to implement strategy
- **Science Research Agenda**
  - e.g. Models, knowledge not yet adequate for prediction

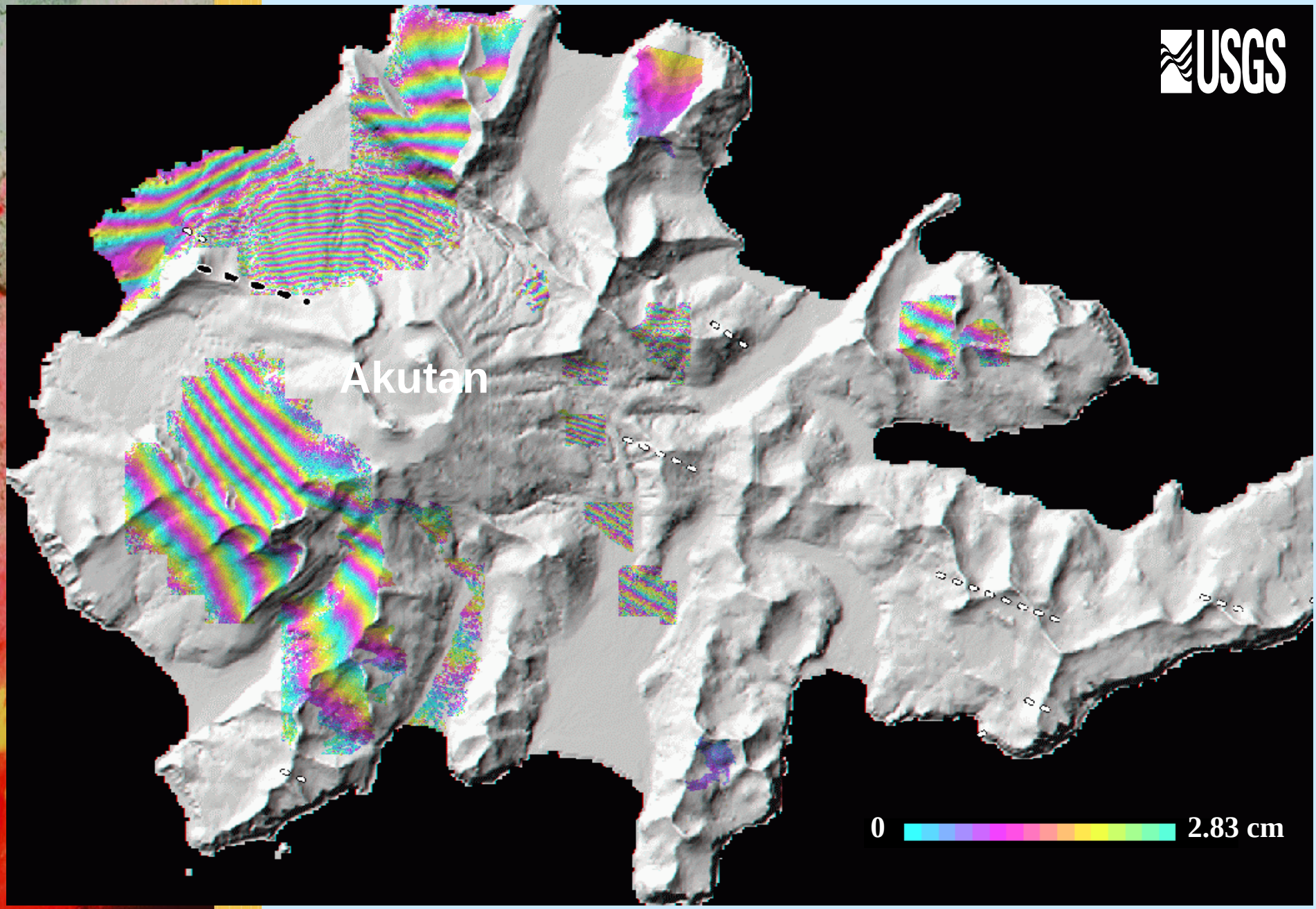
Filling gaps: GEO-GEOSS Process

- ✓ Disasters are one of the selected topics…
- ✓ IGOS Geohazard Theme one of the inputs…
- ✓ Topic Coordinator a member of Theme Team

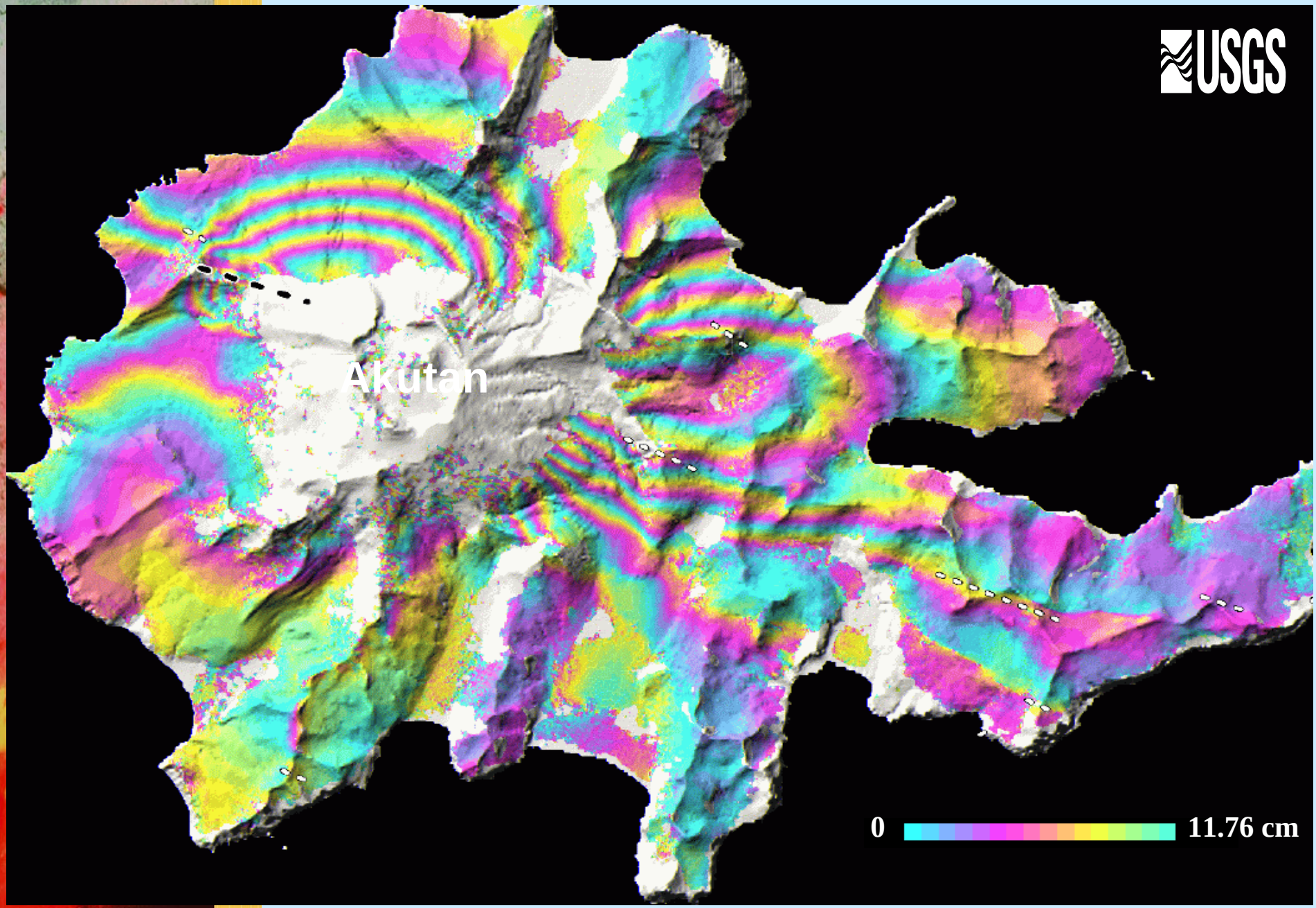
Can GEO fill some critical gaps in:

- Political Support?
- Structures?
- Funding? …to make it all a reality

Co-event deformation mapped by ERS (C-band, λ = 5.66 cm) InSAR



Co-event deformation mapped by JERS (L-band, λ = 23.53 cm) InSAR



Infinite Possibilities

Hazards understood & mapped…

…monitored in space & on the ground.

The right buildings in the right places!

Early warnings & rapid response:

information made available to all

Global Realities

Hazards understood & mapped…

Hazard knowledge and mapping incomplete

…monitored in space & on the ground.

Examples of best practice in developed world

The right buildings in the right places!

Some buildings, some hazards, some places

Early warnings & rapid response:

Warnings only for certain hazards

information made available to all

Inconsistency & the digital divide