



Use of Geospatial Information at Present Day Disaster Management

Orhan ALTAN
Pr ISPRS

What is Changing?


The EastAfrican(Business Daily)NTV(Daily)Monitor/The Citizen/NairobiNation/NAI/NG Investor Briefing

DAILY NATION






THURSDAY September 4, 2008

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Hailstorm in Nyahururu, RiftValley Province



Mr. Joseph Mwangi samples the ice that snowballed Gamarigi Forest in Nyahururu Town last evening.

Add a comment (17 comments so far)

You need to login first to submit a comment.

submitted by [Luviana](#)
Posted: 09/04/08 09:43 PM
wo!wo! hold on here, snow in Kenya? what is going on mother nature? i hope it was a one day thing.

submitted by [Rikamasa](#)
Posted: 09/04/08 09:14 PM
A true reversal of Climate, we have been so accustomed to tropical weather that...are we seeing the start of Kenyan Alps? Blessings!


submitted by [Luviana](#)

Most Popular


- CHARLES ONYANGO-OBBO: A rich ugly king
- Obama hits 50 mark in Gallup poll
- Drink to your health, so leave medicines out
- Power feud raises fear of higher bills
- Mother tongue under attack
- Ralla steps into row over NBSF sacking
- 15 die as matatush collide head-on
- My rights abused, says double-sex prisoner
- Young, beautiful and breastfeeding
- KRA rejects musicians' proposal


In Pictures

Hailstorm in Nyahururu, RiftValley Province



Mr. Joseph Mwangi samples the ice that snowballed Gamarigi Forest in Nyahururu Town last evening.

 Sole ODM nominations

 Obama acceptance speech

NTV Kenya

1


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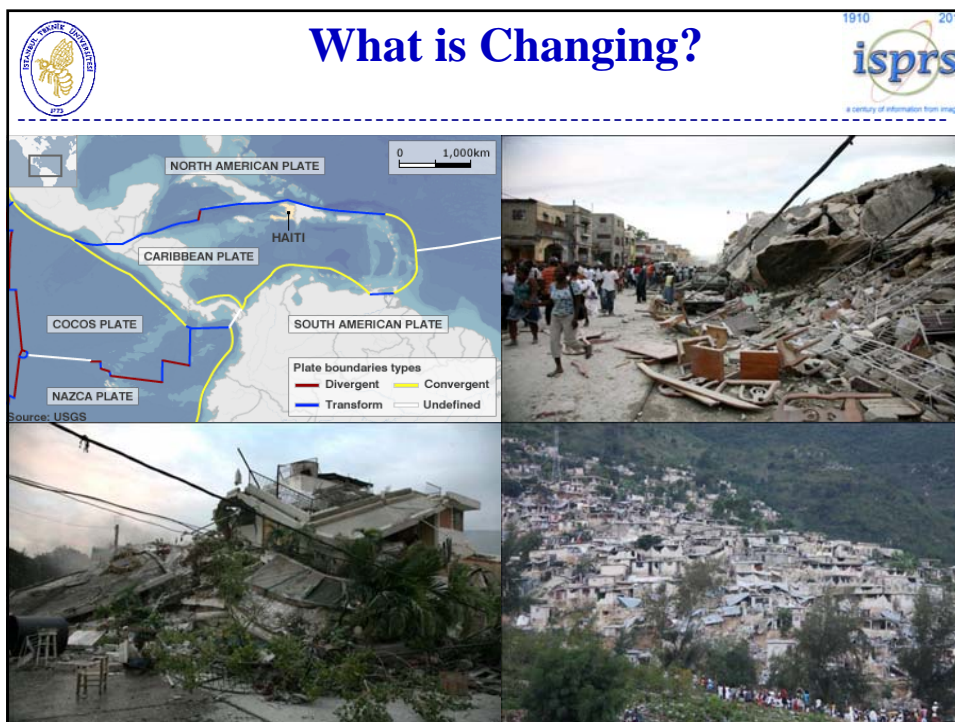
The slide features three photographs illustrating winter conditions. The top-left image shows a group of people playing in a snowy field. The top-right image shows a group of people standing on a snow-covered field. The bottom-center image shows people with bicycles on a snowy path.

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**Heavier precipitation,
more intense and longer droughts....**



The slide features three photographs illustrating extreme weather. The top-left image shows a red train partially submerged in floodwaters. The top-right image shows a woman carrying water on a dry riverbed. The bottom-center image shows a person walking on a cracked, dry ground.





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AP (TOP) APF (BOTTOM)




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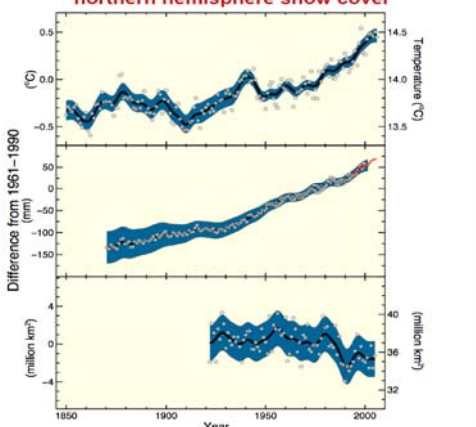
Direct observations of recent climate change

 **Global average temperature**

 **Global average sea level**

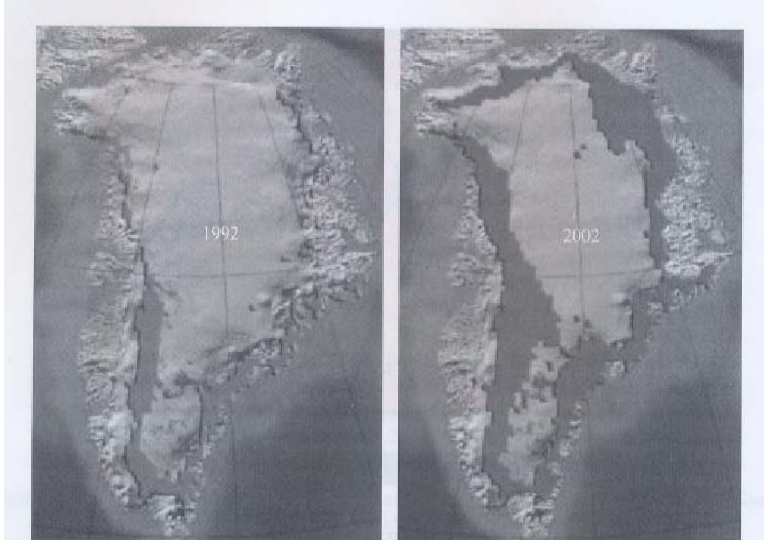
 **Northern hemisphere snow cover**

Changes in temperature, sea level and northern hemisphere snow cover



Dr R K Pachauri: IPCC REPORT

What is Changing?



(L) 1992, (R) 2002: more melting occurred than model prediction

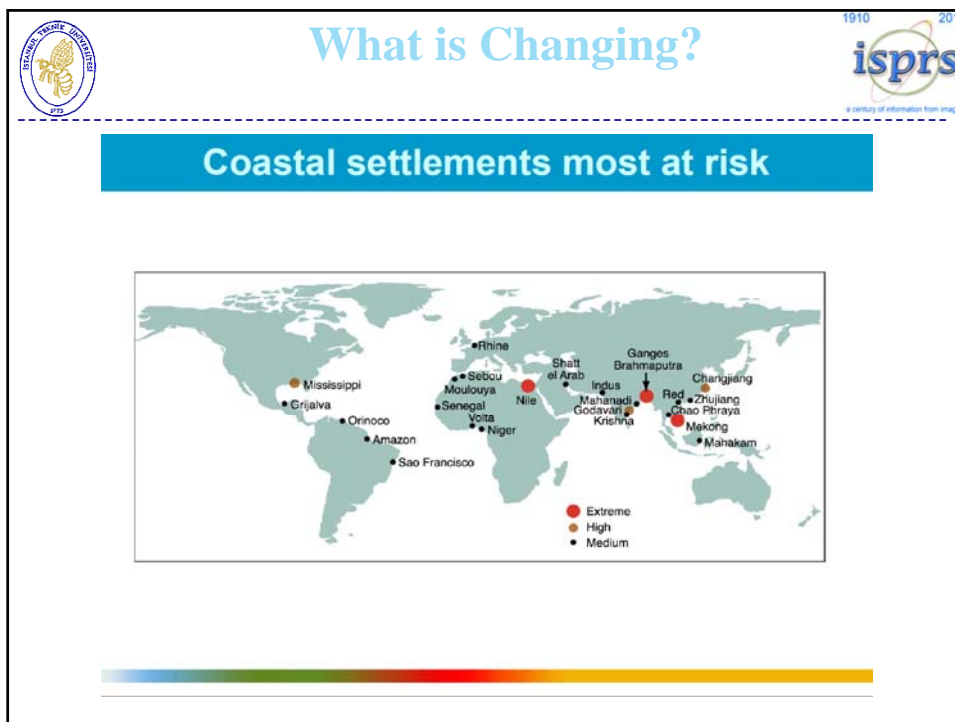
What is Changing?

Key vulnerabilities to climate change

- ◆ **Some regions** will be more affected than others:
 - The Arctic (ice sheet loss, ecosystem changes)
 - Sub-Saharan Africa (water stress, reduced crops)
 - Small islands (coastal erosion, inundation)
 - Asian mega-deltas (flooding from sea and rivers)

- ◆ **Some ecosystems** are highly vulnerable:
 - Coral reefs, marine shell organisms
 - Tundra, boreal forests, mountain and Mediterranean regions
 - 20-30% of plant and animal species at risk of extinction

Dr. R. K. Pachauri: IPCC REPORT



What is Changing? CRED report

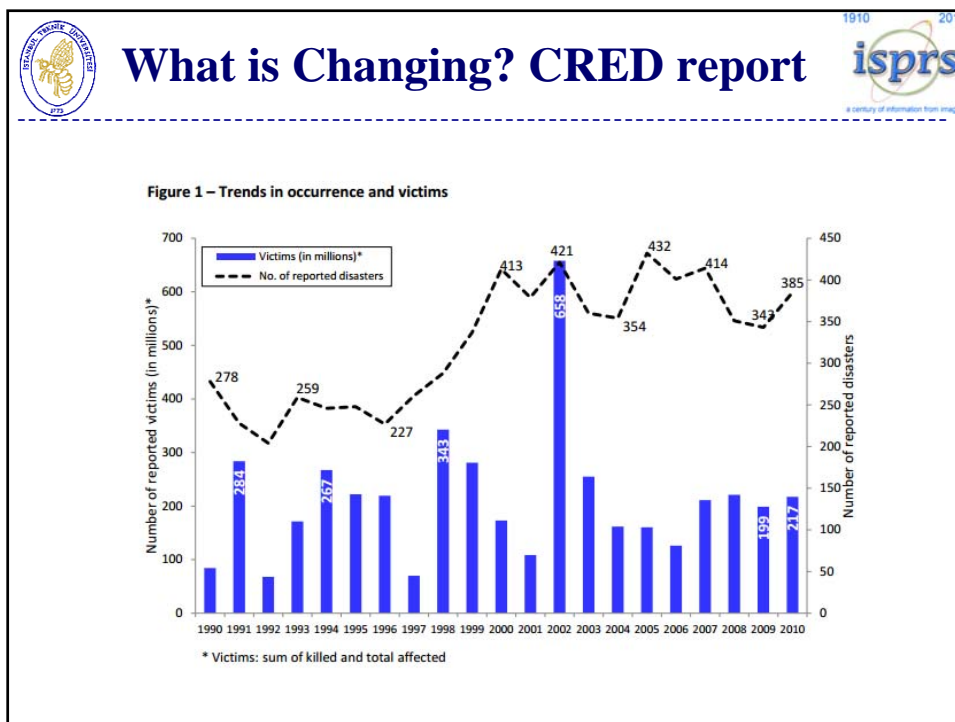
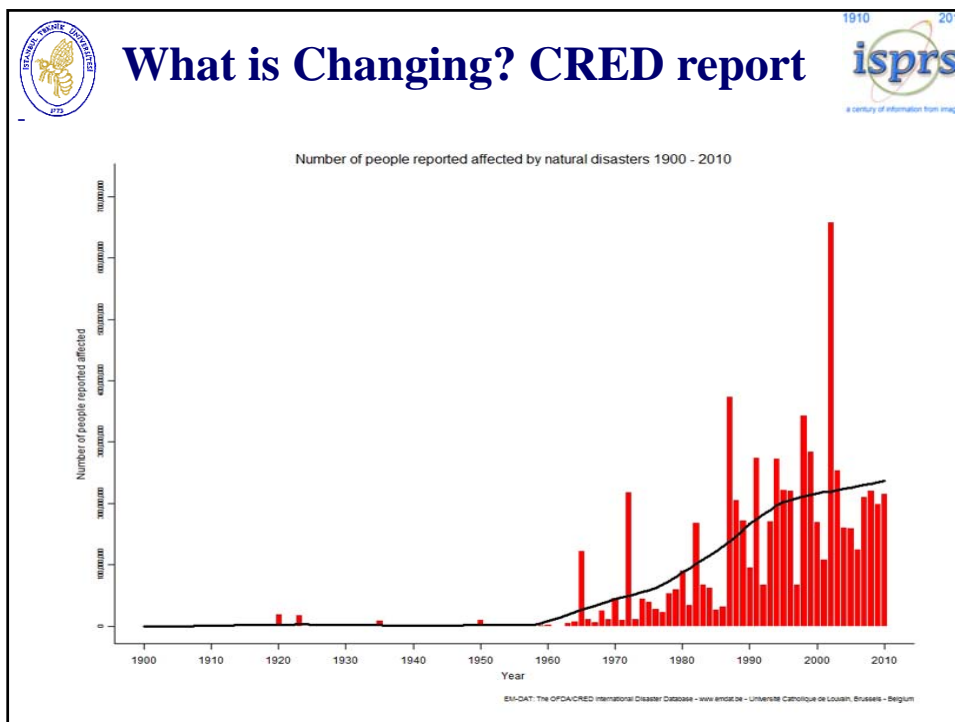
The Centre for Research on the Epidemiology of Disasters (CRED) was established in 1973.

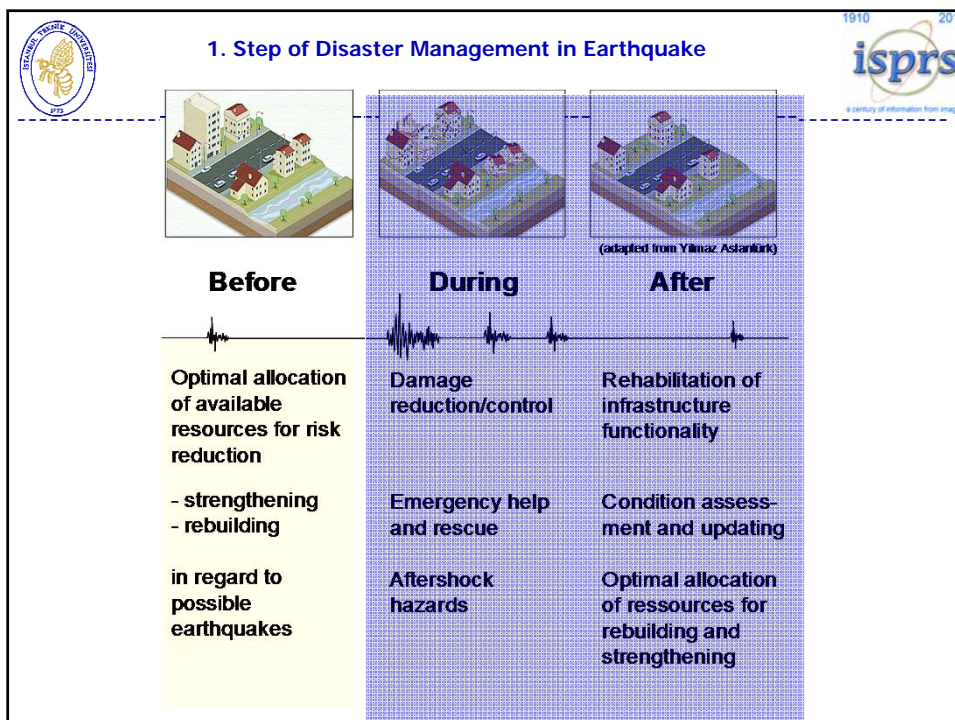
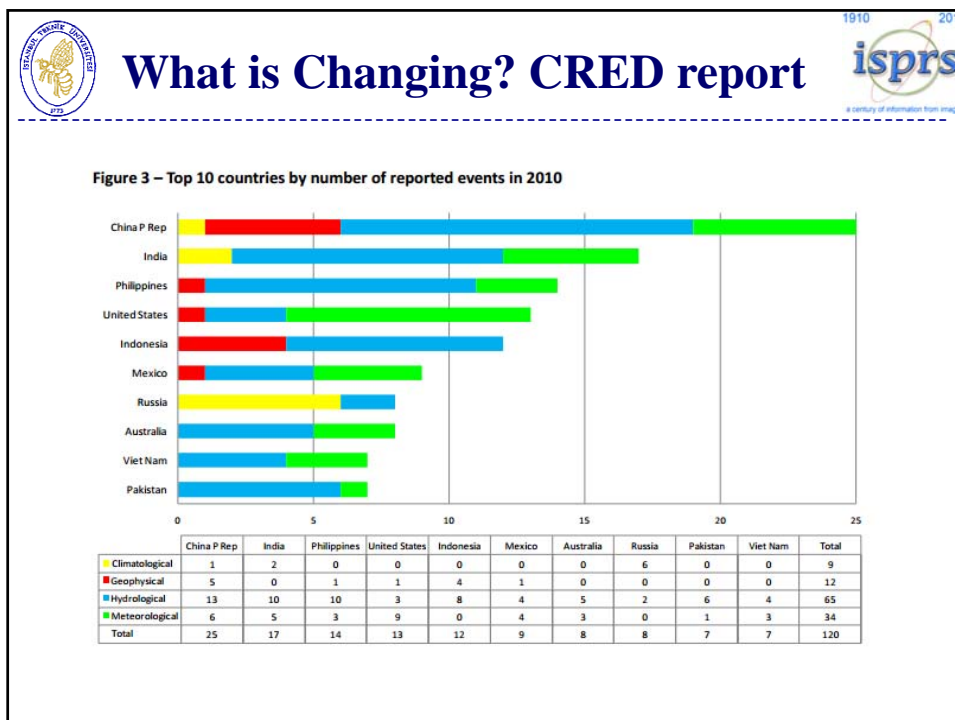
In 1980, CRED became a World Health Organization (WHO) Collaborating Centre as part of WHO's Global Program for Emergency Preparedness and Response.

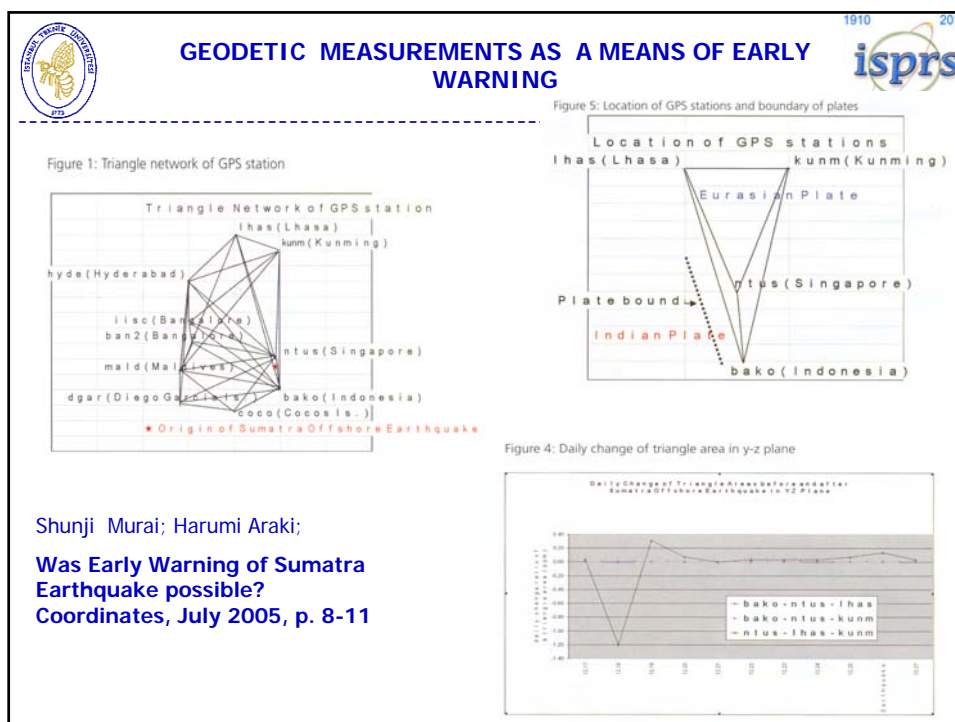
Since then, CRED has increased its international network substantially and collaborates closely with numerous UN agencies, inter-governmental and governmental institutions, non-governmental organizations, research institutes and universities.

Annual Disaster Statistical Review 2010
The numbers and trends
Debby Guha-Sapir, Femke Vos, Regina Below
with Sylvain Ponserre

WHO collaborating Centre for Research on the Epidemiology of Disasters - CRED
UCL
Université catholique de Louvain





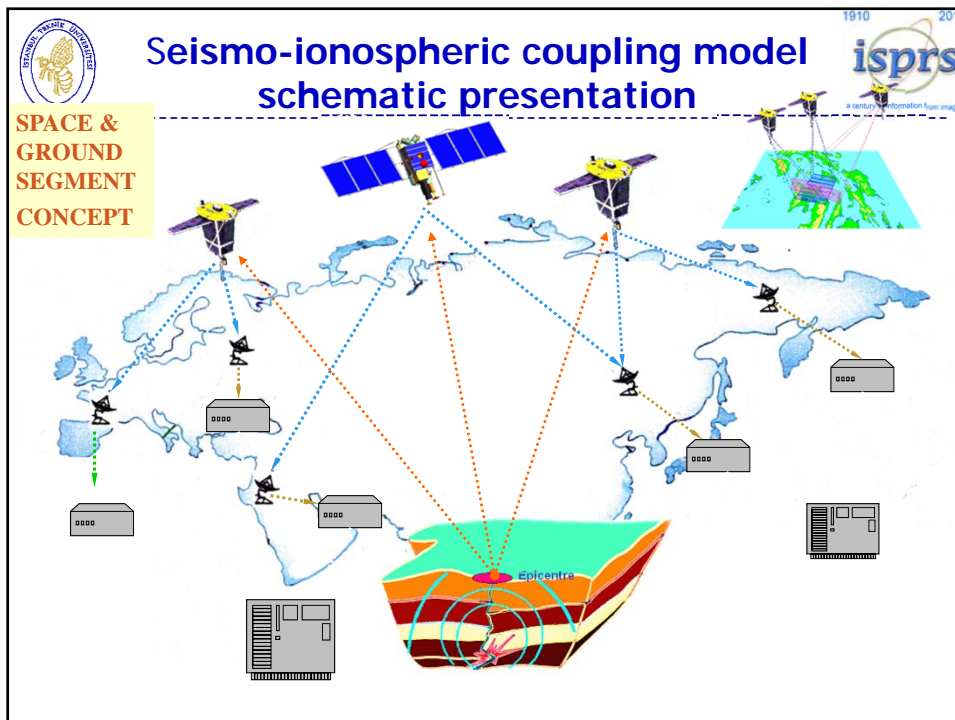
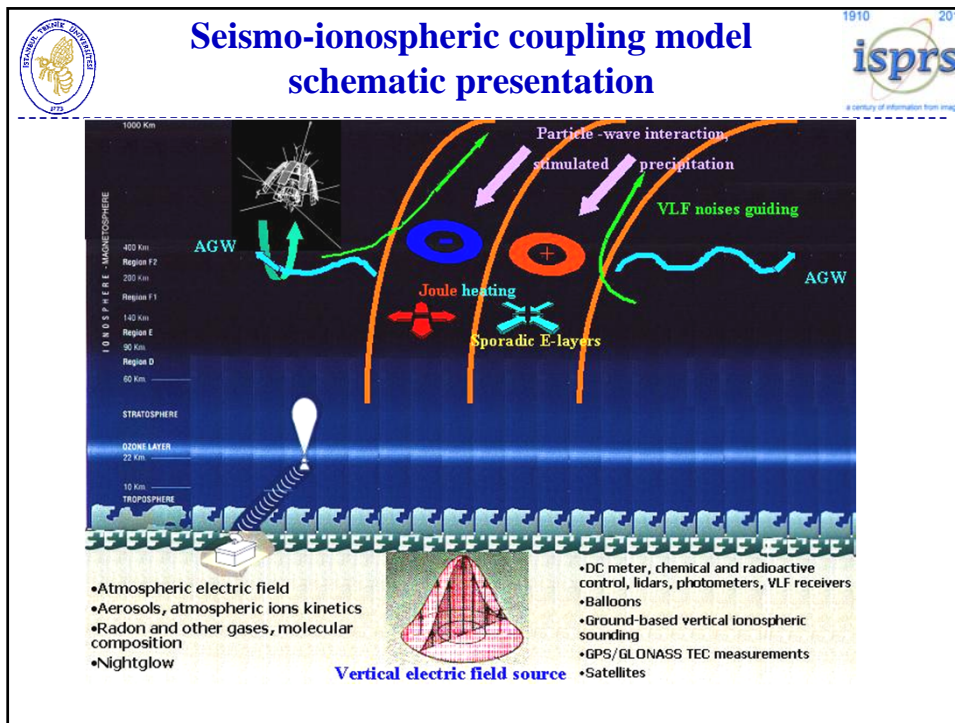


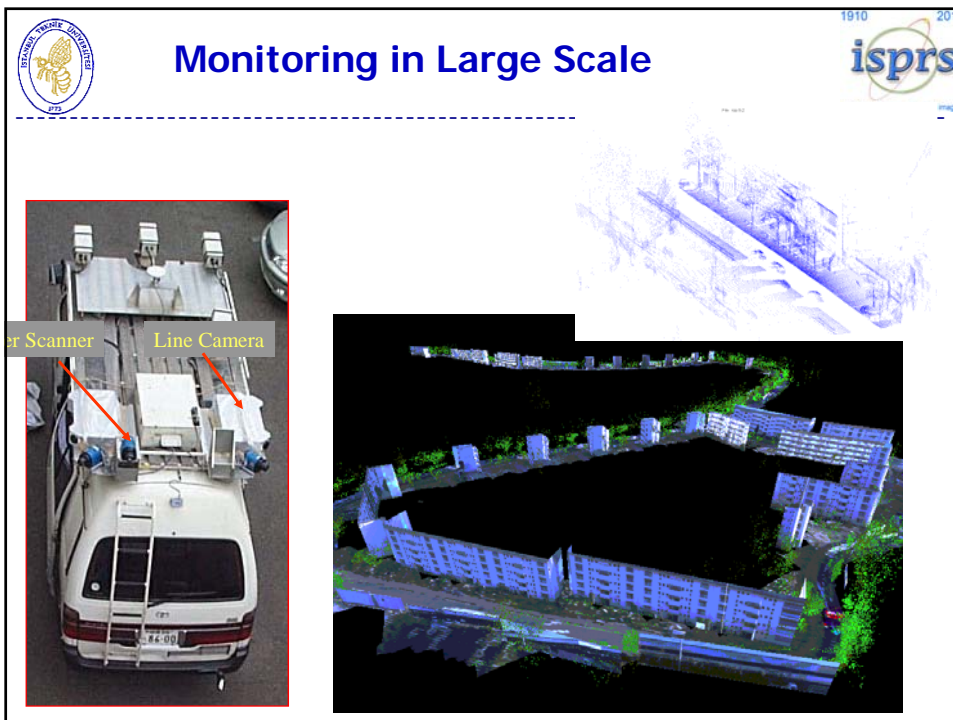
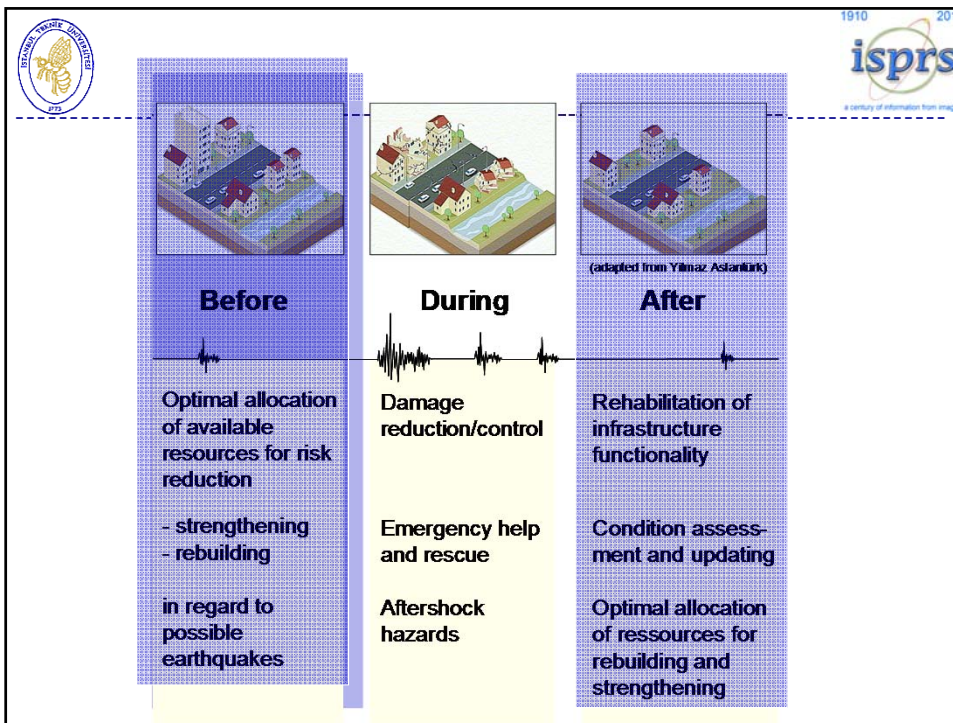


Further Application




- Monday, 7 May 2012 16:00–17:30
- TS03K – Special Session on Catastrophic Disaster of East Japan Earthquake and Tsunami
- Shunji Murai (Japan): lessons from east Japan earthquake and tsunami (5720)





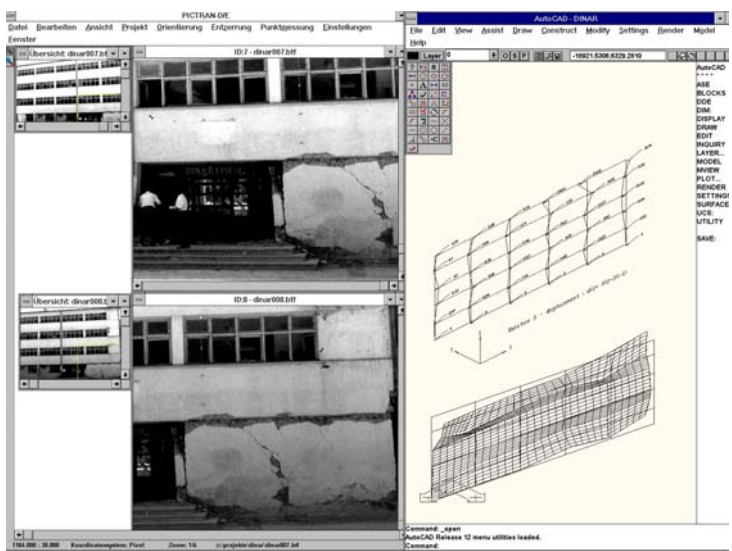
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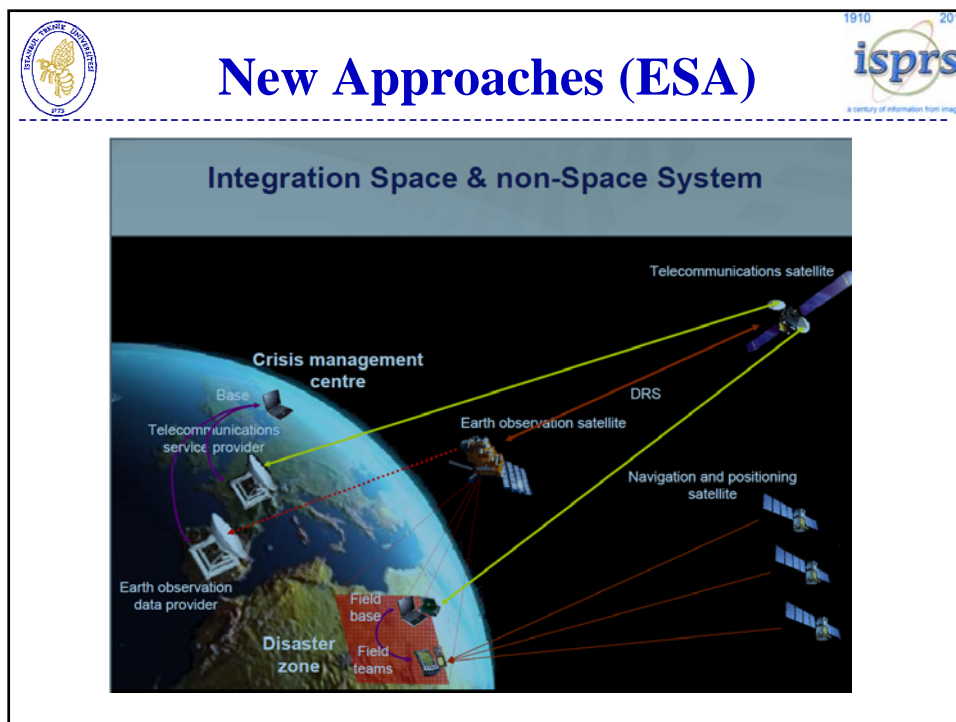
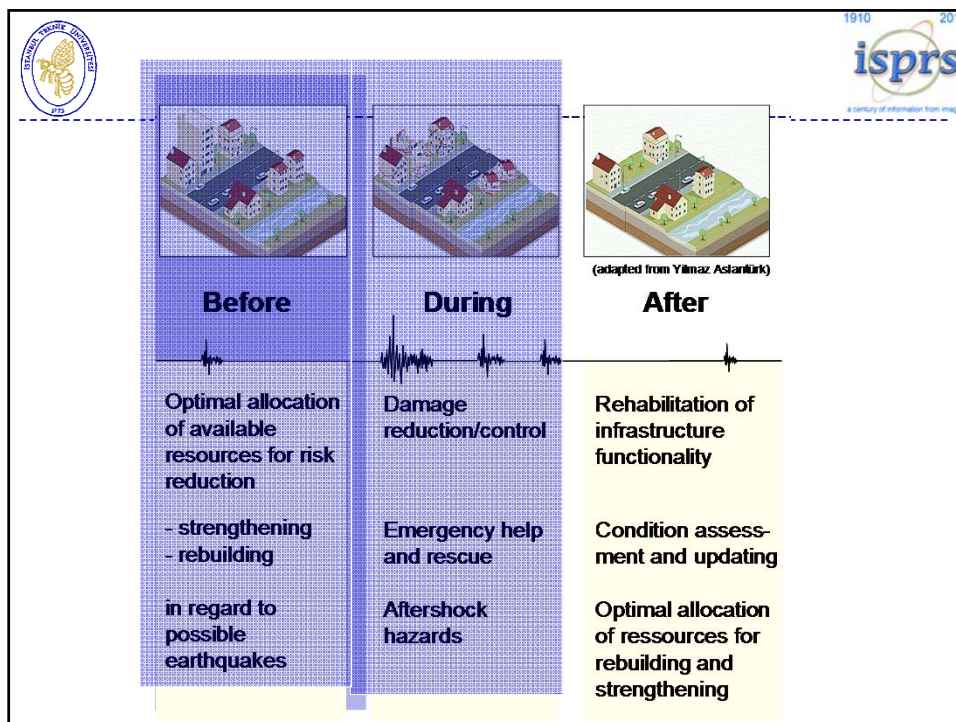
Monitoring in Large Scale




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Monitoring in Large Scale








New Approaches (DigitalGlobe)



Advanced Constellation

- Better large area collection with fewer attempts and consistent radiometry
- Better multispectral data and spatial resolution
- More Satellites = Daily Coverage to monitor the changing earth




Faster. Better.



Wenchuan Earthquake




- The Wenchuan Earthquake which China suffered on 12 May 2008 is one of the catastrophic ones in the history.
- As of 11 June 2008, the Chinese State Council Information Office reported;
- **69,146 persons killed, 17,516 missing, and 374,131 injured.**



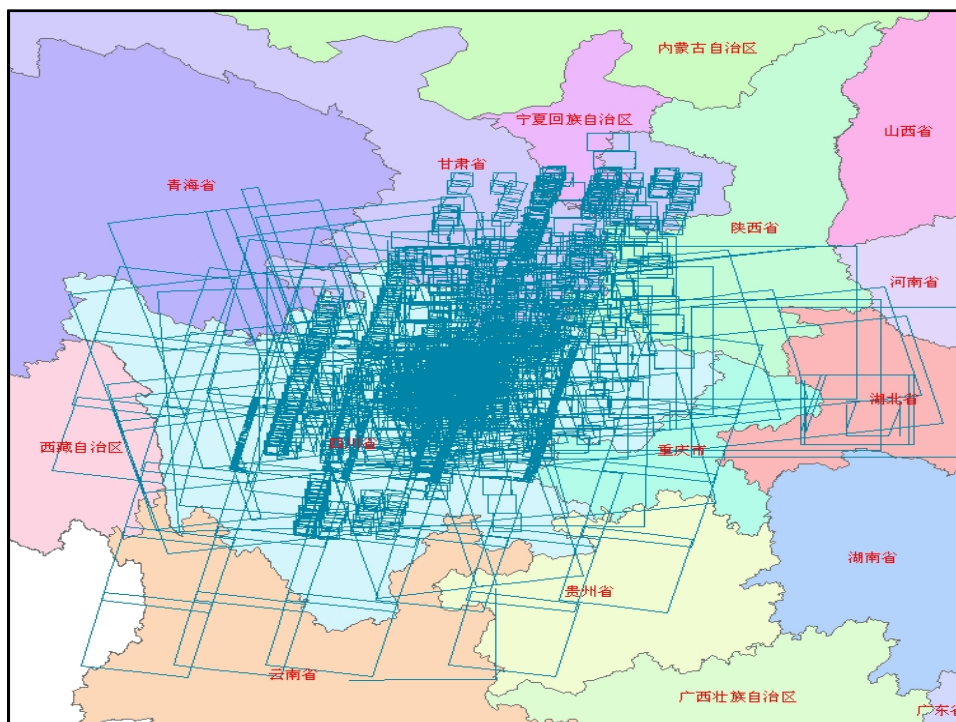
Aerial- Spaceborne Programs


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	Nation	Archive	Programmed	Total
RS 1	China	9	246	255
Fuwei 2	China Taiwan	3	146	149
CBERS-02B	China	400	25	425
Resource 02	China	7	16	23
Beijing 1	China	2	14	16
COSMO-SkyMed	Italy	0	10	10
QuickBird	U.S.A	9	28	37
TERRA ASTER	U.S.A	0	14	14
LANDSAT-7	U.S.A	10	4	14
WorldView	U.S.A	12	0	12
IKONOS	U.S.A	3	0	3
ALOS	Japan	19	21	40
IRS-P5	India	6	27	33
IRS-P6	India	18	0	18
ENVISAT ASAR	ESA	0	16	16
SPOT 5,4,2	France	122	23	145
TerraX-SAR	Germany	0	11	11
EROS - B	Israel	0	10	10
RadarSat-1	Canada	2	11	13
TOPSAT	Britain	0	2	2
UK-DMC	Britain	0	4	4
DMC Nigeriasat-1	Nigeria	0	7	7
Total		622	635	1277

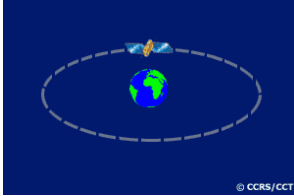
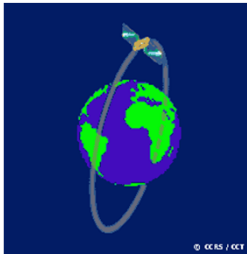





Opportunities of Satellite Remote Sensing






- World-wide coverage
- High temporal coverage
- Detailed as well as large scale analysis possible
- Remote sensing sensors detect wavelengths beyond the capabilities of the human eye
- Observations independent from cloud coverage and sun illumination by Radar-sensors
- Combination / Synergy of different sensors




Spatial vs. temporal resolution







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Satellite	Spatial resolution	Repetition rate	Orbit	Altitude
METEOSAT	1-3 km	15 min	geostationary	36,000 km
QuickBird	0.6- 0.7 m	1-3.5 d	polar	450 km





Risk information by Satellite Remote Sensing




- **Hazard related:**
 - Meteorology (clouds, rain, wind)
 - Topography (terrain)
 - Landuse/landcover
 - Vegetation (type, biomass, health)
 - Open Waters (surface temperature, pollution)
 - Soil (surface temperature, moisture)


- **Vulnerability related:**
 - Landuse
 - Urban fabric
 - Transport infrastructure



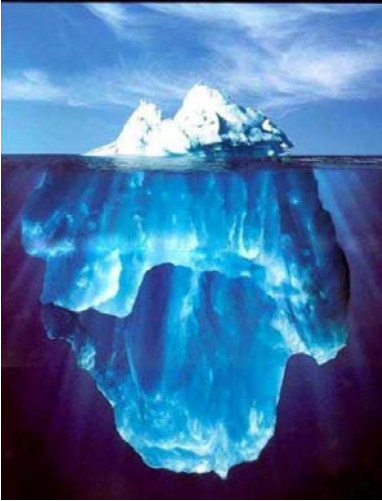





Access to Space-based Information



- What information exists?**
- Where to find?**
- How to access?**
- What are the costs?**
- What is the timeliness?**
- What is the quality?**





Mission and mandate of UN-SPIDER



- **The United Nations General Assembly** agreed on 14 December 2006 to establish the “United Nations Platform for Space-based Information for Disaster Management and Emergency Response (**UN-SPIDER**)” as a programme within the United Nations to provide universal access to all types of space-based information and services relevant to disaster management by
 - being a gateway to space information for disaster management support;
 - serving as a bridge to connect the disaster management and space communities; and
 - being a facilitator of capacity-building and institutional strengthening (A/RES/61/110).




The UN-SPIDER Knowledge Portal: <http://www.un-spider.org/>







The screenshot displays the UN-SPIDER Knowledge Portal website. At the top, there is a navigation bar with tabs for HOME, SPACE APPLICATION, ADVISORY SUPPORT, KNOWLEDGE BASE, NETWORK, and ABOUT US. Below this, the main content area is divided into several sections:


- IN FOCUS:** Features a large image of a modern building and a headline: "UN-SPIDER Expert Meeting on Crowdsourcing Mapping: Now open for applications".
- NEWS AND UPDATES:** Lists recent news items with dates (e.g., "18ED MAY 2 2012 International Charter activated for floods in Paraguay").
- SPACE APPLICATION MATRIX:** A circular diagram illustrating the application of space technology in disaster management.
- NETWORK:** Shows logos of various organizations and regional support offices.
- PUBLICATIONS:** Features a section for "VALID" (Validation of Geospatial Information for Disaster and Risk) and "PUBLICATIONS PROJECT".
- EVENTS:** Lists upcoming events, including an "International Workshop on Drought Monitoring, Assessing and..." and a "UN-SPIDER Expert Meeting on Crowdsourcing Mapping".




The Space Application Matrix: A repository of methods and case studies



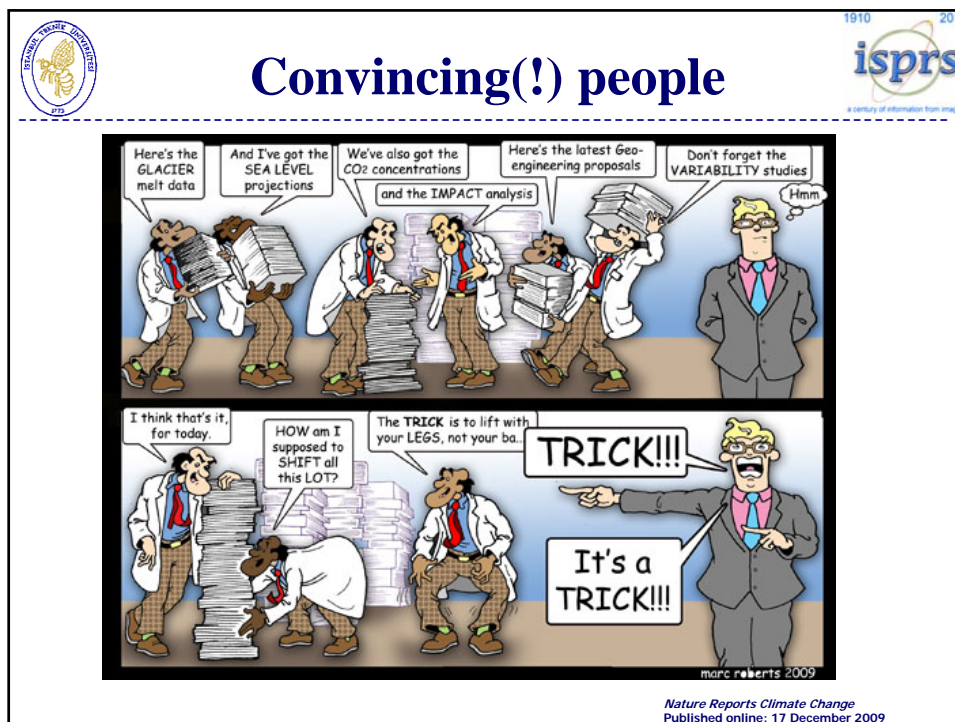




Conclusion



- Geo-Information Sciences is an important tool for observing human induced and natural disasters.
- Scientific research and different applications show this is a very important tool
- BUT!!!
- How can we assure that the **decision makers and governmental institutions realize this fact ???**
- **How can we CONVINCe THEM?**



Convincing(!) people

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“The politicians are learning about the importance of geo-information after an event has happened”

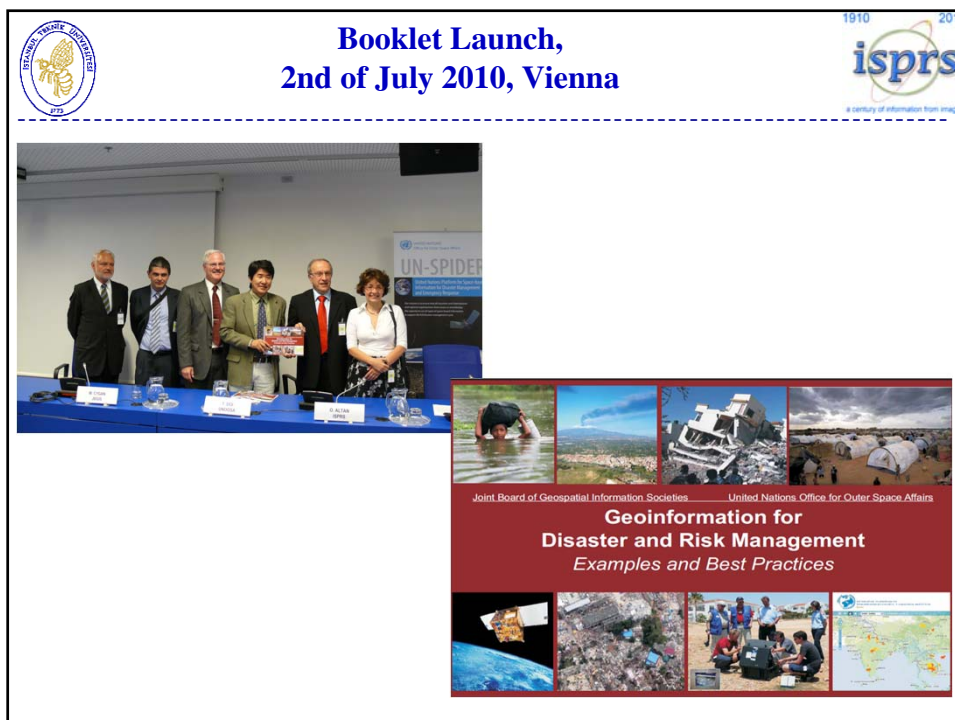
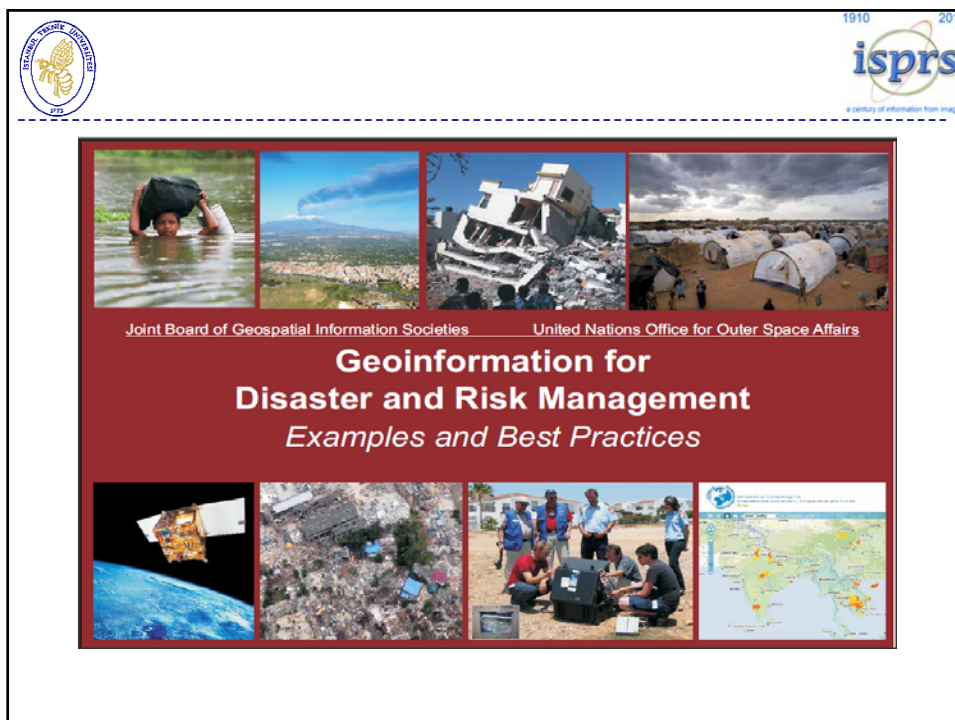
Therefore they have to be aware on the importance of use of geo-information especially in Disaster Management.

So it was proposed Publication of


“Booklet on Best Practices of Geo-information on Risk and Disaster Management”

A joint initiative of JBGIS and UNSPIDER

This booklet is released by a Press Conference in Vienna on 2nd July 2010 at UNOOSA




**Geoinformation and Risk Mapping:
What is the Value?**





The Value of Geo-Information for Disaster and Risk Management (VALID)

- A joint JBGIS/UNOOSA publication project
- Follow-on to the JBGIS/UNOOSA “Best Practices Booklet”
- Work in progress



UNITED NATIONS
Office for Outer Space Affairs / UN-SPIDER





JBGIS


Joint Board of Geospatial Information Societies

The **Joint Board of Geospatial Information Societies (JB GIS)** is a coalition of leading international geospatial societies which can speak on behalf of the geospatial profession at international level, especially to the United Nations and other global stakeholders. Its second goal is to coordinate activities within the geospatial society and organisations.


The JB GIS is a co-operation network and there are no obligations to the membership neither does the JB GIS collect any membership fees. The current members of the JB GIS are:

- Global Spatial Data Infrastructure (GSDI) Association
- IEEE Geoscience and Remote Sensing Society (IEEE-GRSS)
- International Association of Geodesy (IAG)
- International Cartographic Association (ICA)
- International Federation of Surveyors (FIG)
- International Geographic Union (IGU)
- International Hydrographic Organization (IHO)
- International Map Trade Association (IMTA)
- International Society of Photogrammetry and Remote Sensing (ISPRS)
- International Steering Committee for Global Mapping (ISCGM)


The JB GIS meets normally once a year in normal case linked to one of the conferences or other meetings of one or two of the member associations.




Status of work:
Web-based expert stakeholder assessment



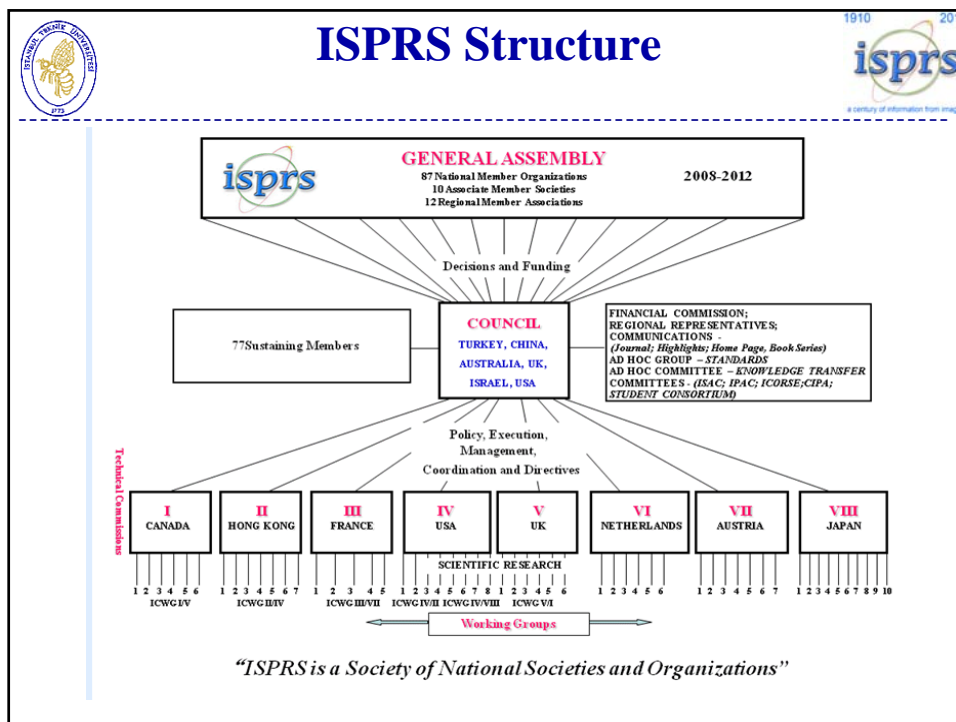
- VALID project site on the UN-SPIDER Knowledge Portal (<http://www.un-spider.org/VALID-stakeholder-assessment-l>)
- Presentation of a longlist (52 geoinformation products)
- Global stakeholder poll (222 participants)
- Geographical/thematical analysis and visualisation of poll results >>> “top ten” shortlist
- Preparation of detailed evaluation of shortlist items (ongoing)
 - Definition of technical profiles by scientific unions
 - template for implementation on the project site



Top ten of longlist poll (= shortlist)



Disaster Type	Product/System	Counts
	Risk Monitoring System	97
	Risk map	95
	Damage Assessment Map	82
	Inundation Map	67
Earthquake	Urban Classification for Risk Analysis	85
	Damage Assessment Map	83
Drought	Vulnerability Map	76
Fire	Risk Map	74
	Detection and Monitoring	67
Landslide	Hazard Assessment	68



Disaster Management in ISPRS

WG IV/8 - 3D Spatial Data Integration for Disaster Management and Environmental Monitoring

Home Page: <http://www.commission4.isprs.org/wg8>

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WG VIII/1 - Disaster Management
Home Page: www.commission3.isprs.org/wg1/

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WG IV/8 Terms of Reference

- 3D data models (geometry, topology, semi ocean)
- 3D data structures, algorithms and standards
- 3D data models for management of geo-s
- Data models allowing for efficient 3D visualization
- Analysis of 3D disaster management and

WG VIII/1 - Terms of Reference:

- Generation of vulnerability and hazard zone maps for different type of disasters, such as forest fire, cyclone, floods, drought, volcano eruptions, earthquakes, land slides etc. and identification & assessment of potential risk zones
- Integrate remotely sensed observations and communication strategies with enhanced predictive modeling capabilities for disaster detection, early warning, monitoring, and damage assessment
- Development of disaster management plans for pre, during and post disaster situations and enhance support for early warning systems, emergency events mitigation and decision making
- Collaborate with GEO and take part in GEO task where appropriate



Melbourne Congress

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http://www.isprs.org

XXII International Society for Photogrammetry and Remote Sensing



The XXII Congress of the International Society for Photogrammetry and Remote Sensing

25 August to 1 September 2012
Melbourne Convention and Exhibition Centre | Melbourne, Australia

Imaging a sustainable future

Why Come To Melbourne?

ISPRS2012 offers delegates eight exciting days of tutorials, presentations and technical tours. The main technical programme will consist of plenary sessions, oral presentation sessions with up to twelve parallel streams, and short presentation sessions with interactive, digital posters. And of course there will also be an engaging social programme that will be a mix of cultural and sporting events. Whether you prefer an evening dining at the theatre or a taste of Australian rules football, there will be something for you to enjoy. The social programme will be just a small sample of the highlights of Melbourne, Victoria and Australia.

Latest News

[Registration is now open](#)

Is Melbourne expensive? Not according to the New York Times. Read about a [specialist in Melbourne](#) for less than \$100

Travel Grant applications have now closed. All applications are currently being reviewed.

Confirmed Plenary Speakers

- Konrad Schindler, ETH Zurich, Switzerland
- Madhu Chandin, Technische Universität Chemnitz, Germany
- Shernaf Walker, ISAE Systems, San Diego USA
- Rainer Sardaou, IAG
- Piero Baccardo, Politecnico di Torino, Italy
- Bhanuprakash Nayakgund, Space Applications Centre, ISRO, Ahmedabad, India
- Professor Ding Gong, Tsinghua University, Beijing and University of California, Berkeley
- Professor Stuart Luginbuhl, University of Lausanne, Switzerland
- Dr Gordon McBeane, President Elect of ICSU, England
- Gilberto Câmara, Director of INPE, Brazil

Visa Information

Host Congress participants will need a Visa to enter Australia. Luckily for many countries this is a very simple process. Follow this [link](#) for further information.

Paper Submission

All full papers should now be submitted in order to guarantee publication in the proceedings of the congress. The online submission system will be closed on 30 April.

Want more Information?

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[Second Announcement](#)
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The 16th ARSPC is being held in conjunction with the ISPRS Congress




16 ARSPC
Australian Remote Sensing & Photogrammetry Conference


Sponsors





Evidence, why and what we can achieve

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1956

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Weight approx. 1ton