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"UN-SPIDER: A model approach to reduce vulnerabilities to hazards through good practices in geospatial information management"

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Tenth United Nations regional Cartographic Conference for the Americas, New York, 19 -23 August 2013

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The Office for Outer Space Affairs (OOSA)

ITS MISSION STATEMENT:

The core business of the Office is to promote international cooperation in the use of outer space to achieve development goals for the benefit of humankind.

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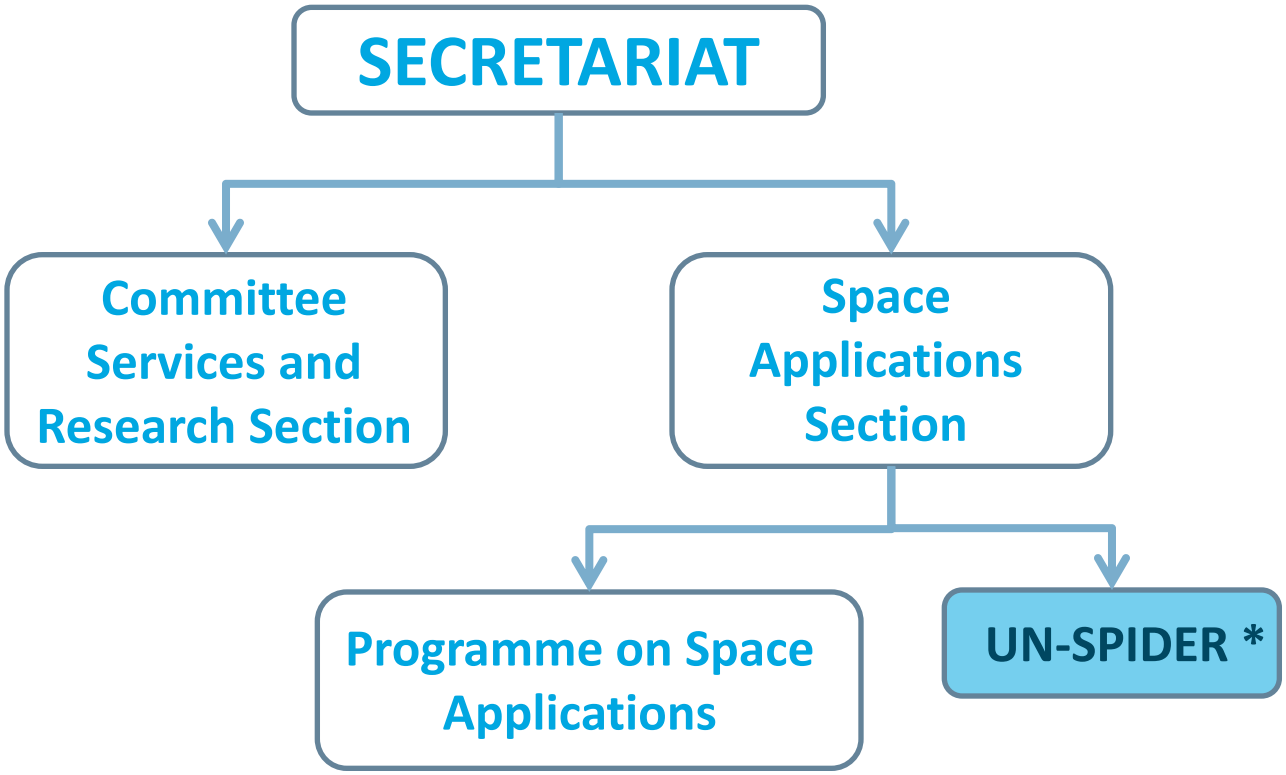
The Office for Outer Space Affairs (OOSA)



*** UN Platform for Space-based Information for Disaster Management and Emergency Response**

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The UN-SPIDER Programme

On 14 December 2006 the United Nations General Assembly established UN-SPIDER as a programme implemented by OOSA with the following mission statement:

"Ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle."

- **Especially 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).**

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The UN-SPIDER Programme

UN-SPIDER in Vienna

UN-SPIDER Beijing Office

UN-SPIDER Bonn Office

UN-SPIDER Team

Network of Regional Support Offices (RSOs) (16)

National Focal Points (45)

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Space Technologies for Disaster Risk Management and Emergency Response

Images from earth observing satellites help assess the damage caused by disasters and assess vulnerability to hazards.

Satellite communications help warn people who are at risk, especially in remote areas. They help connect a disaster zone to the outside world.

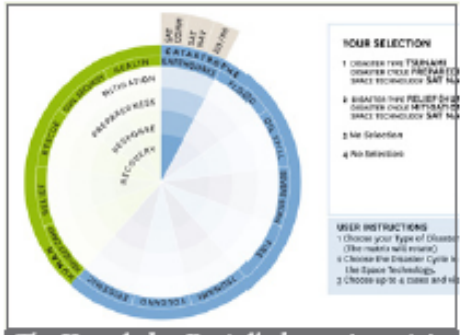
Global navigation satellite systems enable us to obtain positional information on events that have to be mapped.

Activities

- Knowledge Management
- Technical Advisory Support
- Capacity Building
- Fostering Cooperation

Knowledge Portal

The UN-SPIDER Knowledge Portal is a web-based tool for information, communication and process support. Users can find and share case studies, guides and products through the portal.



The Knowledge Portal's dynamic matrix enables rapid information access

Fostering Cooperation

UN-SPIDER bridges the gap between the space and disaster management communities. **UN-SPIDER fosters alliances and creates forums where both communities can meet.**

UN-SPIDER Activities

Technical Advisory Support

UN-SPIDER provides support to countries in assessing national capacity and in evaluating disaster and risk reduction activities, policies and plans with regard to the use of space-based technologies.

Capacity Building

UN-SPIDER facilicates capacity building and institutional strengthening, including the development of curricula and an e-learning platform (e-SPIDER).

...and many more

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Network of Regional Support Offices

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Knowledge Portal

A web portal for information, communication, and process support. A platform which supports knowledge management, capacity building, technical advisory support and support to emergency and humanitarian assistance.
http://www.un-spider.org

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Knowledge Portal content

Space Application Guides including scientific and technical papers, best practices and case studies

News and Events from the space and the disaster/risk management community

Guides on **Technologies, institutions and organizational mechanisms**

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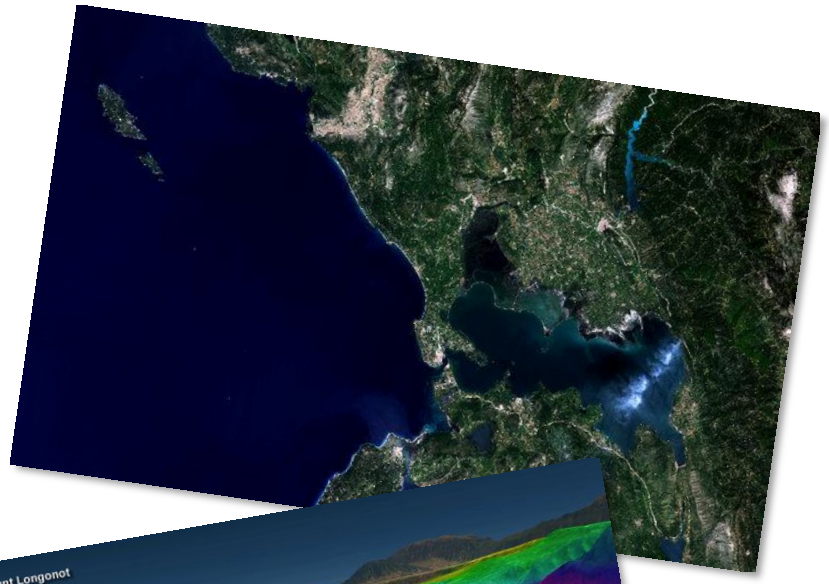
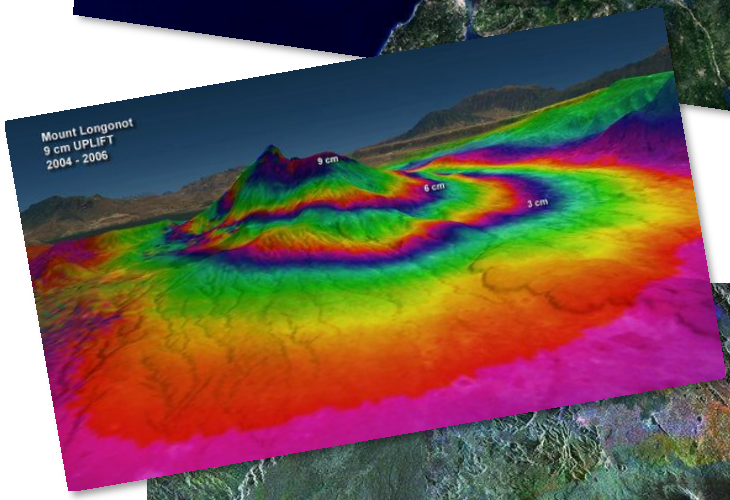
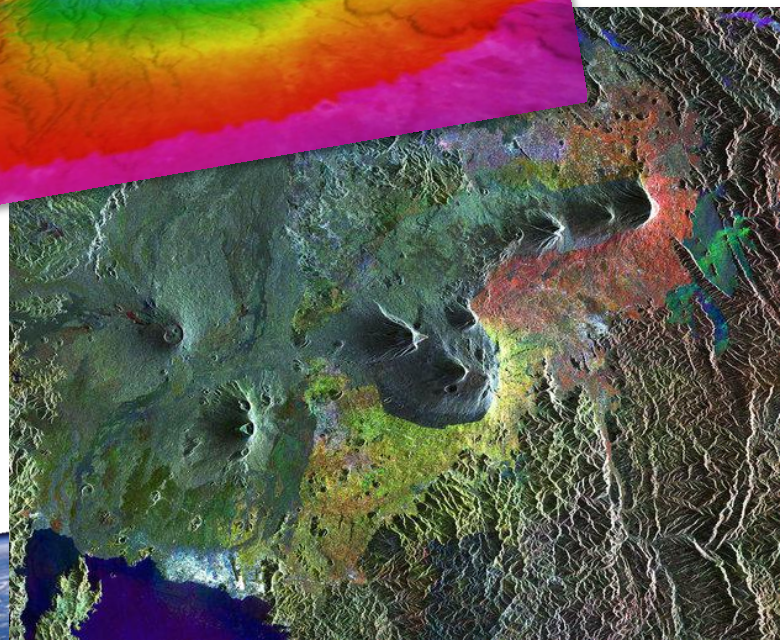
Links to data and information sources







Repository of freely available Earth Observation data and products

- **Hazard-specific datasets**
- **Digital Elevation Models**
- **Land use and land cover maps**
- **Satellite data**
- **Search engines for geospatial data**

Free Data Sources

Earth Observation data and data products provide crucial information for disaster risk management and emergency response. Many datasets are available free of charge and can be downloaded from the web. Others are available as free web-services. The UN-SPIDER team has compiled relevant data sources for you:

- Hazard Specific Datasets (Hydro-Meteorological Hazards, Geo-Hazards, Fire, Pollution, Insects),
- Digital Elevation Models, and
- Land Use and Land Cover Maps.

MISSING SOMETHING?

Get in touch via our contact form

Further below you will find links to:

- Satellite Data and
- Search Engines for Geospatial Data (where you will also find graphical viewers to search geospatial data for different hazard types).

EARTH OBSERVATION INFORMATION FOR DISASTER RISK REDUCTION AND EMERGENCY RESPONSE

Hazard Specific Datasets

Hazard Type	Disaster Risk Management	Response, Recovery	
ecast (Historical Hurricane		Rainfall Monitoring (ERDS - ITHACA) Rainfall Monitoring (TRMM - NASA) Rainfall Estimation (TRMM TOVAS - NASA)	Storm Detection and Fore Tracks - NOAA)
bal MODIS Flood Mapping			Inundation Map (NRT Glo - NASA)
h Flood Observatory -		Storm Detection and Forecast Map (Tropical Cyclones - CIMMS)	Inundation Map (Darmout

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UN-SPIDER Recommended Practices

Recommended practices on the use of archived imagery

Lessons Learned from drought in Iran, floods in Pakistan and earthquakes in Japan

Best Practices on Geo-information for Disaster and Risk Management

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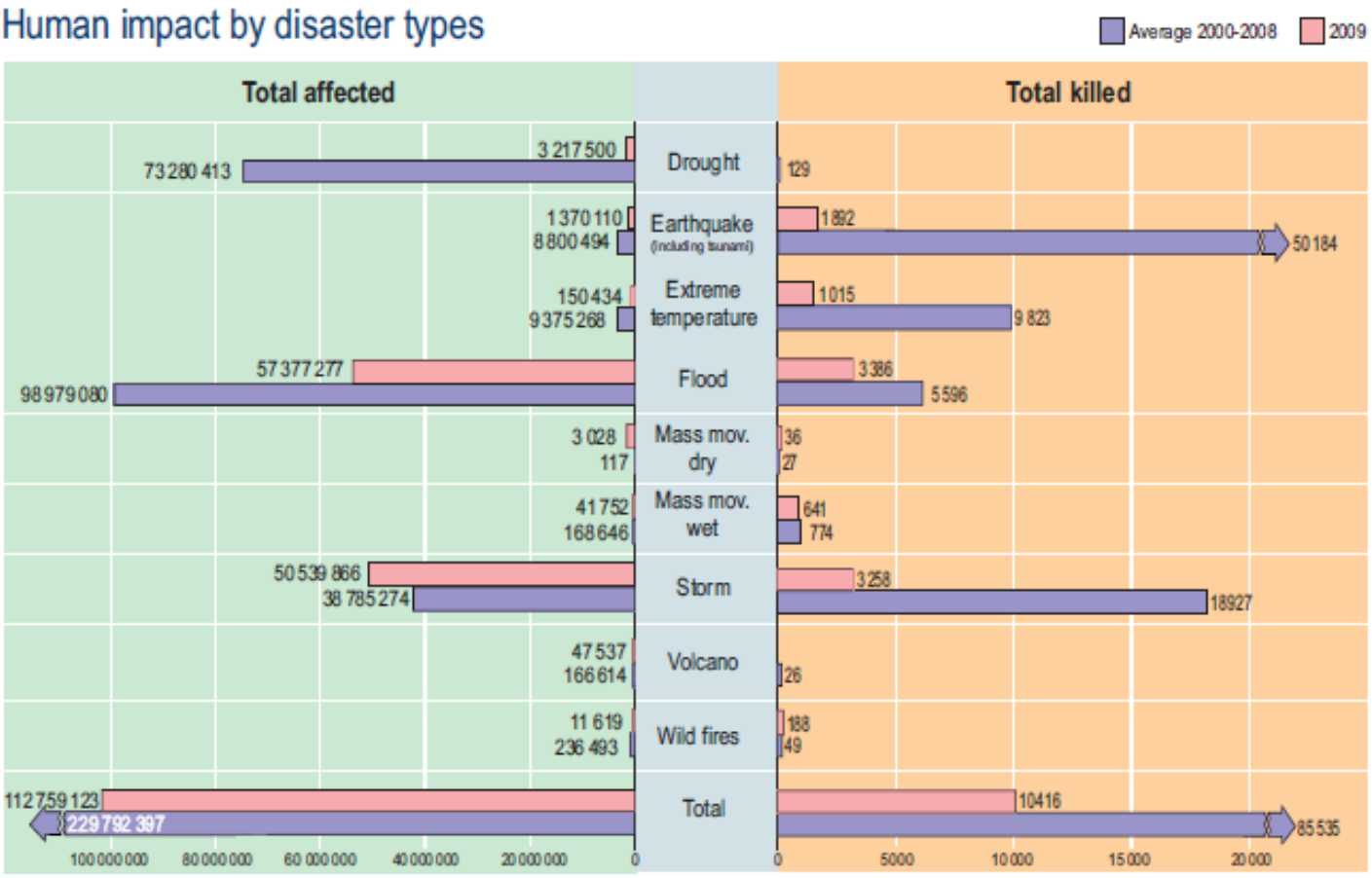
Human impact by disaster type

- Flood - highest impact
- Earthquake - highest number of deaths

- Reasons: lack of preparedness and reliable early warning



http://www.unisdr.org/files/12470_2009disasterfigures.pdf

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Hyogo Framework for Action (HFA) – Priority Actions

5 PRIORITY AREAS

1. Making disaster risk reduction a priority
2. Improving risk information and early warning
3. Building a culture of safety and resilience
4. Reducing the risks in key sectors
5. Strengthening preparedness for response

Space Technology support

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Rio+20 and Post-2015 Development Agenda

THE FUTURE WE WANT

Para 274

We recognize the importance **of space-technology-based data**, in situ monitoring, and **reliable geospatial information** for sustainable development policy-making, programming and project operations. In this context, we note the relevance of global mapping and recognize the efforts in developing global environmental observing systems, including by the Eye on Earth network and through the Global Earth Observation System of Systems. We recognize the need to support developing countries in their efforts to collect environmental data.

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Managing disaster risk with relevant geospatial information management

Extracts from "Fourth session of the global platform for disaster risk reduction proceedings". United Nations Office for Disaster Risk Reduction (UNISDR), 2013

From High Level Dialogue

Advocate for disaster risk reduction and the building of resilience to be a central part of the future we want in sustainable development; the post-2015 development agenda; and the mitigation of, and adaptation to, climate change.

From Drought Resilience in a Changing Climate (featured event)

Reinforce emphasis on science and technology and data management as basis for disaster risk reduction and for turning results into action.

From Applying Science and Technology to Policy and Practice in DRR (featured event)

Ensure greater recognition and use of science and technology in disaster risk reduction to engage with policy-makers.

From DRR: Building Community Resilience in a Changing Climate (side event)

Promote further early warning with timely, comprehensive and tailored climate information to assist with early action

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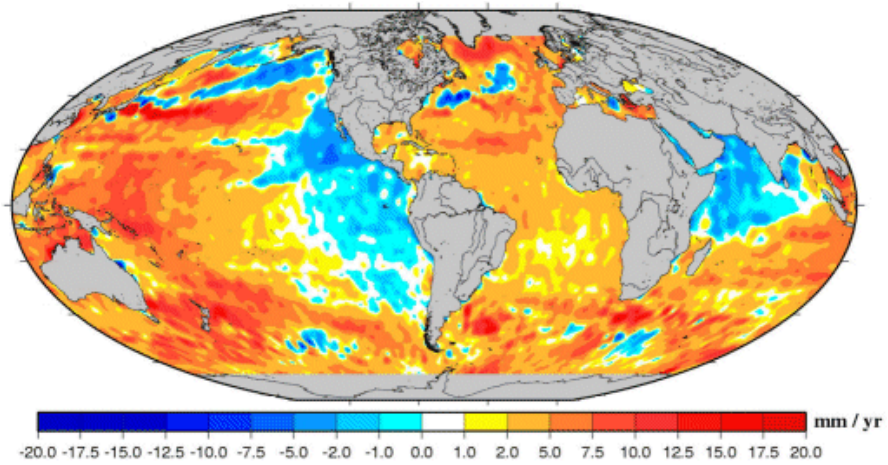
Climate change related information

Promoting the use of integrated space applications

- Adaptation of coastal communities to sea-level rise;
- Adaptation to more frequent and more intense disasters to due hydro-meteorological events



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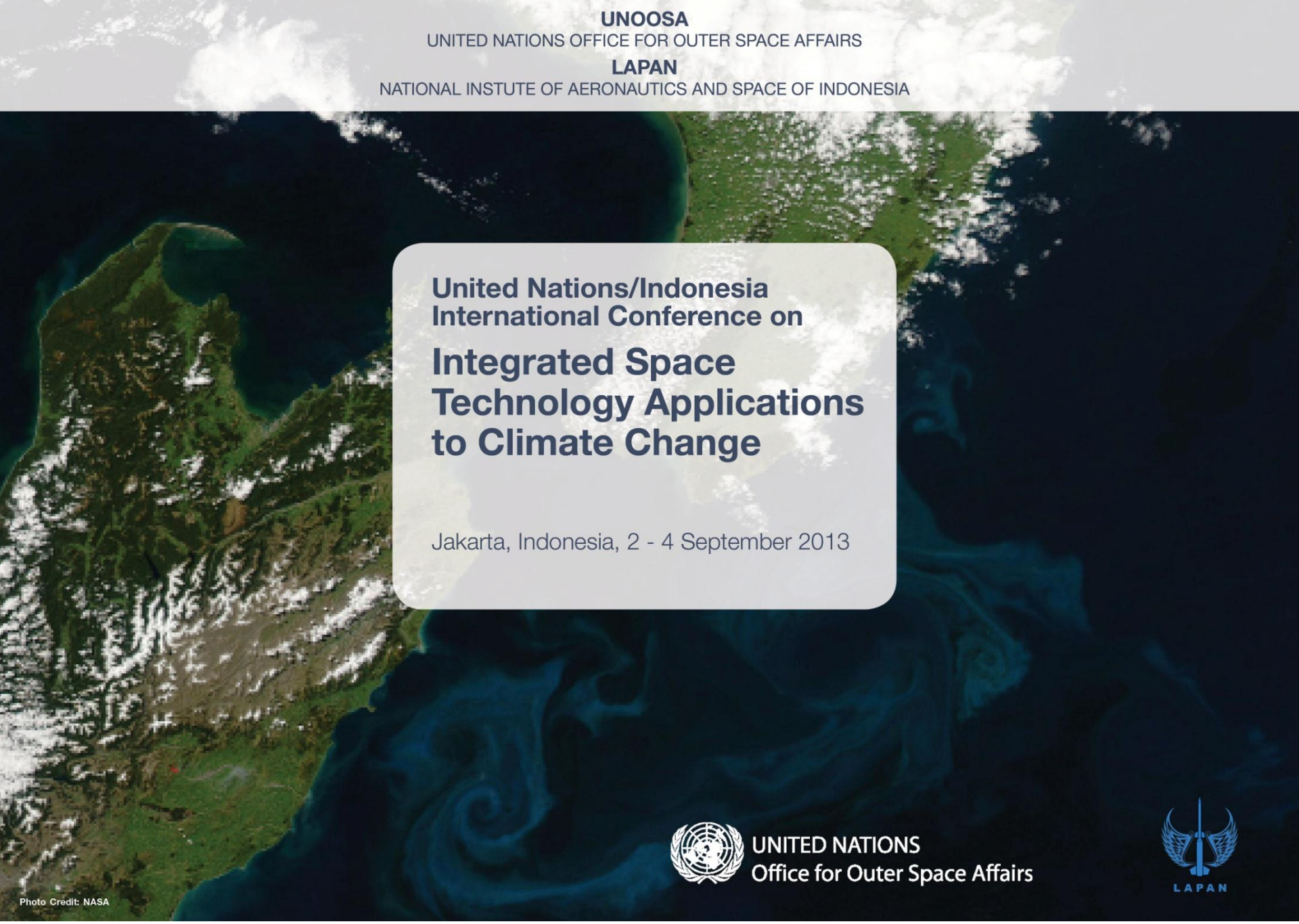
NATIONAL INSTUTE OF AERONAUTICS AND SPACE OF INDONESIA



United Nations/Indonesia
International Conference on

Integrated Space Technology Applications to Climate Change

Jakarta, Indonesia, 2 - 4 September 2013

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Photo Credit: NASA

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Countries receiving Technical Advisory Support (2009 - 2012)

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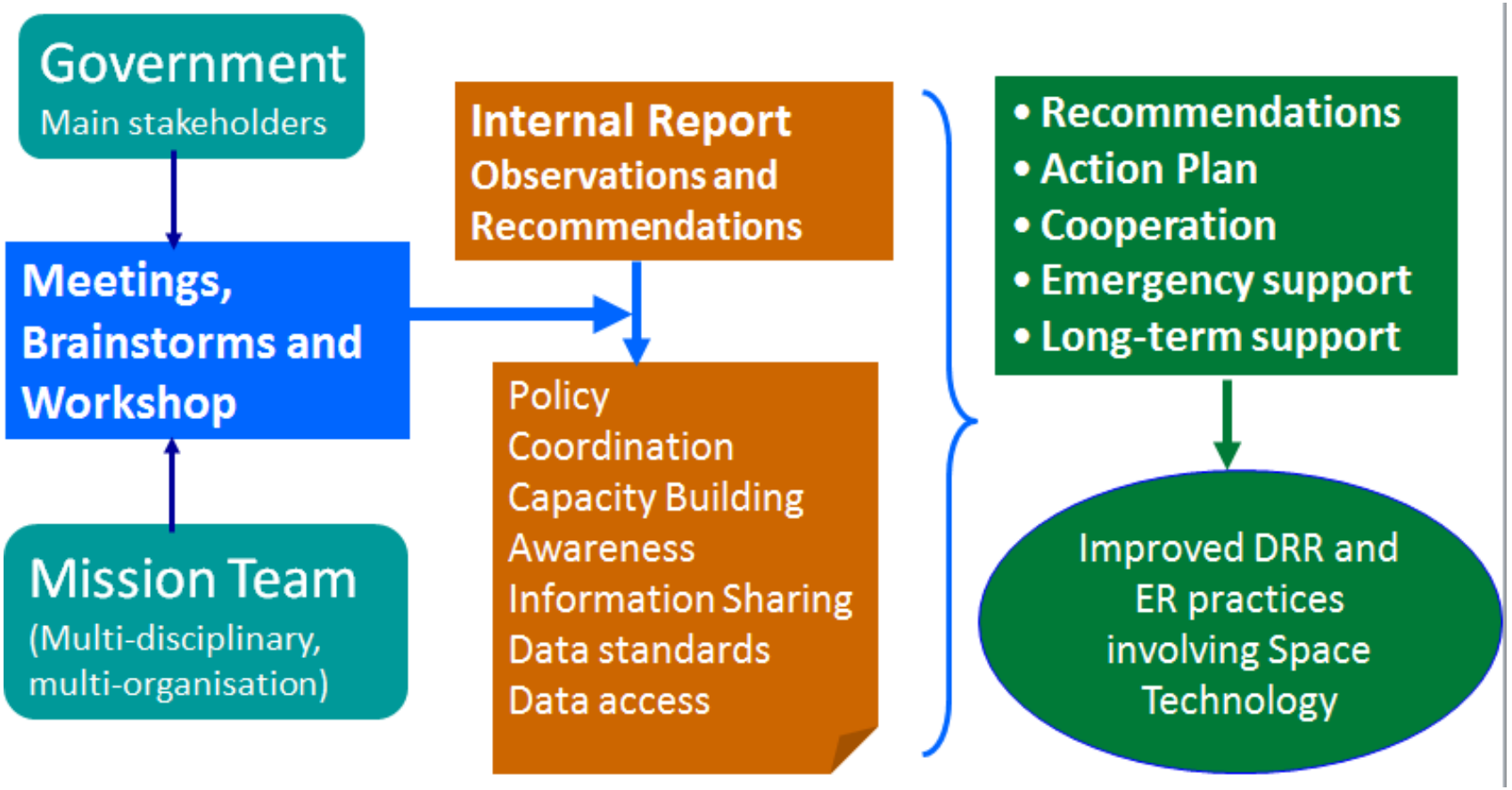
UN-SPIDER Technical Advisory Missions



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"Technical Advisory Mission to Vietnam"

25-29 March 2013

- Shirish Ravan, Head, **UN-SPIDER**, UNOOSA, Beijing, China (Head of the Mission)
- Ms. Juanjuan Han, Expert, **UN-SPIDER**, UNOOSA, Beijing, China
- John Marinos, Information Management Officer, **UN OCHA** Regional Office for Asia and the Pacific
- Milind Pimprikar, Chairman, **CANEUS** (Canada-Europe-Americas-Africa-Asia-Oceania) International, and Centre for Large Space Structures & Systems, Canada
- Jing Li, Member of expert board of National Committee for Disaster Reduction of China, **NDRCC**
- Ms. Thuy Le Toan, RS Expert, Centre d'Etudes Spatiales de la Biosphère (**CNES-CNRS-Université Paul Sabatier**), France
- Ms. DanLing TANG, Professor, **South China Sea Institute of Oceanology**, Chinese Academy of Sciences, China
- Juan Barba Polo, Chairman, **GEREDIS** (Geomatics Sciences Research, Diffusion and Innovation Society), Spain
- Gliceto Olarte Dagondon, Executive Director, **GREEN Mindanao**, Philippines
- Christopher Clyde Chiesa, Deputy Executive Director, **Pacific Disaster Center**, United States of America
- Norman Kerle, Assistant Professor**, University of Twente**, Netherlands
- Talbot John Brooks, Center for Interdisciplinary Geospatial Information Technologies, **Delta State University**, United States of America

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"Technical Advisory Mission to Vietnam"

Follow-up Actions

- The DMC/MARD should plan a workshop for wide dissemination of the TAM report and recommendations to all stakeholders in the country including government agencies, UN and other humanitarian partners and invite their support for implementation of TAM recommendations.
- UNDP and UNRC offices in Vietnam should consider the recommendations in disaster management related programmes developed by the UN agencies and the government.
- High level intervention (at ministerial level) is requested to encourage data sharing and follow up of recommendations on Data Policy.
- UN-SPIDER and DMC, with the help of organisations which participated in the TAM and with the local support of organisations like NRSC/VAST, could organise relevant short term training programmes in Vietnam.
- UN-SPIDER, within its limited resources, could facilitate the capacity building for the staff of Vietnam Government in use of remote sensing and satellite meteorology in cooperation with CSSTEAP (www.cssteap.org).
- The government should consider organising familiarisation study tours of one or two overseas operational "centres of excellence". UN-SPIDER can facilitate such trips, although funding needs to be obtained from governmental sources.
- During emergencies, UN-SPIDER could act as the bridge between users and product service providers (such as International Charter, Sentinel Asia, UN-SPIDER Regional Support Offices and other partners).
- VinAWARE, a technical assistance project undertaken by PDC at the request of MARD/DMC will facilitate the integration of geospatial and early warning information within DMIS to support CCFSC via MARD/DMC.
- Same as above, this is not reflected earlier in the text, difficult to have in follow-up actions.

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"Technical Advisory Mission to Vietnam"

Classes of recommendations

- **Policy and Coordination**
- **Data access, availability and sharing**
- **Capacity Building and Institutional Strengthening**
- **Specific recommendations to address various stages of disaster management (risk reduction, early warning, emergency response etc.)**

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UN-SPIDER Technical Advisory Support

Lessons learned

- **Satellite meteorology does contributes to early warning, although challenges remain**
- **Contribution of satellite images in risk management is in incubation stage**
- **Rapid mapping products remain as reference information during emergency response in most cases**
- **Emergency communication is still an ignored area**

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UN-SPIDER capacity building efforts

UN-SPIDER Technical Advisory Missions → **Follow up actions (Capacity Building)**

Myanmar

Mexico

Cameroon

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"Remote Sensing in the context of Floods"

Dominican Republic, 13-17 May 2013

Follow-up Activity of TAM in 2010 and Institutional Strengthening Mission in 2011

Experts form UN-SPIDER and 3 RSO

- **Topic 1**: Introduction to remote sensing for disaster risk management and emergency response;
- **Topic 2:** Acquisition of satellite data and useful data products for flooding;
- **Topic 3:** Pre-processing, supervised and unsupervised classification of multispectral images;
- **Topic 5:** Calculation of indices and change detection with multispectral images;
- **Topic 6:** Introduction to radar data;
- **Topic 7:** Use of digital elevation models for hydrologic modelling;
- **Topic 8:** Use of thermal data for change detection;
- **Topic 9:** Introduction to the web-portal SMIT;
- **Topic 10:** Hands-on projects in groups.

Open (Geospatial) Data Policies, Practices

- Majority of TAMs highlighted a need for NSDI development and better data sharing
- Many visited institutions confirm difficulties accessing needed geospatial data, be it either from other national agencies or data resulting from international projects
- Accurate, high-quality and detailed GIS/RS data is required for disaster management, especially for response, yet access is limited still overall;
  Haiti, Myanmar are good examples, where crowd-sourcing filled a gap, still late
- Several TAM recommendations included capacity building for SDI development and GIS application; senior Government officials also made aware of needs
- OOSA resources are very limited for adequate TAM follow up; about 2-3 capacity building workshops per year organized, more specific for disaster management

Open Data - Related Actions

- Sustained push for more open data access in general through CEOS (WGCapD), GEO DSWG, in UNGIWG and through COPUOS
- Promoting mechanisms and existing resources at OOSA-led workshops, UN-SPIDER TAMs (International Charter, SENTINEL Asia, DG FirstLook, bilateral agreements with space agencies or other imagery providers etc.)
- Advocating for more relaxed licensing policies where those exist and are restrictive
- Exploring options such as establishing (UN) trust fund for satellite imagery, allowing flexible multi-agency licensing of commercial data for disaster management while taking advantage of existing UN discounts
- Strong support for efforts such as within CEOS for enabling release of restricted data (example of NOAA-led effort on SRTM2)
- Discussions on ensuring open access to donor-sponsored geospatial data

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UN-SPIDER, activities in 2013

- Technical Advisory Mission to **Vietnam**, 25 – 29 March 2013
- Technical Advisory Mission to **Ghana**, Nov/Dec 2013
- Technical Advisory Mission to **Malawi**, 14 – 18 October 2013
- Technical Advisory Support (training) to **Bangladesh**, 12-16 May 2013
- Technical Advisory Support (training) to **Sudan**, 5 – 9 May 2013
- Technical Advisory Support (training) to **Dominican Republic**, 13 - 17 May 2013
- Technical Advisory Support (training) to **Mozambique**, November
- Technical Advisory Support to **Indonesia**, 5 – 6 September
- UN/Germany Early Warning Expert Meeting, Bonn, **Germany**, 25 – 26 June 2013
- SPIDER/NDRCC training, Beijing, **China**, 21-22 October
- UN/China International Conference, Beijing, **China**, 23 – 25 October
- Beijing Training: Flood Risk Mapping, Modeling and Assessment using Space technology, Beijing, **China**, 27-31 October

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"RSO Network"

16 members as of 1 August 2013;

- Hosted by a space agency, a research centre, a university, or a disaster management authority on the basis of a MoU
- Provides knowledge, data, staff, staff time
- Contributes to results and outcomes defined in the UN-SPIDER workplan
- Communicate and coordinate on outreach and capacity building initiatives
- Participate to Technical Advisory Services, including on TAMs
- Rapid mapping
- Contribute to publications on best practices for using space based information in disaster management and emergency response

"RSO Network"

What else?

- Sharing of information through the Knowledge Portal (mailing and contacts, respective workplan on training courses or summer schools, current issues, current difficulties)
- Monitor and take further advantage of social networks and online outreach tools to promote the network and its activities/achievements
- Take advantage of joint participation at conferences/workshops for a RSO consultation and review of UN-SPIDER related activities
- Establishment of a group of Mentors or Experts to support roadmap of the Knowledge Portal
- Pooling satellite imagery and data resources, with a view of sharing such data for RSO's Member States or national entities
- Prepare an online guide of where and how to find data that can be downloaded and shared with other RSO's
- Involve RSOs to evaluate the impacts of Technical Advisory Services and Technical Advisory Missions

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"Space Charter and OOSA"

1. Share with the Secretariat the contact information of the UN-SPIDER network of 15 Regional Support Offices (RSO)1;
2. Share with the Secretariat the contact information of the UN-SPIDER network of 42 National Focal Points (NFP)2 that potentially answers to the selection criteria to become a User of the Charter;
3. Inform RSOs about the roles and responsibilities of Project Managers (PM) for the Charter and support them if they wish to propose individuals/units to become PM;
4. Inform RSOs about PM training opportunities offered by the Charter and facilitate their participation;
5. Explore with the Secretariat opportunities to host PM's trainings in parallel to OOSA activities;
6. Improve and coordinate end-users feedbacks on activation emanating from OOSA;
7. Facilitate the activities of a RSO/PM (once activated) to ensure the requirements of the Charter are respected and disseminate their outputs through UN-SPIDER's networks; and
8. Include in the OOSA annual report to the Charter activities associated with the points above.

Thank you!