Bridging Science with Governance through the UN-SPIDER for flood risk management and preparing for flood emergency response

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United Nations Office for Outer Space Affairs (UNOOSA)

Vision

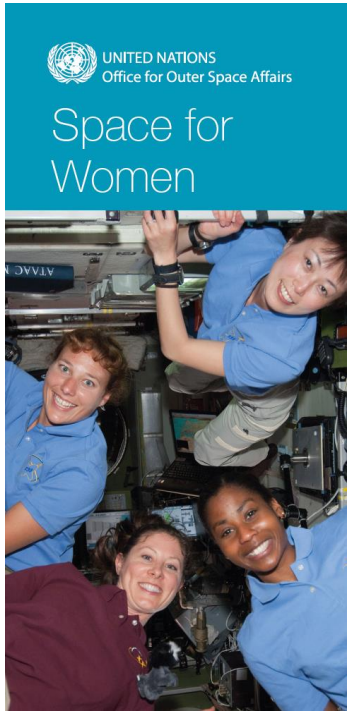
Bringing the benefits of space to humankind

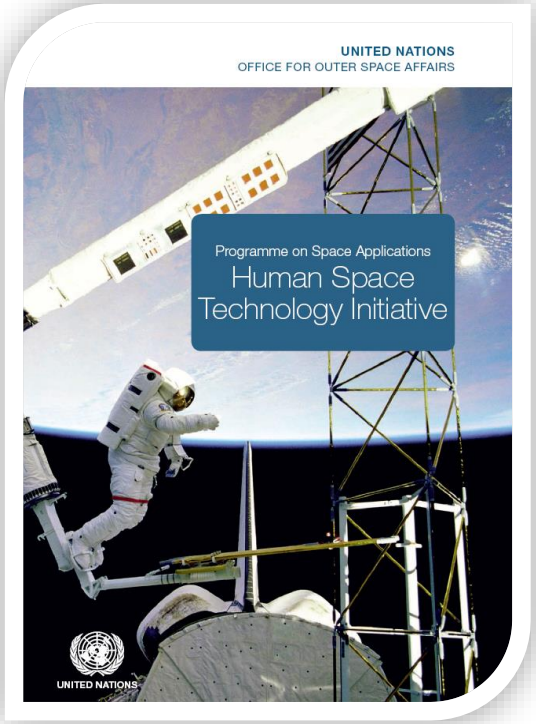
Mission Statement

Promote international cooperation in the peaceful uses of outer space to achieve sustainable development goals

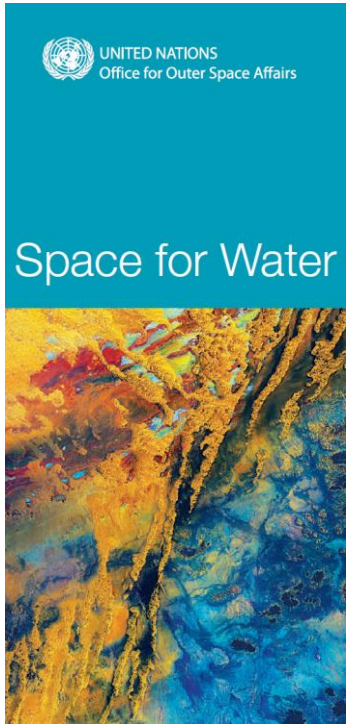
Image credit: Digital Globe/Maxar Technologies

UNOOSA and the SDGs





Access to space Initiative



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ICG International Committee on Global Navigation Satellite Systems

SUSTAINABLE DEVELOPMENT GOALS

Sendai Framework for Disaster Risk Reduction

2015 - 2030

Sendai Framework
From managing disaster to managing risk

- **Outcome**: Substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries …

- **Goal**: Prevent creation of new risk, Reduce exisitng risk and Strengthen resilience

- **Scope**:
  - Adds slow-onset, small-scale, biological and man-made hazards
  - Increases the scope of action in recovery, and reconstruction to Build Back Better

Reference: ISDR

4 PRIORITIES FOR ACTION
Priority 1
Understanding disaster risk
Policies and practices for DRR should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.
Priority 2
Strengthening disaster risk governance to manage disaster risk
Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk.
Priority 3
Investing in disaster risk reduction for resilience
Public and private investment in DRR are essential to enhance the economic, social, health & cultural resilience of persons, communities, countries, their assets, as well as environment
Priority 4
Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction
Strengthened disaster preparedness for response, recovery, rehabilitation and reconstruction are critical to build back better
National and local dimensions
Regional and global dimensions

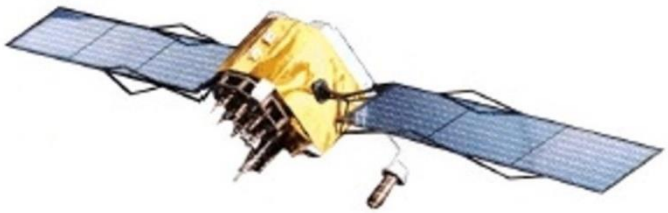
Magnitude of data needed for SDGs (and also for the Sendai Framework)

17 SDGs
169 targets

~232 statistical indicators to be produced by every country to bench mark progress towards SDGs

Covers just about every dimension of development

Risk information is critical for Disaster Risk Reduction



Earth Observation for Disaster Risk Reduction

Evidence-based '*spatial information*'

Better understanding of the 'RISKS'

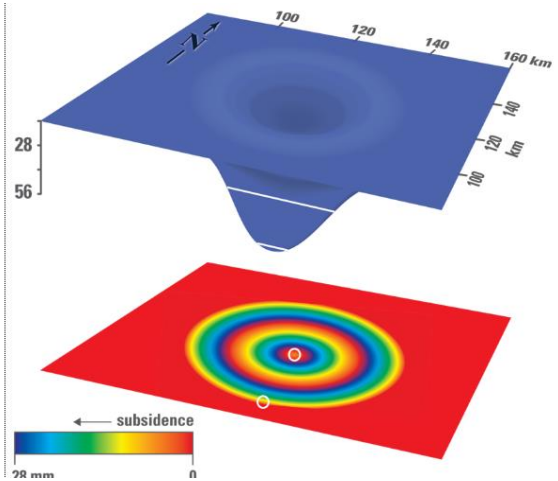
Apt DRR Strategies and risk management

Risks INVISIBLE to human eyes can be predicted and quantified by Satellite Sensors

2011 Bangkok Floods

Reason for prolonged floods - Land subsidence for the past 35 years.

The subsidence reached its most critical state in the early 1980s when it occurred at a rate as high as 120 mm/year



800 deaths

economic loss of 46.5 billion

Source: Engineering Geology 82(4):187-201

We create risks ourselves

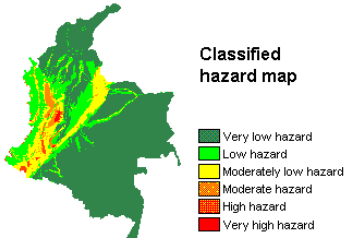
Global scale

Local scale

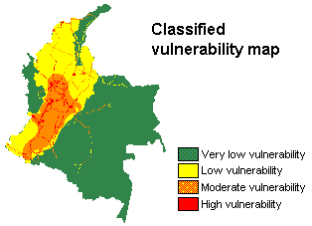
Risk Information from Space

- Map format
- Time series
- Accurate
- Efficient generation
- *Evidence based*

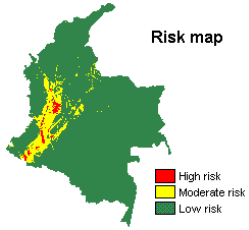
Time series products



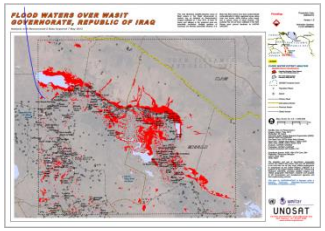
Hazard maps



Vulnerability maps



Risk maps



Response maps

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UN-SPIDER Mission statement

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

UN-SPIDER

Knowledge Portal

The UN-SPIDER Knowledge Portal is a web-based tool for information, communication and process support

Fostering Cooperation

UN-SPIDER fosters alliances and creates forums where both space and disaster management communities can meet

Capacity Building

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

Technical Advisory Support

UN-SPIDER provides support to countries in assessing national capacity and in evaluating disaster and risk reduction activities, policies and plans

and many more…

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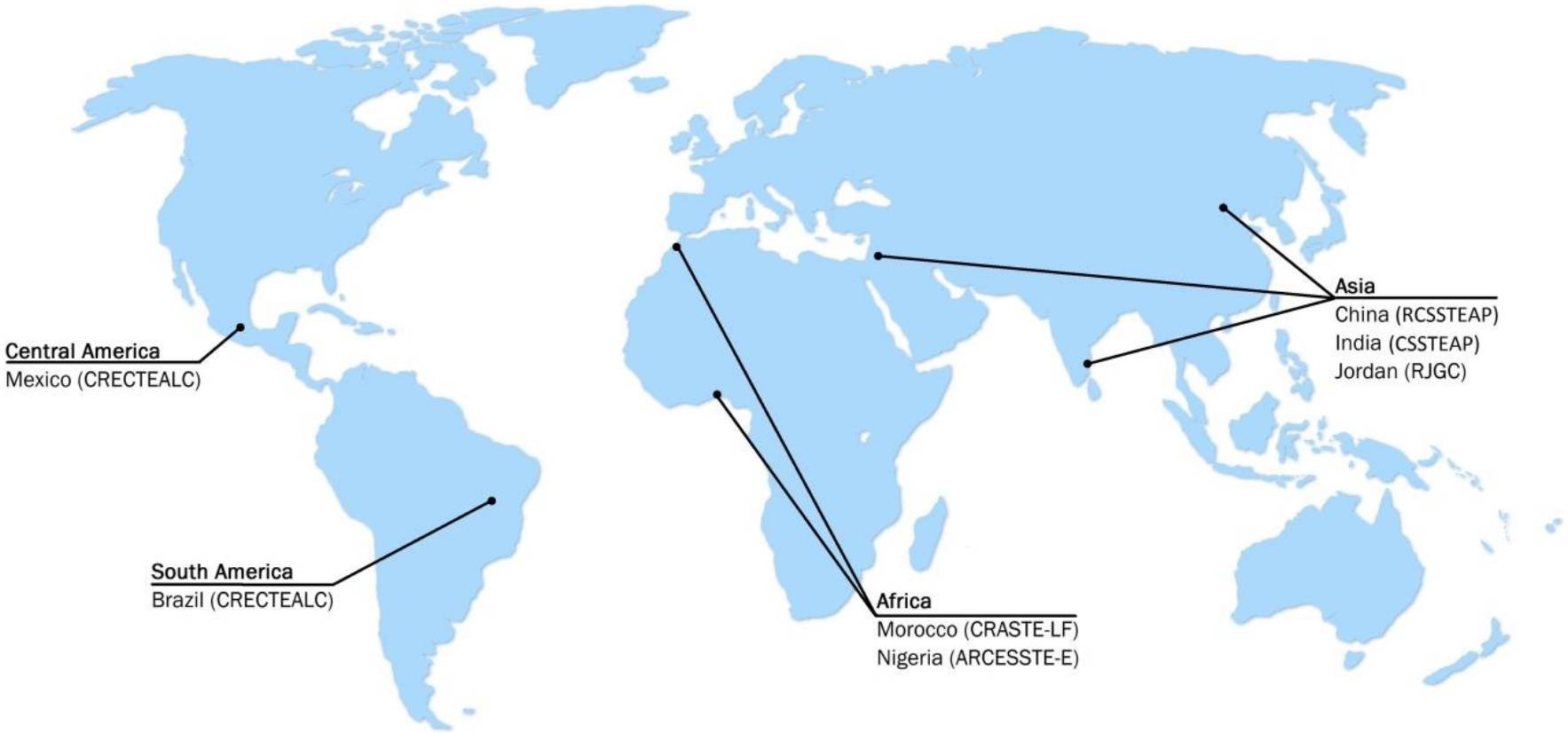
Network of Regional Support Offices

Regional Centres for Space Science and Technology Education (affiliated to the United Nations)



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UN-SPIDER Technical Advisory Support

ASIA

1. Bangladesh
2. Lao PDR
3. Maldives
4. Myanmar
5. Nepal
6. India
7. Indonesia
8. Sri Lanka
9. Vietnam

Pacific

1. Fiji
2. Samoa
3. Solomon Islands
4. Tonga
5. Vanuatu

Sri Lanka

Myanmar

Solomon Islands

ica

Burkina Faso
Burundi

3. Cameroon
4. Cape Verde
5. Chad
6. Congo
7. DR Congo
8. Gabon
9. Ghana
10. Kenya
11. Malawi
12. Mozambique
13. Nigeria
14. Sudan

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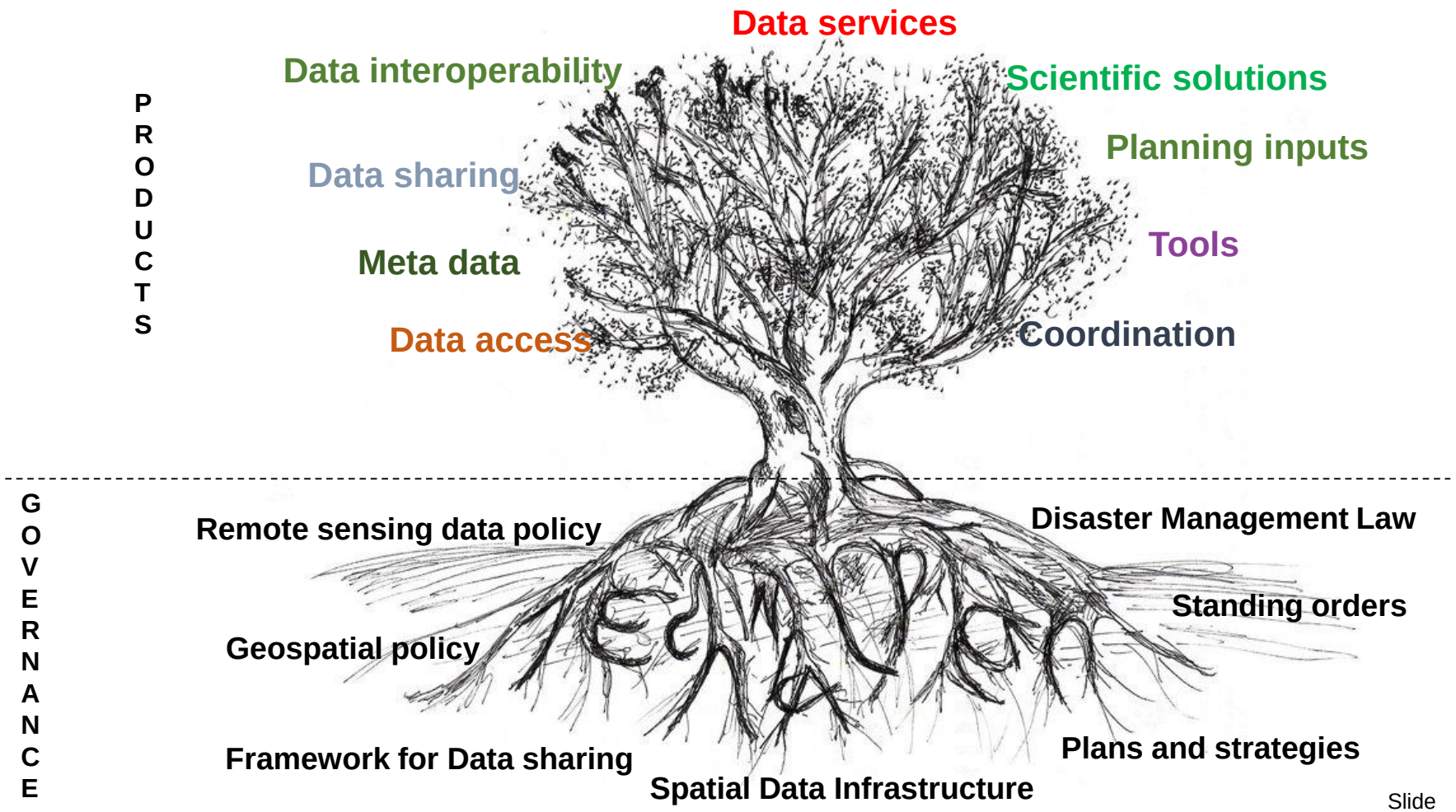
UN-SPIDER Technical Advisory Missions offer interventions at policy and coordination level



Myanmar

- 2012 – UN-SPIDER Technical Advisory Mission
- Key recommendation: Establishment of "Hazard Response and Operations Centre"
- Follow up programmes jointly with Government, UNDP, OCHA and HABITAT
- Impact:
  - Emergency Operation Centre (EOC) established with "Remote Sensing Unit";
  - Trained personnel in remote sensing/GIS are available at EOC;
  - Disaster Management Training Centre conducts courses in remote sensing/GIS
  - NSDI and one map policy under consideration
  - Over 100 personnel trained
  - RRD became Authorised User of the International Charter

2012
Technical Advisory Mission

2012
Meeting of donors and partners, and training on "Geo-Informatics for Disaster Risk Management in Myanmar"

2013-2015
Establishment of a remote sensing unit in the Ministry of Social Welfare, Relief and Resettlement (MSWRR)

2016
TAM follow-up and training on the "Use of Earth Observation Data and GIS Techniques for Landslide Hazard Mapping"

2017
TAM follow-up and training on "Post-Disaster (Earthquake) Rapid Damage Assessment"

2017
Ministry of Social Welfare, Relief and Resettlement (MSWRR) becomes an Authorized User of the International Charter

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Knowledge Portal
www.un-spider.org

Space Application Guides including scientific papers, best practices and experience reports

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

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

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Data Application of the Month

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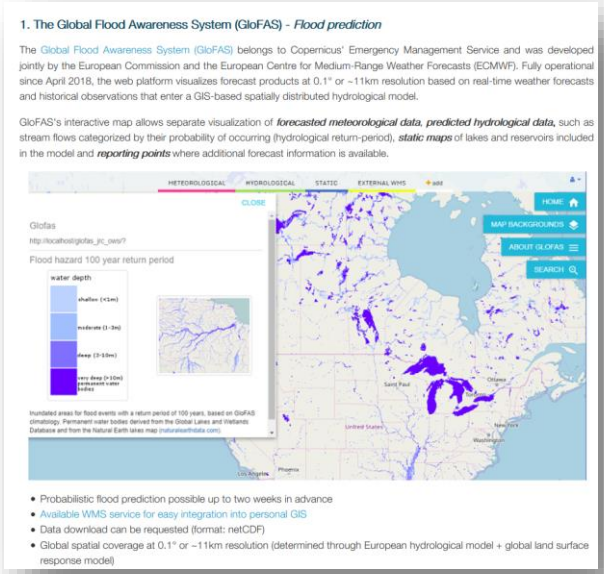
UN-SPIDER KNOWLEDGE PORTAL
Space-based information for Disaster Management and Emergency Response

Home | Space Application | Risks & Disasters | Links & Resources | Advisory Support | Network | Projects | News

Data application of the month: Overview of web maps for flood monitoring

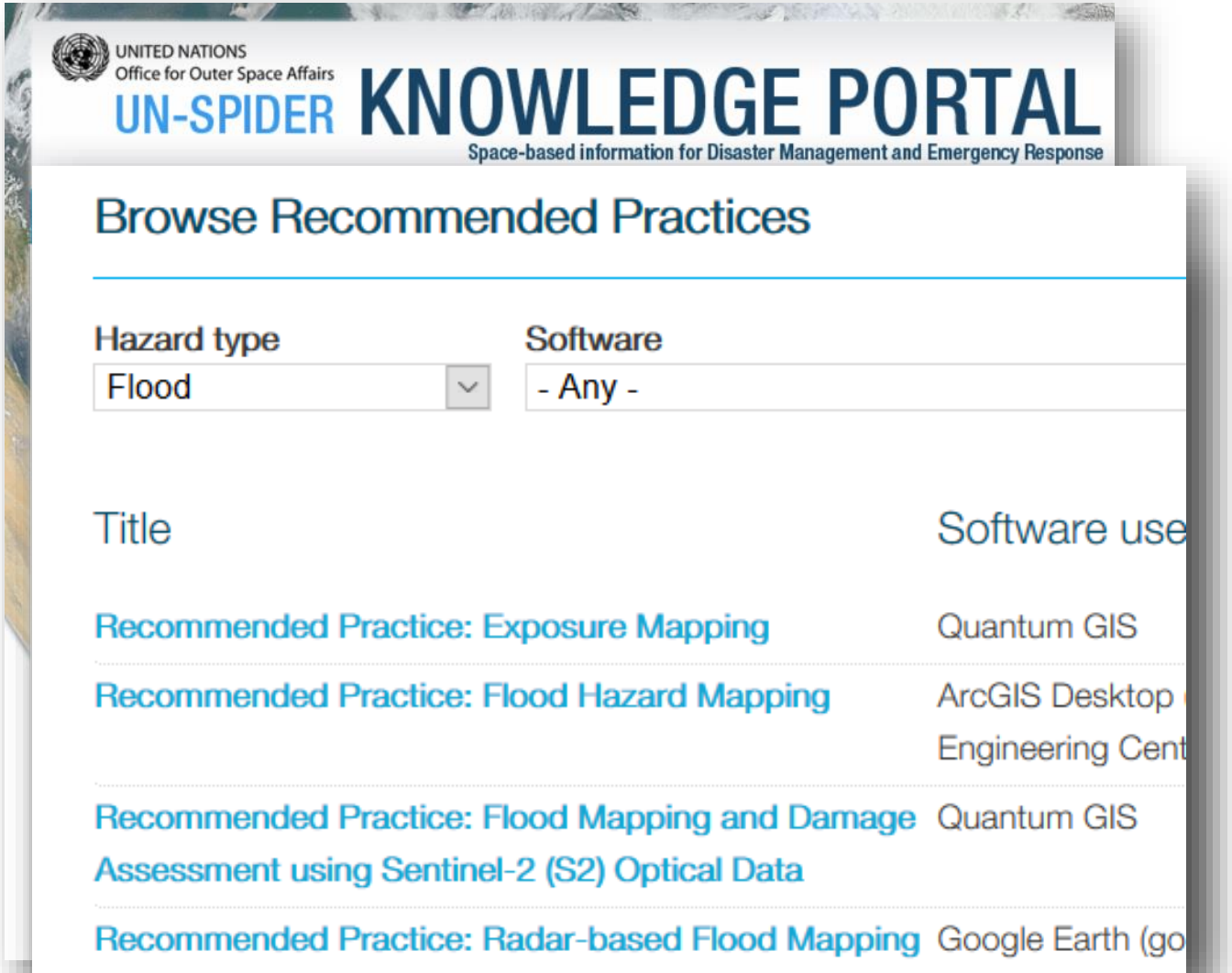
Since its creation, UN-SPIDER's data base on satellite data and products has gathered links and information to more than 250 data sources related to space-based disaster risk reduction and emergency response. These include many links to free satellite data as well as final analysis products such as hazard maps. Flood prediction, near real-time monitoring, risk assessments and damage assessments can all benefit from satellite data and are often also supported by in situ data and physical models. Yet, the diverse supporting data available matched with the various needs of authorities, first responders or researchers make it difficult to be aware of all the information available. To gain an overview we present several easily accessible and interactive web mapping tools that shed light on disaster management for floods from various perspectives. To find more data sources related to floods and other hazards, visit the data sources section of the Knowledge Portal.

Flood prediction | Risk assessment | Damage assessment | Near real-time monitoring



http://www.un-spider.org/links-and-resources/data-sources/daotm-flood-web-maps

Recommended practices – Flood mapping



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Prince Sultan Bin Abdulaziz
International Prize for Water

- A ***multi-stakeholder platform*** for ***interdisciplinary knowledge exchange***
- Making ***information*** on space solutions and technologies for water-related topics ***discoverable and filterable***
- A ***capacity-building platform***
- A portal for ***expert communities, including those from developing countries***

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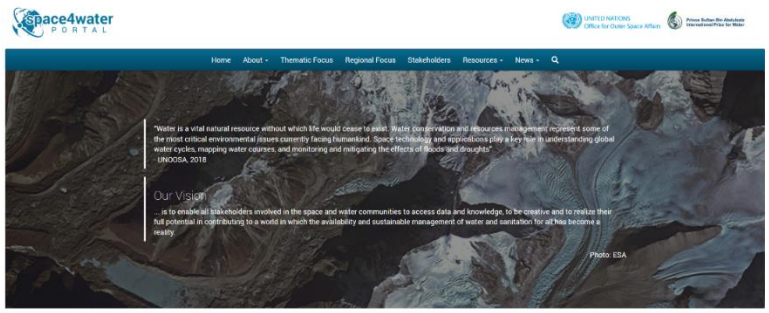
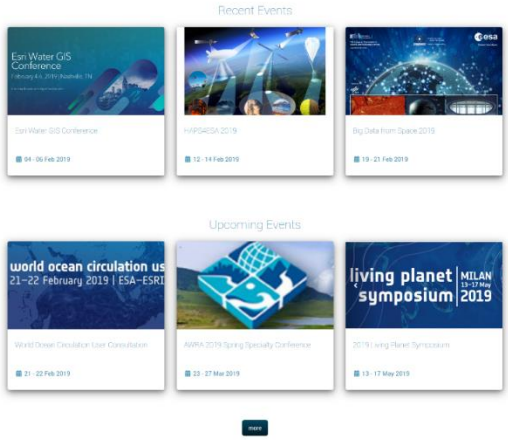
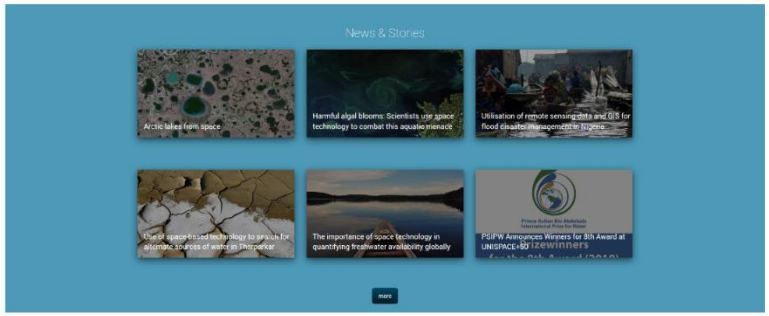


space4water PORTAL





- 32 Stakeholders
- 7 Software
- 6 Project / Mission / Initiative / Community Portal
- 12 Capacity Building and Training Material
- 12 Publications
- 11 Articles
- 53 Events

Get Involved

space4water PORTAL

- Write an article
- Become a stakeholder & contribute resources
- Become a donor
- Experts committee
  - for content review & quality control
- Host and Venue for the 5th International Conference on Space Technologies for Water Management

Emergency response mapping support

Emergency response

International Charter Space and Major Disasters

Emergency Mapping Services

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www.un-spider.org

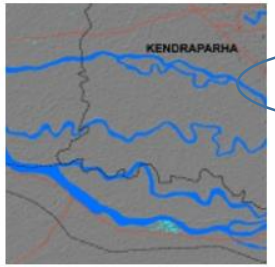
Latest Charter Activations (As on 10 June 2019)

26 MAY 2019

Earthquake in Peru ▸

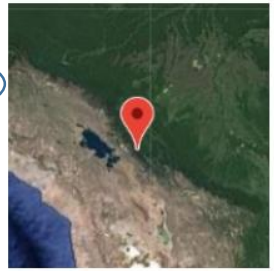
17 MAY 2019

Flood in Paraguay ▸



03 MAY 2019

Cyclone Fani in India ▸



01 MAY 2019

Landslide in Bolivia ▸

25 APRIL 2019

Cyclone Kenneth in Mozambique ▸

25 APRIL 2019

Flood in South Africa ▸

19 APRIL 2019

Flood in Canada ▸

15 APRIL 2019

Flood in Iraq ▸

In general, 50% per cent of satellites images provided during major disasters are accounted for flood disasters.

It raises concern:
Do the benefits of science/technology reach to the end users (risk reduction community)???

Global Flood Partnership
Areas of cooperation

UN-SPIDER can facilitate reach of the scientific knowledge to the end users through its *technical advisory missions, outreach, knowledge portal and training programmes – especially to developing countries*

Opportunities

- Procedural guidelines specific to regions
- Recommended practices
- Training courses
- Massive online open course (MOOCs)
- Workshops/symposiums

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The United Nations Conference on Space-based Technologies for Disaster Risk Reduction - "A Policy Perspective“, Beijing 11-12 September 2019 (9th annual UN-SPIDER Conference)

Please register on www.un-spider.org

Photograph 8th annual UN-SPIDER Conference, 2018

THANK YOU

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