







# SPEAR A joint initiative by UN-SPIDER and ZFL of UniBonn

**UN-SPIDER ZFL** 

Regional Virtual Expert Meeting "Space-based Solutions for Disaster Risk Management and Emergency Response" 13 to 15 July 2021



# United Nations Platform for Space-based Information for Disaster Management and Emergency Response

- Established by the UN General Assembly in 2006:
- Managed by the United Nations Office for Outer Space Affairs (UNOOSA)
- Headquarters at the United Nations Office in Vienna and additional offices in Bonn,
   Germany and in Beijing, China.











# Technical Advisory Support

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



#### Knowledge Portal

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



# **Capacity Building**

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



#### **Fostering Cooperation**

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



## **Network of Regional Support Offices**





fire burnt severity mapping

# Access to Knowledge

**Geoinformation for** Hazard, exposure, vulnerability, and risk assessment

**Recommended Practice on** Flood Hazard Mapping

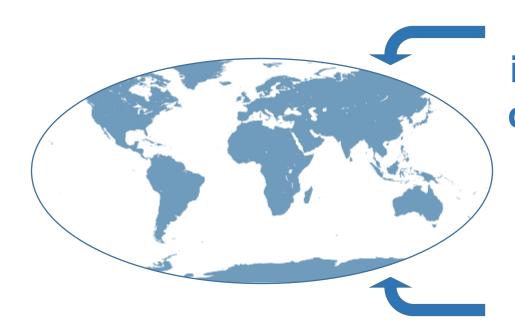
**Recommended Practice on** Storm surge hazard mapping

> **Geoinformation for** Post Disaster Needs Assessment (PDNA)/ Damage and Loss Assessment (DaLA)

**Recommended Practice changes in flood** behaviour due to land-use changes **Geoinformation for** Early Warning systems Prevention Preparedness and Mitigation **Recommended Practice on Drought Monitoring** Disaster management cycle Disaster Recovery **Recommended Practice on** Response Flood extent mapping **Recommended Practice on** Geoinformation for debris flow extent mapping Rapid mapping: Extent and impact **Recommended Practice on Forest** 

### **Main Aim:**

Institutionalizing the generation and use of space-based information:



Establish interinstitutional teams in developing countries

Capacity building and Institutional strengthening



## **Technical Advisory Support to Nigeria:**

- Technical Advisory Mission:
- 13-17 June 2011, coordinated with NASRDA and NEMA
- Advisory Support due to floods:
- Elaboration of maps of floods in 2015, 2018, 2019 and 2020.
- Capacity building efforts:
- Virtual training course for staff of NEMA, NASRDA and ARCSSTE-E in Oct. 2020 on flood mapping using Sentinel 1 radar imagery and Google Earth Engine.
- Mobilization of experts from Nigeria to UN-SPIDER Conferences in Vienna, Bonn and Beijing since 2007.



# **SPEAR**

**Sp**ace-based **E**arth observation **A**pplications for Emergency Response and Disaster **R**isk Reduction

## Objectives



• Raise awareness for the usefulness of EO to contribute to efforts conducted in the areas of DRR, preparedness, response, and recovery with a focus on African countries and in line with the German Africa Strategy.

• Make use of and strengthen German expertise for the use of EO information to support international conventions in the fields of disaster preparedness and response in the multi-hazard and multi-risk context

• Ensure that space-based data, information, tools and applications are accessible based on actual needs and requirements of users, especially in African countries.

## Objectives



• Facilitate international cooperation between the space community and the communities that focus their efforts on disaster risk reduction, preparedness, response, and recovery efforts.

• Contribute to the strengthening of institutional capacities at the national level, in particular of institutions in developing countries.

 Strengthen Bonn as UN and Science location and increase the cooperation between the Center for Remote Sensing of Land Surfaces (ZFL) of the University of Bonn and the UN-Campus

#### **SPEAR**



National Needs & International Conventions

National Needs & Knowledge Transfer

EO for Disaster Risk Reduction, Response, & Recovery

**Data & Information** 

- · SFDRR
- · SDGs
- · UNFCCC

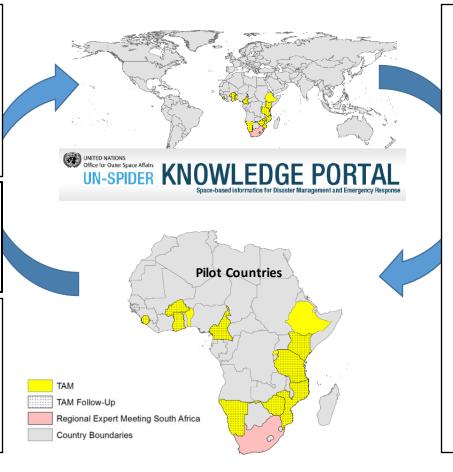
Measures/ Goals of NAPAs

#### **National Needs**

Disaster Preparedness and Response, Capacities

- · CEOS
- · Charter
- · GP-STAR
- · <u>GEO</u>

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Use and development of EO-based information products and recommended practice to strengthen disaster mitigation, preparedness, response & recovery

Knowledge generation and exchange by

- · Capacity building
- Training and Technical Advisory Missions
- Widening Collaborations
- · Knowledge Platform

International exchange

#### Satellite Data

- · Sentinel 1,2,3
- Landsat
- · AVHRR
- · MODIS
- ...

#### Ancillary Data

- · In-situ data
- Multi-Hazard and Risk Assessment
- Models and Scenarios

• ...

#### **EO** related activities









#### **UN-SPIDER Recommended Practices**

- Guidelines for different disaster related methods
- Available through UN-SPIDER Knowledge Portal



#### Method testing and development

- Testing of recommended practices and other methods and tools
- Development of new or improved methods



#### Map and Information production

- To prepare and support UN-SPIDER missions and events in Africa
- To support African institutions and make them aware of different EO capabilities



#### Training and user feedback

- Demonstration and training of methods in virtual and live events, MOOCs etc.
- Development of guidelines and training materials

## **Current EO priorities**











Method development: Multi scale monitoring of Locust infestations



Method development: Sentinel-1 based landslide monitoring approaches



Method development: Radar based damage assessment procedures



Method development: SAR and modelling approaches for dam failure



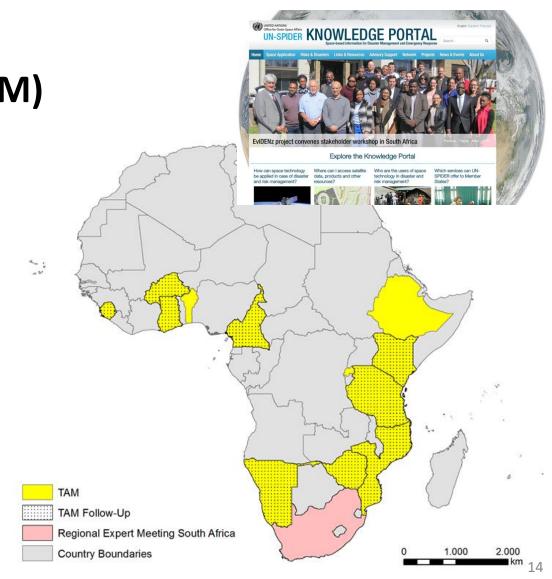
Testing and updating of already existing recommended practices

### TAM & ISM



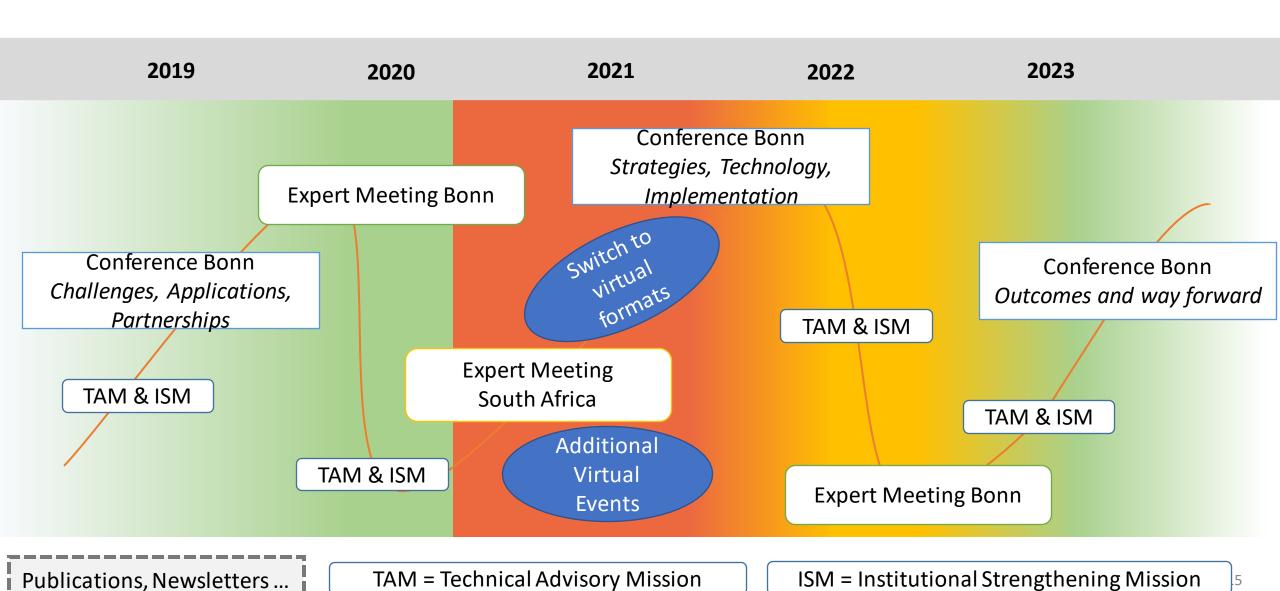
Technical Advisory Missions (TAM)
Institutional Strengthening Missions (ISM)

- 2-3 missions per year
- Regional Expert Meetings
- Training and Capacity Building
- On-demand -> Specific requests
- Africa-wide network
- Shapening EO-based applications



#### **Outreach**





#### The way forward



Continue and strengthen virtual activities

- Continue work on recommended practices and EO applications
  - Improve methods
  - Incorporate new possibilities and data sources
  - Cover different disaster types
  - Develop pilot studies

- New Sentinels-4-African-DRR activity together with DLR
  - EU funded action to strengthen the benefits from Copernicus in the fields of Disaster Mananegement and Risk Reduction in Africa
  - Technical Session tomorrow afternoon!