UNOSAT: Building DRR & Climate Resilience

Aline Roldan
Capacity Development Expert
Disaster Risk Management and Climate Resilience Section
UNOSAT - UNITAR

United Nations inter-agency meeting on outer space activities (UN-Space)
High Level Panel on Space-based Technologies for Disaster Risk Reduction
Friday, 9 December 2022, Bangkok, Thailand
UNITED NATIONS SATELLITE CENTRE (UNOSAT)

• Division for Satellite Analysis and Applied Research at the United Nations Institute for Training and Research (UNITAR)

• Operational since 2001, recognized as the United Nations Satellite Centre in June 2021

Mandate:

“provide United Nations funds, programmes and specialized agencies with satellite analysis, training and capacity development, at their request, as well as to continue supporting Member States with satellite imagery analysis over their respective territories and to provide training and capacity development in the use of geospatial information technologies”

UNOSAT recognized by ECOSOC in June 2021 as The United Nation Satellite Centre (UNOSAT) (Res. E/2021/L.22)
Operational Pillars

Training and Capacity Development
Hands-on technical training, awareness raising and technical backstopping

Satellite Analysis
Satellite imagery derived geospatial products

Applied Research and Innovation
EO, AI, Machine Learning, Big Data Analytics, crowdsourcing
DRR - Capacity Development Projects

• **East Africa (2014-2020):** Enhancing IGAD’s Member States Capacity in GIT applications for DRR

• **West Africa (2018-2020):** Capacity Building Support to the Economic Community of West African States (ECOWAS) on DRR

• **Asia (2014-2020):** Technical trainings on GIT applications for DRR delivered in more than 10 countries in collaboration with ADPC & UNESCAP.

• **Africa (2020):** UNOSAT & UN Technology Bank: Enhancing Capacities in the use of GIT for Improved DRR/M, Climate change (CC), Natural Resources Management (NRM): Gambia, Uganda, Mozambique

• **Guyana (2018-2021):** National Flood Early Warning System (2018 – 2021)

• **Pacific (2018-2022):** CommonSensing - Strengthen climate resilience in Fiji, Vanuatu & Solomon islands

• **IORA Member States (2021-2022):** Geospatial Information Technology (GIT) for Operational Planning and Decision Making in Disaster Risk Management

• **UNESCAP (2021-2022):** Asia Pacific Risk & Resilience Portal

• **UNESCAP (2022):** Utilizing Space Applications to Strengthen Drought and Land Management in Central Asia through Innovative Learning

• **Asia-Pacific and Africa (2021-2024):** Strengthening Capacities in the use of geospatial information for improved resilience in: Uganda, Nigeria, Bhutan, Lao PDR, Bangladesh, Fiji, Solomon Islands and Vanuatu.

OBJECTIVE

Improve national resilience towards climate change in small island developing states. The project focused on improved food security, disaster risk reduction and better access to international climate finance and will contribute to sustainable development in Fiji, Solomon Islands and Vanuatu, through the use of geospatial and climate information technologies.

ACTIVITIES

• Capacity building in the use of geospatial and climate information services, strengthening technical skills across the region
• Technical Backstopping: Embedding specialists within government structures to ensure local data systems, knowledge and decision-making benefit from the added capabilities of CommonSensing
• Development of decision support systems

COUNTRIES

• Fiji, Solomon Islands and Vanuatu

THEMATIC AREAS

- Climate Information
- Food Security
- Disaster Risk Reduction
- Climate Finance

PARTNERS

- The Commonwealth
- CATAPULT
- Met Office
- devex
- sensonomic
- UNIVERSITY of PORTSMOUTH
- Spatial Days

FUNDED BY

- UK Space Agency
- GCRF Global Challenges Research Fund

International Partnership Programme (IPP)
CommonSensing – Building Climate Resilience with Small Islands Nations

1. **DRR Decision Support System**
   The Decision Support System will provide contextual analyses of a variety of hazards, risk, vulnerability, and coping capacity data based on INFORM sub-national methodology to improve situational awareness. Explore

2. **Open Data Cube**
   CommonSensing provides access to the Open Data Cube (ODC) products of various types, serving a range of use cases within climate change resilience. Explore

3. **Climate Impact**
   The Climate Information app was created to allow users to look back in time at how climate parameters have varied over time. Explore

4. **Food Security**
   The open app is designed to provide the farmers or communities with suitability information of potential crops in any location in Fiji. Explore
Decision Support System promoting risk-informed & evidence-based decision making

Data
- Global landcover
- Global cropland
- Global surface water
- High resolution population models
- Global disaster risks

Information
- Data on disaster risks
- Information on landcover, cropland, surface water, and population models

Insights
- Analysis and interpretation of disaster risks and environmental data
- Graphs and charts to visualize insights

[Image of Earth from space and various data maps]
Decision Support System promoting risk-informed & evidence-based decision making
Multi-criteria decision analysis tool (MCDA)
Crop Suitability Application

https://unosat-geodrr.cern.ch/FoodSecurity/CropSuitability/
Sea Level Rise

https://unosat-geodrr.cern.ch/Climate/SeaLevelRise/
UNESCAP Risk and Resilience Portal

Asia Pacific Risk & Resilience Portal
Bridging the science policy gap for informed action

700+ Datasets
100+ Policy documents

https://www.youtube.com/watch?v=clixQxvjo-4
This map shows integrated analysis of location of most vulnerable population (flood under climate change, biological hazard, low-medium HDI) based on probabilistic estimates from various sources. These estimates are yet to be validated by government ministries.

Full metadata for map layers can be found here: Metadata table
The base map is retrieved from UN Clear Map. You can find more details here: United Nations Clear Map

How to use the map:
- Zoom In: Drag on zoom in within a view.
- Zoom Out: Drag on zoom out within a view.
- Pan: Drag the map to browse.
- Full screen: Press F11 to enter full screen.
- Legend: Legend and symbols are located on the right and left side of the map.
- Add layer: Add layer to the legend.
- Remove layer: Remove layer from the legend.

DISCLAIMERS:
1. These are probabilistic estimates, based on data from World Bank Climate Change Knowledge Portal, World Health Organization (2020) Disability-Adjusted Life Years (DALYs) estimates, WorldPop Population Counts, United Nations Development Programme (UNDP) Sub-national Human Development Index (SHDI), Health infrastructure from OCHA Services Data World – Humanitarian Data Exchange (HDX), and ESCAP - Transportation Data.

2. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.
Welcome to the Decision Support System (DSS) of the Risk and Resilience Portal

The Decision Support System provides contextual analysis of a variety of hazards, risk and vulnerability, socio-economic information to support informed decision-making. Using different tools, users can easily understand the location of risky areas, what makes them risky and finally identify the means for reducing and adapting to those risks.
Risk Informed Climate Change relocation for vulnerable communities in Fiji
• Activity 1. Conduct a preliminary climate change adaptation study in 17 vulnerable communities to identify potential adaptation interventions based on their socio-economic status, development plans, susceptibility to various natural hazards, including climate-related risk drivers.

• Activity 2. Supporting the Ministry of Economy (CCICD) with evidence-based information, geospatial products (i.e., Web-maps, Dashboards and Story Maps), and Spatial Decision Support Tools (SDST) for relocation.
Strengthening GIT Capacities for Improved Disaster Resilience in Pacific, Asia and Africa

- Develop technical and institutional capacities of professionals in selected countries on the use of geospatial information technologies.

- Apply geo-information technologies to tackle disaster risk but also environmental degradation, food security, and resilience in a changing climate.

- “End-to-end capacity development” - solution and capacity development will go hand in hand.

- Funded by the Norwegian Agency for Development Cooperation (NORAD)

- 3-year project (until June 2024)

- 8 target countries
Project Activities:

- **Introductory and advanced training courses** to support learning needs of technical staff. Training methodology can be in-person, online, or blended approaches. Training materials to be accessed through a knowledge platform.

- **Customized decision support applications.** UNOSAT co-designs the solutions with the users through UX design. We aim for tools that are sustainable on the long-term.

- **Technical Backstopping** and In-country Expert for ad-hoc support to project implementation activities in close collaboration with national stakeholders.
Strengthening GIT Capacities for Improved Disaster Resilience in Pacific, Asia and Africa

Building Sustainable Capacities

Tutorials

Video Tutorials

Knowledge Hub and Community of Practice

PART C: Perform Unsupervised Image Classification

Lower values or darker areas in a SAR image usually represent water.
THANK YOU!