Committee on Earth Observation Satellites

Update on GEO DISASTER RISK REDUCTION

Rui Kotani, DRR Coordinator, GEO Secretariat
Dave Borges, NASA, GEO DRR WG co-chair

WG Disasters 19 in Cordoba
18 April 2023

About us

- GEO is an international partnership working towards a future where decisions and actions for the benefit of humankind are informed by coordinated, comprehensive and sustained **Earth observations**
- Ever since its inception, GEO has been a strong advocate for broad **open knowledge** policies and practices

2023 GEO Week & Ministerial Summit

Where & When

- Cape Town, South Africa. 6-10 November 2023

Context

- A strategic inflection point for the planet: The triple crisis of climate change, biodiversity loss and pollution.
- And for GEO: it's time to agree on a new direction for post-2025.
- Despite an abundance of information sources, access and use of Earth observations is not widespread.
- We need a new, fit-for purpose GEO that accelerates equitable access to Earth observations, and produces information that leads to implementation.

https://earthobservations.org/documents/pb/me_202302/presentations/PB-25-1.5_MinisterialSummit.pdf

Objectives

- Increase **visibility** of the critical role of Earth observations, and the GEO partnership.
- Secure ministerial **validation** of GEO's post-2025 strategy through a Declaration, and a mandate to develop an implementation plan based on this direction.
- Secure and showcase **commitment** for the implementation of GEO's post 2025 direction, from ministers and GEO partners.
- Provide the GEO community with opportunities to **showcase** their work and **network** with each other.

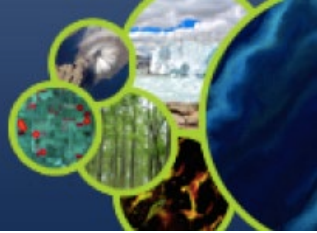
https://earthobservations.org/documents/pb/me_202302/presentations/PB-25-1.5_MinisterialSummit.pdf

Key elements of a Future of GEO

(Recap from PB-24)

2023-2025 GWP review

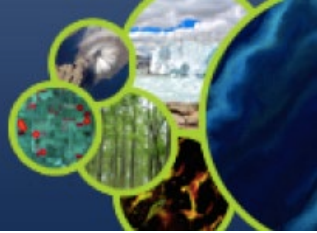
(Recap from PB-24)



- Bilateral engagements ⟶ opportunities for collaboration
- Implementation Plans ⟶ analysis of GWP activities: outputs, users, capacity-building, resources
- Results orientation ⟶ monitoring and evaluation
- Internal process ⟶ redesigned communications

The approach

(Recap from PB-24)



GEO Work Programme 2023-25

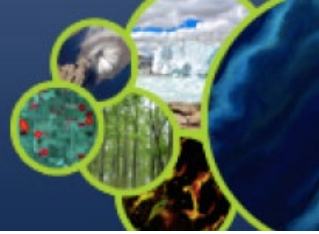
Continued coordination and integration

Post-2025 incubators

Learn, replicate, scale

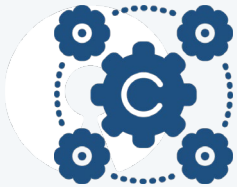
Post-2025 GEO Work Programme

Possible incubators



Nature-based Solutions	• Ecosystem extent mapping and monitoring
Climate-Urban Health	• Global integrated heat and health information system
DRR/Multihazard-risk	• 3 emerging ideas discussed
Ocean-Climate	• Ocean debris monitoring system
Cryosphere	• tbd

Coordination workshops 2022/23



Information-sharing

Collaborations

Integration

The 1st GWP Coordination WS on DRR/multi-hazard risk

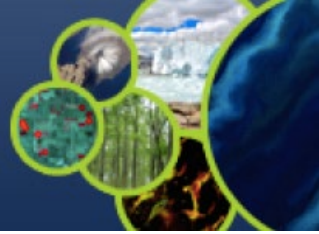
16 March 2023

WHICH IDEA(S) SHOULD BE PRIORITIZED ?

	Value chain integration (data -> information -> knowledge-> actions) and **involvement of stakeholders**	**Thematic integration**	**Demand and gap to be filled (User needs/policy drivers)**	**Building on GEO's strengths**
1 **Systemic Risk in SIDS/Jamaica**	users identified, engaged and coleading Jamaican Ministry of Economic Growth and Job Creation (including GIS and Met agencies) model by which the needs are first defined by the region/parter/ community WFP Communities Academia/Universities	Multiple climate-hazards Land - to - sea interactions CLIMATE ADAPTATION-DRR Systemic Risk Approach exercises to see capabilities and Gaps on Geospatial component	EW4ALL sustainable tech training and software support Prioritise measures in the NAP process to access attached resources Identify Loss and Damage extent and solutions Integration of climate change and Disaster Risk Reduction in order to develop more efficiente policies Analyzing the construction of risk over time - Increase in exposure, in vulnerability sustainable data streams (high-res, timely), multi-user licenses	potential joint project among GEO DRR, CC, CapD WGs collaboration with regional GEOs (AmeriGEO/LACI) collaboration with UNGGIM Convening power to address WIR data finance solutions (creative commons licensing) Existing collaboration with UNFCCC, UNDRR, and UNCCD
2 **Monitoring and seasonal forecasting for public health**	users identified, engaged partnership building with local stakeholders translation piece: how do we move from availability/ access to data and information to plans, policies and programmes/ investments (complementary capacity building, awareness raising) Supply chain for medical/health resources and for staff planning improved in both public & private sectors due to better early warning	Climate-hazards-Health health-infrastructure/ services-ecosystems various hazard-exposure combinations: health, energy, transport, WASH etc. Physical, environmental, health, and environmental data integration, including attention to privacy, security, and environmental justice issues	EW4ALL already lots of tools available, user community may be unsure which suits their needs Empowerment to the individual hospitals cost-benefit analyses to inform prioritisation of how to deal limited resources to mitigate risks (identifying solutions that moderate the impact of multiple risks) coordination task between EO technical/ scientific experts and on the field decision makers : needs to be effective and efficient, ... needs to be very reactive, always actionable	collaboration with WHO (GEO PO) EO4Health, HPI, GUOI, EO4SDG, GEOGLOWS
3 **Impact and risk assessment for the earthquake in Turkey and Syria**	users identified, engaged co-lead and co-construction with local stakeholders and users excellent example of how science can have na impact on real life decisions. Clear chain from EO to decisions, with both science and policy implications. Maybe local stakeholder can be engaged through the GEO principals indispensable to be fully integrated into users ' information systems... not to duplicate platforms or web sites	geohazard-weather Use current recorded loss data for the area to estimate future vulnerabilities inputs to disaster preparedness, urban infrastructure during our planning images covered the whole impacted area integration Integration with vulnerability data needs increasing with Climate Change extreme events raise There is a lot of scientific information being generated. We would need a common web platform to share this info in a direct way (beyond the sharing with the local stakeholders). Perhaps GEOSS could tackle this task ?	humanitarian-development linkages Systematic collection of damage and loss Requirements should be provided by the stakeholders (local/international) EW4ALL if jointly considered with weather climate conditions Avoiding to construct new risk - for example by re-constructing better (not faster) HPI -Systemic refers also to understand the processes that lead to risk (i.e. urbanization)	collaboration with CEOS (GEO PO) new collaboration with International Chater Soace and Major Disasters maybe not a "new" collaboration with the international charter, but an extension of the Charter, for some extreme and very costly disasters This is GEO's unique strength vs EW4ALL which focuses on climate-related hazard Leverage GEO to access mobility data (e.g. mobile phones, GEOSS to perform combined EO/mobility data analysis in support ofrescue/recovering tasks. Build back better ! : GEO 4 Sendai... strong and clear operational links to be created with : International Charter, Sentinal Asia, Copernicus Emergency, UNOSAT, UN-Spider.....
4 **Other ideas** (e.g. Risk modelling for parametric insurance) **and mergers**	Ensure needs identified here get heard during development of new GEOSS Infrastructure.			

Need leaders

Possible incubators



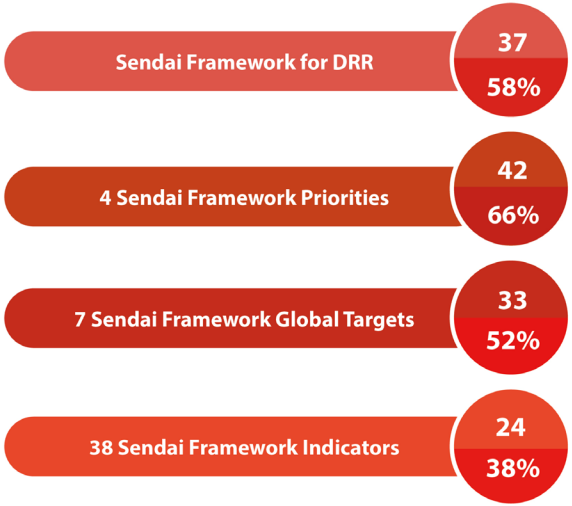
Nature-based Solutions	• Ecosystem extent mapping and monitoring
Climate-Urban Health	• Global integrated heat and health information system
DRR/Multihazard-risk	• EW4All ?
Ocean-Climate	• Ocean debris monitoring system
Cryosphere	• tbd

GEO Work Programme is strongly aligned and supports the Sendai Framework,

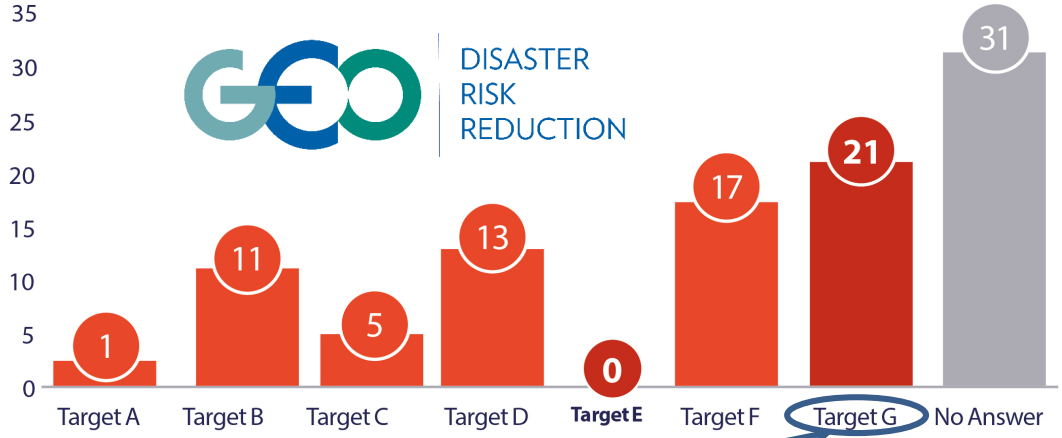
i.e. early warning and info assessment

UN World Conference on Disaster Risk Reduction
2015 Sendai Japan

Indicated relevance across key elements of the Sendai Framework by the GWP activities



GEO activities directly supporting one or more of the 7 Sendai Framework Global Target



Increasing availability of and access to Multi-Hazard ***Early Warning Systems*** *and* ***DRR info assessments***

Early Warnings for All

The UN Global Early Warning Initiative for the Implementation of Climate Adaptation

WORLD METEOROLOGICAL ORGANIZATION

UNDRR
UN Office for Disaster Risk Reduction

IFRC

ITU

Figure 1: Budget overview for the four Pillars of the Early Warnings for All Initiative

GROUP ON EARTH OBSERVATIONS

contributions

GEOGLAM Global Agricultural Monitoring

GEO GLOWS GLOBAL WATER SUSTAINABILITY

Collaboration through

GLOBAL HEAT HEALTH INFORMATION NETWORK

⋮

Figure 1: Budget overview for the four Pillars of the Early Warnings for All Initiative

GEO GROUP ON EARTH OBSERVATIONS

CEOS

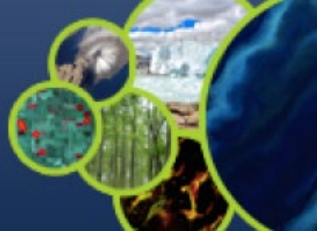
continuous coordination & collaboration *critical*

Launched at COP27 (7 Nov 2022)

We must invest eqally in adaptation and resilience.

This includes the information that allows us to anticipate storms, heatwaves, floods and droughts

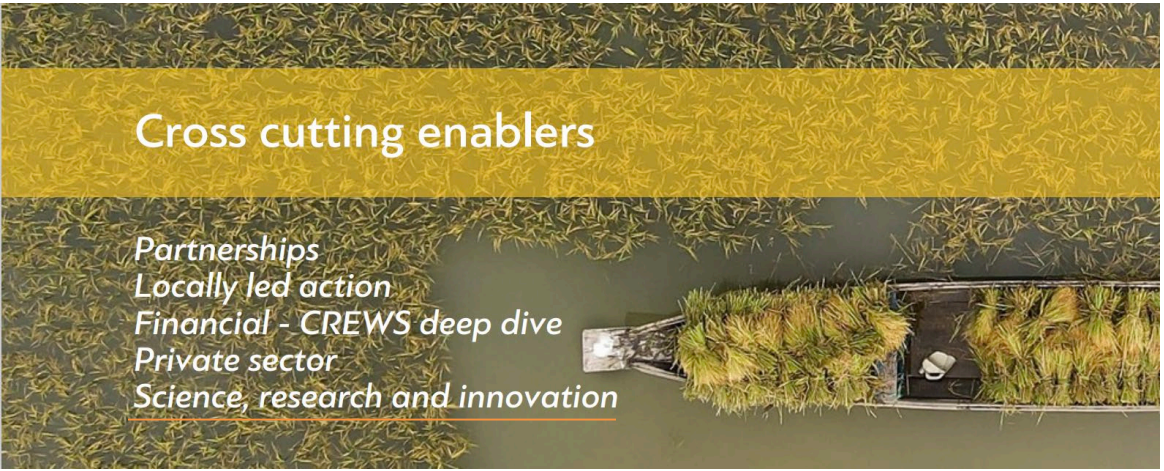
EW4All Initial 30 countries



- **Asia and Pacific:** Bangladesh, Maldives, Nepal, Lao (People's Democratic Republic), Cambodia, Kiribati, Samoa, Solomon Islands, Fiji, Tonga
- **Africa:** Djibouti, Somalia, Sudan, Chad, Comoros, Ethiopia, Liberia, Madagascar, Mauritius, Mozambique, Niger, South Sudan, Uganda
- **Latin America and Caribbean:** Guyana, Haiti, Barbados, Antigua Barbuda, Guatemala, Ecuador
- **Central Asia:** Tajikistan

https://public.wmo.int/en/media/press-release/early-warnings-all-initiative-scaled-action-ground

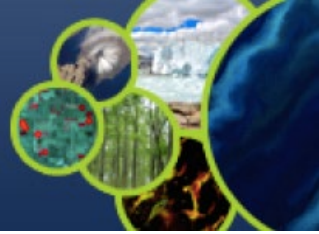
STI&R, satellite for EW4All



"The S&R communities … will be key partners for addressing these challenges through S&T innovations, enabling this action plan and providing early warning for all"

https://library.wmo.int/index.php?lvl=notice_display&id=22154#.ZD2bPNdBw-Q

STI&R, satellite for EW4All



Priority actions *in Pillar 1*

In Year 1 - Building on the Global Status Report of MHEWS (Target G), the focus will be on establishing the state of risk knowledge through the identification of gaps (global, national and sub-national); agreeing on global to sub-national application of knowledge and policies; accelerating the use of innovation and technology to achieve the goal; and identifying a ***minimum risk knowledge global and national data and capability*** for early warning. This will result in a costed, national level focused plan to build this capability in coordination with existing global risk databases, relative to priority hazards, impacts and vulnerabilities.

In Year 2 - The foundations required for implementing the plan will be laid, including commitments and allocations of funding. Implementation will be initiated in a first tranche of countries. A minimum risk knowledge capability will be agreed upon and worked towards, with gaps filled at a global scale through application and integration of global projects and processes. Institutional capacity to deliver support with and by national actors will be built.

Year 3 - Will be about further implementing the plan with an increase percentage of target countries (at least 40%) starting to achieve the minimum.

Year 4 - Will accelerate implementation with 80% of countries starting to achieve the minimum risk data and capability.

Year 5 - Will see all countries achieving the minimum risk data and capability for risk knowledge.

The Seven Risk Knowledge Outcome Themes

1. production
2. access
3. Application
4. M&E
5. Governance/collaboration/inculusion
6. Robust locally led understanding
7. innovation

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STI&R, satellite for EW4All

Key action areas *in Pillar 2*

1. **Enhancing capacity to detect hazards:**
   a. Conduct gap analyses on early warning needs (national, regional) e.g. flood and drought, flash flood, tropical cyclones, heatwaves, tsunami, glacier lake outburst floods etc. Expand the Cataloguing of Hazardous Events (WMO-CHE) to all climate driven hazards and their monitoring requirements.
   b. Enhance the timely access to, and use of satellite observations and of advanced technologies (radar, lightning detection) to build up detection and forecasting capabilities: action: establish satellite nowcasting facilities in Africa and South America; funding requirements.

https://library.wmo.int/index.php?lvl=notice_display&id=22154#.ZD2bPNdBw-Q

Improving DRR WG

Based on results from:
Joint Working Groups Evaluation Survey

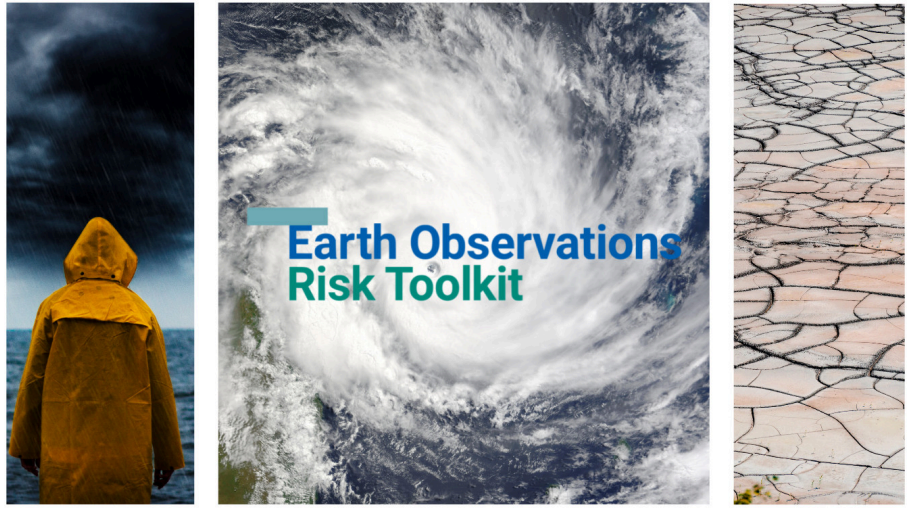
- **GEO Secretariat:** Rui Kotani (DRR Coordinator)

- **Subgroup 2: UNDRR Coordination (Sendai Framework Monitoring & Global Assessments)** led by Nathaniel Newlands (Agriculture/Statistics Canada)

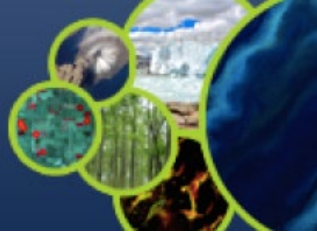
- **Subgroup 1: Coordination across the GEO Work Programme** led by David Borges (NASA, United States)

- **Subgroup 3: Climate Change, SDG, Urban Activities Coordination** led by Kene Onukwube (DEAR Africa, Nigeria)

More impact stories needed



- ✓ EO Risk Toolkit
- ✓ New GWP activity landing page
- ✓ GEO Highlight Report



Thank you