Report of the Disaster Risk Reduction Working Group

This document is submitted by the Disaster Risk Reduction Working Group to the Programme Board for information.

1 INTRODUCTION

Since its establishment in June 2020, Disaster Risk Reduction Working Group (DRR-WG) has been working on developing and implementing a coherent and crosscutting approach within GEO to advance the use of Earth observations to support national DRR and resilience efforts. The DRR-WG promotes awareness of relevant global policy frameworks, such as the United Nations Office for Disaster Risk Reduction (UNDRR) Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030. Serving as the primary GEO liaison to UNDRR, the DRR-WG also collaborates with other GEO Working Groups and activities across the GEO Work Programme relating the GEO engagement priorities.

Three co-chairs were selected by and from the DRR-WG members, which currently consists of 95 members nominated by GEO Members, Participating Organizations, and GEO Associates, representing governmental, intergovernmental, research, commercial sector, and non-governmental organizations in the Americas, Africa, Europe, and Asia-Pacific. Each co-chair leads a designated subgroup (SG) and is supported in their role by three deputy chairs for each sub-group.

> **Subgroup 1 – GWP Coordination**: led by Dave Borges (United States), supported by deputies: Fernando Belda (Spain), Tatiya Chuentragum (Thailand), and Godstime James (Nigeria).
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> **Subgroup 2 – UNDRR Coordination for Sendai Framework Priorities**: initially led by Janet Edwards (Sweden), and replaced by Nathaniel K. Newlands (Canada) as of June 2021; he is supported by deputies: Abdullahi Aliyu (Nigeria), Nhilce Esquivel (Sweden) and John LaBrecque (IUGG).
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> **Subgroup 3 – Climate Change and SDG Coordination**: Kene Onukwube (Nigeria), supported by deputies: Cheila Cullen (United States), Ghulam Rasul (ICIMOD), and Ramesh P. Singh (United States).

A full time DRR Coordinator, seconded by the Government of Japan to the GEO Secretariat, Rui Kotani, coordinates the DRR-WG while supported by a DRR consultant, Delali Sandra Kemeh. They communicate with the WG members, especially the three co-chairs, almost daily to actively support their coordination of the DRR-WG activities. Approximately one quarter of the 95 members have been active, and the Secretariat and the co-chairs have begun reaching out to non-active members to engage them. UNDRR is also now based in the same office as the GEO Secretariat, so a closer working relationship will also be possible here too.

2 TASK GROUP ACTIVITIES AND TARGETED OUTPUTS

The entire DRR-WG has met three times so far and is scheduled to have its 4th meeting on 28 September 2021. Normally, prior to the entire DRR-WG meetings, each SG has a meeting, so they have 3 to 4 meetings per year.

So far, the DRR-WG has launched ten tasks – that are intended to help developing countries address vulnerability, risk and exposure in collaboration with UNDRR – under the three working groups, working towards producing specific outputs (See Annex A). The current emphasis is on two fundamental tasks: Task 1.1 (Joint GEO Work Programme mapping on climate, DRR and capacity development) and 1.2 (EO Risk Toolkit) as the results of these tasks would serve as a basis for the rest of tasks, as described below.

3 ACCOMPLISHMENTS

The DRR-WG has made a few accomplishments in Task 1.2 (Development of EO Risk Toolkit and GAR Contributing Papers) and most notably in 1.3 (Outreach and engagement events/meetings), including in deepening strategic partnership with the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Working Group on Geospatial Information and Services for Disasters (WG-Disasters).

First, in terms of recent events, GEO DRR-WG greatly contributed to one of the Parallel Sessions C of the GEO Virtual Symposium 2021 (22 June 2021). During the session titled "EO strategies, partnerships and services for disaster risk reduction," representatives from GEO Communities, including two DRR-WG co-chairs, DRR leads from the Regional GEOs, strategic partners (UN-GGIM) and a few other DRR-WG members provided insights on work programme activities, public/private partnerships, projects and activities underway to address gaps, user needs and efforts to transform data to decisions for disaster resilience.

The GEO DRR-WG was also represented at the 11th Session of the UN-GGIM on 23, 24, 27 August 2021. GEO DRR activities were highlighted in the UN-GGIM WG-Disasters 11th Session Report:

> *Moreover, the working group highlights awareness-raising and collaborative activities pursued with other complementary working groups and disaster programmes of national and international bodies, including the Committee on Earth Observation Satellites, the* ***Group on Earth Observations****, and the National Aeronautics and Space Administration of the United States of America. The working group indicates that its activities are aimed at identifying mutually beneficial areas of work to provide and expand on the availability of geospatial information and services that cover all dimensions of disaster risk, including hazard, exposure, and vulnerability.* (emphasis added)

Further, the GEO DRR-WG's efforts to develop the EO Risk Toolkit in partnership with UNDRR (Task 1.2) were recognized and encouraged during the 11th Session and in multiple member country intervention statements.

In an effort to increase coordination and collaboration with Regional GEOs, DRR-WG under Task 1.3 has approached relevant DRR groups of the Regional GEOs to highlight relevant work. Most recently, a blog post has been produced to summarize outcomes from the AmeriGEO DRR session to be posted on GEO's main website.

Additionally, the following contribution papers have been accepted and will be included in the UNDRR Global Assessment Report on Disaster Risk Reduction (UNGAR) 2022:

- Earth Observations into Action: Systemic Integration of Earth Observation Applications into National Risk Reduction Decision Structures (highlighting GEO activities such as GEOGLAM, GSNL, GWIS, EO4SENDAI-MONITORING, GFRM as case studies; Task 1.2)
- Transdisciplinary application of Global Navigation Satellite System Radio Occultation (GNSS-RO) to characterize atmospheric hazards and model systemic risk (advocating applications of GNSS for atmospheric hazards and risks via GEODESY4SENDAI; Task 2.4)
- The GEO Indigenous Alliance: Perspectives, Opportunities and Challenges of Earth Observations for Disaster Risk Reduction.

Finally, GEO DRR-WG's renewed homepage has been launched in August 2021 with full descriptions of DRR-WG tasks, as well as a member list with biographies. The information will help members and GEO communities to better understand each other and clarify what this group with various experts have to offer.

4 WORK IN PROGRESS

4.1 Current Priorities: Tasks 1.1 and 1.2

As mentioned earlier, results of Task 1.1 (*Joint GEO Work Programme mapping on climate, DRR and capacity development*) and 1.2 (*EO Risk Toolkit*) serve as a basis for other tasks; therefore, the two tasks are currently two top priorities for the GEO DRR-WG.

Task 1.1 on the joining mapping exercise includes a DRR section (Section 2) with 11 questions made by the DRR-WG (See Annex B). They are formulated to have a comprehensive understanding of how each GWP activity relates to DRR. The results of the mapping will be made available on the GEO homepage and be presented at various events (Task 1.3).

The questions of the mapping (Task 1.1) are designed in a way that the answers help DRR-WG tasks connect with relevant GWP activities. For example, one of the questions of the mapping asks the following to the GWP activities: "Are you aware if EO associated with your GEO activity is mentioned in any national DRR strategy?". The GWP activity leads who provide positive answers to this question will be contacted by the Task 2.1 group, who are assessing EO descriptions in DRR strategies of GEO members. The mapping results are also instrumental in identifying GWP activities with tools and services to be highlighted through the EO Risk Toolkit (Task 1.2).

The EO Risk Toolkit (Task 1.2) has been under development in close collaboration with UNDRR (as a GEO Participating Organization) and Esri (as a GEO Associate) to integrate available GEO DRR-related data, tools and services. The aim is to provide DRR users a one stop site with access to available open source DRR-related EO tools and services to be used at the country level. The target audience is potential users of the products, such as emergency responding agencies of national and local governments and development agencies so that they can easily find GEO products suitable for their operations. The initial contents for the Toolkit hubsite would be selected from the outputs of the GWP activities that are available in the prioritized countries of the UNDRR partners who are working on an initiative called the Global Risk Assessment Framework (GRAF). The GRAF aims at addressing information gaps on hazards, vulnerabilities and exposures in its pilot countries, such as Costa Rica, Bangladesh and Fiji. Tasks under

subgroups 2 and 3 will work with relevant GWP activities to produce contents of the EO Risk Toolkit (Task 1.2), such as policy briefs and case studies, primarily for the GRAF pilot countries.

4.2 Upcoming events: Task 1.3

The GEO DRR-WG under Task 1.3 is preparing for two events: GEO Week on 22-26 November 2021 and the 7th session of the Global Platform for DRR (GP2022) on 23-28, May 2022.

The DRR-WG is contributing to four GEO Week sessions. First, a working group co-chair will speak at Session 3 of the GEO Plenary (*Joint Reporting on Climate Change, Capacity Development and DRR WGs* on 24 November) and report on the EO Risk Toolkit development plan and preliminary analysis of the mapping results. Secondly, Task 3.2 (Compendium with collection of texts and references on EO's role in SDGs) has been working on producing papers on some of sustainable development goals to provide inputs for the GEO Week Anchor Session One (*SDG Interaction* on 23 November). The papers on the goals will be used by the SDG Coordinator, who is organizing the Anchor Session to plan the contents of the event. Thirdly, the GEO Week's Youth Track (on 22, 24, 25, 26 November) is being shaped by contributions from some members of the DRR-WG and the DRR Consultant. The youth track is for young people to present their work, network, share knowledge and create links with the GEO community. Lastly, a side event by the DRR-WG is planned to inform the GEO Community about the development of EO Risk Toolkit hubsite and to get their feedback and help in identifying tools and services coming out of GWPs that are either available or in development.

The DRR-WG aims at developing enough contents of the EO Risk Toolkit and launching the hub site by May next year to be featured during UNDRR's GP2022. Meanwhile, DRR-WG has also begun its coordination and collaboration with Regional GEOs, in particular, AmeriGEO Disasters working group, who are a part of the Organizing Team of the Thematic Section 2 (TS2) on data of the GP2022.

Annex A: DRR Working Group Tasks Aligned to Subgroups

Task	Purposes	Outputs/Outcomes
SUBGROUP 1 ● Aims to develop and implement a coherent and crosscutting approach within GEO to advance the use of EO to support countries' DRR and resilience efforts. ● Works closely with SG2 and SG3 to understand real requirements at the national level and communicate these requirements to relevant activities within the GWP.		
1.1	Highlighting aspects of the GWP related to DRR, and describe key elements and locations of each activity	**Joint GWP Mapping** on climate, DRR and capacity building
1.2	Promoting sharing of data and knowledge to improve DRR, including through good practices and impact	**EO Risk Toolkit** and GAR Contributing Papers
1.3	Promoting awareness of relevant global policy frameworks across the GWP	Outreach (i.e. renewed homepage) and engagement events/meetings, i.e. Parallel Session C, GEO Virtual Symposium 2021 and a side event during GEO Week 2021
SUBGROUP 2 ● Leverages the efforts of SG1 and uses the combined resources of SG2 to promote the dissemination and use of EO to strengthen DRR capabilities according to country needs as identified by UNDRR		
2.1	Increasing the use of EO data for local and national DRR strategies	Assessment of EO descriptions in DRR strategies of GEO member countries
2.2		Policy briefs and use cases on the use EO to create disaster loss data for DRR strategies and for reporting on the Sendai Monitor Global Indicators
2.3		EO-leveraged data collection tools to visualize vulnerability and exposure to be used in DRR strategies
2.4	Increasing the use of GNSS-enhanced EO data through consortia	Global Assessment Report (GAR) on DRR Contribution Paper, policy briefs and new partnerships with ITU
2.5	Increasing the use of EO data to show trends over time and hot spots while predicting and analyzing future risks	Use cases and workshops
SUBGROUP 3 ● Leverages SG1 efforts to provide an overview of links, and actionable opportunities, between disa reduction, climate change, SDGs, and urban activities. Serves as primary link to CC-WG, SDG an related activities		
3.1	Developing EO links between DRR, CC and SDGs, notably for adaptation, early warning and resilience	Policy briefs on EO use in handling various types of natural hazards, such as flooding, landslides, wildfire and snow melt aligned with activities in the GEO work programme
3.2		Compendium with collection of texts and references on EO role in SDG targets and indicators in relation to the SFDRR and the Paris Agreement

Annex B: DRR Section of the Joint GWP Mapping

Section 4: Disaster Risk Reduction

1. Please indicate any/all thematic disaster risk reduction areas your GEO activity addresses.

Please select **all** that apply.

- ☐ Avalanche
- ☐ Biological Hazards
- ☐ Chemical Hazards
- ☐ Cold Wave
- ☐ Cyclone
- ☐ Drought
- ☐ Earthquake
- ☐ Environmental Hazards
- ☐ Epidemic and Pandemic
- ☐ Extraterrestrial Hazards
- ☐ Flood
- ☐ Geohazards
- ☐ Heat Wave
- ☐ Insect Infestation
- ☐ Landslide
- ☐ Meteorological and Hydrological Hazards
- ☐ Nuclear, Biological, Chemical (NBC)
- ☐ Societal Hazards
- ☐ Storm Surge
- ☐ Technical Disaster
- ☐ Technological Hazards
- ☐ Tornado
- ☐ Tsunami
- ☐ Volcano
- ☐ Wildfire
- ☐ Other (please specify):

2. Does your GEO activity focus on one or more of the following disaster phases?

Please select **all** that apply.

- ☐ Prevention of future risks
- ☐ Reduction of existing risk
- ☐ Mitigation
- ☐ Preparedness / Early Action
- ☐ Response
- ☐ Recovery

3. Does your GEO activity work with any of the designated Sendai Framework national focal point institutions in any of the countries you are actively working within?

- ◉ Yes
- ○ No

Please provide agency name and/or POC.

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4. Are you aware if EO associated with your GEO activity is mentioned in any national DRR strategy?

- ○ Yes
- ○ No

5. Does your GEO activity work with any other DRR practitioner (private, public or civil society) or DRR institution/agency in the country?

Examples include domestic, international, public and private sector (i.e., civil protection agencies, meteorological agencies, CEOS, WMO, WFP, UNOOSA/SPIDER, WB/GFDRR, etc.)

- ◉ Yes
- ○ No

Please specify.

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6. Does your GEO activity directly align with and/or support the Sendai Framework?

- ◉ Yes
- ○ No

7. Does your GEO activity align with or support one or more of the four Sendai Framework Priorities for Action?

Please select **all** that apply. View a description of Priorities here.

- ☐ Understanding disaster risk
- ☐ Strengthening disaster risk governance to manage disaster risk
- ☐ Investing in disaster risk reduction for resilience
- ☐ Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction

8. Does your GEO activity directly support one or more of the seven Sendai Framework Global Targets?

Please select **all** that apply. View a description of Targets here.

- ☐ Target A. Global disaster mortality
- ☐ Target B. Number of affected people
- ☐ Target C. Economic loss in relation to GDP
- ☐ Target D. Damage to critical infrastructure and services disruption
- ☐ Target E. Number of countries with national and local DRR strategies by 2020
- ☐ Target F. International cooperation to developing countries
- ☐ Target G. Availability and access to early warning systems and DRR infromation

9. Does your GEO activity directly support any of the 38 Sendai Framework indicators?

Please select **all** that apply. View a description of Indicators here.

☐ A-1	☐ A-2	☐ A-3	☐ B-1	☐ B-2
☐ B-3	☐ B-4	☐ B-5	☐ C-1	☐ C-2
☐ C-3	☐ C-4	☐ C-5	☐ C-6	☐ D-1
☐ D-2	☐ D-3	☐ D-4	☐ D-5	☐ D-6
☐ D-7	☐ D-8	☐ E-1	☐ E-2	☐ F-1
☐ F-2	☐ F-3	☐ F-4	☐ F-5	☐ F-6
☐ F-7	☐ F-8	☐ G-1	☐ G-2	☐ G-3
☐ G-4	☐ G-5	☐ G-6		

10. Are you aware if any countries are directly leveraging your GEO activity efforts to inform national Sendai Framework monitoring / reporting?

- ○ Yes
- ○ No

11. The GEO DRR WG, in partnership with UNDRR, is developing an Earth Observation Risk Toolkit. Would your GEO activity be willing to work with GEO DRR WG to include your capabilities in the new EO Risk Toolkit?

EO informed insights are needed to support evidence-based decision making to reduce disaster risk, e.g. early warning systems. GEO DRR WG intends to aggregate all GEO activities related to DRR into this EO Risk Toolkit, linking to existing tools and developing associated use cases.

- ○ Yes
- ○ No