GROUP ON EARTH OBSERVATIONS

Geospatial Infrastructure for National SDG Implementation

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PLATFORMS, DATA & KNOWLEDGE

ACCESS, STANDARDS & GOOD PRACTICES

GEO GROUP ON EARTH OBSERVATIONS

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RESEARCH, POLICY
& DECISIONS

SDG Interactions (c/o ICSU)

SDG Interactions

Food Security & Water

Food production is strongly dependent on and affects the quality and availability of water, because boosting agricultural production can increase water withdrawals and worsen land and water degradation.

Moreover, achieving nutrition targets requires access to clean water and sanitation. Counteracting these potential trade-offs will require sustainable agricultural systems and practices, and
enhanced water governance to manage growing and competing demands on water resources.

SDG Interactions

Food Security & Climate

Agriculture is an important source of greenhouse gas emissions and so contributes to climate change. Conversely, climate change has wide-ranging impacts on agriculture and food security through extreme weather events as well as long-term climatic changes (such as warming and precipitation changes) and will significantly constrain the achievement of sdg2. Sustainable agricultural practices play an important role in climate adaptation and mitigation (such as improving soils and land quality, genetic diversity, and bioenergy).

SDG Interactions

Food Security & Terrestrial Ecosystems

Healthy ecosystems provide vital services, from soil and water quality, to genetic diversity and pollination. Agriculture is a key driver impacting ecosystems. Sustainable agricultural systems and practices contribute to ecosystem health. However, increased agricultural production and productivity, if not sustainable, can result in deforestation and land degradation, jeopardising longterm food security. A careful balance is needed between achieving food for all and conserving and restoring ecosystems

SDG Interactions

Cities & Health

Cities concentrate a growing part of the global population and have a critical influence on physical and mental health. Sustainable urban planning, and decent and affordable housing support mental health and access to health services, and reduce non-communicable diseases and limit environmental impacts.

SDG Interactions

Climate & Health

Climate change is already having significant impacts on health. Many of these impacts are direct (such as the effects of heat stress
on ability to work outside), while others are indirect and arise through climate change that promotes the spread of disease or contributes to food and water insecurity, or to mass movements of people. Failure to address the climate action goal will make achieving the health goal impossible. As well as major long-lasting health impacts, climate mitigation would have some immediate health benefits (such as through better air quality).

SDG Interactions

Oceans & Food Security

Oceans are essential for ensuring food security and meeting nutritional needs. Establishing marine protected areas could limit access to marine resources for food and nutrition security; however, fisheries and other natural resource uses generally benefit from sustainable practices and balanced conservation measures. Increased agricultural production could damage ocean health through nutrient run-off and related pollution.

SDG Interactions

Coastal areas & Settlements

Coasts are attractive for urban development, often due to opportunities for economic activities and the availability of natural resources, but coastal settlements are a major factor in increasing environmental pressures along the coast-sea interface.

Conflicts may occur where ocean and coastal conservation limit options for housing, infrastructure or transport upgrading, but achieving sdg14 also reinforces sustainable urban planning and resilient coastal settlements

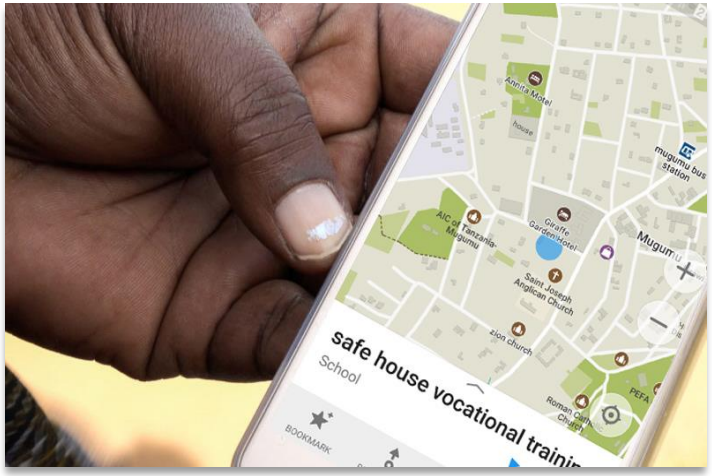
SDG Interactions

Coastal areas & Climate

Oceans and coastal ecosystems both affect and are affected by climate change. Thus, achieving sdg14 and sdg13 is highly synergistic, such as through conservation of coastal ecosystems acting as blue carbon sinks. Careful management is needed to ensure that climate adaptation and coastal and marine protection measures do not conflict

HUMANITARIAN OPENSTREETMAP
MAPPING FOR THE SDGS

Over 50,000 people have made hundreds of millions of map edits, putting the homes of 60 million people on the map



1. **Citizen generated data:** one of the greatest untapped opportunities to close the data gap the SDGs present. The challenge we face to harness informal data producers (e.g. citizens) to fill the gaps of formal data users (e.g. National Statistical Officers)

2. **Leveraging community knowledge:** re-writing the rulebook on how data is gathered from, and represents a community – changing methodology from the preserve of elite professionals to empowering locals. Participation in creating this kind of information enables community advocacy and increases agency of people over the places they live.

OPENSTREETMAP + THE SDGS
EXAMPLES (1)

- Map financial services to understand access
- Inform increased access to basic financial services and microfinance

- Map access to food stores and options to grow food to identify food deserts
- Identify unused spaces which could be used for food production

- Map areas affected by diseases with spatial component e.g. malaria, Ebola, Zika, AIDS, TB
- Access to healthcare and barriers
- Households displaying healthy behaviours
- Disability access

- Map barriers to education e.g. distance travelled, transport options, unsafe and vulnerable routes
- Detailed maps of schools including size, number of teachers, bathrooms

- Access to services of importance to women and girls e.g. health facilities, vocational training centres
- Access to education
- Protect girls at risk of FGM

- Map access to water and sanitation
- Strengthen local communities to improve WaSH management
- Assist planners to better serve locations

OPENSTREETMAP + THE SDGS
EXAMPLES (2)

- Map infrastructure such as powerlines and plants to assess proportion of population connected to the grid, and visualise under provisioned populations

- Promote sustainable industrialisation
- Access in rural areas
- Understand development of road network over time
- Increase access to ICT and internet

- Map communities at micro level to ensure the poorest are counted, population data is released publicly
- Assist policy makers using this to make societies more equal

- Map households + access to basic services in informal settlements
- Involve residents in mapping the places they live – participatory planning and development
- Understand access to safe, reliable, accessible transport + infrastructure
- Water and drainage

- Community asset and vulnerability mapping to grow resilience and adaptive capacity
- Partnerships with national and sub-national disaster risk management agencies to improve preparedness and response

- Train government officials to increase access to high quality, timely, reliable, locally disaggregated data
- Promote value of open data, and contribute mapping outputs to community

Example Case Studies

- Participatory mapping and decision support tools for disaster risk reduction, the Philippines.
- Community Mapping for Exposure in Indonesia.
- Flood preparedness through OpenStreetMap, Jakarta, Indonesia.
- Humanitarian OpenStreetMap Team Mapping in Ulaanbaatar, Mongolia.
- Mapping schools and health facilities in Kathmandu Valley, Nepal.
- Informal settlement mapping, Map Kibera, Nairobi, Kenya.
- National Biodiversity Data Centre, Ireland.
- Mapping for Natural Resources Canada, Canada.
- Open data initiative, New York City, USA.
- OpenStreetMap Community of Practice, US Census Bureau.
- Places of Interest project, National Park Service, USA.
- Crowdsourcing satellite imagery in Somalia.
- Ramani Huria, Dar es Salaam, Tanzania.
- Land Tenure in Tanzania.

Why crowdsourcing/VGI?

- **Value / Transaction cost ratio**
  (e.g. hotel rooms, inside restaurants, remote villages)
- **Temporal coverage – can't be everywhere all the time**
  (e.g. floods, disaster)
- **Resources constraints**
  (e.g. ecological observations)
- **Bypassing structural complexities**
  (e.g. OSM for de facto mapping)

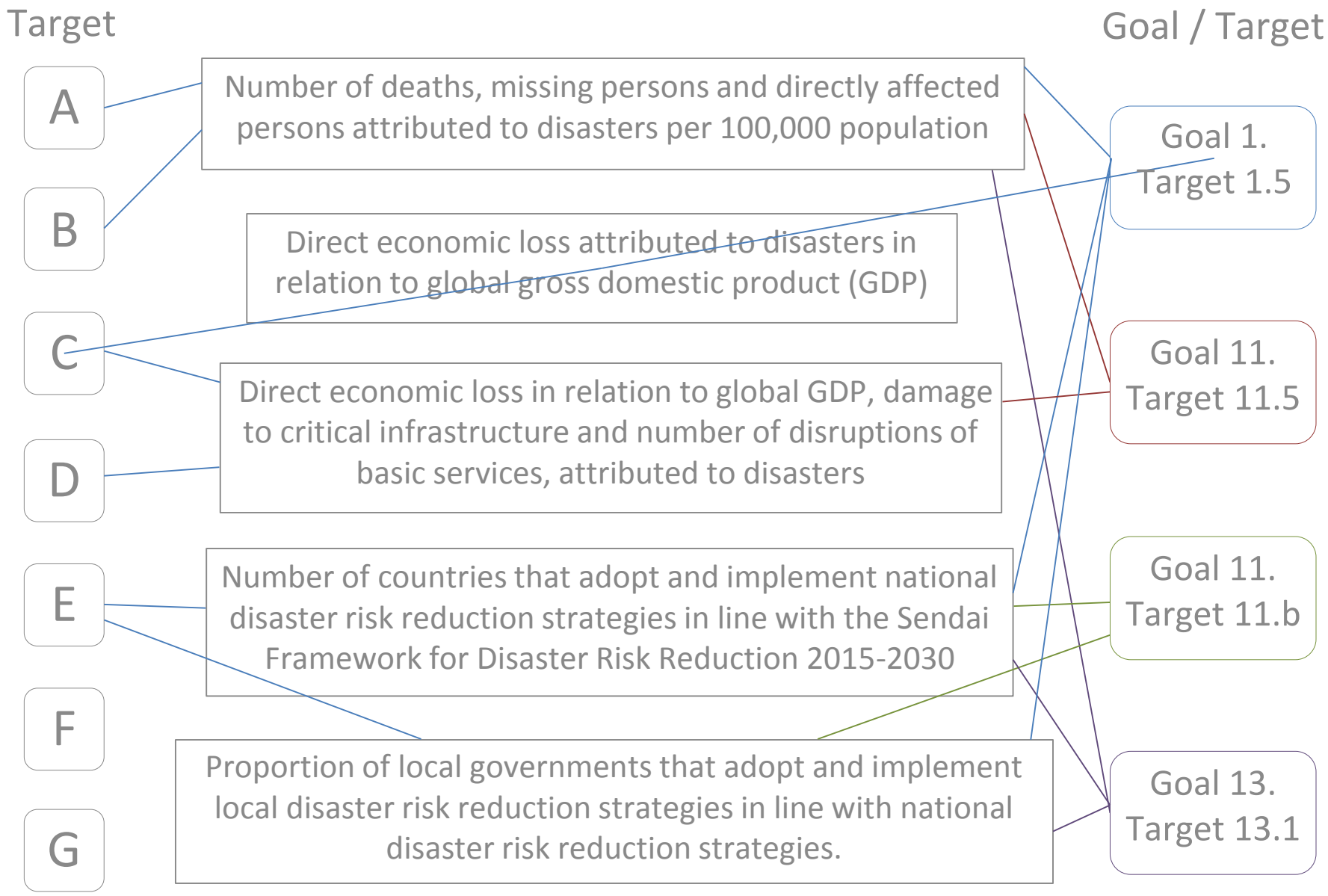
Disaster risk reduction indicators in measuring the 2030 Agenda for Sustainable Development

- **IAEG-SDGs recognizes the OIEWG. Identifies UNISDR as custodian agency, December 2015**
- **UN Statistical Commission, 48th Session, March 2017: endorsed Report of the IAEG-SDGs | Note by the Secretary-General - E/CN.3/2017/2* proposing the recommended indicators of the OIEWG**
  - 3 SDGs:
    - Goal 1. End poverty in all its forms everywhere
    - Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.
    - Goal 13. Take urgent action to combat climate change and its impacts
  - 4 SDG Targets
  - 11 SDG indicators

https://unstats.un.org/unsd/statcom/48th-session/documents/2017-2-IAEG-SDGs-E.pdf

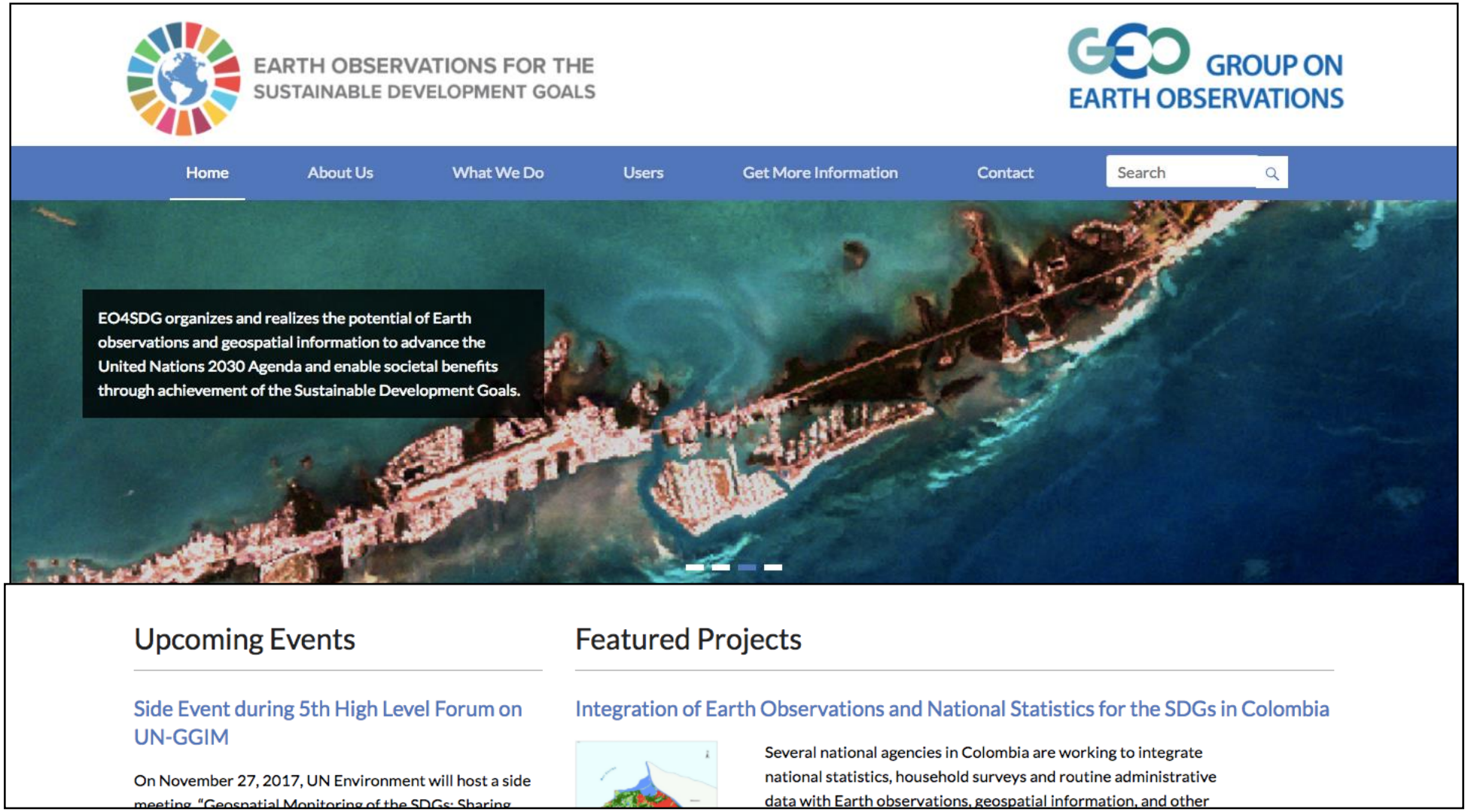
Sendai Framework for Disaster Risk Reduction 2015 - 2030

SUSTAINABLE DEVELOPMENT GOALS



Note: the indicators above are proposed by the IAEG-SDGs to the UN Statistical Commission, 48th Session, and as such are not yet considered final.

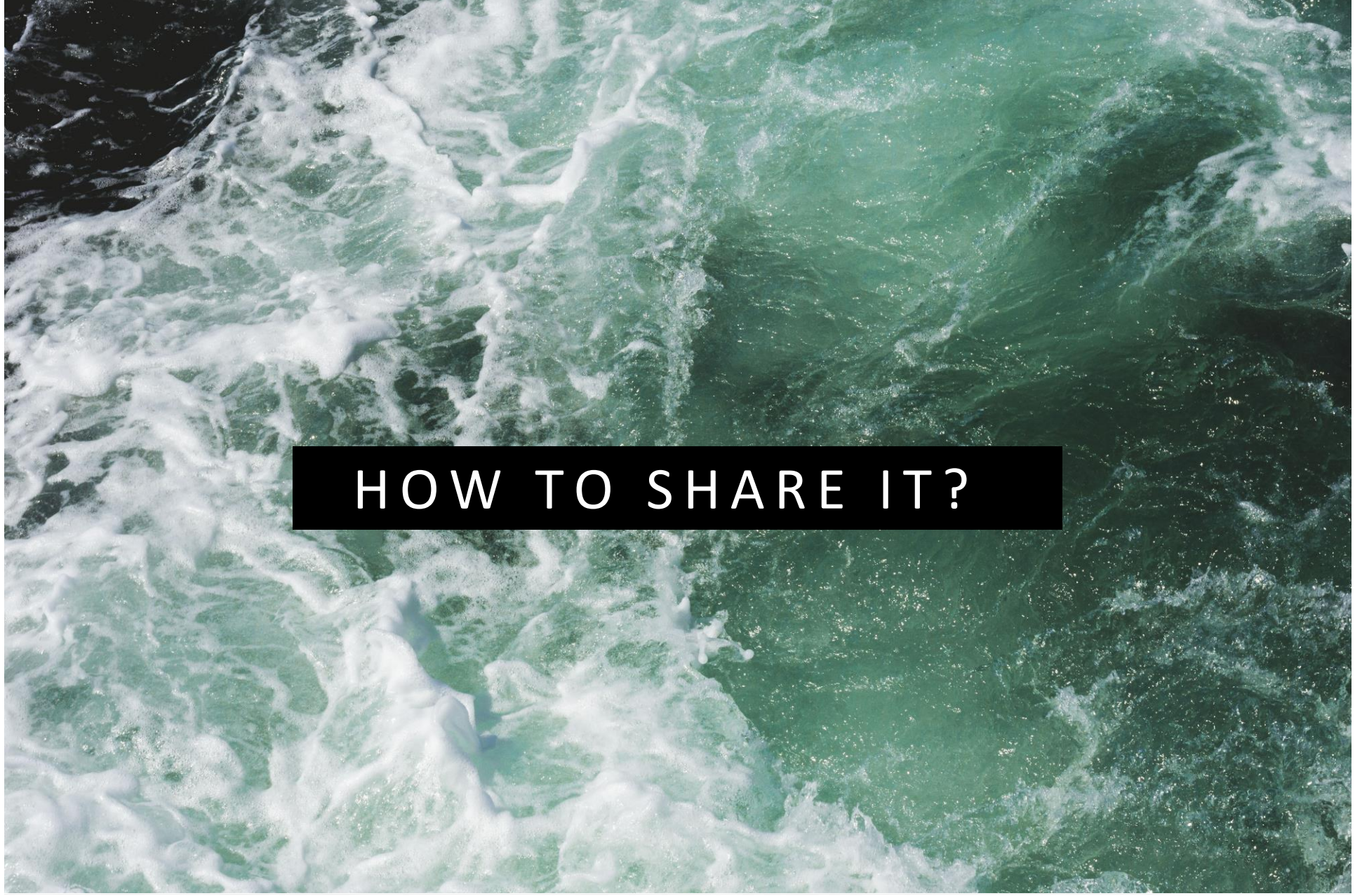
www.eo4sdg.org




WHAT DATA IS AVAILABLE?

HOW TO ACCESS IT?


HOW TO USE IT?


HOW TO SHARE IT?

GEOSS

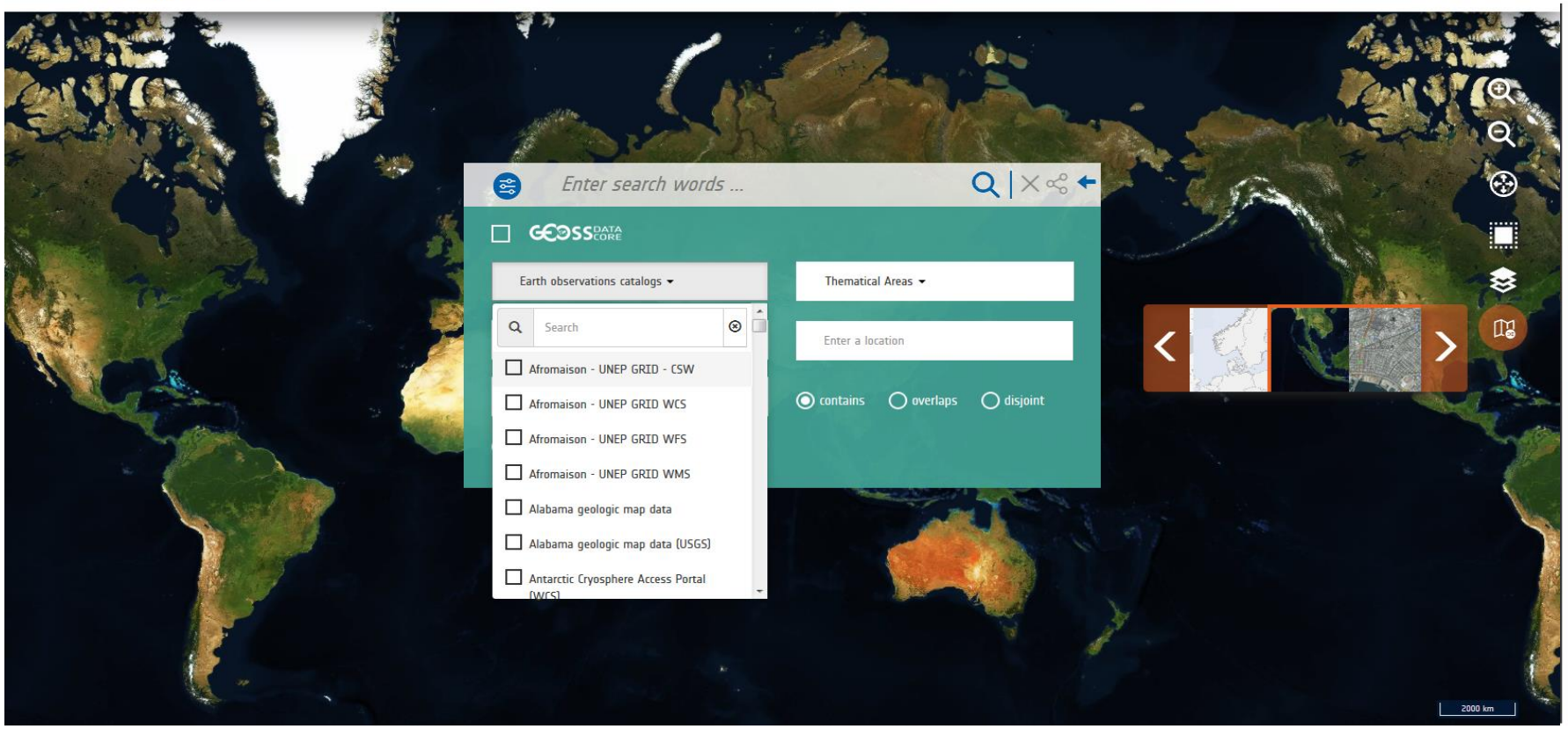
The GEOSS Common Infrastructure (GCI) presently brokers more than 165 open data catalogs and information systems, comprising over 400 million data and information resources .

35 languages
5000 contributing organizations
200,000 keywords

400,000,000
open EO data resources

GEOSS

Global Earth Observation System of Systems



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Spatial Data on the Web (SDW) working group charter

- to determine how spatial information can best be integrated with other data on the Web;
- to determine how machines and people can discover that different facts in different datasets relate to the same place, especially when 'place' is expressed in different ways and at different levels of granularity;
- to identify and assess existing methods and tools and then create a set of best practices for their use;
- to complete the standardization of informal technologies already in widespread use.

https://www.w3.org/2014/05/geo-charter

SDW best practices

Best Practice 1: Use globally unique persistent HTTP URIs for Spatial Things
Best Practice 2: Make your spatial data indexable by search engines
Best Practice 3: Link resources together to create the Web of data
Best Practice 4: Use spatial data encodings that match target audience
Best Practice 5: Provide geometries on the Web in a usable way
Best Practice 6: Provide geometries at right level of accuracy, precision and size
Best Practice 7: Choose coordinate reference systems to suit user applications
Best Practice 8: State how coordinate values are encoded
Best Practice 9: Describe relative positioning
Best Practice 10: Use appropriate relation types to link Spatial Things
Best Practice 11: Provide information on changing nature of spatial things
Best Practice 12: Expose spatial data through 'convenience APIs'
Best Practice 13: Include spatial metadata in dataset metadata
Best Practice 14: Describe positional accuracy of spatial data

From PDF to LOD

★ make your stuff available on the web

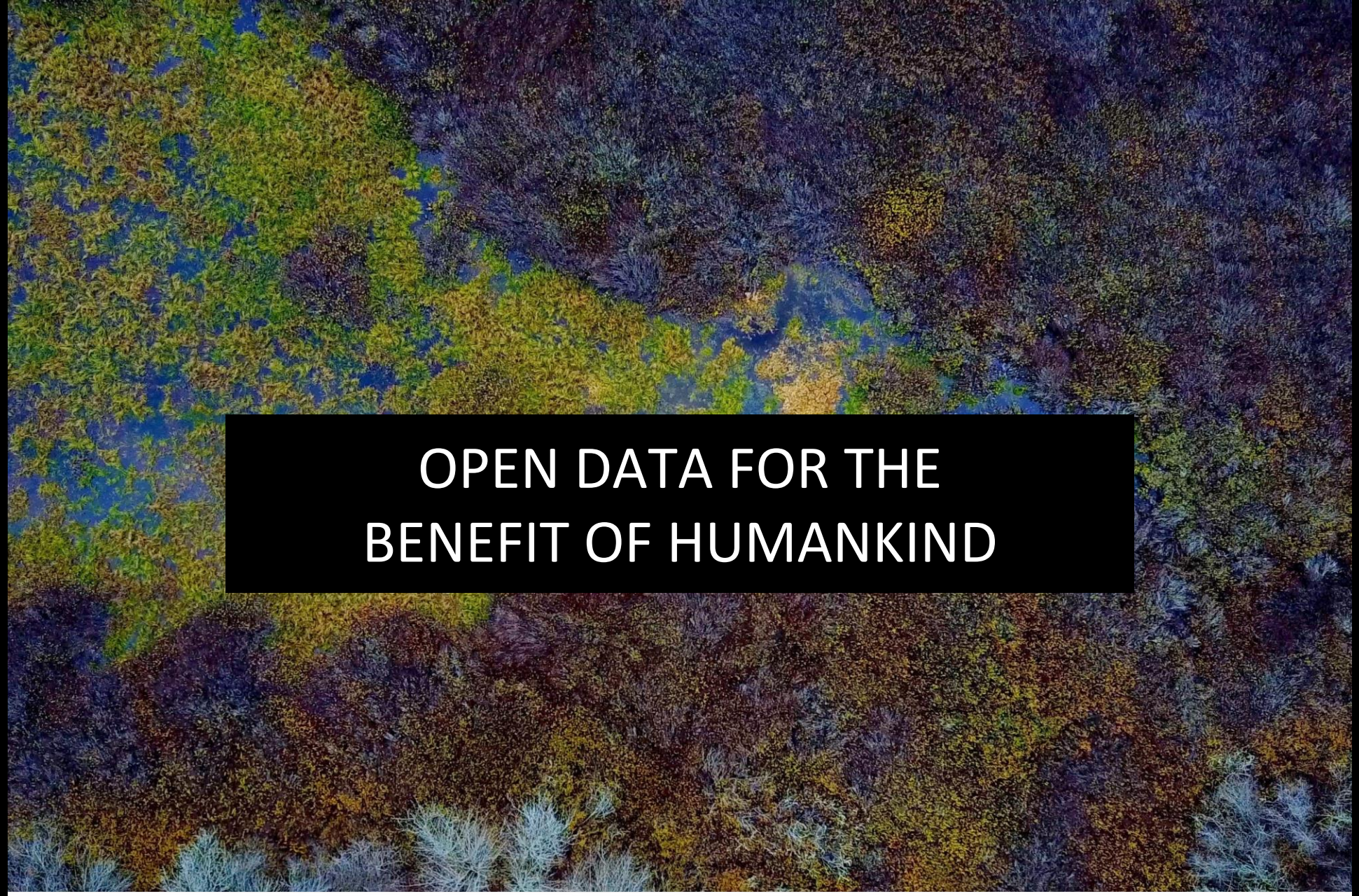
★★ make it available as structured data

★★★ non-proprietary format

★★★★ use URLs to identify things, so people can point at your stuff

★★★★★ link your data to other people's data to provide context

http://5stardata.info/en/



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Thank You

Communicate and Collaborate with GEO:

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