



Earth Observation Applications for the Sustainable Development Goals: GEO Work Programme Efforts and Opportunities for Scaling Successful Methods

Summary

The Earth Observations for the Sustainable Development Goals ([EO4SDG](#)) Initiative held a participatory, multi-stakeholder meeting “Earth Observation Applications for the Sustainable Development Goals: GEO Work Programme Efforts and Opportunities for Scaling Successful Methods” as part of the GEO Week 2018, which was held for October 29-November 1, 2018, in Kyoto, Japan.

LOGISTICS

When: 9:00 am – 02:00 pm on October 29

Where: Room E, Kyoto Conference Center

Access presentations & more details: <http://www.earthobservations.org/geo15.php?seid=656>

Recording: [Watch here](#)

EO4SDG Progress Updates & Program Introduction [EO4SDG Progress Report available: http://eo4sdg.org/wp-content/uploads/2018/09/EO4SDG_for_GEO.Highlights.Report.pdf]

Argyro Kavvada, EO4SDG Executive Secretary, presented key EO4SDG progress updates. Recent activities included a SDG training (July 30-31) in New York as part of UN-GGIM 8, and participation in the UN High Level Political Forum, with Australia-organized side event on sharing country experiences in using Earth observations and technology to improve data collection, analysis, and accessibility. Engagements with UN custodian agencies in studying and refining methodologies of SDG indicators was reported as key progress, including tier upgrades from Tier III to Tier II of indicator 6.6.1 (water-related ecosystem extent change) and 6.3.2 (water quality) in collaboration with UN Environment; and indicator 15.3.1 (land degradation and neutrality) with UNCCD, which helped create the dynamics for a precedent setting request from the UNCCD Committee of Parties to partner with GEO on a global initiative regarding Land Degradation Neutrality. Additional progress was reported on methodological, as well as tool development, efforts in support of 11.3.1 (land consumption rate per population growth rate) in collaboration with UN Habitat.

Examples of country pilots with notable progress included: collaboration with Colombia’s Statistics Office (DANE) and UN Habitat in method comparability, refinement, and standardization, as well as tool development in support of 11.3.1 monitoring and reporting; and engagement with countries – Uganda, Peru, Uruguay, Brazil, among others - and UN Environment in using Earth observation data to support monitoring of spatial extent of water-related ecosystems, namely surface waterbodies and wetlands, with a focus on spatial extent changes and water quality parameters as part of indicator 6.6.1. As part of EO4SDG’s future outlook, special emphasis was placed on: collaboration with the statistical community at both global and national levels to expedite SDG monitoring and reporting efforts and address the ‘Leave No One Behind’ mandate; capacity building to co-design EO uses for SDGs; and EO4SDG’s coordination role in a federated approach to GEO’s overall service to the SDGs.

Further, the initiative announced that it will conduct annual awards for exemplary uses of Earth observations to support the SDGs and their respective targets and indicators. The upcoming EO4SDG Awards Program will provide a mechanism to recognize excellence in sustainable development practices, analysis and reporting through the use of Earth observations, honoring productivity, ingenuity, proficiency, novelty, and exemplary communications of results and experiences in the use of Earth observations to support sustainable development applications.



Panel I: Sharing of Good Practice Country Examples

Argyro Kavvada, EO4SDG Executive Secretary, moderated the session and introduced the panelists.

Andiswa Milsa, South Africa, reported that SANSI is engaged with the national statistical office of South Africa, and SDGs are effectively being used to help set priorities in national policies. The Statistics South Africa submitted a 2017 baseline report, which covered about 63% of the indicators; access to data was one of the main issues identified. Andiswa emphasized the need to not only work with the Statistics Office, but also other relevant government agencies responsible for different sectors / SDGs, to increase awareness on EO applications. As a good practice country example, EO monitoring of population growth in informal dwellings was reported – to help verify statistics or directly monitor percentage of populations living in informal dwellings. Further, enhancing trust in EO data and the need for assessment of quality of geospatial information and how the data can be integrated in national statistics, as well as uncertainty levels were highlighted as key in enabling further EO integration in SDG monitoring and reporting. Reported challenges that statistics offices and other relevant stakeholders are facing in harnessing EO contributions to SDGs included: access to data; avoiding duplication of reporting processes; and lack in capacity (i.e., need for training / capacity building in EO uses with SDGs).

Paloma Merodio, Mexico, presented on Mexico's progress in applying Earth observation solutions with the SDGs, including the implementation of a country-level data cube initiative, in collaboration with Geoscience Australia, and presented good practice country examples of forest area monitoring (15.1.1) and estimation of population living within 2km from all season roads (9.1.1) using Earth observation data. 9.1.1 was highlighted as a great example of integrating geospatial (i.e., topographic map; paved / rural/ transitable roads) and statistical information (i.e., population census data).

Evangelos Gerasopoulos, Greece, reported that the Greek national statistical office is collaborating with the European Statistical Office (Eurostat). The Greek GEO office recently announced its national strategy for applying EO with the SDGs, and has begun engaging with the Greek national statistical office in support of SDG monitoring and reporting efforts, with a focus on understanding the prioritization of the Greek NSO needs; existing workflows and additional workflows and platforms that need to be built / set in place. First steps undertaken include: GEO Greek Office is in close collaboration with EO4SDG; in direct contact with the Greek NSO, emphasizing benefits of EO uses with SDGs; in collaboration with GEO PO, inter-Balkan Environment Center, with a focus on building capacity and extending EO uses for societal benefits in the region; involved in other relevant, thematic activities (i.e., SMURBS project, GEO Essential, other).

Kellie Stokes, U.S, presented on NASA's analytical work of satellite nighttime light data, which indicates good correlation between population with access to electricity in cities and extent of damages by disasters. Examples of using satellite nighttime data based on Suomi-NPP VIIRS (ground resolution: 750m) – data available on a daily basis, calibrated across time [important for measuring SDGs]- as well as Black Marble, a fusion product using VIIRS and Open StreetMap data, were presented showing detailed human activities on the ground, i.e., individual land uses, monitoring electrification, among other applications with relevance to the SDGs as well as the Sendai Framework for Disasters Risk Reduction.

Trevor Dhu, Australia, discussed how Australia is doing with respect to driving progress in monitoring the SDG indicator framework, and how well Australia is doing with respect to driving sustainable development, more broadly. He highlighted that Australia deeply cares about the SDGs. Further, he reported on progress of Australia's SDGs monitoring platform (SDGdata.gov.au), as part of launching the country's voluntary national report (VNR). A case study of Murray-Darling basin – one that has some of the most contentious water use issues in the country - project



was highlighted as an example of a key effort – Australia developed a basic plan to drive sensible use of this basin for different purposes, using EO. The Murray-Darling basin authority developed a case study for compliance monitoring, using EO.

During the Q&A session, a question was asked on the applicability of EO for law enforcement purposes. Cases of detecting illegal fishery operations in South Africa using EO radar data, and Mexico's approach of using national interest information or 'national interest stamps' – which makes something of mandatory use for other ministries, were mentioned as examples. To a question on what is needed to effectively apply EO for SDGs, necessity of infrastructure and investment in EO, data continuity, harmonization and comparability of indicator methodologies and consistency across time (since SDGs focus on progress through time), understanding of the value of EO, and operationalization of EO use were highlighted as key priorities.

Panel II: GEO Work Programme Activities and SDGs

Argyro Kavvada, EO4SDG Executive Secretary, moderated the session and introduced the panelists.

Bob Chen, Human Planet initiative, discussed Human Planet's efforts to support evidence-based assessment of human presence on Earth, with a focus on technology development of geospatial pattern analysis, developing new knowledge, and supporting translation of data into actionable information to support decisionmaking by governments, organizations and individuals. Human Planet has placed strong focus on post-2015 global policy frameworks and associated data and information needs. The European Commission's JRC has focused on developing annual atlases of Human Planet, with the 2018 Atlas (in development) featuring world cities (with improvement in definition of cities) and towns based upon satellite and census data. POPGRID – a data collective which has been focusing on development and intercomparison of population data sets, and cross-validation with other grid population data, as well as with improving the metadata - is working with GPSDD and SDSN to focus on the user community and figure out what it is about these data that is most useful, and help solve problems related to robust and timely settlement, and population data.

Antje Hecheltjen, Land Degradation Neutrality (LDN), Sasha Alexander and Barron Orr, UNCCD, reported on progress regarding the newly developed LDN initiative. This initiative – formally adopted at the GEO Plenary 2018 – will help national and local actors in countries to use EO to achieve LDN, and is a unique stakeholder mandated initiative with a clear policy mandate from the UNCCD. There will be three working groups: one on capacity building; one on data quality and standards; and one on data analytics. Antje noted the existence of many synergies with the EO4SDG initiative.

Ian Jarvis, GEOGLAM, reported on significant progress that this Flagship, which was mandated by the G20 agriculture ministers, has been completing. He highlighted a use case in Uganda in 2017, where early warning of drought helped the government trigger Disaster Risk Financing funds to scale-up public work projects, offsetting agricultural losses and improving the life of 150,000 people in the region. It was pointed out that lack of understanding of what EO can do with respect to sustainable development issues is a key issue and in order to fill this gap, reduction of complexity and engagement with UN custodian agencies and national policy communities are necessary. It was also mentioned that to support indicators, GEOGLAM needs to move toward more quantitative operational monitoring over multiple scales. Further, it was highlighted that the biggest challenge in supporting SDGs, from a GEOGLAM perspective, is institutional. Ian also noted "it is clear that efforts like EO4SDG are really important to develop communication lines between the statistical and EO communities. To rise to this challenge, we need to integrate our work with that of others, reduce complexity and engage the SDG custodians and the national policy communities. EO4SDG can help bridge this gap."



Takeo Tadono, GEO Wetlands, presented on the Global Mangrove Watch program, which uses ALOS-2 SAR data and Landsat optical data to map changes in global mangrove forest areas. The 2010 baseline data was released and annual change data are being prepared. Its accuracy is being validated with ground sampling points and 95% accuracy has been achieved.

Douglas Cripe, GEO Secretariat, reported on behalf of the Blue Planet initiative (Emily Smail provided slide deck for this presentation). Over the last couple of years, Blue Planet has engaged with custodian agencies on information and methodology development in support of SDG 14 indicators. Recently there was a SDG 14.1.1 workshop held at IOC-UNESCO HQ in Paris. Blue Planet participated in this meeting, which focused on advancing the global methodology in support of estimating coastal eutrophication and assessing microplastic pollution. Additional workshops held during last year included a regional SDG Workshop in Saint Vincent and the Grenadines, with a focus on the role of the ocean. Further, Blue Planet and the Marine Biodiversity Observation Network (MBON) – the biodiversity arm of the initiative- are also working together to support other SDG 14 indicators, including target 14.2 (ecosystems); 14.5 (marine protected areas); and 14.a (technology). In terms of future outlook, this includes: continued engagement with custodian agencies and additional regional capacity efforts implementation.

During the Q&A session, questions were posed around: how can GEO country delegates help the GEO initiatives' efforts toward extending EO uses with the SDGs; how to work across data providers and data users and bring together the statistical, geospatial and EO communities; and lastly, how can statistical offices use EO products and services not just for the SDG process but also for census and other relevant national processes. The panel highlighted GEO's role in helping the development and EO communities work across silos – including working with individual countries who have their own silos, focusing on synergies across sectors; noted progress made in thinking holistically across the SDGs, as observed during the UN WDF in Dubai (UAE is one country that has made significant progress in thinking holistically across SDGs); discussed how to work toward co-designing tools and EO-based solutions, which begins by getting to know the end-user; noted the impact and power of showcasing integrated work completed with the use of EO and other data sources in support of monitoring i.e., land degradation, agricultural land use state and change, and incorporating the human settlement element; for the delegations, it was suggested that there is a great opportunity to expand inclusion and involvement of additional government departments in GEO-relevant activities.

Greg Scot, Inter-regional Advisor, UN GGIM & UNSD, reflected on these two panel discussions. He noted that countries have struggled with the development agenda and the global indicator framework, and pointed out that the fact that there are three tiers of indicators suggests that “we were not ready”. The indicator framework was an outcome of a process that was established in Rio, developed by statisticians. There is a need to think about the relationship among people, the environment, and the economy at a high level of disaggregation, and that is a key challenge. “We will never be ready and today is as ready as we will be for as we prepare for tomorrow”, he noted. “We are now having more mature discussions around what are we doing, what is our role, the people side of things, organizational structures within our countries.” He also mentioned that the voluntary reporting that goes into the High Level Political Forum is almost a substitute for countries to report on their indicators because it is really complicated to report from national to global level and through the custodian agencies. This bottom up approach is starting to further develop, and there also exists this top down approach with the global framework and reporting mechanism. The question is how we bring this together swiftly, as time is really against us.

Panel III: EO Solution for the SDGs in the Asia-Pacific Region

Chu Ishida, EO4SDG Co-lead, moderated the session and introduced the panelists.



Keran Wang, UNESCAP, presented remotely on UN ESCAP's relevant activities for SDGs. The ESCAP Ministerial Conference agreed on the 'Space Applications Action Plan for SDGs': this consists of 6 implementation themes (disaster risk reduction, social development, energy, connectivity, natural resource management, climate change) and 3 implementation modalities (research and knowledge sharing, capacity building and technology assistance, intergovernmental discussion and regional practices). Progress will be reviewed every 4 years. It was noted that ESCAP will seek financial contribution; a trust fund is proposed to be established to support national and regional implementation.

Hui DU, UNOOSA, reported on UNOOSA's relevant activities for SDGs with a focus on the Asia Pacific region. UNOOSA and GNSS collaborated in preparing a report on Space4SDGs. UNOOSA and UN-SPIDER sent technical assistance missions for disaster risk reduction to Sri Lanka, Myanmar and Vietnam. It was noted that disaster risk reduction technical assistance missions are being sent to the Pacific island countries, including Fiji, starting in 2018. It also held a 'Space for Sustainable Development' Symposium in September in Graz, Austria. EO4SDG was part of this Symposium.

Mamoru Miyamoto, International Center for Water Hazard and Risk Management (ICHARM) reported on activities of the International Flood Initiative (IFI) which ICHARM serves as secretariat. IFI, in collaboration with the Asian Water Cycle Initiative (IWCI), supported the establishment of the water resilience and disaster platforms in Pakistan, Sri Lanka, Myanmar, Indonesia and Philippines. It was noted that its water related activities contributed to SDG target 11.5 (decrease of human loss due to natural disasters) and SDG 13, with a focus on strengthening resilience and adaptation to climate related hazard and natural disasters. The Kyoto Declaration adopted at the GEOSS-AP, held during the week before the GEO Week 2018, affirmed promotion of full-scale activities to deploy the platform in the Asia Pacific region.

Genki Terauchi, North Pacific Environment Center (NPEC), presented on activities of the NOWPAP CEARAC (Northwest Pacific Action Plan/Coastal Environmental Assessment Regional Activity Center), which was initiated with participation by China, Korea, Russia and Japan, in 1994, under the Regional Seas Program (RSP) (launched by UNEP). A common methodology to assess the eutrophication state and trends using chlorophyll-a data observed by MODIS and SeaWiifs was developed, and assessment of eutrophication in the Northwest Pacific Region, between 1998 and 2015, was completed. A global eutrophication map, which was prepared by applying this methodology, was also presented.

Shinichi Sobue, JAXA, presented on progress of AsiaRiCE, a GEOGLAM initiative. The initiative uses countries' agrometeorological data and EO data to assist with rice yield prediction and early warning. Technical assistance projects were conducted between 2014-2016 in collaboration with the Asian Development Bank (ADB) and currently, projects are being conducted in Myanmar, Cambodia, and also in the Mekong river basin and wide areas of Indonesia. The initiative also contributes to the data cube efforts in Vietnam and Australia. Funding for continuing the service was noted as key issue. Lastly, Asia Rice contributions to SDGs 1, 2, 3, 6, 10, 13, 15 and 17 were discussed at the recently completed GEOSS-AP Symposium.

During the Q&A session, a question was asked on the roles of regional organizations and regional programs/projects for SDGs. Mr. Wang/UNESCAP noted that in the Asia Pacific region, there are data, tools and programs, and users and providers as well. A key issue exists around operationalizing the processes or methodologies, and regional organizations have a key role to play in tackling this challenge.



Regarding key challenges in the region, long-term data series, horizontal expansion of international frameworks, sharing of success stories, and resources for operationalizing the services were mentioned by the panelists.

Wrap up and adjourn

Argyro Kavvada concluded the side meeting, asking participants to share successful examples of EO data uses with the SDGs, and more broadly for sustainable development applications in their countries. She also asked everyone to stay attentive regarding forthcoming information on the EO4SDG Awards Programme.