EVENT REPORT

Earth Observations for the Sustainable Development Goals in the Americas region

29 APRIL 7 2021

UNITED NATIONS

ECLAC

Statistical Conference
of the
Americas
of ECLAC

Side event

Twentieth meeting of the Executive Committee of the Statistical Conference of the Americas of ECLAC

Report

Earth Observations for the Sustainable Development Goals in the Americas region – Side Event

EXECUTIVE SUMMARY

The use of Earth Observations (EO) represents an opportunity to obtain reliable, timely and continuous information, which, integrated with geospatial information and official statistics in the national information system, may allow direct support for the monitoring and measurement of Sustainable Development Goals (SDG) indicators, as well as policy-making.

This side event of the Twentieth Meeting of the Executive Committee of the Statistical Conference of the Americas of the Economic Commission for Latin America (ECLAC), organized by the National Institute of Statistics and Geography (INEGI) of Mexico, allowed the review of national examples of good practices in the use and promotion of EO solutions to monitor and calculate SDG indicators in the Americas region, specifically the cases of Colombia, Brazil, Costa Rica and Mexico. Two initiatives in the region related to the use of EO for the SDGs were also shared: the EO Toolkit for Sustainable Cities and Human Settlements and the Regional Open Data Cube. The session was finalized with a question session from the audience to the panelists.

After the conclusion of the event, it is possible to recognize that the region of the Americas is strengthening efforts in terms of technology and infrastructure to leverage EO for the SDGs; however, there are still major challenges in supporting the production, monitoring and dissemination of SDG indicators from a data ecosystem that integrates EO with other data sources. Progress and learned lessons shared during this event are a contribution to achieving these goals. The session also highlighted the value of partnerships, joint work and global guidelines to make the most of technologies, sources of information and knowledge.

Report

Earth Observations for the Sustainable Development Goals in the Americas region – Side Event

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Aperture **Paloma Merodio, Vice President – National Institute of Statistics and Geography (INEGI), Mexico** The Vice President of the National Institute of Statistics and Geography of Mexico (INEGI) and Chair of the United Nations Regional Committee on Global Geospatial Information Management for the Americas (UN-GGIM:Americas), Paloma Merodio, opened the event with enthusiastic welcome words to the attendees and thanked ECLAC for providing the space for the exchange of experiences on the work being done in various countries as well as for the demonstration of valuable tools and a vision of what is possible to do to advance the region in the field of EO data management.	 Source: UN-GGIM: Americas [UN-GGIM:Americas]. (2020, April, 7). Twitter. https://twitter.com/UNGGIMAmericas/status/1379888581817335814
Discussion panel The discussion panel was composed of 6 presentations, divided into 2 main segments. The first segment reviewed examples of good practices from nations in the use and promotion of EO solutions to monitor and calculate SDG indicators in the Americas region, specifically for the cases of Colombia, Brazil, Costa Rica and Mexico. The second and final segment focused on collaborative initiatives in the region on the use of EO for the SDGs.	
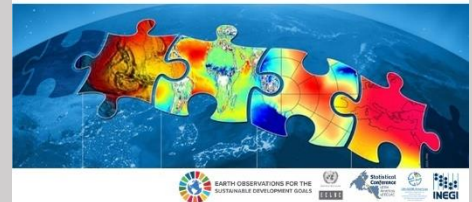
Colombia

Panelist: Juan Guillermo Gil García, Architect – Infrastructure Secretariat, Risaralda Government

During this presentation, the use of geospatial information and EO for the calculation of indicator 9.1.1, 11.3.1 and 11.7.1 was described. Methodological explorations were also shared for the calculation of indicators 11.1.1 and 11.2.1. It was emphasized that there is necessary and growing collaboration between various institutions to strengthen the efforts to calculate SDG indicators, and to address challenges in leveraging geospatial and EO data sources.

Such challenges include widespread lack of knowledge in common citizens of the SDGs and difficulty understanding the importance of EO technologies for the territory and the improvement of quality life of citizens; the limited capacities of institutions that handle geospatial information to keep information updated; the lack of personnel in charge of these analyses or lack of budget to access advanced and/or recent GIS tools; as well as the difficulty in incorporating the information provided by participatory monitoring and citizen science into platforms for scientific analysis. With this vision, Colombia participates at the national and municipal level (Governorate of Risaralda and DANE) in the EO Toolkit for sustainable cities and human settlements.

Brazil

Panelist: Claudio Stenner, Director – Geosciences, Brazilian Institute of Geography and Statistics (IBGE)

During this presentation, the role of IBGE in strategic planning for the use of EO on the production of SDG indicators in Brazil was shared from a comprehensive perspective. The audience was contextualized on the level of commitment of this nation to the 2030 Agenda by means of references of various meetings of information producers to address the 2030 Agenda, from which the Launch of the Brazilian SDG Platform (2018) derived.

The long-term strategy highlights the need to structure an EO-based Information System for SDGs, supported by the extensive experience in the production of remote sensing information

from Brazil's space agency, the National Institute for Space Research (INPE), and IBGE itself. There is also active interest in the integration between organizations producing information through EO, especially in a continental country, such as Brazil. In this regard, an example of this integration was shared for the production of vegetation maps: IBGE, INPE and the Brazilian Agro-livestock sector Research Company (EMBRAPA) collaborate for the unification of the land use and cover mapping in Brazil, ensuring a good resolution and periodicity.

Another strategy shared during this session includes the development and strengthening of infrastructure and algorithms for the production of indicators. A clear example is the use of the Brazilian Data Cube, developed by INPE, which allows great capacities in the production of indicators. However, it is emphasized that in some cases, visual interpretation is more efficient and accurate than algorithms. For example, in the identification of built-up areas, it was decided to perform mapping by visual analysis due to the need for greater accuracy in the use of mapped areas as possible geographic units for the dissemination of the Demographic Census. The future prospect of this project is to feed the classification algorithms with the visually produced mappings to progressively move towards a satisfactory automatic classification.

Costa Rica

Panelist: Rafael Monge, Director – National Center for Environmental Information

This presentation began with a description of the organization of the National System of Monitoring the Land Cover and Use and Ecosystems (SIMOCUTE) for integration of the different processes that generate information of the territory with focus on the mechanisms to answer questions what, how much and where, based on information needs and through a collaboration with key institutions, where the component of the EO is fundamental.

The use of EO has produced very positive results, highlighting the country's participation in the REDD+ initiative for reducing emissions from deforestation and forest degradation. There was also mention of the Project Monitoring of Land Use Change in Productive Landscapes (MOCUPP), where productive

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"Earth Observations for Sustainable Development Goals in the Americas Region – 'Zoom' in on Costa Rica's experience"

En Costa Rica estamos generando procesos y mecanismos para responder las preguntas *qué, cuánto* y *dónde* con base en las necesidades de información y mediante una gran colaboración con varias instituciones donde el componente de las Observaciones de la Tierra es fundamental.

-Rafael Monge

Source: UN-GGIM: Americas [UN-GGIM:Americas]. (2020, April, 7). Twitter. https://twitter.com/UNGGIMAmericas/status/1379898456098152452

landscapes of crops are being monitored, as well as the loss of tree coverage produced by these activities. Another initiative consists of a modeling tool to determine nature's contributions to people, which is developed with Stanford University's "Natural Capital Project." In addition, the work being done on the project "Fighting Deforestation," was highlighted, which seeks to improve current methodologies; in relation to this project, there have been a number of exchange activities with different countries in the region (Colombia, Ecuador and Peru).

The presenter then proceeded to share the progress of the project "Mapping Nature for People and the Planet", also called The Great Enchilada, winner of the GEO 2020 prize of the SDG. This project develops a tool to integrate different spatial data sources into a single map, identifying the places where the territory should be sustainably protected, restored or managed. Finally, comments were made on Costa Rica's participation at the national and municipal levels in the EO Toolkit for Sustainable Cities and Human Settlements, and on the joint development with the World Resource Institute of a methodology for monitoring the SDG indicator 11.3.1.

Mexico

Panelist: Jimena Juárez, Chief – Department of Analysis and Management of the Subsystem – National Institute of Statistics and Geography (INEGI)

During this session, the national experience in implementing an instance of OpenDataCube software in INEGI's institutional infrastructure was shared; this tool is called the Mexican Geospatial Data Cube (CDGM). This Mexican platform offers intelligent handling of large volumes (90 TB) of Landsat satellite images for the massive data processing and time series analysis for the production of information at the national scale, with pixel level precision.

On its current status, it was shared that this tool offers services to access the information for visualization, downloading and analysis to internal users, and it was mentioned that there are other services still under development to grow this range of options. It was emphasized that one of INEGI's priorities is to increase the use of this tool and promote its incorporation into information production processes, which is intended to be achieved by training staff in the use of this platform. In this

Source: UN-GGIM: Americas [UN-GGIM:Americas]. (2020, April, 7). Twitter. https://twitter.com/UNGGIMAmericas/status/1379901404861587458

regard, there was also sharing of some examples of current uses within the Institute that are already applied to the information the CDGM provides in the production of land use and vegetation information and information on hydrology matters.

Derived from the exploitation of the capabilities of this tool, there is currently an annual product published on INEGI's website; this product is called Landsat Geomedian and consists of an annual summary of the observed behavior of the territory over an entire year; practically, there is a Landsat Geomedian for every year of the last 3 decades. Emphasis was made on the importance of this product, since it allows to bring the data closer to users and to potentialize the use of information, as well as to promote knowledge of the territory and its observation over time. Three examples of explorations of the usefulness of the geomedian with respect to urban growth (SDG 11), vegetation and deforestation (SDG 15) and the presence of water and water body surface (SDG 6) were shown.

EO Toolkit for Sustainable Cities and Human Settlements

Panelist: Argyro Kavvada, Leader – Sustainable Development Goals - National Aeronautics and Space Administration (NASA), Division of Earth Sciences

During this presentation, details of the EO4SDG Initiative were shared like its purpose of organizing and expanding the use of EO and geospatial information to advance the 2030 Agenda and enable benefits to society through SDG achievement, emphasizing the importance of collaboration among national statistical offices, ministries, mapping agencies, and United Nations, as well as the scalability and replicability of EO methods for the SDGs.

Next, details about one of the activities of the EO4SDG initiative were shared, a collaboration with UN-Habitat and more than 40 organizations including municipal authorities, national statistical offices, ministries, academic institutions, and the private sector: the EO Toolkit for Sustainable Cities and Human Settlements, describing it as an online knowledge resource that facilitates the use of EO data and tools related to urban issues and that provides data and application tools available to analysts and decision makers; the Toolkit also aims to encourage knowledge sharing, capacity building and collaboration between local communities, cities, countries and

Source: UN-GGIM: Americas [UN-GGIM:Americas]. (2020, April, 7). Twitter. https://twitter.com/UNGGIMAmericas/status/1379901823105040387

EO experts. There are currently four groups on the Toolkit committee: – Impact, Awareness Building, Bench-learning across Levels, and FAIR Data – and their goals are to increase the usage and sharing of the resource. The toolkit can be accessed at the following link; there is openness for new contributions by the organizers of this activity.

Regional Open Data Cube

Panelist: Brian Killough, Chief - Committee on Earth Observation Satellites (CEOS), Office of Systems Engineering at National Aeronautics and Space Administration (NASA) Langley Research Center

During this presentation, the Open Data Cube (ODC) tool was described as open source software that takes advantage of cloud computing and provides a framework for managing and analyzing geospatial data for decision making.
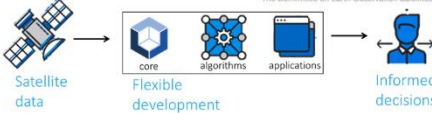
The origin, current state and future prospects of this initiative were discussed. The ODC's past (before 2020) discussed its origin, the birth of the concept and brand within CEOS and how it has been demonstrated in Australia, and Africa as a regional platform. On the present of the ODC (2020-2021) there were commets on the existence of various national and regional initiatives, either in an operational state or within the first plans, to implement this tool; its impact extends across more than 100 nations. To describe the expected future (beyond 2021) for the ODC, its ultimate purpose was discussed, which is to achieve a global network of regional data cubes and to increase the community to share and test algorithms and methodologies.

In this regard, the conversation continued to present the initiative of a Regional Open Data Cube for the Americas (Digital Earth Americas) with the aim of providing a framework of collaboration and exchange with a focus on EO data to solve critical problems in the region, it was made clear that there are challenges to the realization of this solution in terms of interoperability, since the Region of the Americas already has many advanced users and various EO systems; for which it is proposed to seek solutions for a better connection between users that allows them to use these resources and sharin algorithms and methodologies in a common environment.

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El Cubo de Datos Abiertos (opendatacube) es *un marco de trabajo de código abierto para la administración y análisis de datos geoespaciales para la toma de decisions. Actualmente su impacto se extiende en más de 100 países.*
-Dr. Brian Killough

Q&A session

Moderator: Angélica Gutiérrez, Co-Chair – GEO for the Region of the Americas (AmeriGEO)

Following the last presentation of the panel, Angelica Gutiérrez shared a brief but complete summary of the main points discussed during the series of presentations, mentioning the strengths of each of the cases exposed, as well as emphasizing the value of regional collaboration for progress in monitoring SDG indicators through a comprehensive integration of EO data. She then proceeded to moderate an enriching Q&A session that allowed panellists to delve further into topics that were of interest to the audience.

Source: UN-GGIM: Americas [UN-GGIM:Americas]. (2020, April, 7). Twitter. https://twitter.com/UNGGIMAmericas/status/1379903006838292481

Closing words

Alvaro Monett, on behalf of the Direct or of the Statistics Division of ECLAC, Rolando Ocampo.

Emotional and thoughtful words about the presentations were addressed, together with a fraternal greeting to the entire audience, with the invitation to continue working together to strengthen the common agenda, for the benefit of all the countries and territories in the region. Some of the content of this message are shared in the next section of the document (event results).

Event results

It is clear, following the four presentations of national use cases of EO for the SDGs, that in the Americas region, people are strengthening efforts in terms of technology and infrastructure to leverage these data sources and that there is acknowledgement of their value for monitoring some SDG indicators. However, a long road reamains ahead, the session has discussed great achievements, but also major challenges in supporting the production, monitoring and dissemination of SDG indicators with a robust data ecosystem that integrates EO, geospatial information, statistical data and other possible data sources. To this end, the progress and learnings that have already been experienced will undoubtedly be a contribution to the tasks to be undertaken in these areas.

A second reflection, present in the 2 presentations of initiatives related to the use of EO for the SDGs, is the value of partnerships, joint work and global guidelines, to make the most of technologies, data sources and knowledge. During this session, it has been shown that the region of the Americas has a valuable asset in the process of materialization, which is the cooperation and collaboration of the communities of practice associated with this data ecosystem for sustainable development: government agencies, the private sector, academia and civil society, contributing in an integrated manner to add value and maximize the use of available resources.