



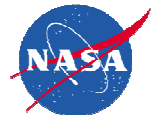
THE GLOBAL GOALS
For Sustainable Development

***Working Group on
Geospatial Information
4th Meeting***

Dec. 6-8, 2017

***GEO-XIV
Plenary Summary***

**Lawrence Friedl
Argyro Kavvada
Group on Earth Observations
NASA Earth Science**





Group on Earth Observations

<http://earthobservations.org>

An intergovernmental organization working to improve the availability, access, integration, and use of Earth observations to inform decisions and benefit society.

Advocate for importance of Earth observations and for open data sharing globally

Engage with stakeholders communities and foster strategic partnerships to address global and regional challenges

Deliver data, information and knowledge enabling stakeholders to improve decision-making and inform policy



SDGs



Climate



Disaster Risk



GEO-XIV Plenary

GEO Plenary

Structured to enable thought-provoking discussions with limited amounts of administrative topics and process.

Discussions of the Sustainable Development Goals were present throughout the GEO-XIV Week

Side Events

Plenary Sessions

Meeting of SDG Initiative Team

EO4SDG



EARTH OBSERVATIONS FOR THE
SUSTAINABLE DEVELOPMENT GOALS

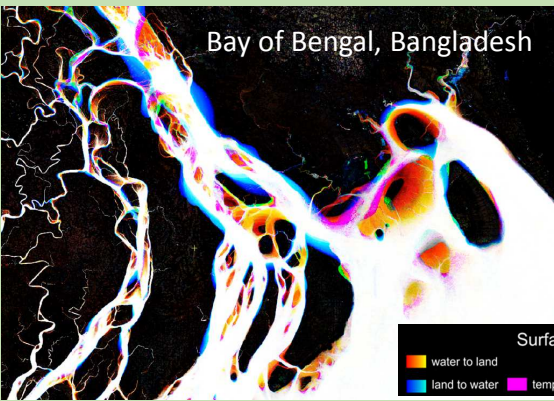
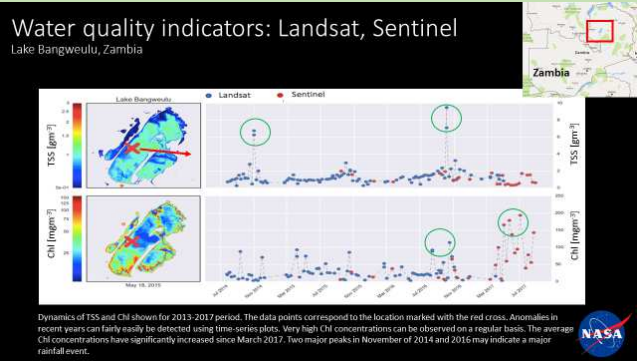
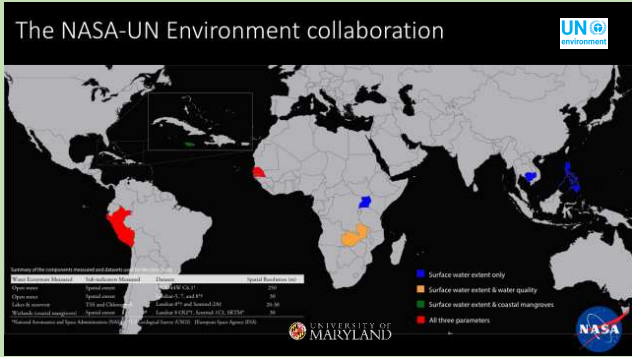
EO4SDG *Side Event*

Event focused on identifying concrete lessons – both technical and programmatic – from efforts to use Earth observations to support the SDGs. Four panels:



Hands-on training for SDG 6.3.2 on water quality

6 CLEAN WATER AND SANITATION



Examples showed applicability of Earth observations data to complement country-generated data.

11 SUSTAINABLE CITIES AND COMMUNITIES

Indicator 11.3.1

| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Advance <ul style="list-style-type: none"> DANE proposed a methodology to calculate the indicator SDG 11.3.1 DANE is calculating this indicator for 138 cities in Colombia | Sources <ul style="list-style-type: none"> Landsat Images DANE population projections | Software <ul style="list-style-type: none"> Google Earth Engine ArcGIS R | Challenges <ul style="list-style-type: none"> To obtain information in areas with high cloud cover all year |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|

Move forward

Indicator 11.7.1

- Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities.

Other statistics

- Agriculture
- Socioeconomic variables

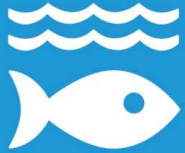
Recommendations

To help cities become more sustainable is important to give information:

- available with a high level of geographical disaggregation (this makes the information more relevant and useful)
- easily accessed by all the citizens.

It is very important to share experience and lessons because help us to take advantage of this knowledge and allows to create reproducible research.

14 LIFE BELOW WATER



GEO GROUP ON EARTH OBSERVATIONS

THE GLOBAL GOALS For Sustainable Development

SDG 14 PANEL

Sabato Caesar, St. Vincent & the Grenadines

Christoph Aubrecht, ESA & World Bank

Michael Ott, IOC

Frank Muller-Karger, USF & MBON

Max Kaplan, NOAA

Sofie Seeyave/Paul DiGiacomo, Blue Planet

Moderator: William Sonntag, GEO

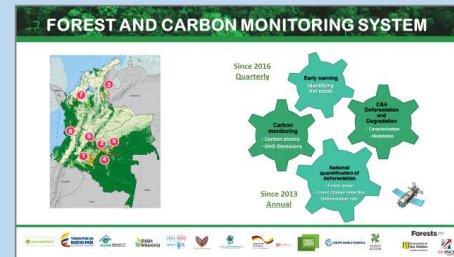
EO4SDG



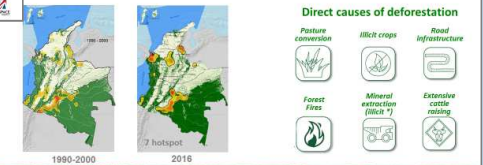
IOC plays a coordinating role in fostering capacity, partnerships, and standards to collect, manage, and analyze ocean data and to provide ocean information.

GEO's Blue Planet Initiative serves as a broker between data providers and users, such as January workshop on SDGs in Small Island States

15 LIFE ON LAND



Deforestation drivers



Lesson Learned and recommendations

- Is important to define agreements between national entities to establish responsibilities for reporting SDGs
- Also, is important to build capacities in order to continue the statistic operations for generating official information
- Is needed a national capacity for administration the Data Cube and for creation of new algorithms (python) in order to support new information products (SDG)
- Is needed a very powerful technological infrastructure to manage the Big Data of EO (which is growing exponentially)





GEO-XIV Plenary

Panel Sessions

**Earth
Observations &
Public
Policy**

**Earth
Observations &
International
Development**

**Earth
Observations &
Commercial
Sector**

**National
Earth
Observations
Portfolios**



GEO-XIV Plenary

Key Findings

User-centric over data-centric

Fast-pace of innovations and new uses

Open-data at the core of GEO agenda

Focus on integration rather than “the” portal

Commitment to 2030 *Agenda*

Global- and national-level support along with disaggregation



GEO-XIV Plenary

Key Findings

Moving from a data-centric to user-centric approaches – closing gaps among users and data providers. Need to engage in dialogues rather than simply posting data in portals.

Uses of Earth obs. and geospatial info is expanding globally and at a fast pace – significant innovations across public & private sectors.

Open data is still at the core of the GEO agenda. Novel uses and technologies are being brought together to more effectively harness the potential of open geospatial and Earth obs. data.

A focus on having “the” portal for all data needs is mis-guided. Instead, focus on ways to enable better integration of data from disparate sources, even if integration is transparent to users.

Reinforcement of GEO commitment to support the 2030 *Agenda* as one of the 3 priority engagement areas

GEO will act at both global and national levels and with a stronger focus to support countries for SDG reporting and adequate use of disaggregated EO data.



THE GLOBAL GOALS
For Sustainable Development

WGGI
4th Meeting

Strategic Partnerships

Indicator Tiers

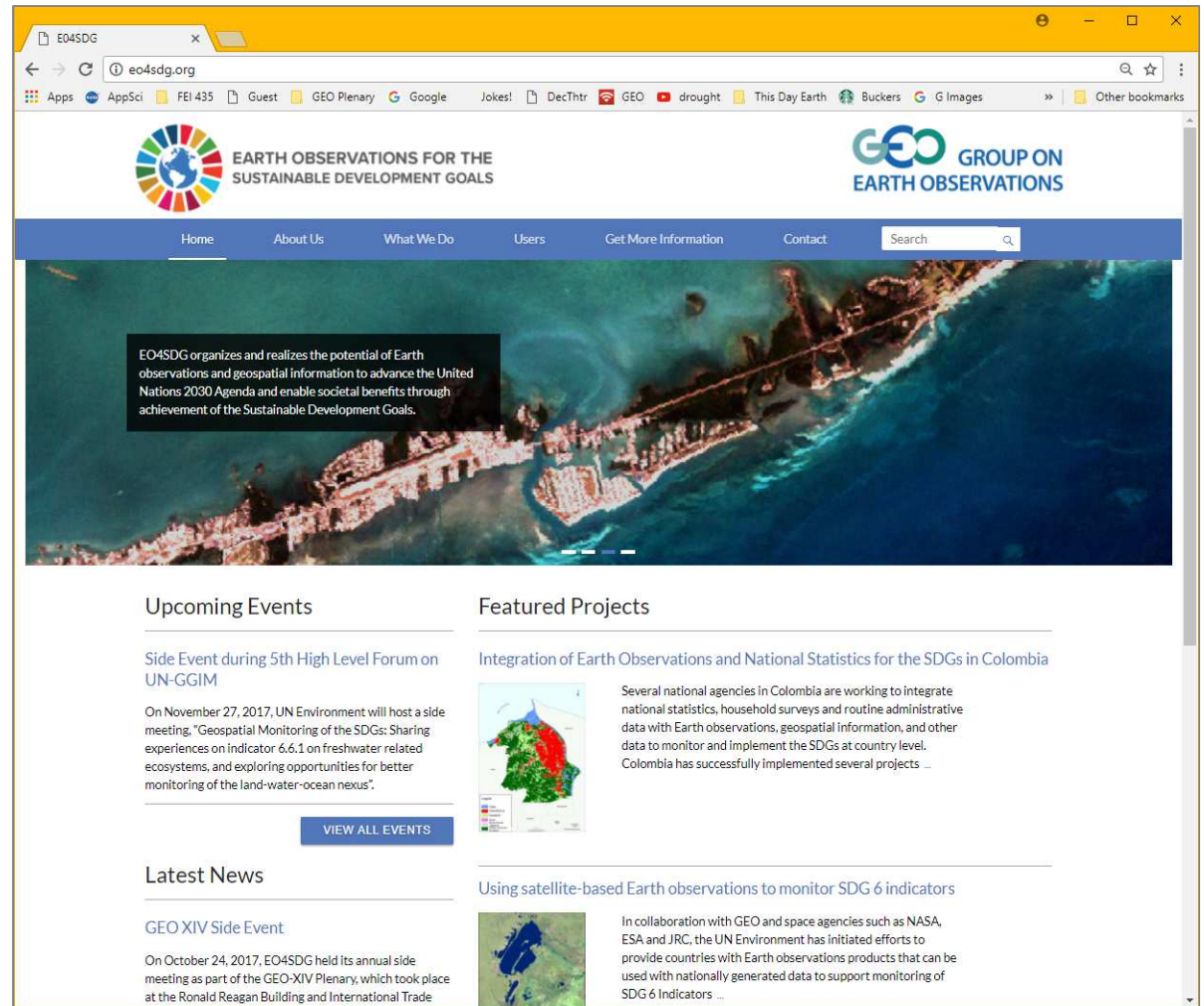
Examples & Case Studies

EO4SDG



EARTH OBSERVATIONS FOR THE
SUSTAINABLE DEVELOPMENT GOALS

<http://eo4sdg.org>



The screenshot shows the EO4SDG website homepage. The browser address bar displays "eo4sdg.org". The page features a navigation menu with links for Home, About Us, What We Do, Users, Get More Information, and Contact. A search bar is located in the top right corner. The main content area includes a large banner image of a coastal city with a text box stating: "EO4SDG organizes and realizes the potential of Earth observations and geospatial information to advance the United Nations 2030 Agenda and enable societal benefits through achievement of the Sustainable Development Goals." Below the banner, there are sections for "Upcoming Events" and "Featured Projects". The "Upcoming Events" section lists a side event during the 5th High Level Forum on UN-GGIM on November 27, 2017, with a "VIEW ALL EVENTS" button. The "Featured Projects" section highlights the "Integration of Earth Observations and National Statistics for the SDGs in Colombia" and "Using satellite-based Earth observations to monitor SDG 6 indicators".



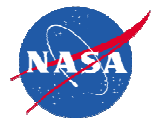
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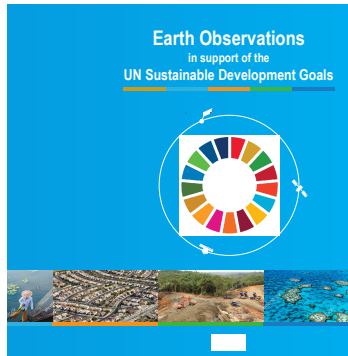
***GEO-XIV
Plenary Summary***

***Backup
Materials***



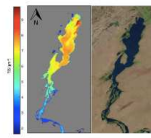


EARTH OBSERVATIONS FOR THE SUSTAINABLE DEVELOPMENT GOALS



EO Case Studies for the 2030 Agenda

UN Environment-GEO-NASA -UMD Collaboration on SDG 6



TECHNICAL BRIEF Reporting on SDG Indicator 6.6.1 Using Satellite Earth Observations

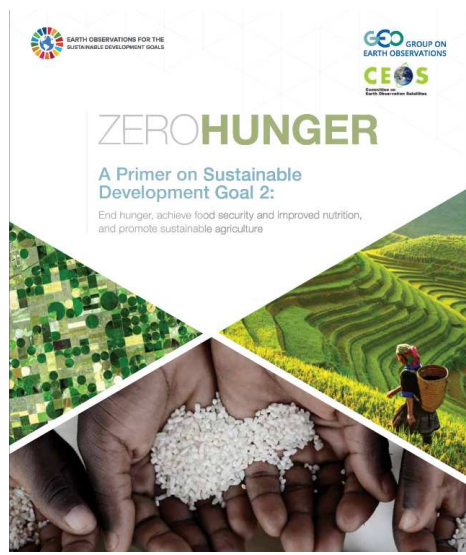
Indicator 6.6.1 tracks changes over time in the extent of water-related ecosystems. While analysis of ground-based, survey data and in-situ measurements is an important part of SDG monitoring and reporting, there is potential for countries to utilize satellite-based Earth observations to meet some of the reporting requirements of indicator 6.6.1, pertaining to both spatial water extent and quality of waterbodies and wetlands. In collaboration with the Group on Earth Observations (GEO) and space agencies such as NASA, USA, and JAXA, UN Environment has identified a series of activities that focus on the use of Earth observations to support the monitoring and data collection process for this indicator.

The UN Environment-NASA collaboration
Global Monitoring of Sustainable Development Goal (SDG) 6 - ensure availability and sustainable management of water and sanitation for all - was initiated in early 2017 following development, testing, and evaluation of methodology for monitoring the ecosystem indicator. Target 6.6 is SDG 6.6.1 for the protection and restoration of water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes. The EoI indicator of this target, Indicator 6.6.1, tracks change over time in the extent of water-related ecosystems. UN Environment is the custodian agency for this indicator and has developed a step-by-step methodology that enables how to monitor change in the extent of water-related ecosystems over time. It first initiates the UN Environment and NASA has been developed to explore the applicability of Earth observations datasets and tools that can be used with country-level generated data to support national reporting on this indicator.

| Summary of the countries measured and data used for the pilot study | | |
|---------------------------------------------------------------------|------------------------|---------------------------------------------------------------------|
| Water Ecosystem Measured | Sub-Indicator Measured | Spatial Resolution (m) |
| Open water | Spatial extent | MCD45F CL1 ² |
| Open water | Spatial extent | LandUse, N, and P ³ |
| Lake & reservoir | 735 and Chlorophyll | LandUse ³ and Sentinel-2M ⁴ |
| Wetland (forest management) | Spatial extent | LandUse ³ , Sentinel-1C ⁵ , SRTM ⁶ |

UN Environment and Space Agencies (NASA) - US Geological Survey (USGS) - European Space Agency (ESA)
The UN Environment-NASA pilot effort does not intend to replace the country-level process of SDG data collection and submission; rather, this initiative intends to explore the applicability of Earth observation data to complement country-generated data. The goal of this initiative is to assess the feasibility of using the reporting requirements of SDG Indicator 6.6.1 from Earth observation data for a subset group of pilot countries, including open water, forest, lake, and wetland. This initiative aims to identify methods that are successful and feasible to use in order to support their data collection and reporting on this indicator.

Proof of concept for select pilot countries
A NASA University of Maryland research team served as a proof of concept for the indicator. Drawing on the ecosystem complexity of riparian wetlands, forest management, and open water (river and estuary, lakes and reservoir). Two of the four pilot water ecosystem sub-indicators, as defined by the UN Water publication "Integrated Monitoring Guide for SDG 6.6.1", were targeted and measured: the spatial extent of water-related ecosystems, and the quality of water within those ecosystems. The following regions of the pilot were analyzed by the team:
1. Spatial extent for open waterbodies, 2. TSS and Chlorophyll for lake waterbodies, 3. Spatial extent for forest management.
For the extent of open waterbodies, the pilot countries included Cambodia, Jamaica, Peru, Philippines, Senegal, Uganda and Zambia. A proof of concept for the restoration of the water quality indicator of TSS (Sentinel-2M, TSS) and Chlorophyll was also provided for select large river basins. In the context of Peru, Senegal and Jamaica, the countries for the pilot extent of forest management included Jamaica, Peru and Senegal. All of the satellite-based Earth observations datasets that were used are of global coverage and publicly available or accessible through a particularly restrictive option for data access regions. The temporal consistency and frequency of these datasets and the data file resolution capability over time, making reporting of change from baseline values more consistent and accurate.
Information on the methodology used can be found at <http://enbiod.org/earthobservations-for-sdgsmonitoring/>



A Primer on SDG 2, Zero Hunger

- Data for Action
- Earth Observation Data for the SDGs
 - Making Use of Citizen Generated Data
 - Youth and SDGs Data Revolution
 - Telco Data for Sustainable Development
 - Subnational Data for Sustainable Development
 - Open Data for Sustainable Development
 - Open Mapping for the SDGs
 - Geospatial Data and Planning for the SDGs
 - Data Visualization and Analytics
 - Decision Support Systems
- Toolbox: Data for Action
-



EO4SDG-GPSDD-DANE Workshop at DANE HQ, Colombia

In person trainings & webinars



Pilot Activities

Outreach & Engagement

Capacity Building

Information Products



UN Environment-GEO Collaboration on SDG Indicator 6.6.1

Using satellite-based Earth observations to support monitoring of SDG 6 indicators

» UN Environment-GEO-Space Agencies Collaboration

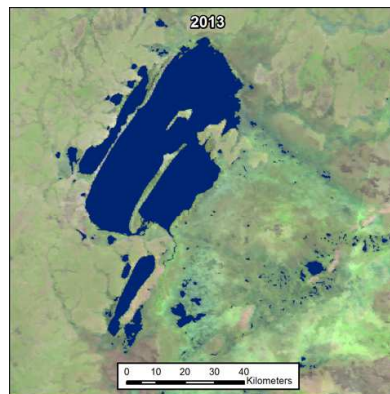
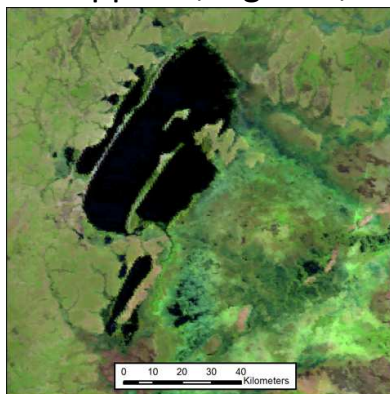


» NASA-University of Maryland Pilot Study:

- Spatial extent for open waterbodies
- TSS and Chlorophyll for inland waterbodies
- Spatial extent for coastal mangroves



for one or more of the following countries: Senegal, Peru, Jamaica, Nepal, Cambodia, Philippines, Uganda, and Zambia



Left: False color composite MODIS surface reflectance image of several lakes, the largest of which is Lake Bangweulu, and associated swamps in Zambia. Imagery is an 8-day composite collected from a period beginning on 7/12/13.

Right The annual water dataset, MOD44W C6.1 (Carroll et al., 2017), overlain in blue, showing measured spatial extent of open water for the year 2013.

Integration of EO and National Statistics for the SDGs in Colombia

Colombia has successfully implemented several projects that demonstrate the value of using EO to monitor SDGs

- » 11.3.1 (land consumption over population growth) – DANE
- » A complete country-level Landsat Data Cube (25,000 scenes back to year 2000) was completed in Dec 2016 – IDEAM & Univ. of Andes

Milestones, Partnerships & Future Plans

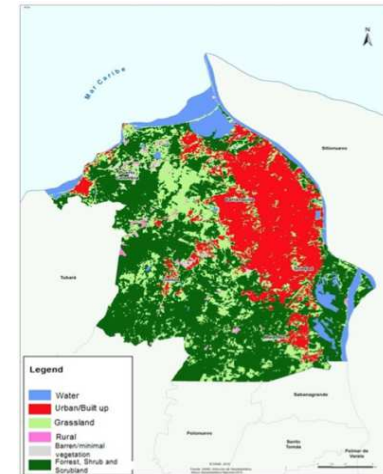
March 30, 2017: Workshop in Bogota, Colombia

July 12, 2017: Learning, Training, and Practice Session, High Level Political Forum, 2017:

July 13, 2017: Brown Bag Talk at NASA HQ: Earth Observations in Service of the SDGs: Country Experiences

Ongoing: EO4SDG, DANE, & GPSDD are working to devise a work plan to assist with EO methods and data to help address gaps & achieve the SDGs

GEO-CEOS: Submitted joined proposal to GPSDD WB TFSCB Call on the development of SDG products from Data Cube technologies & their testing and validation by national statistics offices & line ministries



Land cover areas for the Barranquilla Metropolitan Area: year 2015.

EO4SDG



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EARTH OBSERVATIONS FOR THE SUSTAINABLE DEVELOPMENT GOALS

GEO GROUP ON EARTH OBSERVATIONS

Home About Us What We Do Users Get More Information Contact

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Upcoming Events

Side Event during 5th High Level Forum on UN-GGIM

On November 27, 2017, UN Environment will host a side meeting, "Geospatial Monitoring of the SDGs: Sharing experiences on indicator 6.6.1 on freshwater related ecosystems, and exploring opportunities for better monitoring of the land-water-ocean nexus".

[VIEW ALL EVENTS](#)

Featured Projects

Integration of Earth Observations and National Statistics for the SDGs in Colombia

Several national agencies in Colombia are working to integrate national statistics, household surveys and routine administrative data with Earth observations, geospatial information, and other data to monitor and implement the SDGs at country level. Colombia has successfully implemented several projects ...

Latest News

GEO XIV Side Event

On October 24, 2017, EO4SDG held its annual side meeting as part of the GEO XIV Plenary, which took place at the Ronald Reagan Building and International Trade Center.

GEO EO4SDG
Observations in Service of the 2030 Agenda for Sustainable Development

EO4SDG Initiative website:
<http://eo4sdg.org>

WHAT WE DO
Share the latest pilot projects, data and information products, capacity building and outreach activities.

UPCOMING EVENTS
Keep up with the latest events that are relevant to EO4SDG's mission and purpose.

NEWS
See the latest on Earth observations as they relate to Sustainable Development Goals.

USERS & GEO COMMUNITY
Share successes, challenges, lessons learned, and opportunities for engagement.

EO4SDG organizes and realizes the potential of Earth observations and geospatial information to advance the United Nations 2030 Agenda and enable societal benefits through achievement of the Sustainable Development Goals.

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