GROUP ON EARTH OBSERVATIONS

THE GLOBAL GOALS For Sustainable Development

GEO COMMUNITY & PARTNERS CAPACITY BUILDING ACTIVITIES EARTH OBSERVATIONS DATA TO SUPPORT THE SUSTAINABLE DEVELOPMENT GOALS WGGI DECEMBER 2017

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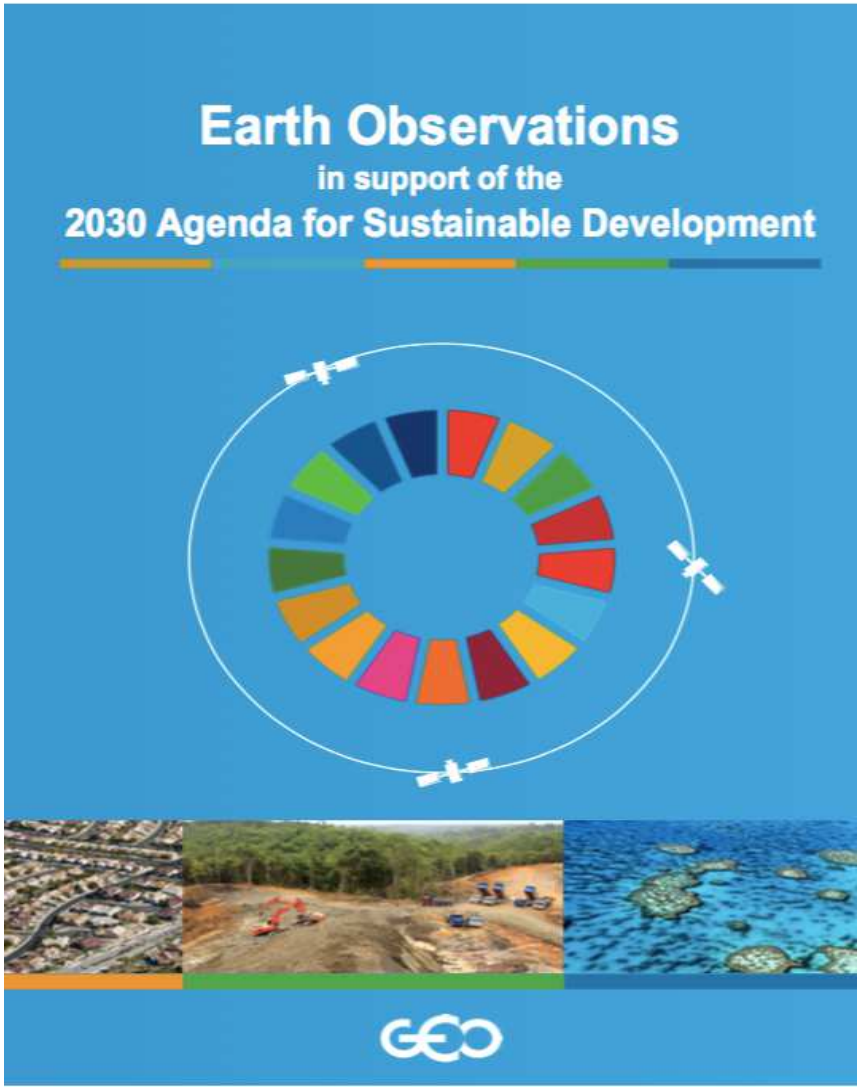
For Sustainable Development



Sustainable Development Goals

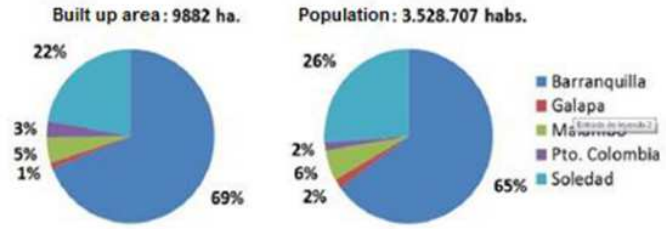
Earth Observations in Service of the *Agenda 2030*

Target — *Contribute to progress on the Target yet not the indicator per se*									*Goal*	*Indicator* — *Direct measure or indirect support*				
							1.4	1.5		1.4.2				
						2.3	2.4	2.c		2.4.1				
					3.3	3.4	3.9	3.d		3.9.1				
								5.a		5.a.1				
		6.1	6.3	6.4	6.5	6.6	6.a	6.b		6.3.1	6.3.2	6.4.2	6.5.1	6.6.1
					7.2	7.3	7.a	7.b		7.1.1				
								8.4						
					9.1	9.4	9.5	9.a		9.1.1	9.4.1			
						10.6	10.7	10.a						
	11.1	11.3	11.4	11.5	11.6	11.7	11.b	11.c		11.1.1	11.2.1	11.3.1	11.6.2	11.7.1
				12.2	12.4	12.6	12.a	12.b		12.a.1				
					13.1	13.2	13.3	13.b		13.1.1				
		14.1	14.2	14.3	14.4	14.6	14.7	14.a		14.3.1	14.4.1	14.5.1		
	15.1	15.2	15.3	15.4	15.5	15.7	15.8	15.9		15.1.1	15.2.1	15.3.1	15.4.1	15.4.2
								16.8						
17.2	17.3	17.6	17.7	17.8	17.9	17.16	17.17	17.18		17.6.1	17.18.1			

Fig. 2 SDG Targets and Indicators that can be supported by Earth observations. Credit: EO4SDGs / CEOS

Integration of Earth Observations and National Statistics for the Sustainable Development Goals (SDGs) in Colombia

Figure 1. Evolution of the indicator and rates for the Barranquilla Metropolitan Area



	Growth Built up area		Growth Population		Indicator		Square meters built Average per inhabitant		
	2005 - 2010	2010 - 2015	2005 - 2010	2010 - 2015	2005	2010	2005	2010	2015
Barranquilla	6,7%	2,9%	3,5%	2,7%	1,9	1,1	30	31	31
Galapa	34,2%	135,5%	16,5%	15,3%	2,1	8,9	17	20	41
Malambo	2,6%	20,5%	9,9%	9,1%	0,3	2,3	23	22	24
Puerto Colombia	40,9%	20,5%	-0,9%	-0,8%	-46,4	-25,2	58	82	100
Soledad	5,7%	0,3%	16,1%	14,9%	0,4	0,02	24	22	19
Total	7,6%	5,6%	7,3%	6,7%	1,0	0,8	28	28	28

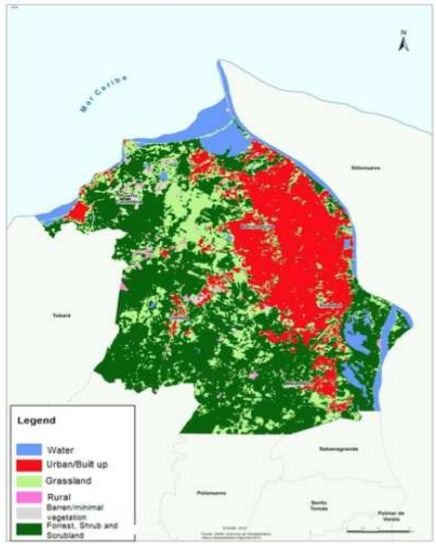


Figure 2. Land cover areas for the Barranquilla Metropolitan Area: year 2015. (**Credit:** DANE Report "Use of Satellite Images to calculate statistics on land cover and land use")

- **Colombia's National Statistics Office (DANE) used Landsat images with population data** for 2005, 2010, and 2015, to investigate the relationship between land consumption and population growth (SDG indicator 11.3.1).

- **DANE is now calculating this indicator for 138 cities in Colombia** using Google Earth Engine for image classification and processing.

- **Together with GEO, CEOS, GPSDD and partners, NASA is working with DANE to:** build capacity in the use and processing of satellite images via webinars and in-country workshops; extend successful method to other countries; identify additional priority areas for collaboration (i.e. air pollution, agriculture, forest management, land cover change, water ecosystems).

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WEBINAR TRAINING

Remote Sensing of Land Indicators for SDG 15: 15.1.1 & 15.3.1

June 20-22, 2017
Course Material in English & Spanish

Three-session training:
Satellite observations of land cover; image classification, change detection, and techniques for developing accuracy assessments.

Satellites & sensors: Landsat, MODIS, Sentinel 3, Suomi NPP/VIIRS

IN PERSON TRAINING

Satellite Observations of Water Quality for SDG 6: 6.3.2

October 24, 2017;
Washington, DC GEOWeek 2017

Three-hour training:
Satellite observations for monitoring of harmful algal blooms, sediments, and other water pollutants.

Hands-on Exercises: Acquiring Satellite-Based Water Quality Data for SDG Indicator 6.3.2

https://arset.gsfc.nasa.gov/

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Ghana

April 5-6, 2017: National Forum on Data Roadmaps for Sustainable Development organized with Ghana by GPSDD. Addressed data gaps, data use, data ecosystem, and multi-stakeholder approaches

September 19-20, 2017: Meeting during UNGA events

October 23-27, 2017: NSO participation in EO4SDG Side Mtg. GEO Week Events

GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT DATA

CILSS

SERVIR

Senegal

GEO EO4SDG engaging with Senegal National Statistical Office, African Development Bank, GPSDD, ipar, and Knoema.

Key topics include: forest cover, sustainable forest management, food security / agriculture

ipar

GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT DATA

BANQUE AFRICAINE DE DEVELOPPEMENT AFRICAN DEVELOPMENT BANK

knoema

Kenya

Ministry of Agriculture, GPSDD, SERVIR, and EO4SDG addressing Earth obs. and geospatial info. for SDG monitoring and reporting and to meet Agenda 2063

Topics: Food security, Capacity building in agricultural sector, Cross-regional collaboration, Health

CEOS exploring country-wide data cube

RCMRD

SERVIR

CEOS

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African Regional Data Cube

- CEOS, GPSDD, GEO Partnership
- Today much of the archived EO satellite data is underutilized despite availability of computing and analysis infrastructures
- It often not technically feasible or financially affordable for countries to consider traditional local processing and data distribution methods
- The Data Cube allows satellite data to be spatially and temporally aligned in "cubes" of pixels. These data cubes allow efficient time series analyses (e.g. water extent or land change)
- The new African Regional Data Cube (ARDC) will support 5 countries in central Africa: Kenya, Senegal, Sierra Leone, Ghana and Tanzania

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Analysis Algorithms In Open Data Cube

- Custom Mosaic Cloud-free mosaic based on median, recent pixel; Tutorial: https://www.youtube.com/watch?v=aw3de5098IgCEOS https://github.com/ceos-seo/data_cube_ui/ tree/master/apps/custom_mosaic_tool
- Fractional Cover Land cover (bare soil, PV, NPV) fraction based on Juan Gerschman algorithm CSIRO, CEOS https://github.com/ceos-seo/data_cube_notebooks OR https://github.com/ceos-seo/data_cube_ui/ tree/master/apps/fractional_cover
- pyCCD Land change detection based on Boston Univ. and USGS PyCCD algorithm USGS, CEOS https://github.com/ceos-seo/data_cube_notebooks
- NDVI Anomaly Change in NDVI CEOS https://github.com/ceos-seo/data_cube_notebooks OR https://github.com/ceos-seo/data_cube_ui/ tree/master/apps/ndvi_anomaly
- SLIP Landslide risk detection based on Dalia Kirschbaum algorithm CEOS, NASA GSFC https://github.com/ceos-seo/data_cube_notebooks OR https://github.com/ceos-seo/data_cube_ui/ tree/master/apps/slip
- Coastal Change Change in coastline position based on Australian WOFSCEOS, GA https://github.com/ceos-seo/data_cube_notebooks OR https://github.com/ceos-seo/data_cube_ui/ tree/master/apps/coastal_change
- TSM Total Suspended Matter (water quality) CSIRO, CEOS https://github.com/ceos-seo/data_cube_ui/ tree/master/apps/tsm
- SWAMPy Water Quality CSIRO,GA
- K-Means Clustering PIxel clusterning function to support classification CEOS https://github.com/ceos-seo/data_cube_utilities/blob/master/dc_clustering.python

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New GEO Land Degradation Neutrality Initiative

- Created to assist UN Member Countries develop Earth observations, monitoring and reporting necessary to support SDG 15, specifically Indicator 15.3.1 (selected for action by WGGI last year)
- Will also help convene the global community interested in landscape changes and classification to help develop related standards and methodologies;
- Working with UNCCD, the Custodian Agency for this Indicator, the Initiative includes and series of 6 to 8 regional workshops organized for Member Countries by UNCCD starting in 2018
- Initiative will include two workgroups and primary action areas – capacity building, standards development
- Initiative governance will be organized early next year.

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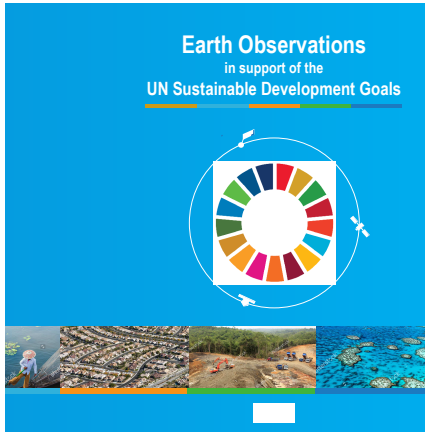
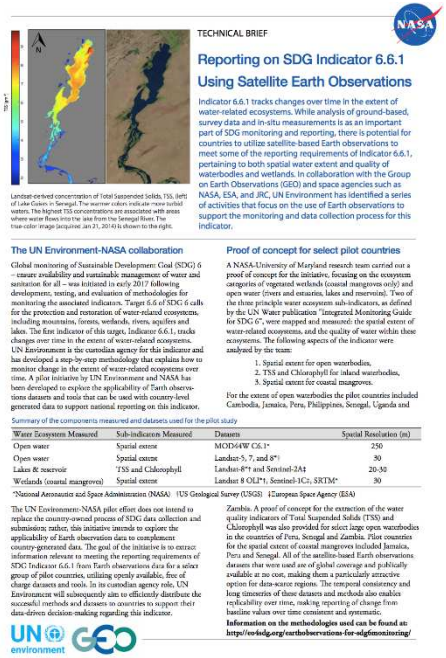
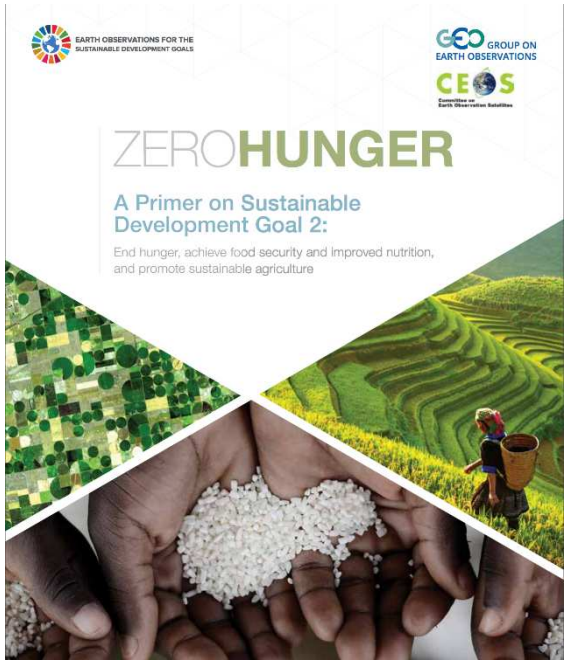


EO Case Studies for the 2030 Agenda

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





A Primer on SDG 2, Zero Hunger

Toolbox: Data for Action

EO4SDG-GPSDD-DANE Workshop at DANE HQ, Colombia

In person trainings & webinars

Pilot Activities

Outreach & Engagement

Capacity Building

Information Products

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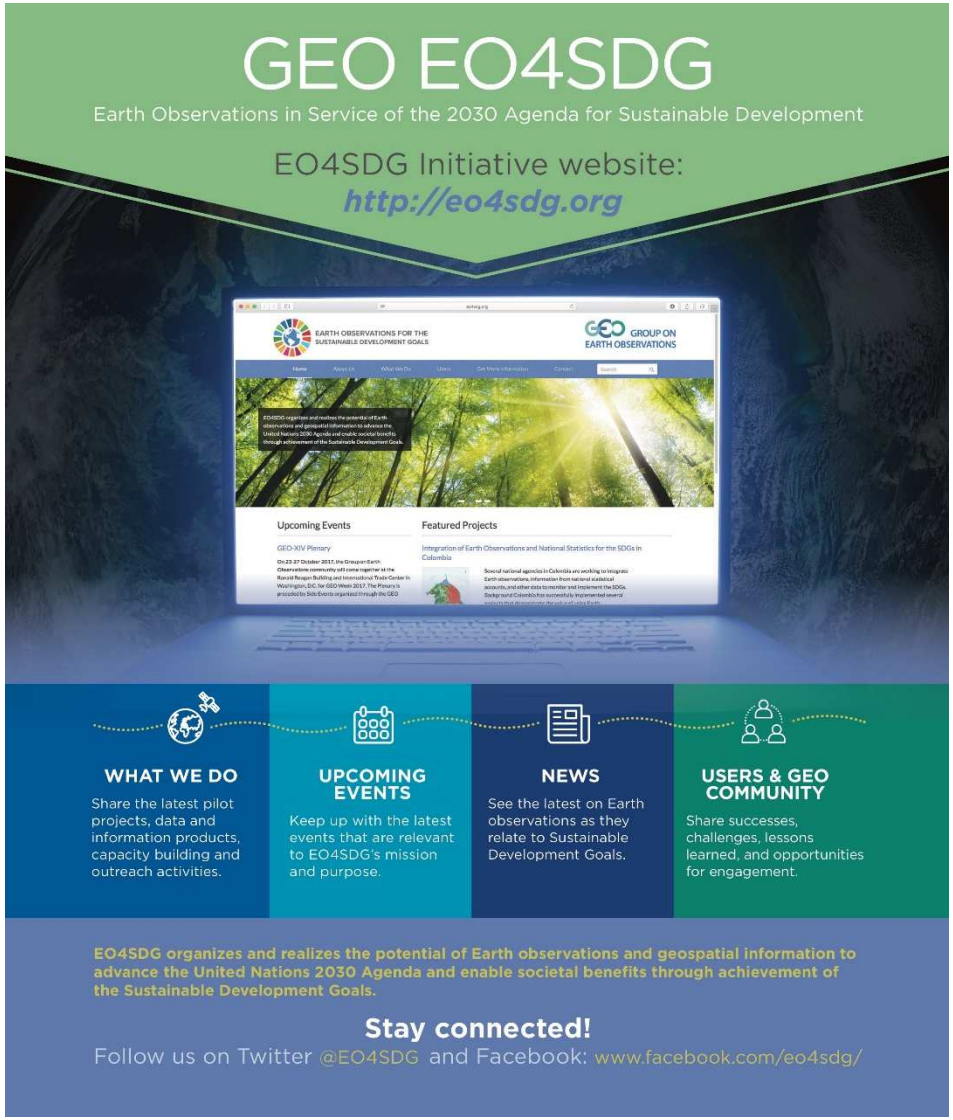
EO4SDG Initiative Website: http://eo4sdg.org

Aims to serve as:

- GEO community resource
- UN SDG community resource
- NSOs / Line Ministries resource
- General public resource
- Platform to demonstrate success stories, lessons learned, challenges, opportunities for engagement



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www.facebook.com/eo4sdg/