UN/IAF Workshop on Space Technologies for Socio-Economic Benefit: "Space Sustainability as a Game-Changer for Development" October 12 - 2024 Milan, 75th IAC

Prof. Teodoro Valente - ASI President

ASI Earth Observation contribution to sustainability: an overview

Earth Observation contribution to SDGs

Resolution adopted by the UN General Assembly on 27 July 2012

The General Assembly, Recalling its resolution 64/236 of 24 December 2009, in which it decided to organize the United Nations Conference on Sustainable Development at the highest possible level in 2012, as well as its resolution 66/197 of 22 December 2011:

[…]

B. Technology

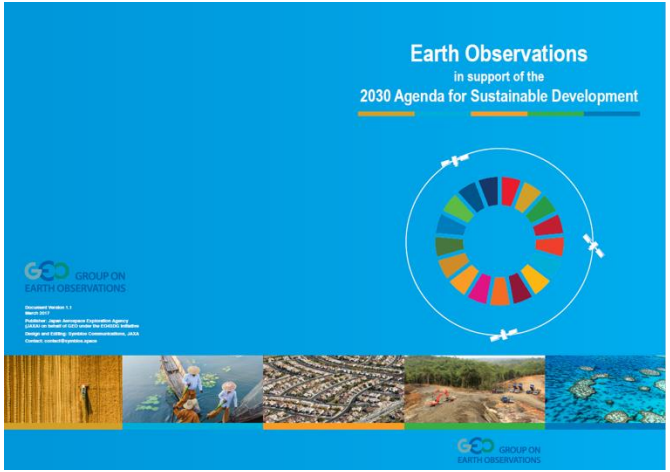
[…]

274. We recognize **the importance of space-technology-based data, in situ monitoring and reliable geospatial information for sustainable development policymaking, programming and project operations**. In this context, we note the relevance of global mapping and recognize the efforts in developing global environmental observing systems, including by the Eye on Earth Network and through the Global Earth Observation System of Systems. We recognize the need to support developing countries in their efforts to collect environmental data.

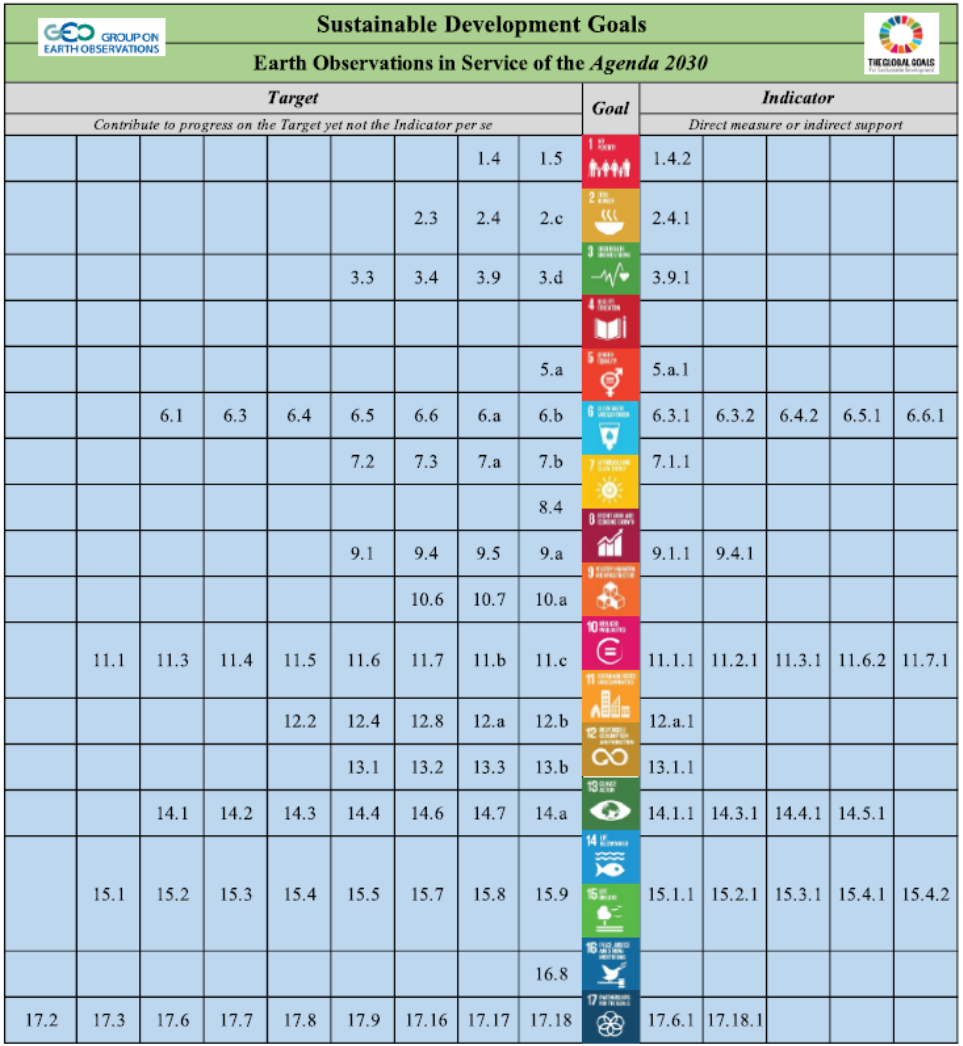
Source: https://sustainabledevelopment.un.org/futurewewant.html

Earth Observation: a Powerful Tool to track SDGs progress

- Data collection **continuity** at appropriate **resolutions** (**spatial, spectral, radiometric and temporal**);
- Building **long time series**;
- **Multi-scale** (global, local, national, regional);
- **Multi-platform** (incl. satellite, airborne, land- atmospheric- and marine-based data);
- **Consistency** and **comparability** of measurements;
- **Diversity** of measurements;
- **Complementarity** with traditional statistical methods;
- Data democratization, increasing **free & open** data;
- Increased release of free and open **products** (e.g. at global to regional to local scale), also generated from satellite data that are not free and open;
- Analysis Ready Data (**ARD**) provision by space agencies.



Source: GEO



Earth Observation data contribution to the 2030 Agenda

Target

Contribute to progress on the Target yet not the Indicator per se

Indicator

Direct measure or indirect support

According to GEO's analysis, there are 72 (42%) Targets and 30 (13%) Indicators where Earth observations can contribute to as a direct measure or as indirect support.

Based on this analysis, the greatest opportunities for the application of Earth Observation data are offered wrt:

SDG 6: Clean water and sanitation,

SDG 11: Sustainable cities and communities,

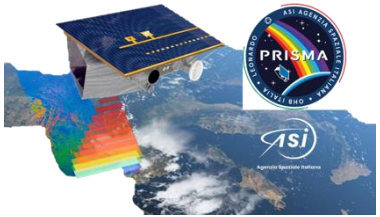
SDG 14: Life below water,

SDG 15: Life on land.

Source: GEO – EO4SDG (2020)

Italian Space Agency EO approach to SDGs

- Ensure **long-term continuity** of EO national satellite missions (e.g. COSMO-SkyMed)
- Enriching the existing image catalogues with consistent long time series;
- Promote multi-sensor approach e.g. in bilateral cooperation (e.g. SIASGE system);
- Invest on data exploitation facilitating the access to EO data to science users, institutions and stakeholders (e.g. Map Italy, MADS, PRISMA quasi-open free data distribution);
- Bridging the Gap: the Downstream, putting Science in action;
- Support R&D activities based on EO data analysis and product/services generation;
- Support the national scientific community to exploit EO data in integration with in situ and non-EO data;
- Contribute to international and inter-agencies initiatives to foster the use of EO data (e.g. CEOS, GEO) and promote capacity building.

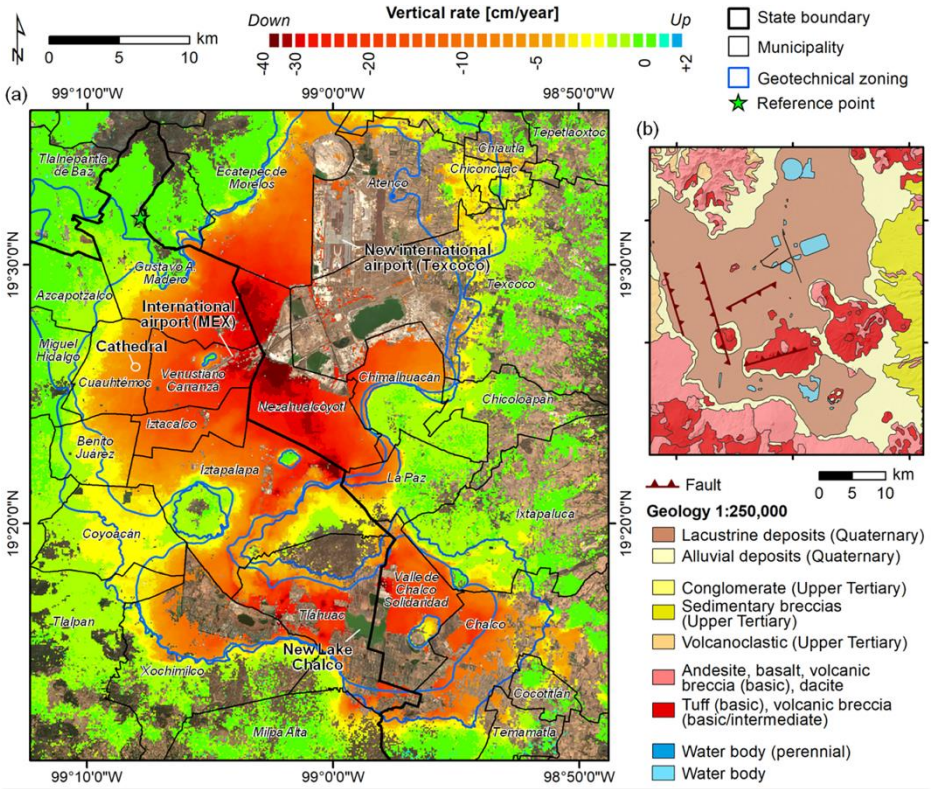


National, bilateral cooperation & EU satellite assets

Urbanization – water resource usage

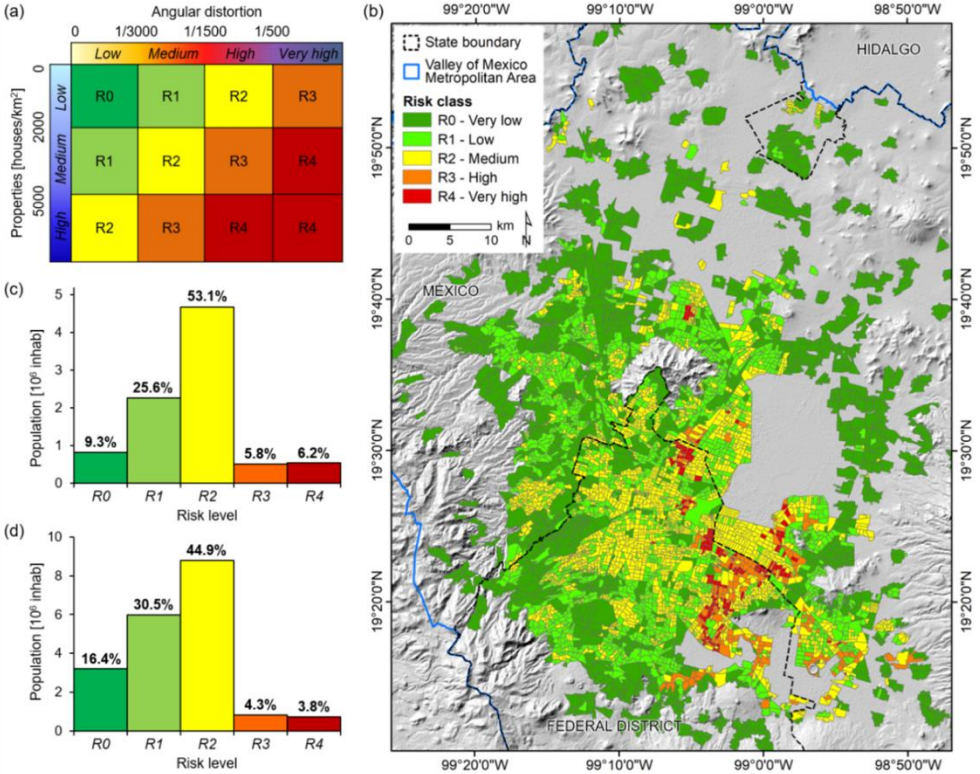
Unlevel sinking of Basilica of Our Lady of Guadalupe, Mexico City (www.usgs.gov)

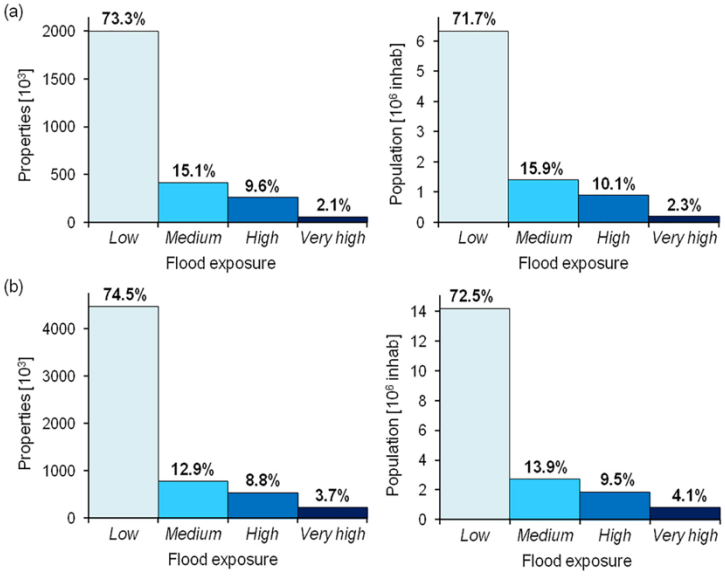
Damaged houses due to differential subsidence (FIGUEROA-MIRANDA *et al.* 2018)



Cigna and Tapete (2021); doi: 10.1016/j.rse.2020.112161

From satellite data to products for end-users





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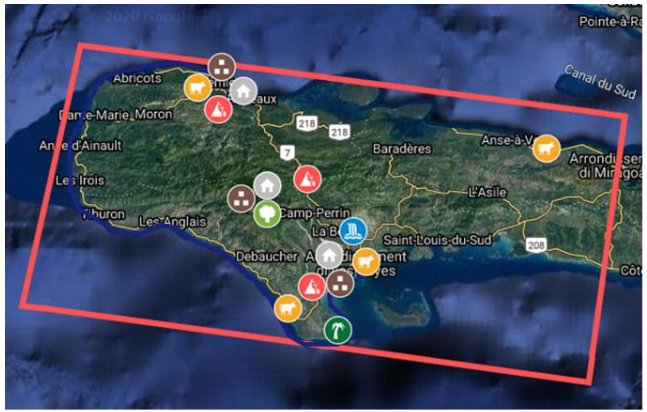
ASI support in helping countries suffering natural disasters: an international collaborative effort.



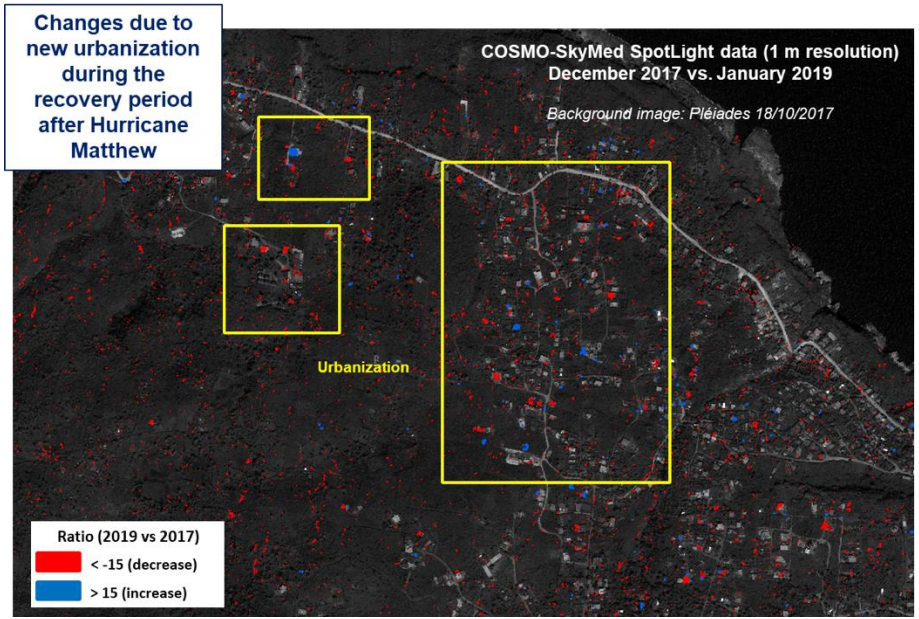
https://www.recovery-observatory.org/drupal/en

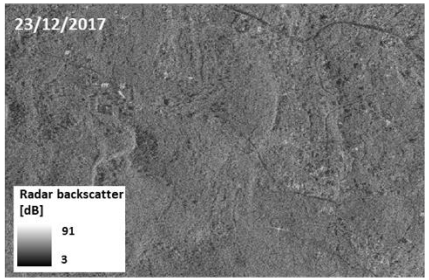
	Produit	Utilisateur-clef	Elaboration	Données satellites
	Land Use	All	CNIGS, CNES	Sentinel-2
	Buildings Mapping	CIAT / Planning Ministry	CNES/SERTIT, Copernicus EMS R&R	Pléiades, WorldView-3
	Terrain Motion Change Detection	BME / URGeo	ASI, CNES/EOST	COSMO-SkyMed, Pléiades, Spot 6/7, TerraSAR-X
	Watershed / Flood	ONEV / Agriculture Ministry	ASI/CIMA Foundation	Pléiades, COSMO-SkyMed
	Agriculture	Agriculture Ministry	Copernicus EMS R&R	Sentinel-2, Spot 6/7, GeoEye-1, WorldView-2
	Macaya National Park Monitoring	ANAP / ONEV / Environment Ministry	Copernicus EMS R&R, CNES/SERTIT	Spot 6/7, Pléiades
	Environmental Impact	ONEV / Environment Ministry	Copernicus EMS R&R	Sentinel-2, Spot 6/7, Pléiades, WorldView-2

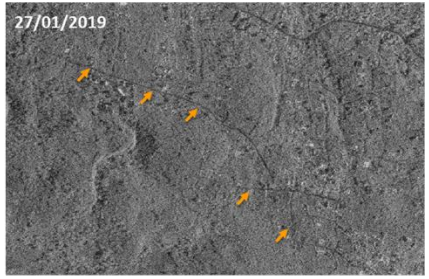
Local Partners (on the Recovery Observatory Steering Committee)

Value adders

ASI support in helping countries suffering natural disasters: Products and capacity building





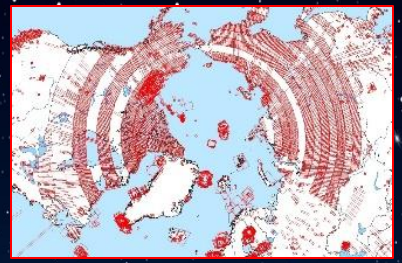


University training at Port-au-Prince in 2019 with SERTIT/CNES and ASI

SAR and Land use training in Jérémie by ASI (left) and Port-au-Prince by CNES (right)

ASI contribution in the frame of the CEOS Recovery Observatory

POLAR AREAS MONITORING AND AVAILABLE DATA SETS



Dedicated acquisition plans starting from 2014

	Number of Glacers acquired	Acquisition number per orbital cycle
Greenland	53 (11 level. 3 16 level 2 26 level 1)	156
Antartica	33 (6 level 3 6 level 2 21 level 1)	244
Antartic Coast	-	496

More than 36.000 data available in the archive over Greenland Glaciers and more than 350.000 data over Antarctic territory (up to May 2021)

Evolution of the Larsen C fracture (2017)

13 CLIMATE ACTION

https://asitv.it/media/vod/v/4021/video/larsen-c-prende-il-largo

ASI support to CEOS Recovery Observatory: UN acknowledgement

Resolution adopted by the General Assembly on 25 October 2021

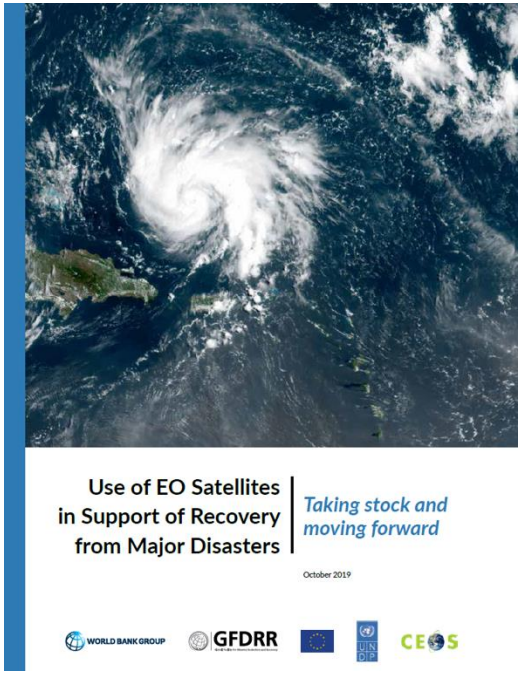
[*without reference to a Main Committee (A/76/L.3 and A/76/L.3/Add.1)*]

76/3. The "Space2030" Agenda: space as a driver of sustainable development

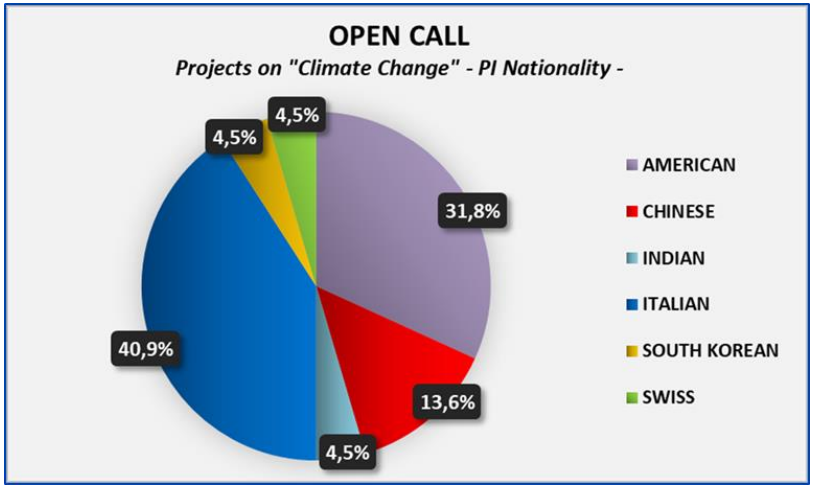
II. Tools

24. In implementing the "Space2030" Agenda, Member States could contribute to and benefit from a number of international and regional mechanisms, programmes, projects and platforms that are already in place or are being developed, such as the following:

(e) The Recovery Observatory of the Committee on Earth Observation Satellites, as a means to increase the contribution of satellite data to recovery from natural disasters;



Widening accessibility to ASI space infrastructure: The COSMO-SkyMed “open call” model



- Globally, considering the geographic areas of interest of the projects supported through the COSMO-SkyMed Open Call initiative and applications for developing countries, they represent the 5% of the global scientific purposes in the framework of the Open Call initiatives.
- However, the same trend is not found if we consider the geographical distribution of Principal Investigator (PI)’s nationality, pointing out the necessity to further disseminate and promote this initiative in the appropriate contexts, in order to reduce inequalities (as per the SDG#10).


Agenzia Spaziale Italiana
THANK YOU FOR YOUR ATTENTION!