

# Consultative Meeting on the Implementation Framework for the Environmental Dimension of the 2030 Agenda in the Arab Region”

Cairo, Egypt, 18-20 Sep 2017

## UN Work on Geospatial Information in Support of Sustainable Development:

*Emerging Data Sources, Including Integrating Statistical and Geospatial Information*

Amor (read Omar) Laaribi, PhD  
United Nations Retiree  
Former Coordinator of UN-GGIM



UN-GGIM

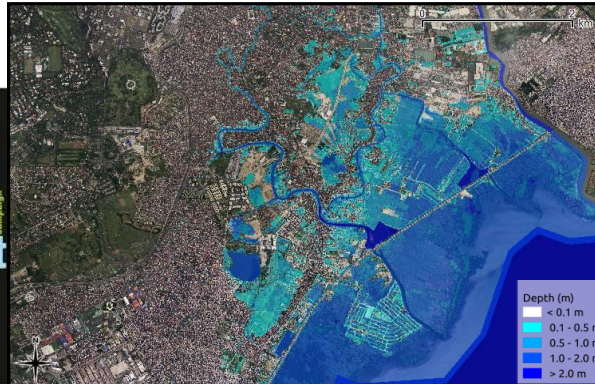
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# Outline

- ❖ Location Matters! Importance of Geospatial Information
- ❖ A global mechanism: UN-GGIM
- ❖ Geospatial Information Technology
- ❖ Integration of Statistical and Geospatial Information
- ❖ Support to SDGs
- ❖ Examples
- ❖ Recommendations/Conclusions



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# Slum “Cité Soleil” in Port-au-Prince



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# 1. What a Slum Dweller Dreams of?

❖ One simple thing to improve your life?

- Education for his children, better house, food, health care, etc.?
- Surprisingly, the slum dweller said: **I want a land registry!**

**That would significantly improve the slum dweller life!**



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# ...No Land Registry - No Address!

❖ In many developing (i.e. African) countries:

- No proper address, no street names, no house numbers, no institutions has registered where you actually live etc.
- Estimated **4 Billion** people in the world live without address.
- Out of the map, no access to services, to banking loans, businesses, ...

❖ **No access to services....No tax collection...**



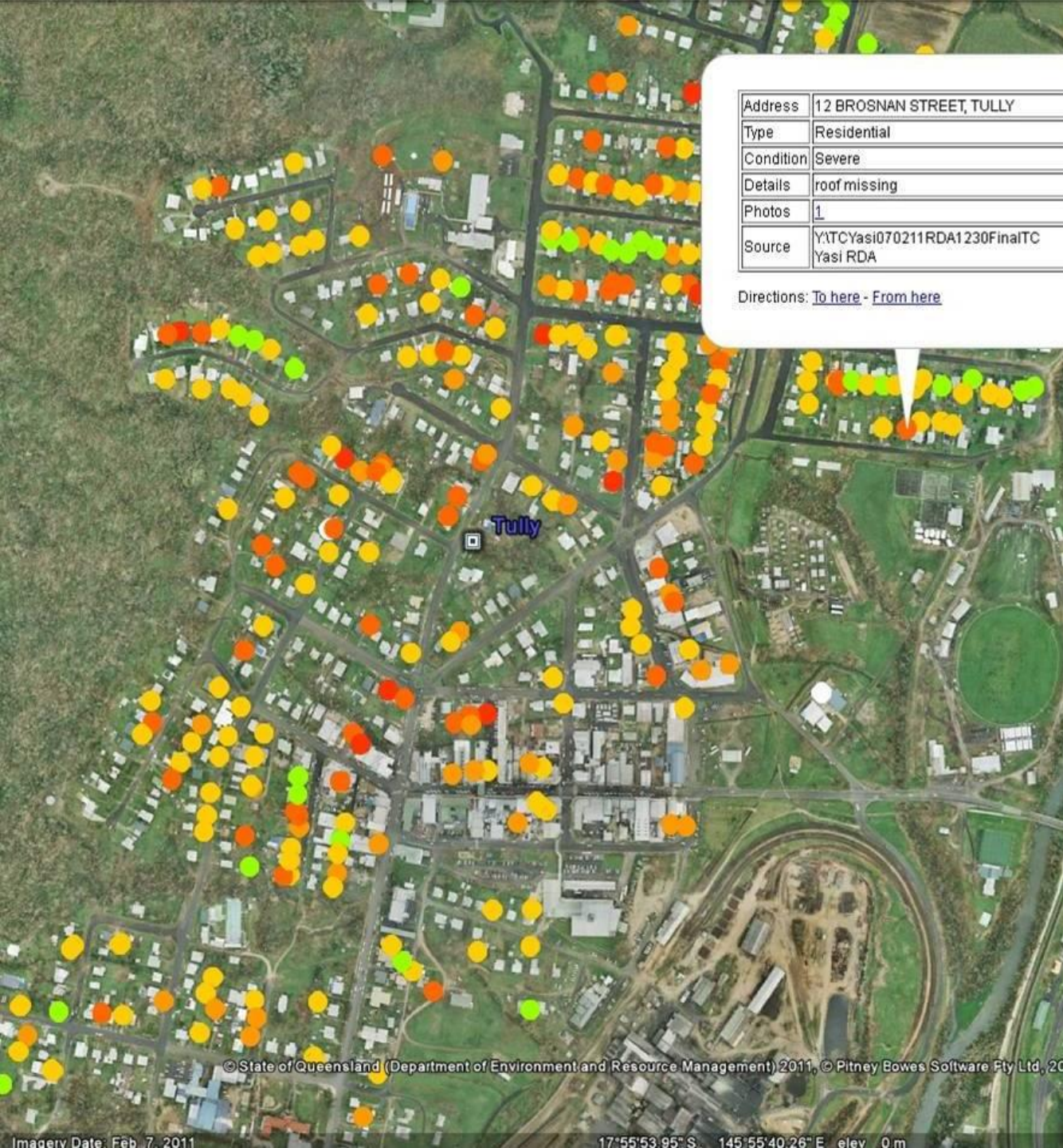
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“Everything that happens...  
happens somewhere...”



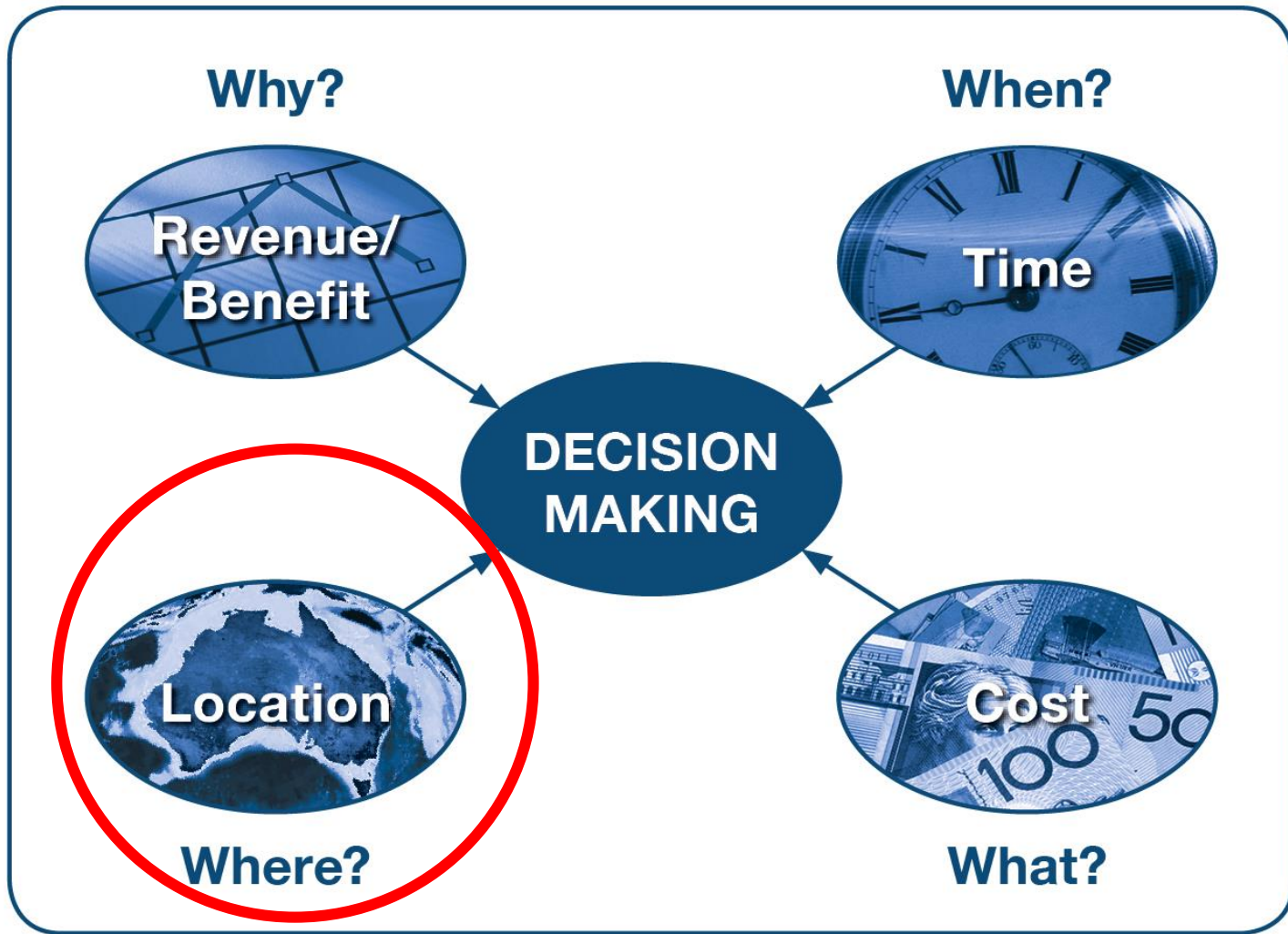
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# Paradigm shift: Location is the 4<sup>th</sup> dimension of decision making



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# UN Position:

- ❖ “Knowing **where** people and things are, and their relationship to each other, are essential for informed decision-making and **to measure and monitor outcomes**”.
- ❖ “**Geography and location** provides an important **link** to enable a richer picture of our countries, and what is happening in and across them. It enables data from diverse sources to be brought together to **unleash their combined power in analysis and decision making**”.



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# UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) : 20<sup>th</sup> Committee at the UN- July 2011

Formal inter-governmental **UN Committee of Experts** to:

- ❖ **Enhance and coordinate** Global Geospatial Information Management activities
- ❖ **Make joint decisions and set directions** on the use of geospatial information
- ❖ Work with Governments to **improve policy, institutional arrangements, and legal frameworks**
- ❖ Address global issues and **contribute collective knowledge**
- ❖ Develop effective strategies to **build geospatial capacity** in developing countries



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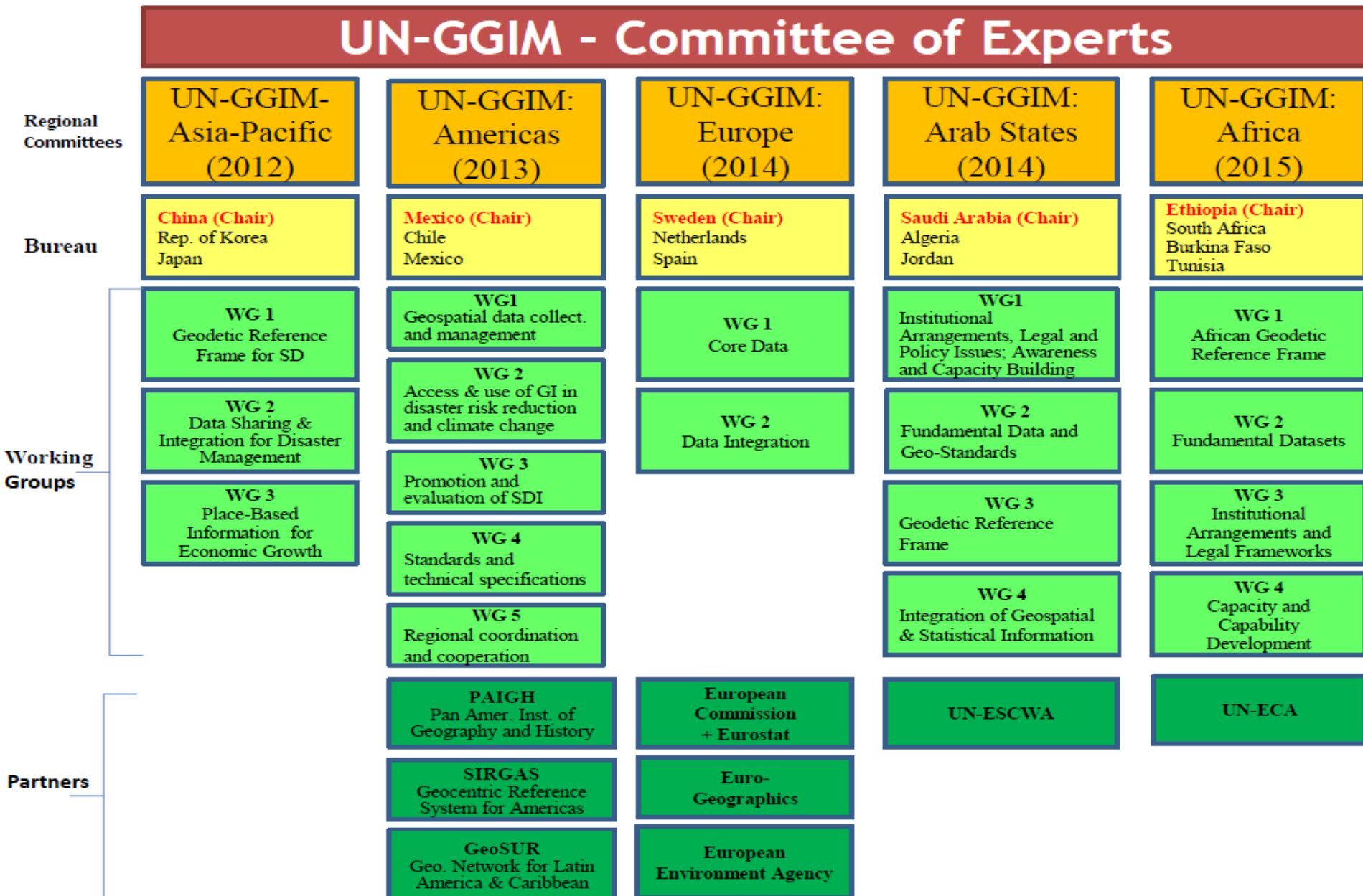
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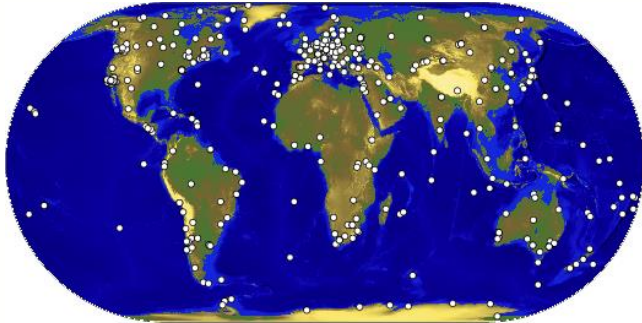
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# UN-GGIM: Regional Architecture



# The Global Geodetic Reference Frame

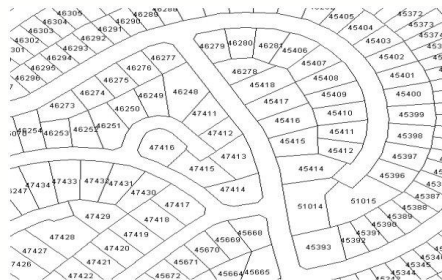


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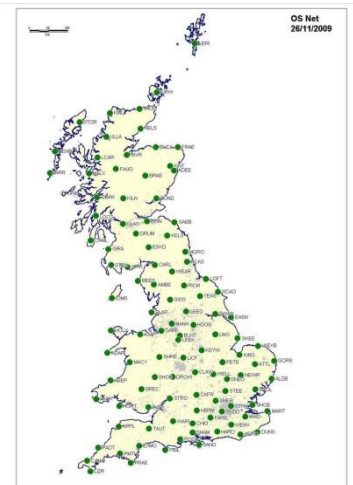
Global Geodetic Reference System



Regional Reference System



Local application



National Reference System



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# First Geospatial UN GA Resolution: A Global Geodetic Reference Frame for Sustainable Development



General Assembly, 26 February 2015



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# Geospatial Information Technology







# United Nations Statistics Division

- ❖ United Nations Statistical Commission (since 1947 )
- ❖ United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM, since 2011):
  - One of the major issues identified was “**Linking statistical and geospatial information**”



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# statistics as spatial information

Statistical  
world

Statistisches Bundesamt  
Deutschland

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**STATIS**  
wissen. nutzen.

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## Indicators

[Short-term indicators](#)  
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## National Accounts

### Important economic indicators

Specification	Unit	2007	2008	2009
Gross value added <sup>1</sup>	EUR bn.	2,176.57	2,239.24	2,149.88
Agriculture, hunting and forestry; fishing	EUR bn.	20.67	20.25	18.11
Industry, including energy	EUR bn.	568.38	572.72	471.74
Construction	EUR bn.	88.28	95.23	98.58
Trade, transport and communications	EUR bn.	379.58	397.43	378.23
Financial, real-estate, renting and business activities	EUR bn.	639.37	659.16	666.81
Other service activities	EUR bn.	480.29	494.45	516.41
Gross domestic product <sup>1</sup>	EUR bn.	2,428.20	2,495.80	2,404.40
Final consumption expenditure	EUR bn.	1,810.96	1,861.48	1,888.43
Final consumption expenditure (households and NPISHs)	EUR bn.	1,375.39	1,409.71	1,416.36
Government final consumption expenditure	EUR bn.	435.57	451.77	472.07
Gross fixed capital formation	EUR bn.	455.53	474.71	431.95

Google maps

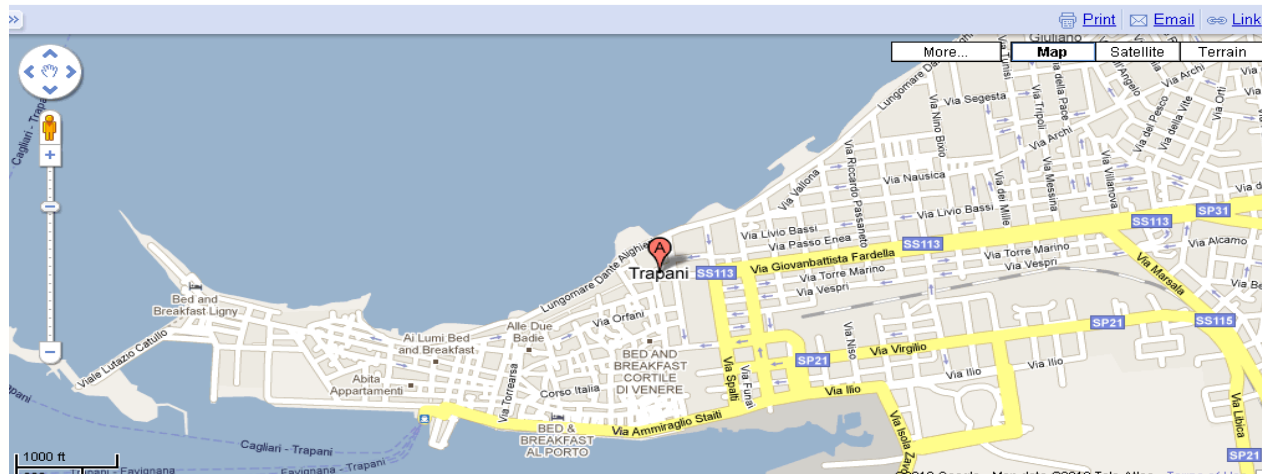
trapani, italy

Search Maps

[Show search options](#)

Find businesses, addresses and places of interest.

Physical  
world



Statistics are about human characteristics and activities which are geographic in nature.

Source: Eurostat

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# Location as Basic Unit of Observation

25 Dupont St, Town T  
x,y: 35.5676, 135.6587



Address / Geocode



Enumeration Areas  
(operational geographic units for data collection)

Geographic Data Structure: Points, Lines, and Polygons



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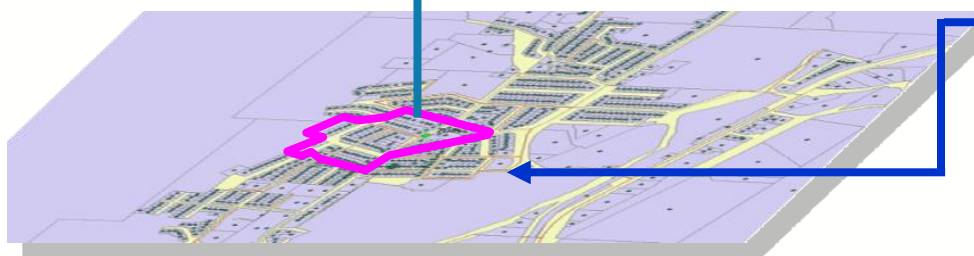
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# Need for a Statistical Geospatial Framework

Analysis and aggregation across geographies



Geocoded unit level data

25 Dupont St = x,y: 35.5676, 135.6587



A common geographic framework is fundamental to integration  
Need for appropriate standards to support the linking of socio-economic information to location

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# UN Expert Group on the Integration of Statistical Geospatial Information

- ❖ Establishment of UN Expert Group on the Integration of Statistical and Geospatial Information:
  - Created by UNSC and UN-GGIM
  - First meeting in New York, 30 Oct. – 1 Nov. 2013
  - Second meeting in Lisbon, May 2015
  - Third meeting, Paris, April 2016
  - Terms of Reference and Work Programme endorsed
  - Raison d'être: **Developing a Global Statistical-Geospatial Framework**



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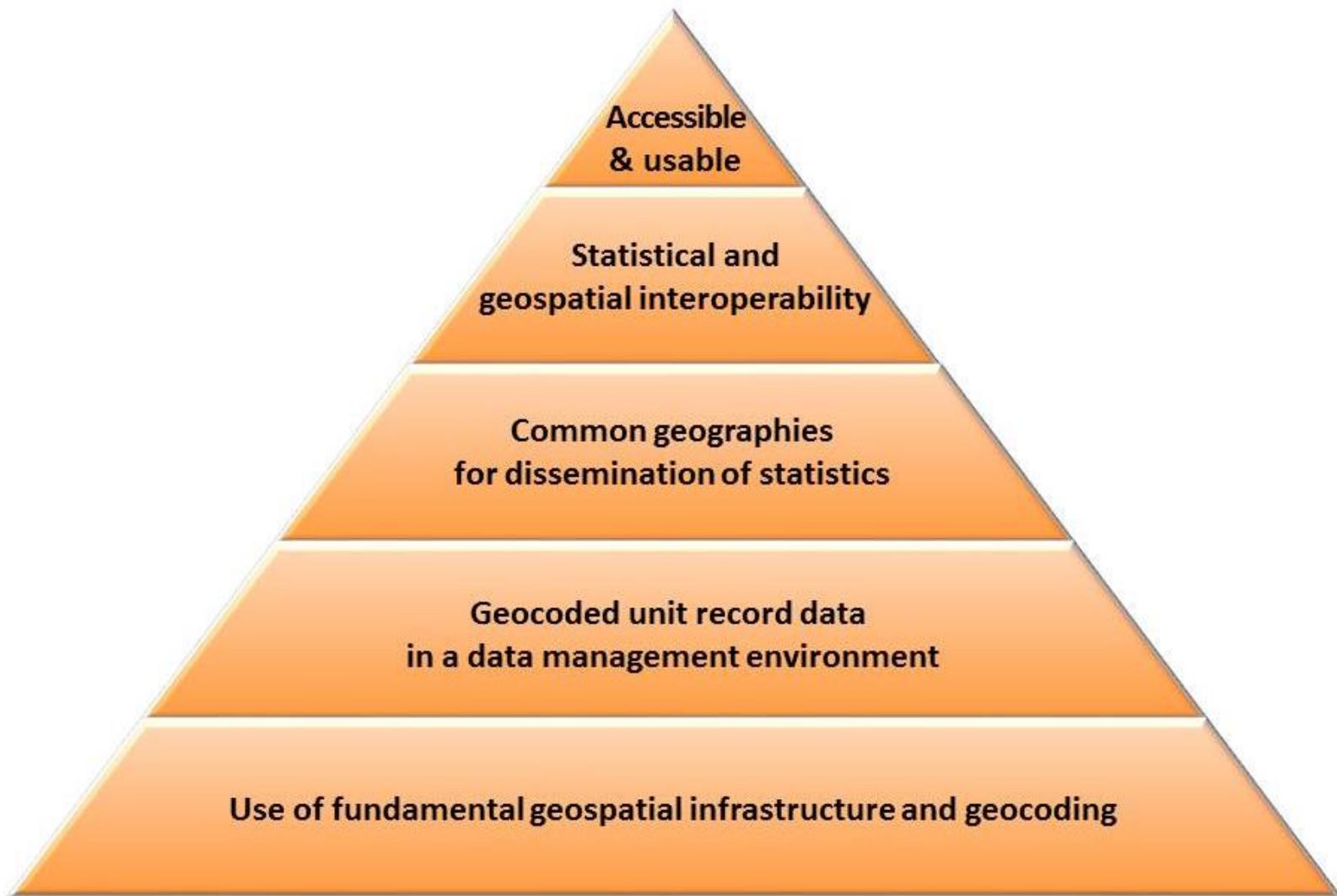
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# Global Statistical Geospatial Framework



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# Transforming our World: The 2030 Agenda for Sustainable Development



- ❖ Article 76: ... We will promote transparent and accountable scaling-up of appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, **including Earth observation and geo-spatial information**, while ensuring national ownership in supporting and tracking progress.



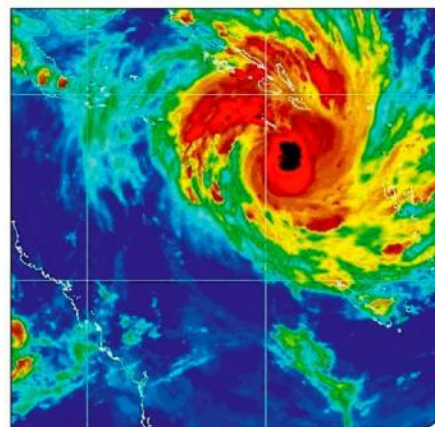
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# How can you measure and monitor sustainable development...



...without location and geography



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# Transforming our World: The 2030 Agenda for Sustainable Development

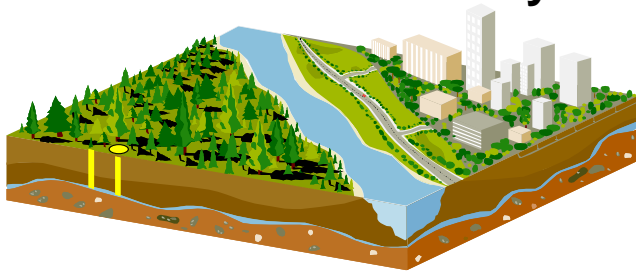


- ❖ The blueprint to guide us for the next 15 years, and contains much more accountability than the MDGs with **17** goals, **169** targets, and **232** indicators (*The global indicators will be yearly refined and comprehensively reviewed by the UNSC 51st session in 2020 and its 56th session in 2025*).
- ❖ Implementation will require **good policy**, **science**, **technology** and **data**.
- ❖ Measuring and monitoring, from local to global, requires ‘**data**’....but where does the data come from, and is it’s provision sustainable?
- ❖ How many of these goals capture or include elements of **geography**, **place**, and **location**? What is the role of mapping and land related agencies?



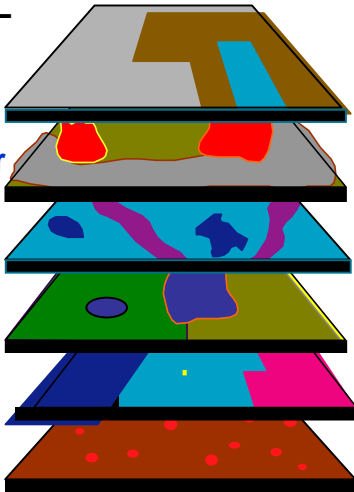
# SDGs Link to Fundamental Geospatial Data

## NSDI Fundamental Layers



### FUNDAMENTAL

Geodetic  
Elevation  
Water/Ocean  
Land use/cover  
Transport  
Cadastral  
Population  
Infrastructure  
Settlements  
Admin. Bds.  
Imagery  
Geology/soils  
etc.



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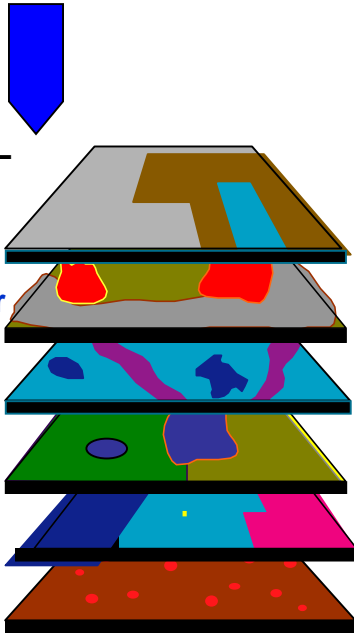
# ...Fundamental data to make better decisions and policy

## NSDI Fundamental Layers



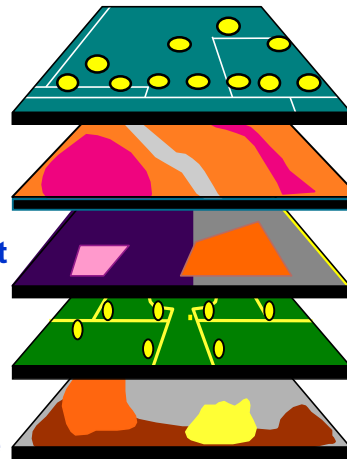
### FUNDAMENTAL

Geodetic  
Elevation  
Water/Ocean  
Land use/cover  
Transport  
Cadastre  
Population  
Infrastructure  
Settlements  
Admin. Bdys.  
Imagery  
Geology/soils  
etc.



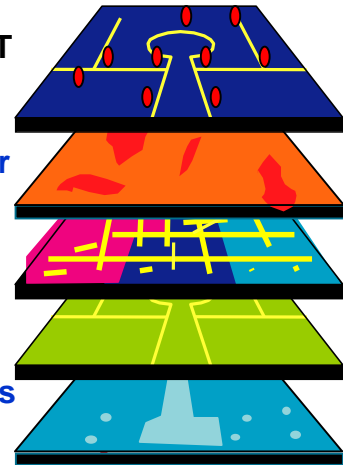
### SOCIAL

Society  
Poverty  
Education  
Health  
Population  
Employment  
Water  
Sanitation  
Equality  
Gender  
Governance



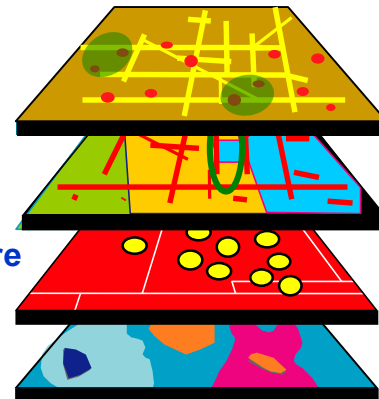
### ENVIRONMENT

Water  
Seas/oceans  
Land use/cover  
Ecosystems  
Forests  
Agriculture  
Climate  
Biodiversity  
Natural hazards  
Pollution



### ECONOMIC

Well-being  
Cities  
Water  
Energy  
Infrastructure  
Industry  
Sanitation  
Economy



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# Contribution of Geospatial Information

Geospatial data can contribute to monitoring of the 2030 Agenda in four ways:

- a) As data in itself – geospatial data is used directly for the indicator construction (geospatial data = indicator)
  - **indicator 15.1.1: Forest area as a percentage of total land area**



# Contribution of Geospatial Information

a) ...

b) Support statistical data – geospatial data is used in combination with other data to estimate an indicator (geospatial and other data -> indicator)

– **indicator 11.2.1: Proportion of the population that has convenient access to public transport, by age, sex and persons with disabilities**

- ❖ Monitoring this indicator requires disaggregated information on **population**, **available means of transport** and their **routes/stops**
- ❖ We need to be able to calculate **distances** for the population to transportation access points – in other words a **geospatial analysis**...



# Contribution of Geospatial Information

Geospatial data can contribute to monitoring of the 2030 Agenda in four ways...

- a) ...
- b) ...
- c) Enrich statistical data – geospatial data is used to enrich the indicators, although the indicator does not require a geospatial breakdown (analysis, enrichment of the indicators)

**– Indicator 6.3.2: Percentage of water bodies with good ambient water quality**





# Contribution of Geospatial Information...

- a) ...
- b) ...
- c) ...
- d) Geospatial data can help in communication and gives possibilities for geographical disaggregation of data:

**232 Indicators** disaggregated by:

- **geographic location,**
- **urban/rural,**
- **region, etc.**



# SD Goals and Geospatial Data

## Goal 1 | End Poverty

- Losses from natural disasters
- Poverty maps

## Goal 2 | Hunger and Food Security

- Crop yield estimates, soil characteristics, crop water productivity, irrigation
- Nutritional status maps

## Goal 3 | Health and Well-being

- Health facility maps
- Disease incidence and risk maps

## Goal 4 | Education

- School facility maps
- Literacy and educational achievement maps

## Goal 6 | Water and Sanitation

- Water resources
- Water and sanitation access maps

## Goal 9 | Access to Infrastructure

- Roads, Public transportation
- Mobility maps
- Facilities inventories



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# ...SD Goals and Geospatial Data

## Goal 11 | Cities

- Access to public green space
- Substandard housing maps

## Goal 12 | Sustainable Consumption

- Energy productivity maps
- Pollution maps

## Goal 13 | Combating Climate Change

- CO<sub>2</sub> emissions
- Exposure to extreme storms and droughts

## Goal 14 | Marine and coastal ecosystems

- Coastal/Marine protected areas
- Harmful algal blooms
- Eutrophication

## Goal 15 | Terrestrial ecosystems

- Land cover, land degradation, bio-diversity
- Protected areas

## Goal 16 | Peaceful and inclusive societies

- Maps of political violence
- Crime maps
- Refugee and IDP movement



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Target	Indicator	Addresses	Administrative units	Built-up area polygons	Cadastral parcels	Geographical names	Habitats and biotopes	Transport networks	....	Additional geometry
<b>Goal 1 End poverty in all its forms everywhere</b>										
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	1.1.1 Proportion of population below the international poverty line, by sex, age , employment status and geographical location (urban/rural)	✓	✓	✓						
<b>Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b>										
9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	9.1.1 Proportion of the rural population who live within 2 km of an all-season road	✓	✓	✓			✓			
<b>Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable</b>										
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	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	✓	✓						Open space Polygons	



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UNITED NATIONS INITIATIVE ON  
GLOBAL GEOSPATIAL  
INFORMATION MANAGEMENT



# UN Environment SDG Indicators



- Water quality, water resource management, freshwater ecosystems and water and sanitation

8 DECENT WORK AND ECONOMIC GROWTH



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



- Sustainable consumption and production, including material flow accounts, chemicals and wastes, environmental policy, food waste and fossil fuels

14 LIFE BELOW WATER



- Ocean related indicators on marine litter, acidification, marine management and coverage of protected areas

15 LIFE ON LAND



- Protected areas, including mountains, and national targets for the Convention on Biological Diversity

17 PARTNERSHIPS FOR THE GOALS



- Environmentally sound technology and sustainable development policy



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# UN Environment SDG Indicators



- 6.3.2, 6.5.1, 6.6.1, 6.a.1, 6.b.1

8 DECENT WORK AND ECONOMIC GROWTH



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



- 8.4.1, 8.4.2, 12.1.1, 12.2.1, 12.2.2, 12.3.1, 12.4.1, 12.4.2, 12.5.1, 12.6.1, 12.7.1, 12.a.1, 12.c.1 5

14 LIFE BELOW WATER



- 14.1.1, 14.2.1, 14.5.1

15 LIFE ON LAND



- 15.1.2, 15.4.1, 15.9.1

17 PARTNERSHIPS FOR THE GOALS



- 17.7.1, 17.14.1



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# Remote Sensing potential

- ❖ Earth Observation (remote sensing) can provide data where **none exists** and can ensure **repeatability** and **comparability**.
- ❖ High potential for using Earth Observation for other indicators related to land, oceans, population and disaster related SDG indicators.



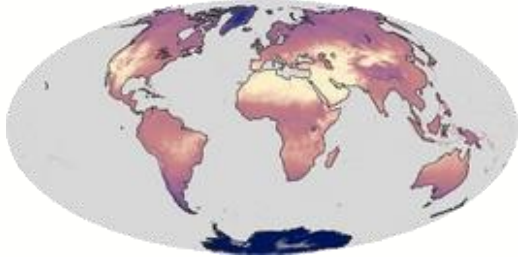
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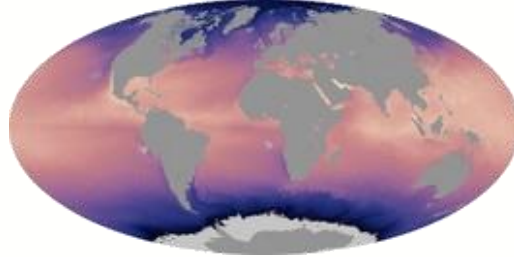
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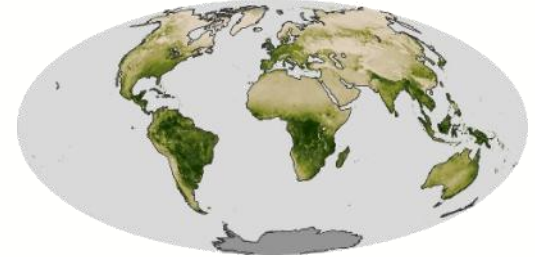
# ***Some Types of Earth Observations . . .***



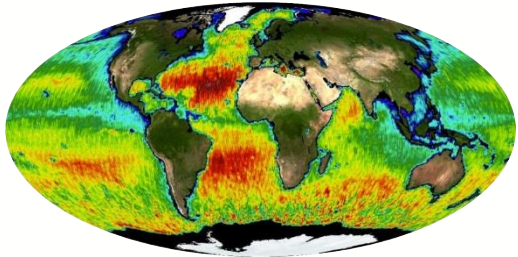
**Land Temperature**



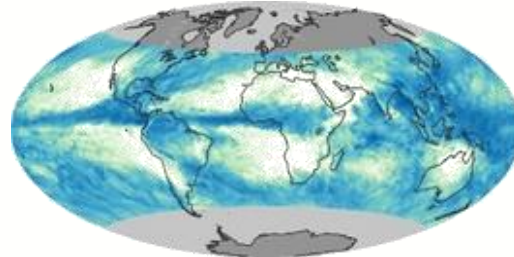
**Sea Surface Temperature**



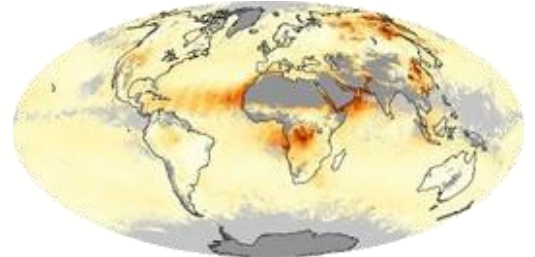
**Vegetation**



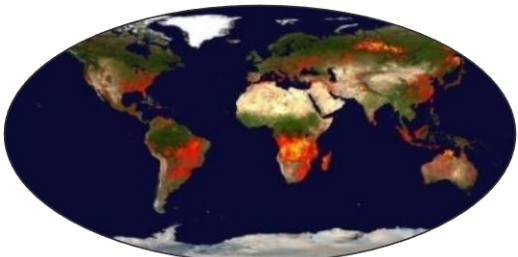
**Sea Surface Salinity**



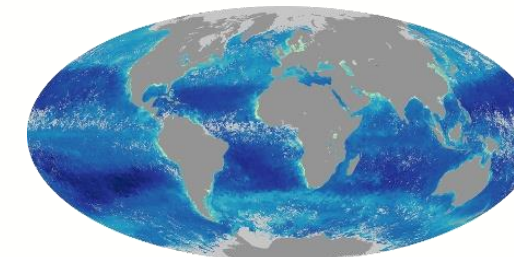
**Total Rainfall**



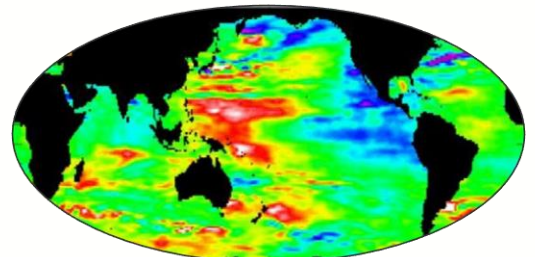
**Aerosols**



**Fires & Thermal Anomalies**



**Chlorophyll**



**Sea Surface Height**



**UN-GGIM**

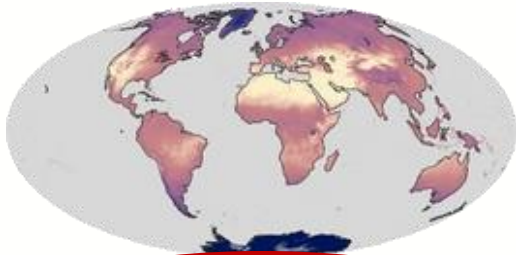
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# Some Types of Earth Observations . . .

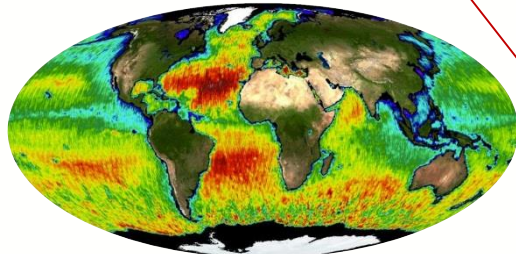
**Environmental factors  
for malaria  
transmission**



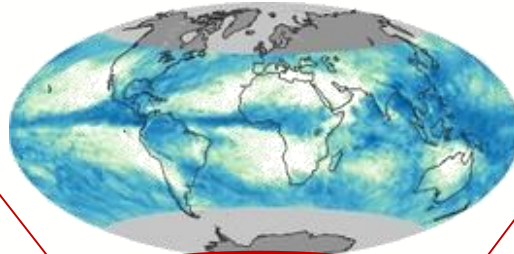
**Land Temperature**



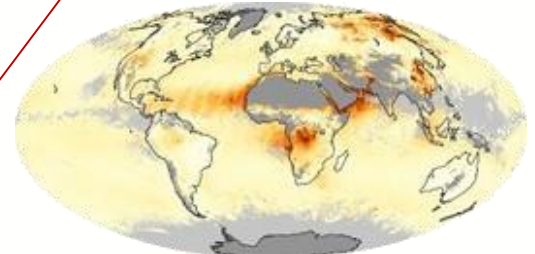
**Vegetation**



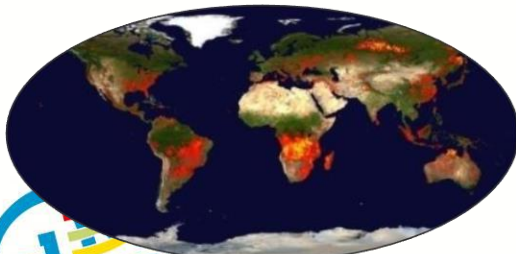
**Sea Surface Salinity**



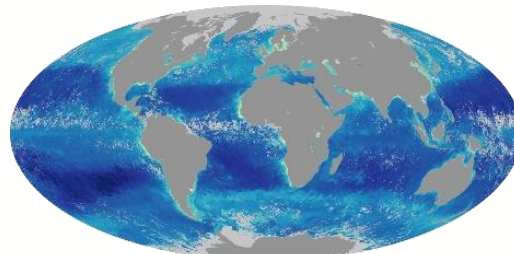
**Total Rainfall**



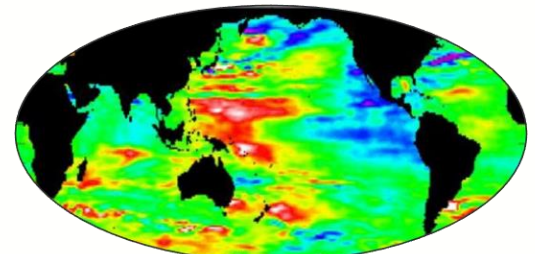
**Aerosols**



**Fires & Thermal Anomalies**



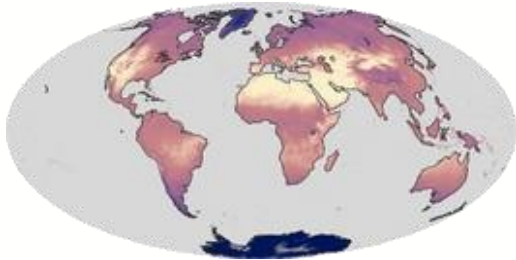
**Chlorophyll**



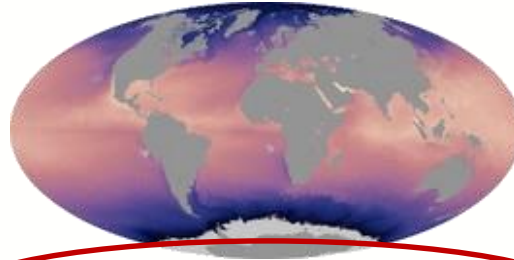
**Sea Surface Height**



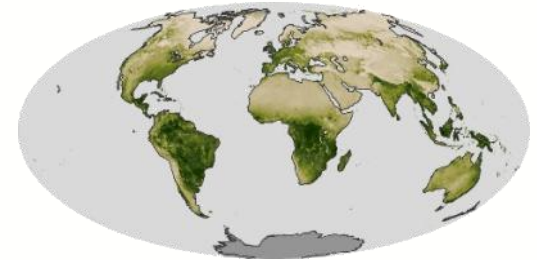
# Some Types of Earth Observations . . .



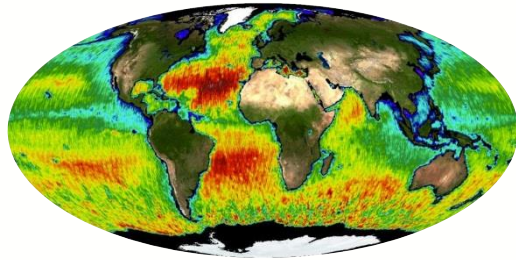
Land Temperature



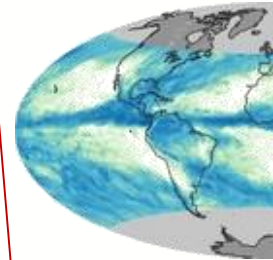
Sea Surface Temperature



Vegetation

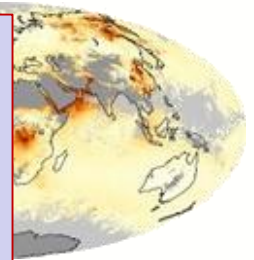


Sea Surface Salinity



Total Rainfall

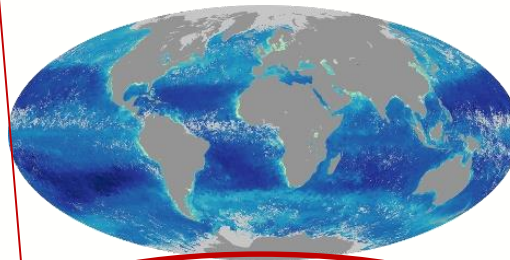
Environmental factors  
for fisheries  
management



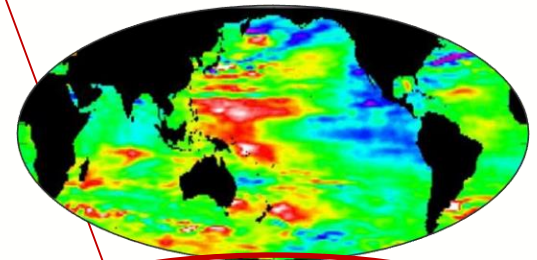
Sea Surface Albedo



Fires & Thermal Anomalies



Chlorophyll



Sea Surface Height



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Global observations routinely provide early insights on anomalies in crop condition and aid food supply and production forecasts.

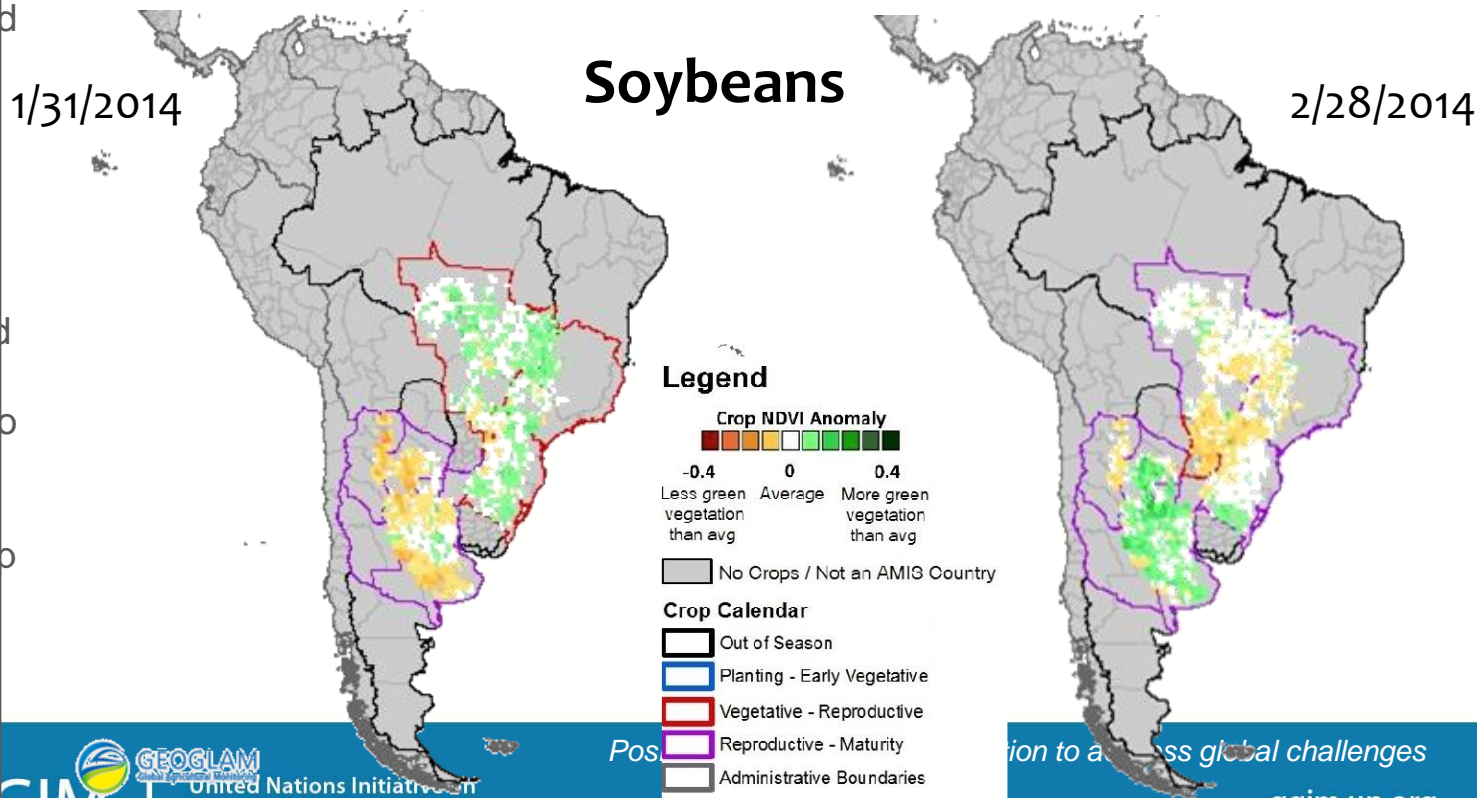


**Target 2.4:**  
By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production ...

**Target 2.c:**  
Adopt measures to ensure the proper functioning of food commodity markets and their derivatives, and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.

The Agricultural Market Information System includes monthly crop health estimates in the *Market Monitor*.

Crop NDVI Anomalies from 2000-2013 average



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# Other Examples & Pilots in Development ...



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3 GOOD HEALTH  
AND WELL-BEING



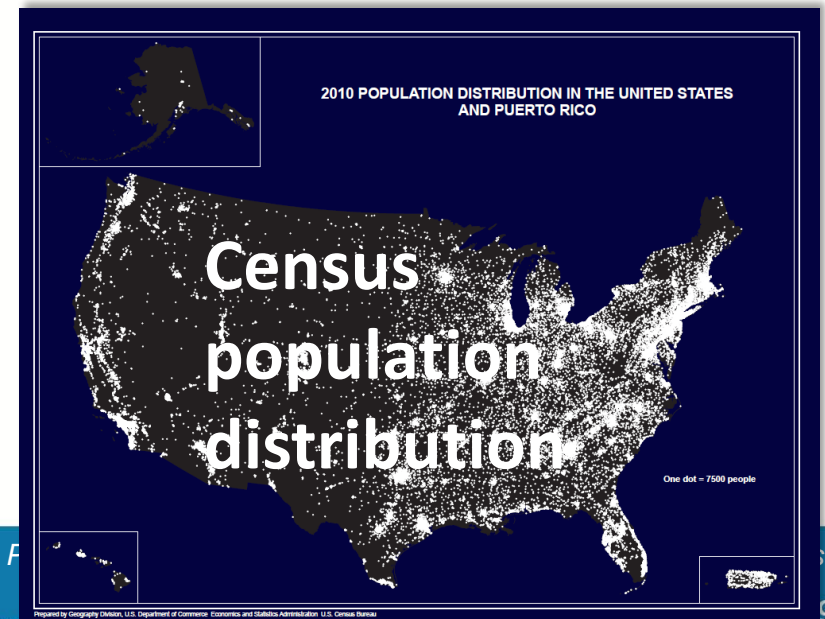
## Indicator 3.9.1:

Population in urban areas exposed to outdoor air pollution levels above WHO guideline values

## Approach & Data Sources:

*US Census:* Urban Areas in US (1:2000); Global gridded population dataset; Global population distribution at subnational level.

*NASA:* EPA AIRNow point-based air quality network; MERRA aerosol reanalysis; Satellites.



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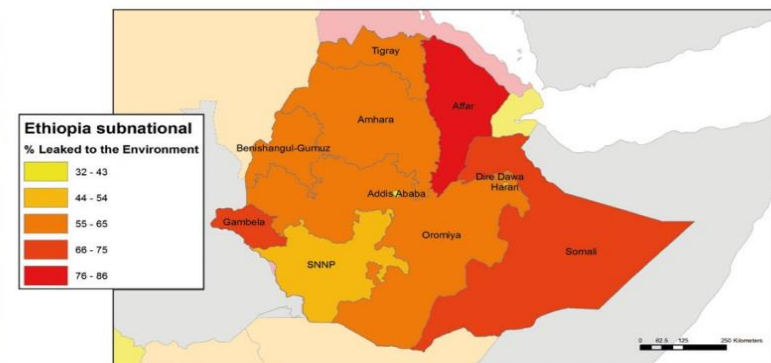
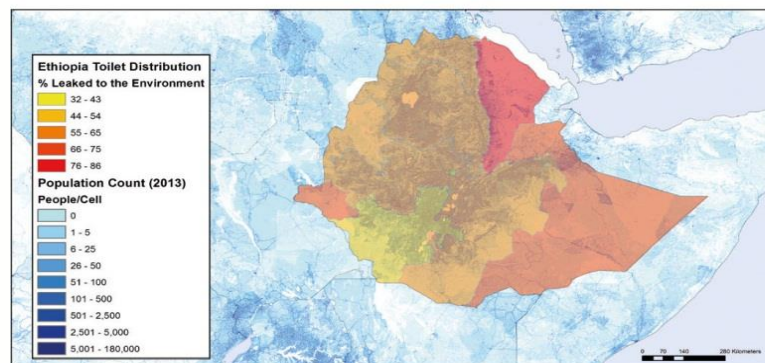
# Application of EO in wastewater monitoring

EO support for the indicators (pop density, land use, land cover) integrated with other GI, survey, admin data



**Target 6.3** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing the least hazardous chemicals and materials, halving the proportion of untreated waste water and substantially increasing recycling and safe reuse globally.

## POPULATION DENSITY OVERLAID ON UNTREATED WASTEWATER LEAKING TO THE ENVIRONMENT, ETHIOPIA SUB NATIONAL



WHO/UNICEF Joint Monitoring Programme (JMP)  
for Water Supply and Sanitation

Integrating data from Earth observations and geospatial information with national surveys to monitor the impact of untreated wastewater on the population. The map on the left shows the extent of leakage of wastewater, excreta and grey water, with areas in red denoting extensive pollution. The map on the right integrates all data and shows where there is high impact, i.e., high leakage in densely populated areas.



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# GOAL 11



MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

## Target 11.5:

By 2030 significantly reduce the number of deaths and the number of affected people and decrease by [x] per cent the economic losses relative to GDP caused by disasters, including water-related disasters, with the focus on protecting the poor and people in vulnerable situations.

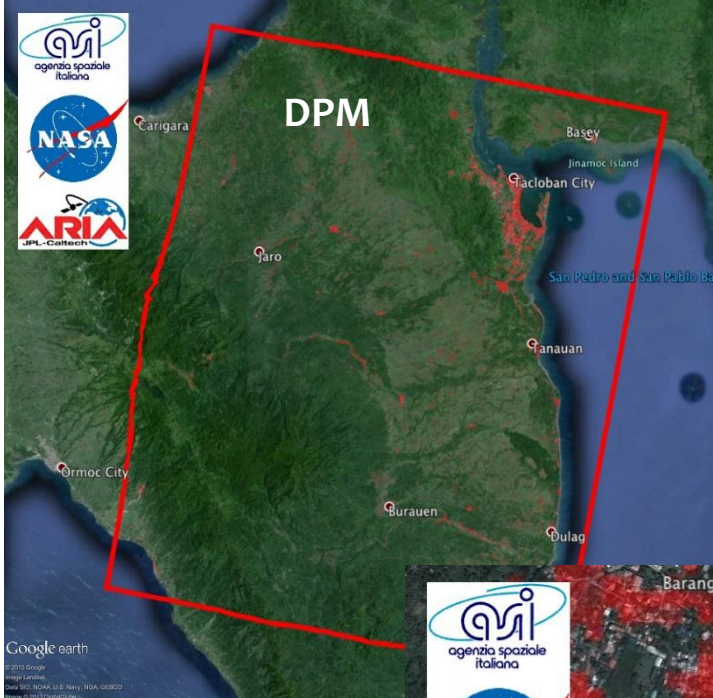
## Indicator :

Number of housing units damaged and destroyed [by disasters]



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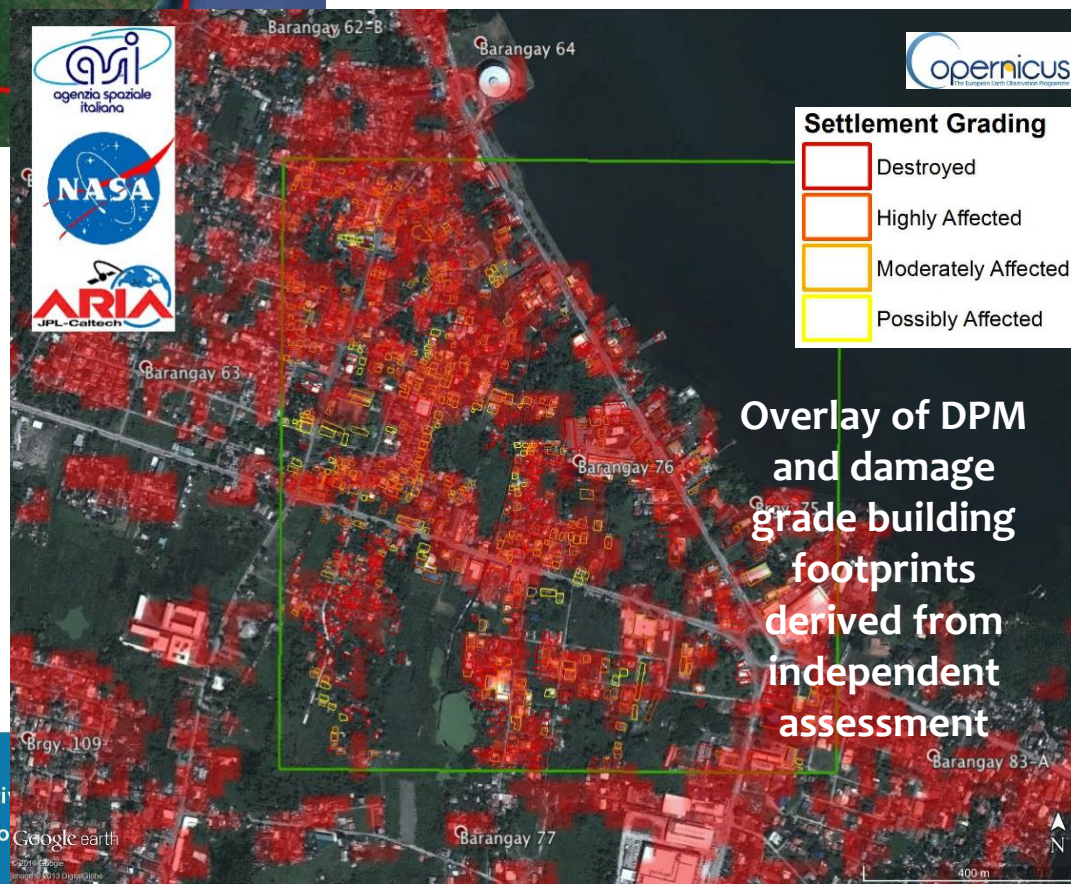


Imaged with  
COSMO-SkyMed  
radar satellite  
constellation

DPM: Damage  
Proxy Map



## Super Typhoon Haiyan Damage in Tacloban, Philippines December 2013



### Settlement Grading

<span style="border: 2px solid red; padding: 2px;"> </span>	Destroyed
<span style="border: 2px solid orange; padding: 2px;"> </span>	Highly Affected
<span style="border: 2px solid yellow; padding: 2px;"> </span>	Moderately Affected
<span style="border: 2px solid lightyellow; padding: 2px;"> </span>	Possibly Affected

Overlay of DPM  
and damage  
grade building  
footprints  
derived from  
independent  
assessment





## Indicator 11.6.2

Annual mean levels of fine particulate matter  
(i.e. PM<sub>2.5</sub> and PM<sub>10</sub>) in cities (population weighted)



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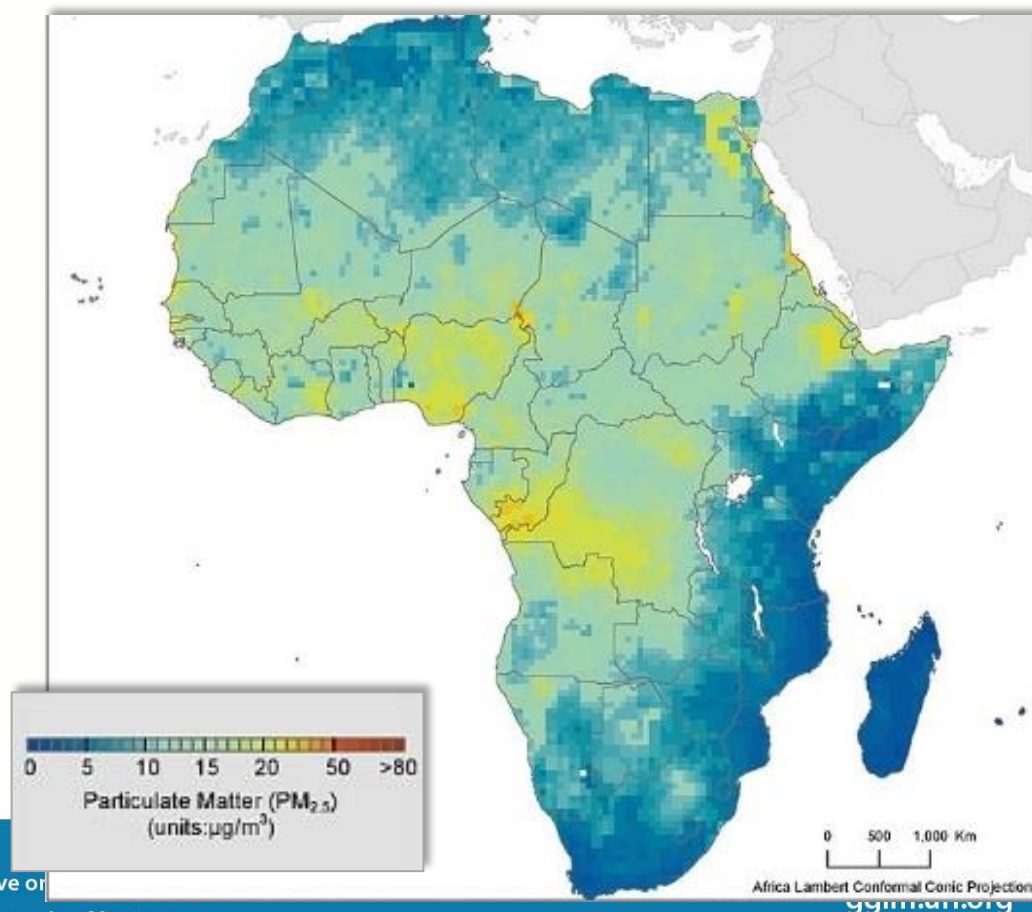
### Target 11.6

By 2030,  
reduce the  
adverse per  
capita  
environmental  
impact of  
cities,  
including by  
paying special  
attention to air  
quality and  
municipal and  
other waste  
management

## Air Quality: Annual Average PM<sub>2.5</sub> Grids

Background image:  
Data from 2010.

*Data Source:*  
Aerosol Optical Depth  
from MISR and  
MODIS sensors on  
Terra & Aqua satellites.



Source:  
CIESIN  
Columbia University

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15 LIFE ON LAND



## Indicator 15.1.1

Forest area as a percentage of total land area



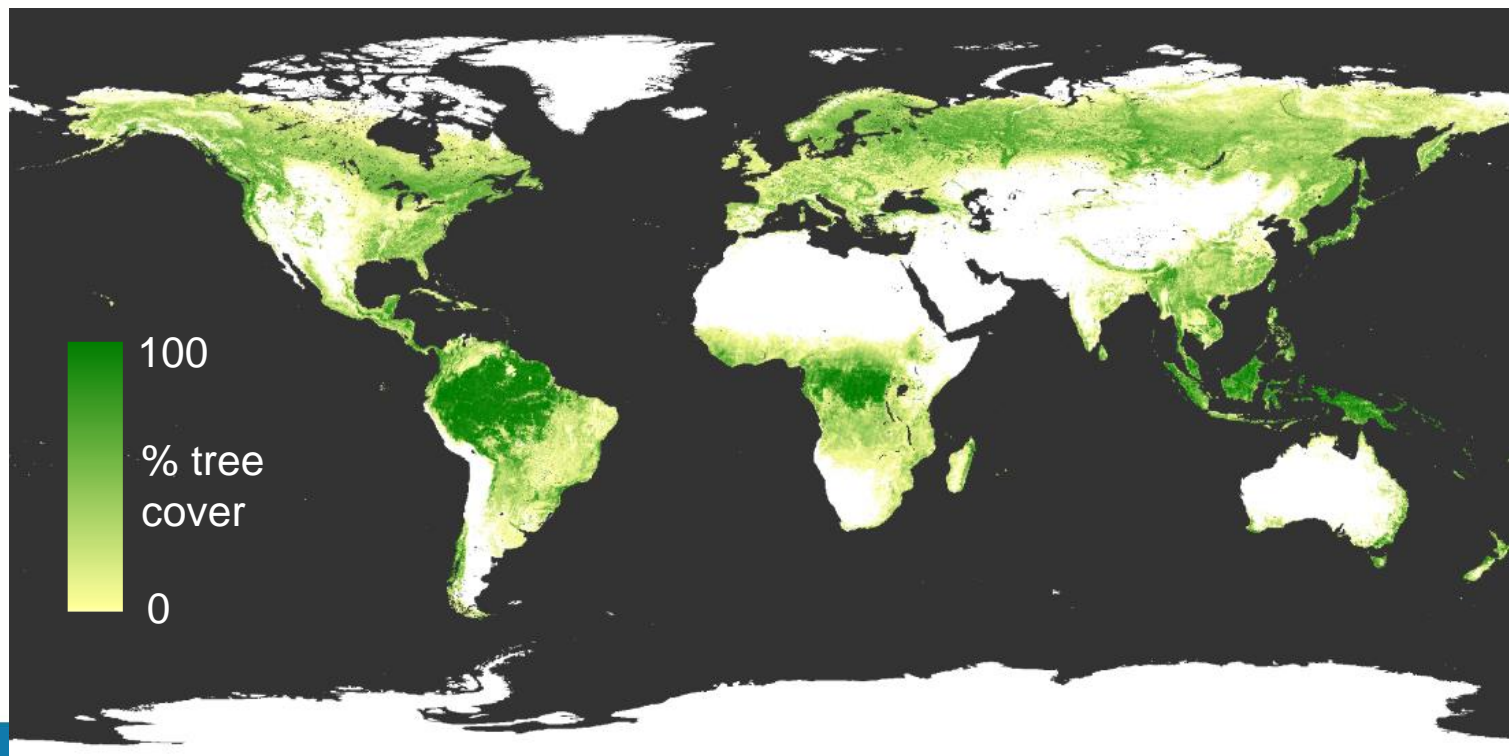
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### Target 15.1

By 2020 ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands...

## Forest Area from Earth-observing Environmental Satellites

*2013 Tree Cover*



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Credit: Matthew C. Hansen, Univ. Maryland, et al.





## Indicator 15.1.1

Forest area as a percentage of total land area

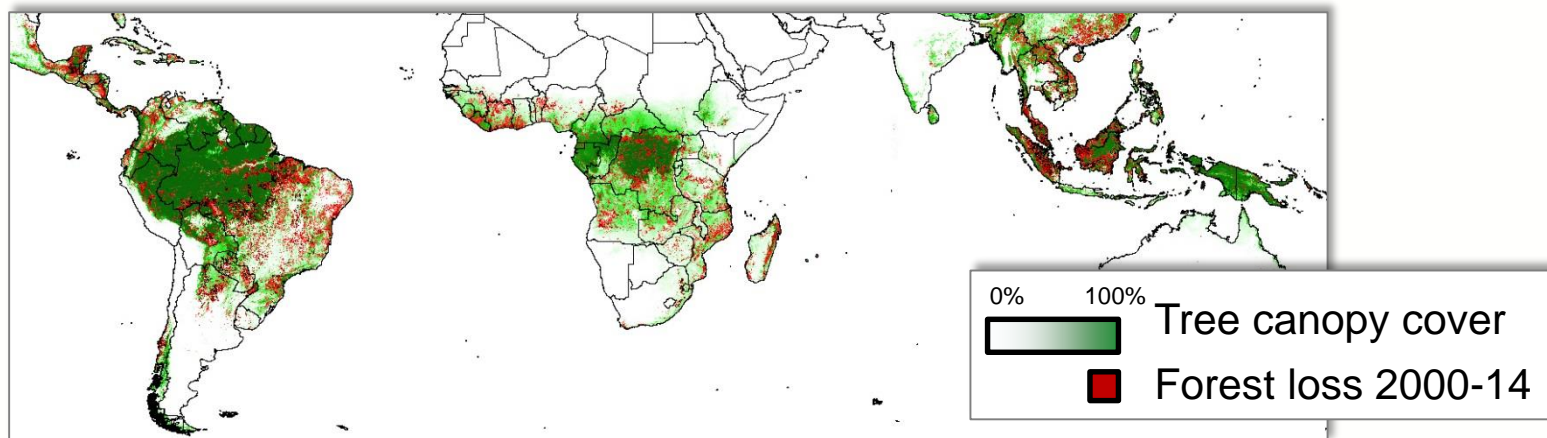


THE GLOBAL GOALS  
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### Target 15.1

By 2020 ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands...

## Gross Forest Cover Change: 2000-2014



<< Annual loss shown using 3-year mean filter

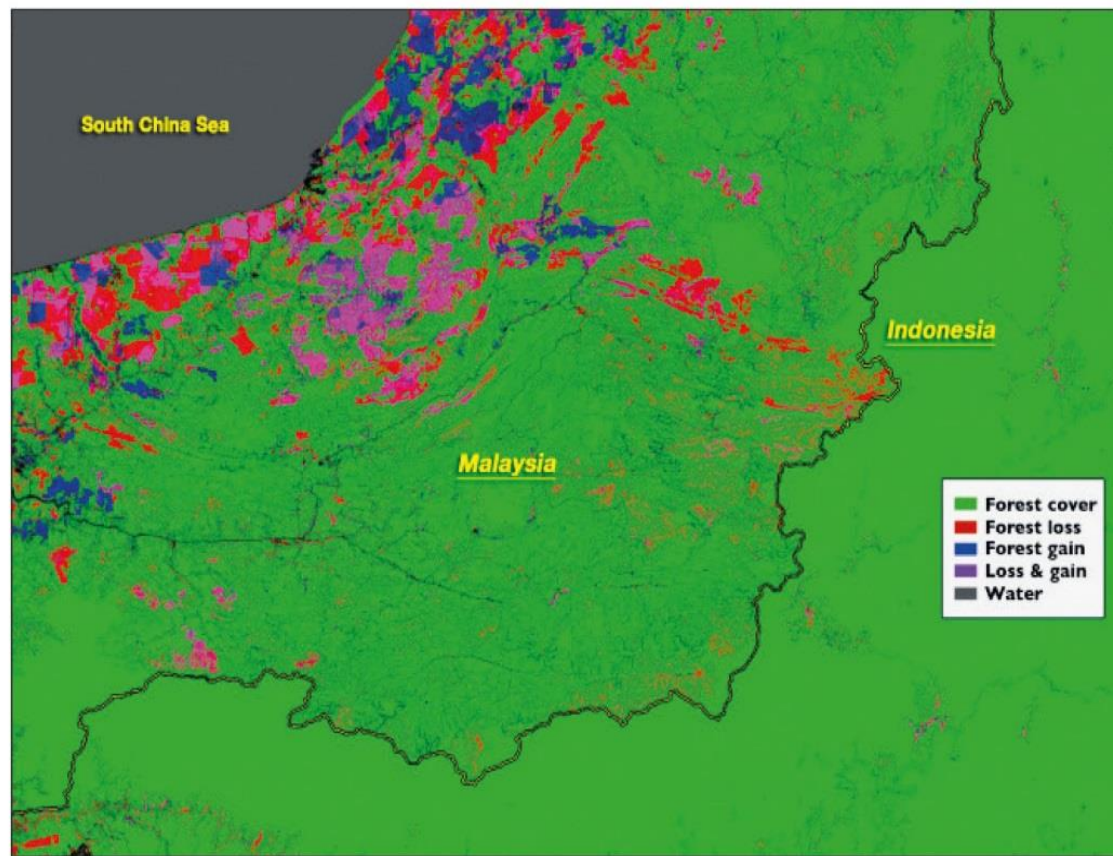
15 LIFE  
ON LAND



**Target 15.2** By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

## EARTH-OBSERVING SATELLITES CAN TRACK TREE COVER EXTENT AND FOREST LOSS AND GAIN OVER TIME

The border between Malaysia and Indonesia on the island of Borneo stands out in the Landsat-based map of forest disturbance. Red pixels represent forest loss between 2000 and 2012.



NASA Goddard, based on data from Hansen et al., 2013.

*"Mapping SDG-related data  
will improve measuring and  
monitoring of progress toward  
the SDG Indicators."*



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# Earth Observations and Geospatial Information

## Support to SDGs

An analysis by GEO and CEOS has identified specific Targets and Indicators that can be supported by Earth observations, summarized in Figure



	Population distribution	Cities and infrastructure mapping	Elevation and topography	Land cover and use mapping	Oceanographic observations	Hydrological and water quality observations	Atmospheric and air quality monitoring	Biodiversity and ecosystem observations	Agricultural monitoring	Hazards, disasters and environmental impact monitoring
1 No poverty										
2 Zero hunger										
3 Good health and well-being										
4 Quality education										
5 Gender equality										
6 Clean water and sanitation										
7 Affordable and clean energy										
8 Decent work and economic growth										
9 Industry, innovation and infrastructure										
10 Reduced inequalities										
11 Sustainable cities and communities										
12 Responsible consumption and production										
13 Climate action										
14 Life below water										
15 Life on land										
16 Peace, justice and strong institutions										
17 Partnerships for the goals										



# Free and open data is on the increase

- ❖ Some global initiatives are trying to offer free and open EO data, such as **Radiant Earth** (Bill Gates Foundation and ebay)
- ❖ The advent of the free and open data policy of Europe's Copernicus programme of multiple satellite data streams, the prospects for access to the EO data required by developing countries have improved considerably.
- ❖ Cloud storage and processing capabilities are making it simpler to handle and apply EO satellite datasets which can be large and complex.
- ❖ And space agencies are prioritizing efforts to further remove the burden on potential users by making more data 'analysis ready' (analysis ready data or ARD).





# IAEG-SDGs

## Working Group on Geospatial Information

- ❖ Provide expertise and advice as to how **geospatial information**, **Earth observations** and other new data sources can reliably and consistently contribute to the indicators.
- ❖ Review the agreed indicators and metadata through a 'geographic location' lens and identify existing geospatial data gaps, methodological and measurements issues.
- ❖ Propose strategies for undertaking methodological work on specific areas for improving **disaggregation by geographic location concepts**.



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# Conclusions/Recommendations

- ❖ Recognition of the importance of **Geospatial Information Technology** – SDG Indicators with a **geographic dimension**
- ❖ Geospatial Information Technology is a **cross-cutting technology** to help achieve SDGs. It is not a short-cut or panacea to development, but an **enabler/accelerator** to Development
- ❖ At global and regional levels: bring **Statistical** and **Geospatial** communities to work together: **Develop the Global Statistical-Geospatial Framework** (UN Statistical Commission & UN-GGIM)
- ❖ At national level: better cooperation/coordination between **NSOs** and **NMAs**: through the National Spatial Data Infrastructure (**NSDI**)



# ...Conclusions

- ❖ Building a **National Geospatial Information Infrastructure** is as important as building roads, telecommunications, etc.
- ❖ Two major opportunities for countries: **2030 Sustainable Development Agenda** (SDGs-recognition of the importance of the integration of statistical and geospatial information) and **2020 Round of Census** (to develop their statistical-geospatial infrastructure)
- ❖ Role of Governments and all stakeholders (**Partnerships**) in Mobilizing **Geospatial Information Technology** for Sustainable Development.



# Thank You!!

Email: amorlaaribi7@gmail.com

<https://www.gim-international.com/content/article/the-sdgs-indicator-framework-2>



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# Three Tiers of indicators

- ❖ **Tier I:** established methodology and data available (Global reporting is currently based on Tier I and a few Tier II indicators, where regional aggregates are possible)
- ❖ **Tier II:** established methodology but data not regularly produced by countries (Capacity building efforts will focus on Tier II)
- ❖ **Tier III:** no established methodology and standards or being developed/tested (Methodological work is taking place on approximately one third of the indicators)



# Geospatial and Earth Observations in Support of the Global Indicator Framework

- ❖ The IAEG-SDGs Working Group on Geospatial Information concluded that there are a number of indicators, including Tier I indicators, which would be much more relevant once disaggregated through geospatial information as required within the targets.
- ❖ Geospatial information and Earth observations are able to provide enabling methodologies and processes for disaggregation.
- ❖ In some cases, the disaggregation of national statistical data is only viable by use of geospatial information. This is acknowledged within the five guiding principles of the Global Statistical Geospatial Framework.



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# Cape Town Global Action Plan for Sustainable Development Data

❖ **Objective 3.4: Integrate geospatial data into statistical production programmes at all levels.**

❖ **Key Actions:**

- Promote the integration of modern geospatial information management systems within mainstream statistical production programmes by highlighting synergies between the two systems.
- Promote the integration of geospatial and statistical metadata.
- Encourage the use and adoption of technologies that promote integration of geospatial and statistical information.
- **Support the implementation of the Global Statistical and Geospatial Framework**, when it is adopted.



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