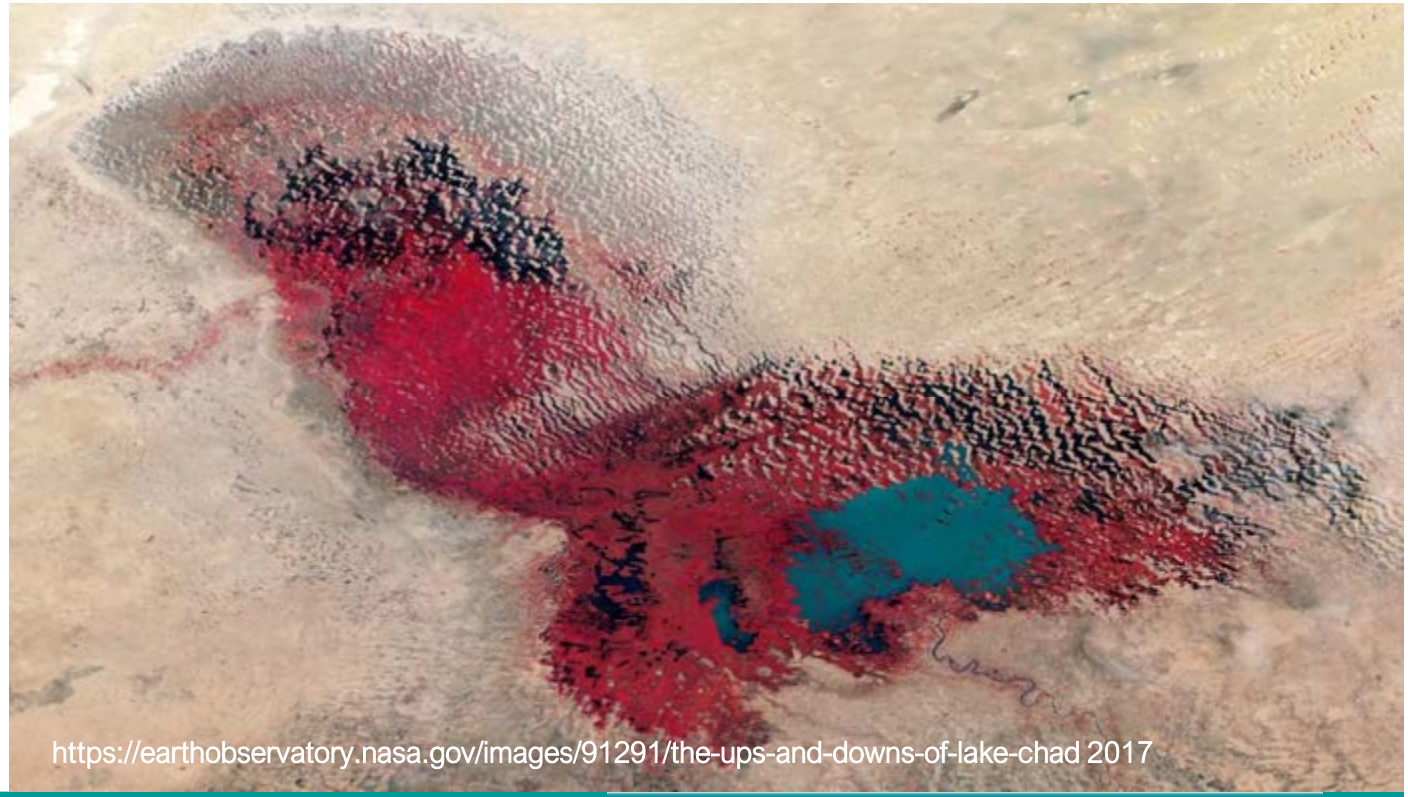
Innovations and Challenges in the Use of Open Remote-Sensing Data and Tools



https://earthobservatory.nasa.gov/images/91291/the-ups-and-downs-of-lake-chad 2017

Victoria M Gammino, PhD., MPH
Chief Science Officer

International Meeting on Emerging Diseases, ISID
Vienna, Austria 10 Nov. 2018

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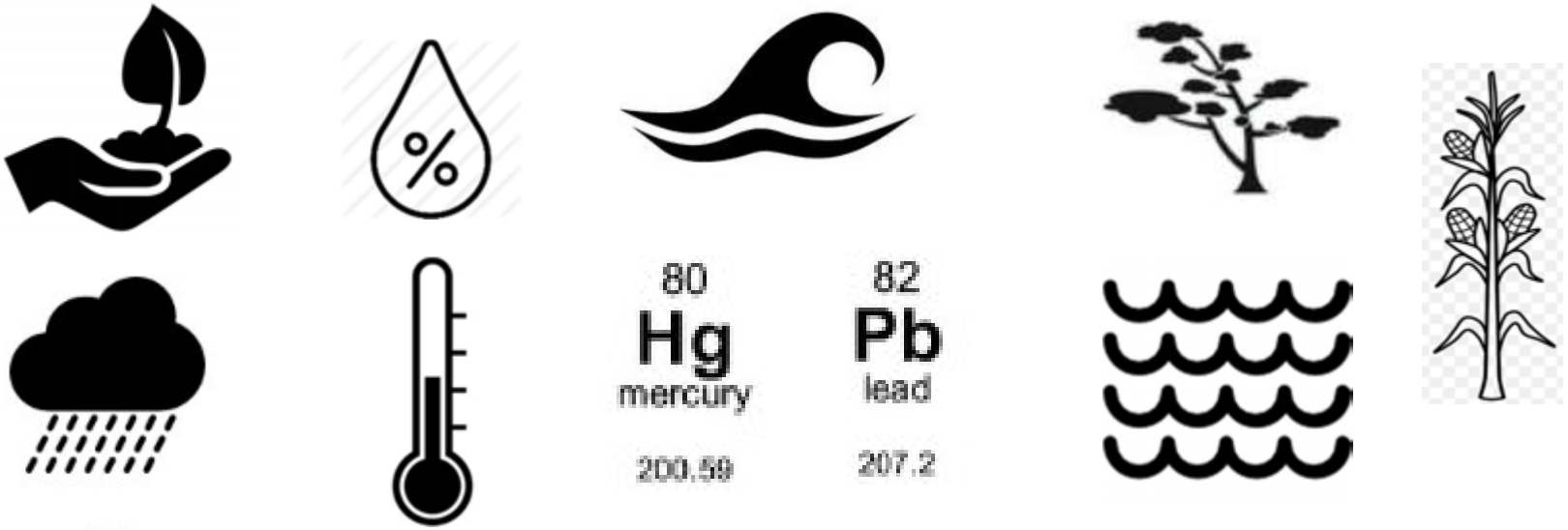
REMOTE SENSING: The science and at of identifying, observing and measuring an object without coming into direct contact (NASA)



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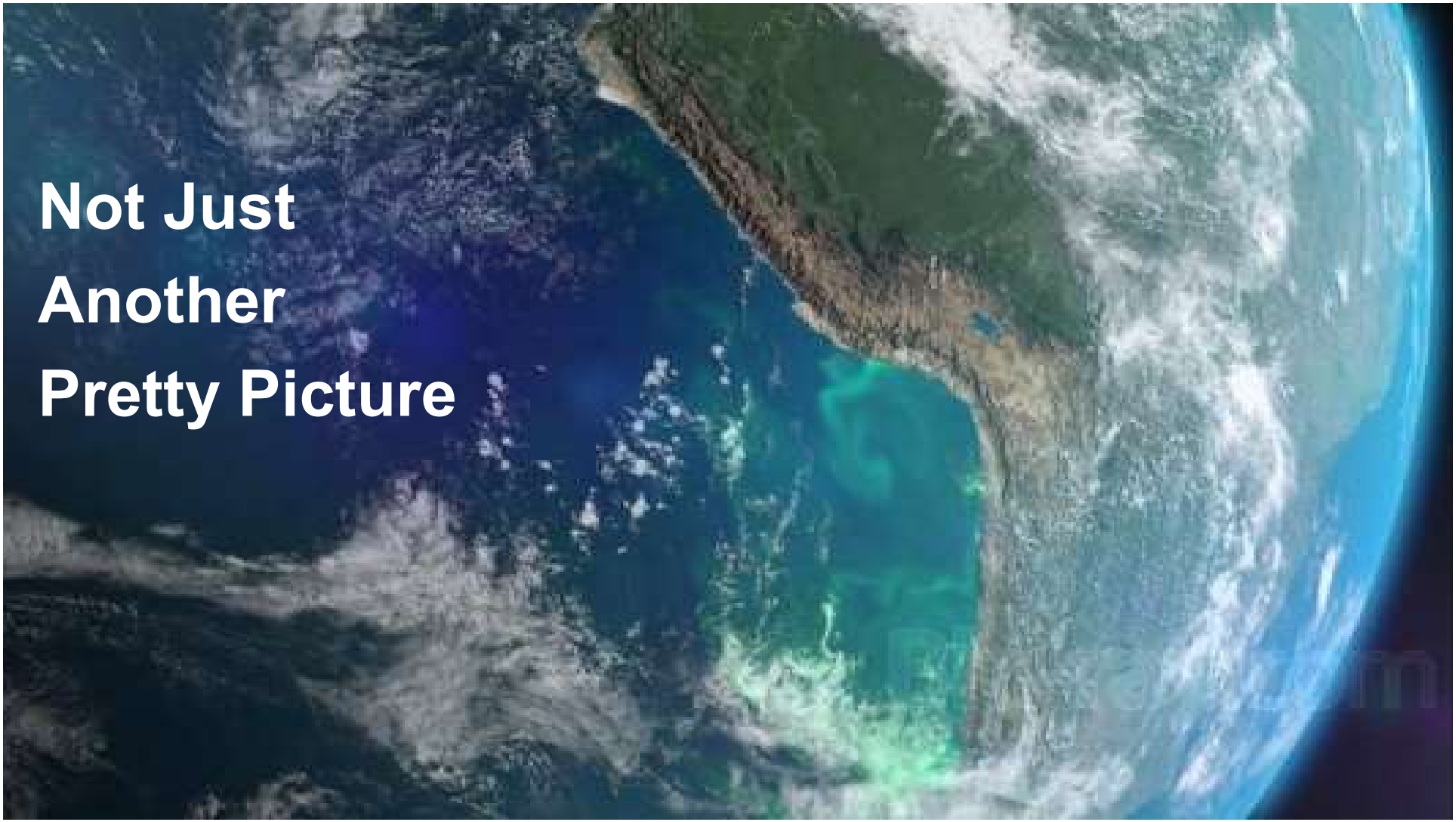
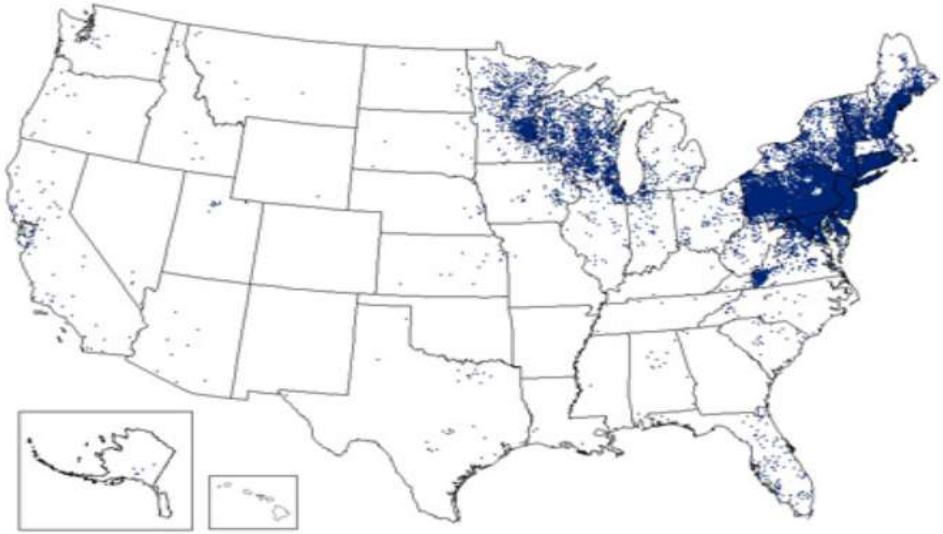

Not Just
Another
Pretty Picture

Centers for Disease Control and Prevention

CDC 24/7: Saving Lives, Protecting People™

Reported Cases of Lyme Disease – United States, 2016



1 dot placed randomly within county of residence for each confirmed case

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https://www.cdc.gov/lyme/stats/maps.html

Spatial Resolution

Spatial resolution refers to the pixel size of the satellite image. The lower the number (e.g., 1m) the finer the clarity of image)

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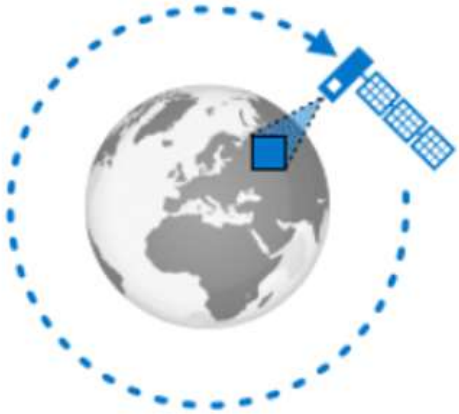
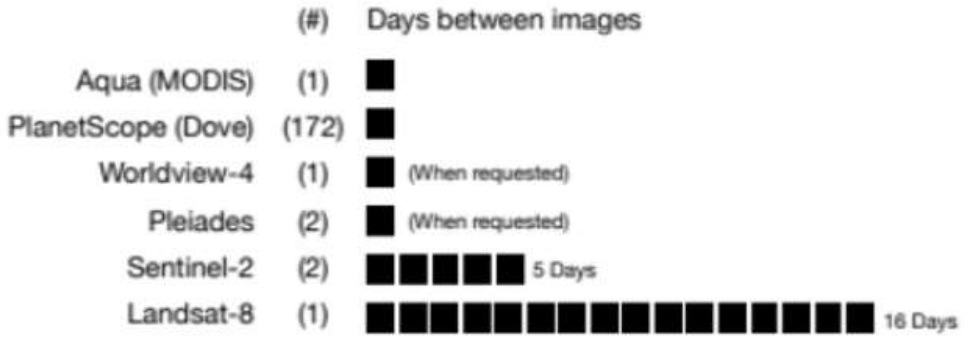
Temporal Resolution

Varies by satellite and describes the time it takes for an individual satellite to orbit and revisit a specific area.





OPPORTUNITIES

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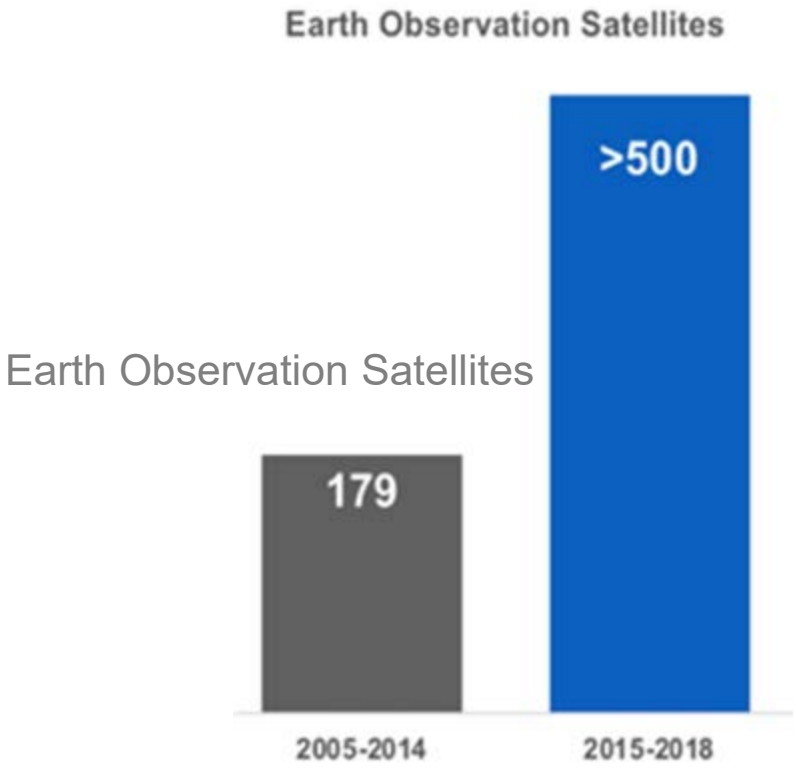
EARTH IMAGERY FOR IMPACT

Dramatic Increase In Imagery Supply



Satellite

Aircraft

Drone

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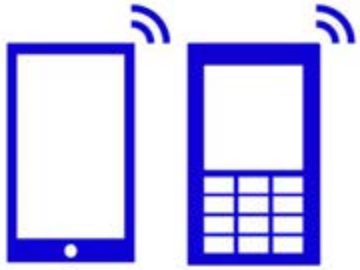
https://www.ucsusa.org

Internet of Things

RFID

Bluetooth

Biosensors



Mobiles and Tablets

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New Tools for Processing and Analysis

Cloud Computing

Machine Learning

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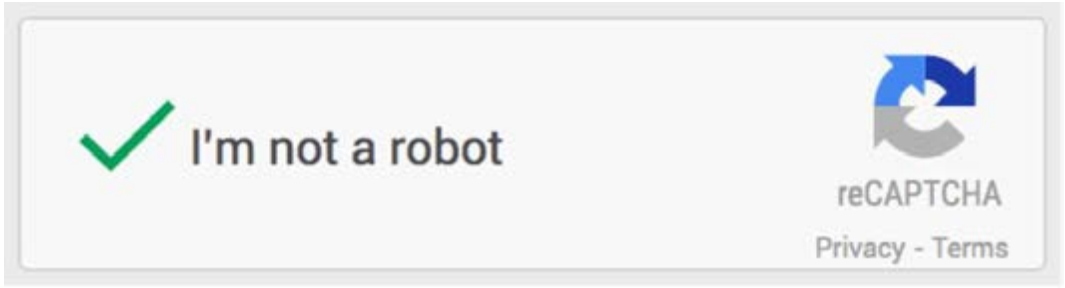
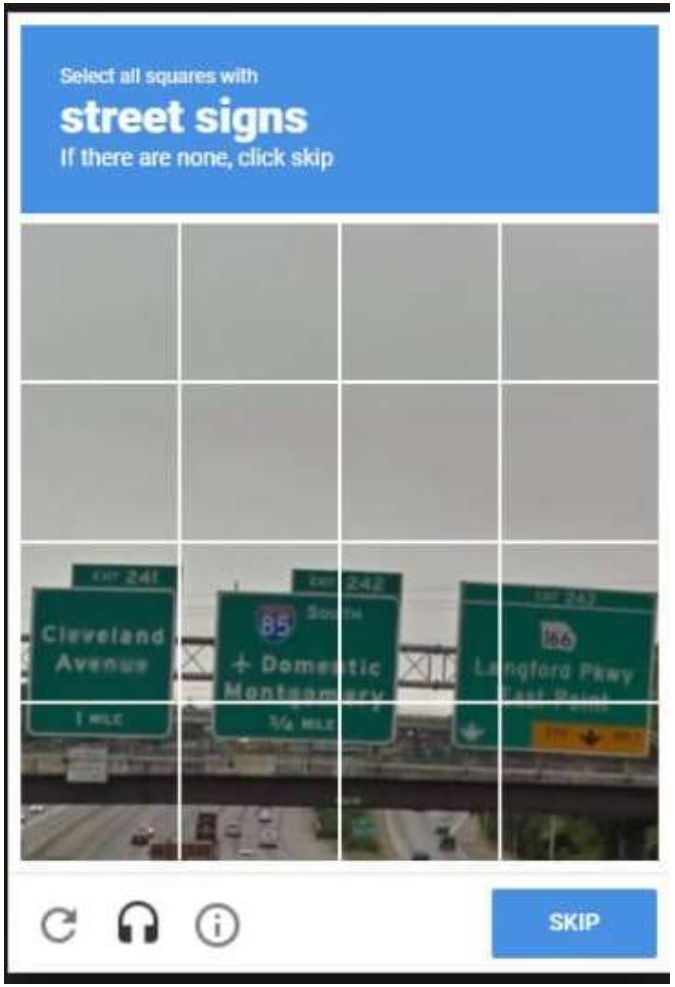
Computer Vision





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The Public Health Context

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CHALLENGES

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EARTH IMAGERY FOR IMPACT

The Dual Contexts of Earth Observation

Data producers vs consumers

Widening technology divide

Differential access despite “open”

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Data Discovery

- Innumerable sources of data
  - Velocity and volume
  - Storage space and costs
- Inherent complexity
  - Data standards
  - Catalogs/tagging
- Time, software, expertise

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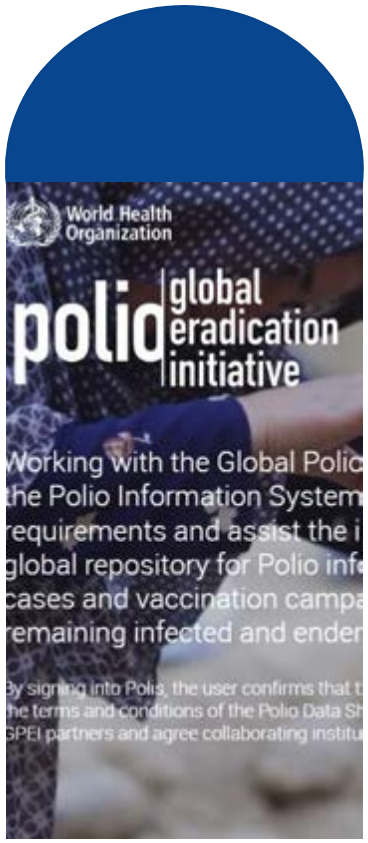
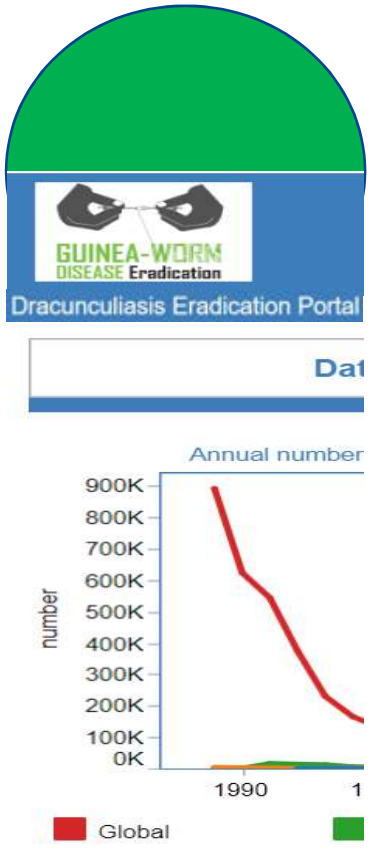
Data Silos





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Ground Truth

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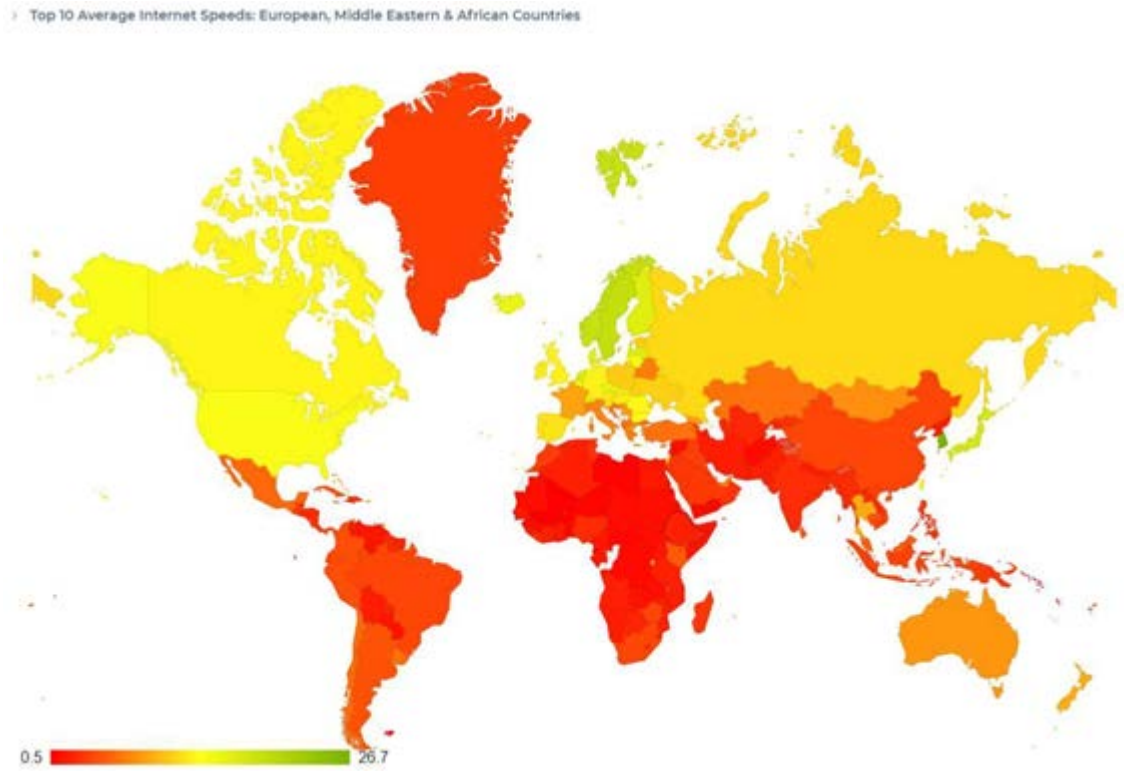
ICT Infrastructure

Upload/download speeds limit cloud computing

1GB via 14.4 modem ~ 167 hours

GSDI equally poor or non-existent



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https://www.fastmetrics.com/internet-connection-speed-by-country.php

LEADERS	CHALLENGERS	ASPIRANTS
Advanced NSDI	NSDI focused on collection and aggregation	Basic NSDI, under development or in planning
National Mapping Agency	Thematic layers (cadastral, topography, utilities and transport infrastructure) available every 6-12 months)	Thematic layers of lower resolution; updates lag 3-5 years
Space Agency	EO imagery generally above 3m Provides general access Integrated data centers and data clearinghouses	Little or no current EO data

https://geobuiz.com/geobuiz-2018-report.html

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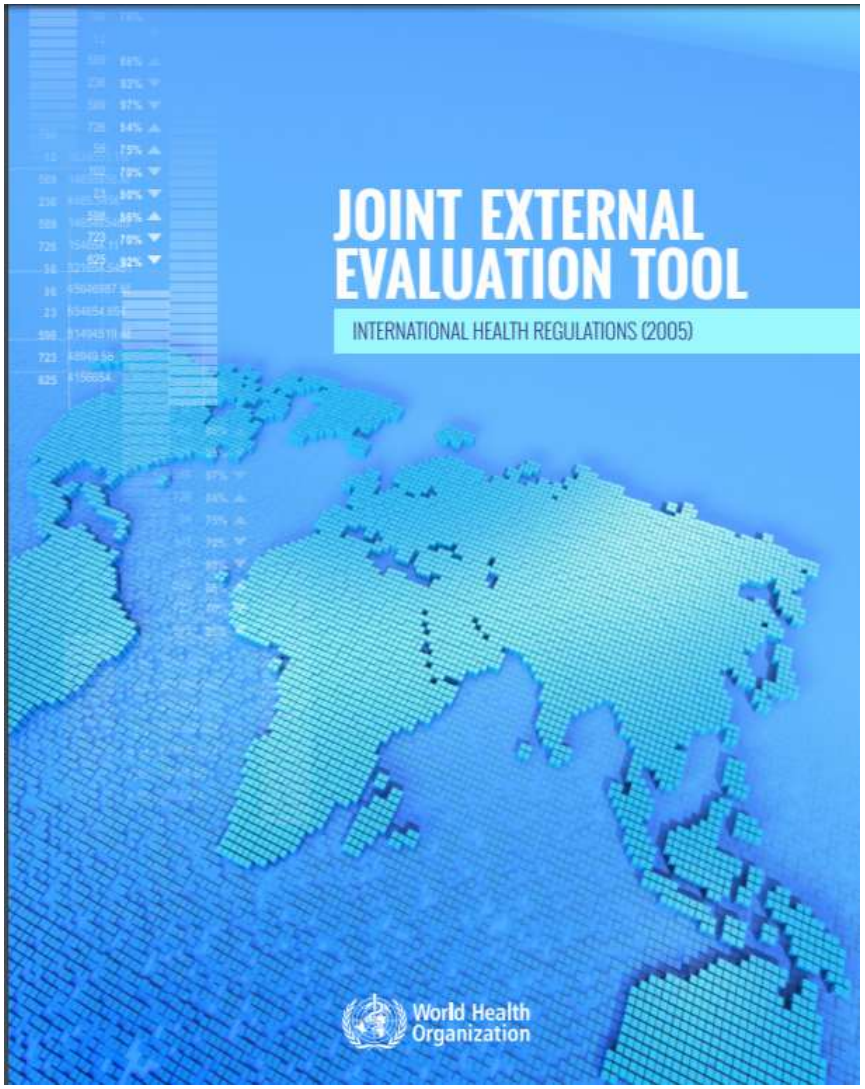

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WHAT NEXT

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EARTH IMAGERY FOR IMPACT

1 Invest in GDSI.

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2 Calculate the return on investment.

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3 Codify it.

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4 Lean further into open data.

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6 WELCOME FAILURE

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ADDITIONAL RESOURCES

https://www.radiant.earth/ ; http://geopode.world/ ;

Resources for Finding and Using Satellite Images by Toby McIntyre (Global Investigative Journalism Network) https://gijn.org/resources-for-finding-and-using-satellite-images/

Satellite Journalism: The Big Picture by Mark Corcoran (Reuters) https://reutersinstitute.politics.ox.ac.uk/our-research/satellite-journalism-big-picture

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WORKSHOP : Sunday Nov 11th 2018, 1145- 1345 hrs. Klimt1

Additional Slides, Instructional & Contact Information

Victoria M Gammino, PhD, MPH
Chief Science Officer
Radiant Earth Foundation
p: (202) 986-5471
w: www.radiant.earth
https://medium.com/radiant-earth-insights
https://twitter.com/OurRadiantEarth
https://twitter.com/VictoriaGammino

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Webinars and Tutorials

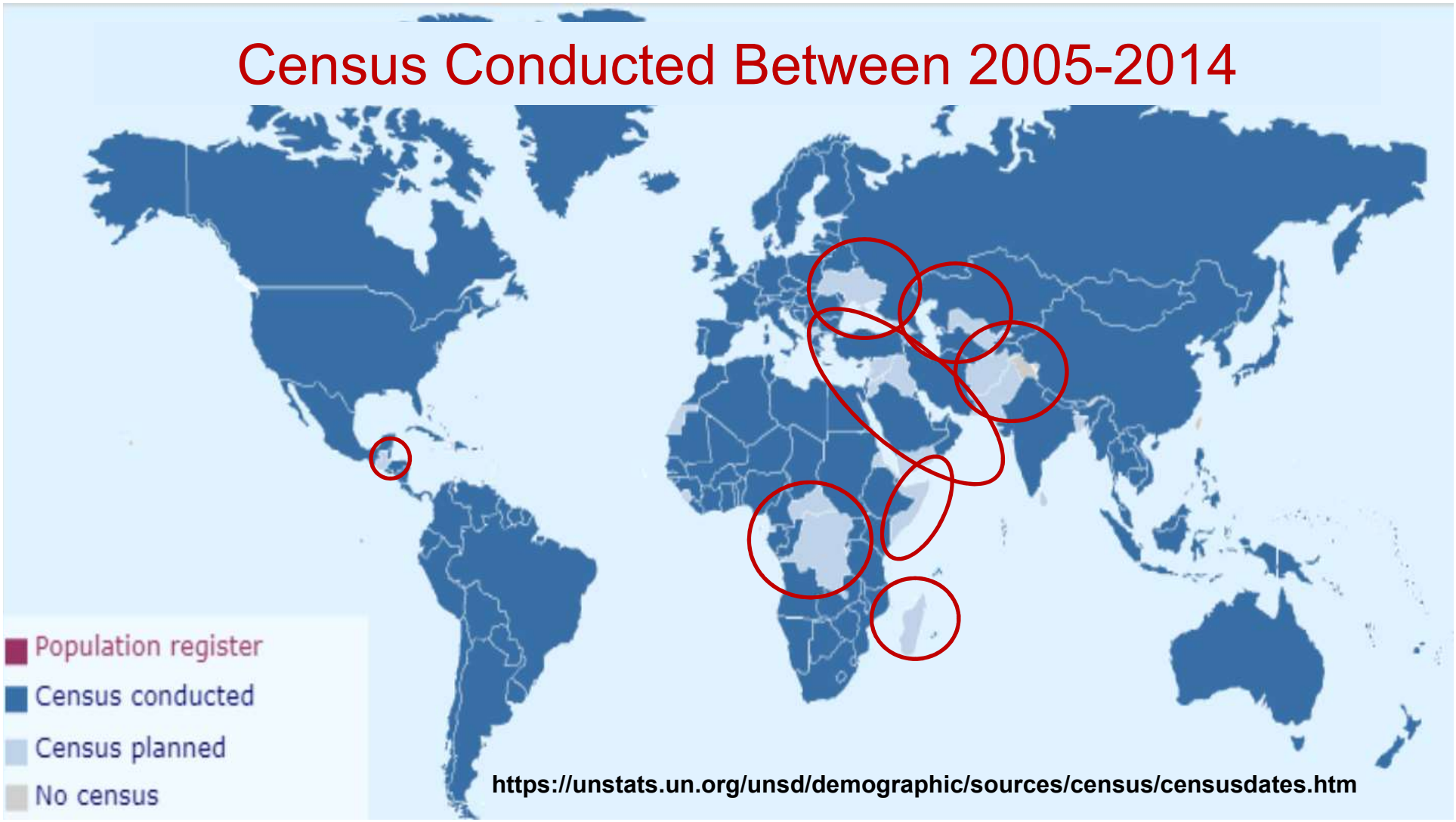
YouTube

https://www.youtube.com/channel/UCfEmhf6e_yOzvh5FzVDmZPg

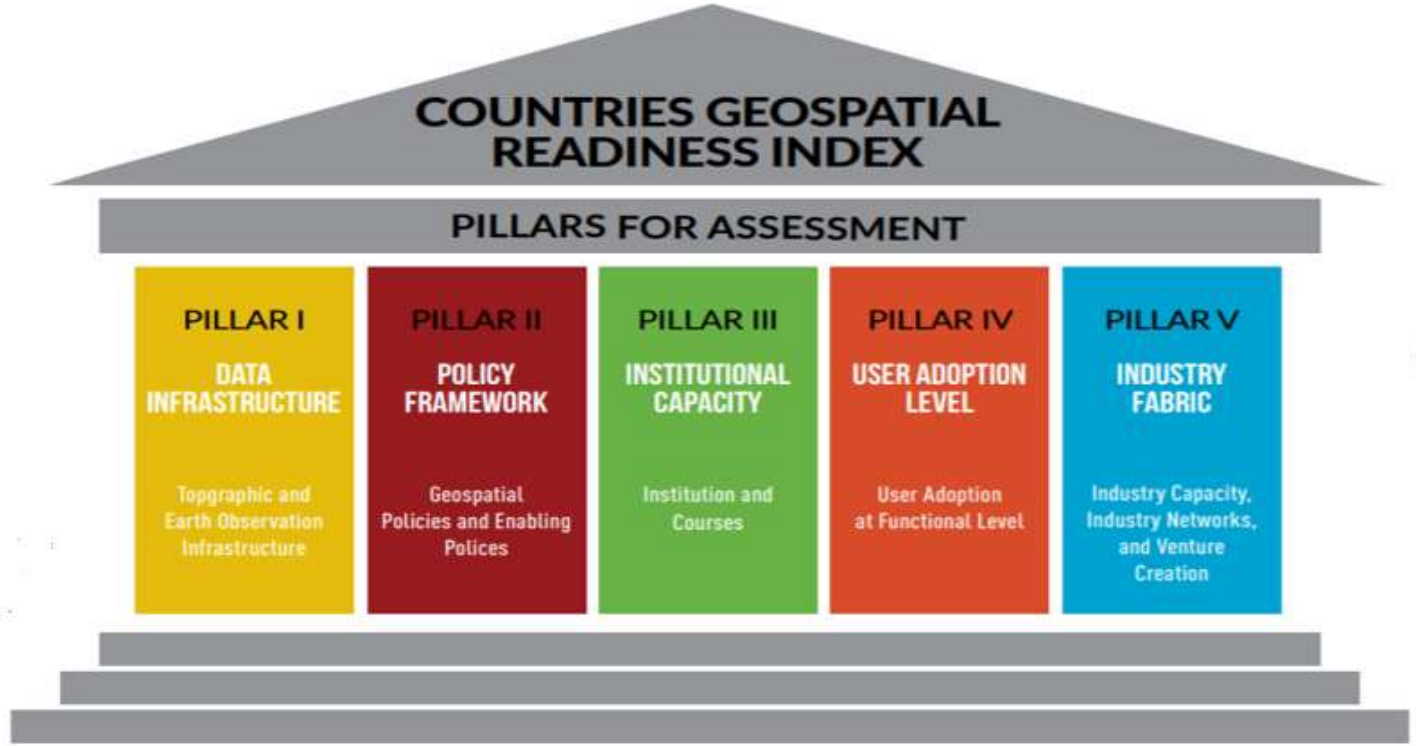
facebook

https://www.facebook.com/OurRadiantEarth/

Census Conducted Between 2005-2014



Country Geospatial Readiness Index- Assessment Pillars



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https://geobuiz.com/geobuiz-2018-report.html