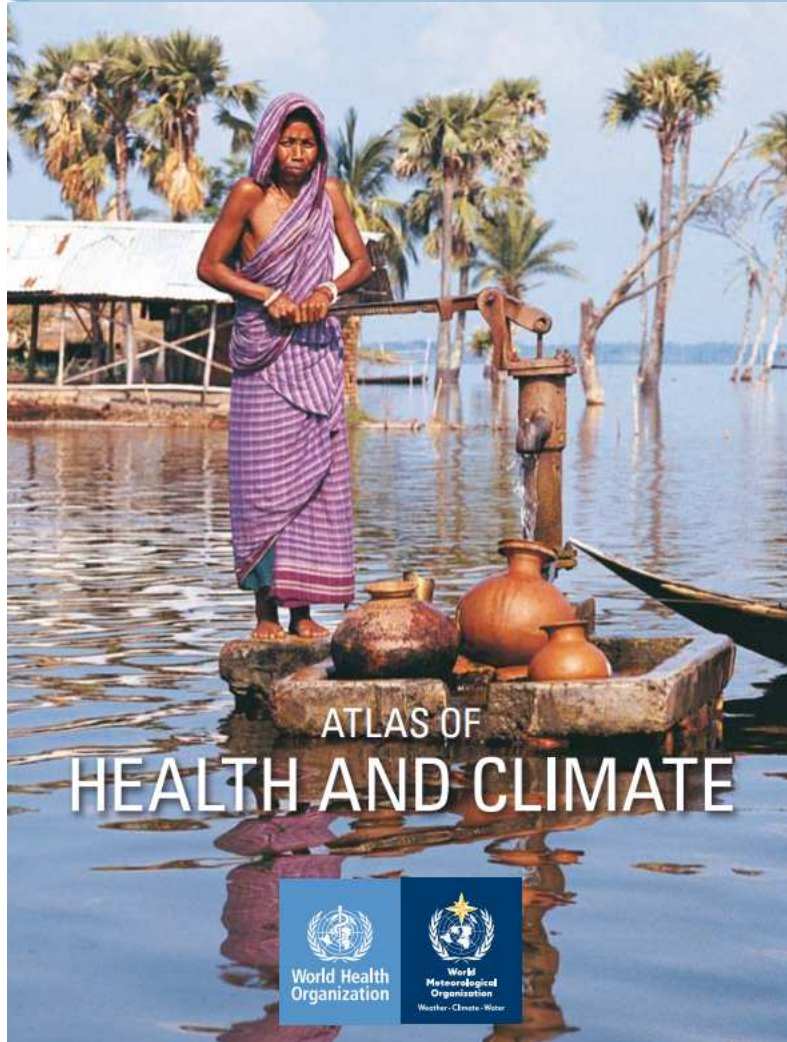


Geospatial info in SDG monitoring



10th meeting of the
Inter Agency and Experts
Group on SDG Indicators

Addis Ababa, 23 October 2019

Rifat Hossain (hossainr@who.int)
World Health Organization
Geneva, Switzerland

Use of geospatial info in everyday life



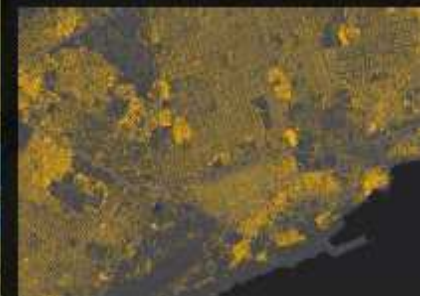
GIS | Where Technology and GIS Meet to Develop Public Health Solutions

Advantages of using satellite imagery

- Reaching the unreachable.
- Validating the gaps and between the team areas for vaccination.
- Analyzing equitable distance for the health facility catchment areas.
- As a supportive planning tool for vaccination campaigns.
- An effective support tool for monitoring and evaluation post campaign.
- To calculate the affected population.
- To track the movement of the vaccinators.
- Disease modelling.
- Mapping of inaccessible areas.

Children who are affected by polio may be..

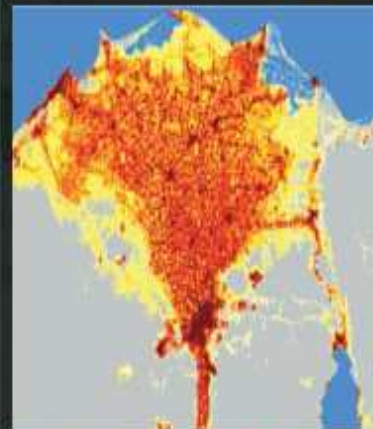
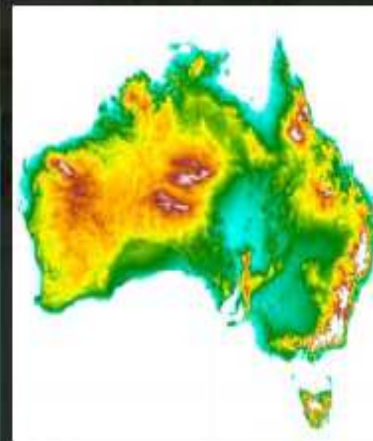
- Unreachable
- Inaccessible
- Hard to find



GIS | baseline geo-data

Baseline geo-data

- Sub national administrative boundaries.
- Spatial population datasets.
- Health facilities.
- Roads, airports, sea ports.
- Digital elevation mode (terrain).
- WHO legal approved base map to support various web application.



GIS | field data collection

Support various field data collection tools related to the collection of disease related geo spatial information

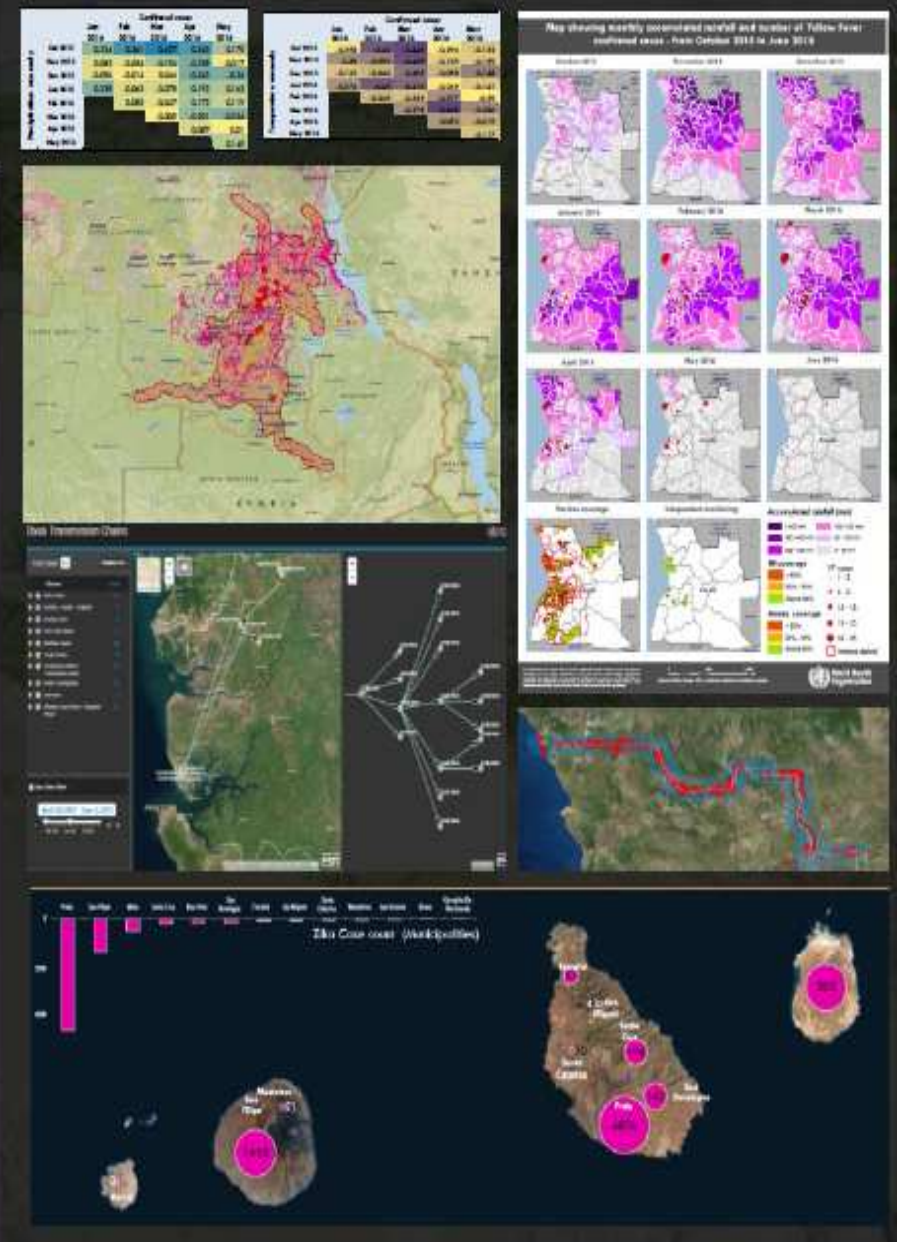
- Use of location- enabled web and mobile applications for data collection.
- The collection of data in the field – from household surveys to location of health facilities.
- Without robust knowledge coming in from the field where incidents, outbreaks, immunizations.



GIS | spatiotemporal analytics

Support various epi analysis using the spatiotemporal analytical tools

- Disease Mapping
- Geographic correlation studies
- Clustering, disease clusters, and surveillance.
- Risk mapping.

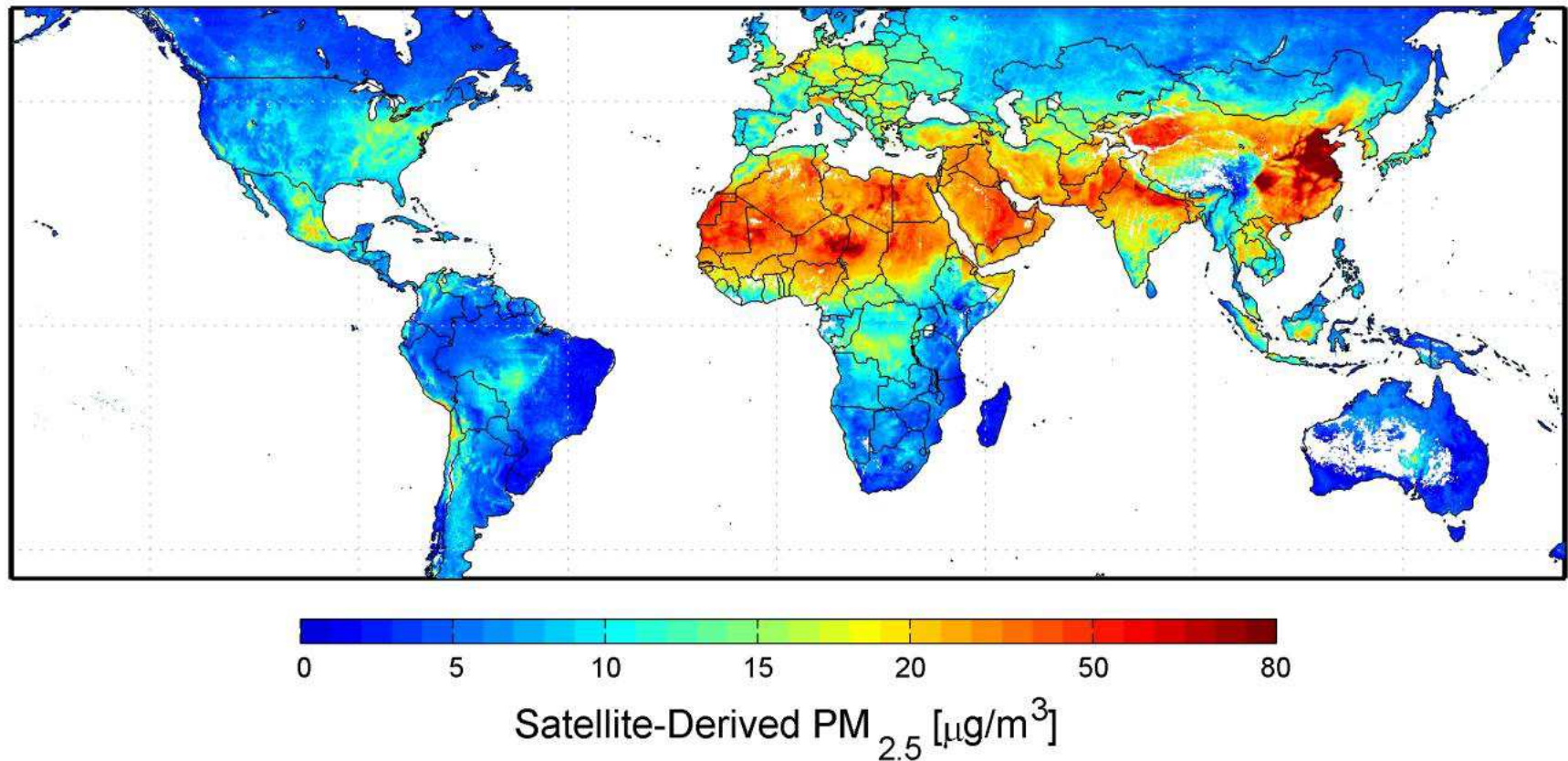


MDGs to SDGs...geospatial info

- MDGs...silent on sustainability etc.
 - High reliance on household surveys...cost efficient
 - Limit different aspects and timely reporting
 - Info on access to water sources, but not its quality
- Sustainable DGs...challenges are also opportunities:
 - EO data available for cost effective monitoring
 - Huge investments in EO: how can we best use them?
- Data revolution: integrate GI/EO, traditional data, etc.

EO, ground monitors, air transport models,

11.6.2 Annual mean levels of fine particulate matter (e.g. PM_{2.5} and PM₁₀) in cities (population weighted)



Application of EO in wastewater monitoring

SDG indicator: Proportion of wastewater safely treated

EO support for the indicators (pop density, landuse, landcover, etc.) integrated with other geospatial, survey and admin data

1)



EO integrated with other geospatial data to estimate waste water generation potential, releases and their impacts.


2)



High resolution satellite images can document the location of treatment facilities.

SDG3: interlinked with 14 SDGs

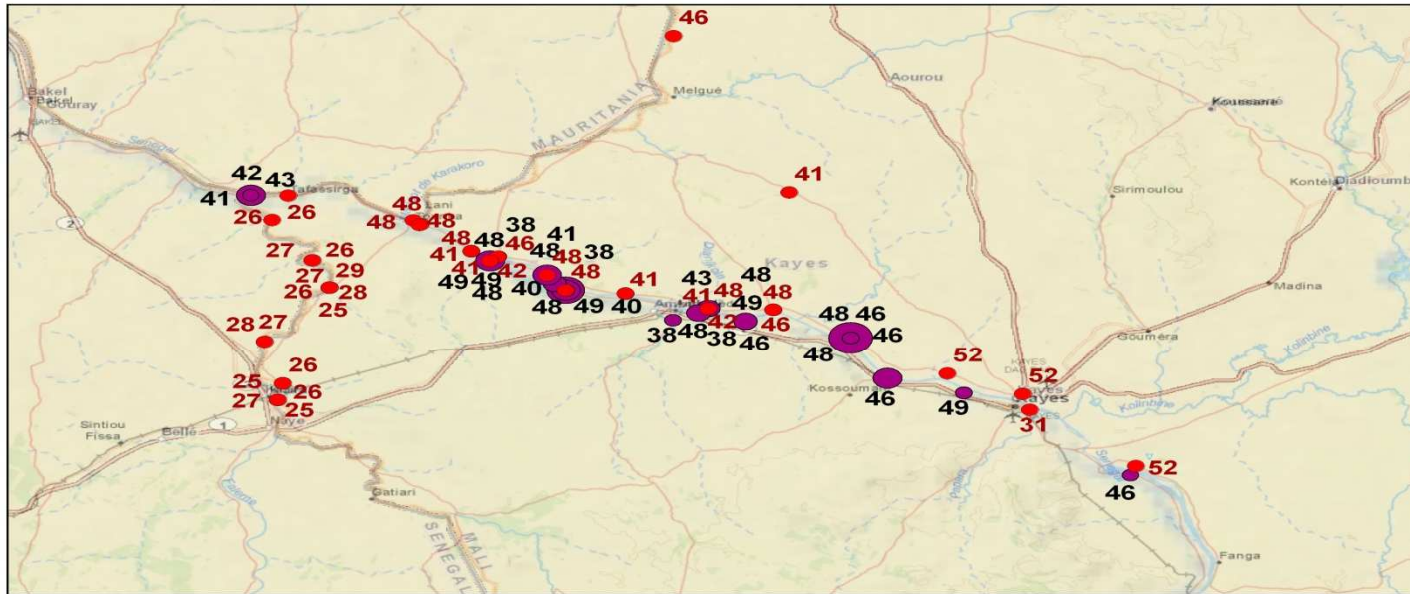
Goal 3 Example

GOAL 3: Ensure healthy lives and promote well-being for all at all ages	Interlinkages within the Global Framework
<h1 style="font-size: 2em; margin: 0;">3</h1> <h2 style="font-size: 1.5em; margin: 0;">GOOD HEALTH AND WELL-BEING</h2> 	<p>1 - 1.1, 1.2, 1.3, 1.4, 1.5, 1.a, 1.b 2 - 2.1, 2.2 4 - 4.1, 4.2, 4.3, 4.7 5 - 5.1, 5.2, 5.3, 5.6, 5.c 6 - 6.1, 6.2, 6.3, 6.4, 6.a, 6.b 8 - 8.1, 8.5, 8.6, 8.7, 8.8 9 - 9.1, 9.c 10 - 10.1, 10.2, 10.3, 10.4, 10.7 11 - 11.1, 11.2, 11.3, 11.5, 11.6, 11.7, 11.b 12 - 12.4 13 - 13.1, 13.3 14 - 14.1, 14.2 16 - 16.1, 16.2, 16.3, 16.6, 16.7, 16.9, 16.10, 16.a 17 - 17.13, 17.16, 17.18</p>
<p>Analyzing interlinkages of the Global Framework allows us to map out which targets are most closely linked, and to then examine what implications this may have on policy and statistics.</p>	



Geospatial data in cholera mapping (2010)

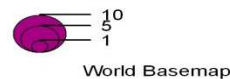
Mali: Epidémies de choléra de 2005 et 2008



Cas en 2005

- Cas de 2005
- World Basemap

Nombre de cas en 2008

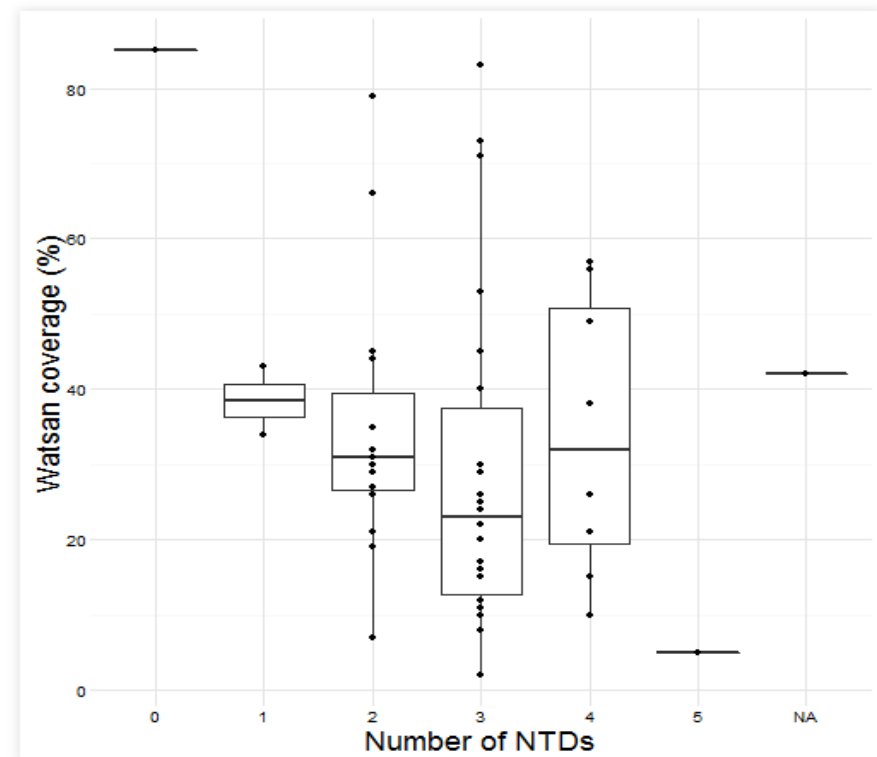
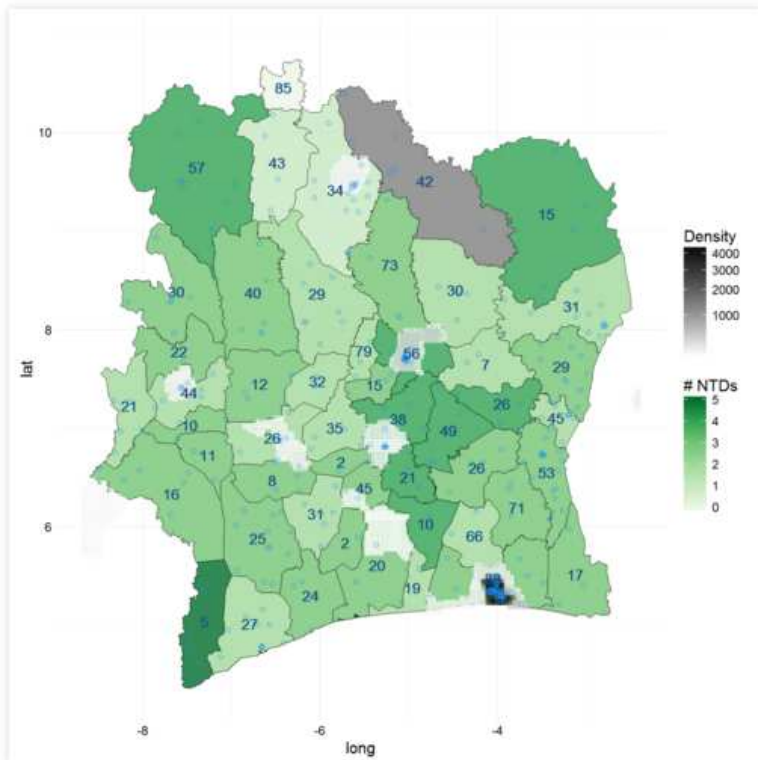


Les valeurs sur la carte représentent les semaines où les cas ont été enregistrés
Rouge: 2005
Noir: 2008

Cholera outbreaks in Mali along the main river: combining geospatial DHS data and cholera data

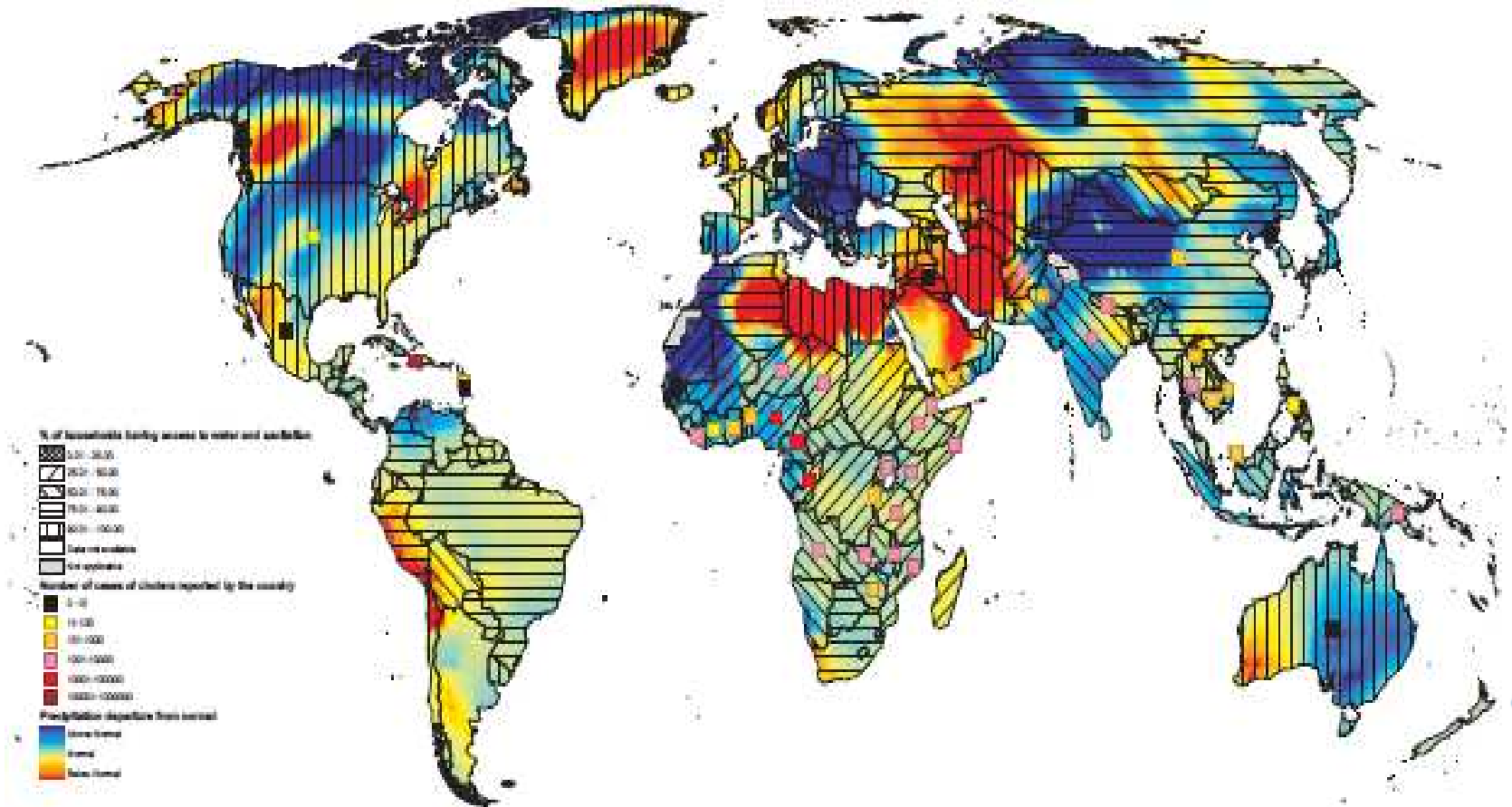
Neglected Tropical Diseases: WASH inequality

NTD endemicity higher in clusters of lower WASH access (2016)



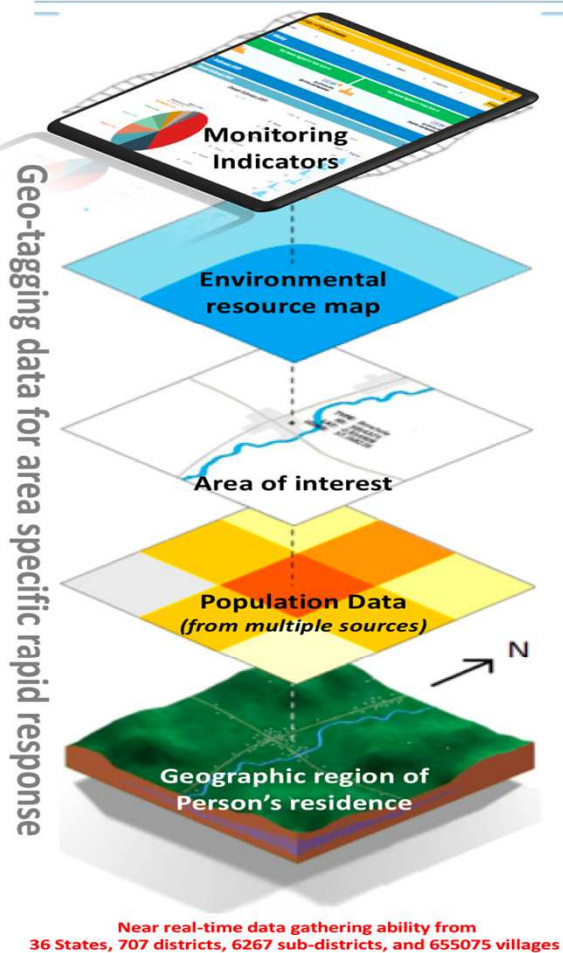
Linking water with climate and health

<http://www.who.int/globalchange/publications/atlas/report/en/index.html>



Cholera outbreaks in areas with poor WASH coverage and greater precipitation anomalies (2010)

Data integration for policy and decision making



Integrated Health Surveillance Portal
Integrated Disease Surveillance Programme
 Ministry of Health and Family Welfare

Near real-time, web-enabled, person-centric, national health surveillance portal to track data for routine surveillance, early warning signals, outbreak investigation, special surveillance, facility and lab reporting status, media scanning, customized dashboards

Home
About ▾
Manage IDSP Forms ▾
Special Surveillance ▾
Reports ▾
View Map
IHR ▾

Data entry from phone or computer from anywhere in India

	Number of cases				Grand Total	Number of Death cases * (Please enter in listing of death cases in next section)		
	≤ 5 Yr	> 5 Yr	Total	Total		Male	Female	Total Death
ARI/Influenza Like Illness(ILI)	22	0	22	2	24	0	0	0
ARI/Severe Acute Respiratory Infection (SARI)								
Acute Diarrhoeal Disease								

Nation-wide monitoring for compliance

S#	Action	Name	Provisional Diagnosis	Test Performed	Date of Onset	Date Of Sample Collection	Type Of Sample	Specimen Id	Date of Test Performed	Results
1	Edit	Raja M L	Leptospirosis	IgM ELISA	03/01/2018	18/01/2018	Blood-Plasma	a12344		
2	Edit	Raja M L	Leptospirosis	IgM ELISA	05/01/2018	20/01/2018	Blood-Plasma	a12344		
3	Edit	K.Lost	Measles	IgM ELISA	04/01/2018	10/01/2018	Biopsy (mention type)	8738ewe		
4	Edit	Rajeshwar M	Dengue	NS1 by ELISA	10/01/2018	14/01/2018	Blood Film	a123		

System generated reports

Typoid - Total: 350 Cases

Week wise | Month wise

Lab confirmed cases

Pathogen-wise Summary

21.7%	29.7%	25.7%	22.9%
Salmonella paratyphi A	Salmonella paratyphi B	Salmonella paratyphi C	Salmonella typhi

GPS Location of cases

Aggregate report

Export Date	28/08/2017	04/09/2017	11/09/2017	18/09/2017	
P	L	P	L	P	L
0	0	1	1	1	2

THANK YOU

Use of all available and relevant data is the real data revolution and integrating them into the monitoring framework will be transformational...