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Filling the data gaps for air quality management

JULIA BUCKNALL

THE WORLD BANK

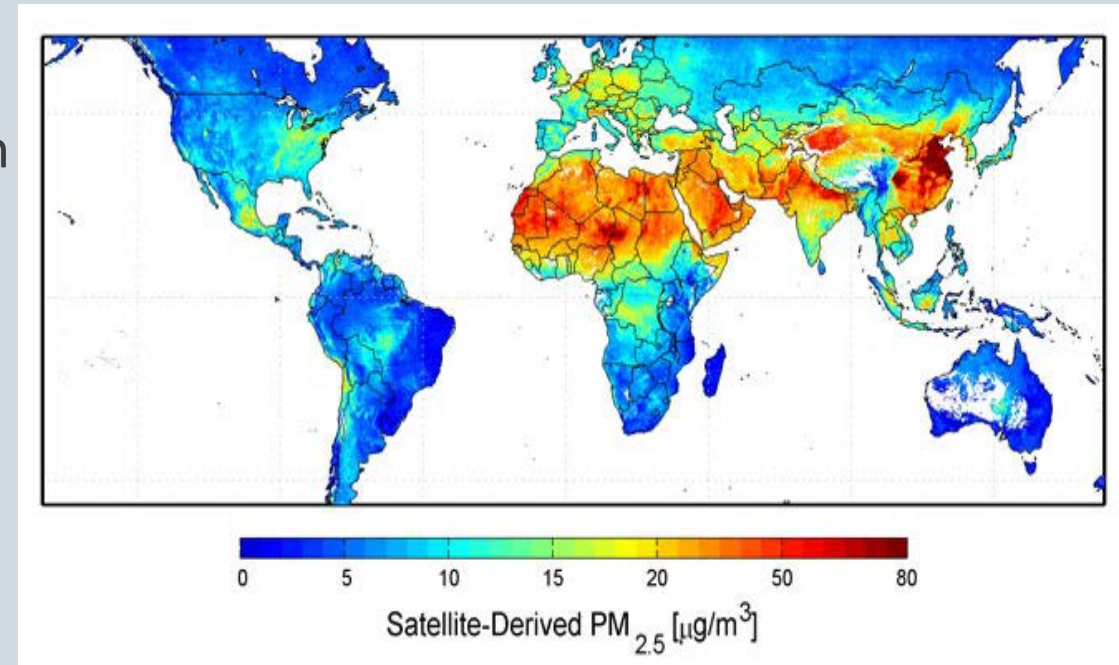
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U.S. EPA

The current state of the air

- Ambient air pollution is a leading cause of sickness and death worldwide – ranked in the top 10 health risk factors in the Global Burden of Disease (Lancet, 2015)
- Most of those deaths occur in developing countries and result in a heavy economic burden (>3% of GDP in some countries)
- Other impacts: visibility, ecosystems
- Air pollution is constituted of a complex mixture of gases and particles.
- Particles smaller than 2.5 micrometers – or $PM_{2.5}$ – are a primary pollutant of concern in many countries due to wide-ranging health effects and formation from many sources

Satellite image showing average $PM_{2.5}$ levels from 2001-2006. Reference: van Donkelaar et al, 2010.



Measuring the air in low and middle income countries

- Measurement of air pollution is critical to support successful air quality management
- Air monitoring practices worldwide range widely:
 - Prevalence: No air monitoring at all to mature networks
 - Quality: Inconsistent training, equipment management, and quality assurance to rigorous air quality monitoring.
 - Data availability: If measured, limited data availability to real-time updates to accessible databases
 - Support: Low priority to mission critical

"If you cannot measure it, you cannot improve it.." - Lord Kelvin

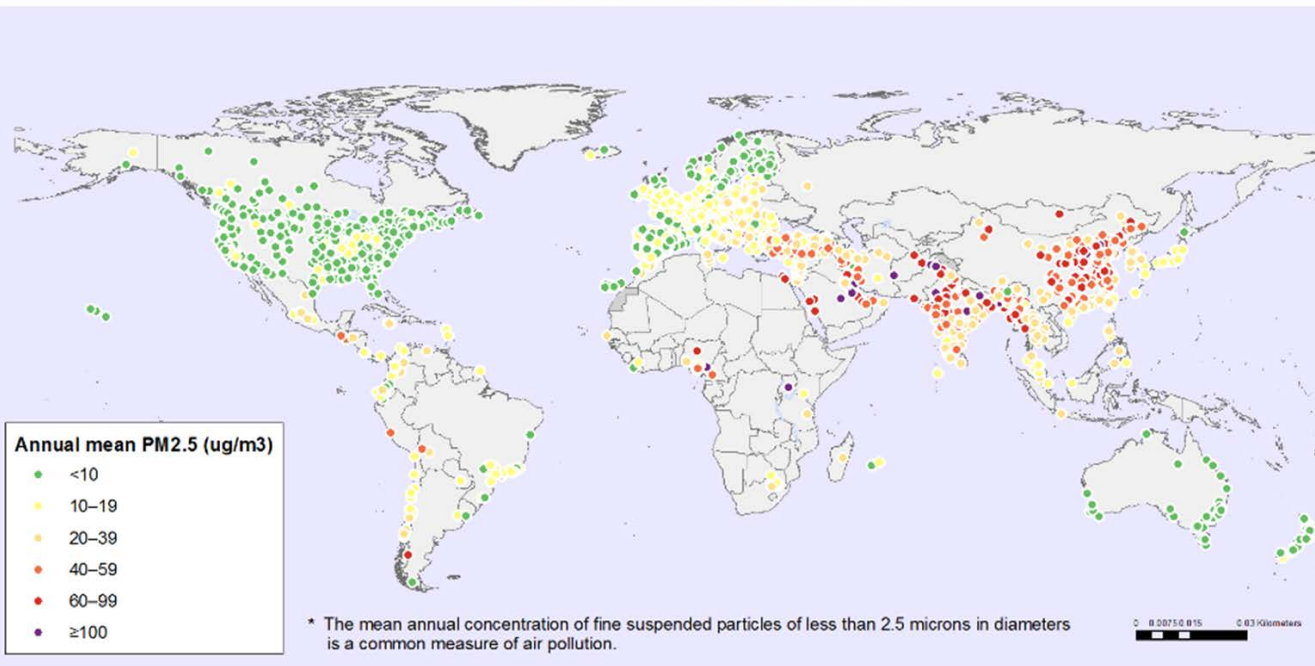
"Nigeria's Port Harcourt covered in mystery cloud of soot"

BBC News
4 March 2017



Measuring the air in low and middle income countries

Concentration of particulate matter with an aerodynamic diameter of 2.5 µm or less (PM2.5) in nearly 3000 urban areas*, 2008–2015



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Information Evidence and Research (IER)
World Health Organization



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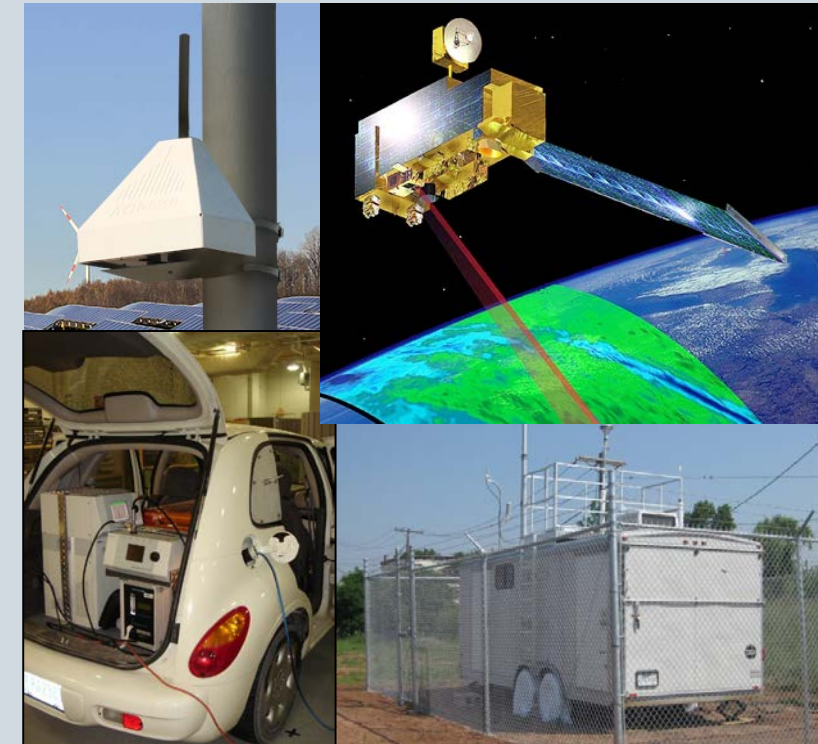


Significant air quality data gaps in many countries

Source: waqi.info

Measuring the air

- Meanwhile, a growing diversity of measurement technologies has emerged:
 - Small air sensor technology – stationary networks, portable monitors
 - Mobile monitoring platforms
 - Satellite remote sensing data
- Can these technologies help improve knowledge of air quality conditions and support air quality management? How accurate / reliable / suitable are they?



Filling the Gaps Workshop

- World Bank and US EPA co-hosted a workshop in July 2017 to discuss the state of air monitoring and new technologies
 - 2 ½ day event in Washington, DC
 - Approximately 50 invitees, including representatives from government institutions, private sector, multilateral organizations, academia
- Presentations were given on:
 - Country and international organization perspectives
 - Technical experts – ground-level monitoring, satellite remote sensing, quality assurance, data management
 - Highlights of innovative projects
- Information and presentations available:
<http://www.worldbank.org/en/events/2017/07/25/filling-the-gaps-improving-measurement-of-air-quality-in-developing-countries-workshop>

White Paper/Discussion Draft



- Provides framework to consider the spectrum of air quality technologies and recommendations for countries at different phases of AQ monitoring.
- Structure:
 - Chapter 1: Problem Statement and Overview
 - Chapter 2: Factors Influencing Air Quality Monitoring in Low and Middle Income Countries
 - Chapter 3: Technical Steps and Future Research Needs to Meet LMIC goals
 - Chapter 4: Sustainable and Successful Monitoring: The Human and Institutional Dimension
 - Chapter 5: Recommendations
- Needs review and input from user community

Document available at: <http://www.worldbank.org/en/events/2017/07/25/filling-the-gaps-improving-measurement-of-air-quality-in-developing-countries-workshop>

Filling the Gaps Workshop

- Some key messages in the report:
 - Measurement strategies must be selected to fit a purpose, and should be linked to air quality management goals.
 - A successful, sustainable monitoring strategy requires more than equipment.
 - The purchase price of monitoring equipment is not the full cost.
 - Quality assurance planning, including data management, is one of the most critical components of an air measurement strategy.

Thank you!



For more information:

Yewande Aramide Awe: yawe@worldbank.org

Gayle Hagler: hagler.gayle@epa.gov