

ESA: Sentinel family, altered by presenter
http://www.esa.int/ESA_Multimedia/Images/2014/04/Sentinel_family



The Guardian, 26.11.2019:
<https://guardian.ng/news/lagos-where-residents-live-in-dread-of-flooding/>

OPPORTUNITIES AND CHALLENGES: SPACE-BASED TECHNOLOGIES FOR FLOOD MANAGEMENT IN URBAN AFRICA

An qualitative study in collaboration with the
Regional Academy on the United Nations &
United Nations Office for Outer Space Affairs

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United Nations International Conference on
Space-based Technologies for Disaster Risk
Reduction



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UNITED NATIONS
Office for Outer Space Affairs

AGENDA

- 1. Research Method**
- 2. Current Situation**
- 3. Benefits of Space-Based Technology**
- 4. Challenges: What - Who - How**
- 5. Potential Solutions**

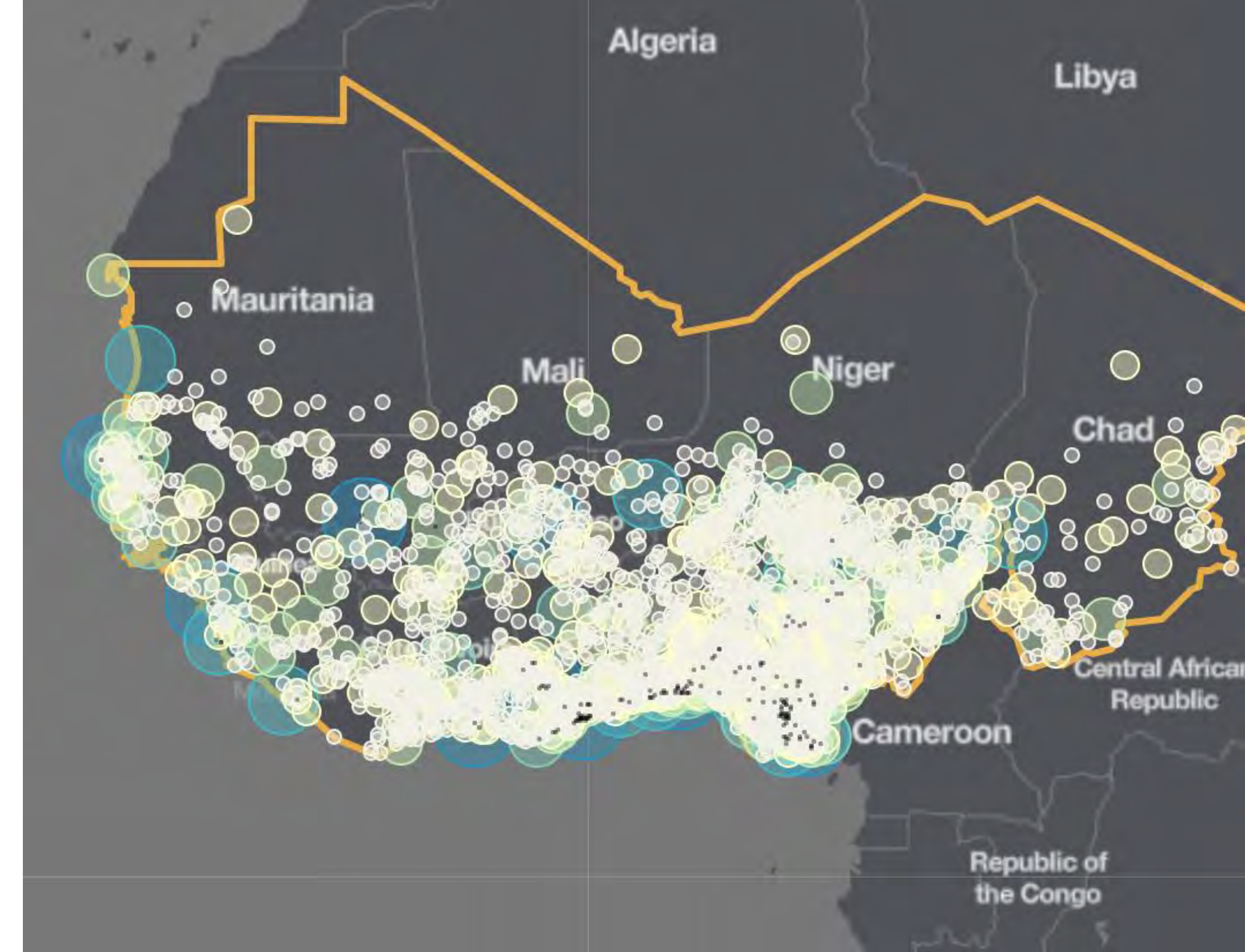
HOW DID WE CONDUCT OUR RESEARCH?

- 9 semi-structured interviews with experts on space-based technologies, flooding, urban planning, risk management and emergency response.
- Analyzed through the reductive approach of a qualitative content analysis

| UN Organizations | Governmental Organizations | Private Corporation / Academia |
|---|--|---|
| UN-SPIDER (UNOOSA) | African Union Commission | Planet Labs Inc. |
| UNESCO Regional Office for Eastern Africa | National Space Research and Development Agency (NASRDA), Nigeria | University of Salzburg (as independent UN Consultant) |
| World Bank | National Disaster Management Organization (NADMO), Ghana | Fraunhofer Institute (former UN and EU employee) |

CURRENT SITUATION

- Megatrend Urbanisation. Africa's urban population is among the fastest-growing in the world and is facing increasing flood risks
- The socioeconomic impacts of flooding are huge
- West Africa: 3.8 Billion Dollars a year due to erosion, flooding and pollution, which are 10.4 Million Dollars every day
- People die, lose their homes and cannot work.
- Information for preventive measures is often too late, not enough or not at all



Urbanisation in the SWAC Region: africapolis.org

Sources:

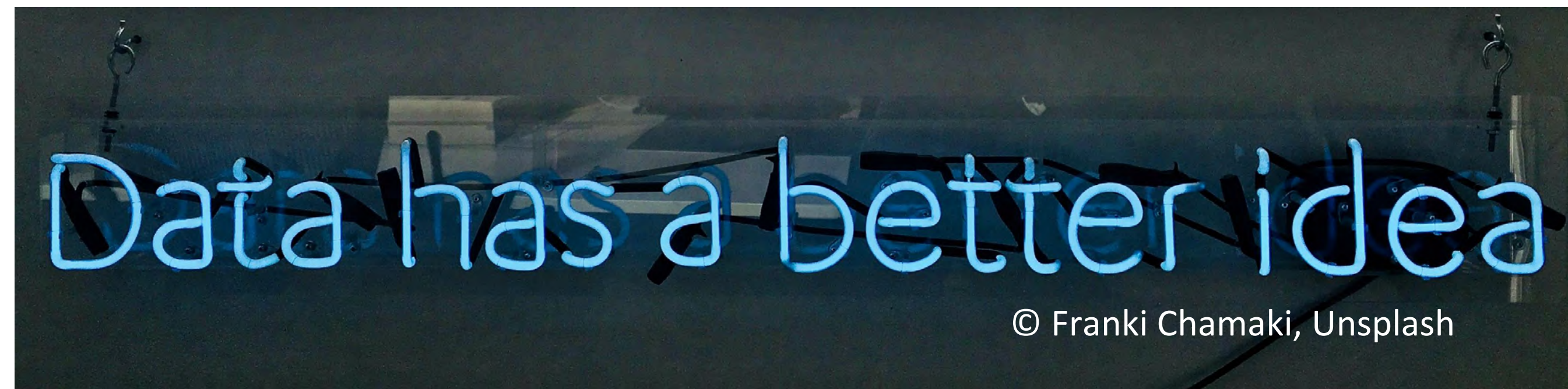
- UN Habitat (2020): COVID-19 in African Cities: Impacts, Responses and Policies.
- Salami, R.O., Von Meding, J.K. & Giggins, H. (2017): Urban settlements' vulnerability to flood risks in African cities: A conceptual framework, *Jàmbá: Journal of Disaster Risk Studies* 9(1), a370
- World Bank (2019): The Cost of Coastal Zone Degradation in West Africa : Benin, Cote d'Ivoire, Senegal, and Togo (English)

HOW CAN SPACE-BASED TECHNOLOGY IMPROVE LIFE?

- There is numerous technology available to
 - analyze and document urban floods
 - prevent the negative impacts of floods
- e.g.
1. UN-SPIDER
 2. The International Charter Space and Major Disasters
 3. EU Copernicus Emergency Management Service
 4. Sentinel Asia

BENEFITS

- Accurate
- Near real time
- Large areas
- Independent of national borders



CHALLENGE: WHAT?

- Access to meaningful data
- Publicly available data and privately available data
- Compatibility of different data to create one data product



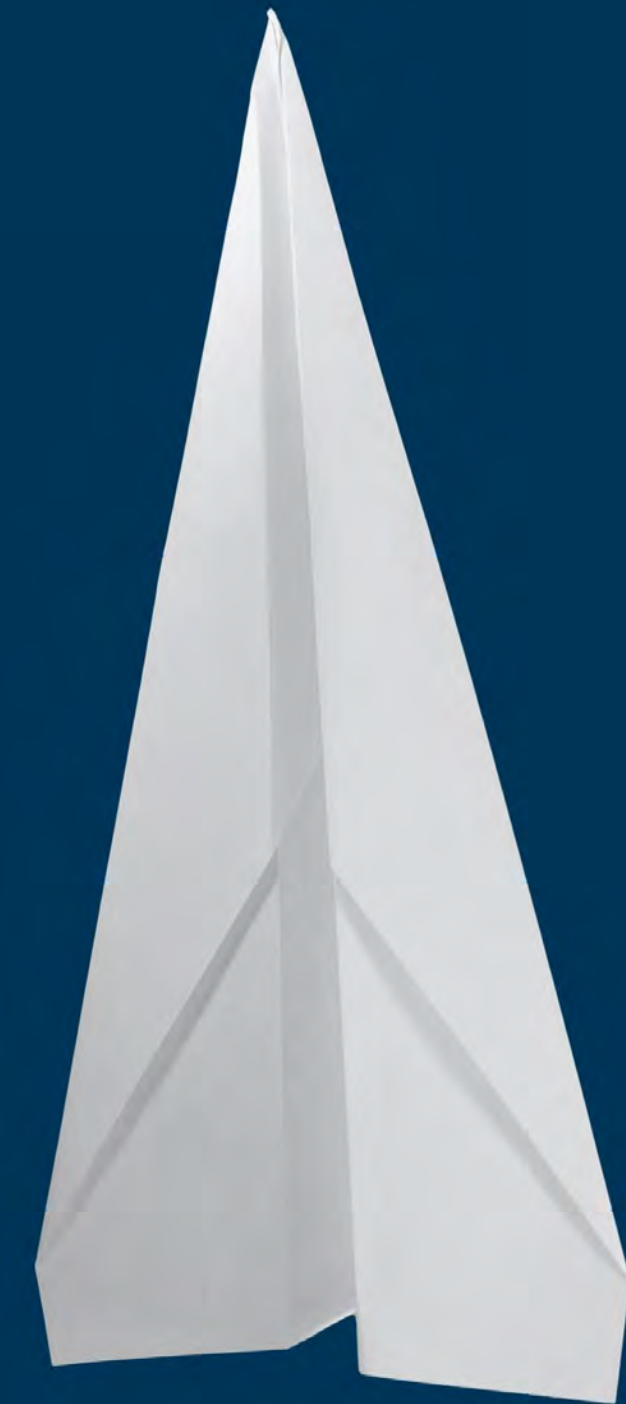
CHALLENGE: WHO?

- Staff needs to be trained to process the data
- *“You can’t just throw technology out there and expect people to use it”*
- Knowledge transfer & sustainability of projects



CHALLENGE: HOW?

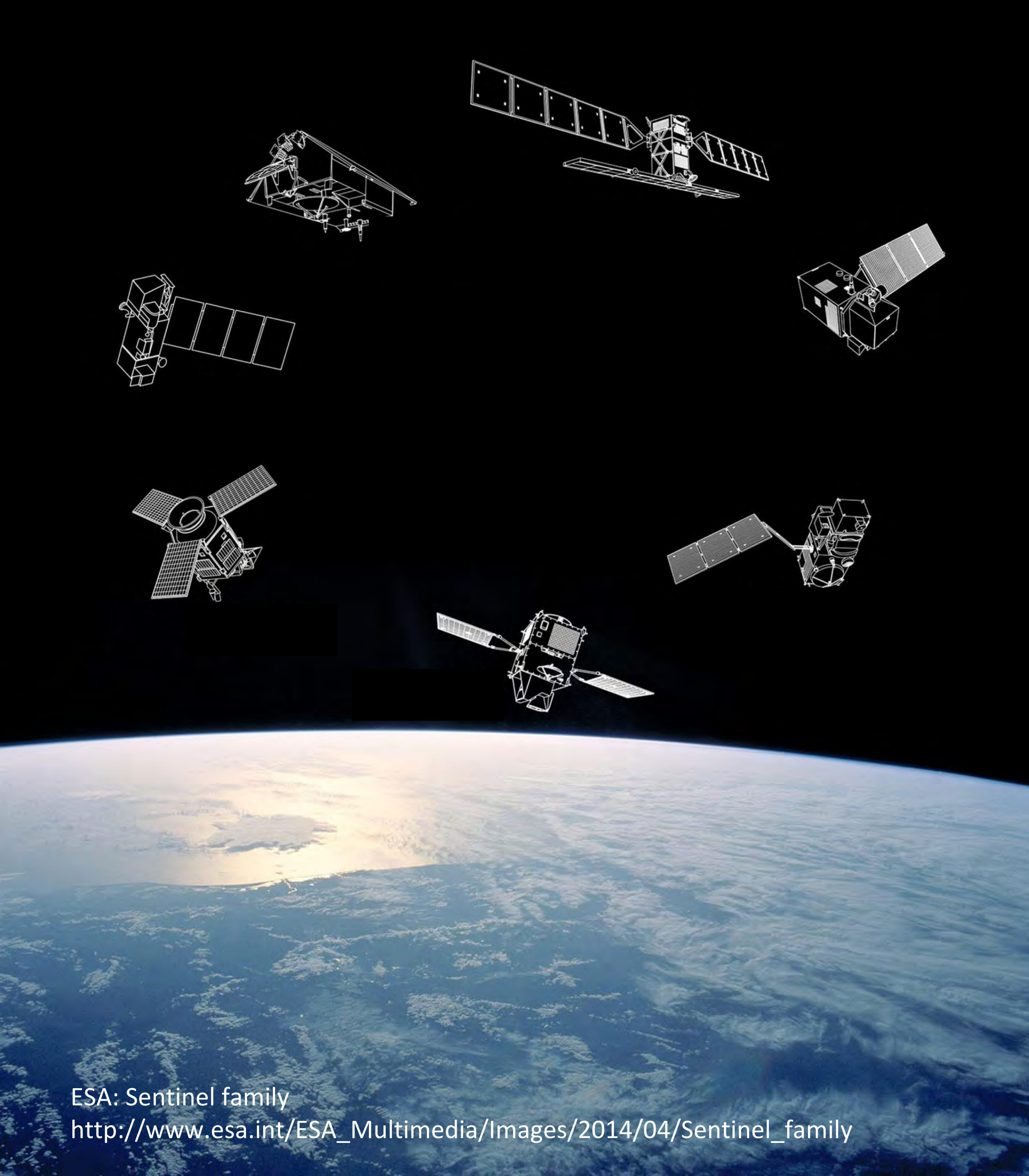
- Low hanging fruits projects with an oversee-able time frame instead of deep dive projects
- Lacking funds, bandwidth & access to data
- *“It is a very complex field”*



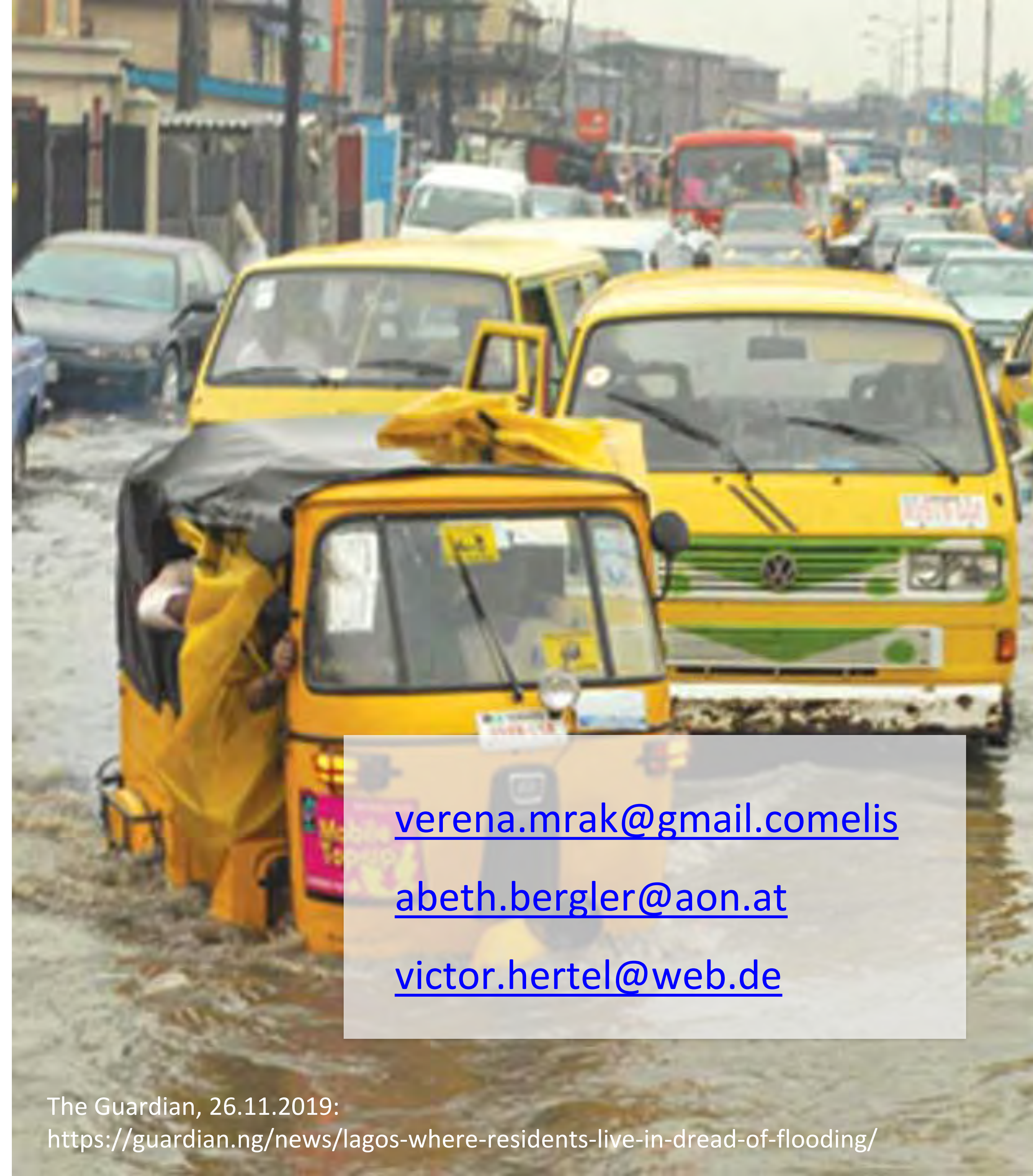
POTENTIAL SOLUTIONS

- Awareness Raising: awareness and training on the possibilities of space-based technology on different levels, e.g. private sector, government, public awareness
- Capacity Building: access to data, data communication (intuitive usage), continuous learning and innovation
- Focus on Preventive Measures: accessible High Resolution DEMs for hydrological modelling and risk assessment
- Partnerships & Cooperation: self-sufficiency





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