Internal displacement

The role of big data in monitoring climate and reducing the impacts of climate change

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Internally displaced persons (IDPs)

"Persons or groups of persons who have **been forced** or obliged to flee or **to leave their homes** or places of habitual residence, in particular as a result of or in order **to avoid** the effects of **armed conflict**, situations of generalized violence, violations of human rights or natural or human-made **disasters**, and who **have not crossed** an internationally recognized State border" (Guiding Principles on Internal Displacement, 1998)

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A young returnee girl by the Kunar riverside in Behsud District, Nangarhar, Afghanistan.
Photo: NRC/Enayatullah Azad, January 2017

UN Resolution A/C.3/70/L.51/Rev.1 of 18 November 2015

Recognizes the need to collect reliable disaggregated data, including data disaggregated by sex, age and location, on internally displaced persons and the impact of long-term displacement on host communities in order to improve policy, programming and response to internal displacement and, in this respect, the relevance of the inter-agency Joint Internally Displaced Person Profiling Service and the global database on internally displaced persons maintained by the Internal Displacement Monitoring Centre

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The Internal Displacement Monitoring Centre

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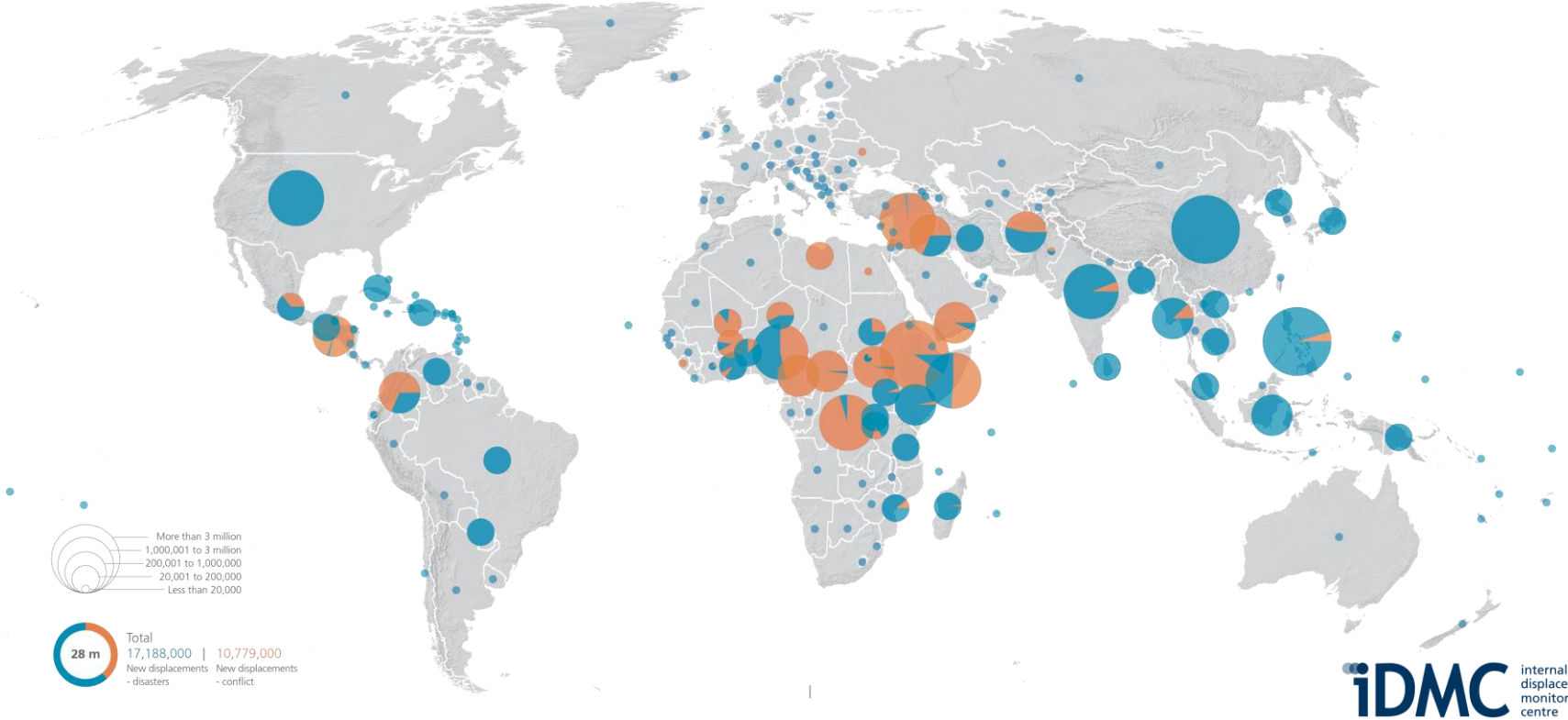
New displacements reported in 2018



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IDMC workflow

Monitoring
Internal displacement

Conflict and violence

Disasters

Development projects

Compiling,triangulating, aggregating and curating internal displacement data
(structured and unstructured data)

Assessments, surveys registration data, media and satellite imagery analysis*

IDPs, evacuees, forced to flee housing destruction*

Validation of data and analysis
in coordination with primary data collectors, governments and other relevant actors

Publication of global figures in the GIDD
(Global Internal Displacement Database)

* The list of terms used in this graphic is not exhaustive.

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Challenges

- Limited human resources
- Capturing data on internally displaced people worldwide
- Lack of data interoperability and common or well-defined terminology
- Lack of information on the duration and severity of displacement
- Multicausality of internal displacement

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Big data

Source image: http://www.imperial.ac.uk/news/173206/imperial-college-ahsc-seminar-series-kicks/

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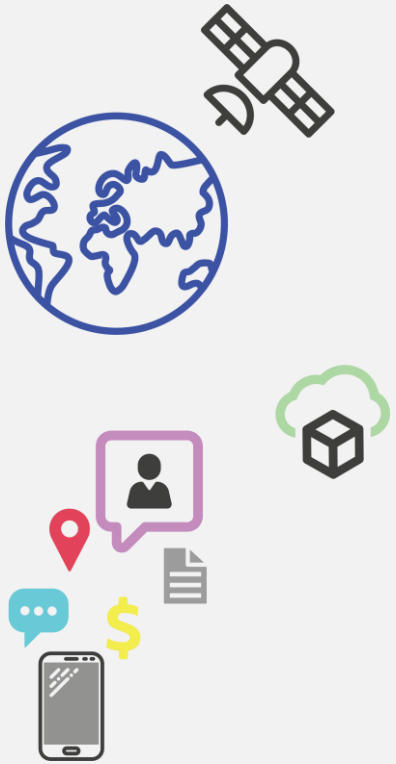
Big data

- Social networks, systems and sensors

- High volume, velocity, variety, veracity

25 Million TB/day (2016)

- Datasets are so complex that traditional data-processing applications become insufficient to capture, store, and analyse data.



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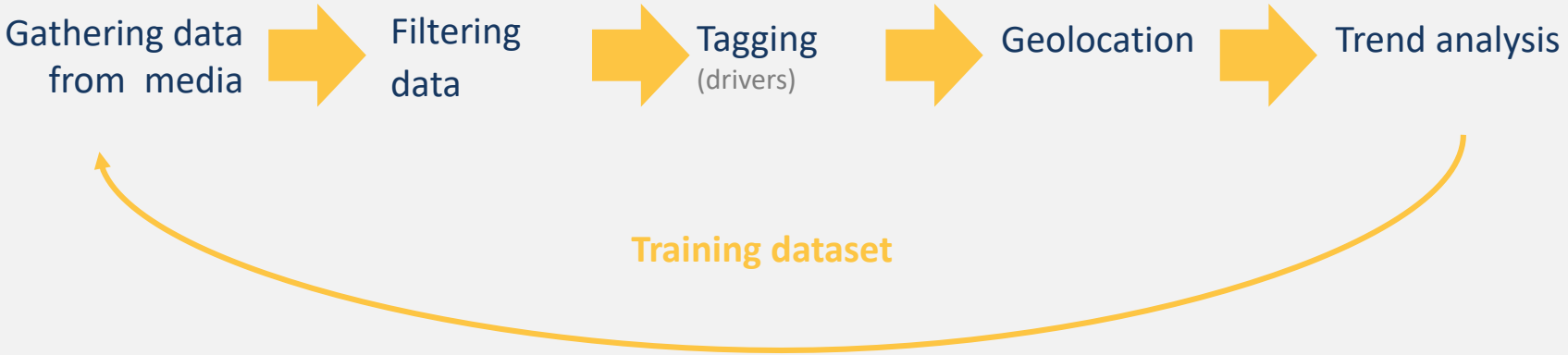
Media monitoring to fill data gaps

Natural language processing and supervised machine learning tool



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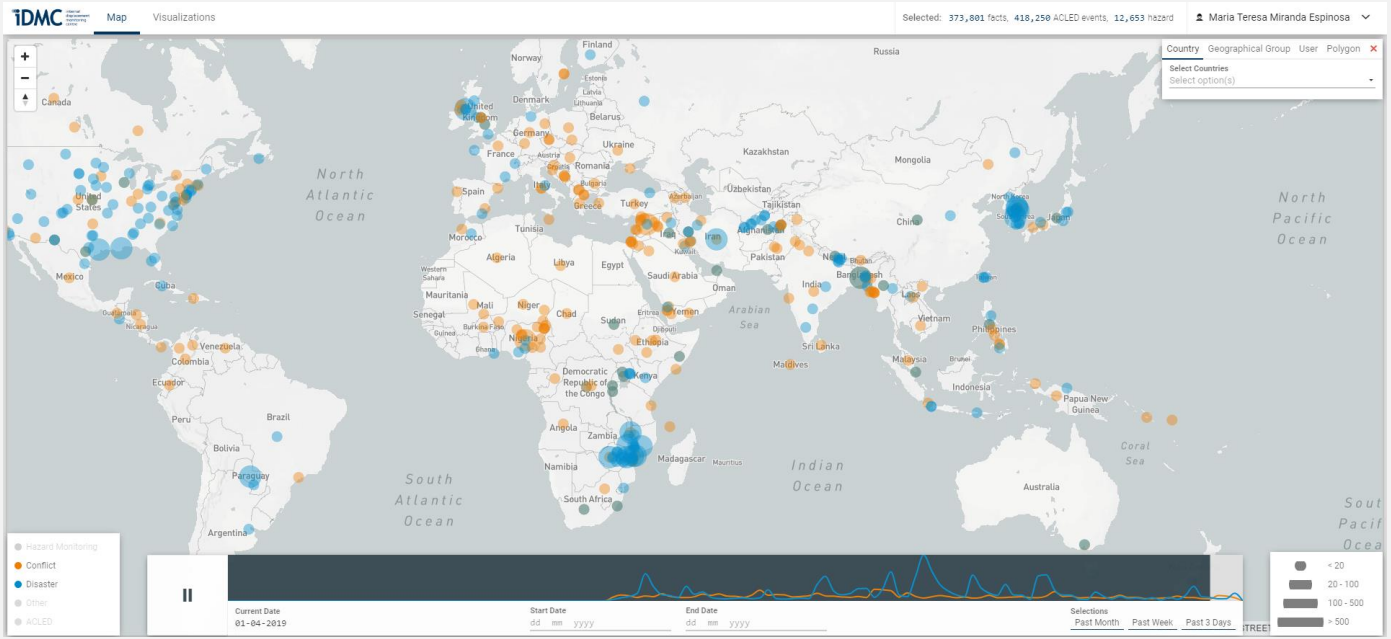
IDMC's Monitoring platform

Natural language processing and supervised machine learning tool



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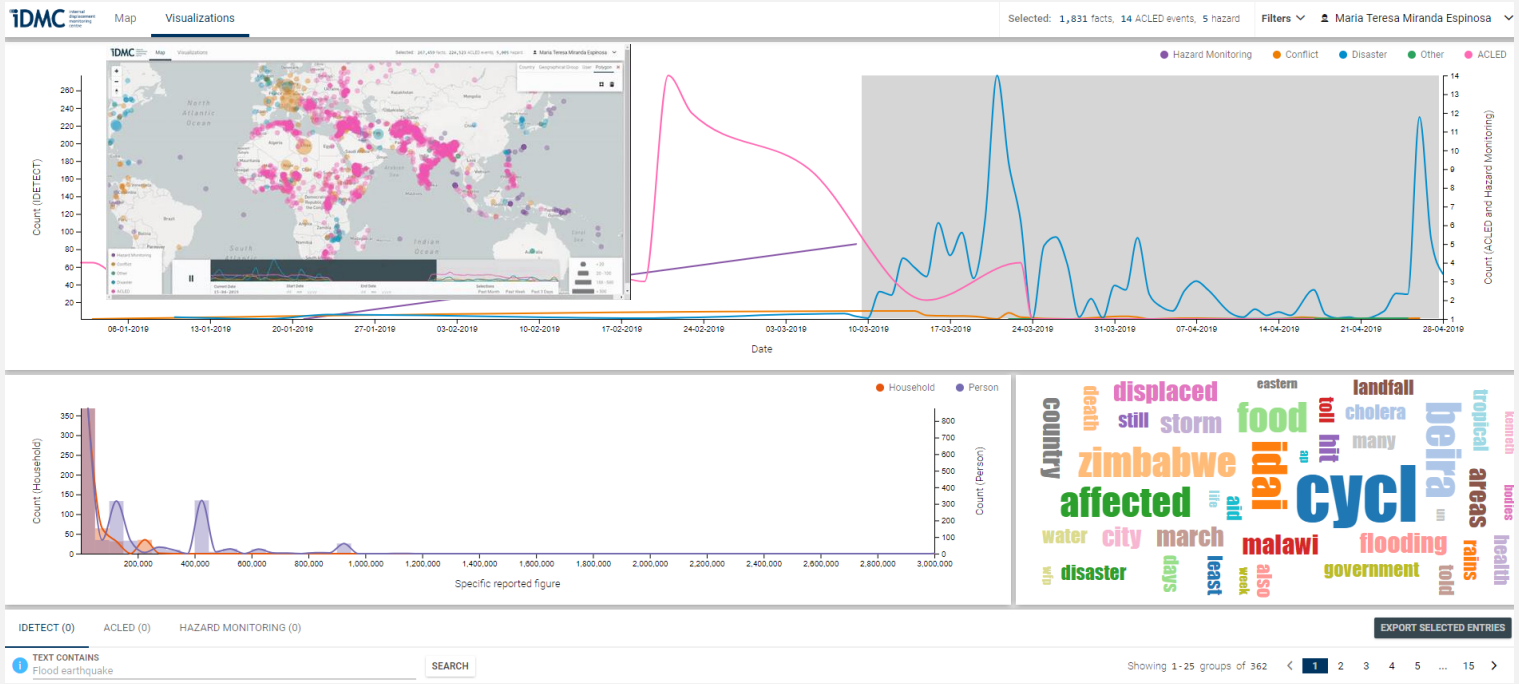
IDMC's monitoring platform



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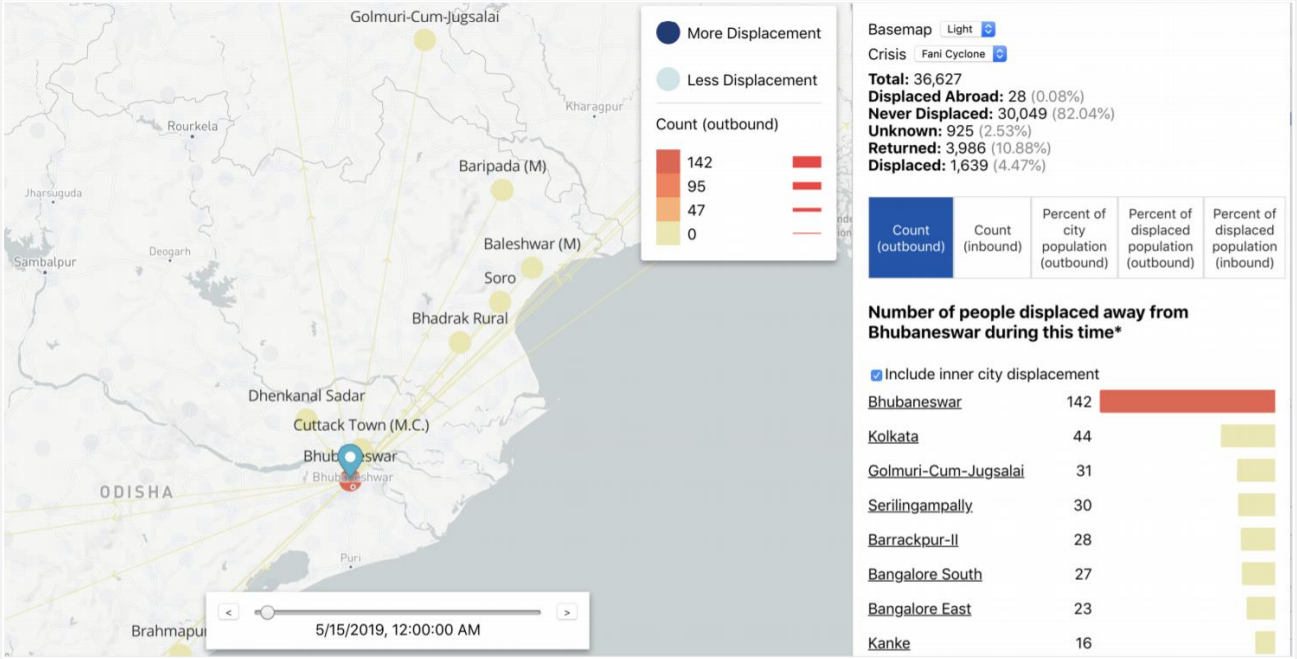
Disaggregated data – Mobile data (Facebook data for good)



(Facebook, 2019)

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Big data
Climate monitoring

Source image: NASA/Apollo 17 crew

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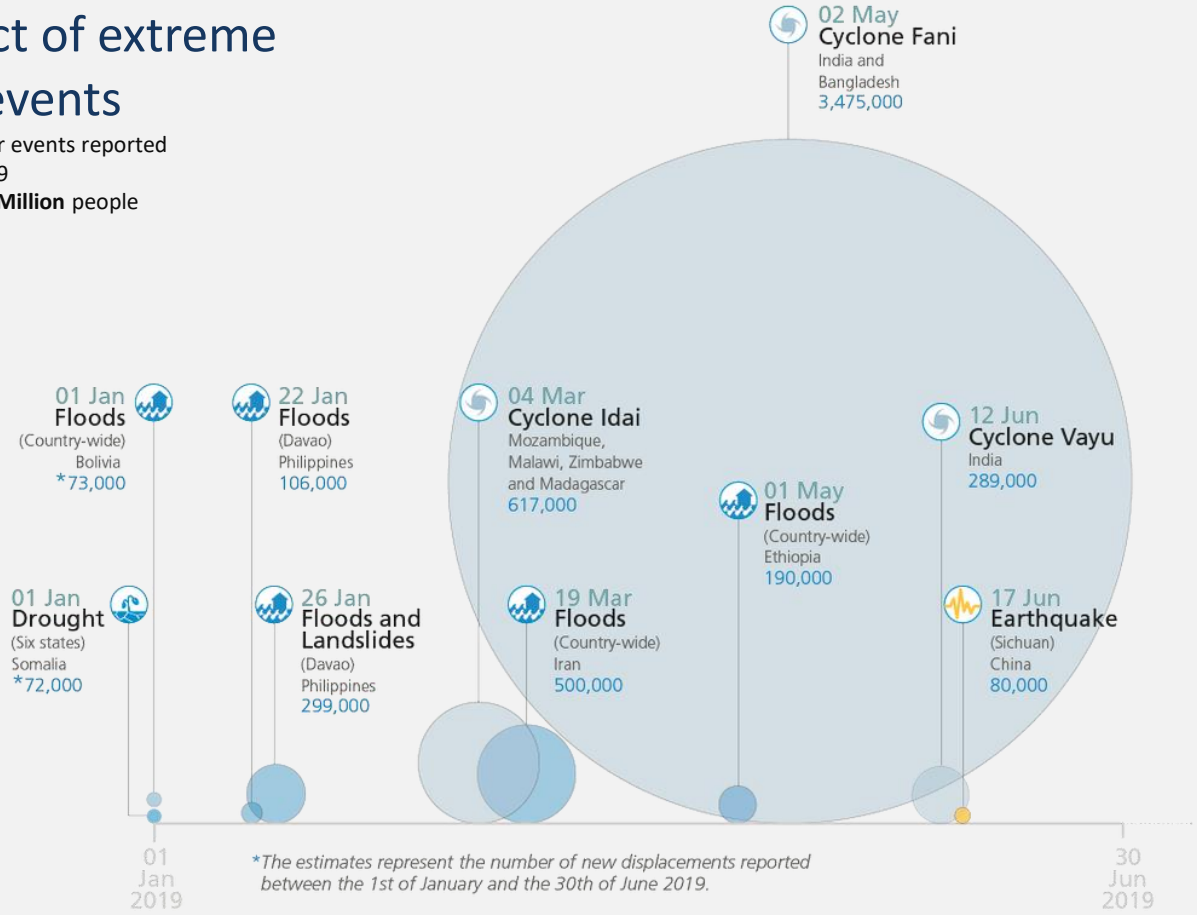
The impact of extreme weather events

The ten major disaster events reported in the first half of 2019 displaced around **5,7 Million** people



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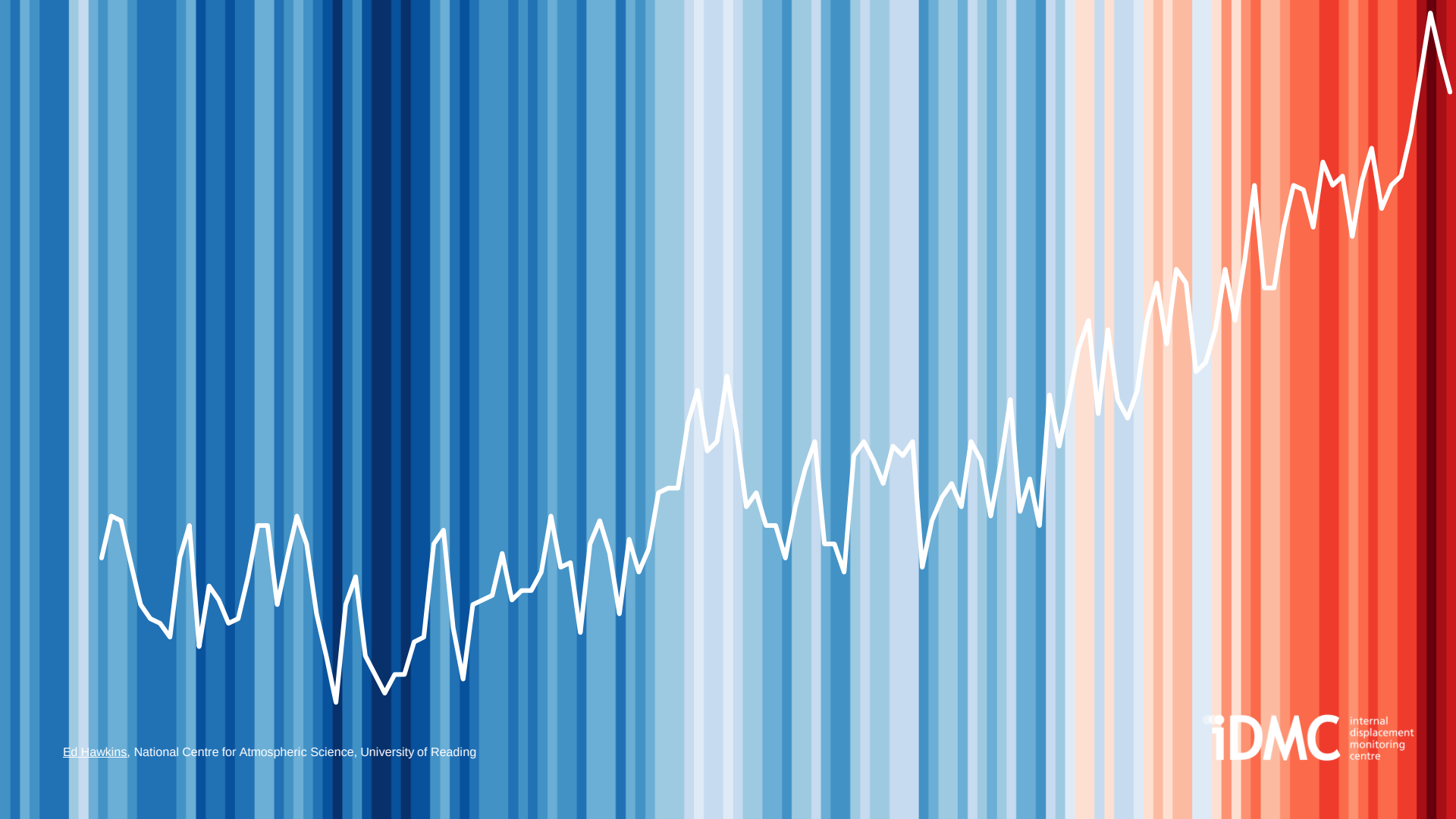

Ed Hawkins, National Centre for Atmospheric Science, University of Reading

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An aerial view of the destruction in Praia Nova in Beira, Mozambique, after Tropical Cyclone Idai destroyed and damaged homes, knocking out electricity and communications. Photo: IFRC/ Denis Onyodi, March 2019

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Somali families that fled conflict and drought live in crowded and unhealthy conditions in a shelter camp in Kismayo in southern Somalia. With shelters made only of plastic, cloth and sticks, families here are vulnerable to flooding and insecurity. Photo: NRC/Jepsen, February 2019

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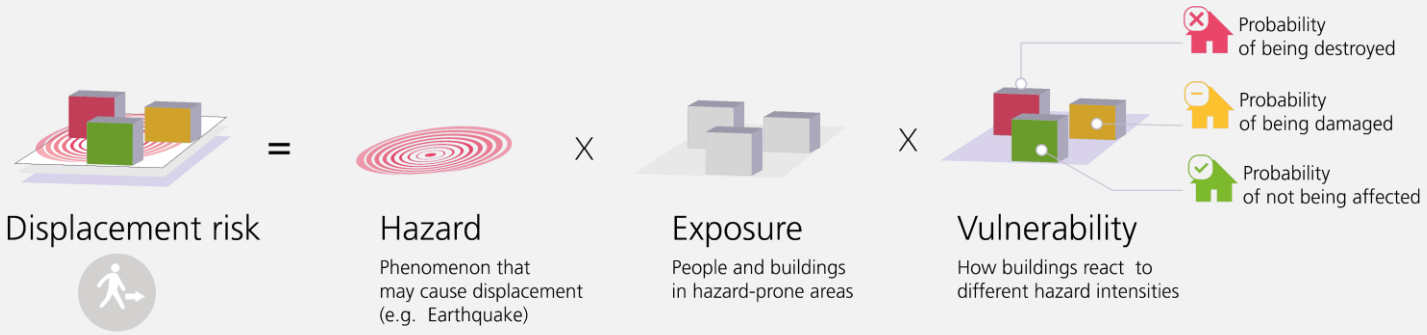
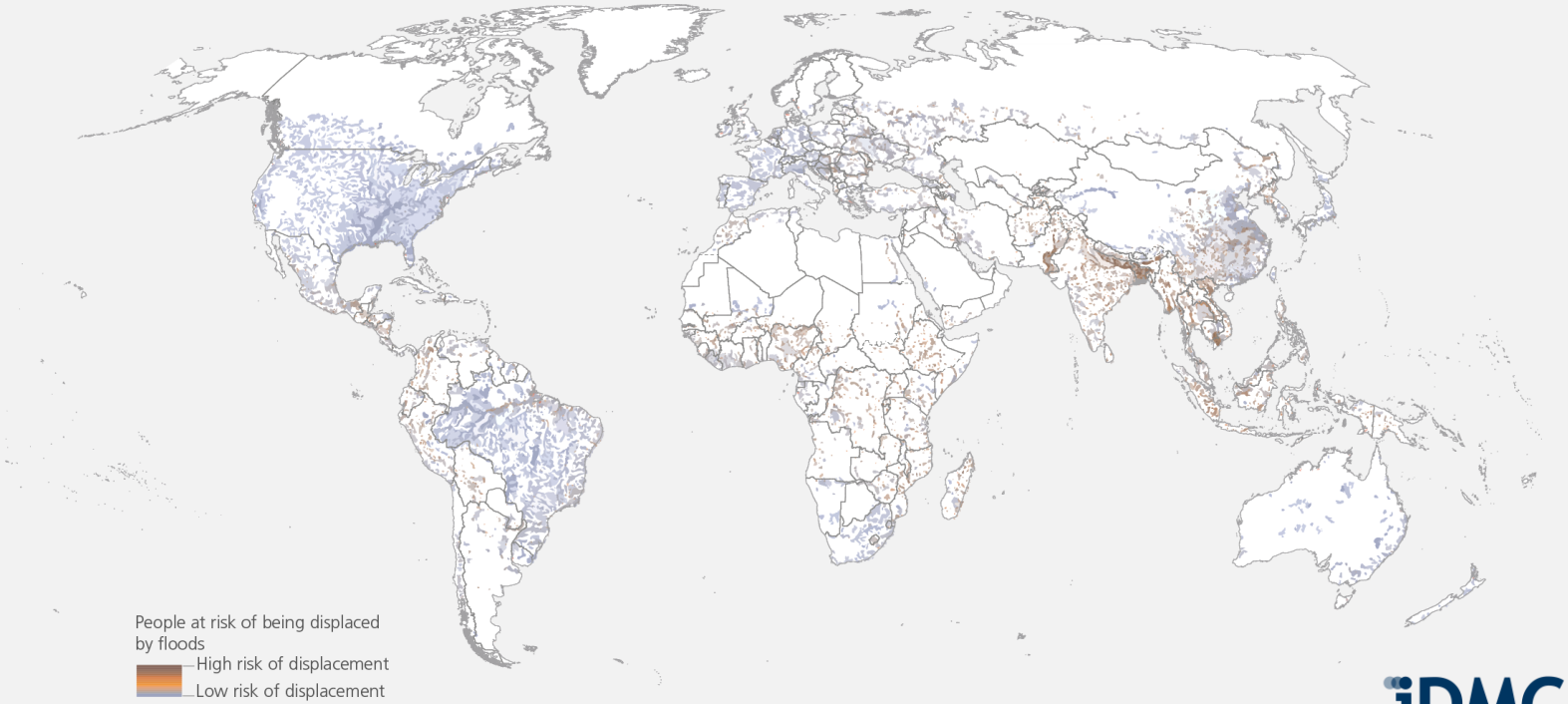
Displacement Risk



Displacement risk model (floods)



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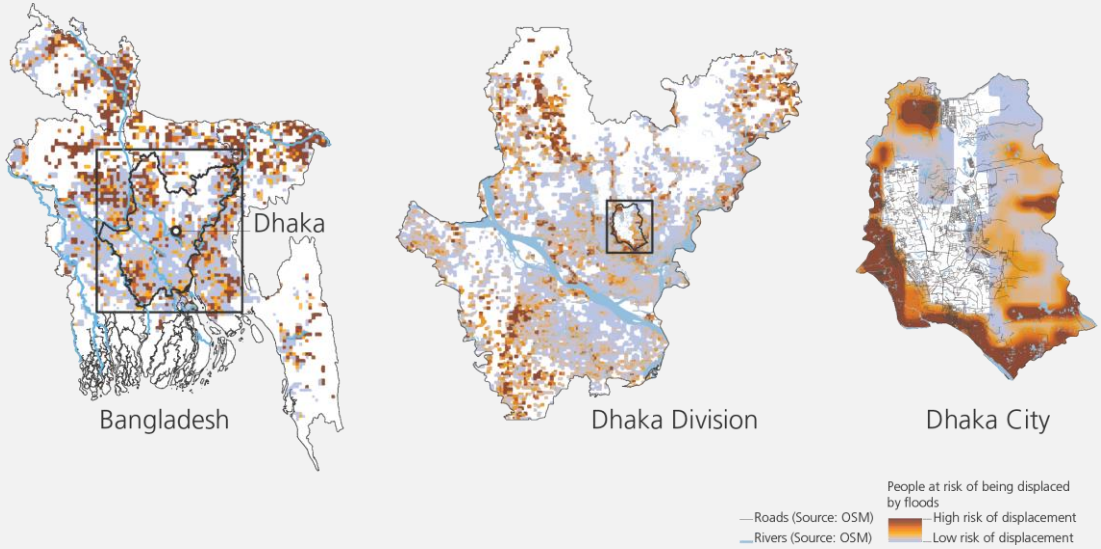
Displacement Risk (at different resolutions)

(probabilistic and deterministic models)



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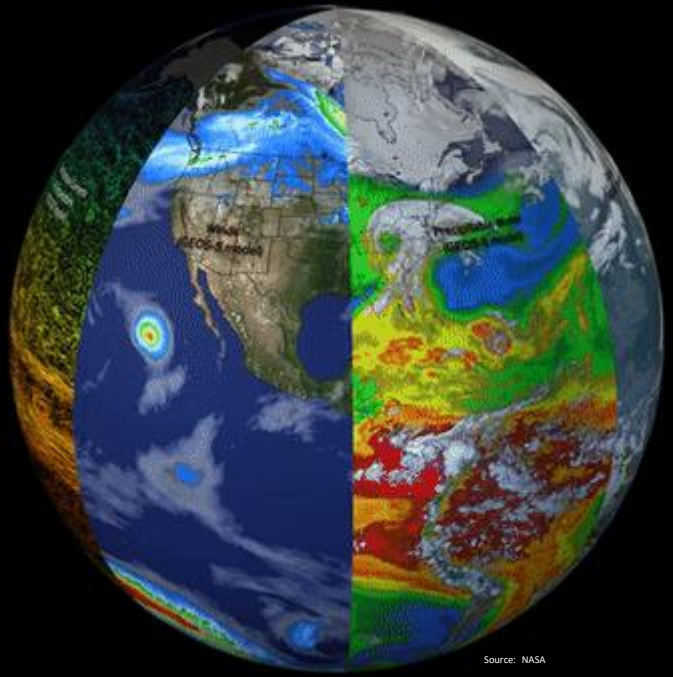
- Using near real time EOs as input for the displacement risk model

- Climate scenarios



Source: NASA

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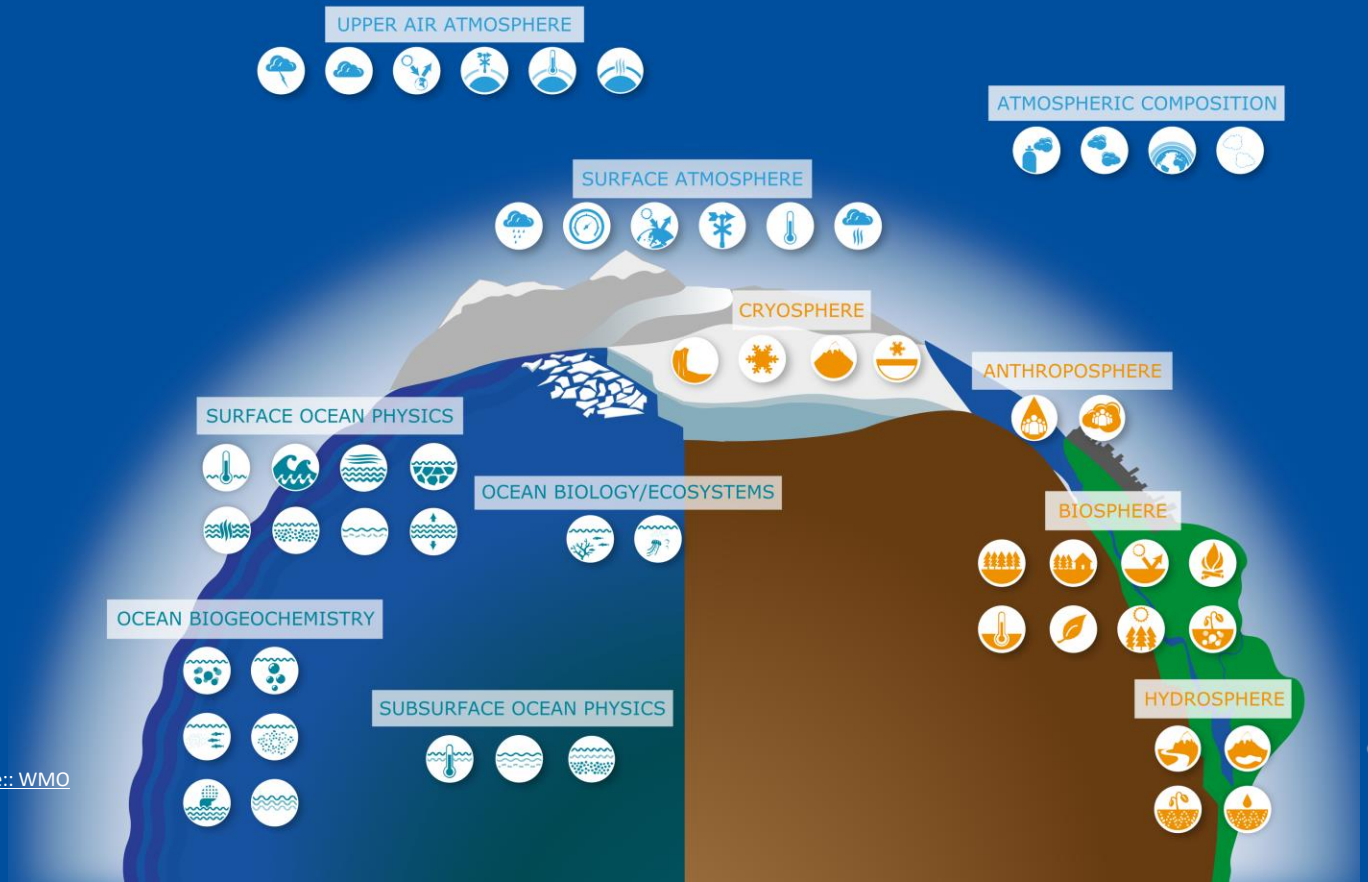
Essential Climate Variables (ECVs)



Source image:: WMO

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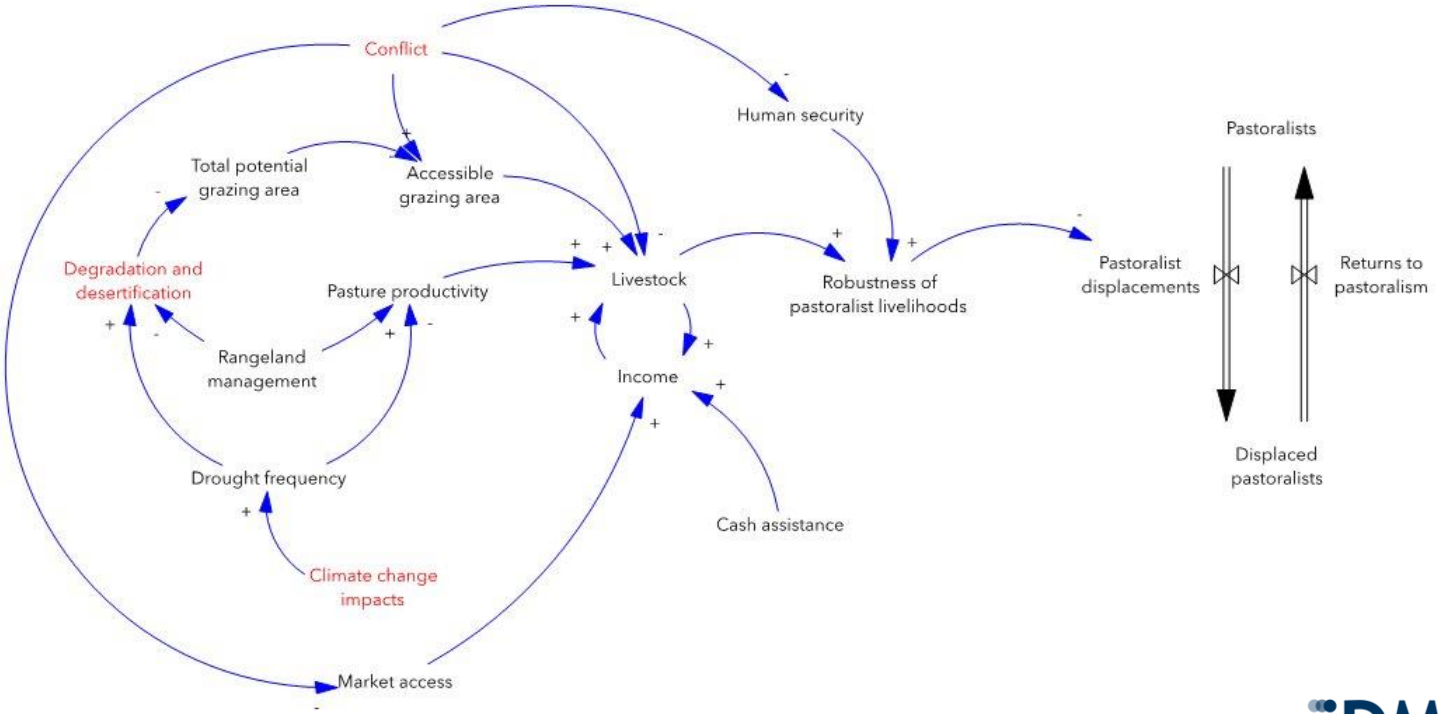
Multi-causal nature of pastoralist displacement



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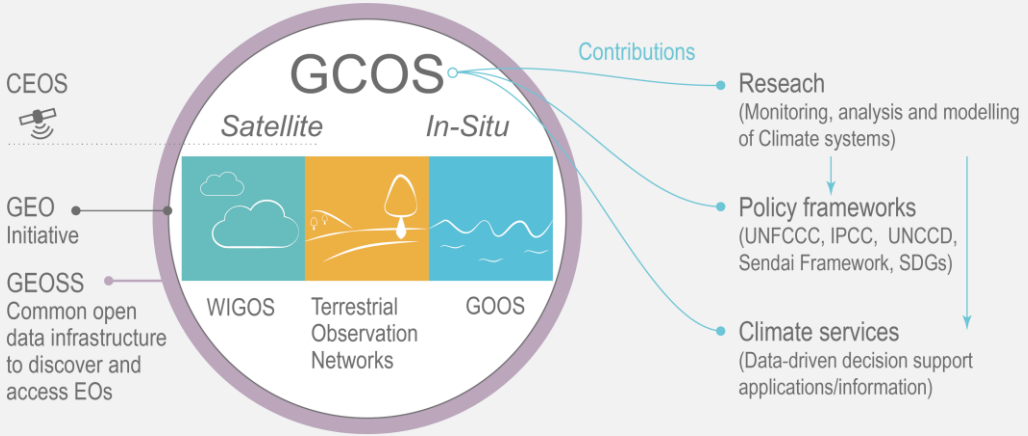
Which are the global strategic alliances that foster the tools available for use in climate change adaptation, mitigation and monitoring?

Global strategic alliances that foster the tools available for use in climate change adaptation, mitigation and monitoring?

Global Climate Observing System (GCOS): Coordinating and ensuring the availability and accessibility to climate observations for all potential users.
Provides: ECVs



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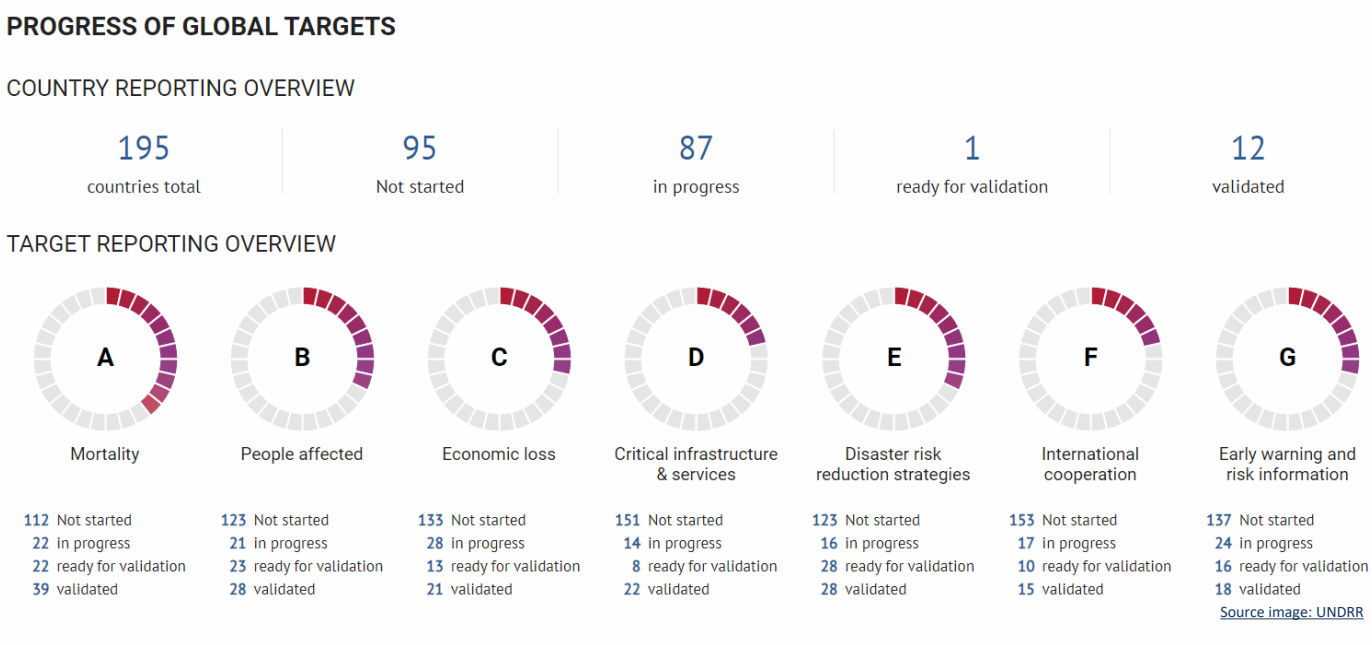
Sendai Framework for Disaster Risk Reduction targets

(Prevention, protection, reduction of risk and creation of partnerships to reduce the number of people affected by disasters)



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Challenges and opportunities ?

General challenges (beyond our work)

- Lack of data **interoperability**
- Improve **access to infrastructure, software, skills (training)** and **networks** to access, interpret and share big data
- Data **resolution**

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General challenges (beyond our work)

- Limited **access/discoverability** of datasets
- Moving from **data** and **analytics** to decision-support information and tools
- **Financial support** to maintain or renovate climate observation systems and to improve climate observations networks

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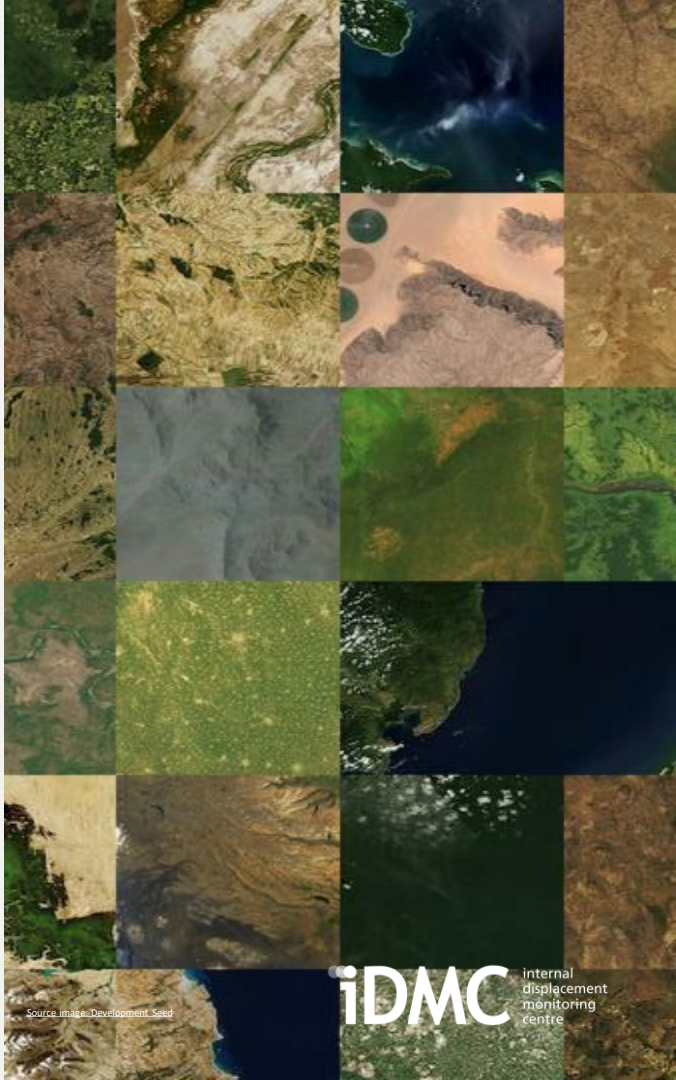
General challenges (beyond our work)

- Making systems **diverse and inclusive** (better represent the words diversity)
- Non technical issues



Opportunities

Earth Observations
Hazard risk
Vulnerability

Data-driven applications

Decision making tools
Data-driven initiatives

Opportunities

- Increasing the access to hazard, as well as the population data for a **better understanding** of the **nature and drivers of risk**
- Predictive analytics to **reduce risk, address impacts and strengthen resilience**
- Better data **resolution** and **early warning systems**

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Opportunities

- Creation user-friendly tools for data exploration and analysis to **understand** the impacts of climate change and the potential impact of **long-term strategies**
- Transform relevant data into **usable information** for a diverse range of decision-makers and users
- **Filling data** and information **gaps**

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An aerial view of the destruction in Praia Nova in Beira, Mozambique, after Tropical Cyclone Idai destroyed and damaged homes, knocking out electricity and communications. Photo: IFRC/ Denis Onyodi, March 2019

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www.internal-displacement.org