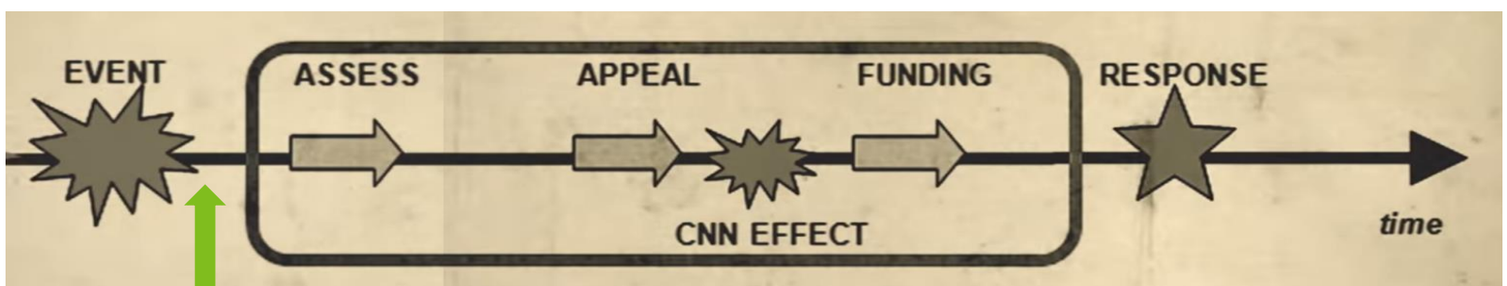
What is the African Risk Capacity (ARC)?

- A Specialized Agency of the African Union:
    - Agency established: 2012.
    - First Policies (Drought): 2014.
- Enables participating Member States to prepare, manage and finance natural disasters.
- The ARC Group:
    - ARC Agency: 33 Member States.
    - ARC Ltd: financial affiliate and mutual insurance company.

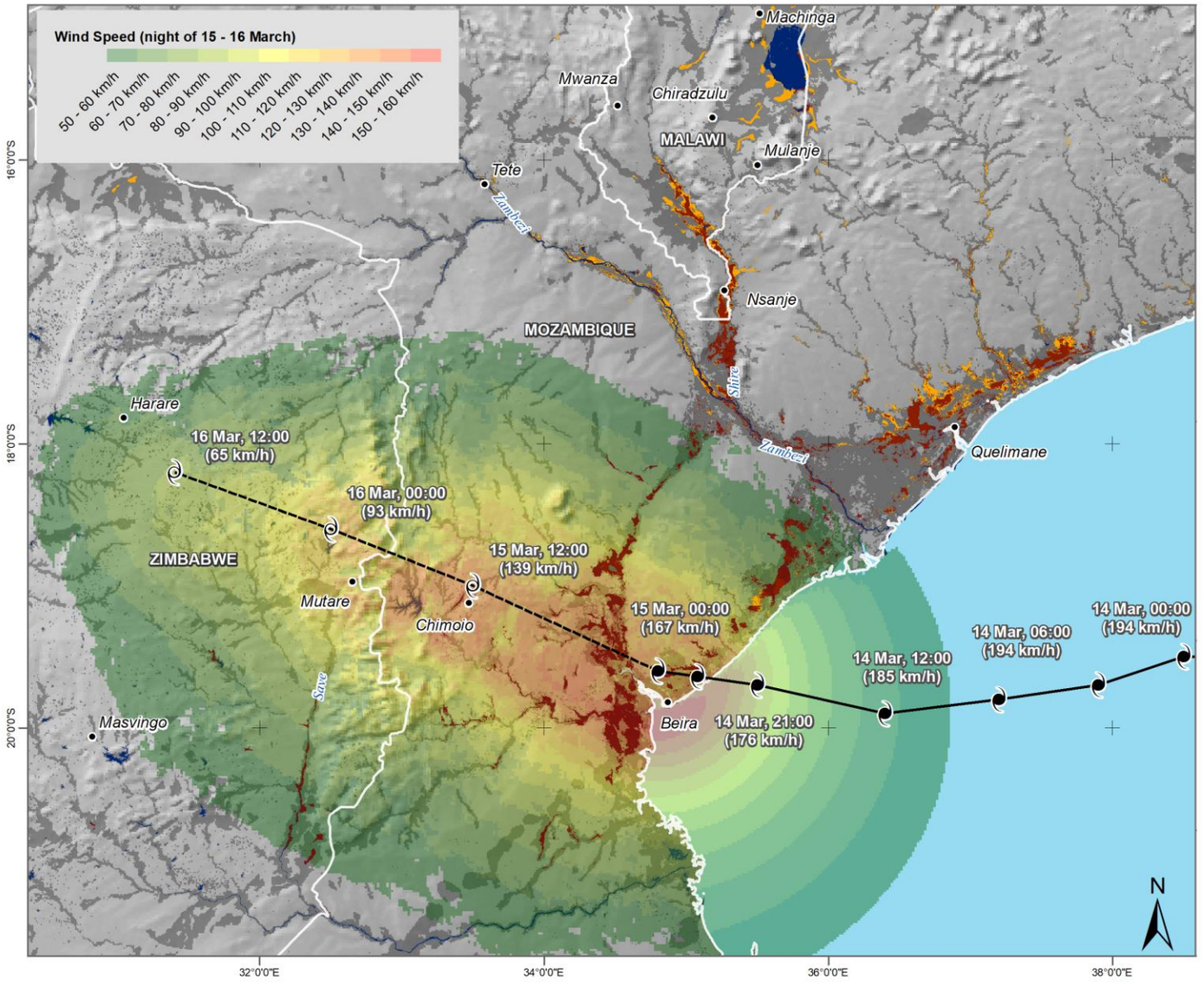


ARC aims to provide cost-effective contingency funding to protect livelihoods and development gains.

ARC and Sovereign Disaster Insurance

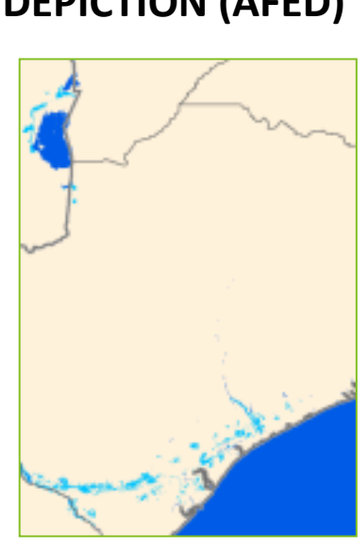
- Drought Insurance Policies Issued by ARC Ltd since 2014:
  - Payouts of approximately 38 million USD to member states – Senegal, Mauritania, Niger, Malawi.
  - > 2,2 million people have been alleviated from drought impact through ARC's insurance framework.
- ARC Ltd. is expanding its portfolio to cover natural disasters resulting from:
  - Outbreaks & Epidemics (**O&E**),
  - Tropical Cyclones (**TC Model**).
  - Large-scale River Flooding (**AFM-R**).

Tropical Cyclone *IDAI* – AFED Depictions & TC Data



What is the ARC River Flood Model (AFM-R)?

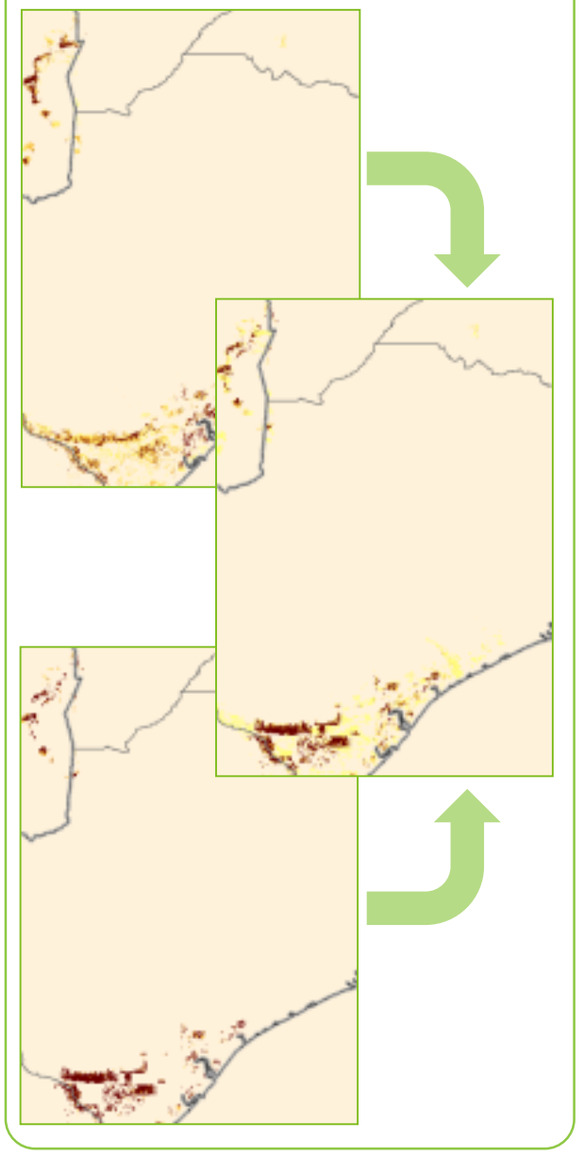
DAILY FLOOD DEPICTION (AFED)



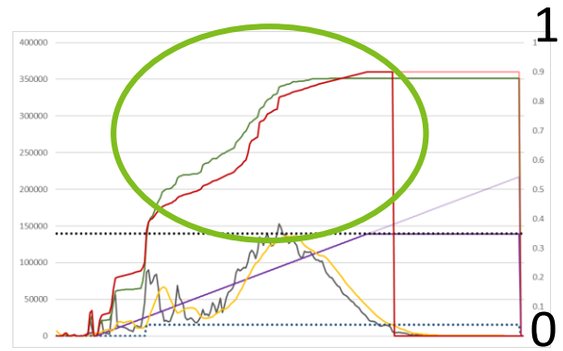
EXPOSURE DATA

SUB RIVER BASIN AGGREGATION

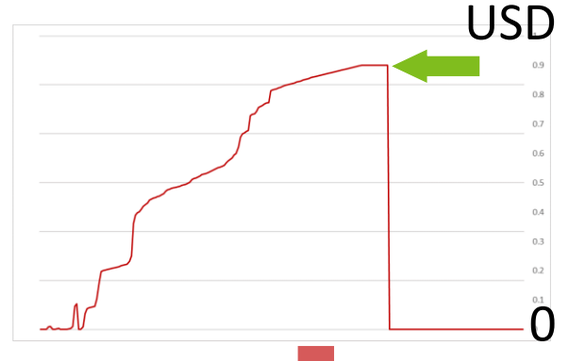
MODELLED IMPACT



AFM-R INDEX



RESPONSE COSTS



RISK TRANSFERRED TO ARC

The 2019 West-African AFM-R Pilot

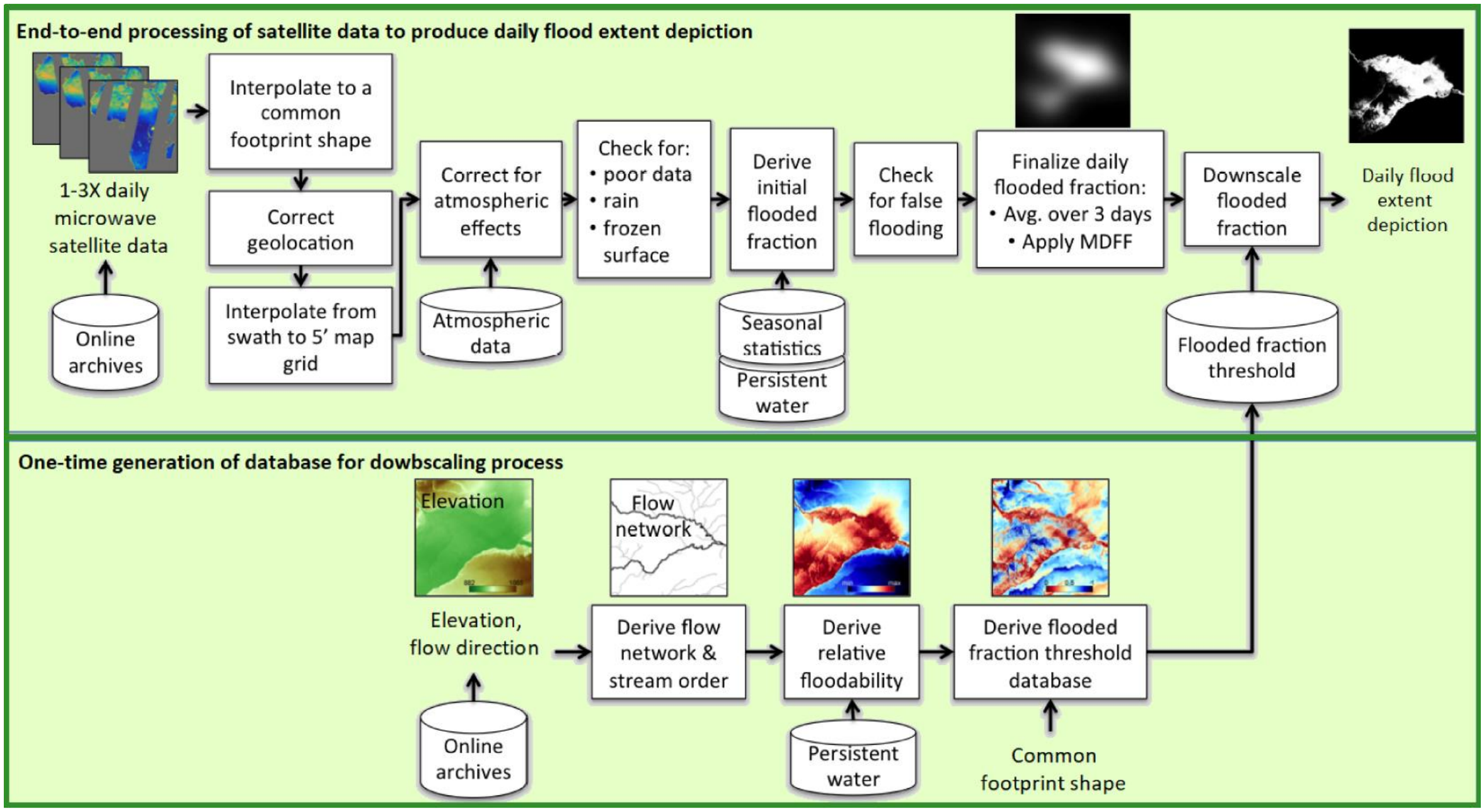
- Cote d'Ivoire, Ghana, The Gambia, Togo.
- Flood cycle: 12 months; inception will be aligned with drought insurance timeline.
- Monitoring of the season from May/June onward.
- September/October/November: countries decide whether they would like to take out river flood insurance.

African Risk Capacity

aer Atmospheric and Environmental Research

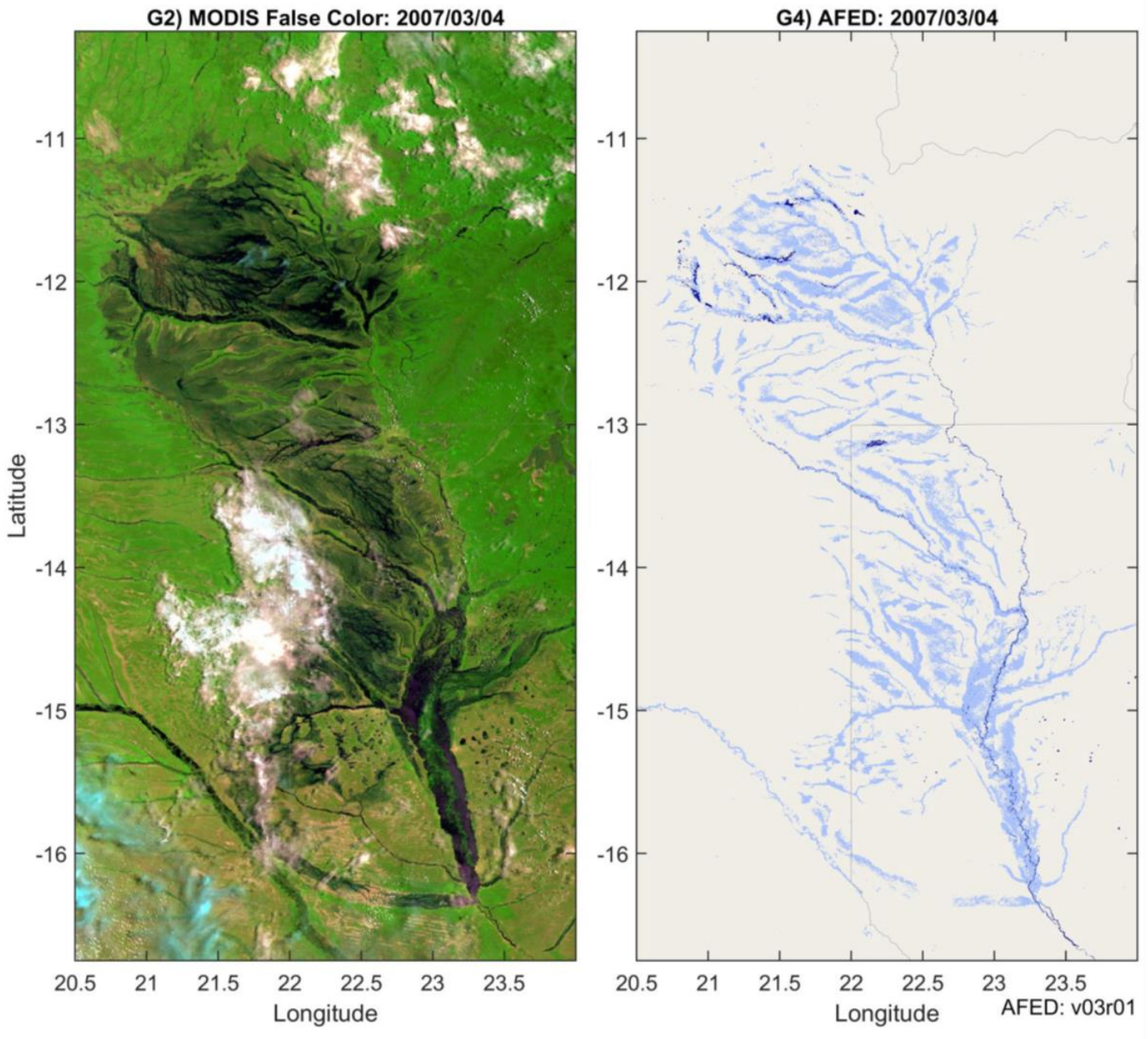
GFP global flood partnership

What is the ARC Flood Extent Depiction (AFED) dataset?

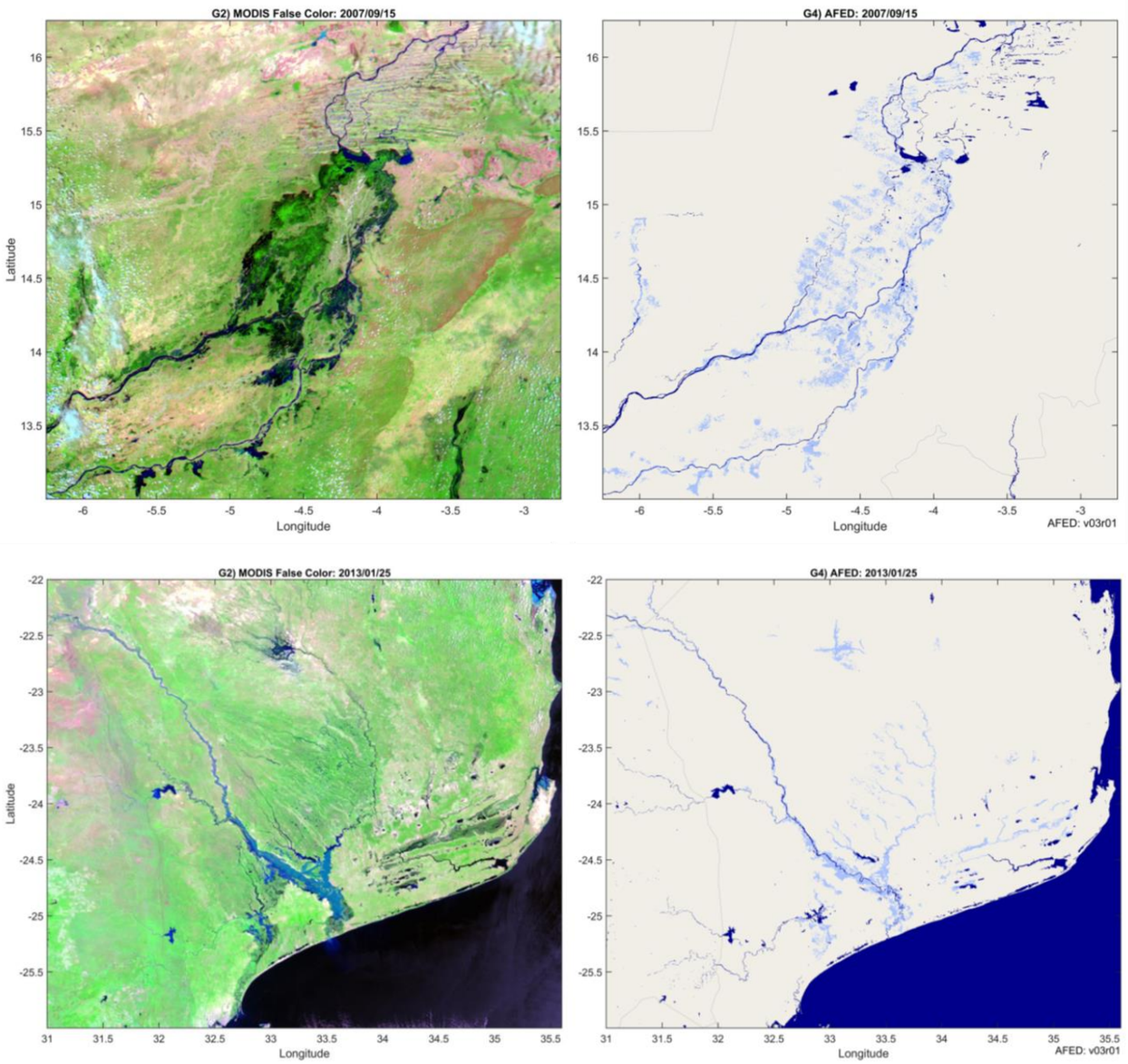


What we know about AFED

- Necessary criteria for **insurance purposes**:
  - Method **objectivity, consistency** & **transparency**
  - **Continuous temporal coverage** (1998 – present)
- Depicts **long-lasting** (>2 – 3 days) **large-scale** flooding in wide (>2 km) flood plains
- Detects **non-permanent** water through **clouds**
- At **polygon-aggregated** level – ideal for use in **insurance-underwriting** to cover large-scale river floods
- **Constraints:** signal interference from rain; small-scale flooding; flash floods; urban & coastal flooding

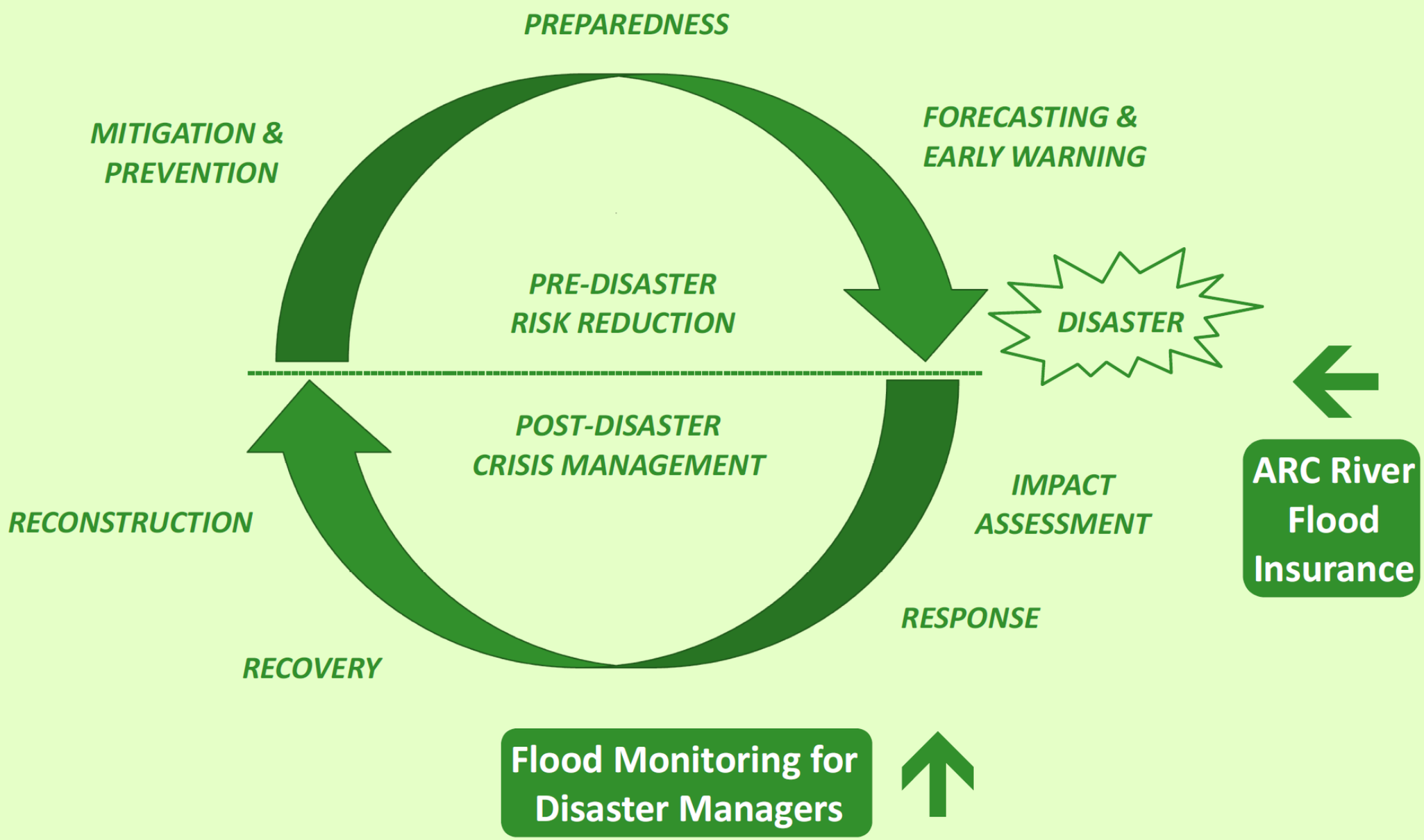


What we don't know about AFED



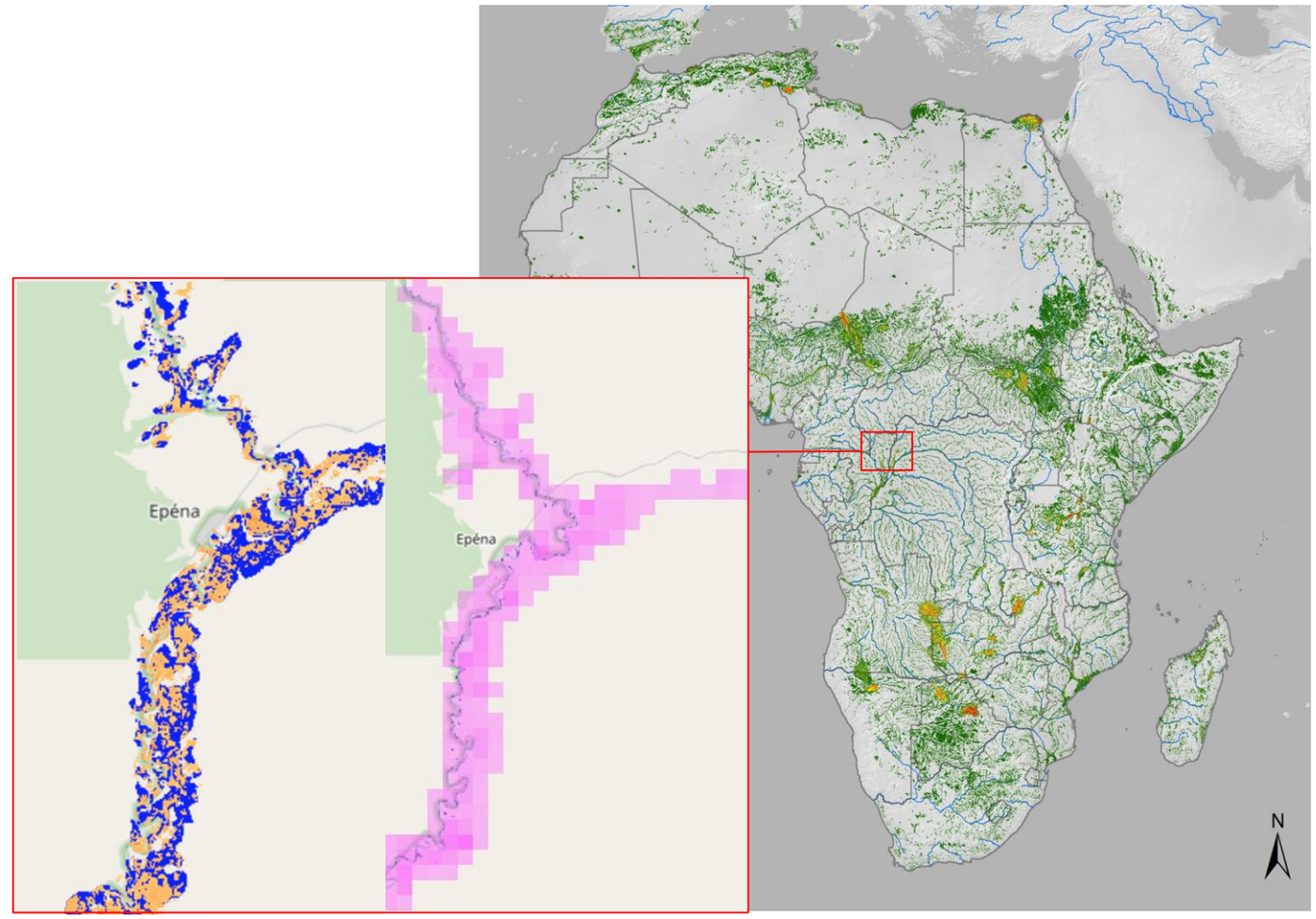
- How well does it depict true ground conditions (**Overall Depiction Accuracy**)?
- How does it compare to other **existing** flood-extent **depictions** and Global Flood Models (**GFM**s)?
- How does it compare to **existing forecasting** systems and **hydrometeorological** data?
- Combined with exposure, how well does it detect flood events characterised by **combinations** of **small/large scale** versus **low/high impact**?
- Can it be used for **forecasting** and/or Early Warning (**EW**)?

AFM-R and the Disaster Cycle



The 2019 Flood Information System (FIS) Prototype

- Building on the strength of High **Temporal** Coverage of AFED Data and High **Spatial** Resolution of **alternative satellite-derived** Flood Extent Depictions.
- Allows for:
  - Faster and more efficient **decision-making**
  - **Reduce loss from flooding** amongst the general population
  - **Improve the ARC flood service offerings** in the countries by providing access to flood maps and **custom impact analytics** via a near real-time platform during the **2019 rainy season**



INNOVATION ACCELERATOR

The way forward for AFED

- Technical Review Forum (**TRF**) Recommendation (February, 2019): "**Introduce & make available** AFED to a **wider pool of experts**, **stimulate research** that may result in peer-reviewed publications that could potentially yield **additional information** regarding the **performance, accuracy** and further **applications** of the dataset."

- **Come and engage with us:**

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THANK YOU