Strengthening Flood Early Warnings in Nigeria
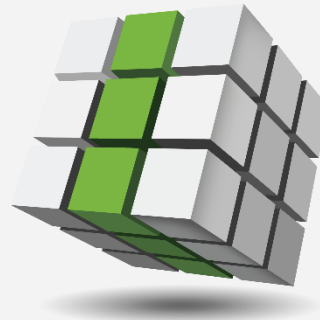
Integrating GloFAS Forecasting with Save the Children's Community-Driven EWS

Presenter: Odil Kurbanov
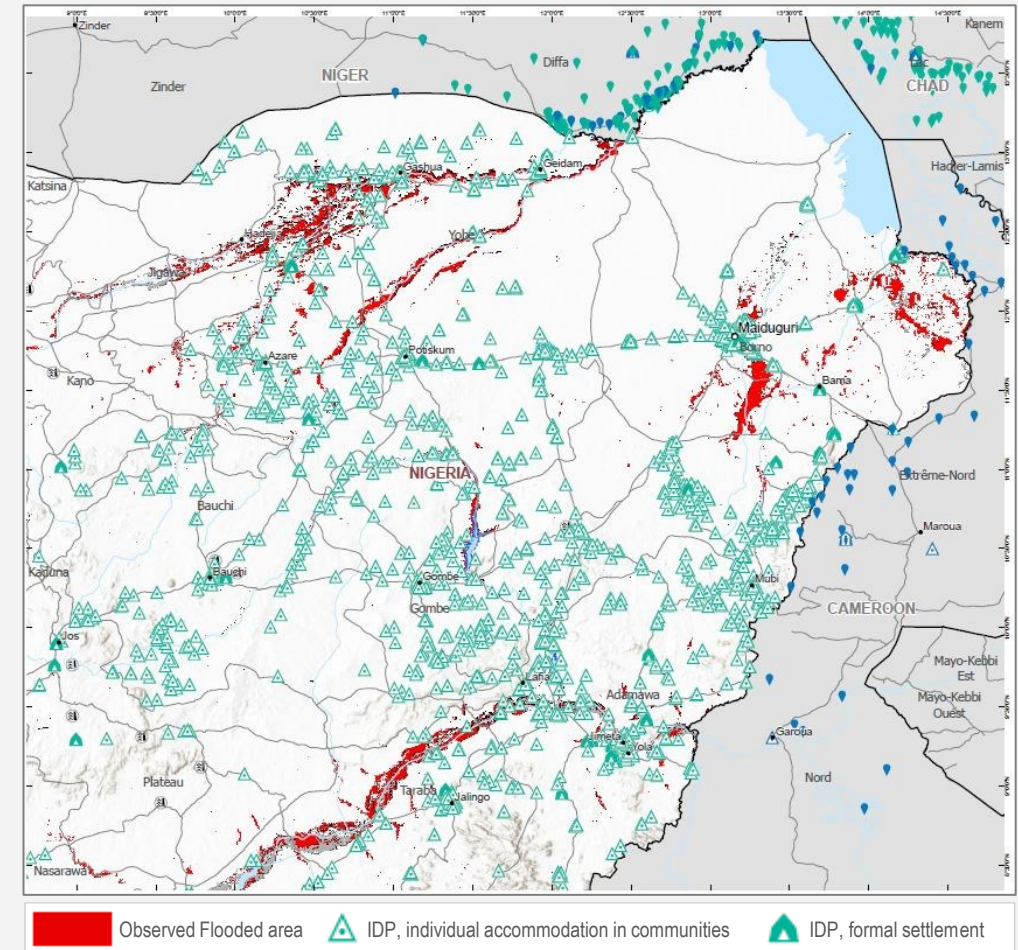**Affiliation:** Lead GIS Developer, UDA Consulting for Save the Children Nigeria
Event: 4th CEMS Global Flood Forecasting and Monitoring Meeting
Date: 2 April 2025

Nigeria: High Flood Risk, Children Bearing the Brunt

- Nigeria highly susceptible to seasonal flooding, causing significant humanitarian impact.

- Children are disproportionately affected by climate shocks like floods – increased vulnerability to health impacts, undernutrition, and loss of education

- Nigeria highlighted as a country with both high vulnerability and one of the highest child populations, making child-focused action critical.

- Save the Children has long-standing community-based EWS, built on disaster risk reduction principles, now enhanced with a stronger focus on child-centered approaches.

Legend: Observed Flooded area | IDP, individual accommodation in communities | IDP, formal settlement

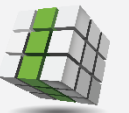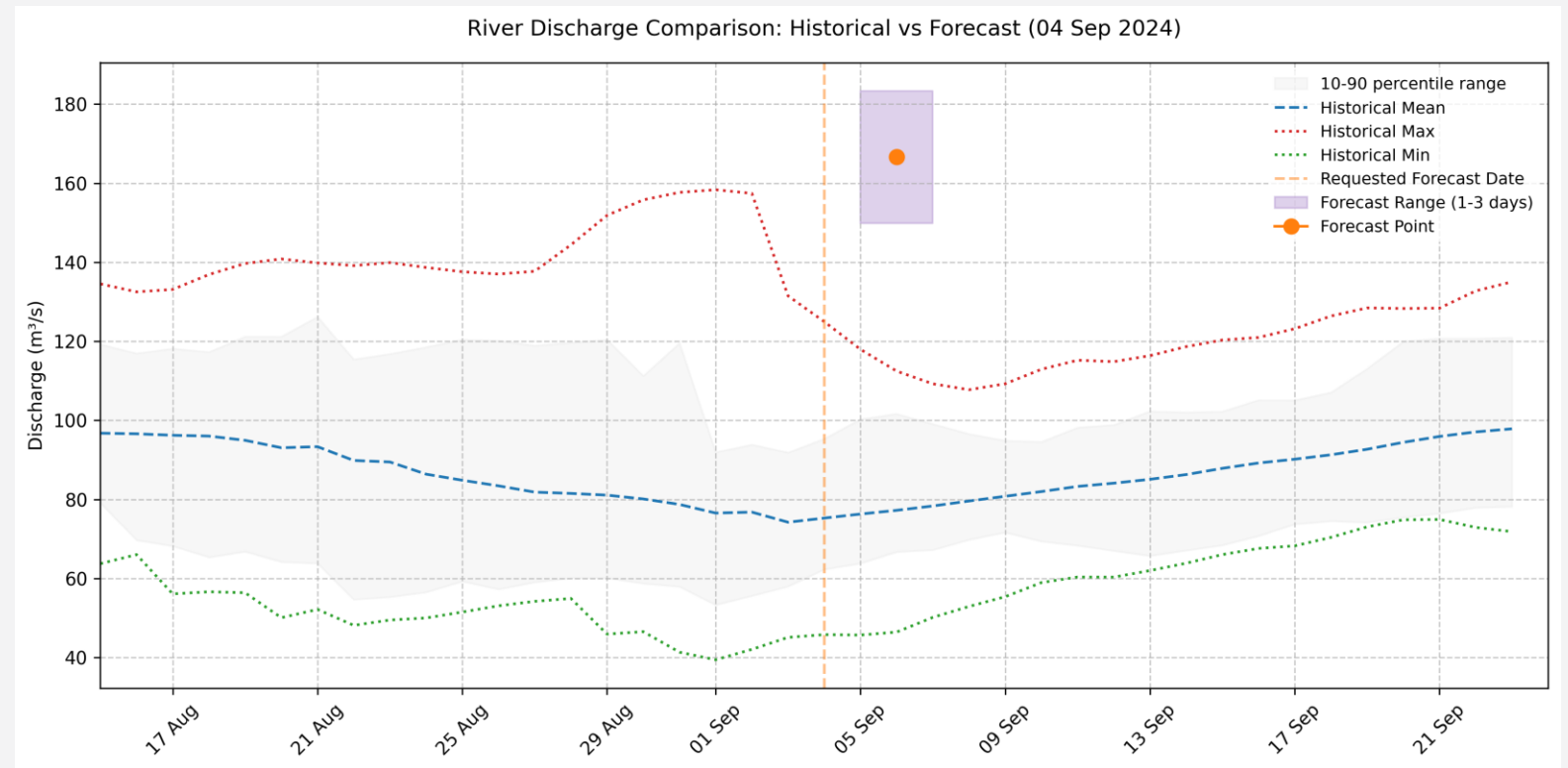Source: WFP ADAM, Nigeria Flood Impact Analysis, Sep 2024

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Enhancing EWS through Integration: A Child-Centered Approach

▶ **Objective**: Timely, accurate, accessible flood warnings, designed with and for children and their communities.

▶ **Integrated Approach (Global-National-Local)**: Integrates multiple data sources, aligning with SC's global strategy and key EWS principles:

  ▶ **Global Forecasting**: CEMS GloFAS (Discharge/Precipitation forecasts).

  ▶ **National Data**: NiMet (Met) & NHSA (Hydro) via MoUs.

  ▶ **Local Knowledge & Dissemination**: Leveraging SC's trusted community networks and child participation methods.

▶ **Core Idea**: Combine predictive power (GloFAS) with national validation and community reach for effective, *child-sensitive* early action
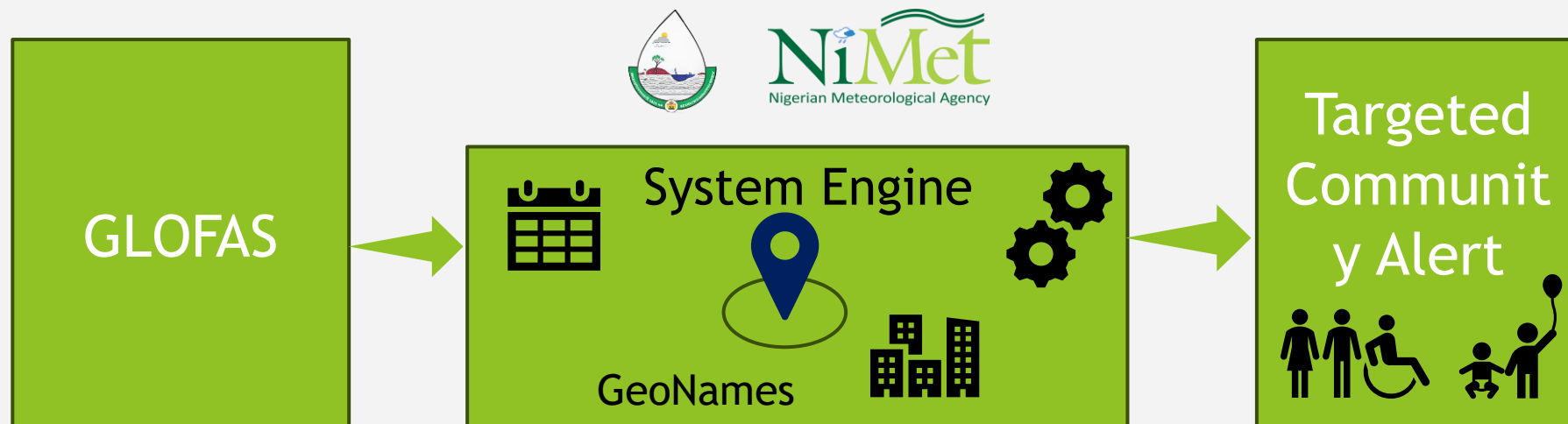
Leveraging GloFAS for Early Flood Indication

▶ **How GloFAS data is used**: Accessing daily discharge and precipitation forecasts.

▶ **Core Analysis**
Comparing GloFAS forecast values against established thresholds.

▶ **Value:**
Provides crucial **multi-day lead time** for potential large-scale riverine flooding events

River Discharge Comparison: Historical vs Forecast (04 Sep 2024)

Tailoring Forecasts: Seasonal Tuning, Area Focus & Community Linking
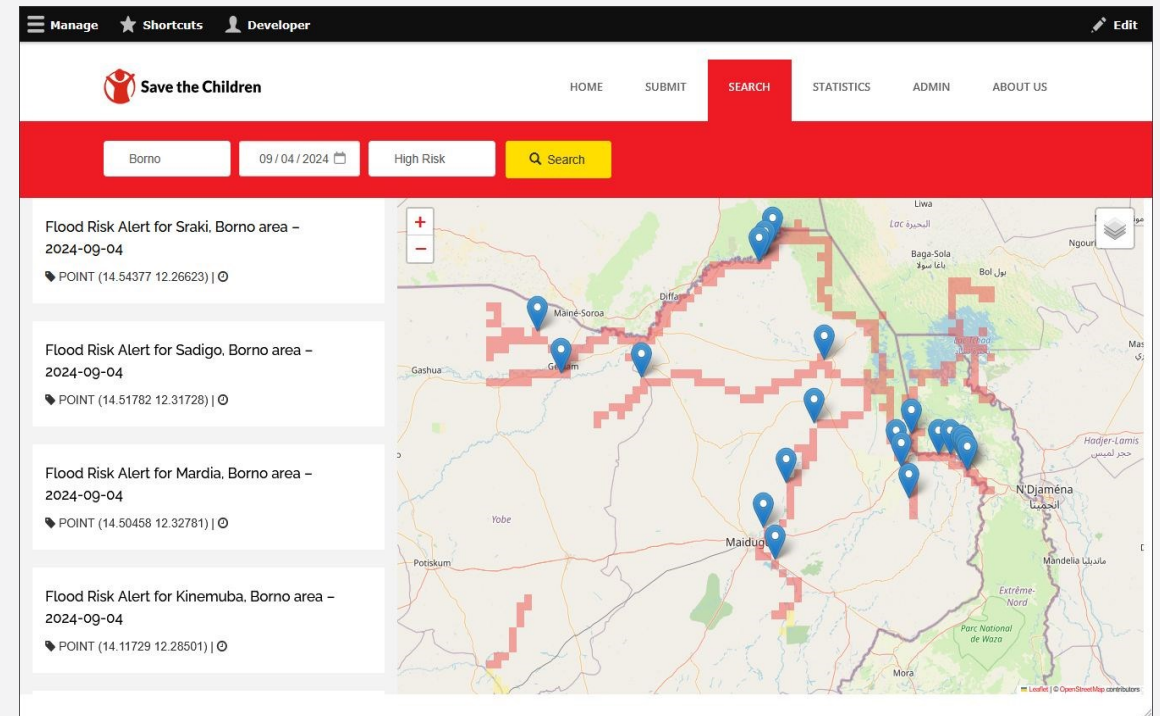
▶ **Challenge:** Global forecasts require local adaptation for relevance and accuracy.

▶ **Our Solution – Multi-Layer Tuning:**

  ▶ **Seasonal Adaptation -** Different parameters (thresholds, risk factors) for wet/dry seasons & peak months -> Improves sensitivity

  ▶ **Geographic Targeting -** Defining specific 'Areas' (e.g., states) with unique criteria -> Focuses warnings.

  ▶ **Connecting to People -** Integrating GeoNames -> Identifies specific populated places at risk

▶ **Combined Power:** Tuning + National Data + local input = More reliable and actionable alerts.

GLOFAS → System Engine / GeoNames → Targeted Community Alert

From Data Integration to Actionable Alerts

Simplified process flow:

1. Data Ingestion (GloFAS, NiMet, NHSA, Community).
2. Analysis Engine:
   1. Apply Seasonal & Area Parameters
   2. Compare vs Thresholds
   3. Determine Risk Level
3. Alert Generation:
   1. Identify Affected Places (GeoNames)
   2. Estimate Potential Impact
   3. Disseminate via SC channels
4. Trigger: Targeted **Anticipatory Action (AA)** & Community Response.

System Testing Underway: Focusing on Decision Support for Action

- **Status:** System build is complete. We are currently in the **testing and calibration phase.**
  - Using historical flood data (e.g., 2024 ground truth) to refine seasonal parameters for Nigeria.
  - Ensuring readiness for the upcoming flood season.

- **Primary Goal:** Provide reliable, timely alerts to enable effective Anticipatory Action (AA), especially protecting children.

- **Key Challenge:** Accurate Population Data for Impact Assessment.
  - Obtaining near real-time, geographically precise numbers of people (particularly children and vulnerable groups) within forecasted flood zones remains difficult.

- **Impact on Decision Making:** This data gap affects the ability to accurately estimate potential impact, hindering optimal planning and resource allocation for targeted Anticipatory Action.

- **Current Focus:** Exploring methods and data sources to improve population estimates for better, faster decision-making when alerts are triggered.

Thank You & Questions

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