Supported by:

REGIONAL WORKSHOP ON IMPACT-BASED FORECASTING:

Training-of-Trainers and National Demonstration Planning for Temperature-Related Hazards

SAHF IBF Working Group Implementation Plan Project

09-13 February 2026

Kathmandu, Nepal

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Impact-based Forecast: Through Anticipatory Action for Flood/WFP

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Guide: IBF-Anticipatory Action for flood

IBF Flood

This session is designed to showcase an example of IBF for flood.

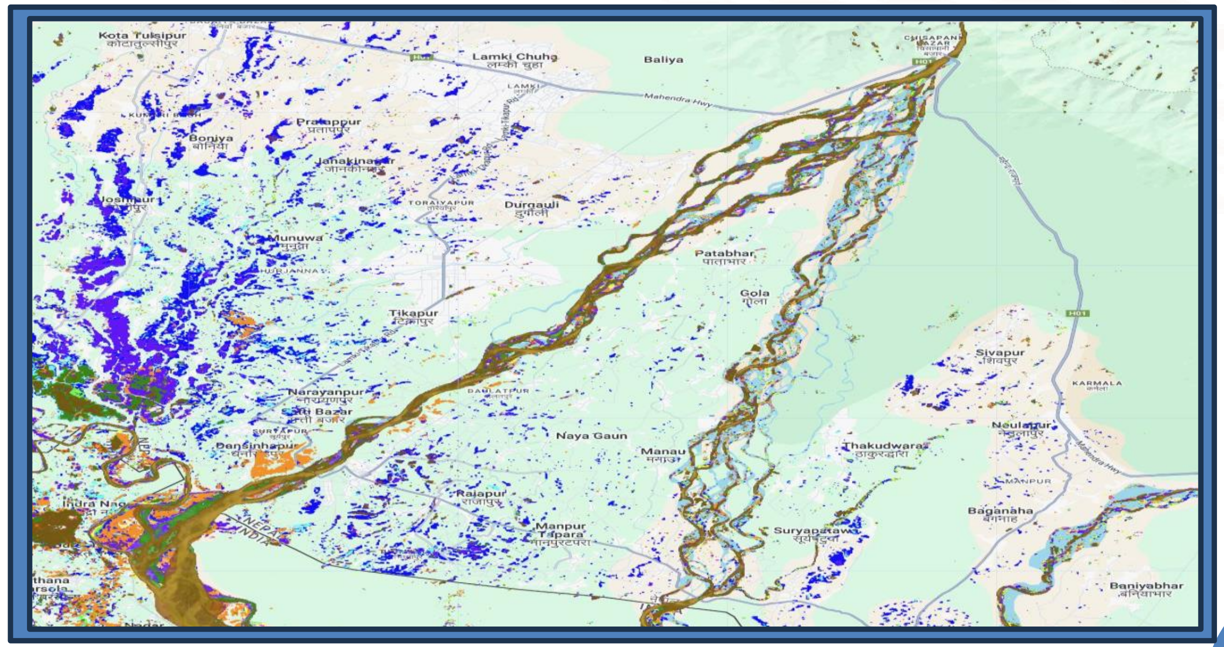
Content:

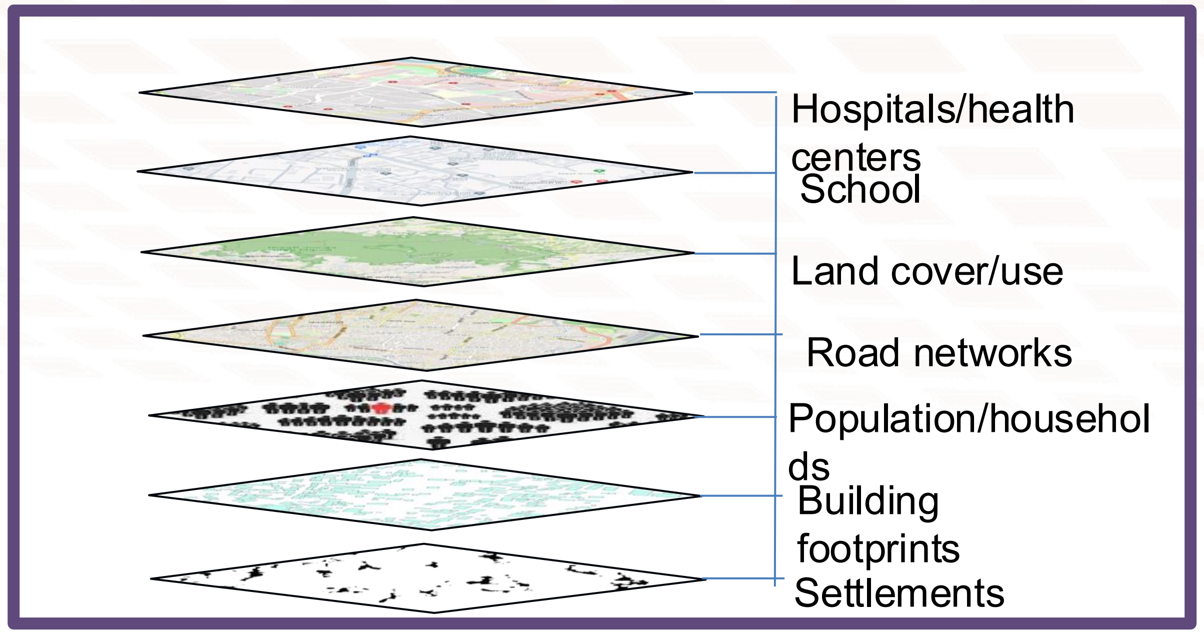
- Share the Earth Observation data that has been used
- Discuss on the methods and tools
- Highlight the exposure and vulnerability data that has been produced at settlement level

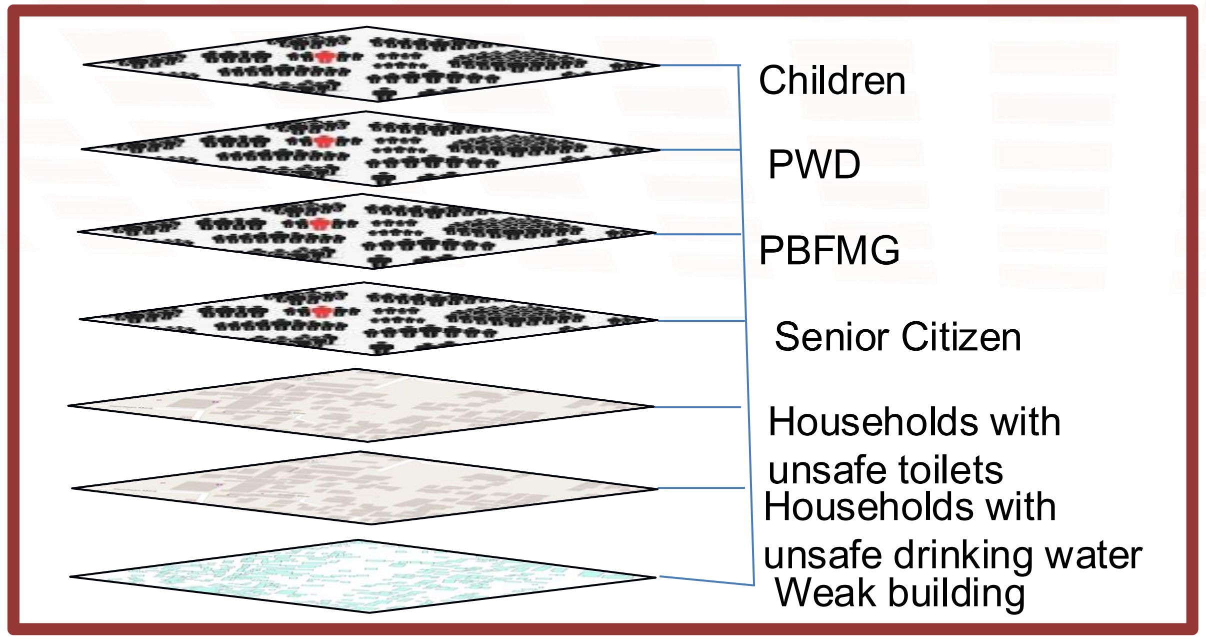
Can this model be replicated for IBF heat/cold wave?

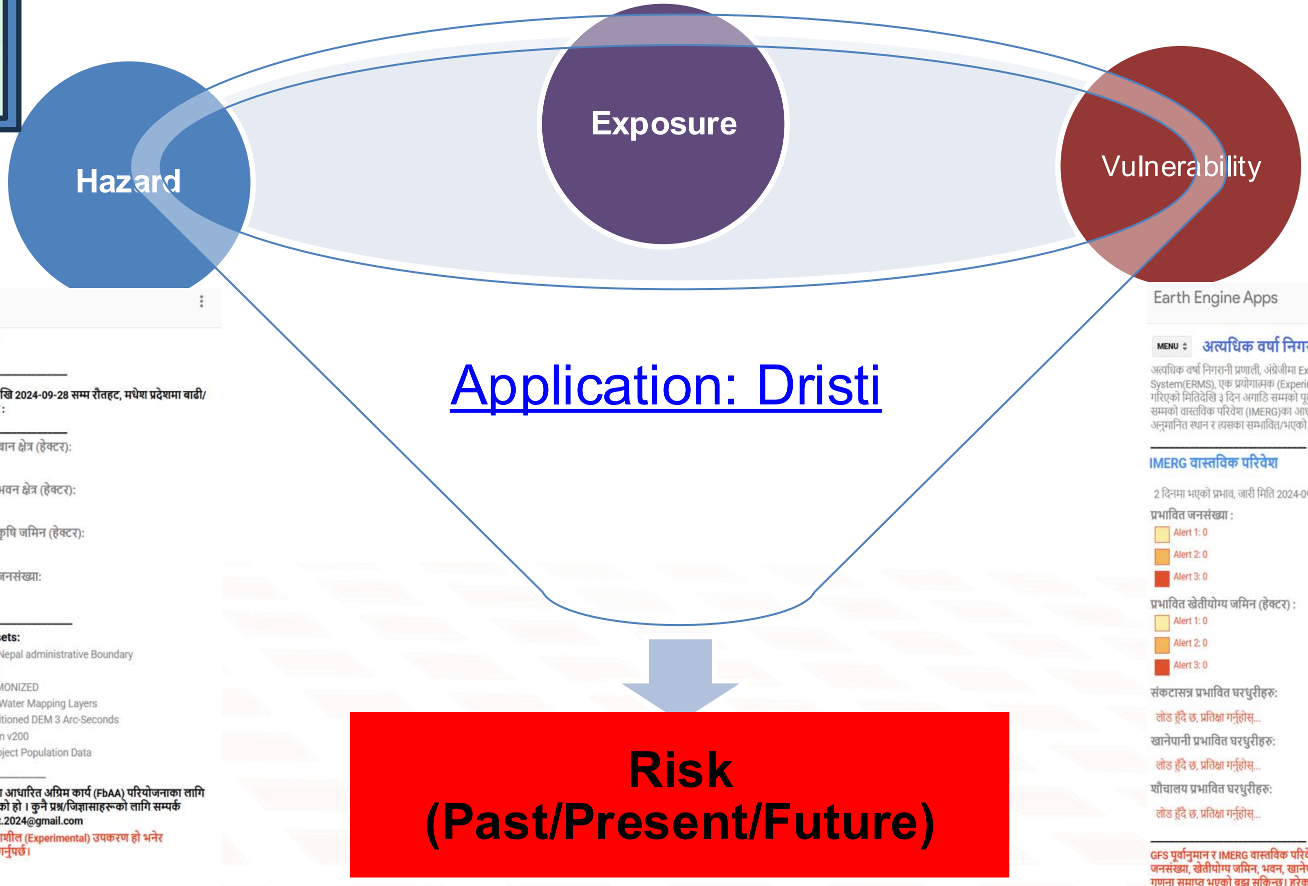
Questions, feedback and comment are welcome for discussion.

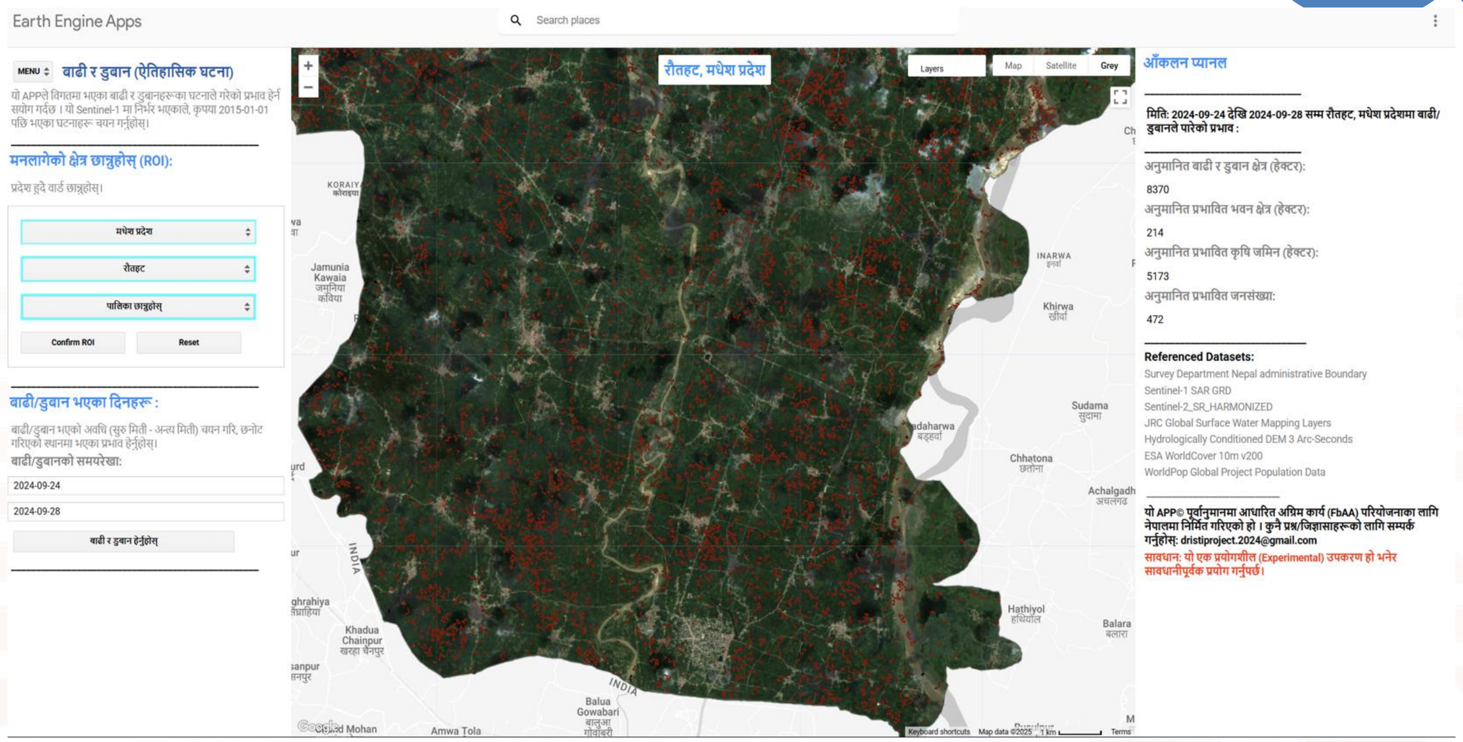
IBF: Disaster Risk, Impact and Situation Tracking Interface (DRISTI) system

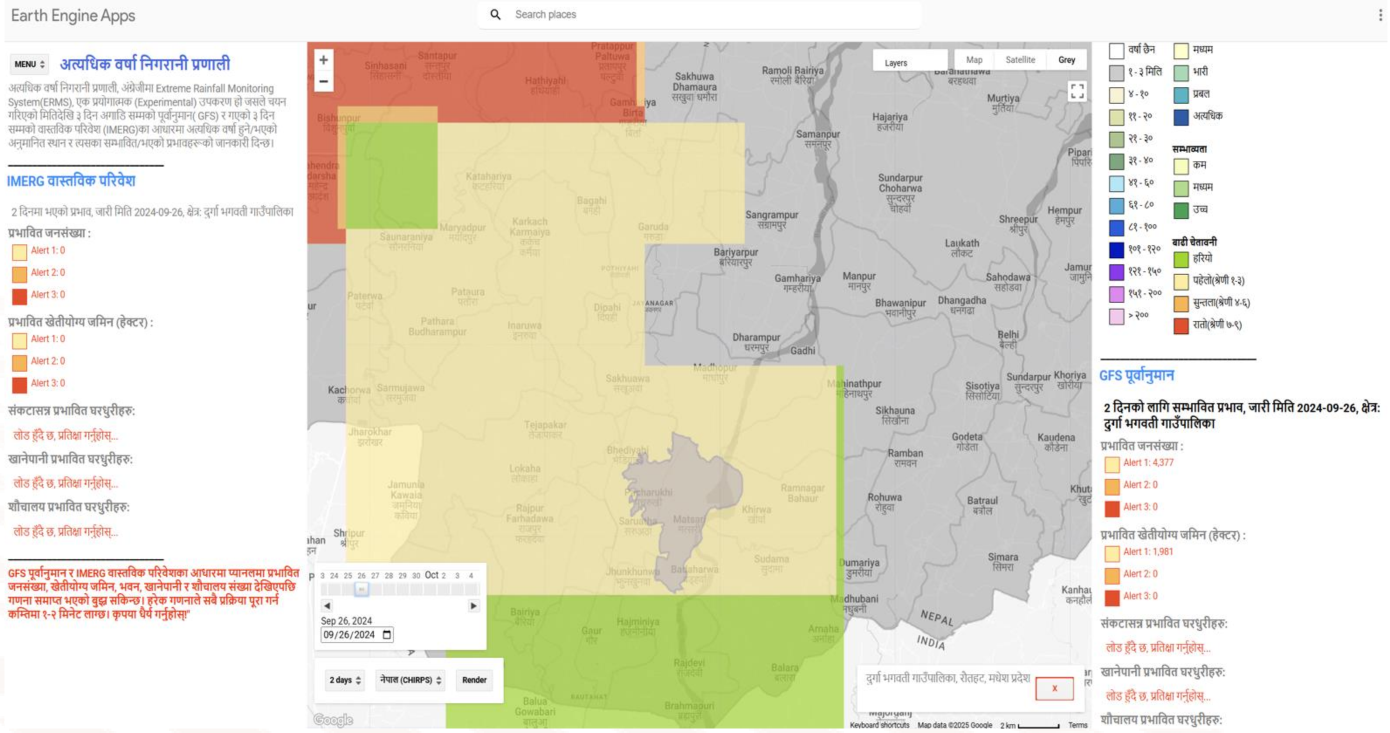












1. Methods and Tools

- 🌧️ **Rainfall & Flood Modeling**: **GPM IMERG/CHIRPS/GFS** rainfall used to model rainfall–flood relationships.

- 📊 **Regression-Based Flood Susceptibility: Focal & Multiple Regression** quantify influence of rainfall, NDVI, soil moisture, elevation, slope, TWI, SPI, HAND & river proximity.

- ⚠️ **Key Flood Drivers**:

Increase risk: 🌧️ Rainfall, 💧 Soil Moisture, 🌐 TWI, ⚡ SPI
Reduce risk: 🌿 NDVI, ⛰️ Elevation, ⛰️ Slope, 📏 HAND

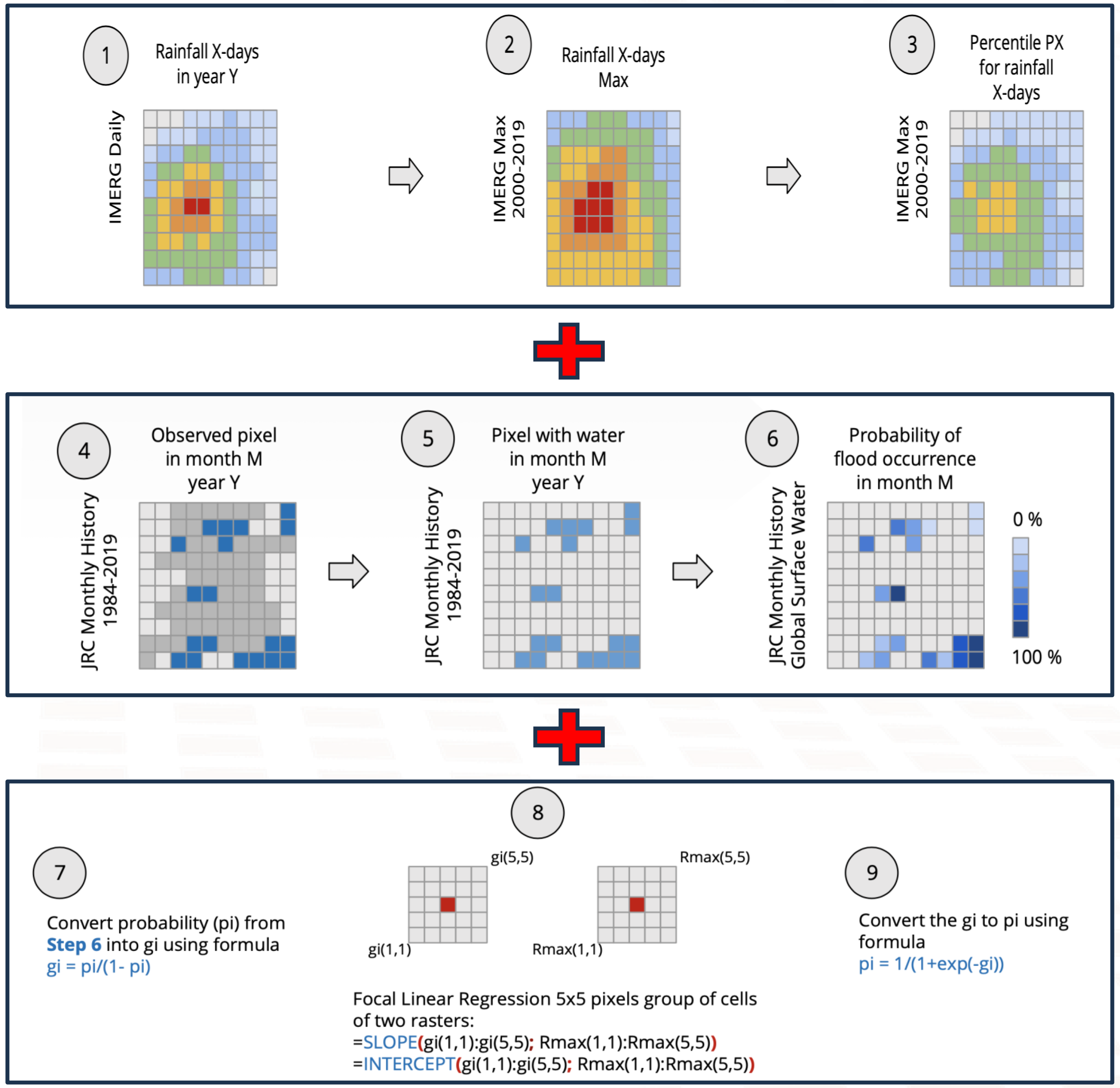
- 👥 **Population Exposure**: **NPHC 2021** population redistributed using **dasymetric mapping** for realistic settlement-level exposure.

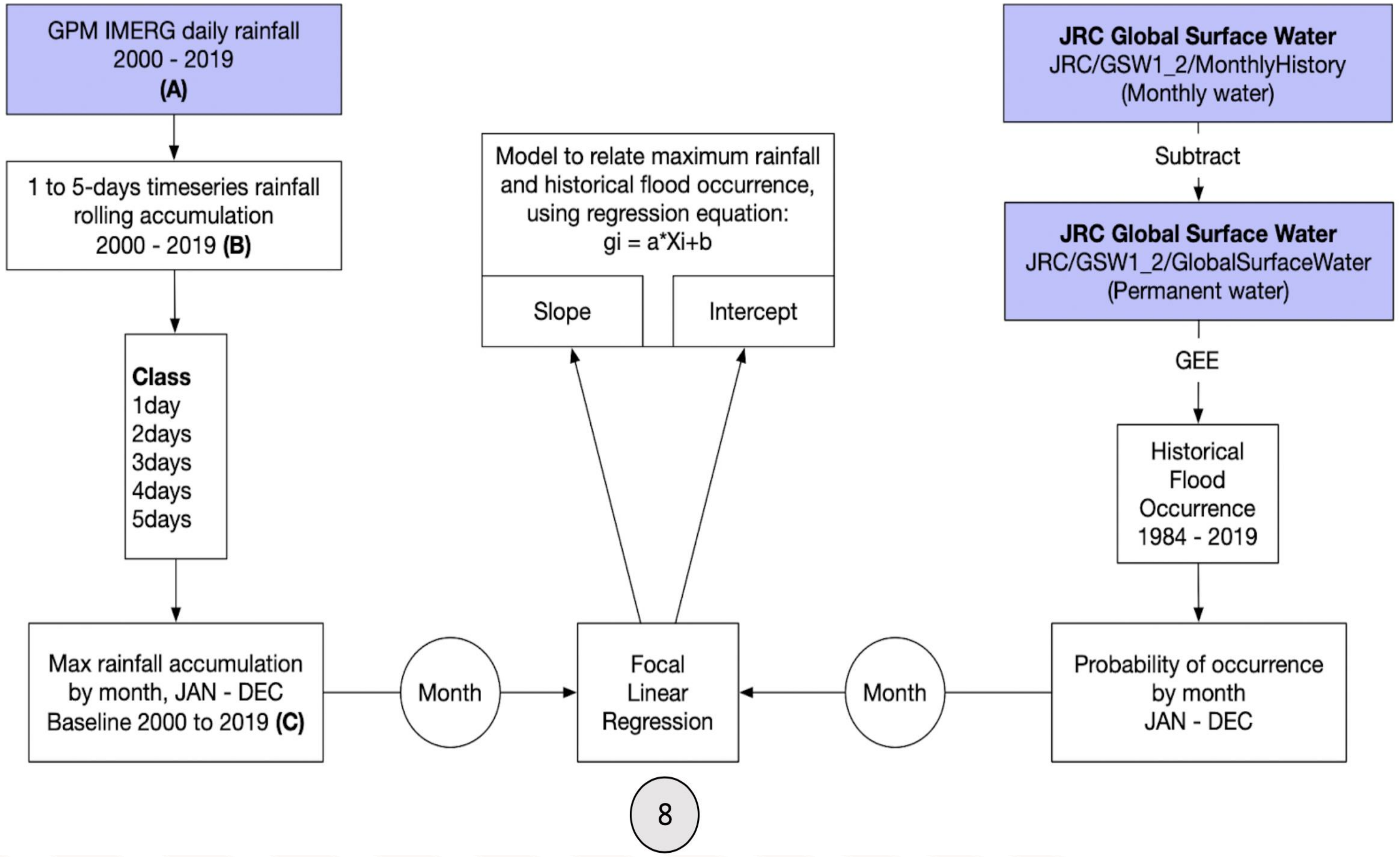
- 👶👵 **Vulnerable Age Groups**: **Children (<5)** and **Elderly (60+)** localized through census age structure + dasymetric redistribution.

- ♿ **People with Disabilities:** Disability prevalence from census spatially downscaled to identify high-vulnerability clusters.

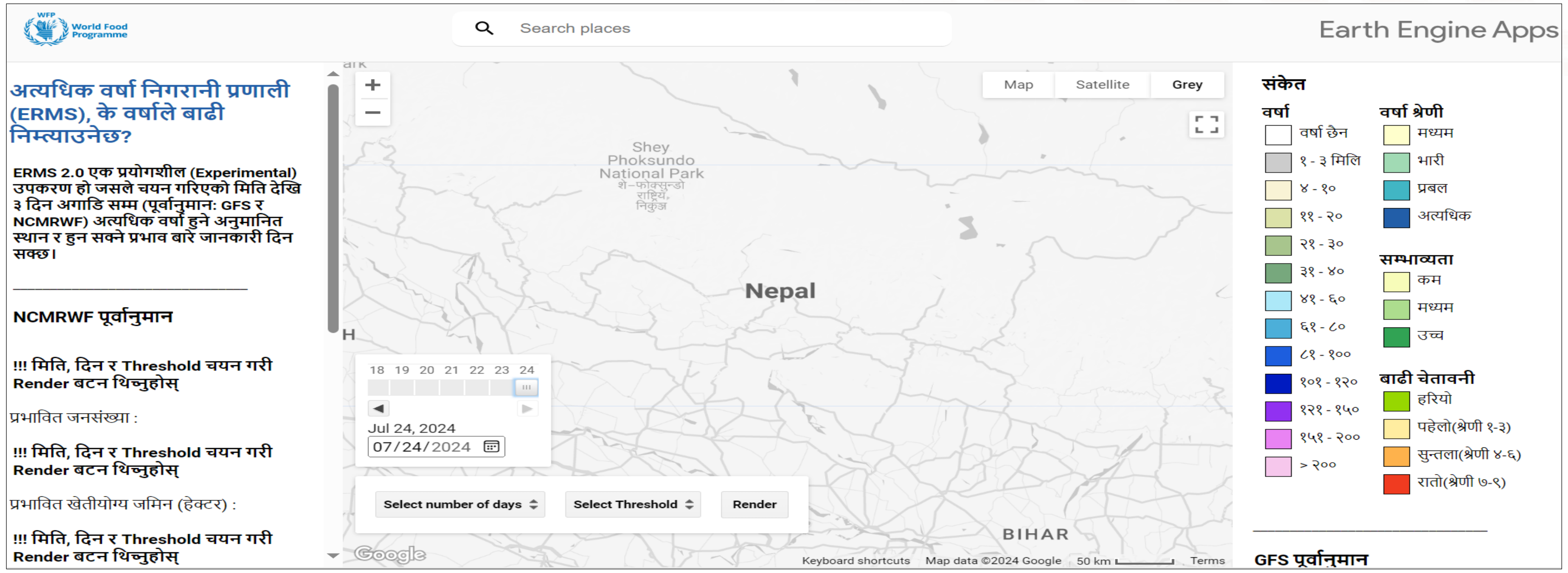
- 🏠 **Housing Vulnerability:** Building materials (e.g., **mud-bonded**, **bamboo**, **thatch**) mapped to identify structurally fragile homes in flood-prone areas

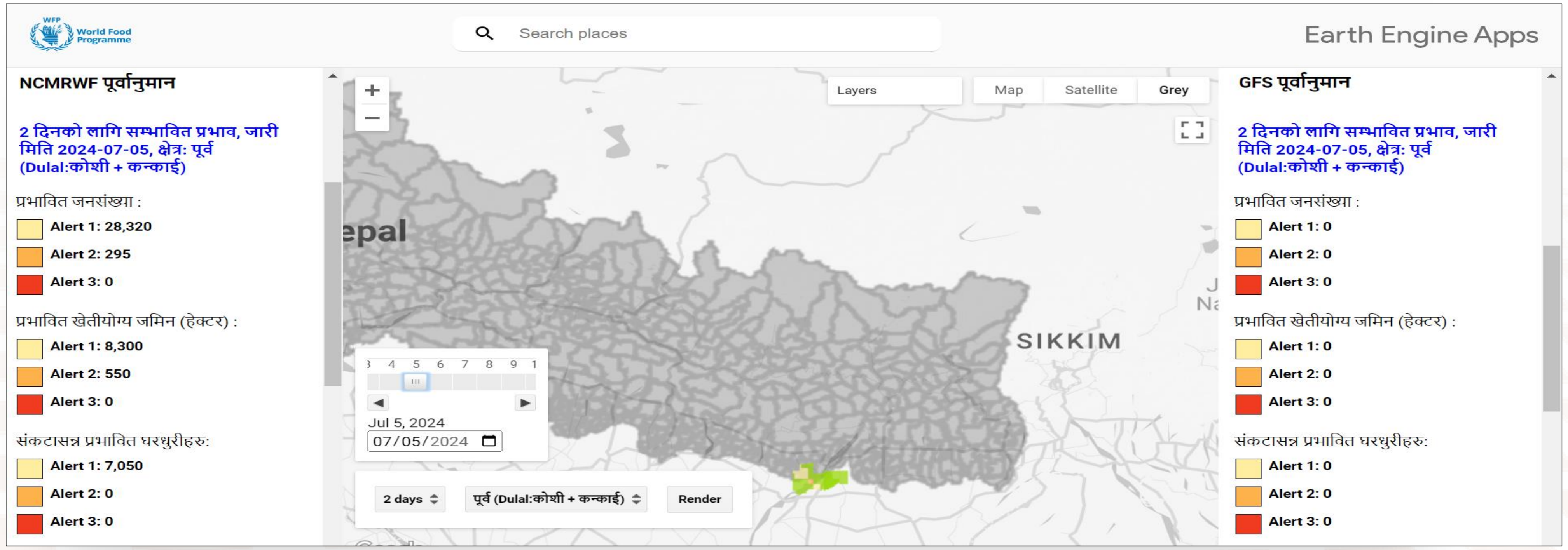
1. Method and Tools Contd....





2. Extreme Rainfall Monitoring System

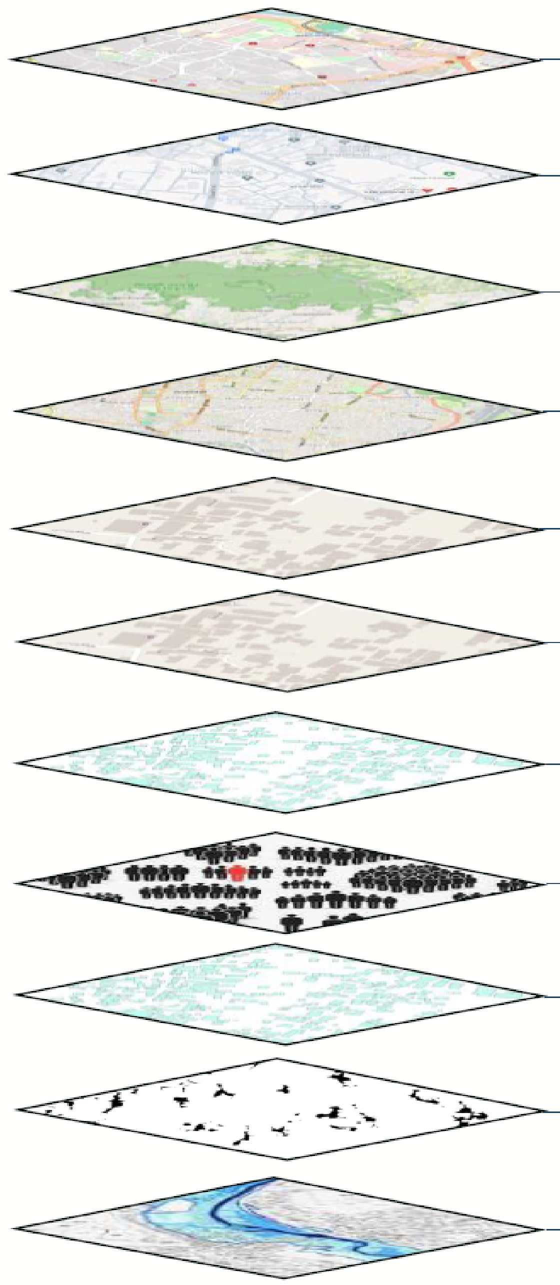




Impact	Likelihood: Low <60%	Moderate 60-80%	High >80%
Moderate P50 ~ 2yr RP	Green Alert	Green Alert	1
Heavy P80 ~ 5yr RP	Green Alert	2	4
Intense P90 ~ 10yr RP	3	5	7
Extreme P96 ~ 25yr RP	6	8	9

3. Forecast-based Risk Analytics

Data layers



Hospitals/health centers

School

Land cover/use

Road networks

Households with unsafe toilets

Households with unsafe drinking water

Weak building

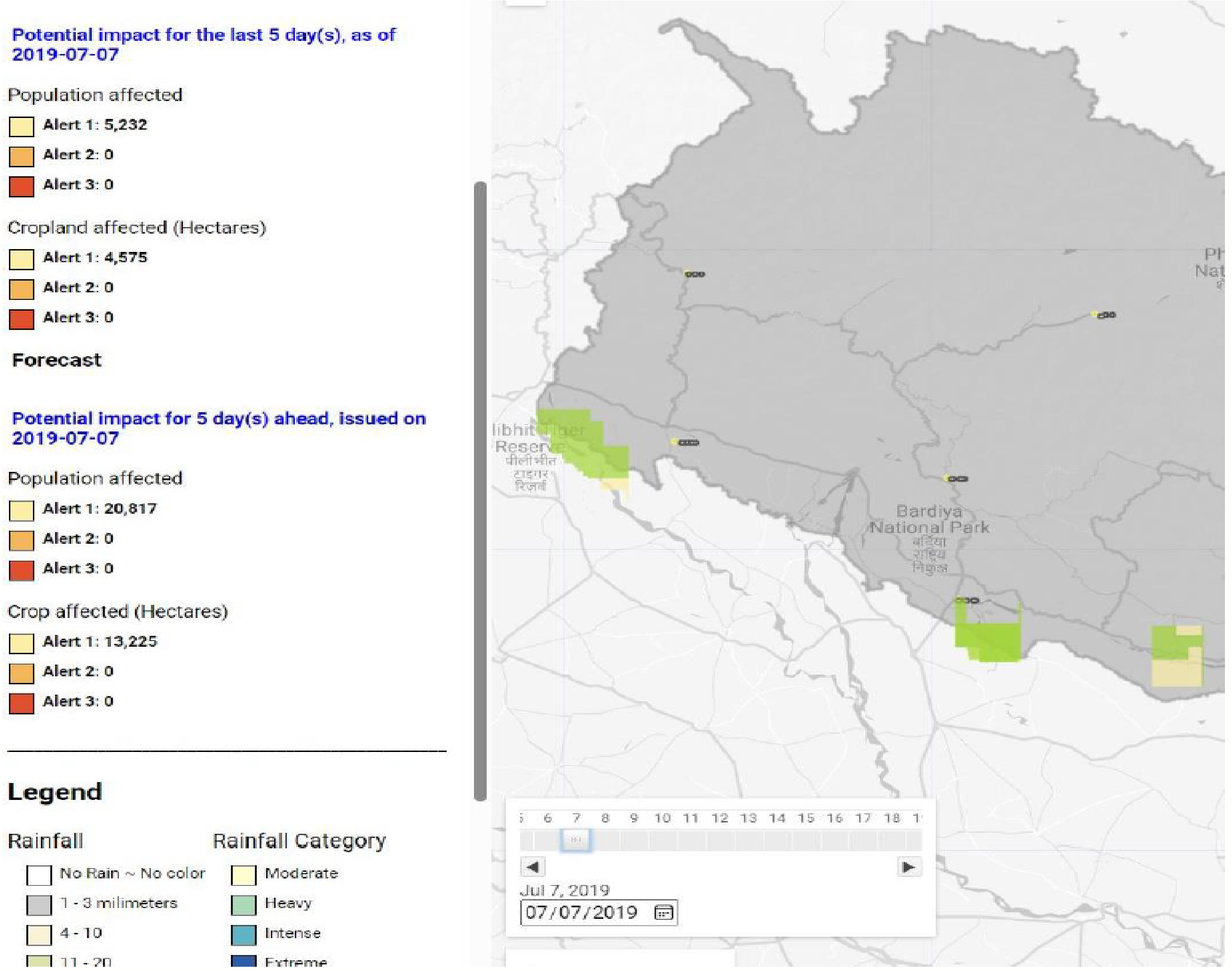
Population/households

Building footprints

Settlements

Flood hazard map

Forecast overlay



Clusters

Protection

Education

Health

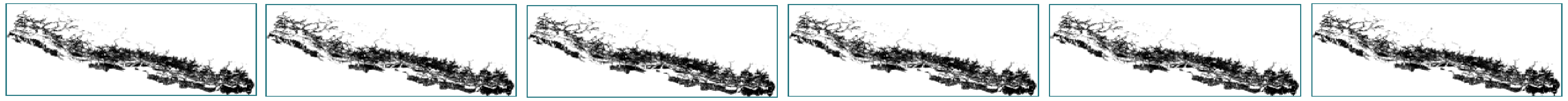
Logistics

WASH

Temporary Shelter

Food Security

Georeferenced data at settlement level

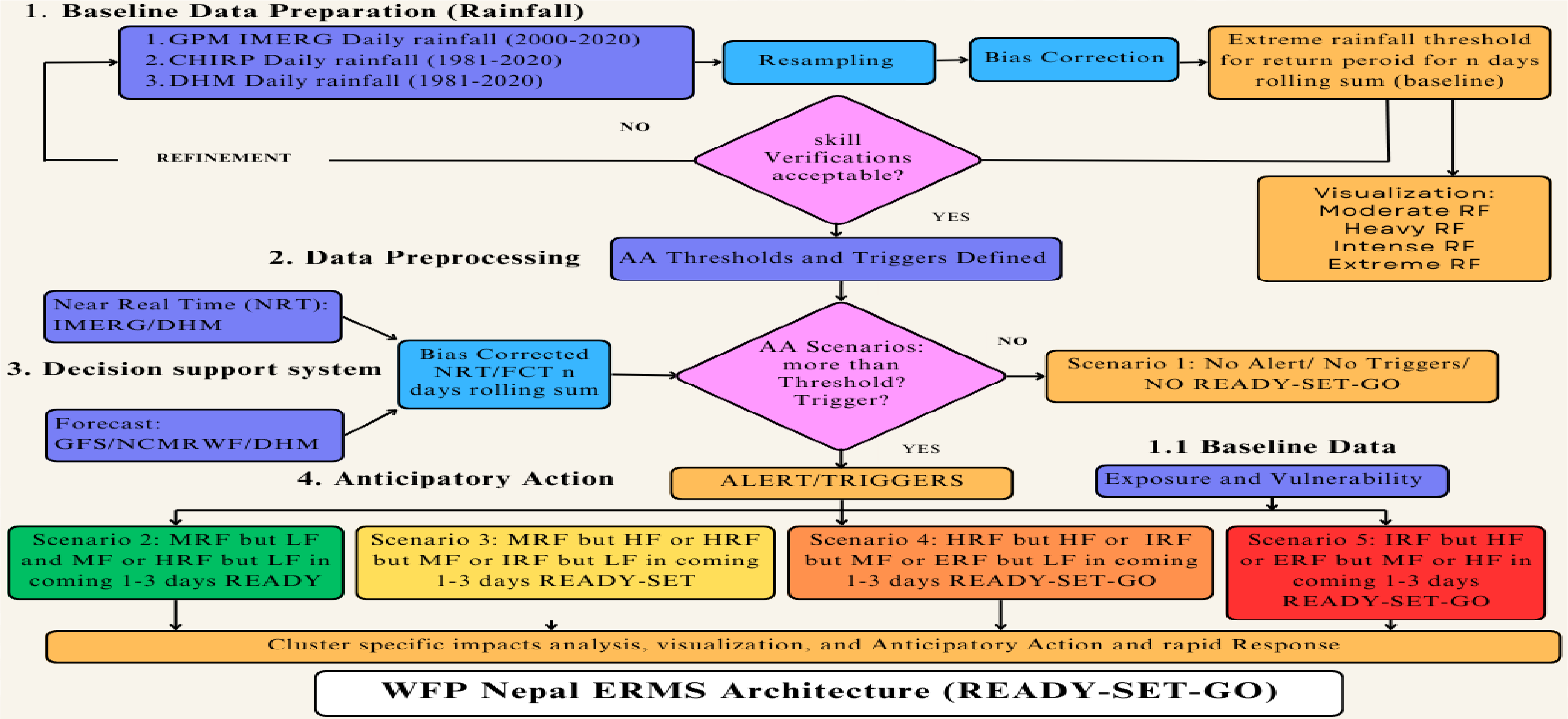


Buildings | Settlements | Population | Weak buildings | HHs with unsafe drinking water | HHs with unsafe toilets

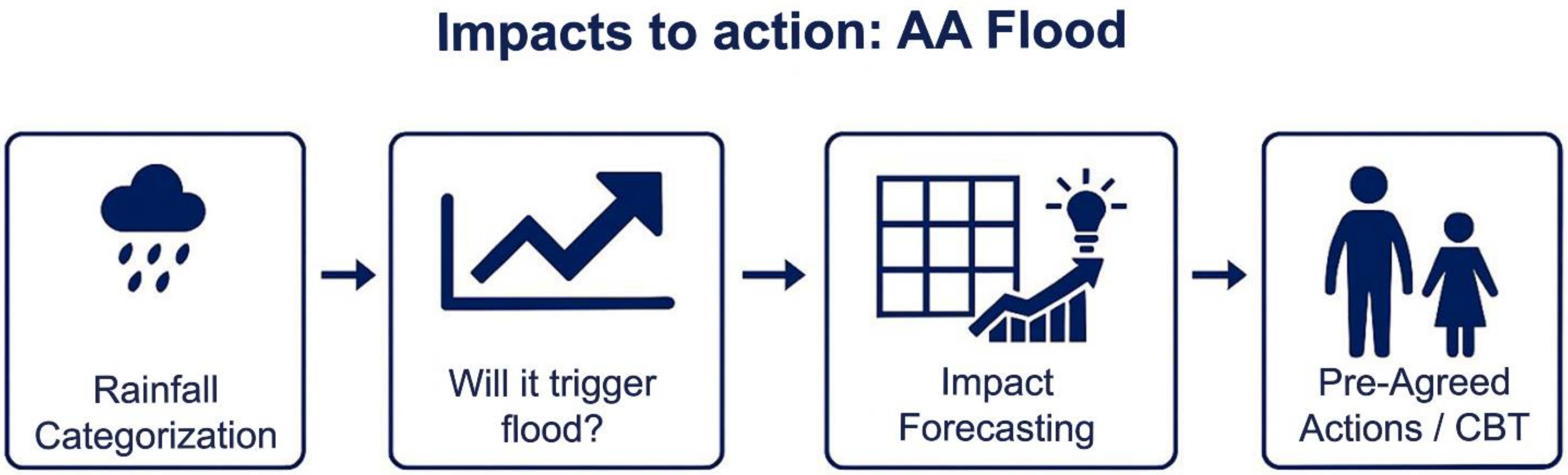
Google Research/WFP, 2024

Populated the demographic data of NSO, Govt. of Nepal at settlement level, (NPHC 2021)

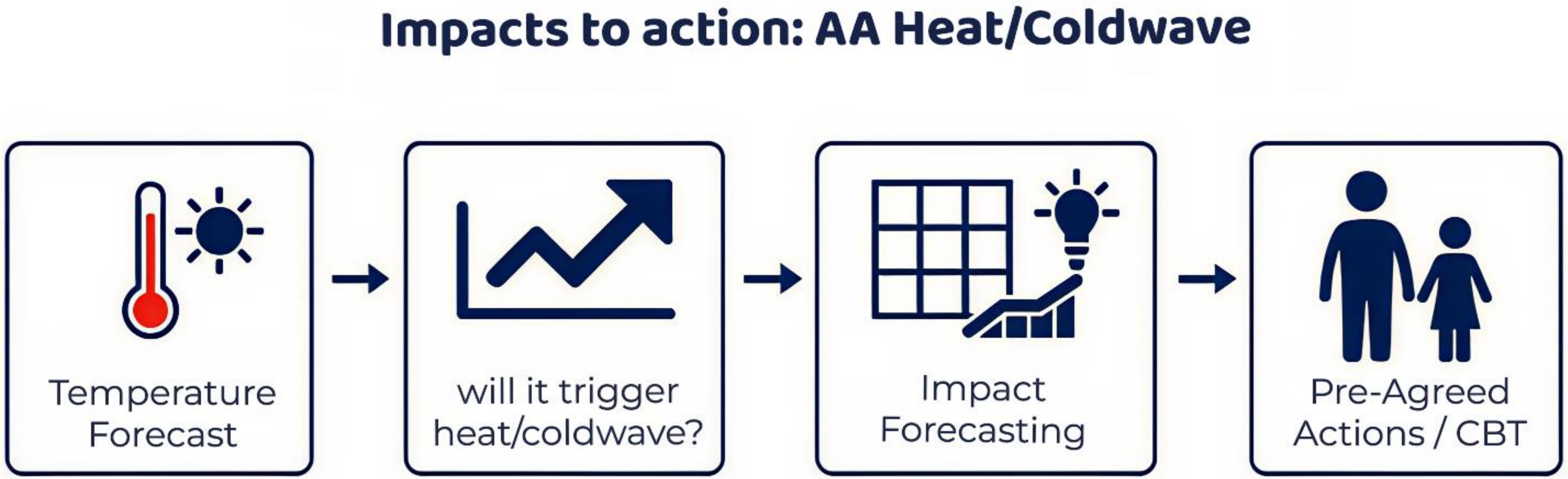
4. Operationalization



Summary


Impacts to action: AA Flood
Rainfall Categorization
Will it trigger flood?
Impact Forecasting
Pre-Agreed Actions / CBT

Replication



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