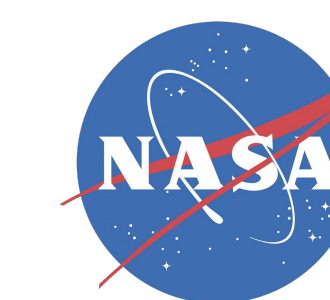# Improving resilience of West Africa using WA_SubX and FANFAR

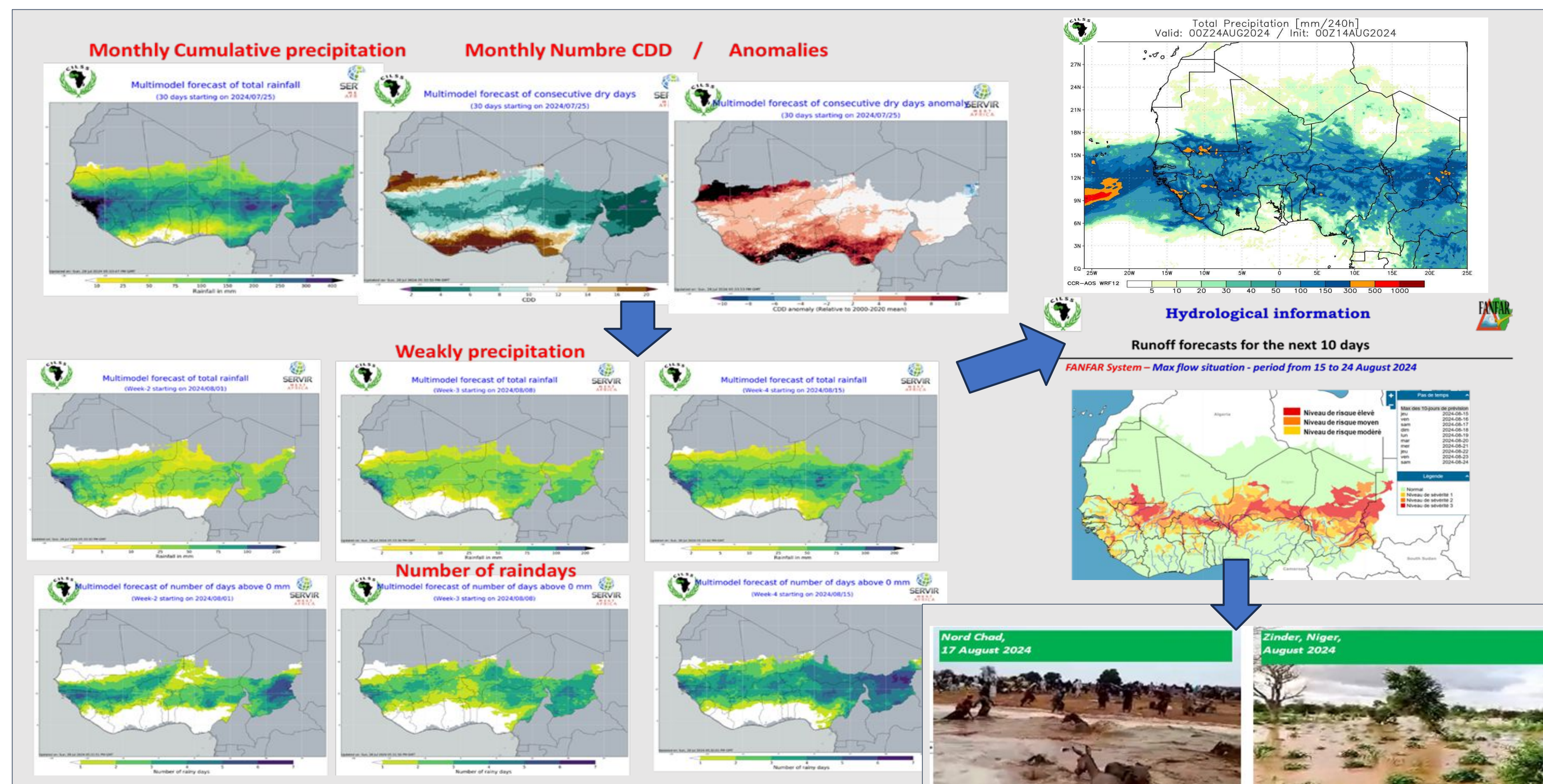USAID FROM THE AMERICAN PEOPLE · NASA · SERVIR WEST AFRICA

Several floods have occurred in recent years with severe consequences. Flooding is also projected to increase with climate change. Hence, there is an urgent need for improved flood management. In West Africa and the Sahel monitoring and forecast of weather, climate, and river flows can help to improve the resilience of communities if proper actions follow.

Partners & Collaborators
- AGRHYMET CCR-AOS
- Climate Hazards Center, UCSB.
- SERVIR-WA
- FANFAR consortium

Background
- Experimental high-resolution (5km X 5km) subseasonal-scale forecasts over the next 30 days
- FANFAR enhances the capacity of West African institutions to forecast, alert for and manage floods.
- Web visualisation, SMS, e-mail, and application programming interfaces (API)

Monthly Cumulative precipitation — Monthly Numbre CDD / Anomalies

Weakly precipitation

Number of raindays

Total Precipitation [mm/240h] Valid: 00Z24AUG2024 / Init: 00Z14AUG2024

Hydrological information — Runoff forecasts for the next 10 days
FANFAR System – Max flow situation - period from 15 to 24 August 2024

Forecast: Future Weather and Climate conditions (SubX) and expected impacts on rivers flows (FANFAR)

SubX: Quantile mapping-based bias-correction and downscaling of the forecasts from NMME SubX project (Pegion et al., 2019), currently using 5 climate forecasts models:1999-2016.

FAFAR: Hydrological model, to predict the effects of meteorological dynamics (e.g. rainfall and temperature) on river flow, water level, soil moisture in rivers, lakes, wetlands, and all land surface areas. FANFAR, use the Niger-HYPE model for the Niger River basin and the World-Wide HYPE model for the entire West African domain

WRF-AGRHYMET: Daily and 10 days weather forecasts

Nord Chad, 17 August 2024 — Zinder, Niger, August 2024 — El-Méki, Niger, Auigsut. 2024 — Bamako, 19 august 2024

Disasters: Flooding in 2024 in Central and West Africa More than 570 people killed in August 2024 and 1,600,000 displaced (Source: UN OCHA, IFRC, OIM, Gvt Niger and Chad)

Use of the products
- 10 days briefing
- Monthly bulletins
- Technical notes

Outcomes & Impacts
- NMHSs DRRA have access to the platforms
- Users are trained
- Products are included in National Meteorological and Hydrological Services (NMHSs) and DRRA process for Early Warning (EW) mechanisms
- Humanitarian

Next Steps
1. Improve the SubX platform with localized information
2. Improve FANFAR with socioeconomic data
3. Establish and operationalize situation room for EW in AGRHYMET-RCC
4. Multi-models forecasting system
5. Impact based forecast system
6. Trained users and set up local medias network

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