



Earth observations: current operational early warning systems

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Director,
GEO Secretariat

Geneva, October 2022



in numbers



7

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114

COUNTRIES



140

PARTICIPATING
ORGANIZATIONS



19

ASSOCIATES



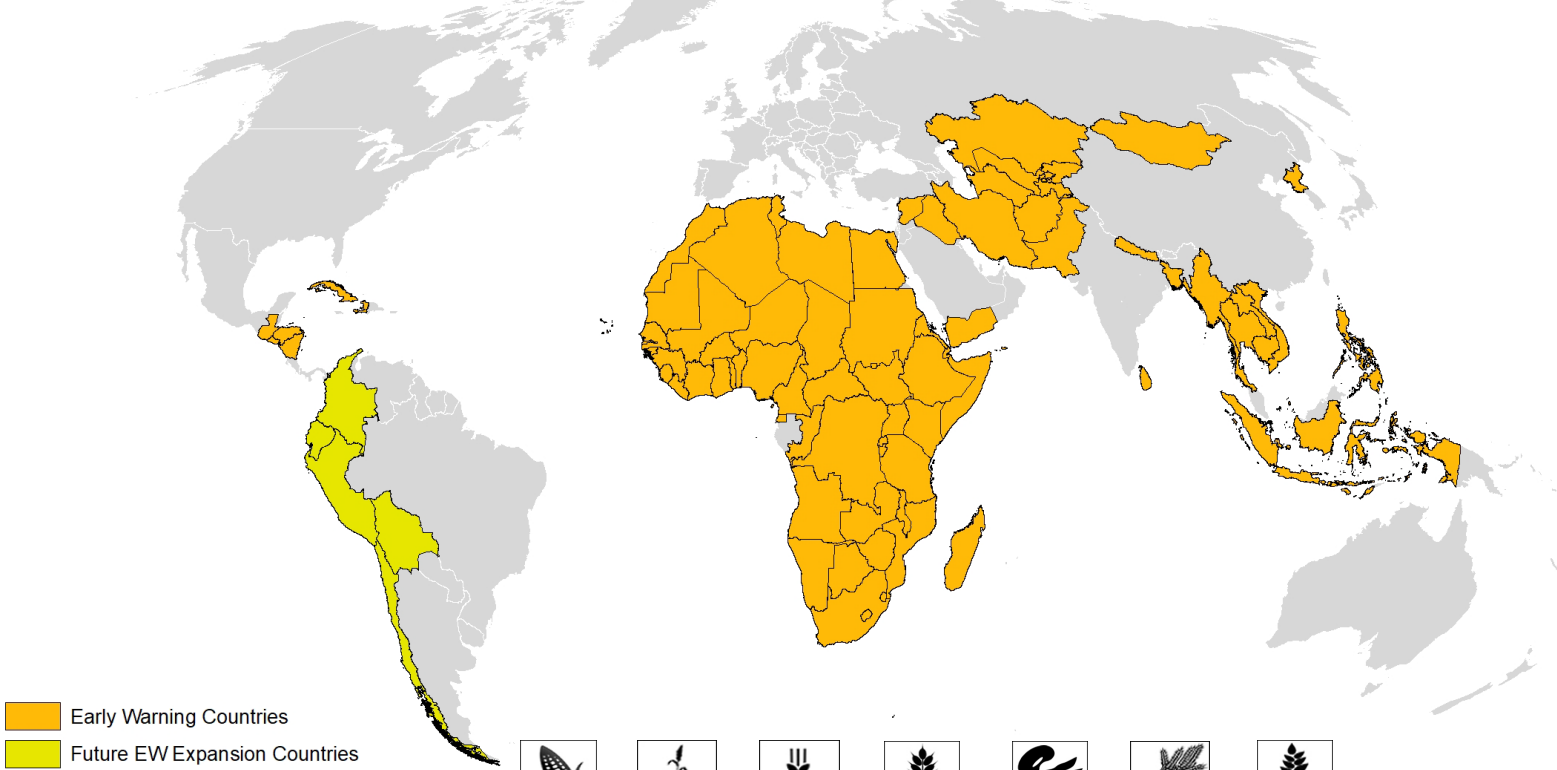
Crop failure in Karamoja, Uganda. Mr. Olinga John, District Agriculture Officer, collecting field data (credit: Catherine Lilian Nakalembe)

- **Uganda Disaster Risk Financing:** Need for fair and transparent process to establish threshold unlock financing.
- GEOGLAM designed and customized **Uganda Crop Monitor System**
- In June 2017, early warning for widespread crop failure. Unlocked **\$4.1million** to scale-up public works, benefiting **28,601 households** and approximately **150,000 people**, more than 50% of whom were women. **Savings of US \$2.6 million** in costs for food aid, which could be reallocated to target households to strengthen food security.

Crop Monitor for Early Warning (CM4EW)

Launched 2016

- Covers regionally important crops across multiple seasons
- Focuses on countries at risk of famine
- Enhances data and builds capacity in support of food security decisions



Early Warning Countries
Future EW Expansion Countries



Monthly global consensus on crop conditions through international and national aid organisations working together

National & Regional Owned & Operated Crop Monitors

Co-Developed, Replicable and Adaptable

Republic of Kenya
Ministry of Agriculture & Irrigation

June 2018 Issue 1

CROP CONDITIONS BULLETIN: June 2018

National Synthesis (Maize, Beans and Wheat)

SUMMARY
Prevailing conditions are favourable for maize production in most parts of the Country. The fertilizer subsidy program has also contributed to favourable maize performance. There has been in FAW infestation due to intensive rainfall received in most parts of the Country. However, conditions adversely affected beans production in most parts of the country. Frost occurred in highlands also affected beans production leading to rotting. Wheat production is favorable in growing areas. Wholesale prices of most commodities continued to decline.

Map showing regional crop conditions information in Kenya as at 23rd June 2018 for maize, wheat and beans. The crop Monitor map is based on a combination of several variables including remotely sensed data, ground observations, field reports, national, and regional experts. Crops with conditions that are other than favorable are labeled on the map with their driver.

OUTLOOK (Kenya Met Department (KMD)/State Department of Crops Development (SDCD))
Good maize crop performance is expected to continue over most parts of Kenya. The expected enhanced rainfall in Western Highlands and parts of North Rift and Central highlands will lead to further improvement in crop performance in the areas. However, beans production in parts of the country as well as frost in parts of the country.

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Climate outlook
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Les conditions des cultures au niveau national au 28 août 2019 (Summary)

Stade de récolte pour le maïs et l'arachide de bas-fond ou de jardin ; montaison-épiaison pour le maïs de saison, les mil/sorgho et levée pour le coton. Observation de l'aspect végétatif des champs dans les régions de Ségou, Sikasso et Mopti.

Superficies emblavées supérieures à celles de l'année dernière au niveau des mares et lacs des régions de Mopti et de Tombouctou. Stade montaison-début initiation paniculaire pour les mil/sorgho et ramification-début fructification pour le niébé. Bon aspect végétatif des cultures.

Observation d'un léger retard à moyen dans le démarrage de la campagne agricole par rapport à l'année dernière et à la normale.

Marachage d'hivernage en cours ; superficies exploitées proches de celles de l'année dernière.

Productions arboricoles moyennes à bonnes. Manguiers et les ancardiers en phase de déclinaison saisonnière de production.

Montaison début épiaison pour le riz dans les périmètres rizicoles de la région de Ségou, Mopti et de Tombouctou. Perspectives de productions jugées globalement moyennes à t poches de moyennes productions dans le sahel région de Kayes.

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NATIONAL FOOD SECURITY BULLETIN

02-2017 www.agriculture.go.tz

NATIONAL HIGHLIGHTS
In most parts of the country, food crops are in good conditions following good performance of both Msimba and Msimba rains. However, some food crops such as Maize, Rice and Beans have been harvested in some parts of the country. Msimba and msimu rains were on progress with good performance, in both availability and distribution. However, Eastern and North East regions damaging of infrastructures and farms were reported. Traditional storage practices in Tanzania cannot guarantee protection against major storage pests of staple food crops like maize which lead to 20-30% of grain losses. To address this problem, metal silos are used as a valid option and proven to be effective in protecting stored grains from attack by storage insect pests. The impact of metal silo technology includes, improving food security, empowering smallholder farmers, enhancing income opportunities and job creation. The price of major food crops are slightly decreasing, an indication of the harvesting period for the 2016/2017 production season. Lowest price of rice was observed in Mpanda, Shinyanga, Kigoma, and Mwanza market centers. Morogoro, Dodoma, Ilala and Singida market centers had above average maize price while Mpanda, Mbeya, Kigoma Sunbawanga were all below average maize prices. Lowest maize price were observed in Mpanda, Mbeya and Kigoma market. Ilala, Geita, Tembeke, Babati and for beans while Sunbawanga, Buhembe and lowest prices of beans.

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Public Awareness

U - NIE
The Official Government of Uganda
Monthly National Integrated Multi-Hazard Early Warning System (NIHMES)

Vol. 03 15th MAY - 15th JUNE 2019

CROP & PASTURE CONDITIONS MAP

Key to Conditions:
Favourable Conditions range from slightly below to slightly above average.
Watch Conditions are not far from average, but there is potential risk to production.
Poor Conditions are well below the average. Crop yields are likely to not or more below the average.

Early Warning for Regions!
Central 1 & 2: "Watch" crop and pasture conditions prevail across the regions except for Kiboga, Nakaseke, Nakazongola, and Kayunga in Central 1 and Ssembabule and Lyantonde in Central 2 that are poor. This is due to delayed, inconsistent and below average rainfall observed across the regions.
Karamoja, Acholi & Lango: Poor crop and pasture condition prevail in the region due to delayed and below average rainfall. Land preparations and planting activities are still underway in Karamoja and start of rains may lead to improved pasture conditions.
West Nile: The region is under "watch" crop conditions and planting is underway due to delayed onset of rainfall. Conditions are improving due to rainfall during the last decade of April 2019 leading to significant improvement in pastures.
South western: "Watch" crop and pasture conditions prevail in the region due to non-uniform rainfall under watch, though tilling, planting, and weeding activities are underway in the region.
Teso: "Poor" crop and pasture conditions prevail in the region due to delayed onset of rainfall. Poor conditions may occur in the region.

November 2021 Issue No.7 Rwanda National Crop Monitor

November Overview:

Generally, Beans and Maize crops are at maturity to harvesting stage while Rice is at vegetative stage across the country. Late rains and persistence dry weather conditions mostly in the Eastern Province and Kigali City has been the main challenge that farmers faced during this month; various agriculture practices were put in place to respond to this challenge.

Risks, Impacts and interventions
Dry weather conditions: For Bugesera, Rwamagana, Kayanza, Nyagatare, Kicukiro, Nyarugenge Kicukiro, and Gasabo districts, the Maize and Beans crops were affected by late rainfall and dry weather condition, farmers are advised to apply irrigation and other agricultural practices to improve water availability in the soil.
Socio-economic: In Kayanza district, Rice crop was affected due to insufficient water. The available water resources have been shared with the project that needs a lot of water for irrigation (KIWP), that competition is slowing down water supply in rice plantation and still rainfall amount in this season is very little.

Source: The Crop Monitor
Map showing national performance for rice, maize and beans in November, based on several variables including remotely sensed data, rainfall, ground observations, and field reports.

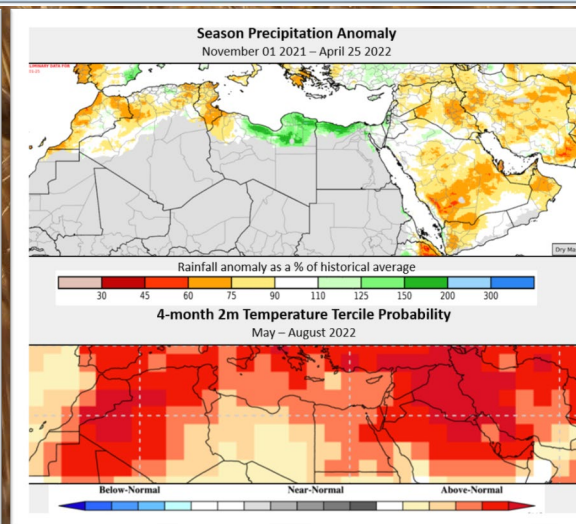
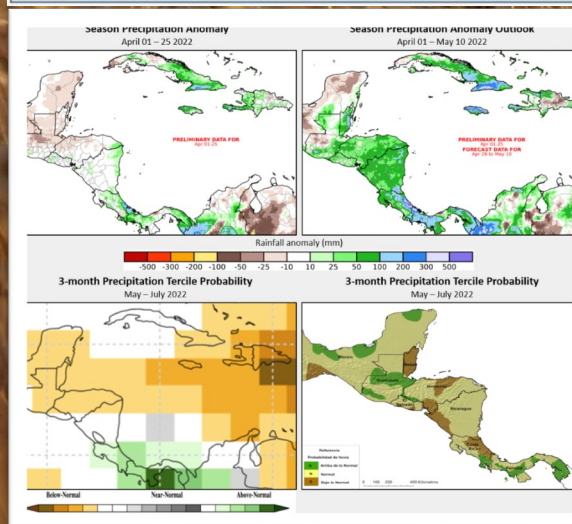
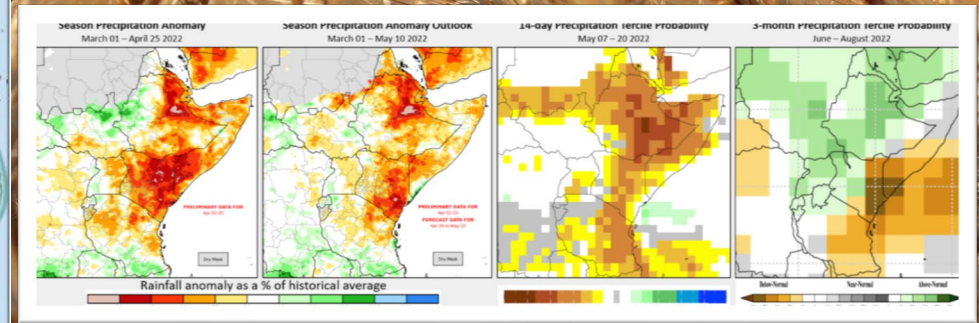
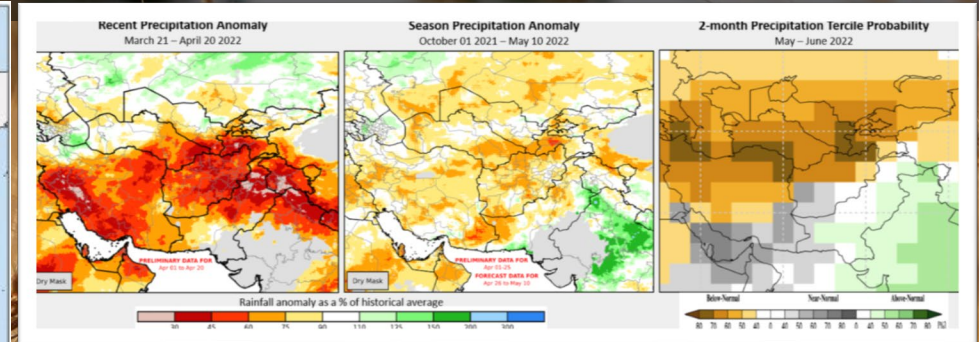
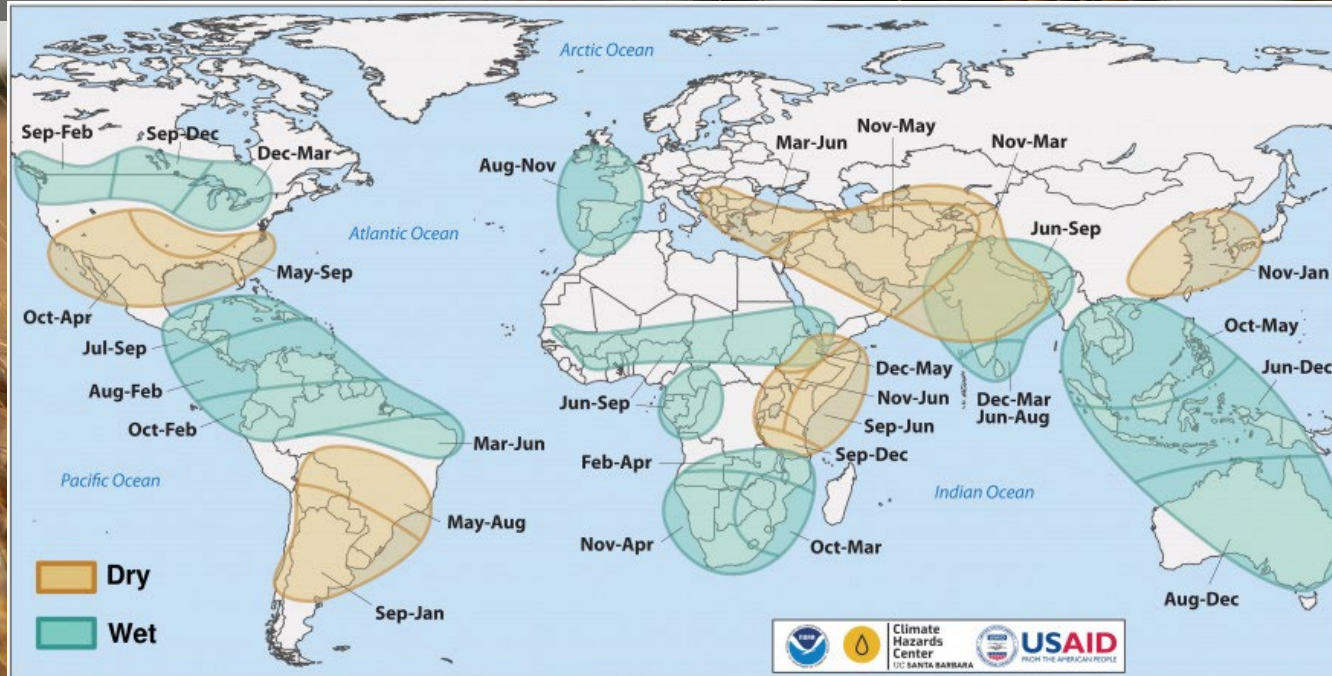
Source: The Crop Monitor
In Ruhango, Nyarugenge, Gasabo, and Bugesera districts, beans are under poor conditions while in Nyanza, Nyagatare, Kicukiro, Ngoma, Rwamagana and Kirehe districts Beans are under watch. Beans were affected by late rains and dry weather conditions that experienced during germination and vegetative stages.

Source: The Crop Monitor
Late rains that caused dry conditions affected Maize in Kicukiro, Gasabo, Nyarugenge, Bugesera, Rwamagana, Ngoma, Kirehe, Nyagatare and Ruhango districts, during the germination and vegetative phases this unfavorable weather conditions lead to poor crop.

www.minagri.gov.rw www.rab.gov.rw

- End-user driven, national ownership, integrated into existing systems to meet national needs
- Enhancing regional and global information
- Standardized global approach for crop condition monitoring

Integrating Climate Indicators: Short to Long Term Regional & Global Forecasts



- Provide timely seasonal and in-season forecasting
- Partnership with UCSB CHC since 2018
- Forecast alerts for areas of developing concern
- Global to regional monthly coverage, as required
- Working towards extended seasonal outlook assessments

Flood Risk Preparedness

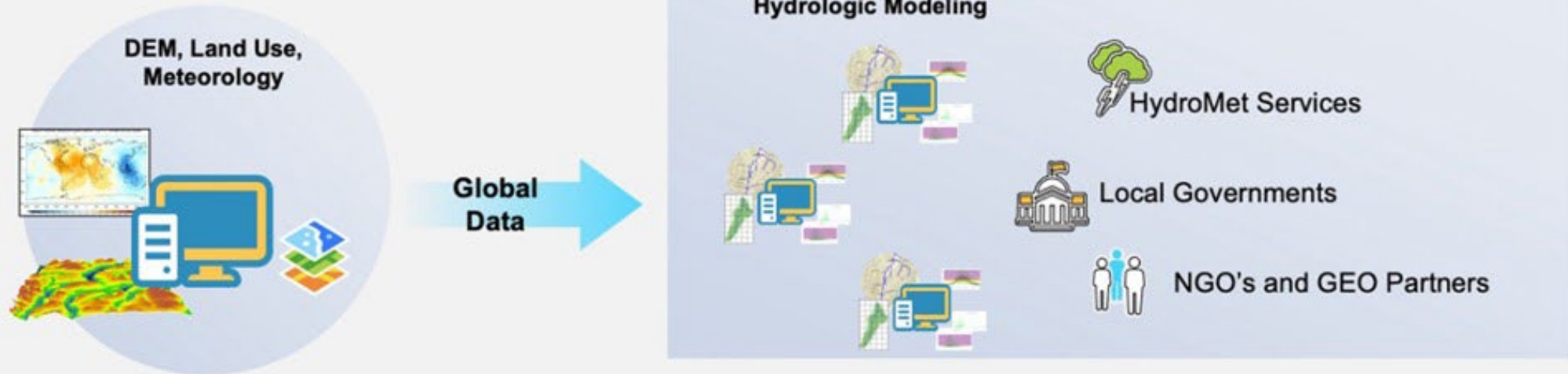


Honduras' state power company ENEE begins discharges at hydroelectric dam El Cajón. (source: Bnamericas Nov 6, 2020)

- During Hurricanes Eta and Iota, Honduras' state power company ENEE used the GEOGloWS Streamflow Forecast Services to direct discharge of 200 million m³ of water in the El Cajón reservoir before Iota's arrival, to avoid loss of power and flooding of Sula Valley.
- The Sula Valley generates about 65% of GDP, representing over 50% of Honduras exports. 2 million people represent 30% of the national population.
- Losses from Eta and Iota in 2020, when compared to those from Hurricane Mitch in 1998, were about 30% less.



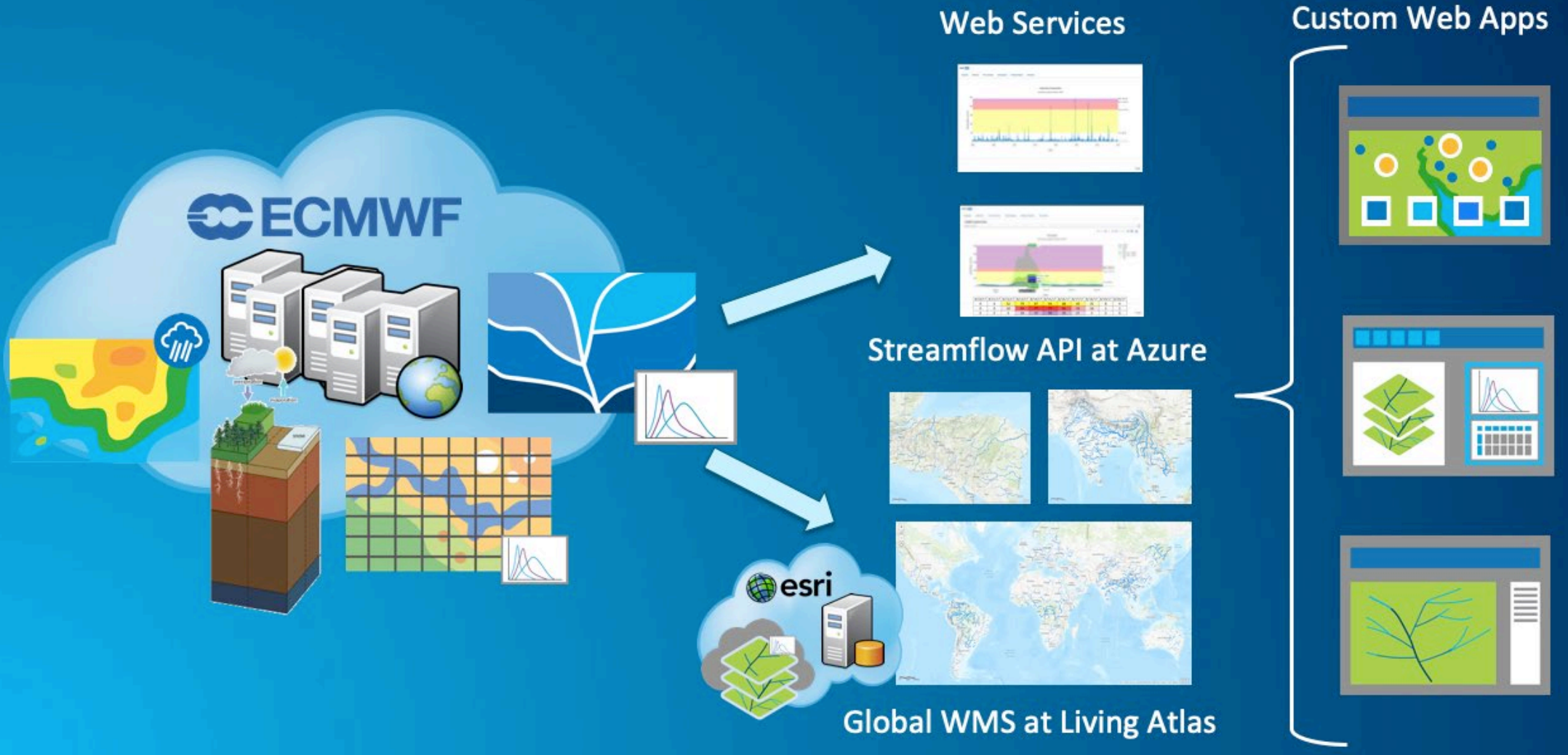
Traditional Approach



GEOGloWS Innovation

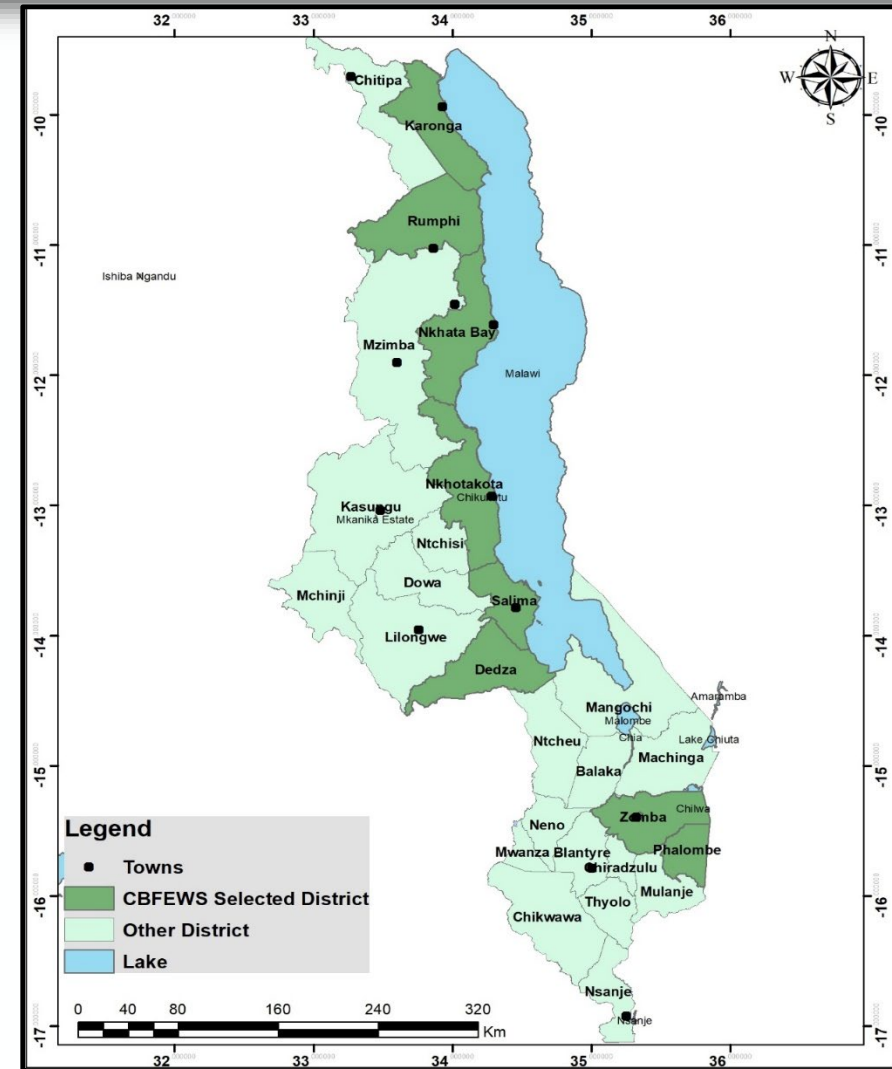


Global Streamflow Services from ECMWF



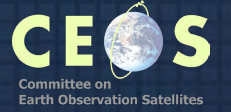
Objectives:

- ❖ To establish telemetric community-based flood early warning systems (CBFEWS) in 8 flood prone districts of:
 - Karonga, Salima, Dedza, Nkhotakota, Nkhata Bay, Rumphu, Phalombe, Zomba
- ❖ Leverage EO, including satellite data to complement telemetric CBFEWS.
- ❖ Strengthening technical capacity building of government institutions in the use of the integrated system.
- ❖ Evaluate system performance during the times of flooding and develop standard operating procedure.



GEO GLOWS

GLOBAL WATER SUSTAINABILITY





cloud credits programme



2019

17 COUNTRIES

\$1.5m
+ \$1m cap dev

2020

32 COUNTRIES

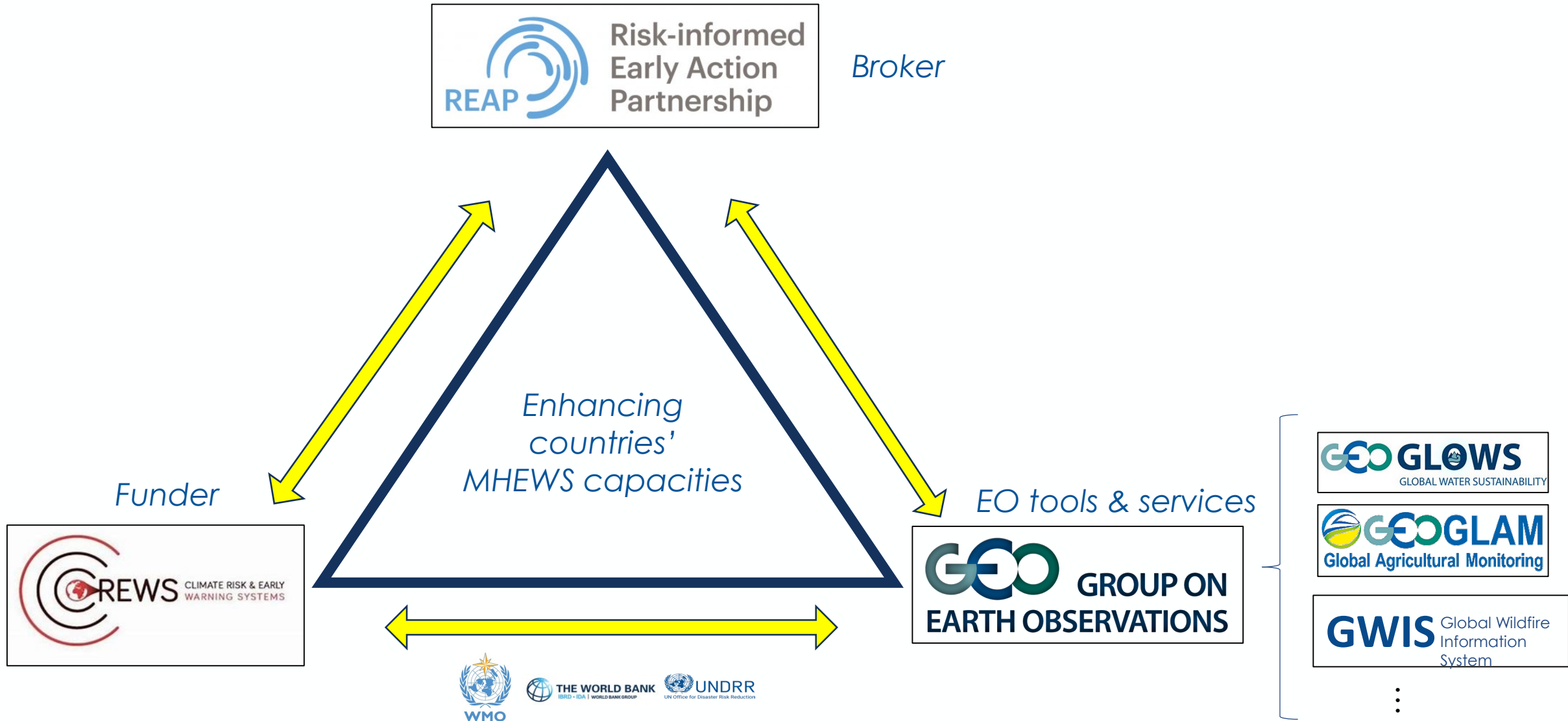
\$3m
+ \$1.5m cap dev

2021

18 COUNTRIES

\$3m (50% cash) + \$1m
cap dev

Creating Win-Win Scenarios Together



Build on existing, proven solutions for multi-hazard early warning globally.



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GEO WEEK 2022

Global Action for Local Impact

31 October - 04 November 2022 | Accra, Ghana



GLOBAL WILDFIRE INFORMATION SYSTEM (GWIS)



2020 STATE OF CLIMATE SERVICES

RISK INFORMATION AND EARLY WARNING SYSTEMS



2021 STATE OF CLIMATE SERVICES

WATER



GLOBAL WATER SUSTAINABILITY (GEOGLOWS)



2022 STATE OF CLIMATE SERVICES

ENERGY



GEO CRADLE SOLAR ATLAS GEO VISION FOR ENERGY