

## 2022 Stocktaking Reports

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### 1. Overview of activities before 2022

The Group on Earth Observations Global Agricultural Monitoring Initiative (GEOGLAM.org) was initially launched by the Group of Twenty (G20) Agriculture Ministers in Paris, June 2011 as part of the Minister's G20 Action Plan on Food Price Volatility. Since 2011 the GEOGLAM focus has expanded along with the G20's to also include a broader focus on global food security. GEOGLAM delivers on its mission by producing and openly disseminating consensus based, relevant, timely, and actionable information on agricultural conditions and outlooks of production at national, regional, and global scales (Cropmonitor.org). GEOGLAM participants include representatives from most G20 nations as well as many other countries, and several international organizations and NGOs. Participation is from more than 120 institutions from over 50 nations, with beneficiaries from least developed nations further expanding the reach of GEOGLAM.

While the focus of GEOGLAM continues to be on operational outcomes, these are underlain by a solid research foundation, including the Joint Experiments for Crop Assessment and Monitoring (JECAM). JECAM was initiated in 2009 and has grown to be a global network of about 50 research sites working together to develop operational solutions.

Since 2013 GEOGLAM information has covered G20 nations, as well as other AMIS major producing and exporting countries. The GEOGLAM Crop Monitor for AMIS (CM4AMIS) encompasses over 80% of global production, consumption, and trade volumes of AMIS targeted crops (Wheat, Maize, Rice, Soybeans). Over forty nations and institutions contribute to the Crop Monitor. Since 2016 the Crop Monitor for Early Warning (CM4EW) has monitored crops that are critical for food security by region, generally encompassing countries and regions that are susceptible to food insecurity. Participants include the major food security organizations including WFP, FAO, USAID FEWSNET, EC JRC, AsiaRice along with several regional and national agencies.

- Key milestones 2011-2022:
- Since 2013: Key information deliverables include monthly crop monitor reports for GEOGLAM's partner initiative, the Agricultural Markets Information System (AMIS). These are consensus reports on the four major food commodities (maize, wheat, rice, and soybean). They are based on science-based information including satellite EO data, agro-climate assessments, and expert analysis. The monthly Crop Monitors are key component of the AMIS Market Monitor.
- Since 2016: GEOGLAM Crop Monitor for Early Warning reports for food insecure nations have been produced providing monthly consensus reporting on cropping conditions for international food security monitoring and response organizations. These reports have provided information in support of food aid mobilization and disaster response by the humanitarian community.
- Since 2017: Working with least developed countries to co-develop their own crop monitoring systems within national mandated agencies. These efforts have had a significant impact on food security by supporting proactive responses that save lives, improve livelihoods while reducing the cost of emergency food aid.
- Since 2017: Development of Special Reports in response to emerging food security concerns.

Developed in response to UNOCHA requests for more frequent information in areas of emerging concern.

- Since 2018: To augment the crop condition reports GEOGLAM has been publishing global climate outlooks, including El Niño-Southern Oscillation (ENSO) status reports.
- Since 2018: Regional forecasts and Seasonal forecast alerts are routinely included as part of the crop monitors. GEOGLAM works in partnership with climate forecasters to codevelop these outlooks, and as longer-term forecasts become viable, we will incorporate them into our outlooks.
- Since 2020: Under CM4EW, GEOGLAM has been publishing Food Security and Conflict reports to provide further insight into the impacts of conflict on agricultural production and food security across reporting regions.
- Since 2021: GEOGLAM is working with the Committee of Earth Observing Satellites (CEOS) and the UNFCCC to develop a “roadmap” to apply Earth observations to the first Global Stock Take and develop systematic approaches to bring EO information to inform climate mitigation.
- Since 2021: Development of the GEOGLAM Global Crop Monitor, which combines the information from the Crop Monitor for AMIS and the Crop Monitor for Early Warning to give a global perspective on global crop conditions. Integrated with short-term (2-week) and mid-term (3-month) rainfall forecasts for all agricultural regions.

## **2. Progress since the previous stocktaking exercise (March 2022)**

### **GEOGLAM Operations 2021:**

- Crop Monitor for AMIS reports which were incorporated into the AMIS Market Monitor
  - 11 Monthly review meetings with CM4AMIS partners and held jointly with AMIS analysts and country partners invited
  - Publishing 10 monthly reports that were incorporated into the AMIS Market Monitor, plus one published separate during August when the AMIS Market Monitor is not published.
- Crop Monitor for Early Warning reports (CM4EW)
  - 11 Monthly review meetings with CM4EW partners and 11 monthly reports published
  - Reports included Regional Forecast Outlooks produced monthly for areas of developing concern, Seasonal Forecast Alerts for East Africa, Middle East & North Africa, and Central & South Asia for the 2020/2021 cropping season, Desert Locust Updates, and a Tropical Cyclone Alert for Southern Africa.
  - As reported last year the UN World Food Programme (WFP) has expanded participation in CM4EW to its Regional Bureaus, improving local expert input into the crop monitors. Dakar (West Africa), Nairobi (East Africa), and now Johannesburg (Southern Africa) are now routinely providing inputs into the CM4EW discussions. Cairo and other bureaus are coming online in 2022
- Published 1 Special Report on the La Nina outlook for South America in January 2021
- Published 2 Food Security & Conflict Reports. These reports aim to provide further insight into each region’s specific conflict situation by detailing the history of the current conflict, the agricultural baseline and specific impacts of conflict on agricultural production and food security.
  - Yemen
  - The Syrian Arab Republic

- There has been an increased emphasis on climate forecasts in monthly reporting, including 2 -week rainfall anomaly, 30-day sub-seasonal rainfall anomaly forecasts, 3-month seasonal rainfall anomaly forecast, and detailed regional forecasts in regions of emerging concern due to climate conditions. In addition, Seasonal Forecast Alerts were published for Middle East & North Africa, Central & South Asia, and East Africa detailing concerns for the 2020/ 2021 rainfall seasons and the potential impacts of consecutive dry seasons on food security outcomes.
- Published monthly synthesis maps that integrate the Crop Monitor for AMIS with the Crop Monitor for Early Warning to provide a snap-shot overview of global conditions
- Launched the New NASA Harvest/ GEOGLAM Agrometeorological ([AGMET](#)) Earth Observation Indicators Dashboard providing pre-processed and easy to digest EO data to support in season crop assessments and to monitor current crop conditions at the sub-national scale.

#### **Enhanced Coordination of Co-Development Activities (Focus on Africa):**

- GEOGLAM has hired a project coordination consultant for 2022 using support from U.K. DEFRA
- GEOGLAM has co-developed 8 national and one regional operational crop monitoring systems in African countries. Demand for support from least developed nations has outstripped our capacity to deliver and we are looking at new strategies to scale up activities
- GEOGLAM has been working with the UNFCCC and the GEO Climate Change Working Group to support climate change adaptation. GEOGLAM is developing supplemental guidance for the UNFCCC National Adaptation Planning (NAP) process. The NAP Guidance document is a policy level document that helps guide the integration of Earth observations in the NAP Process, building on the GEOGLAM experience working with African nations
- Copernicus4GEOGLAM. Completion of 2021 field work and analysis for two cropping seasons in Tanzania, Uganda and Kenya. The in situ data is publicly available
- Launched the GEOGLAM in situ data working group to improve standards and best practices around in situ data management for agricultural monitoring, including the development of a GEOGLAM In Situ Data Curation Strategy and Guidelines guided by a data lifecycle management approach

#### **Development of Essential Agricultural Variables (EAVs):**

- The development of EAVs are central to the evolution of GEOGLAM monitoring to be able to support emerging policy drivers around AMIS, SDG's, climate and disasters
- Preliminary definitions complete, further committee work is required. The work is on-going but delayed due to the pandemic. We anticipate completion by the end of 2022

#### **Development and Implementation of specific GEOGLAM Engagement Strategies (2030 on Sustainable Development, the Paris Climate Agreement, and the Sendai Framework on Disaster Risk Reduction):**

- Climate Mitigation. Development of an agriculture strategy document as input to the Committee of Earth Observing Satellites (CEOS) Roadmap to supporting the UNFCCC Global Stock Take and the development of Nationally Determined Contributions in least developed countries.
- Climate Adaptation and Early Warning for Disaster Response. Developing Supplemental Guidelines for the UNFCCC National Adaptation Planning process (see above in the co-development section)

### **Establishment of a sustainable GEOGLAM operations and governance perspective:**

Most of GEOGLAM operations are based on in-kind contributions from public agencies. Incremental to this is support directly to the GEOGLAM secretariat via the WMO trust fund for GEO. This funding supports the coordination of GEOGLAM activities. In 2021 this included:

- Ongoing funding from Germany BMEL, 264k Euros/ Year through 2023. General trust fund support for the GEOGLAM Secretariat.
- Funding received April 2021: U.K. DEFRA/ODA, 100K GBP. Focus on capacity development
- Funding received February 2022: U.K. DEFRA/ODA 125k GBP. General trust fund contribution with a focus on capacity development
- Funding Received April 2021 (2020-21 fiscal year): Agriculture and Agri-Food Canada, \$100k CAD. General trust fund contribution
- Funding Received October 2021 (2021-22 fiscal year): Agriculture and Agri-Food Canada, \$100k CAD. General trust fund contribution

Currently funding levels are adequate to sustain the GEOGLAM Secretariat through 2023 with support from 3 G20 Nations. There is uncertainty in funding after this time. All G20 nations are asked to consider support for the GEOGLAM Secretariat through funding to the WMO/GEO trust fund.

### **3. COVID-19 impacts**

The ongoing pandemic has served to highlight the urgency and need for enhanced agricultural information and the gaps that earth observations can help fill.

In response to the evolving food crisis the provision of objective and transparent near real time information on global agriculture has never been so critical. GEOGLAM has risen to the challenge in 2020 and continued to do so in 2021 by providing state of the science information products to the AMIS G20 community. In a year when much of the world was in some form of lockdown, the pandemic has clearly demonstrated the importance of space-based observations compensate for the reduction in ground information to provide insights on the state and changes to crop conditions in near real-time. Just as important as technology to GEOGLAM's response has been our ability bring diverse expertise together and build consensus. Because GEOGLAM has established resilient and committed expert networks we were able to rally the community to continue to deliver vetted, authoritative, consensus information to support food commodity markets and food security response without missing a step.

Beyond global markets the COVID-19 pandemic has posed a credible and mounting threat to food security at the local level, which requires timely decisions and interventions to mitigate the crisis. In terms of National and International response programs, the COVID-19 pandemic is exacerbating already existing food crises and driving worsening food insecurity among vulnerable populations. In countries dependent on humanitarian and development aid, the sudden diversion of funds to address the COVID-19 crisis are impacting food aid distribution, requiring ever more efficient utilization of resources. In this regard GEOGLAM continues to work with international food security response organizations to provide information and help them do their job more efficiently and effectively.

At the National level, as we have demonstrated through our co-development work with least developed countries that EO based agricultural monitoring systems can provide timely early warning information to

enable proactive policy responses. Past GEOGLAM investments in National co-development, made prior to the pandemic, have clearly paid off, and highlighted the importance of this work.

#### 4. Workplan for the future

##### Regular Monitoring Operations:

- GEOGLAM will continue to publish monthly Crop Monitor for AMIS Reports as a contribution to the AMIS Market Monitor.
- GEOGLAM will continue to publish monthly Crop Monitor for Early Warning reports
- Special reports, conflict reports and seasonal/regional forecasts will be developed as required

##### Capacity Development Strategy:

- The GEOGLAM community will publish its “Guidance Document on good practices for designing, implementing, and evaluating capacity development interventions in GEOGLAM” to support efforts to scale up impact in less developed countries

##### Essential Agriculture Variables:

- Completion of version one of the EAV for GEOGLAM definitions
- Launch of the GEOGLAM EAV website

##### In Situ data:

- Development of an in situ data lifecycle management system
- Working with GEOGLAM partners, develop and curate version 1 of a global reference in situ database for crop mapping. This will support the development of high-resolution crop type area products, including support for the UNFCCC Global Stock take, and Nationally Determined Contributions

##### Adaptation – UNFCCC

- For the UNFCCC/Adaptation, publish supplemental Guidance on using EO based agricultural monitoring in support of the development and implementation of National Adaptation Plans in less developed countries. This will be a policy level guidance document on how to access open EO data and tools

##### Mitigation AFOLU Roadmap

- GEOGLAM will participate on the Committee on Earth Observing Satellites (CEOS) “AFOLU Roadmap” leadership team, leading the agriculture activity. CEOS is the coordinating body for public sector space agencies. The roadmap will be used to guide the public space agency support and GEOGLAM’s activities through the first UNFCCC Global Stock Take (GST) in 2023. It will also develop a systematic approach to doing agricultural landscape state and change metrics for future climate monitoring (GST and NDC’s)