The GEOGLAM Crop Monitor for Early Warning:

**Strengthening agricultural decisions in countries at risk of food insecurity**

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GEOGLAM: The GEO Global Agricultural Monitoring Initiative (Adopted alongside AMIS by G20 under French Presidency 2011)

G20 Final Declaration

44. We commit to improve market information and transparency in order to make international markets for agricultural commodities more effective. To that end, we launched:

- The "Agricultural Market Information System" (AMIS) in Rome on September 15, 2011, to improve information on markets ...;

- The "Global Agricultural Geo-monitoring Initiative" (GEO-GLAM) in Geneva on September 22-23, 2011. This initiative will coordinate satellite monitoring observation systems in different regions of the world in order to enhance crop production projections and weather forecasting data.

Vision:
Strengthen international community’s capacity to provide actionable, science-driven, open, information at sub-national to global scales, in support of policies, investments and decisions, in food security, & ag. Markets

- Through use of coordinated Earth Observations (EO)
- Building on existing systems
AMIS: Agricultural Market Information System

Improve market information and transparency

inter-Agency Platform to enhance food market transparency and encourage coordination of policy action in response to market uncertainty

www.amis-outlook.org
Launch of Operational Crop Assessments:
AMIS Request to GEOGLAM

• Provision of timely and transparent monthly **crop condition assessments** in primary agricultural production areas
• Reflecting an **international consensus**, building on existing systems
• 4 Crops: Wheat, maize, soybean, rice
• Focus: main production/export countries (AMIS Countries)
• Output: Crop Monitor, published in Market Monitor
Operational Monthly Bulletin Since 2013
Published in the AMIS Market Monitor

Focus on primary production and export countries
Close to 40 contributing organizations

- First time the international community comes together to produce operational crop assessments
- Bridging the gap between the EO, Policy and Economics communities
Crop Monitor for Early Warning

- Grew out of the success of the AMIS Crop Monitor
- Recognition even more pressing need for enhanced, reliable, vetted information on crop conditions within countries at risk
- Response to the Early Warning Community’s request
Objective and Partners

- Exchange information, build consensus and reduce uncertainty in countries most vulnerable to food insecurity, to strengthen agricultural decision making
- Monthly publication, first bulletin published Feb 2016
  - Building on AMIS CM bulletin
  - 10 crops: main food security crops for each region
- Strong focus on continued expansion to regional networks, and national partners

<table>
<thead>
<tr>
<th>Date</th>
<th>Country</th>
<th>Region/Zone</th>
<th>Crop</th>
<th>Condition</th>
<th>Status</th>
</tr>
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<tbody>
<tr>
<td>March 29, 2017</td>
<td>Iraq</td>
<td>Western Plains</td>
<td>Winter Wheat</td>
<td>Favourable</td>
<td>Stable</td>
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<td>March 29, 2017</td>
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<td>Lower Mesopotamian Plain</td>
<td>Winter Wheat</td>
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<td>Delta plains</td>
<td>Winter Wheat</td>
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<td>Stable</td>
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<td>Northern</td>
<td>Winter Wheat</td>
<td>Watch</td>
<td>View</td>
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<td>Caspian Coastal Plain</td>
<td>Winter Wheat</td>
<td>Favourable</td>
<td>Stable</td>
</tr>
<tr>
<td>March 29, 2017</td>
<td>Iran (Islamic Republic of)</td>
<td>Arid Central and South</td>
<td>Winter Wheat</td>
<td>Favourable</td>
<td>Stable</td>
</tr>
</tbody>
</table>
Countries Covered

AMIS vs. EW

Covering 94% of global agricultural lands
Monthly Crop Monitor Process

- Partners submit crop condition information, data through Crop Assessment Tool
- Submitted crop conditions are compiled into summary and discrepancy maps and sent out for review
- Telecon held with all partners to discuss assessment and review discrepancies
- Bulletin compiled, reviewed and published on first Thursday of month
  - Released at same time as AMIS Market Monitor

Total process is about 10 days long
The reporting process is carried out globally every month on the web-based Crop Assessment Tool.
Baseline Data:

- Crop Calendars
- Subnational regions
- Cropland Maps
- Subnational Statistics,
- Marginal vs. Intensive lands

Example of sub-national crop calendars, based on information from partner agencies

Crop Calendar: Barley

Crop Calendar: Wheat

Crop Calendar: Teff

Crop Calendar: Maize
Cropland mask

- Current mask based on IIASA-IFPRI Global Cropland Map and AFSIS Probabilities of Croplands
- Ongoing effort to update and enhance
Satellite Data Serve as Indicators for Crop Conditions

- NDVI anomaly
- Temperature Sum anomaly
- Rainfall Sum anomaly
- CHIRPS Rainfall anomaly
- Evaporative Stress Index
- Actual ET anomaly
- Soil Moisture anomaly
- Soil Water Index anomaly
Example: March Assessment Numbers & Maps

- 7 agencies participated in exercise
  - FEWS NET, Asia RiCE, JRC, FAO GIEWS, WFP, ARC, OPM Uganda, MALF Tanzania
  - 501 entries over 56 countries covering 12 different crops
  - 136 overlap regions between agencies
  - 41 sub-national regions with crop condition discrepancies
    - Covering Maize 1, Sorghum 1, and Winter Wheat in Africa
  - 12 sub-national regions with changing crop conditions – positive or negative change
Example discrepancy map

• Hashed areas show conflicting crop condition entries from different agencies

First assessment had 31 discrepancies - which were discussed and ultimately we reached a full consensus
Map Products

Crop specific & regional synthesis map

- Synthesis maps provide an overview of regional conditions
- Crop specific maps convey the drivers behind those conditions

Quick and easy to interpret crop conditions oriented for policy communities

[Map of Africa & Yemen: Synthesis conditions as of March 28th 2016]
Crop Specific Maps & Pie Charts per Region

• Accompany the crop maps
• Inform users as to the percent of production per country in each crop condition and why
• Based on sub-national statistics
Crop Monitor for Early Warning Bulletin

www.cropmonitor.org

CROP MONITOR FOR EARLY WARNING

NO. 15
April 2017

The Crop Monitor for Early Warning brings together international, regional, and national organizations monitoring crop conditions within countries at risk of food insecurity. The focus is on developing timely consensus assessments of crop conditions, recognizing that reaching a consensus will help to strengthen confidence in decision making. The Early Warning Crop Monitor grew out of a successful collaborative relationship, the AMIS Crop Monitor (www.amis-outlook.org), which monitors the main producing countries.
Already informing agricultural decisions
Next Steps

• Continued focus on strengthening regional & national partnerships & expanding participation

• Develop/enhance best available baseline products
  — Cropland and type masks, calendars, stats, marginal vs high production areas

• R&D on crop condition indicators

• Develop regional products for integration and enhancement of existing systems and information sources

• Expand stakeholder dialogue to enhance products and their utility
In Summary

- **CM4EW provides a public good**: open, timely, science-driven, actionable information on crop conditions within countries at risk
- Proven **effective & scalable mechanism for coordination of crop assessments**
- **First time the Early Warning community comes together** on a monthly basis
  - to produce joint assessments that reflect a consensus
- **End user driven** with strong community & high level support
  - Bridging the gap between the policy and EO communities
- **Increasing communication and knowledge transfer** amongst national, regional & int. organizations
  - Thereby strengthening national monitoring systems
- **Internationally recognized** as a highly valuable source of information
  - Already informing decisions
Thank You!

www.cropmonitor.org
@GEOCropMonitor
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Crop Condition Definitions

- **Exceptional**: Conditions are much better than average; optimal agro-meteorological conditions.
- **Favourable**: Conditions range from slightly below to slightly above average at reporting time.
- **Watch**: Conditions are near average but there is potential for a poor outcome.
- **Poor**: Crop conditions are well below average. Crop yields are likely to be 10-25% below average. This is used when crops are stunted and are not likely to recover, and impact on production is likely.
- **Failure**: Crop conditions are extremely poor. Crop yields are likely to be 25% or more below average.

*“Average” refers to the average conditions over the past 5 years.*
### Drivers, Impacts, Confidence, and Provenance

#### Drivers
- Wet
- Dry
- Hot
- Cold
- Extreme Event
- Delayed Onset
- Pest & Disease
- Socio-political

#### Impacts
- Significant positive
- Minor positive
- Minor negative
- Significant negative
- Unknown

#### Confidence
- Very High, High, Medium, Low, Very Low

#### Provenance
- Official National Endorsement
- National source
- International/Regional source
- Official International/Regional Endorsement