

# Progress on GEOGLAM Implementation, Challenges & Required Resources

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# GEOGLAM Progress

## AMIS Market Monitor

Prototype : August

Final version, 1st edition: September

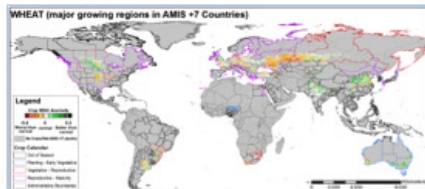
### GEOGLAM Prototype Global Crop Assessment

August 1, 2013



#### Wheat

WHEAT (major growing regions in AMIS +7 Countries)



NDVI anomaly ranges from -0.2 to 0.2. Orange to red indicates less green vegetation than average, green indicates higher than average vegetation. Administrative unit outline colors indicate growth stage: Blue - planting to early vegetative, Red - Vegetative to Reproductive, Purple - Reproductive to Maturity, Black - out of season. Note: only AMIS+7 countries are highlighted.

#### Wheat Comments and Highlights

Overall wheat conditions have been favorable. In the **United States** winter wheat has mostly been harvested. By end of July 94% of spring wheat was at or beyond the heading stage, and close to 70% is reportedly in good to excellent conditions according to USDA. In **Canada** crop conditions are favorable across the country for reproductive spring grains with only minor delays and development issues. Winter wheat harvest is in progress in Ontario and early reports indicate excellent yields. In **Russia** winter wheat has mostly been harvested. Widespread showers maintained favorable conditions for heading spring wheat in the Volga District while warm and dry conditions are affecting the southern Urals and Southern District. Rainfall in eastern **Russia** and **Kazakhstan** improved yield prospects for heading spring wheat. In **Ukraine** wheat harvest was in progress in early July. In **China** wheat has mostly been harvested. In **Europe** this agricultural year has so far been marked by an unusually prolonged winter for western and central Europe and heavy rainfall in May and June. **South America** wheat crops are generally favorable across most of the country. Recent rainfall in Western Australia has reversed the dry conditions of the past few weeks. Southeast production areas are in good condition. Better than average conditions in southern of New South Wales offsets an area of concern in northern New South Wales due to extended dryness in July. In **Argentina** winter wheat planting is mostly complete. Cool weather slowing early wheat development. In **Brazil** wheat is vegetative stages with cool wet temperatures affecting the southern portions of the country.

International Meeting on Food Security, Earth Observations and Agricultural Monitoring – Brussels, 22nd November 2013



### Market Monitor

No.11 – September 2013

www.amis-outlook.org

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**Crop Monitor** (As of 28 August)

This is the first GEOGLAM Crop Monitor developed for AMIS\*. It summarizes latest crop conditions for AMIS crops based on regional expertise and analysis of satellite data, ground observations, and meteorological data, and was conducted by experts from global, national and regional monitoring systems. For each of the four crops, a paragraph summarizing current conditions is provided, accompanied by a satellite-based indicator map. Each map depicts crop vegetative growth anomalies from August 28th (relative to a 12 year average), over the main crop growing regions within AMIS countries.

**Wheat:** Prospects are favourable in the Northern Hemisphere. Winter wheat harvest is complete and spring wheat is in late-maturity to harvest stages. In the US, Canada, Russia and Kazakhstan spring wheat conditions are good though final yields will depend on weather in the coming month. Crops in the Southern Hemisphere are in early-vegetative to reproductive stages and conditions are mostly favourable. In Australia overall conditions are average to above-average but rainfall in the next month will be critical as there is some concern over dry conditions in parts of the country. In Argentina conditions are good although additional moisture is needed. In Brazil frosts caused some significant crop damage and there is some concern over excessive wetness. In South Africa winter wheat conditions have improved since July, following widespread precipitation.

**Maize:** General conditions are good. In the US approximately half of the maize is in good to excellent condition and in spite of dry weather and rising temperatures in August, a bumper production is expected largely due to increased planted area. In Canada, conditions are favourable and yields are expected to be average to above average. In the EU, prospects are good except in northern Italy, Hungary, Austria, Slovenia and Croatia where there is concern due to late sowing and dry and hot conditions. In Russia, current yield prospects are favourable despite low soil moisture in the south. In China, India, Mexico and Ukraine conditions are generally good. In Brazil the second maize crop harvest is almost complete and it is expected to be favourable.

**Rice:** Growing conditions are favourable. The monsoon season in South and Southeast Asia has maintained good moisture across most of the region. In India, conditions are favourable as monsoon rains have been well distributed. In Thailand, precipitation has been widespread, though there is some concern over localized dryness. Mostly favourable conditions were maintained in Vietnam and the Philippines with some concern over excess moisture and flooding. In China, good moisture conditions were maintained in the North China Plain though there is some concern over flooding in the northeast and excess moisture in the southwest. Meanwhile, south of the Yangtze River, dry conditions and above normal temperatures raise concern. In Japan, conditions are mostly favourable in the south for early developing rice.

**Soybeans:** Growing conditions are favourable. In the US, about half of the crop is in good to excellent condition although prolonged dry conditions in the Midwest are raising concern. In China, conditions are favourable in the North China Plain and in the Northeast production regions. In India, conditions are favourable but there is some concern over excessive moisture.

\*GEOGLAM aims at strengthening global agricultural monitoring by improving the use of satellite information for crop production forecasting. It is implemented within the framework of the Inter-ministerial Group on Earth Observations (IGEO), both GEOGLAM and AMIS were endorsed by the G20 Heads of State/ Government (G20HS, November 2011) when GEOGLAM was tasked to "coordinate satellite monitoring observation systems in different regions of the world in order to enhance crop production projections and weather forecasting data." Within this framework, GEOGLAM is providing global crop outlook assessments in support of AMIS market monitoring activities.

More detailed information on the GEOGLAM crop assessments is available on: [www.geo-glamlam-crop-monitor.org](http://www.geo-glamlam-crop-monitor.org)

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**Contents**

- World Supply-Demand Monitor **NEW**
- International Prices
- Futures Markets
- Policy Development
- Market Indicators
- Explanatory Notes

**Satellite-Based Vegetative Growth Anomalies based on the Normalized Difference Vegetation Index (NDVI)**

NDVI is an indicator of photosynthesis often used for monitoring croplands. These anomaly images compare the NDVI for August 28<sup>th</sup> 2013 to the average NDVI for the same date from 2000-2012, over the main growing regions of the four AMIS crops. Orange to red indicates less green vegetation than average, green indicates higher than average vegetation. Administrative unit outline colours indicate crop growth stage: Blue-planting to early vegetative, Red-vegetative to reproductive (generally the most sensitive crop growth period), Purple- reproductive to Maturity, Black-areas out of season. Note: only AMIS countries are highlighted.

**WHEAT** (major growing regions in AMIS Countries)

**MAIZE** (major growing regions in AMIS Countries)

**RICE** (major growing regions in AMIS Countries)

**SOYBEAN** (major growing regions in AMIS Countries)

**Legend**

- Less green - NDVI Anomaly
- Avg - NDVI Anomaly
- More green - NDVI Anomaly
- Out of Season
- Planting - Early Vegetative
- Reproductive - Maturity
- Administrative Boundaries
- 10 Crops / Not an AMIS Country
- Crop Calendar
- Reproductive - Reproductive

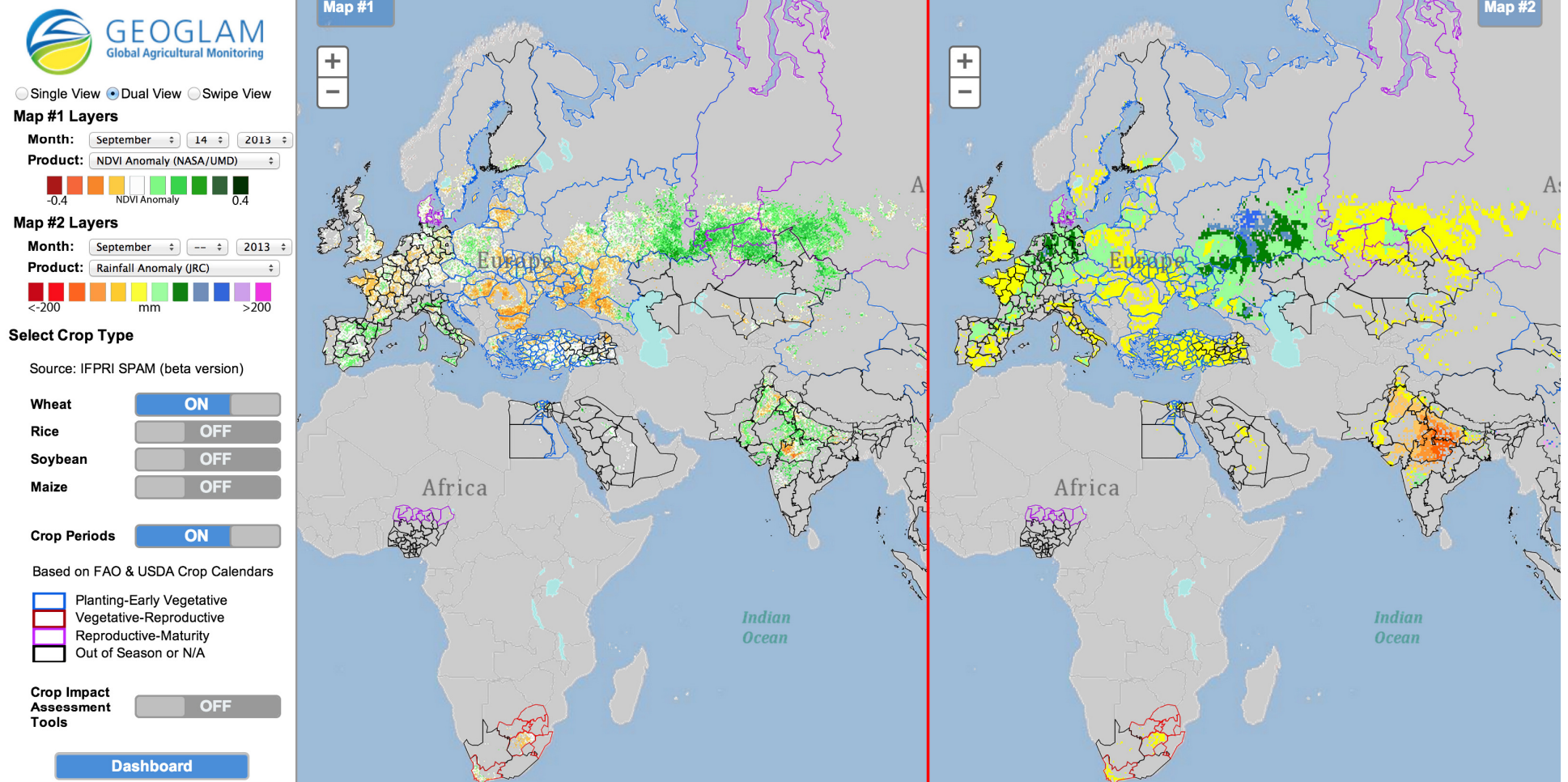
**Sources & Disclaimer**

The Crop Monitor assessment has been conducted by GEOGLAM with inputs from the following partners (in alphabetical order): AMIS (Canada), CAS CropWatch (China), CSRI/ARC (South Africa), IARIS/IRRI/ISRO (Australia), COMAGREF (Brazil), GISTDA (Thailand), EC JRC-MAIS, FAO, ISRO (India), JAXA (Japan), ASA RCE, IRI (Russia), INTA (Argentina), LAPAN/MDA (Indonesia), Mexico (SIAP), NASA, UMD, and USDA FAS/USDA NASS (US), Ukraine Hydromet Center/NASU-NSAU (Ukraine), VAST/VHNE (Vietnam).

The findings and conclusions found in this joint multiple-agency reporting are only consensus statements from the GEOGLAM expert group, and do not necessarily reflect those of the individual Agencies represented by these experts. Map data sources: Main crop type areas based on the IFPRI SPAM 2005 beta release (2013). Crop calendars based on FAO and USDA crop calendars. NDVI anomaly data produced by NASA/USDA/UMD based on NASA MODIS data.

# GEOGLAM Complement to AMIS bulletin

## *GEOGLAM Crop Monitor Interface*



**Enables comparison between relevant datasets** (global, national and regional), by crop type and accounting for crop calendars; enables **crop condition labeling** and commenting to reflect **national expert assessments**

# GEOGLAM Progress : JECAM

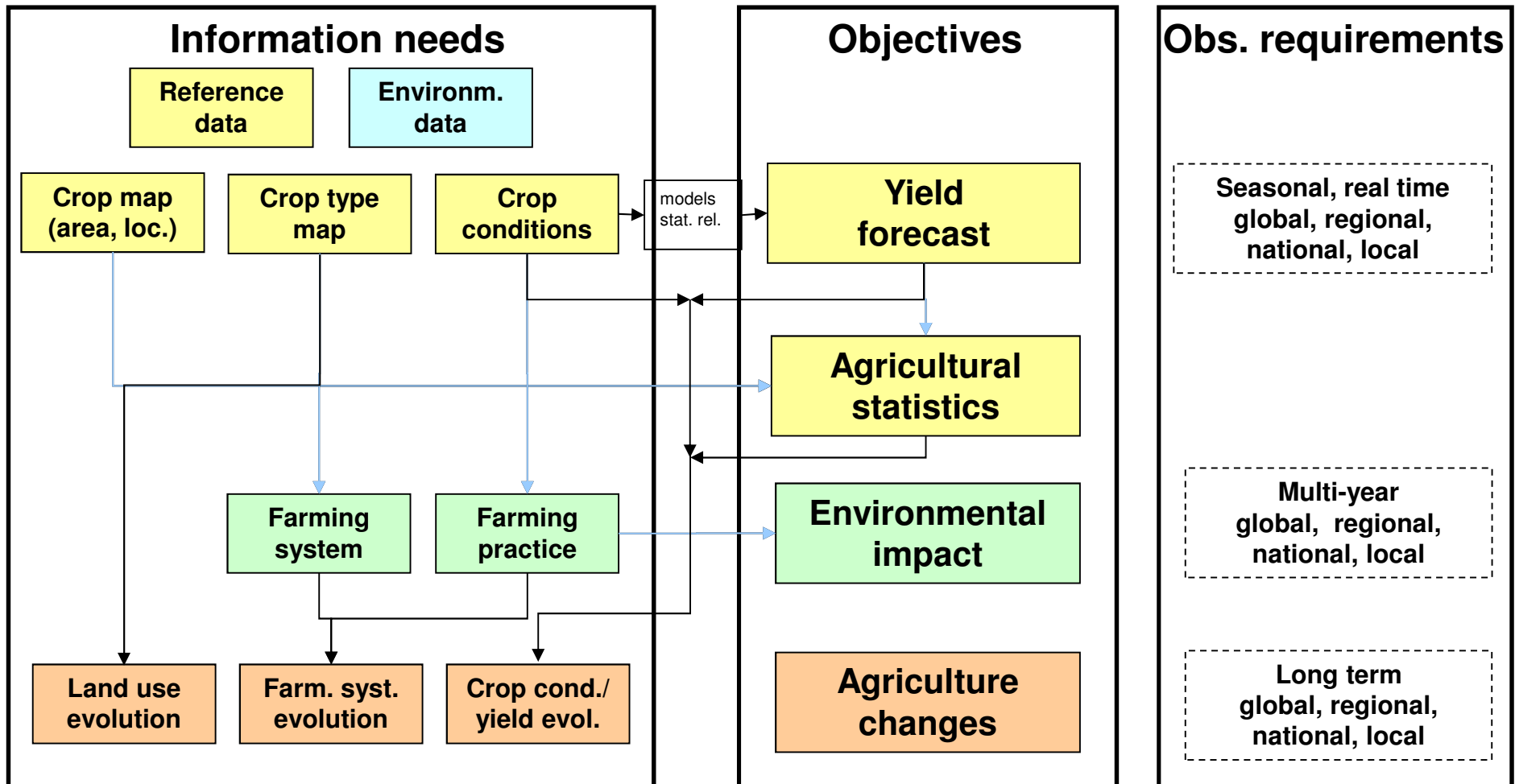
- JECAM activities are being undertaken at a **series of study sites** which represent many of the world's main cropping systems
- 29 sites currently exist or are in development



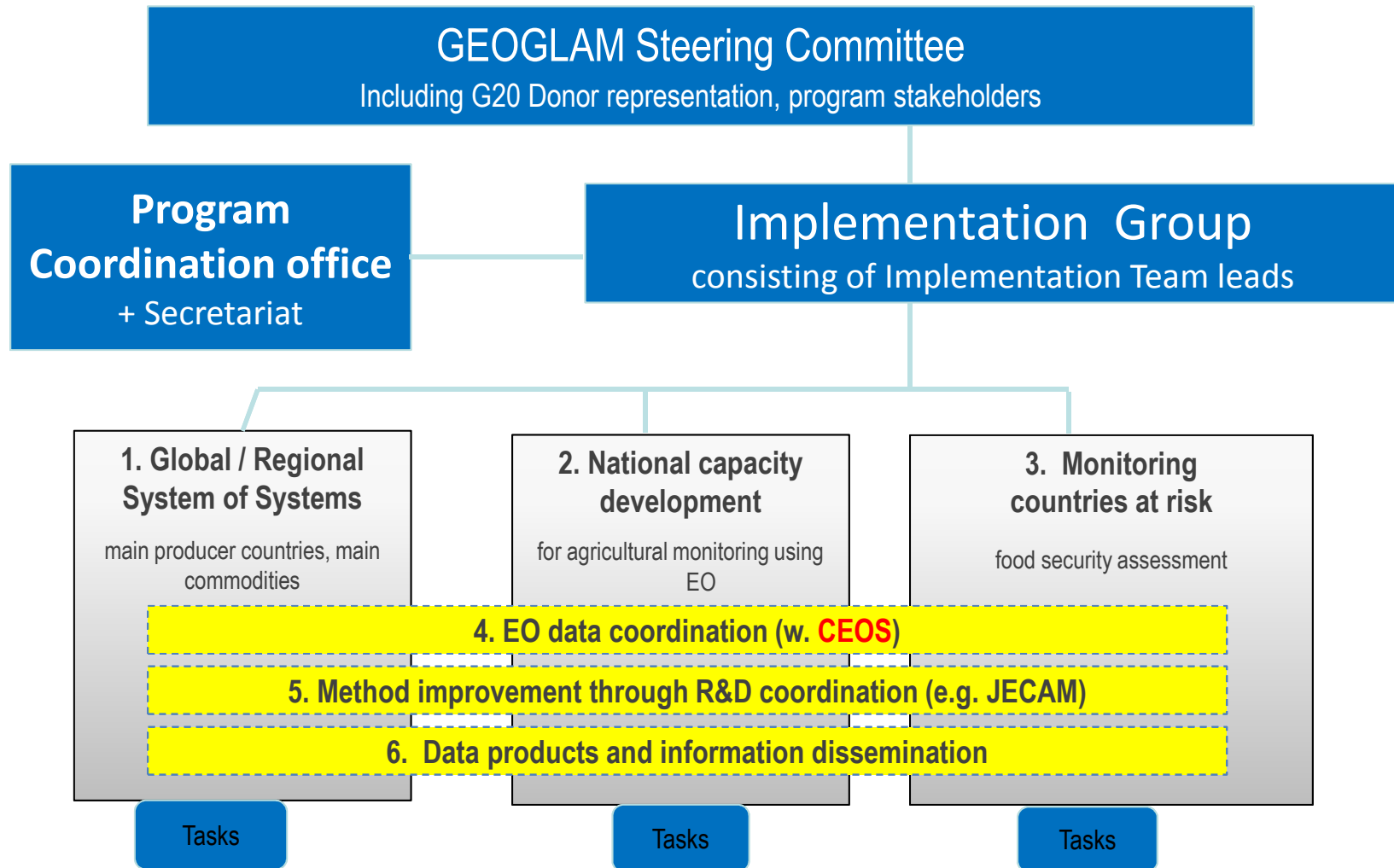
# GEOGLAM and CEOS Collaboration

## *Establishment of Requirements for Monitoring*

- **Rationale** : translating monitoring objectives into information needs and EO requirements



# GEOGLAM Structure & Work plan



# Research Challenge : Adaptation to National Agrosystems

- ex. Mixed crops – Rungbe, Tanzania
- Agroforestry systems based on :
  - Crops: perennial (coffee, banana, cocoa, fruit trees, tea) and annual (corn, rice).
  - Small fields : 300-1500 m<sup>2</sup>.
  - « CBM » : Coffee, Banana, and Maize
- Trends
  - Upper zone : CBM progressing, with gradual trimming of the tea-cropping areas and the Afromontane forest.
  - Lower areas : CBM being abandoned in advantage of cocoa and rice monoculture, supported by significant investments (irrigation).



C. Lelong  
CIRAD

# *Challenges in Implementation*

- **Training – Capacity building**
  - Transfer Research → Min. Agriculture Depts (Statistics, Food)
  - Need to adjust Tools & Methods to local agrosystems
  - Huge needs in Training / Capacity building in new User-countries (Learning engineering: Skills to be acquired, Pre-requisites, Online-presence.. TurnOver)
  - Prerequisite. Dialog with stakeholders (needs time and expertise)
- **Great funding needs**
  - GEO overall voluntary nature great, but institutionalizing require firm commitments (research, capacity building)
  - Identification of new funds: an issue in many member countries
  - Need for leadership: member countries to lead the early phases of GEOGLAM implementation



# Budget estimates 2012-2017 : Pillars 1-2-3

- Around.. 46 Mios \$

		Ph. 1	Ph. 1	Ph. 1/2	Ph. 2	Ph. 2/3	Ph. 3	Total (Mio US\$)
		2012	2013	2014	2015	2016	2017	
Pillar 1 Global / regional systems (main producers & commodities)	Prototype outlooks	0,5	0,5	0,5				1,5
	Harmonized annual crop outlooks		0,5	1	1	1	1	4,5
	Asia Rice Pilot Studies	0,4	1	1	1			3,4
	Asia Rice Forecasts/production	0,2	0,3	0,3	0,3	1	1	3,1
	Information System	0,1	0,1	0,1	0,1	0,1	0,1	0,6
	R&D Forecast	0,1	0,1	0,2	0,3	0,2	0,1	1,0
	Workshops		0,2	0,2	0,2	0,2	0,2	1,0
	<b>Sub-Total</b>	<b>1,3</b>	<b>2,7</b>	<b>3,3</b>	<b>2,9</b>	<b>2,5</b>	<b>2,4</b>	<b>15,1</b>
Pillar 2 National development (EO data into crop monitoring systems)	Regional assessments	0,1	0,5	0,6				1,2
	Crop area mapping	0,2	0,5	0,3	0,3	0,3	0,2	1,8
	Workshops	0,2	0,2	0,2	0,2	0,2	0,1	1,1
	EO datasets (Satellite, met, in situ)	0,5	0,6	0,9	1,2	1,2	0,9	5,3
	Infrastructure			0,7	1,5	1,5	0,9	4,6
	Agromet data			0,2	0,2	0,2	0,2	0,8
	Information System		0,1	0,1	0,1	0,1	0,1	0,5
	R&D Best Practices	0,2	0,2	0,2	0,3	0,3	0,2	1,4
	<b>Sub-Total</b>	<b>1,2</b>	<b>2,1</b>	<b>3,2</b>	<b>3,8</b>	<b>3,8</b>	<b>2,6</b>	<b>16,7</b>
Pillar 3 Countries-at-risk (Food security) Information System	Global gridded rainfall	0,2	0,3	0,3	0,3	0,3	0,3	1,7
	MODIS ET maps	0,2	0,2	0,2	0,2	0,2	0,2	1,2
	Water Stress Index Maps	0,2	0,2	0,2	0,2	0,2	0,2	1,2
	Workshops	0,1	0,2	0,2	0,2	0,2	0,2	1,1
	EO datasets (Satellite, met, in situ)	0,5	0,6	0,6	0,8	0,6	0,6	3,7
	R&D best Practices	0,1	0,2	0,2	0,3	0,2	0,1	1,1
	<b>Sub-Total</b>	<b>1,3</b>	<b>1,7</b>	<b>1,7</b>	<b>2</b>	<b>1,7</b>	<b>1,6</b>	<b>10,0</b>
Secrétariat		0,3	0,5	0,8	0,8	0,8	0,8	4,0
								<b>45,8</b>

# Conclusion

- **Significant on-going progress of GEOGLAM**
  - An established Community of Practice
  - AMIS, JECAM...
  - Lot of existing national initiatives to benefit from GEOGLAM
- **GEO : an international voluntary organisation...**
- **Challenges**
  - To formalise participation and support to GEOGLAM, incl. GEOGLAM project office...
  - To raise funding (World Bank, regional Devt banks, national and international development agencies, national agriculture ministries, national space agencies...)
  - Support for capacity building for food security in developing countries

**Thank You !**

[earthobservations.org](http://earthobservations.org)

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