

GEOGLAM: an introduction

Joao Soares
On behalf of the GEO AG CoP
November 21st, 2013



GEOGLAM
Global Agricultural Monitoring



GEO the Group on Earth Observations

an Intergovernmental Organization with 90 Members
and 67 Participating Organizations



U.S. Department of State, Washington DC. July 31, 2003

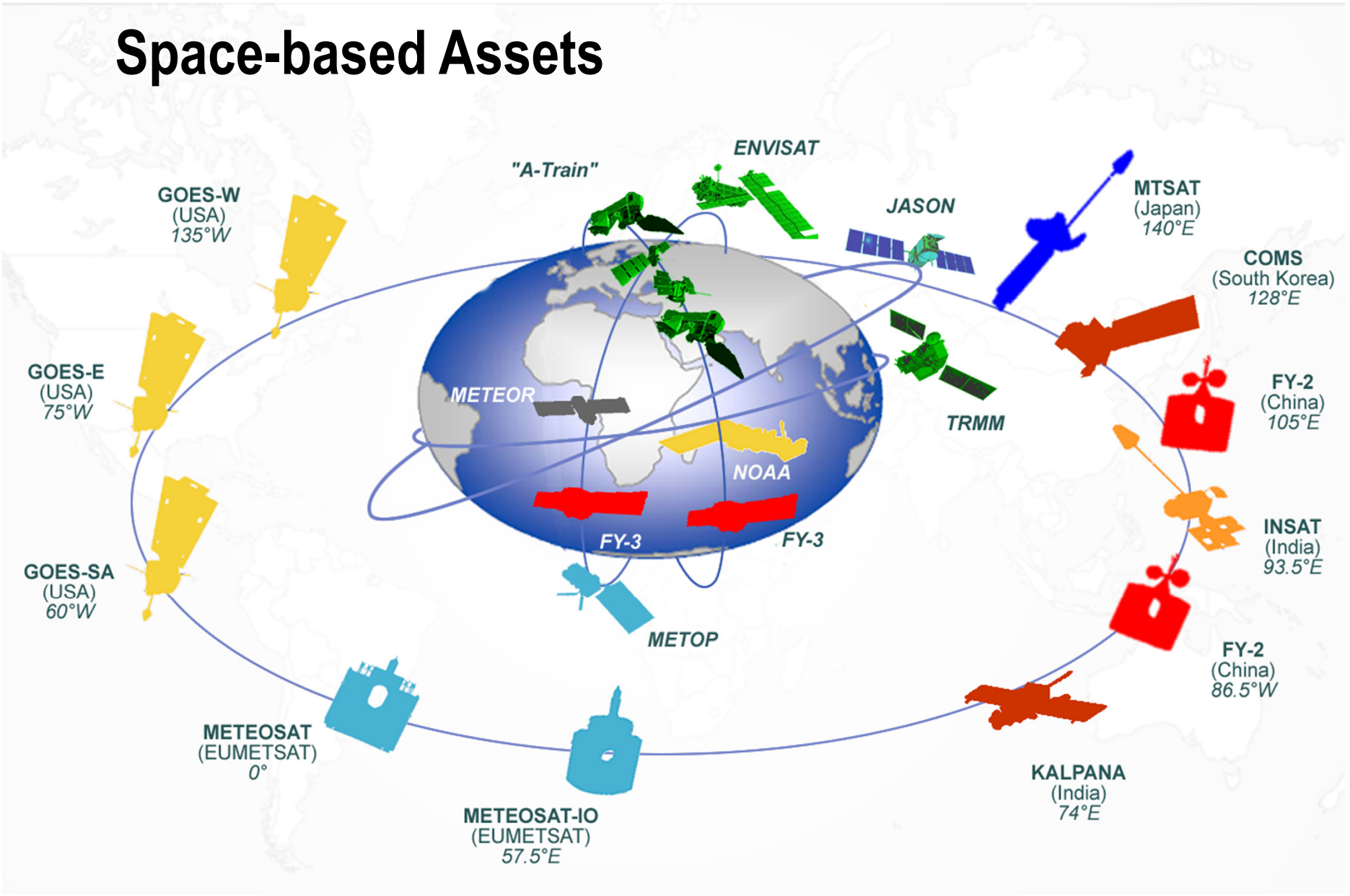
Led to the Establishment of a

Global Earth Observing System of Systems (GEOSS)

The Vision for GEOSS...

...a world where decisions and actions are informed by coordinated, comprehensive and sustained Earth observations.

Space-based Assets

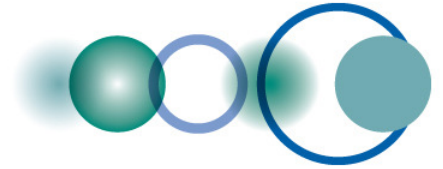


In-situ Systems



To foster the use of EO GEO must:

- Improve and Coordinate Observation Systems
- Advance Broad Open Data Policies/Practices
- Enhance Capacity



Created in 2005, to develop a coordinated and sustained Global Earth Observation System of Systems (GEOSS) to enhance decision making in nine Societal Benefit Areas (SBAs)

GEO today:

90 Members

67 Participating

Organizations



67 Participating Organizations



GEO is focused on societal benefit

Agriculture is one of the GEO societal benefit areas

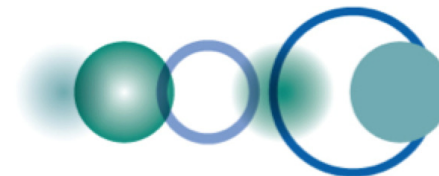


10 year implementation plan with targets for all SBAs

The Ag CoP - Who We Are

Open Community made up of international and national agencies concerned with agricultural monitoring including ministries of Ag, space agencies, universities, and industry

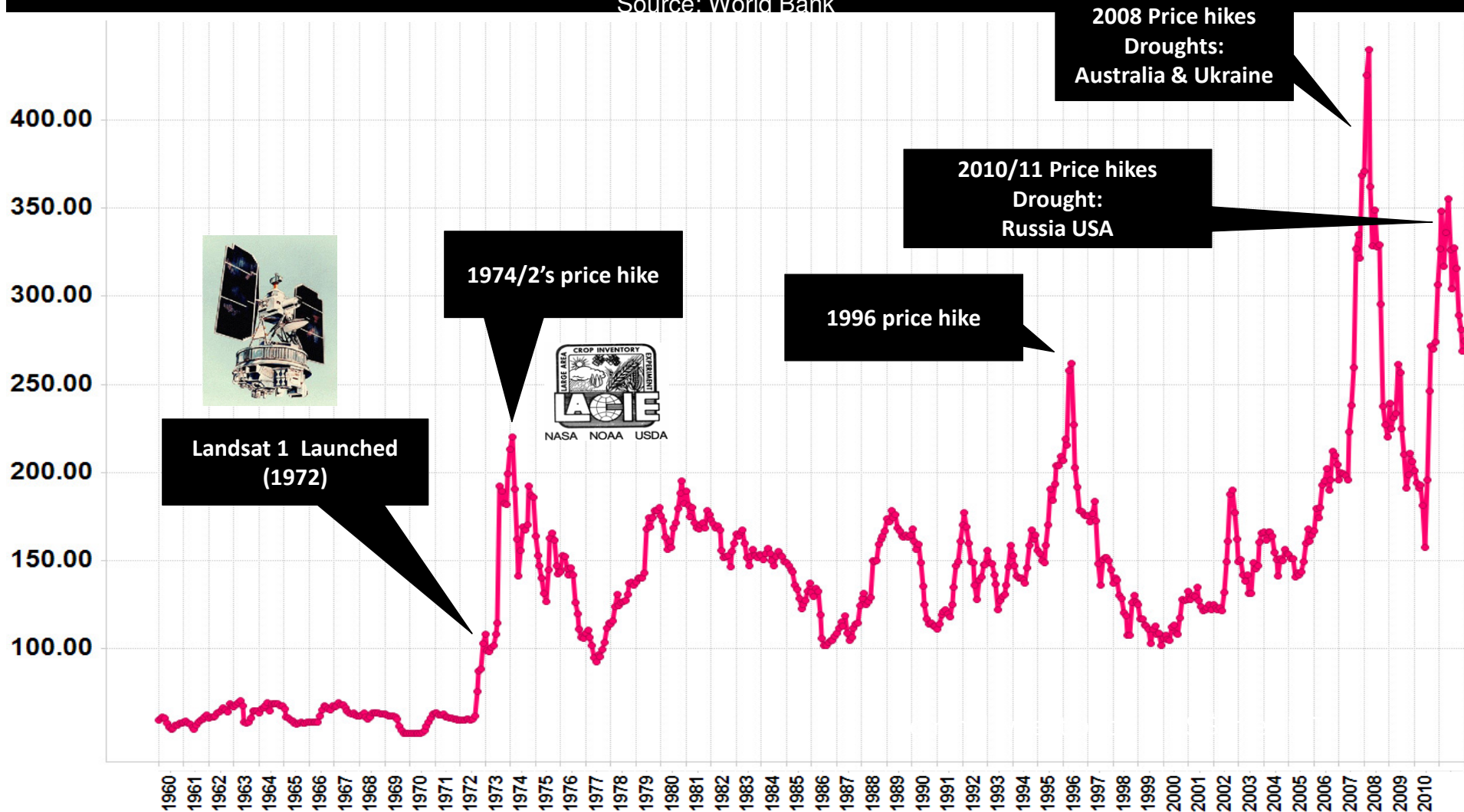




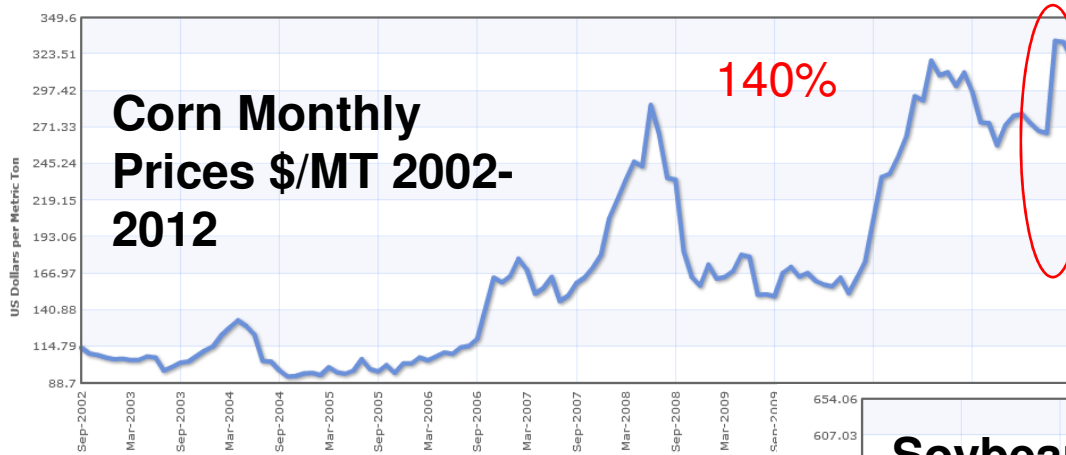
Context For GEOGLAM

Monthly Wheat Prices 1960-2011 (\$/Metric Ton)

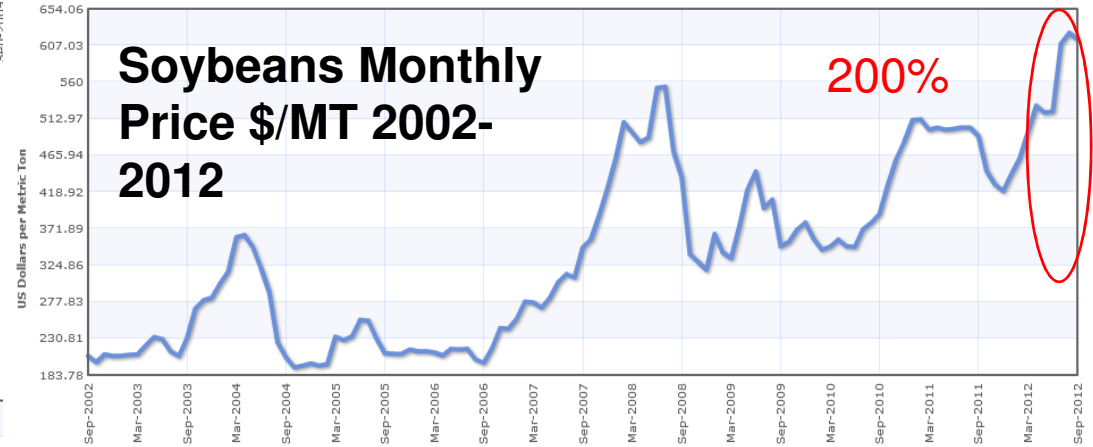
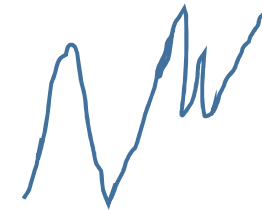
Source: World Bank



10 year Monthly Market Prices of Corn, Soybeans and Wheat



Volatility

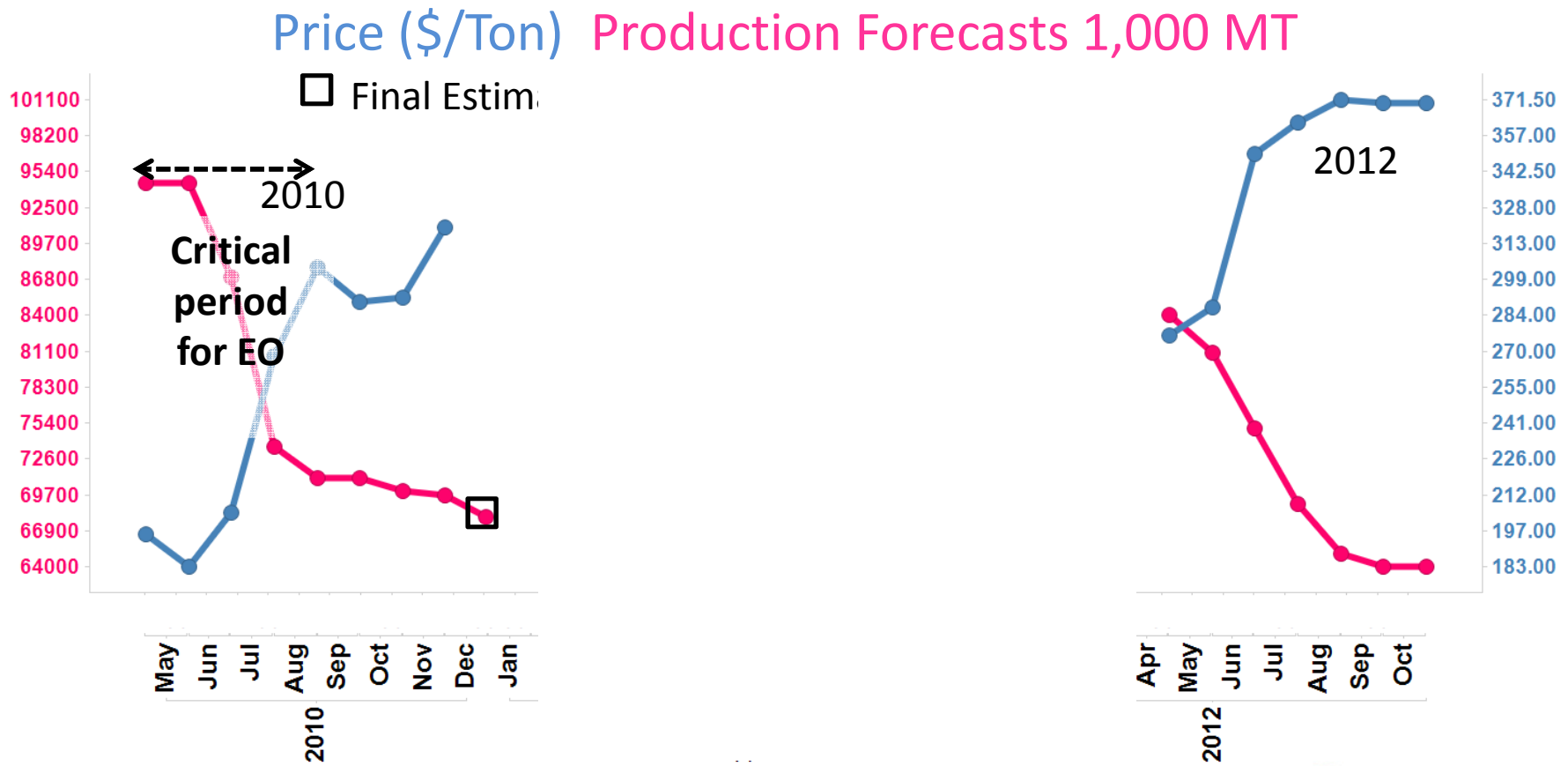


Price increase



Need for timely reliable production forecasts

Aggregation of Wheat Production Forecasts from Main Wheat Export Countries vs. International Market Price: 2010, 2012

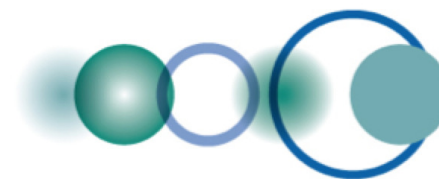


Policy Framework for GEOGLAM



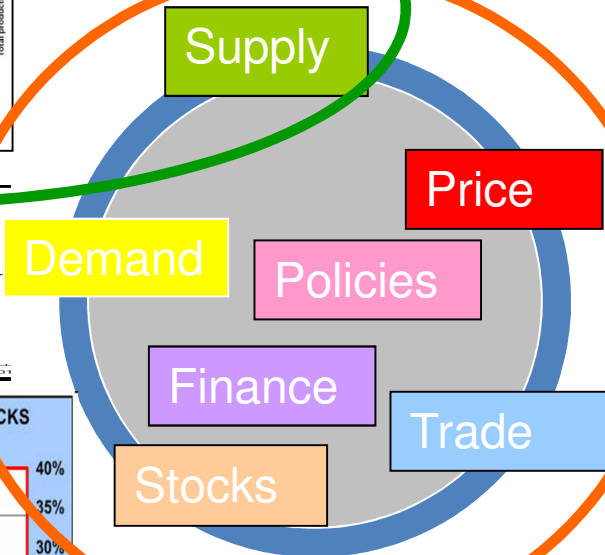
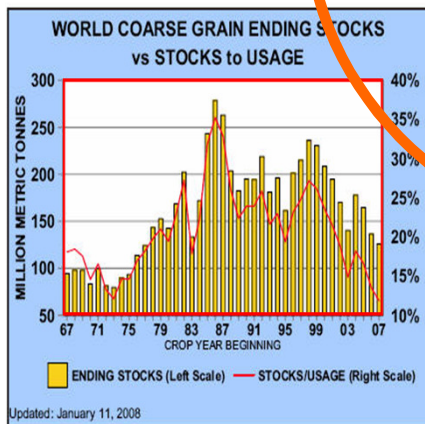
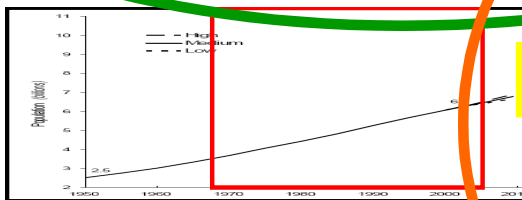
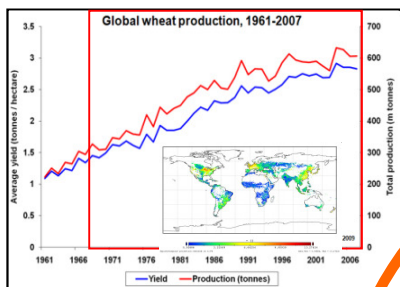
G20 Final Declaration

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.



GEOGLAM

2 initiatives to increase information availability, quality and transparency

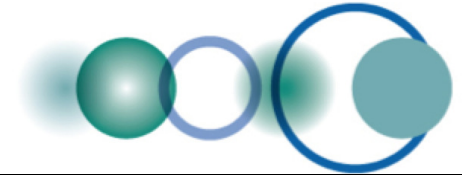


AMIS



GOAL AND SCOPE

- To strengthen the international community's capacity to produce and disseminate relevant information on agricultural production at national, regional and global scales, through reinforced use of Earth Observations.
- GEOGLAM is a 'coordination program', aiming at:
 - supporting, strengthening and articulating existing efforts through the use of EO
 - developing capacities and awareness at national and global level
 - disseminating information



The GEOGLAM Components

1. GLOBAL/ REGIONAL SYSTEM OF SYSTEMS

*Main producer countries, main
crops*

2. NATIONAL CAPACITY DEVELOPMENT

*for agricultural monitoring
using Earth Observation*

3. MONITORING COUNTRIES AT RISK

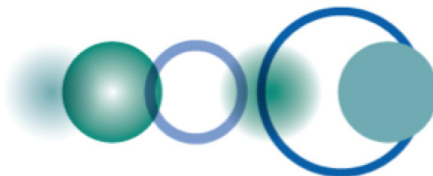
Food security assessment

4. EO DATA COORDINATION



5. METHOD IMPROVEMENT through R&D coordination (JECAM)

6. Data, products and INFORMATION DISSEMINATION



GEOGLAM Monthly Crop Monitor for AMIS

- Objective: develop consensus crop condition and prospects assessment in primary agricultural production areas highlighting potential hotspots of stress/bumper crops
 - inputs from international and national agencies, based on evidence from satellite, weather, agromet, and national expert assessments

GEOGLAM Outlooks: AMIS Market Monitor

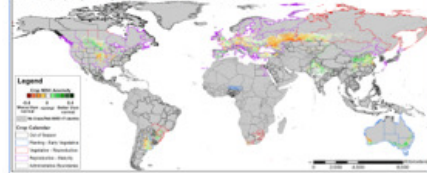
GEOGLAM Prototype Global Crop Assessment

August 1, 2013



Wheat

WHEAT (major growing regions in AMIS +7 Countries)



NDVI anomalies from USDA MODIS satellite vegetation reports. NDVI anomalies range 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 September. 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. Forecasts for **France** as the biggest producer show lower yields compared to last year, whereas higher yield levels are foreseen in **Spain, Romania, Bulgaria and Hungary**. In **South Africa** winter wheat is in emergence stage. Although still early in the season, vegetation index anomalies indicate some stress and one or two significant rainfall events are needed in coming months. Growing conditions for **Australia** 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.



Market Monitor

No.11 – September 2013

www.amis-outlook.org

The Market Monitor is a product of the Agricultural Market Information System (AMIS), a G20 initiative to provide information, analysis and

Contents

- World Supply-Demand Outlook.....1
- Crop Monitor **NEW** AMIS.....1
- International Prices.....1
- Futures Markets.....1
- Policy Development.....1
- Market Indicators.....1
- Explanatory Notes.....1

AMIS

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 favourable 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/Delegation (Cannes, 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.geoglam-crop-monitor.org

AMIS

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 favourable 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/Delegation (Cannes, 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.geoglam-crop-monitor.org

AMIS

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 favourable 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/Delegation (Cannes, 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.geoglam-crop-monitor.org

AMIS

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 favourable 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/Delegation (Cannes, 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.geoglam-crop-monitor.org

AMIS

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 favourable 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.

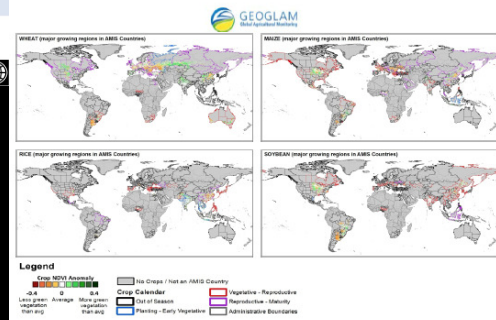
Maize: General conditions are good. In the US approximately half of the maize is in good to excellent condition and in spite of dry weather and rising temperatures in August, a bumper production is expected largely due to increased planted area. In Canada, conditions are favourable and yields are expected 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/Delegation (Cannes, 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.geoglam-crop-monitor.org



Legend

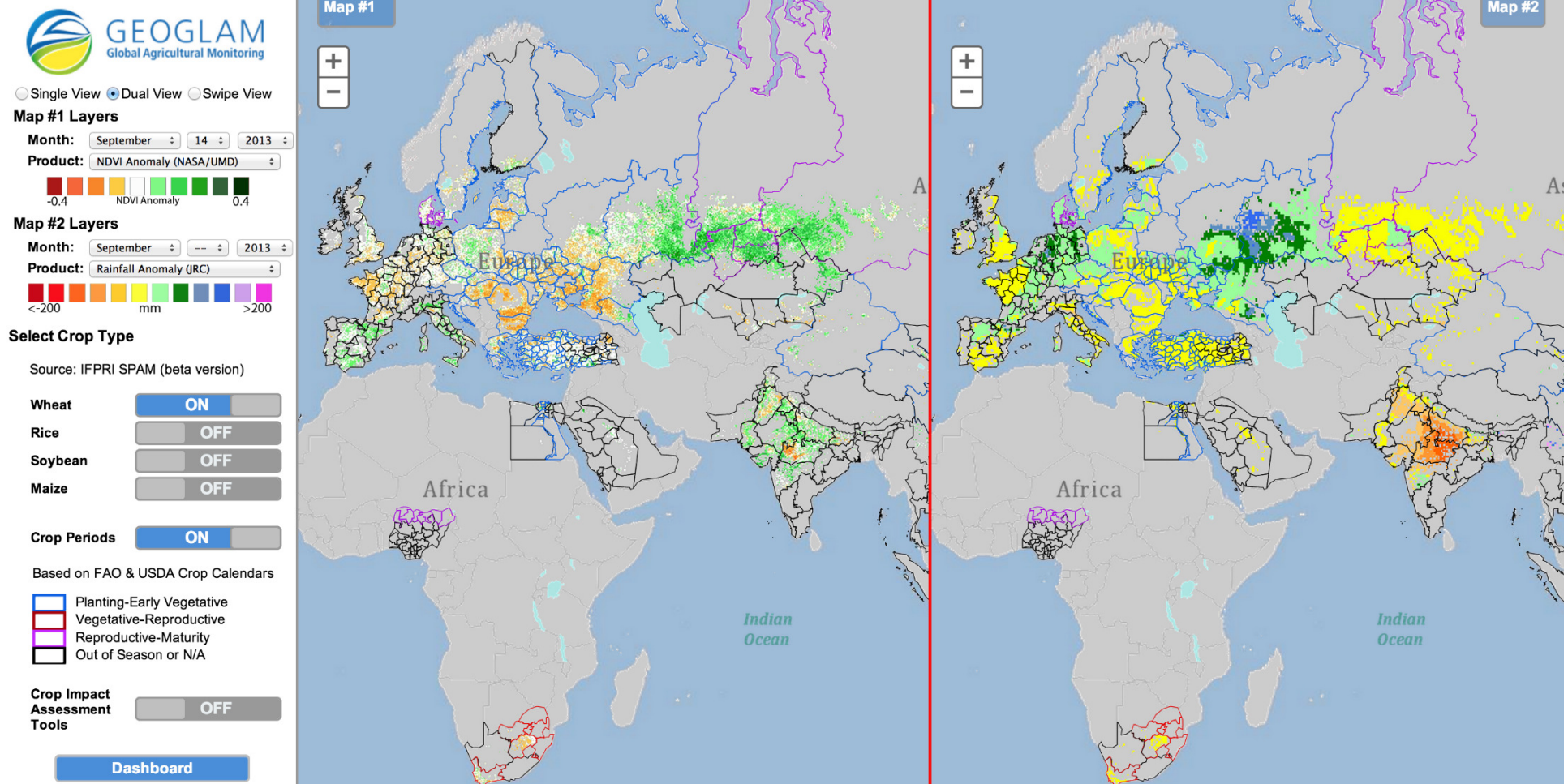
- NDVI Anomaly: -0.2 to 0.2
- Less green: Average, More green: 12-yr avg
- Blue: Planting - Early Vegetative
- Red: Vegetative - Reproductive
- Orange: Reproductive - Maturity
- Black: Administrative Boundaries
- No Crops / Not an AMIS Country
- Out of Season

Sources & Disclaimer

The Crop Monitor assessment has been conducted by GEOGLAM with inputs from the following partners (in alphabetical order): AIPC (Canada), CAS CropWatch (China), CSIR/ARIC (South Africa), IBAARS/DARF/CSRO (Australia), CONAB/INPE (Brazil), CSIRDA (Thailand), EC-IRC-AMIS, FAO, IGEO (India), JAXA (Japan), ASAR-RICE, IR (Russia), INTA (Argentina), LAPAN/MDA (Indonesia), Mexico (SIAP), NASA, UMD, and USDA FAS/USDA NASS (US), Ukraine Hydromet Center/NASU-NASU (Ukraine), VAST/VMHE (Vietnam).

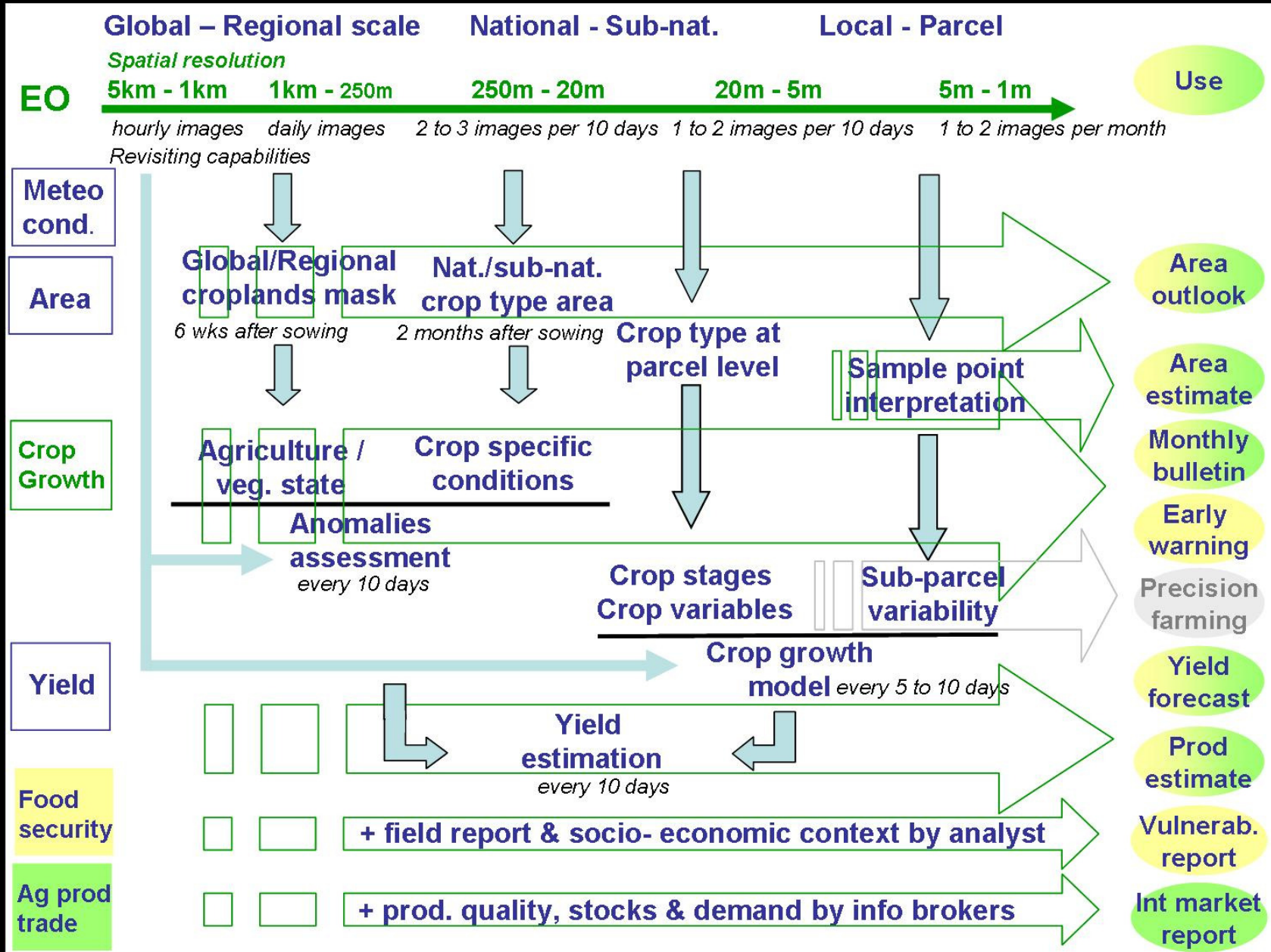
The findings and conclusions found in this joint multiple-agency reporting are only consensus statements from the GEOGLAM expert group, and do not necessarily reflect those of the individual Agencies represented by these experts. Map data sources: Main crop type areas based on the IFPRI SPAM 2005 beta 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 Crop Assessment Interface



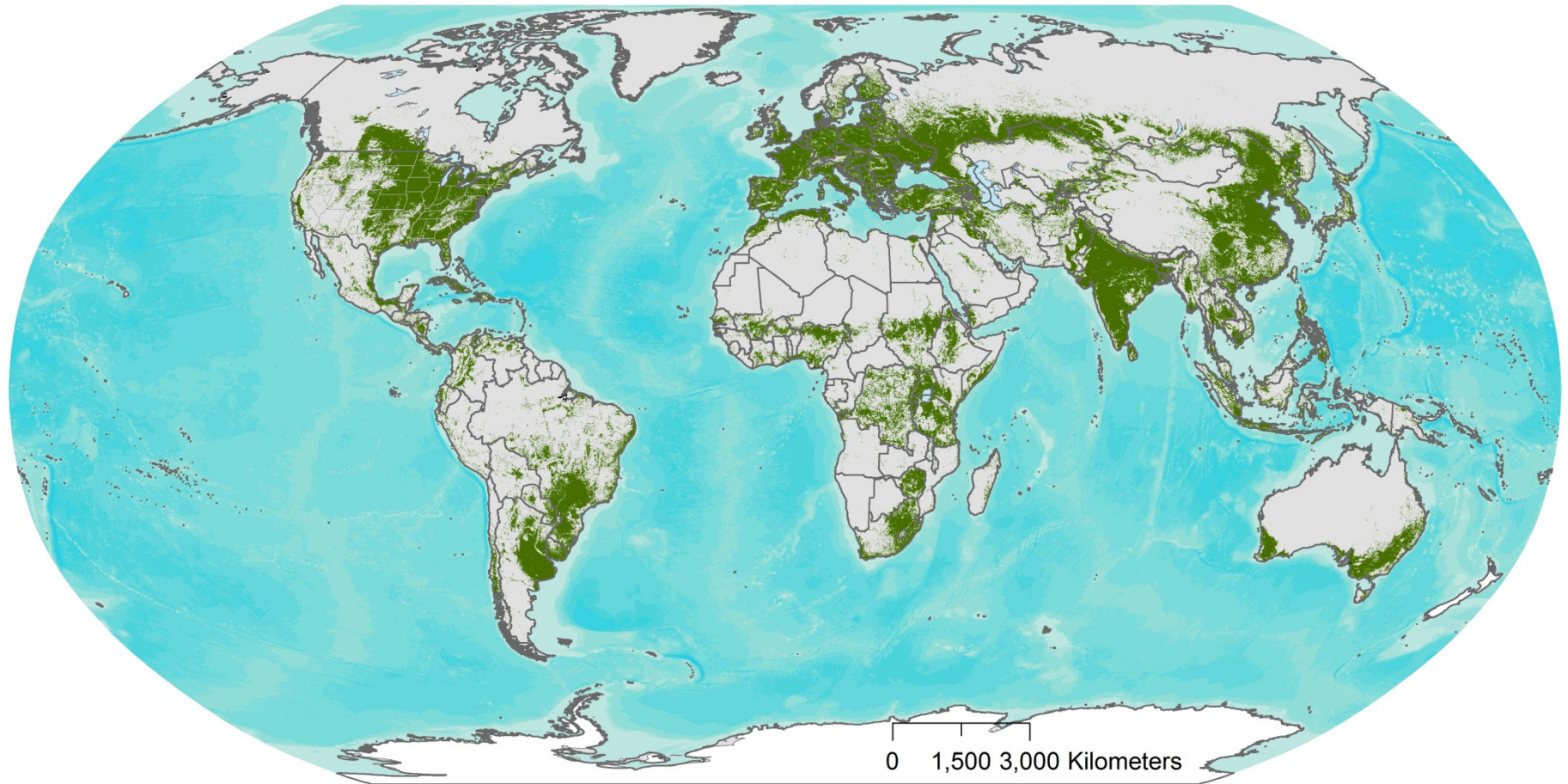
Enables comparison between relevant datasets (global, national and regional), by crop type and accounting for crop calendars; enables **crop condition labeling** and commenting to reflect **national expert assessments**

Translating Information Needs into Observation Requirements



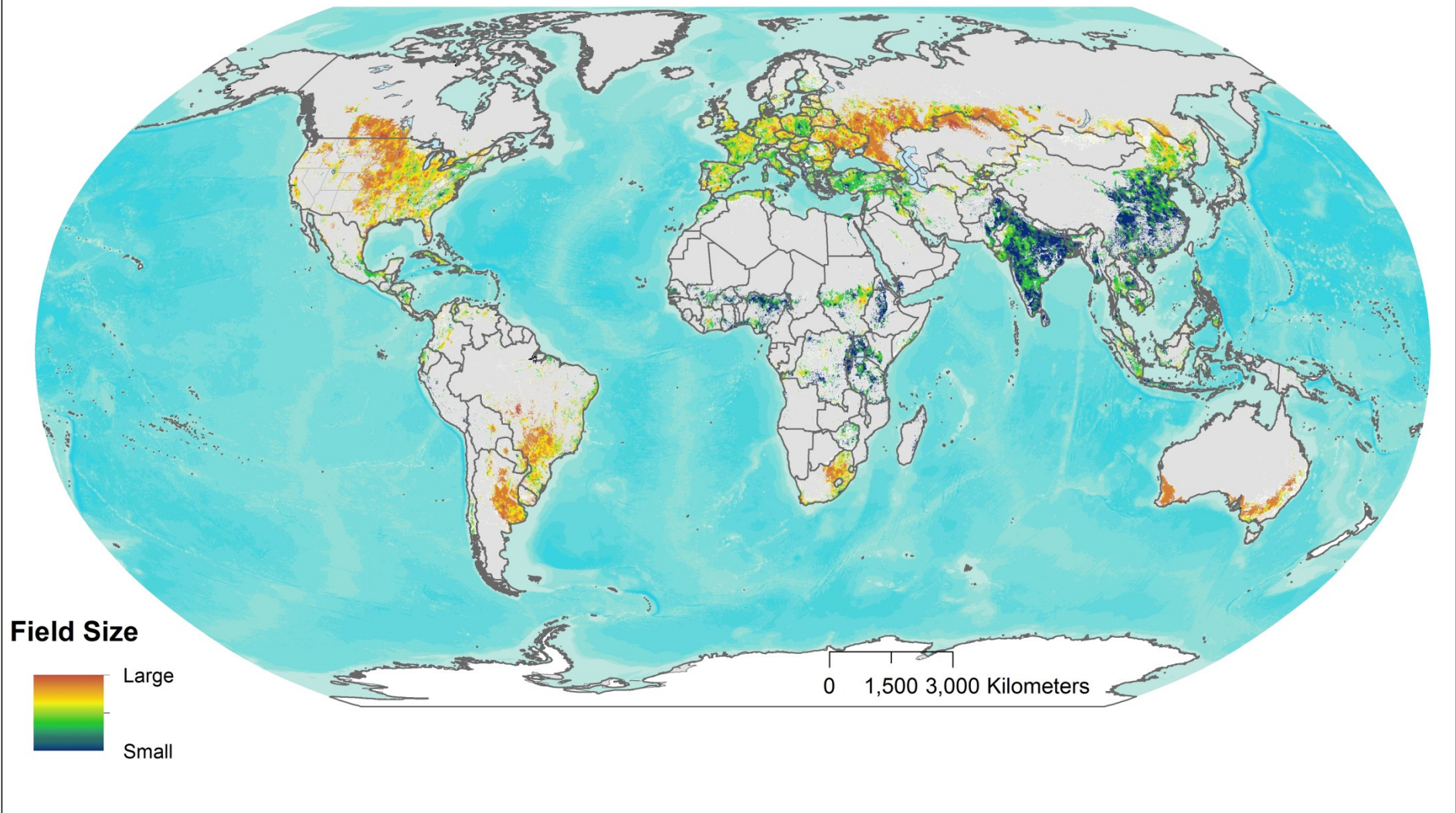
WHERE?

Cultivated Land Distribution



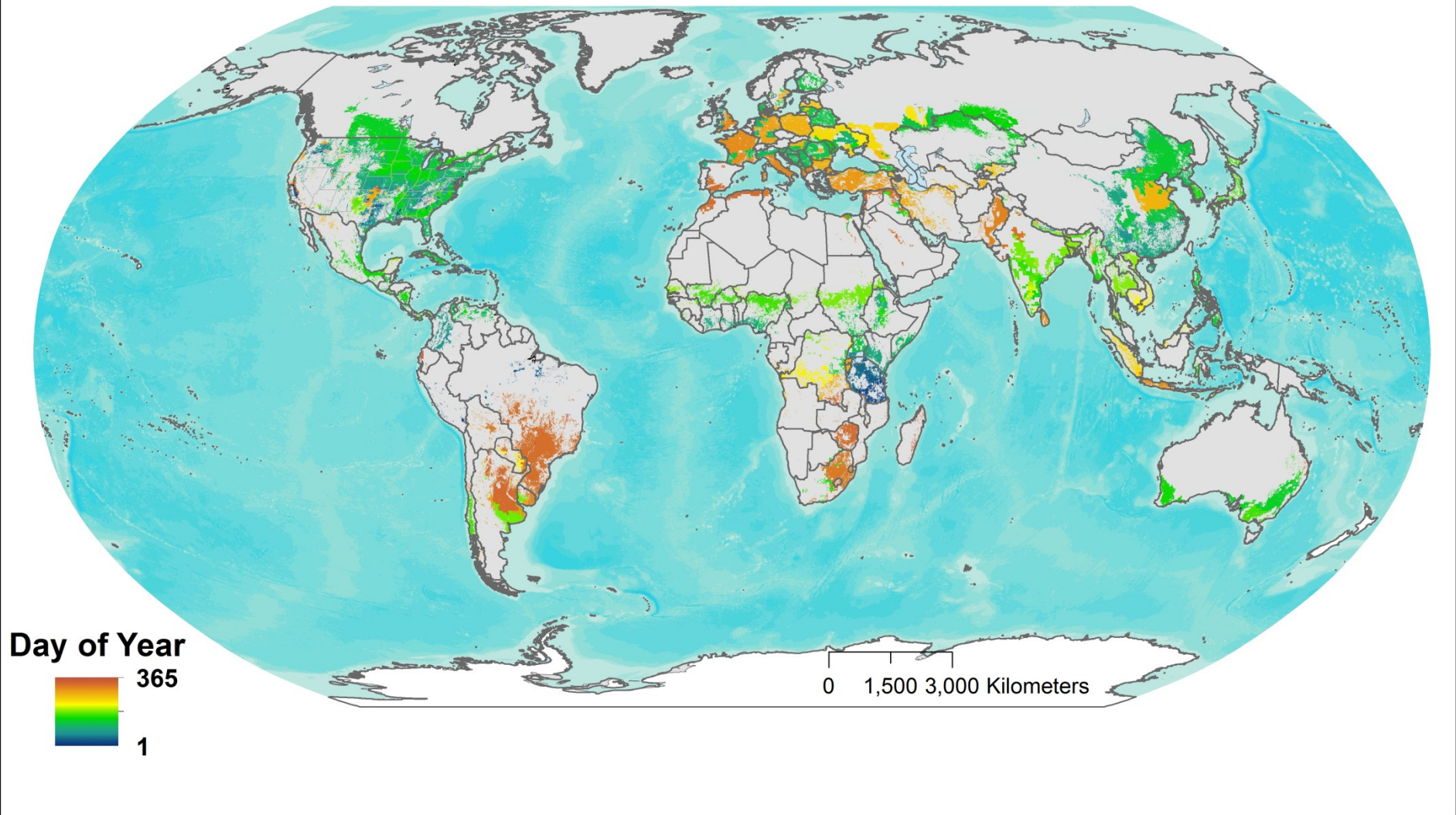
AT WHAT LEVEL OF DETAIL (SPATIAL RESOLUTION)?

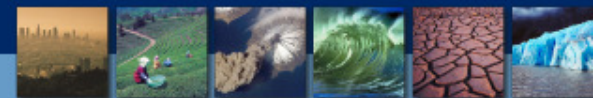
Field Size Distribution



WHEN?

Average Start of Growing Season Date





- Ad-hoc advisory group taking Earth observations requirements from science community

Req#	Spatial Resolution	Spectral Range	Effective observ. frequency (cloud free)*	Sample Type	Target Products						
					Crop Mask	Crop Type Area and Growing Calendar	Crop Condition	Crop Yield	Crop Biophysical Variables	Environ. Variables	Ag Practices / Cropping Systems
Coarse Resolution Sampling (>100m)											
1	500 - 2000 m	thermal IR + optical	Daily	Cropland Extent			✓		L		
2	100-500 m	optical + SWIR	2 to 5 per week	Cropland Extent	✓		✓	L	L		L
3	10-50 km	microwave	Daily	Cropland Extent			✓	✓	✓	✓	
Moderate Resolution Sampling (10 to 100m)											
4	20-70m	optical + SWIR + TIR	Monthly (min 2 out of season + 3 in season). Required every 3-5 years.	Cropland Extent	L/M/S	L/M					✓
5	20-70m	optical + SWIR + TIR	Weekly (min. 1 per 2 weeks)	s	L/M/S	L/M/S	✓	✓	✓	✓	✓
6	10-100m	SAR	Monthly	s	✓	✓	✓	✓			
Fine Resolution Sampling (5 to 10m)											
7	5-10 m	optical + SWIR	Monthly (3 in season)	rs		L/M/S					
8	5-10 m	optical + SWIR	Weekly (min. 1 per 2 weeks)	rs2			✓		✓	✓	✓
Very Fine Resolution Sampling (<5m)											
9	< 5 m	optical	1 to 2 per month	rs3		✓					✓



- Ad-hoc advisory group taking Earth observations requirements from science community
- ... and converting them into an acquisition strategy by linking **requirements to data streams**

Req#	Proposed Core Missions	Proposed Contributing and Potential Missions	Spatial Resolution	Spectral Range	Sample Type	Effective observ. frequency (cloud free)*	Growing Season Calendar
Coarse Resolution Sampling (>100m)							
1	Aqua/Terra (1000m) / NPP (750m)	SPOT-5 (1150m) / Proba-V (1000m)	500 - 2000 m	thermal IR + optical	Cropland Extent	Daily	all year
2	Aqua/Terra (250m) / NPP (375m)	Proba-V (350m) / Sentinel-3A (500m)	100-500 m	optical + SWIR	Cropland Extent	2 to 5 per week	all year
3	GCOM-W1/W2 / SMOS / SMAP		10-50 km	microwave	Cropland Extent	Daily	all year
Moderate Resolution Sampling (10 to 100m)							
4	Landsat 7/8 (30m)	ResourceSat-2 (56m) / Sentinel-2A (20m)	20-70m	optical + SWIR + TIR	Cropland Extent	Monthly (min 2 out of season + 3 in season). Required every 3-5 years.	all year
5	Landsat 7/8 (30m)	ResourceSat-2 (56m) / Sentinel-2A (20m)	20-70m	optical + SWIR + TIR	s	Weekly (min. 1 per 2 weeks)	growing season
6	Sentinel-1A (C)	Radarsat-2 (C) TerraSAR-X (X) ALOS-2 (L)	10-100m	SAR Dual Polarization	s	Monthly (Asia-RICE only)	all year
Fine Resolution Sampling (5 to 10m)							
7	RapidEye	SPOT-5	5-10 m	optical + SWIR	rs	Monthly (3 in season)	growing season
8	RapidEye	SPOT-5	5-10 m	optical + SWIR	rs2	Weekly (min. 1 per 2 weeks)	growing season
Very Fine Resolution Sampling (<5m)							
9		Pleiades	< 5 m	optical	rs3	1 to 2 per month	growing season



Pakistan Agricultural Information System (Collaboration between USDA, FAO, SUPARCO, CRS, & UMD)

Global Agriculture Monitoring -- 250-meter MODIS/NDVI Time Series Database
Pakistan -- 2012-Jun-09 to Jun-24

Regional Image (View)
Click to Show Detail. Red box indicates bounds of detail image. Each pixel is 2.5km.

Options

Product Type: MOD44/MYD44 (16-day) [v]
Image Date: 2012-Jun-09 to Jun-24 [v]
Image Type: Current Image [v]
Water Mask: Standard (MOD12) [v]
Crop Mask: None [v]
Palette: Color (Ramp) [v]
Click Type: Polygon: Provinces [v]

Pakistan Polygon Options

Draw? Label? Zoom To

Provinces: Punjab [v]
Divisions: [v]
Districts: [v]

MODIS NDVI (Terra) (MOD09 8-day) Graph [v] [Download Graph Data] [Download Graph Data (Information)]

MODIS NDVI (Terra) (MOD09 8-day) : Dera Ghazi Khan (Crops Only)

Crop type classification

PAKISTAN AGRICULTURAL INFORMATION SYSTEM
Building Provincial Capacity for Crop Estimation, Forecasting, and Reporting using Remote Sensing

USDA SUPARCO

HOME

AGRICULTURAL INFORMATION SYSTEM

Project GCP/PAK/125/USA
Building Provincial Capacity in Pakistan for Crop Estimation, Forecasting, and Reporting based on the Integral use of Remotely Sensed Data.

What's new?

HOT TOPICS

SUPARCO produces monthly crop monitoring information bulletins with satellite-based data on crop growth pattern, information on fertilizer and irrigation availability during a cropping season, and crop yield and production forecasts/estimates for different seasons.

NEWS / ANNOUNCEMENTS

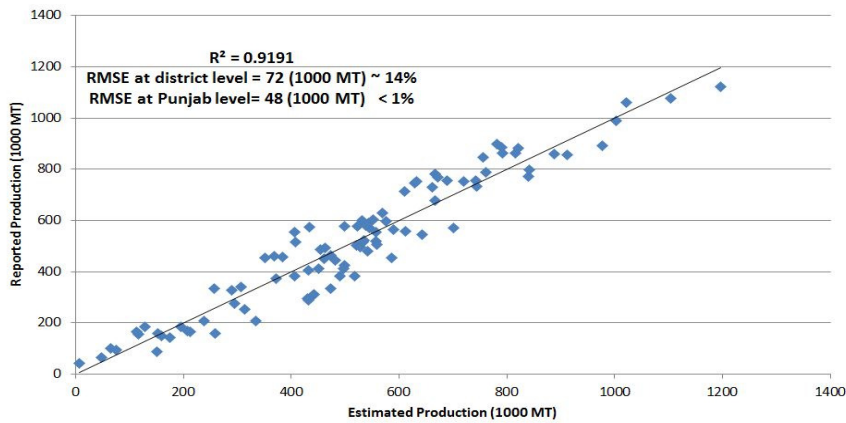
The 4th targeted training course on monitoring of crops through satellite technology for CRS staff is announced for 12-16 November, 2012. It aims to provide CRS officials with the knowledge of procedures for monitoring crops through satellite technology and the capability to estimate crop area and forecast yield and production at provincial level.

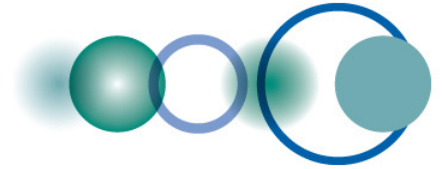
DIRECT Links

USDA and FAO reports with datasets | Crop bulletins and reports from SUPARCO | Training courses | Procedures / Maps | Publications

USDA SUPARCO

EO Estimated vs. Reported Wheat Production for Punjab Districts: 2009-2011



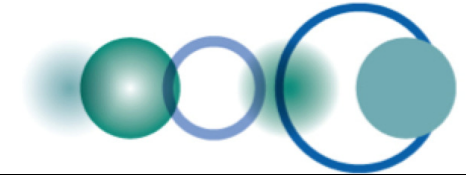


Phased Approach across all components

Phased approach	2012	2013	2014	2015	2016	2017	2018
1 Foundation activities	[Light blue bar spanning 2012, 2013, and 2014]						
2 New starts with GEOGLAM funding			[Green bar spanning 2014, 2015, and 2016]				
3 Thematic / Geographic expansion				[Red bar spanning 2015, 2016, and 2017]			
4 Operational						[Dark blue bar spanning 2017 and 2018]	

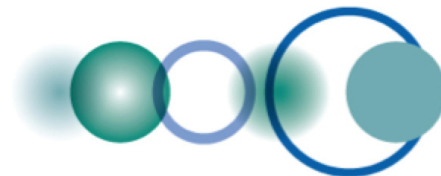
Phase 1 Activities: best effort, ongoing and realigned tasks and voluntary contributions

Phase 2 Activities: GEOGLAM funded tasks and contributory projects



Examples of Phase 1 Support: Current & Potential

- **US / NASA**
 - Global Soy Area Estimation
 - Crop Outlooks
 - Wheat Yield Forecasting prototype
 - Pakistan Capacity Building
 - GLAM Operation w. NASA
 - **Japan, India, Thailand, Vietnam**
 - Asia RiCE Initiative (ADB)
 - **China:**
 - GEO Agriculture Task (MOST)
 - **Canada**
 - JECAM office/coordination
 - **EU FP 7**
 - -9 Million Euro SIGMA Project
 - **Voluntary/In-kind Contributions**
 - JRC Workshops,, Canadian SA Workshop,
 - Argentina Regional Workshop
- France**
- GEOGLAM operations/secondment of P5 to Project Coordination Office
- Gates Foundation**
- RS Africa capacity building activities for smallholder farmers – Tanzania
- Australia**
- Coordination of Rangelands component
- Germany**
- Interest in supporting GEOGLAM
- Argentina (Ministry of Ag)**
- National capacity building initiative
- China (MOST)**
- Considering support GEOGLAM
- US (USDA/NASA/USGEO)**
- Global Component Office proposal
- KSS International Program**
- visualizing the global food system
- RUSSIA ?**



Summary

- GEOGLAM has a good policy mandate - the global food problem will not go away!
- GEOGLAM has momentum in the Community of Practice
- International and national funding support exists and is growing
- National institutional participation growing
- Early successes demonstrate the progress

THANK YOU !

earthobservations.org

jsoares@geosec.org



GEOGLAM
Global Agricultural Monitoring