



GEOGLAM Phase 1 Implementation

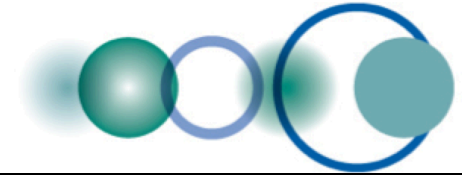
Status

Phase 1 country engagement
Data access and processing product generation
Crop Monitor for AMIS Update

Inbal Becker – Reshef, Michel Deshayes, Alyssa Whitcraft

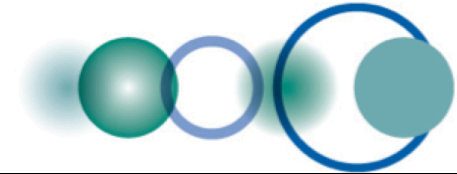
CEOS-GEOGLAM meeting, 27th-28th February 2014

ESA/ESRIN, Frascati, Italy



GEOGLAM Phase 1

- Phase 1 spans over the 2012-2014 time frame
- focuses on
 - foundation activities,
 - building on existing activities
 - pilot projects for a few countries
 - scoping out the programme for the following phases



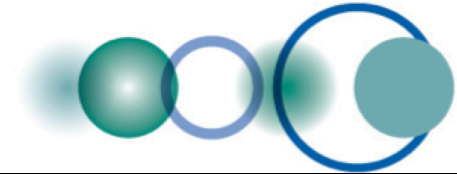
GEOGLAM Phase Timing

Does this timeline need to be revisited?

Phased approach	2012	2013	2014	2015	2016	2017	2018
1 Foundation activities/feasibility demonstration	[Light blue bar spanning 2012, 2013, and 2014]						
2 Review and expanded initiatives			[Green bar spanning 2014, 2015, and 2016]				
3 Thematic and Geographic expansion				[Red bar spanning 2015, 2016, and 2017]			
4 Operational						[Grey bar spanning 2017 and 2018]	

Phase 1 Activities: focus on foundation activities, selected countries, prototype/feasibility demonstrations

Phase 2 Activities: GEOGLAM funded tasks implementation of feasibility projects



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

Phase 1/2 by Component as stated in GEOGLAM Implementation Plan

- C1: Global/Regional systems
 - Crop Monitor
 - Improved global baseline data sets
 - Asia Rice
- C2: National Capacity Development
 - Develop a series of regional workshops for status assessment, needs and priorities;
 - Argentina workshop
 - Russia workshop
 - Ukraine workshop planned in May
 - East Africa workshop planned in June
 - National engagement and commitments by interested parties
 - National Implementation
 - Regional training / information exchange and continued regional networking
- Need better tracking of status and successes

C2 Activities and Countries

<i>Argentina</i>			
P1	Assessment of current status and priorities for enhancements – crop monitoring		
P1	Crop condition monitoring/cropland mapping/ crop area prototype		
P2	Prototype yield, evaluate crop area approach and expand		
<i>Mexico</i>			
P1	Regional Needs Assessment Workshop		
P1	Cropland mask and crop type mapping		
<i>Russia – Ukraine/Belarus/Kazakhstan</i>			
P1	Regional Needs Assessment Workshop		
P2	National Engagement		
<i>Australia</i>			
P1	Assessment of current status and priorities for enhancements	<i>Thailand – Laos/Philippines/Vietnam</i>	
P1	JECAM/crop condition/cropland mapping/ crop area prototype	P1	Pilot activities for Agricultural and rural statistics
P2	Prototype yield, evaluate crop area approach and expand	P2	Implementation and workshop / capacity building
		P2	GEOGLAM augmentation needed in terms of data access – ALOS2/RISAT /Radarsat /Sentinel 1.
		<i>Pakistan</i>	
		P1	Capacity Building for Crop Reporting Services
		P2	Capacity Building for Crop Reporting Services
		<i>Uganda</i>	
		P1	Pilot Early Warning and National Monitoring (NUDC/FEWSNET)
		P2	Pilot Early Warning and National Monitoring (NUDC/FEWSNET)
		<i>Ethiopia</i>	
		P1	National Monitoring System (FAO and others)
		P2	National Monitoring System (FAO and others)
		<i>Algeria</i>	
		P1	Crop outlook and yield forecast (EU/INRA Min Ag)

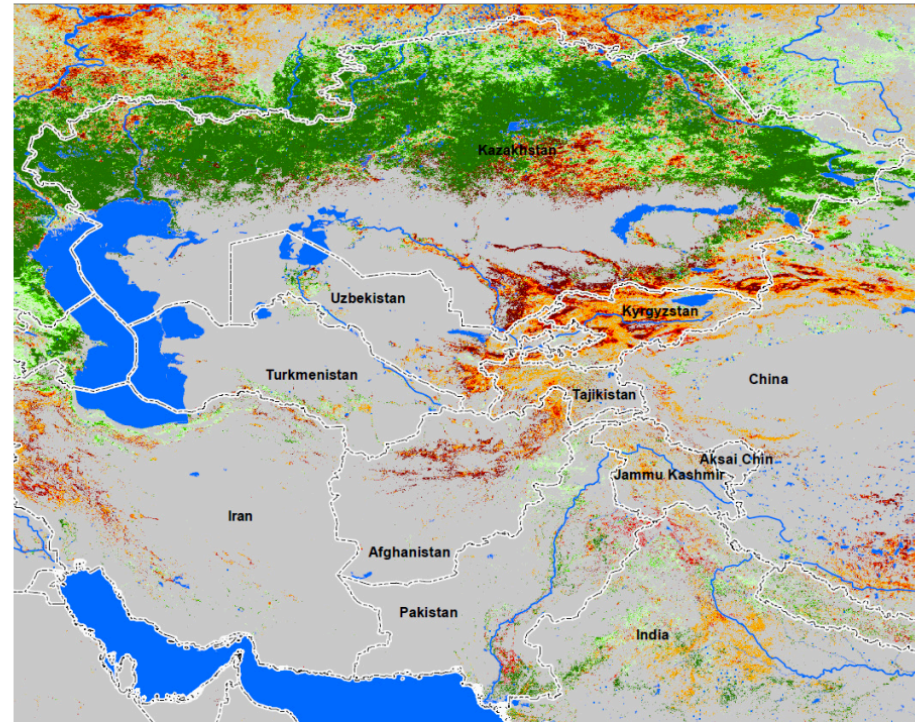
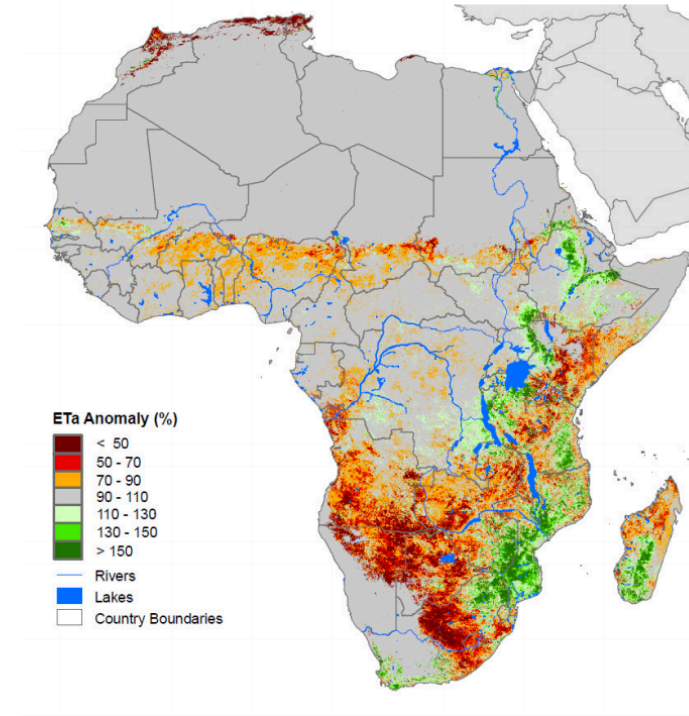
C3: Countries at-risk

- East Africa selected as initial target region, given that there have been identified potential partners and in-kind sources such as JRC, FAO GIEWS, FEWSNET CMRD, the SERVIR regional hub, ICPAC and the Gates Foundation
- build on existing systems and established collaborative networks (with potential for growth)
- Initial development stages- focus of Phase 2

C3 Activities

<i>Data Sets</i>	
P1	FEWS NET Global gridded rainfall FEWS NET MODIS ET FAO Agricultural Stress Index
P2	Work with WMO to strengthen national climate station and crop reporting networks
P2	Leverage advanced computing capabilities to apply high- to medium-resolution (5m -30 m) imagery to seasonal monitoring for early warning (Rapid Eye, Landsat, Sentinel 2, etc.)
<i>Data gaps</i>	
P1	FEWS NET/WMO/GEO Workshop with East Africa National Met Services
<i>R&D</i>	
P1	National and sub-national crop production shortfall risk profiling – loss exceedence probability functions
P1	Long time-series agricultural drought indicator
<i>Training</i>	
P1	Exploration and application of FEWS NET gridded rainfall and MODIS ETa data sets
P1	Exploration and application of FAO agricultural stress index data set

Actual ET from MODIS LST at 1 km



- Presently Africa and Central Asia using NASA DAAC feed of Terra LST
- Product updates every five days
- Moving to NASA LANCE feed of Aqua LST, global coverage in 2014

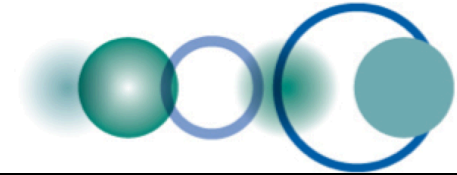


Food Security, Earth Observations and Agricultural Monitoring
November 21, 2013 – Brussels



C4: Earth Observation coordination

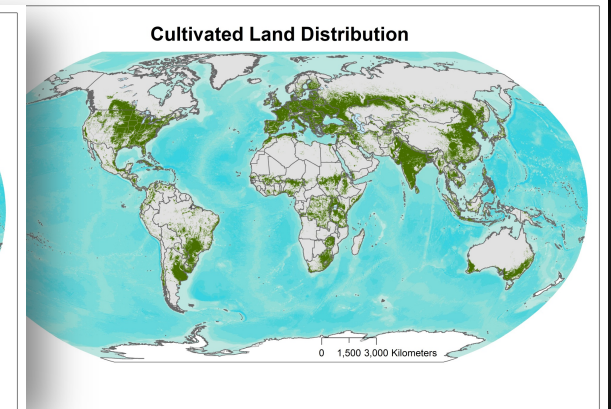
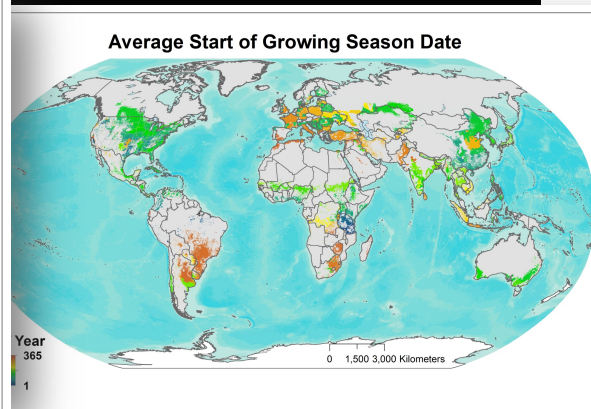
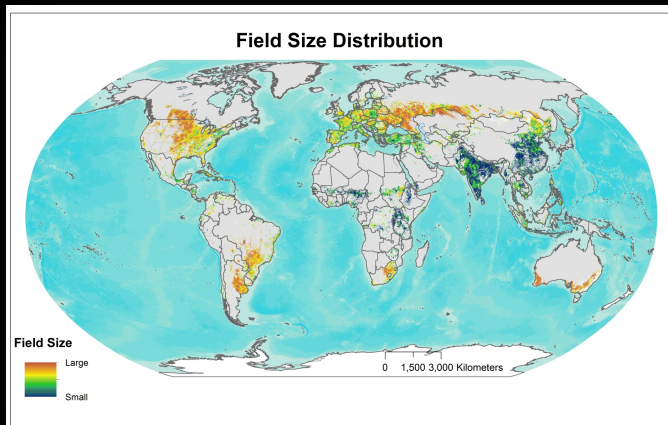
- Overall Phasing Approach- permit an evolution of growing capacity in:
 - Increased number of countries;
 - Integration of additional sensors as agencies and new sensors come on board, and datasets are made available;
 - Assimilation, processing, product creation, distribution and integration of information products into decision making processes,
 - Capacity building, particularly in at-risk countries for ingestion and processing of EO data
- Phase 1/2: Support for demonstration and feasibility
 - Test sample sites and information products, to validate their usefulness, robustness and affordability
 - Focus on major commodities (wheat, maize, rice and soybean)
 - Some observations will be wall to wall, cropland extent others will be sampled
 - The Rice Monitoring pilot study plan will be expanded with available SAR data in Asia and other regions



EO Data Requirements Framework & Base Datasets

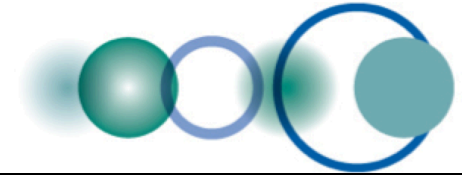
developed taking into consideration the observation needs, the derived products they will serve, and regional specificities; CEOS-GEOGLAM July 2012 Montreal)

Sensor Mission	OBSERVATION & SENSOR TYPE			REGIONAL CHARACTERISTICS & GEOGRAPHICAL EXTENT				DERIVED PRODUCTS & MONITORING APPLICATIONS								
	SPATIAL RES.	SPECTRAL RES.	TEMPORAL RES.	WHERE? (+ cropland mask & sampling scheme)			WHEN?		Use (Primary or Secondary Source)	Cropland mask	Crop type area	Crop cond. indicators	Crop bioph. var. (water, soil moisture)	Env. variables (reservoir, Practices / Cropping systems)	Ag. Cropping systems	Crop yield
	Spatial resolution	Spectral range	Effective observ. frequency (cloud free)*	Swath / Extent	Sample (s), Refined (rs) or Wall-to-Wall (w2w)	Large, Medium, Small fields	Crop types diversity	Calendar/ Multiple cropping								
MODIS (Aqua/Terra), VIIRS(NPP), Vegetation (SPOT-3)	2000 - 500 m	thermal IR + optical	few per day	global	w2w							x	x (L)			
MODIS (optical not SWIR), Sentinel 3P (Future), CMA FY (Asia), Proba-V (Future)	100-300m	optical + SWIR	2 to 5 per week	global	w2w	L/M/S		*			x	x	x	x (L)	x (L)	x (L)
FUTURE	1-15km	passive microwave	daily	global	w2w											
FUTURE	50-150 m	SAR dual pol. (K,C,L) ****	5 per season	main crops	s	L/M/S	rice area	entire growing season	high cloud cov.		x	x	x	x (L)	x	x (L)
FUTURE	5-20m	SAR dual pol. (K,C,L) ****	5 per season	main crops	s	L/M/S	rice area	entire growing season	high cloud cov.			x	x	x	x	x
FUTURE	Footprint 50-100m	RADAR Altimetry	weekly	main crops	s	L/M/S		entire growing season					x			
ITM (Landsat-7), ASTER (Terra), TRIS(DCM), IRMS (CBERS-3)	20-70m	optical + SWIR	1 per month (if possible same sensor) (min 2 out of season + 3 in season)	croplands	w2w	all M/S		year-round, focus on growing season			M/S	M				
AV Optical Mid-Resolution (Landsat, Terra, EO-1, Resourcesat-2, CBERS-3, Sentinel-2)	20-70m	optical+SWIR	1 per week (min. 1 per 2 weeks)	main crops	s	country specific (see phasing) L/M/S		entire growing season			L/M/S	M/S	x	x	x	x
NRT (Sentinel-2P) Resolution (Landsat, Terra, EO-1, Resourcesat-2, CBERS-3, Sentinel-2)	5-10 m	optical (+SWIR)***	1 per month (if possible same sensor) (min 2 out of season + 3 in season)	croplands	rs	L/M/S (focus on S)		year-round, focus on growing season			L/M/S	L/M/S				
HRA (SPOT-5), Rapid Eye (optical)	5-10 m	optical (+SWIR)***	1 per week (min. 1 per 2 weeks)	main crops	rs2	country specific (see phasing) S		entire growing season					x	x	x	x
HRA (SPOT-5), Rapid Eye (optical)	< 5 m	optical	1 to 2 per month	croplands	rs3	demo. case (2-5% of croplands L/M/S)		2-4 coverages per year							x	x

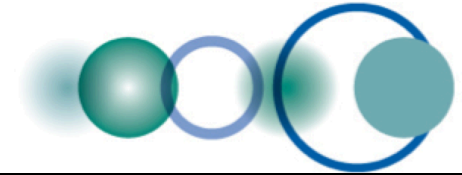


C5: R&D JECAM

- Annual JECAM Meetings
 - Directed Workshops to address GEOGLAM research needs, including National Capacity building
 - SAR for Soil moisture Monitoring, SAR for monitoring crops in tropical-subtropical regions
 - Sampling Frameworks for agric monitoring
 - Best practices for crop monitoring
-
- Defining minimum data requirements across JECAM sites and data collection protocols
 - Linking to AGMiP
 - Data dissemination
 - Sigma Project
 - STARS: Spurring a Transformation for Agriculture through Remote Sensing



Phase 1 Country Engagement



Australia

- National partners: CSIRO & ABARES
- Prototype MODIS crop & rangelands condition system
- Prototype MODIS-Landsat wheat classification (leveraging existing projects)
 - Australia has receiving station for Landsat- have wall to wall time series
 - Sampling strategy for fine res data
- Expect new funds in July 1 2014 to support crop type mapping

Prototype MODIS Crop & Rangelands Condition System

Global Agriculture Monitoring — 250-meter MODIS/NDVI Time Series Database Australia

Logos: GLAM, CSIRO, TERN, Australian Government Department of Agriculture, Fisheries and Forestry, UNIVERSITY OF WYOMING, NASA, USDA, GEOGLAM

Options Raster: MODIS MOD44 NDVI (2014-Feb-02 to Feb-18) / Water Mask: Standard (MOD12)

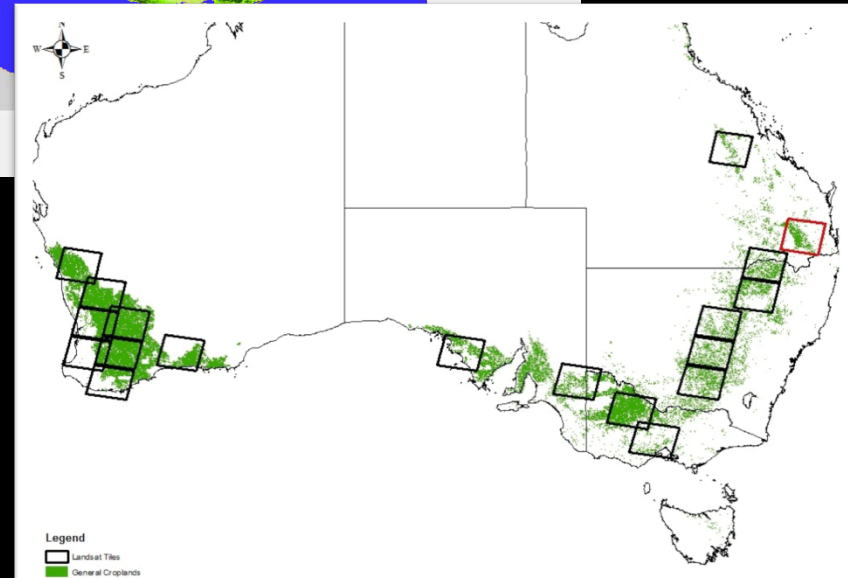
Image Type: MODIS MOD44 NDVI
Image Date: 2014-Feb-02 to Feb-18
Image Mode: Current Image
Image Overlay: None

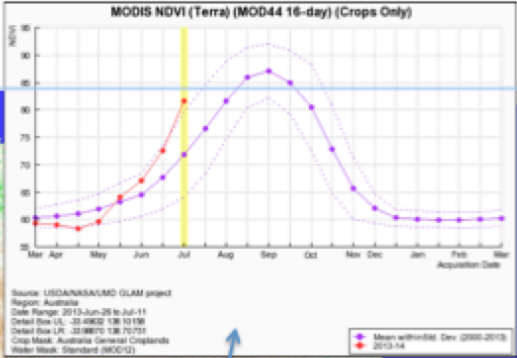
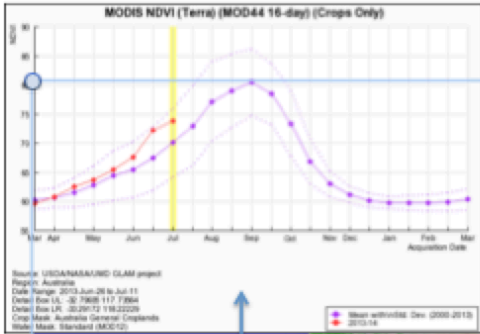
Mask Water Mask: Standard (MOD12)
Opacity: 100%
Crop Mask: None

Shape	Draw	Label	Select	Zoom To Shape
Country	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Admin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
IJ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Australia Admin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Australia Rangelands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Australia Sorghum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
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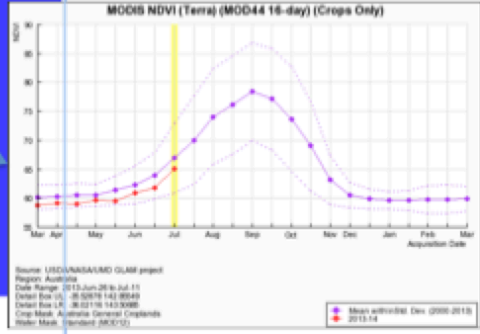
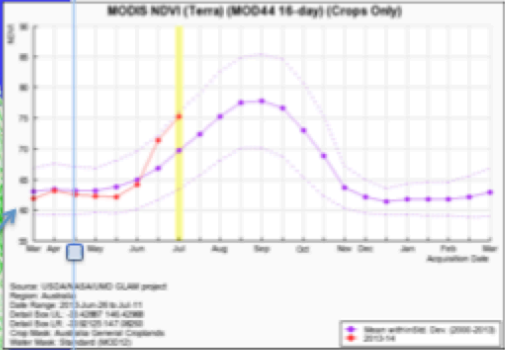
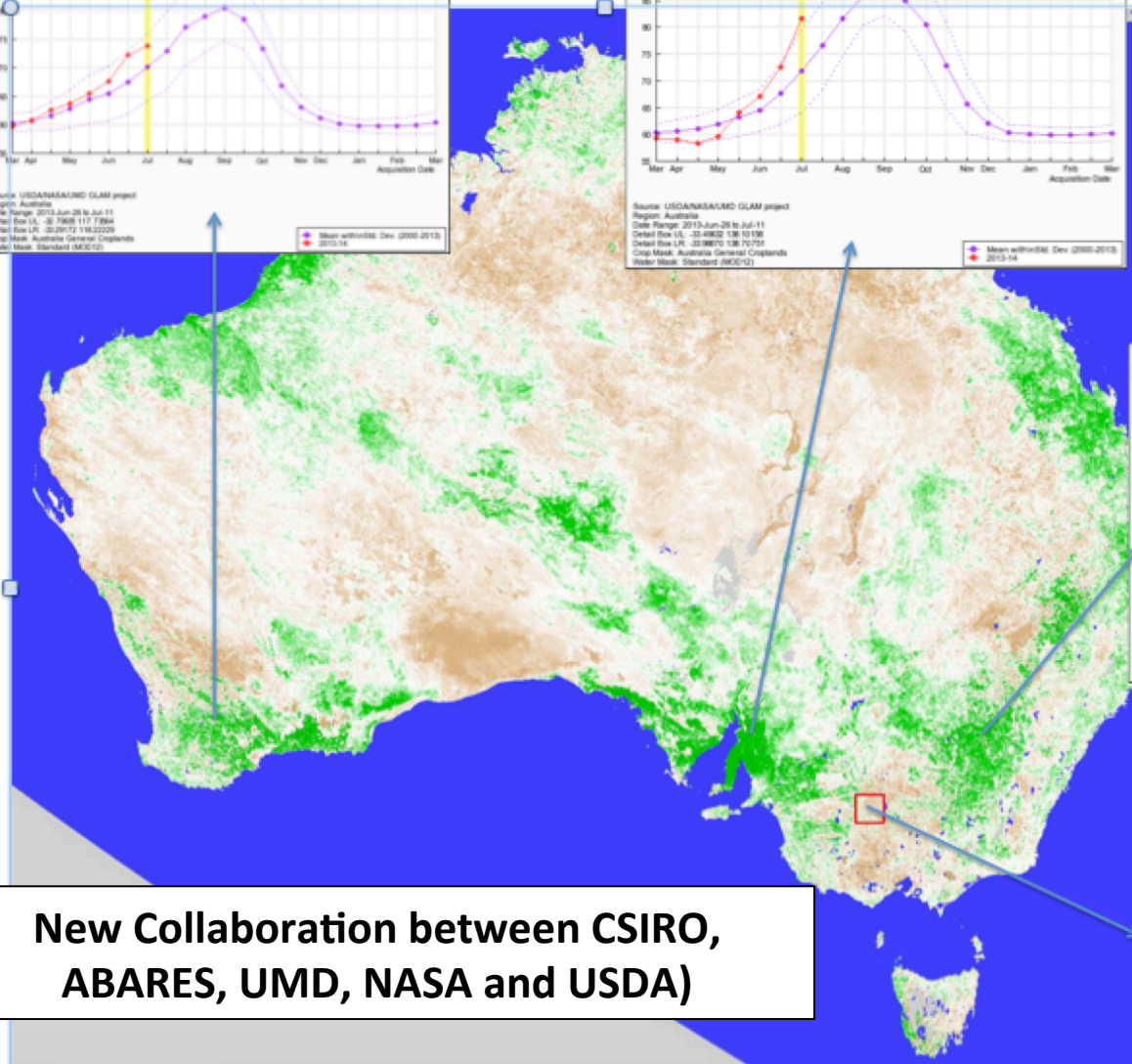
Graph Calendar Start: September (Default is September)
Months to Graph: 12
Year(s) to Graph: None, Current Year, All Years, Year 2000, Year 2001, Year 2002

Prototype MODIS Wheat Mask for prototyping sampling strategy

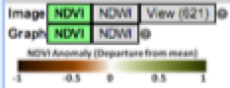




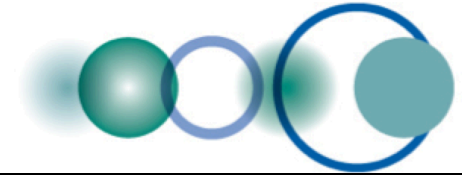
Crop Condition
 (NDVI anomaly)
 June 26 - July 11 2013



**New Collaboration between CSIRO,
 ABARES, UMD, NASA and USDA)**



Australia
 2013-Jun-26 to Jul-11
 UL: -10.16120° 114.16260°
 LR: -43.86572° 158.42768°



Argentina

- National Partner: INTA
- Prototype MODIS Crop Condition system
- MODIS stratification map for soy (leveraging existing projects)
 - Sampling strategy for landsat and RE defined
 - 5 RE scenes acquired per sample blocks over growing season
- Preliminary EO based soy area estimate

Argentina

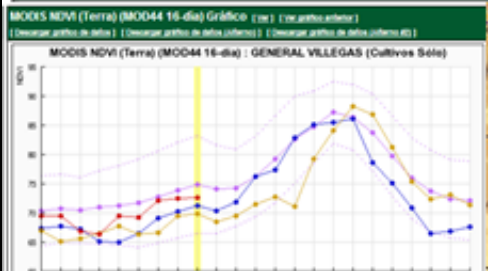
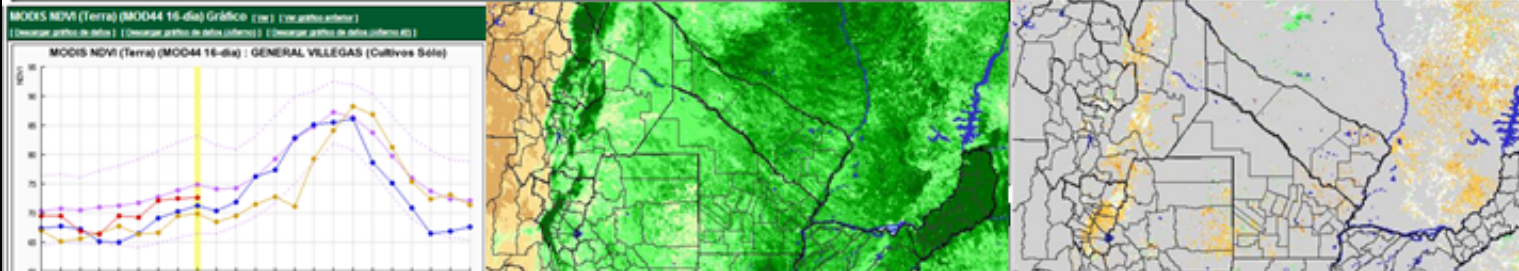
Prototype MODIS Crop & Rangelands Condition System

Seguimiento Global de la Agricultura -- Base de Datos Temporal MODIS/NDVI a 250 metros

Argentina -- 2012-oct-15 a oct-30

Lenguaje (Detección Automática)

Imagen Regional [Ver]
Haga click para mayor detalle. El cuadro rojo indica los límites de la imagen detallada. Cada píxel representa 2,5 km.



Fuente: USGS/NOAA/UMD GLIM project
Región Argentina
Rincón de fecha: 2012-oct-15 a oct-30
Fuente: Buenos Aires - GENERAL VILLEGAS
Código Punto de Inter: 423000
Muestra de cultivo: Cereales + 80%, SEMIS-derechos
Muestra de tipo: Sembrado (200-12)

Imagen: MODIS MODIS (16 d) [Ver (2012)]
Gráfico: MODIS MODIS

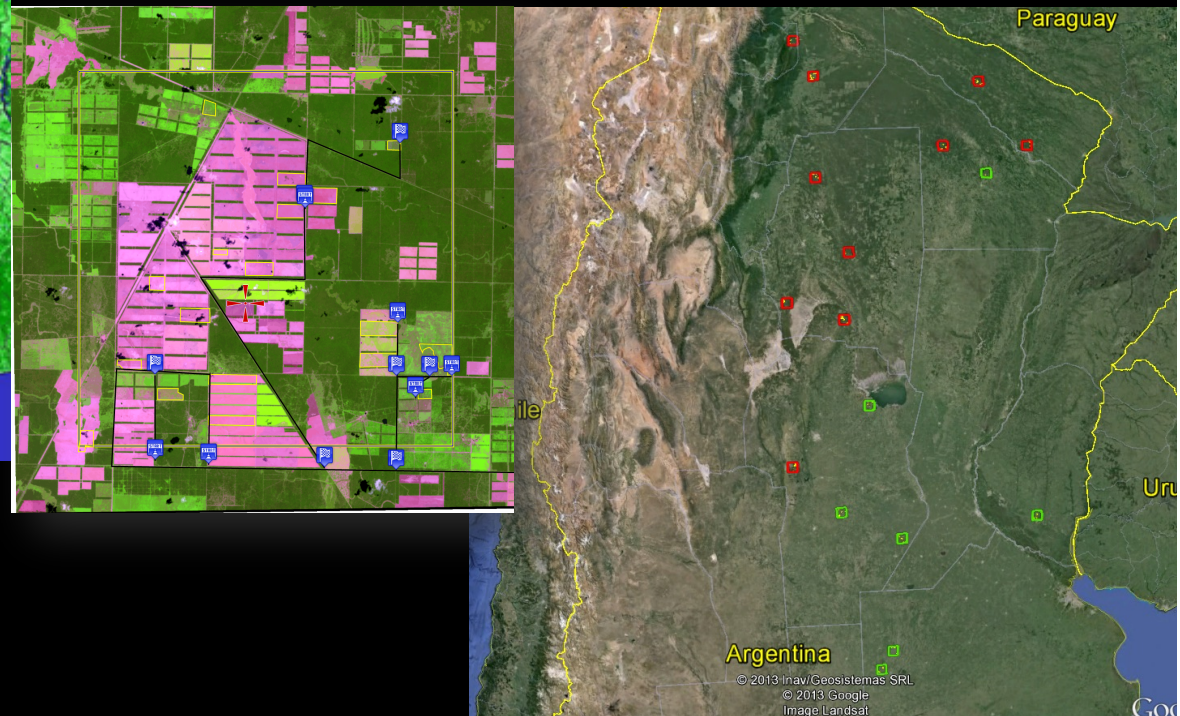
Inicio del calendario: June (La región predeterminada es September) Mises a graficar

Cuadro / Punto de detalles

Ninguna	Ninguna
Todos los años	Todos los años
Año 2000	Año 2000
Año 2001	Año 2001
Año 2002	Año 2002
Año 2003	Año 2003
Año 2004	Año 2004
Año 2005	Año 2005
Año 2006	Año 2006
Año 2007	Año 2007
Año 2008	Año 2008
Año 2009	Año 2009
Año 2010	Año 2010
Año 2011	Año 2011
Año 2012	Año 2012
Sin Media (2000-2012)	Mostrar la media con desvío estándar 2000-
Sin Mediana (2000-2012)	Sin Mediana (2000-2012)

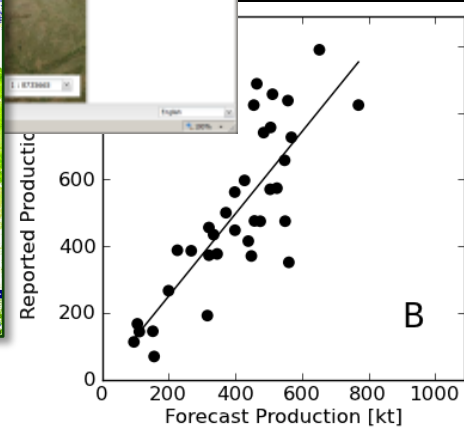
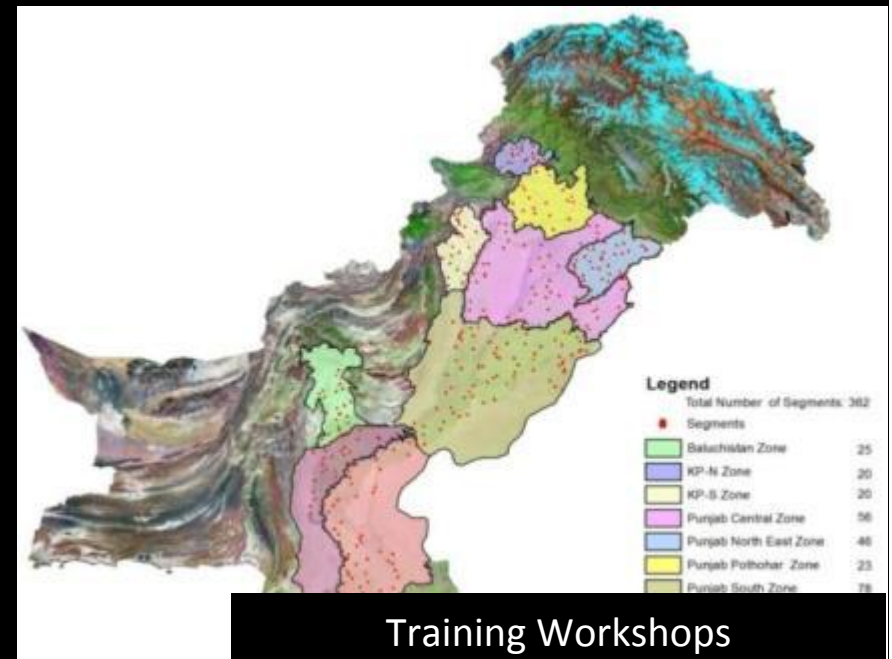
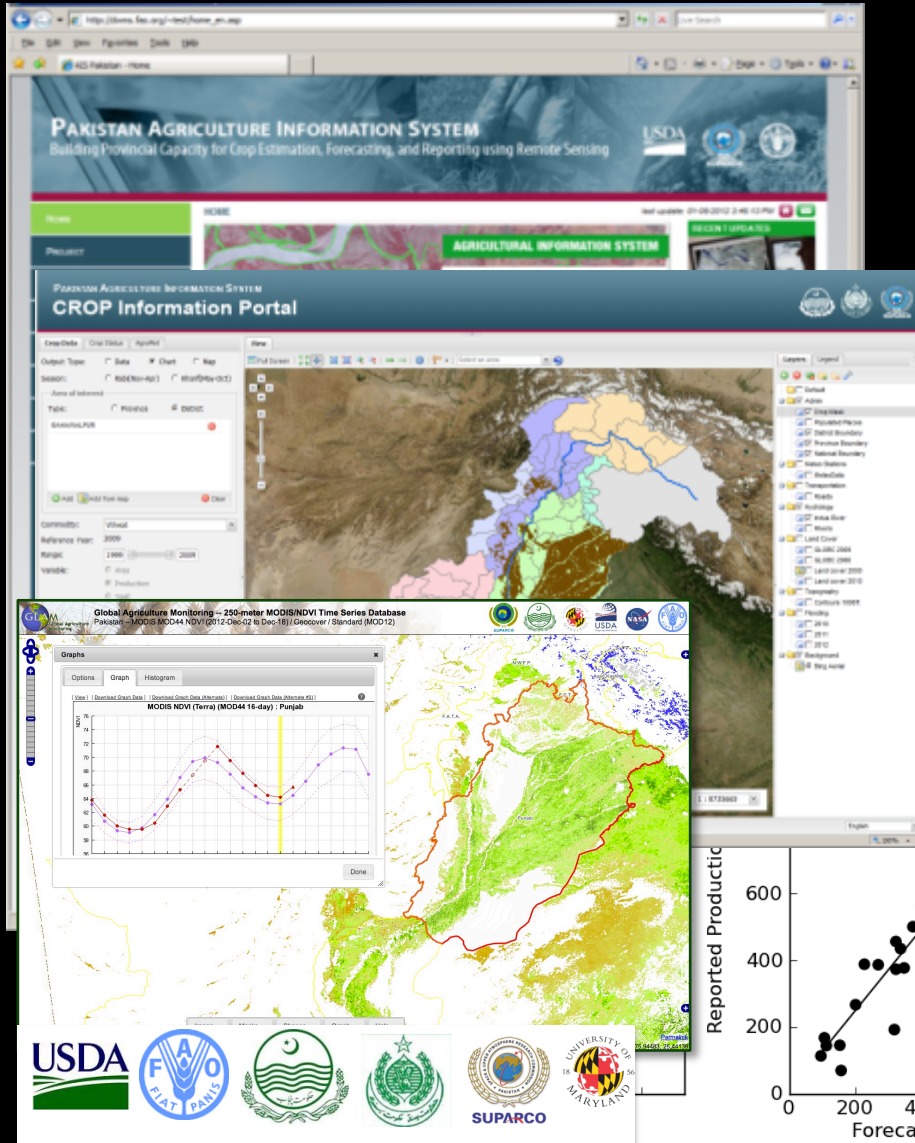
NDVI Valores: 0 - 100 Escala: Adaptativo Cumulativo: No Color: Estándar Actualizar gráficos

Argentina RE sample blocks



Pakistan: Strengthening Provincial Capacity

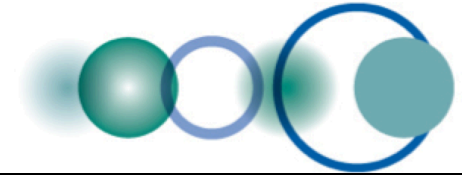
(collaboration between USDA, FAO, SUPARCO, CRS Pakistan, & UMD)



New Development:

Phase 1 planning for Phase 2 implementation

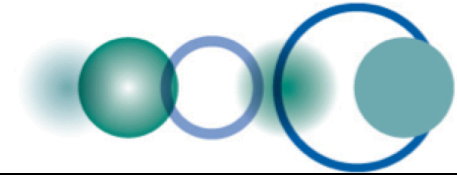
- New STARS project- coordinated by ITC
(Spurring a Transformation for Agriculture through Remote Sensing)
- Funded by BMGF
- Strong synergy with JECAM
- East Africa (Tanzania/Uganda), West Africa (Mali/Niger), S Asia (Bangladesh)
- CSIRO, ITC, UMD, ICRISAT, CIMMYT



GEOGLAM Crop Monitor for AMIS (Agricultural Market Information System)

- Objective: develop transparent, timely, crop condition assessments in primary agricultural production areas highlighting potential hotspots of stress/bumper crop
- These assessments reflect an international consensus of crop conditions

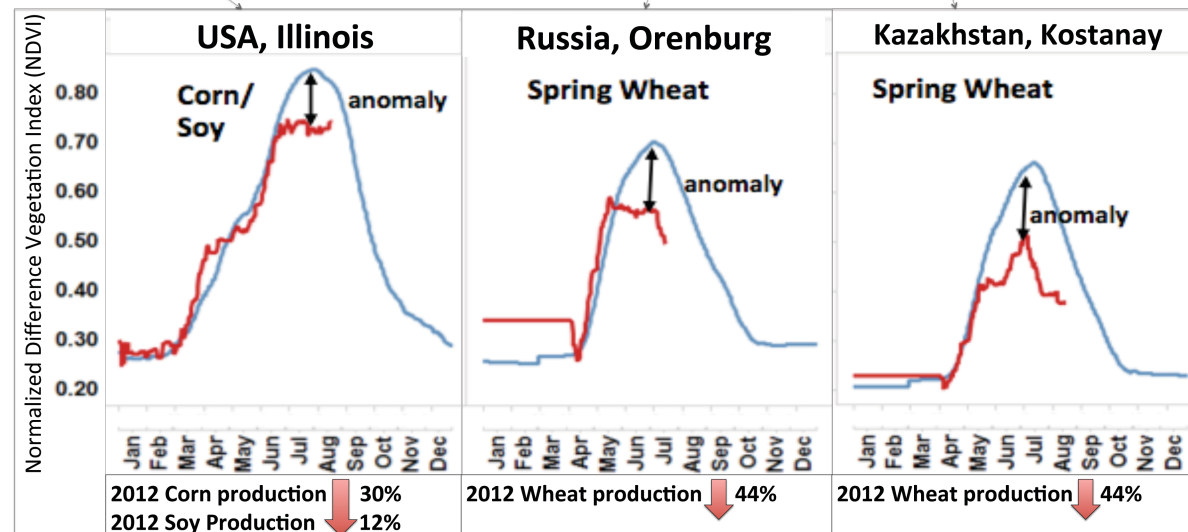
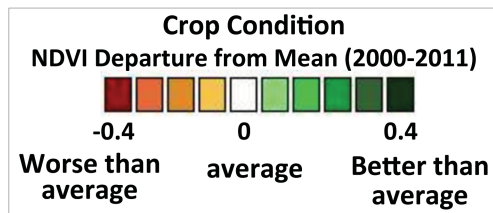
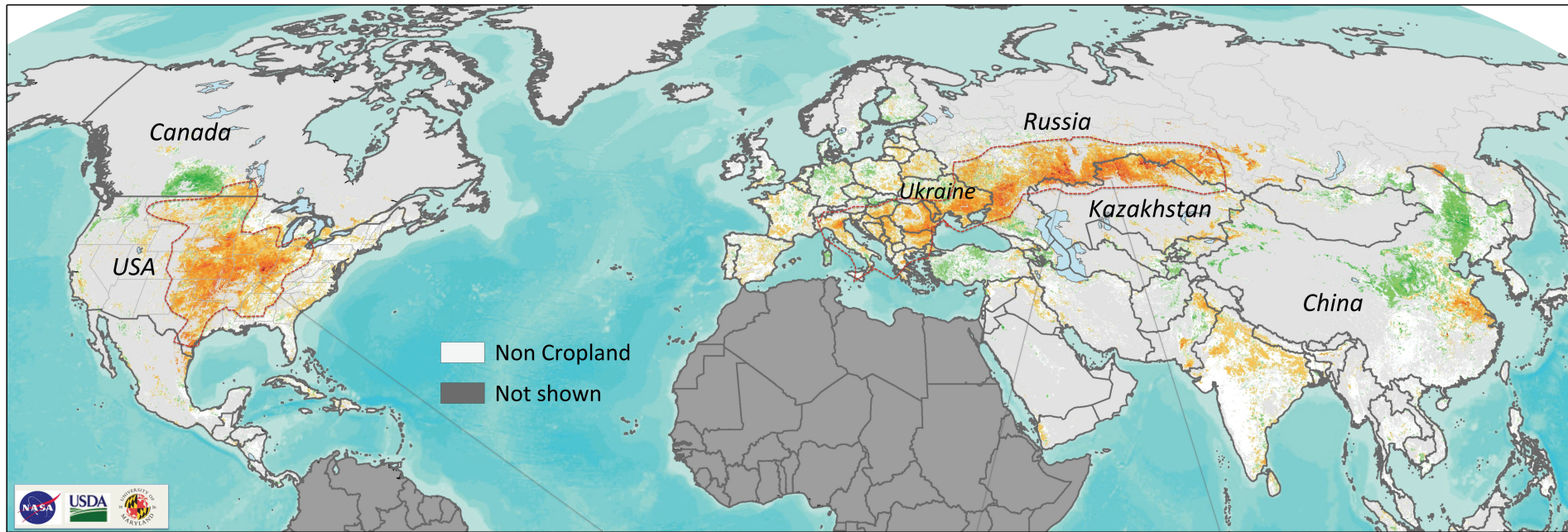
This activity is led by UMD with support from NASA Applied Sciences

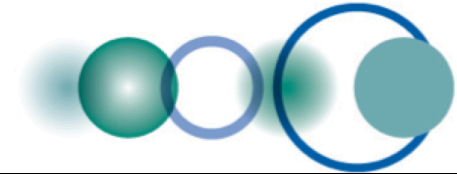


Crop Monitor Achievements

- Developed Operational international consensus crop assessments!
 - Positive response high level of engagement
 - A focus on high quality national information
 - Referenced in commodity reports and press releases
- International high level support
- Developing awareness & demand for RS based information
- Operational community guiding the research agenda

Where we started: Crop NDVI Anomaly, August 15 2012





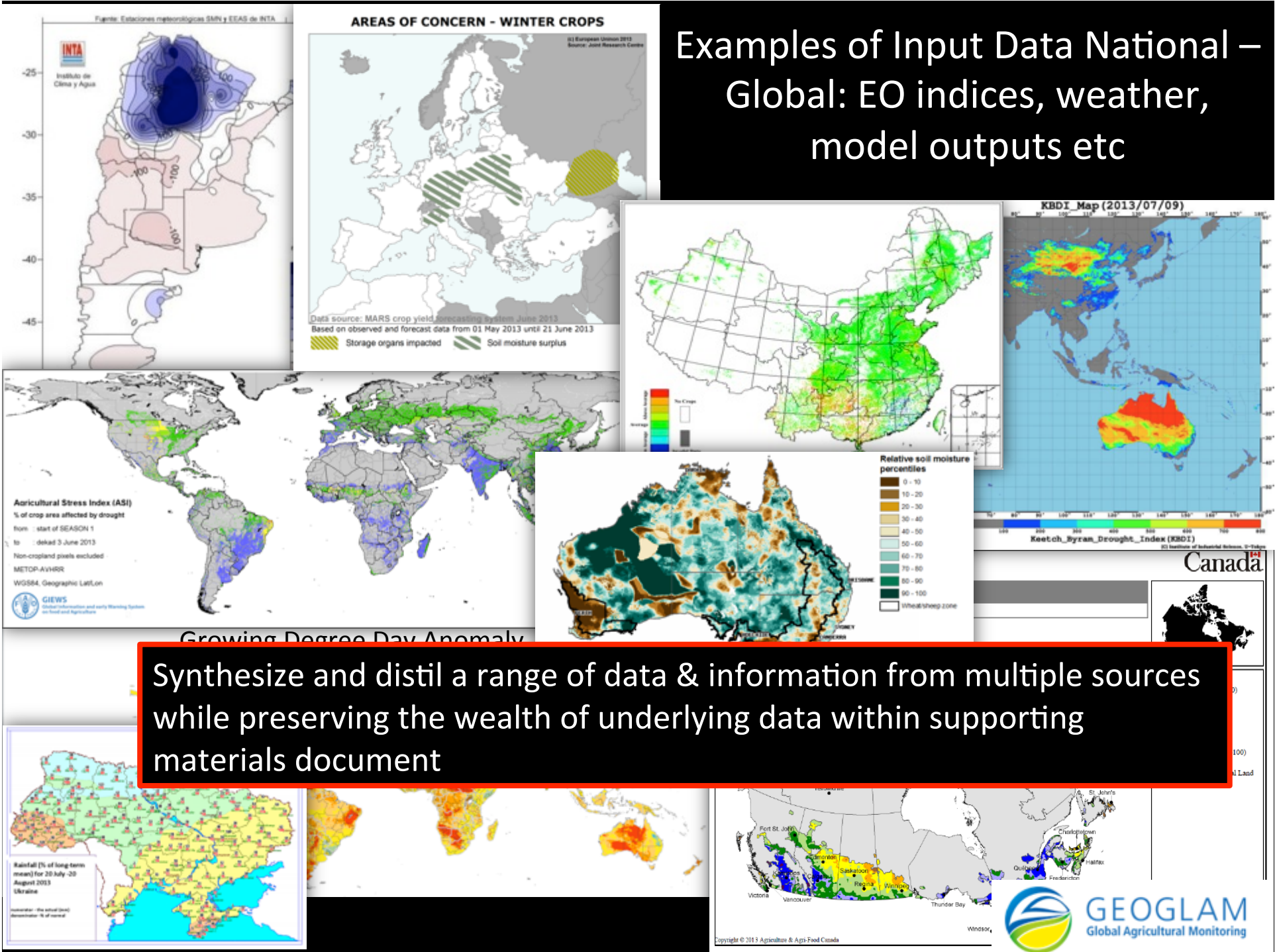
GEOGLAM Crop Monitor Partners

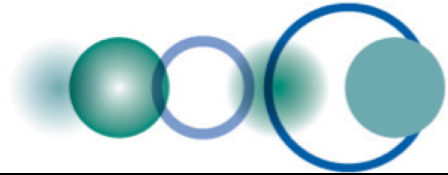
Developing Monthly Crop Condition Assessments

(>25 partners & growing)

- USDA FAS, NASS
- NASA
- UMD
- EC JRC
- Canada (Agriculture Canada)
- FAO
- China CropWatch
- Russia (IKI)
- Ukraine (Hydromet, NASU-NSAU)
- Kazakhstan (ISR)
- Australia (ABARES, DA, CSIRO)
- South Africa (NRC)
- JAXA/Asia Rice
- AFSIS
- Indonesia (LAPAN)
- Thailand (GISTDA)
- Vietnam (VAST, VIMHE)
- IRRI
- Argentina (INTA)
- Brazil (CONAB, INPE)
- India (ISRO)
- Mexico (SIAP)
- GEO SEC

Examples of Input Data National – Global: EO indices, weather, model outputs etc





October

Crop Monitor
No. 12 – October 2013 | 2

Crop Monitor is developed for AMIS by GEOGLAM. It summarizes latest crop conditions (as of October 27th) for AMIS crops based on regional expertise and analysis of satellite data, ground observations, and meteorological data.*

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 September 27th 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 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: Prospects for wheat harvest in the Northern Hemisphere are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

Maize: Prospects for maize harvest in the Northern Hemisphere are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

November

Crop Monitor*
No. 13 – November 2013 | 2

Crop Monitor is developed for AMIS by GEOGLAM. It summarizes latest crop conditions (as of November 28th) for AMIS crops based on regional expertise and analysis of satellite data, ground observations, and meteorological data.*

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

NDVI is an indicator of photosynthesis often used for monitoring croplands. These anomaly images compare the NDVI for October 28th, 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: In the Northern Hemisphere spring wheat harvest is underway. In the Southern Hemisphere, prospects are generally favourable. In Argentina, prospects are favourable.

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 short-term supply and demand forecasts. It covers...

Contents

- World Supply-Demand Outlook 1
- Crop Monitor **NEW** 2

December

Crop Monitor*
No. 14 – December 2013 | 2

Crop Monitor is developed for AMIS by GEOGLAM. It summarizes latest conditions (as of November 28th) for AMIS crops based on regional expertise and analysis of satellite data, ground observations, and meteorological data.*

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

NDVI is an indicator of photosynthesis often used for monitoring croplands. These anomaly images compare the NDVI for November 28th, 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: Overall conditions are favourable. In the Northern Hemisphere, prospects are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

Maize: In the Northern Hemisphere, prospects are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

Rice: Overall conditions are favourable. In the Northern Hemisphere, prospects are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

Soybeans: In the Northern Hemisphere, prospects are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

September

Crop Monitor
No. 11 – September 2013 | 2

Crop Monitor is developed for AMIS. It summarizes latest crop conditions (as of September 28th) for AMIS crops based on regional expertise and analysis of satellite data, ground observations, and meteorological data.*

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Wheat: In the Northern Hemisphere, winter wheat harvest is complete and spring wheat is sown. In the Southern Hemisphere, prospects are generally favourable. In Argentina, prospects are favourable.

Maize: In the Northern Hemisphere, prospects are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

Rice: Overall conditions are favourable. In the Northern Hemisphere, prospects are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

Soybean: In the Northern Hemisphere, prospects are generally favourable. In the Southern Hemisphere, prospects are mixed. In Argentina, prospects are favourable.

Operational GEOGLAM Global Crop Condition Assessments published monthly within the G-20 AMIS Market Monitor Bulletin

Sources & Disclaimer

The Crop Monitor assessment has been conducted by GEOGLAM with the following partners (in alphabetical order): AAFC (Canada), CAS CropWatch (China), ARC (South Africa), CONAB/INPE (Brazil), GISTDA (Thailand), EC JRC-MARS, FAO, ISRO (India), INTA (Argentina), IRI, LAPAN/MOA (Indonesia), Mexico (SIAP), NASA, USAID (USA), Ukraine Hydromet Center/NASU-NSAU (Ukraine), VAST/VIMHE (Vietnam).

The findings and conclusions found in this joint multiple-agency reporting are only consensual 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/IASA 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 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 (GEO), both GEOGLAM and AMIS were endorsed by the G20 Heads of States/Declarations (Cancun, November 2011) when GEOGLAM was established as a "coordinated 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 outdoor assessments in support of AMIS market monitoring activities.

More detailed information on the GEOGLAM crop assessments is available on: www.geoglam-crop-monitor.org

With inputs from the following partners (in alphabetical order): AAFC (Canada), CAS CropWatch (China), ARC (South Africa), CONAB/INPE (Brazil), GISTDA (Thailand), EC JRC-MARS, FAO, ISRO (India), INTA (Argentina), IRI, LAPAN/MOA (Indonesia), Mexico (SIAP), NASA, USAID (USA), Ukraine Hydromet Center/NASU-NSAU (Ukraine), VAST/VIMHE (Vietnam).

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NEWS RELEASE

Food and Agriculture Organization of the United Nations
for a world without hunger

Contact

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FAO Food Price Index falls despite climbing dairy prices **Favourable production prospects keep cereal prices under downward pressure**

6 February 2014, Rome - The [FAO Food Price Index](#) fell in January for the first time in 3 months as lower prices of cereals, sugars, oils and meat outstripped gains in dairy values.

Cereal production looking up

FAO also released its latest estimate for world cereal production in 2013. This points to a stronger growth in world cereal production than had been anticipated, to a record 2 502 million tonnes, up 8.5 percent from 2012. The bumper cereal crop in 2013 would help in replenishing world reserves, which according to FAO could reach 573 million tonnes, 13.5 percent higher than in the previous season.

At this level, the stocks-to-use ratio for global cereals would top 23.5 percent in 2013/14, its highest value since 2002/03 and well above its historical low of 18.4 percent registered in 2007/08.

AMIS positive on early 2014 harvests

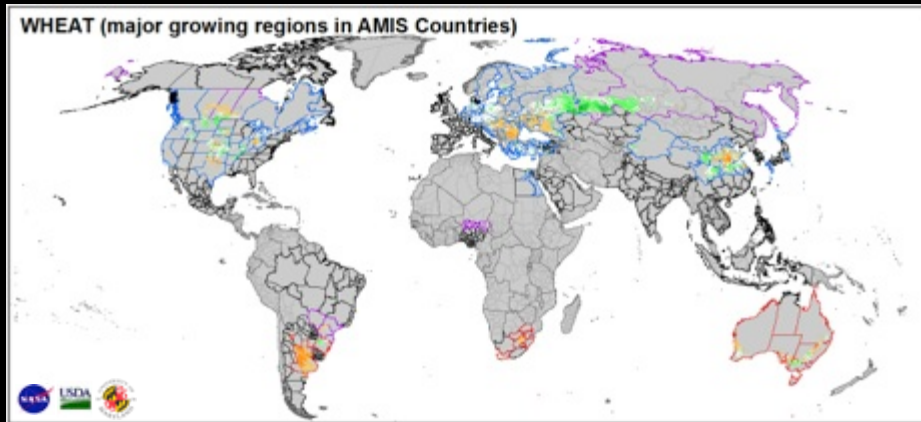
Based on the latest information, FAO also considers early prospects for crops to be harvested in 2014 to be favourable. This view is shared by a separate report published today by the [Agricultural Market Information System \(AMIS\)](#) a G20 initiative which is housed at FAO and managed by ten international organizations.

The February report of the [AMIS Market Monitor](#) attributed the positive prospects for crops in 2014 to favourable winter wheat growing conditions in the northern hemisphere and better than previously anticipated maize and soybean situations in the southern hemisphere.

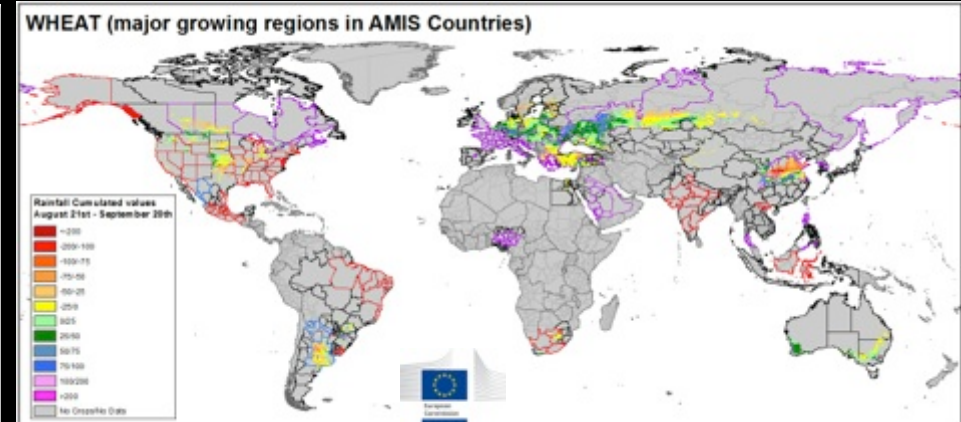
FAO February 2014 Press Release referencing information from the GEOGLAM Crop Monitor which is published in the AMIS Market Monitor



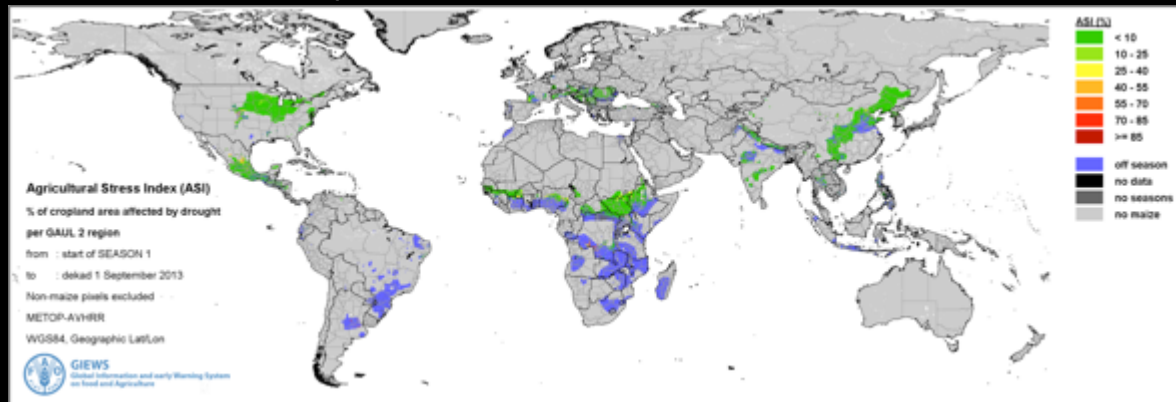
NDVI Anomalies by Crop Type



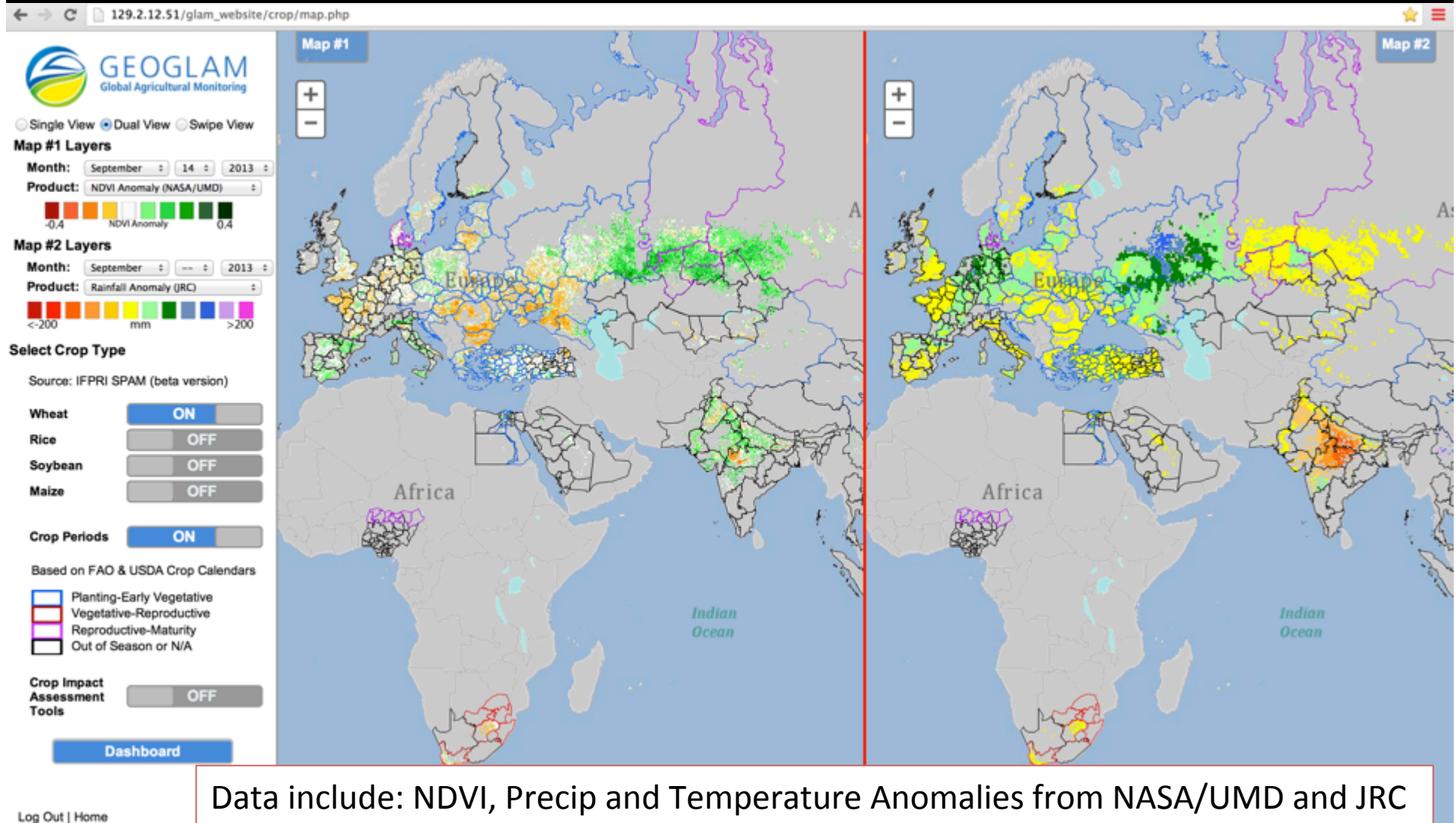
Precipitation Anomalies by Crop Type



New FAO Crop Stress Index (ASIS)- under evaluation



Crop Assessment Interface



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

Crop Monitor Dashboard for GEOGLAM Analysts

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Dashboard

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Version 2.1

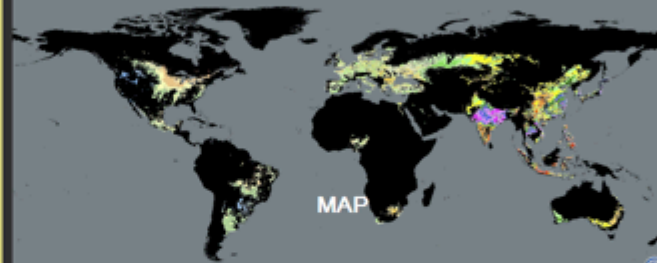


MONTHLY ASSESSMENT

8% COMPLETE



SEARCH
16 TOTAL ENTRIES



REPORTS
NO. 4 - DECEMBER 2013 (BASED
ON INFORMATION AS OF
NOVEMBER 28TH)

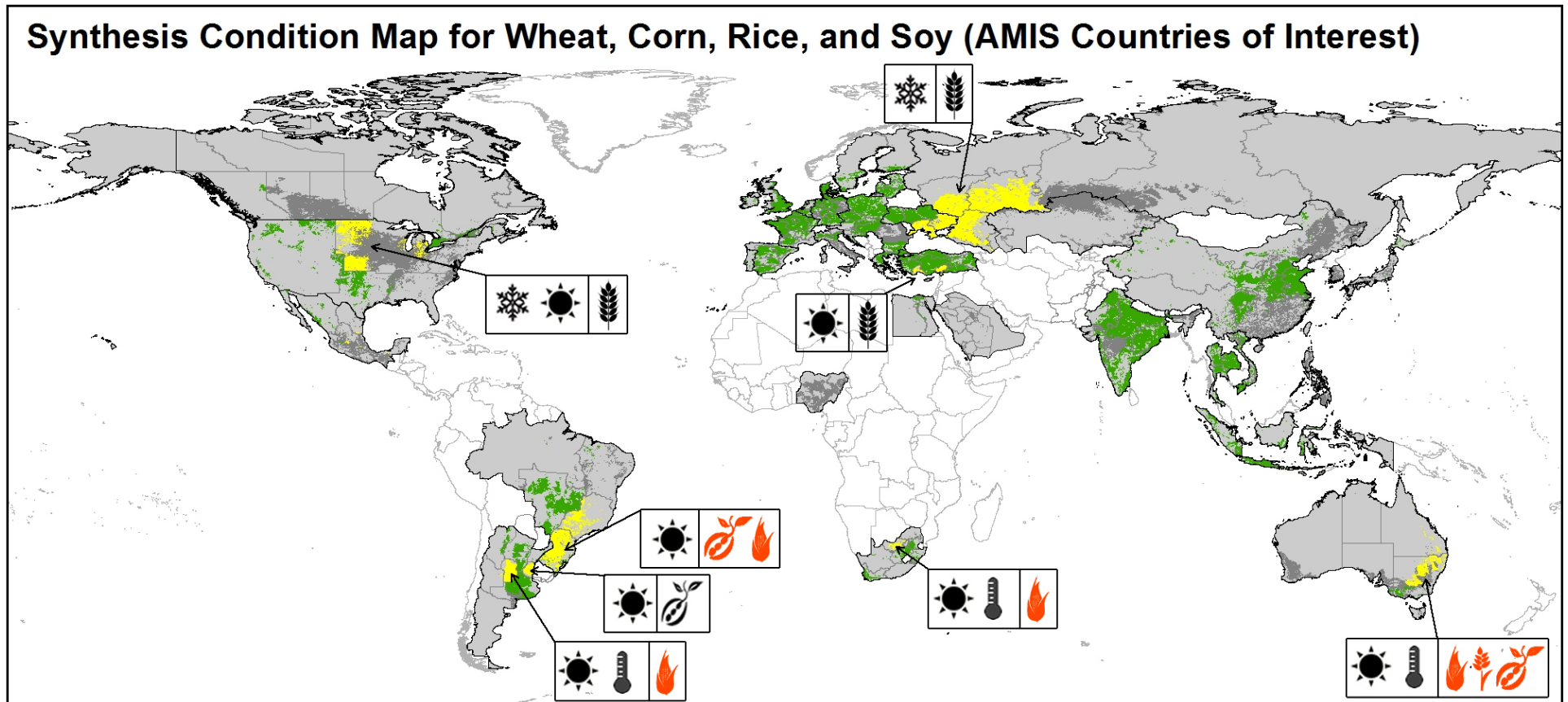


ABOUT



SETTINGS





Prototype Synthesis Condition Maps



Conditions:

- Exceptional
- Favorable
- Watch
- Poor
- Out of Season

Crops:

Corn Wheat Soybean Rice

Crop symbols are colored **Orange** during the Vegetative-Reproductive stage to denote sensitivity to adverse growing conditions.

Drivers:



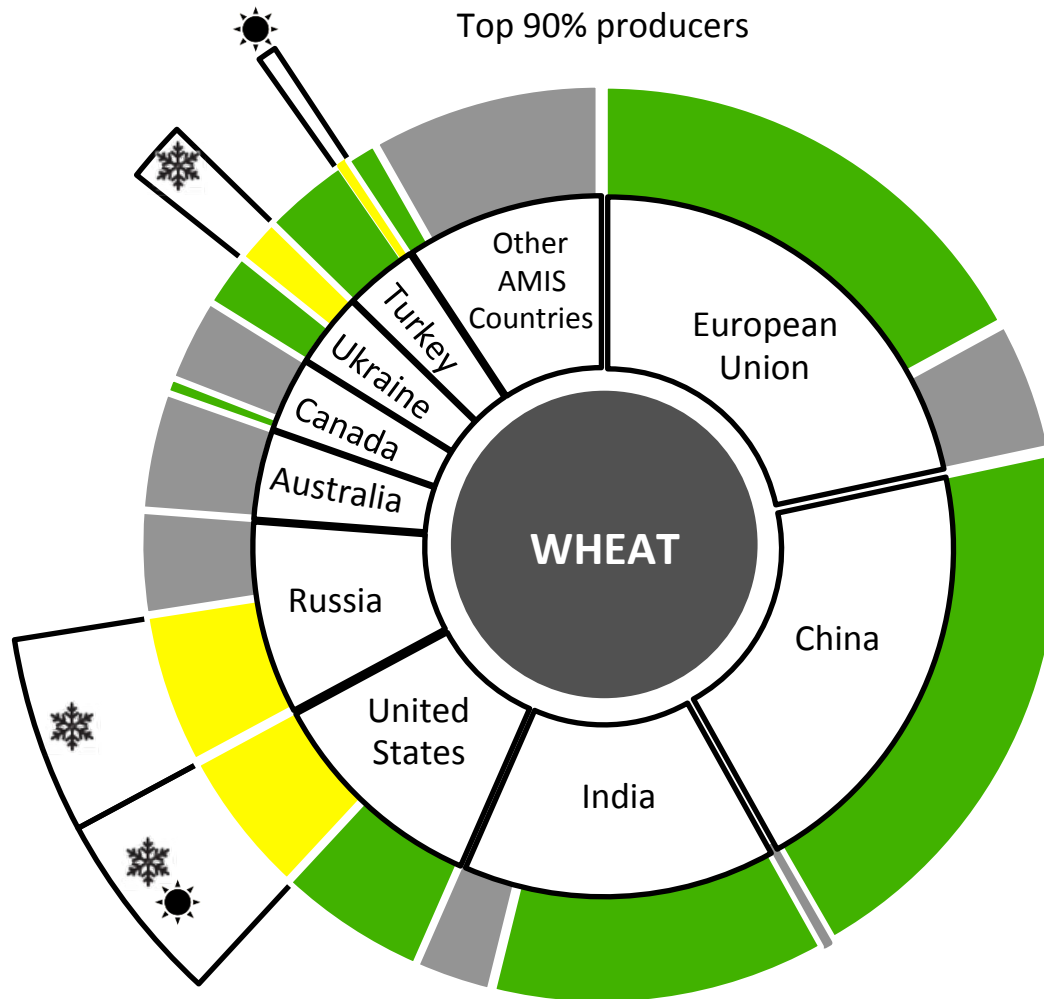




Wet Dry Hot Cold Extreme Weather

Conditions January 2014

Percent of AMIS Production:
Top 90% producers



Conditions:

- Exceptional
- Favorable
- Watch
- Poor
- Out of Season

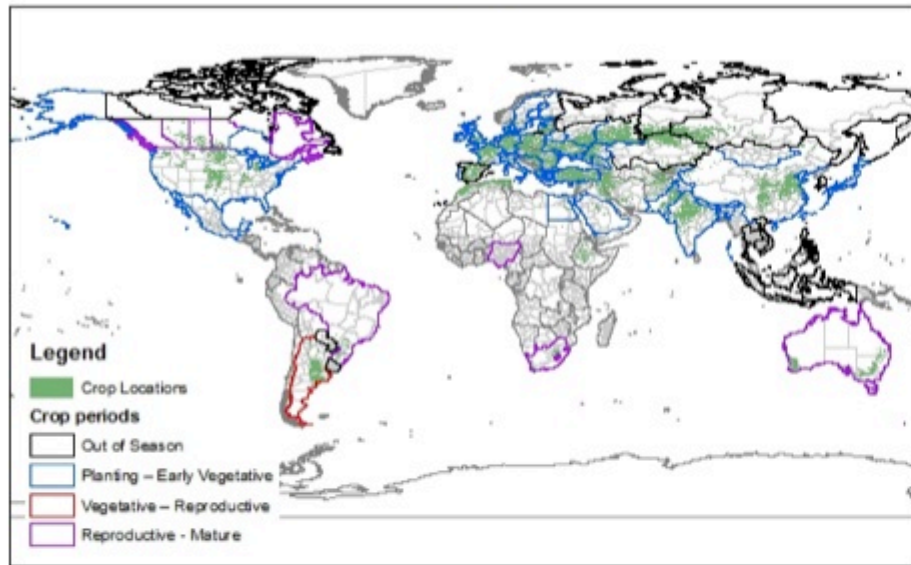
Drivers:

- Wet
- Dry
- Hot
- Cold
- Extreme Weather

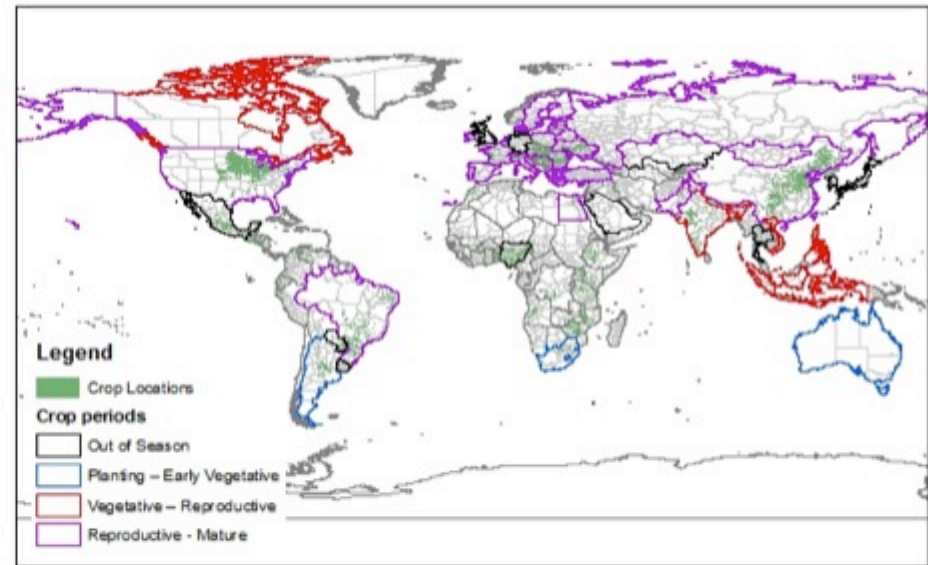
AMIS Countries Represent 87.3% of Global Production

Base Layers: Crop Calendars and Crop Masks

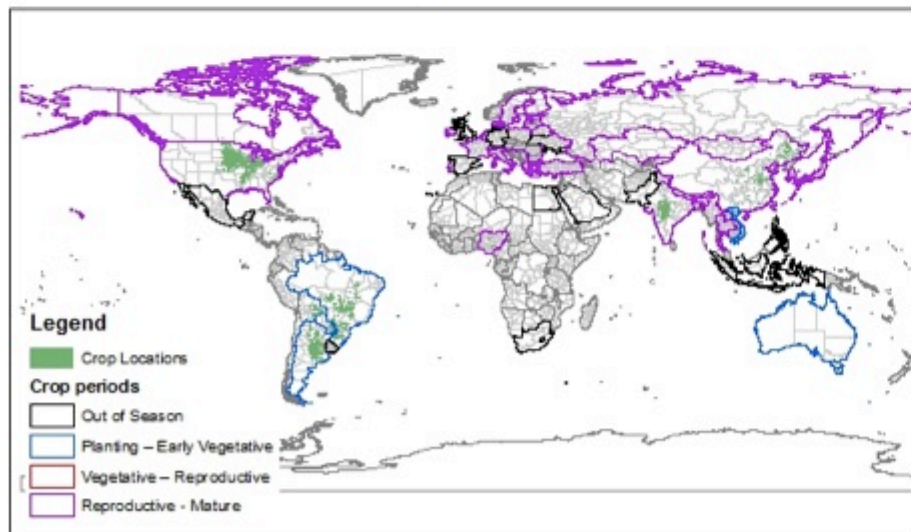
Wheat



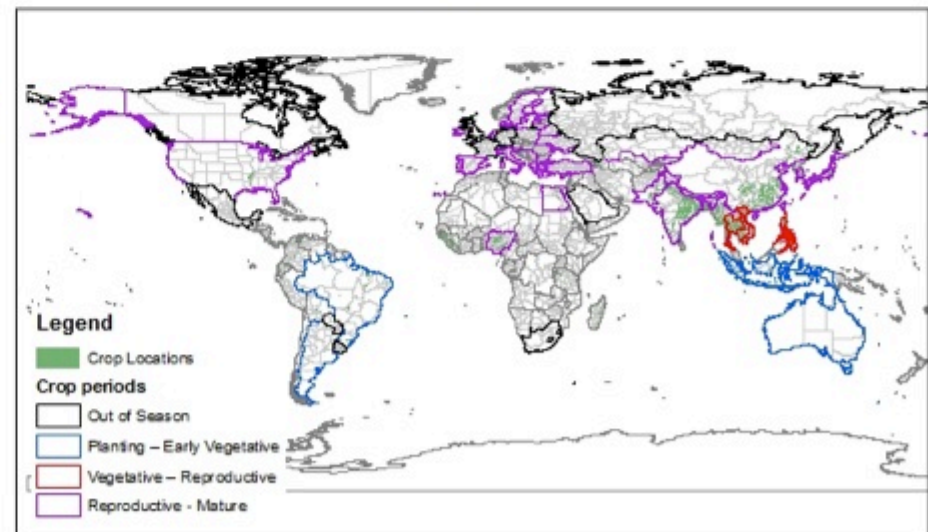
Maize



Soybean

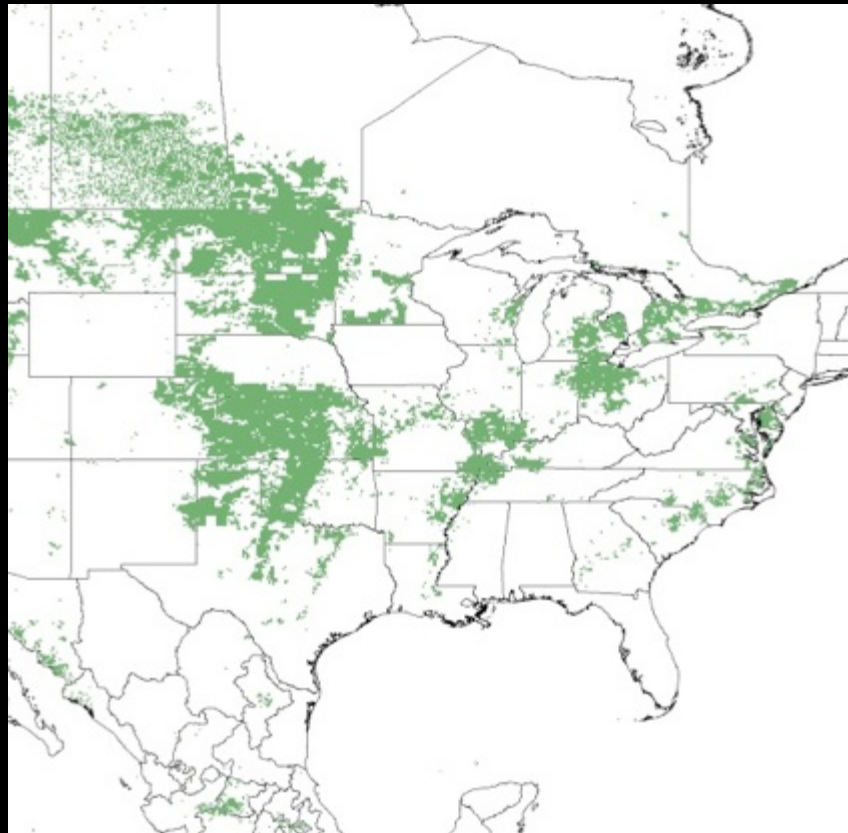


Rice

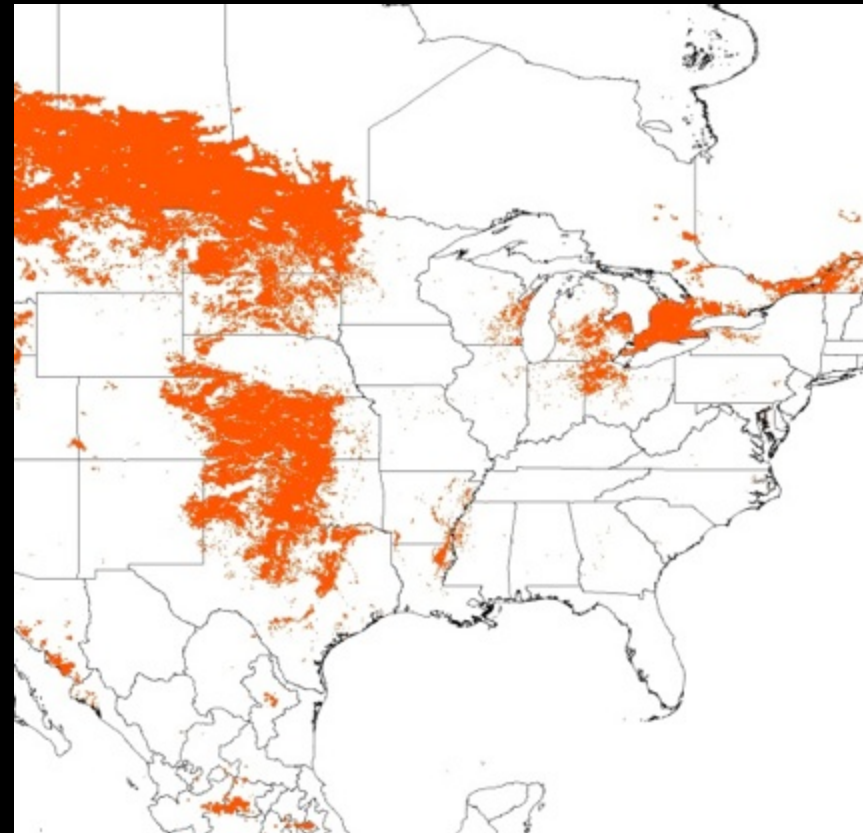


Best Available Crop Type Maps: Wheat

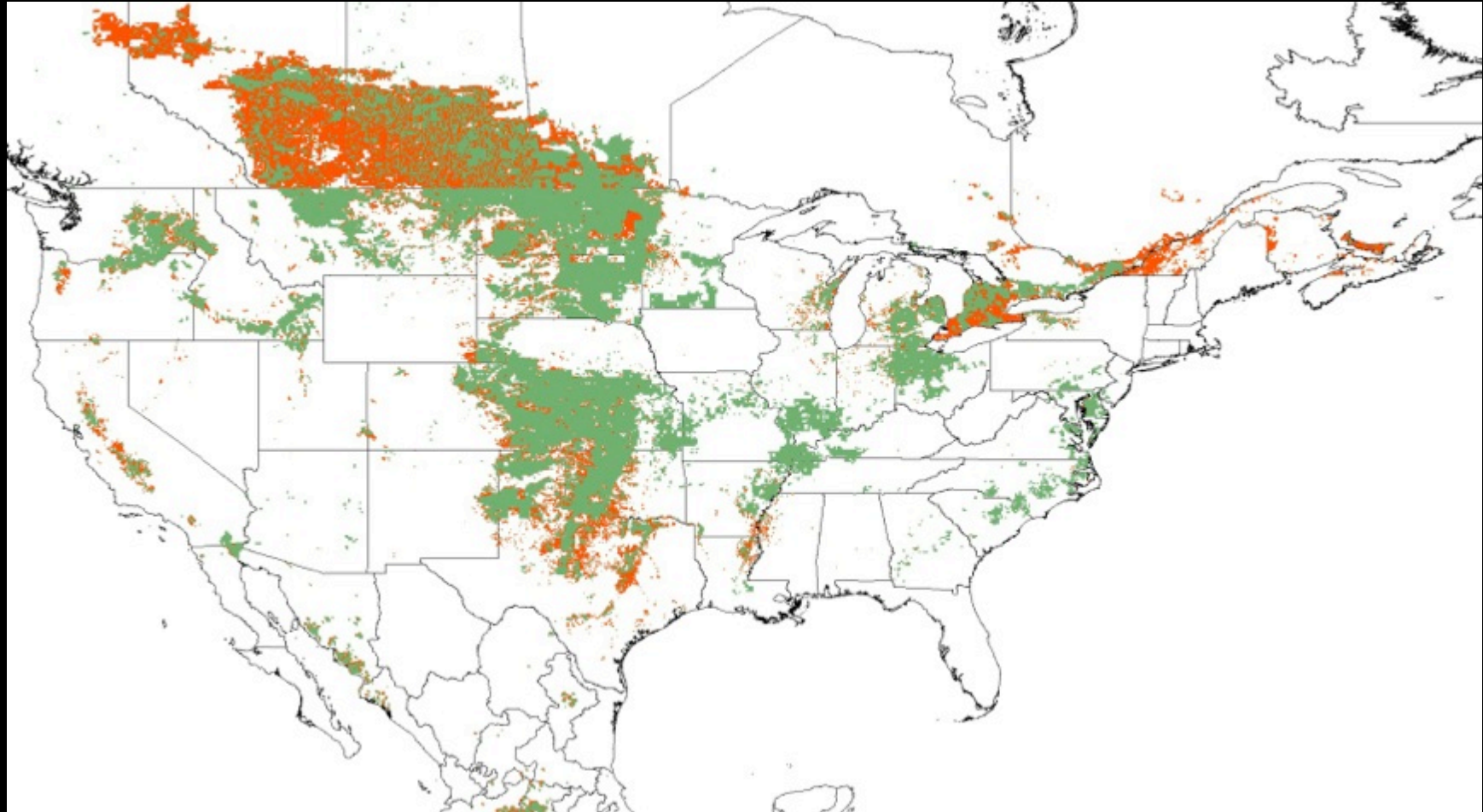
SPAM 2005 beta



Combined USA and Canada

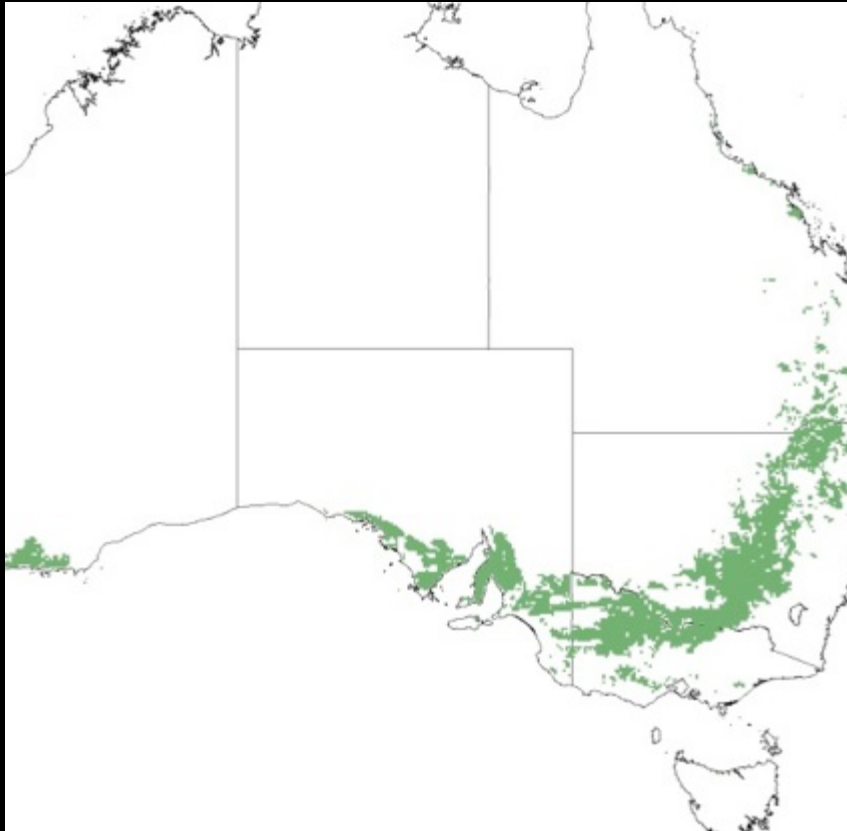


Wheat

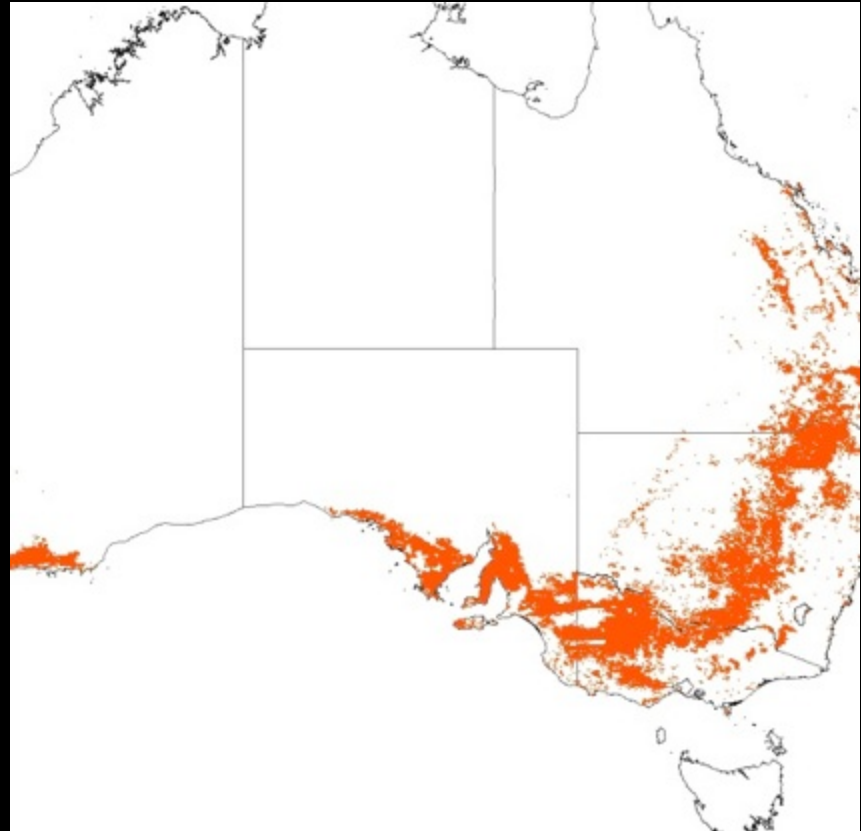


Wheat

SPAM 2005 beta



National level Australia



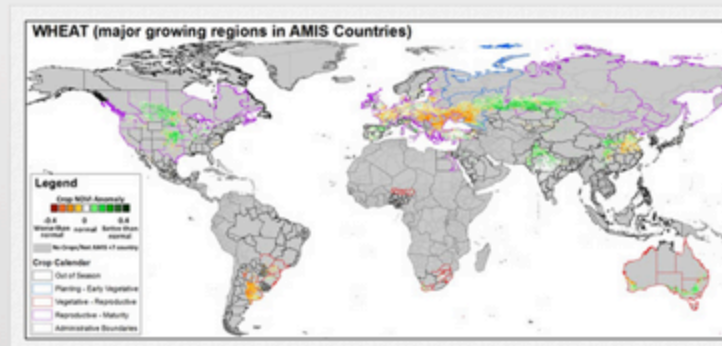
Crop Monitor Website: www.geoglam-crop-monitor.org



[HOME](#) [CROP MONITOR ASSESSMENTS](#) [CROP ASSESSMENT TOOL](#) [CROP MONITOR GROUP](#)

Crop Monitor Assessments

The GEOGLAM Crop Monitor Assessment is an international consensus assessment developed for AMIS*. It summarizes latest crop conditions for the four 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 (wheat, maize, soy, rice) a summary of current conditions is provided accompanied by a map of the main crop growing regions for each crop, depicting general crop stage and satellite based vegetation indices satellited derived anomalies. The report includes supporting material used to develop the current assessment.

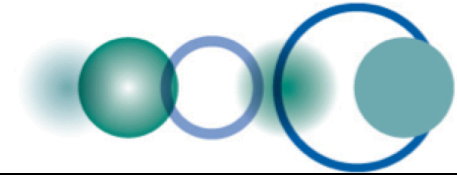


[Tell me more](#)



GEOGLAM Initiative

GEOGLAM, the GEO Global Agricultural Monitoring initiative was initially launched by the Group of Twenty (G20) Agriculture Ministers in June 2011, in Paris. The initiative forms part of the G20 Action Plan on Food Price Volatility, which also includes the Agricultural Market Information System (AMIS, <http://www.amis-outlook.org>), another inter-institutional initiative hosted by the UN Food and Agriculture Organization (FAO). The G20 Ministerial Declaration states that GEOGLAM "will strengthen global agricultural monitoring by improving the use of remote sensing tools for crop production projections and weather forecasting". By providing coordinated Earth observations from satellites and integrating them with ground-



Many achievements to GEOGLAM's credit

1. Substantial effort with CEOS to develop requirements/data plan
2. Operational international crop outlooks for AMIS
3. Asia Rice (www.asia-rice.org)
4. Global Rangelands monitoring initiated (CSIRO)
5. JECAM Network of pilot site across the globe (www.jecam.org) with increasing number of new funded sites
6. CoP with more than 300 members initiated by the GEO Ag Task
7. Increasing # of funded projects including EC SIGMA
8. USDA GEOGLAM office under the Deputy Under Secretary of Research
9. Regional and National engagement
10. Many At-Risk –country activities involving AG CoP being better organized
11. FEWSNet dialogue with WMO on improving in-situ EO data in Africa
12. Attracting attention from potential donors as WB and Gates Foundation (pilot projects in Tanzania and Ethiopia)

G8

Perspectives from
 David Cameron • Barack Obama
 François Hollande • José Manuel Barroso
 Ellen Johnson Sirleaf • Lord Stephen Green
 Supachai Panitchpakdi • Guy Ryder
 Maria van der Hoeven • Achim Steiner
 Haruhiko Kuroda • Kanayo F Nwanze
 Sir Roger Carr • Paul Collier
 Sir Nicholas Bayne • John Kirtton

THE UK SUMMIT: LOUGH ERNE

JUNE 2013

MUNK SCHOOL OF GLOBAL AFFAIRS
 UNIVERSITY OF TORONTO

G8 Research Group



Help
 global
 to take

June G8 UK Summit Magazine included an article on GEOGLAM and early stages of outlooks

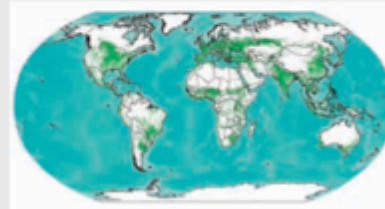
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GEOGLAM: where policy and science meet

The Group on Earth Observations' Global Agriculture Monitoring (GEOGLAM) initiative is one of several emerging initiatives of the Group on Earth Observations (GEO) where policy and science meet. In 2011, as part of its Action Plan on Food Price Volatility and Agriculture, the G20 committed to "improve market information and transparency in order to make international markets for agricultural commodities more effective". In its Final Declaration from Cannes (November 2011), the G20 invited GEO to "lead the development of an initiative to coordinate satellite monitoring observation systems in different regions of the world in order to enhance crop production projections and weather forecasting data".

One example of the effects that significant weather events in producer/exporter countries have on crop prices is shown below in data from the World Bank. The graph illustrates wheat prices in US dollars for the period from 1960-2011. The first decade (1960-70) shows a relatively stable situation with price volatility increasing thereafter, and particularly so since 2007. Droughts in Australia, Russia and the Ukraine and the effect that they have had on wheat prices are shown on the graph.

Also shown on the graph is the launch in 1972 of the first in a series of Landsat



Global cropland distribution

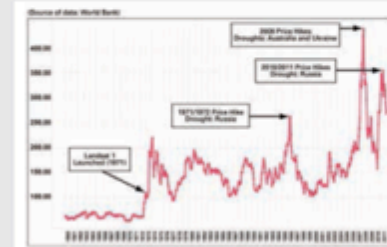
satellites designed to observe the Earth's landscape. Landsat-8 was successfully launched earlier this year (February 2013), resulting in a 40-year record of how the Earth's landscape is changing, including croplands, forests and urban areas.

The observations of these croplands from space are a key element in the policy/science spectrum, where both opportunities and challenges associated with their use emerge. Satellites from space agencies around the world afford us the opportunity to collect consistent, sustained global observations of cropland areas. Clearly, agricultural measurements

from the ground are essential, and will remain so. Supplementing traditional ground-based observations with space-based observations, however, provide and/or strengthen global transparency.

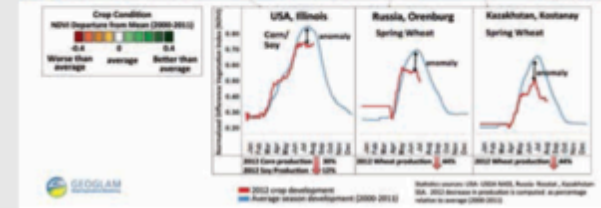
The map above shows the percentage of cropland at a 1km resolution, and was created using satellite and ground-based data at the global, regional and national level. Cropland statistics from the Food and Agriculture Organization (FAO) and International Food Policy Research Institute (IFPRI) were used to calibrate the product to ensure compliance with those data sources. The 21 countries producing 80% of the world's food supply are visible. This map, available for viewing and downloading at <http://beta.hybrid.geo-wiki.org>, is now being used to develop crop-type distribution maps, and, combined with crop calendars, to optimize the future collection of satellite data for GEOGLAM. The map was prepared by the International Institute for Applied Systems Analysis (IIASA) as a contribution to GEOGLAM.

The map on the opposite page indicates how satellite imagery can provide the global community with timely information on crop conditions and prospects prior to crop harvest. It shows a snapshot of daily maps that are available in real time of a satellite-derived index, called Normalized Difference Vegetation Index (NDVI). This vegetation index provides information on crop growth and condition. The anomaly image shows the



Monthly wheat prices (US\$) 1960-2011

SPONSORED FEATURE



Crop Conditions during the 2012 Northern Hemisphere Summer Drought

cropland NDVI departure from Average (2000-11) on 30 July 2012, highlighting hotspots of crops under stress during the 2012 droughts that affected the United States and the Black Sea region. The time series curves below the map compare the daily development of croplands in 2012 (red) to average (blue) in three important crop-growing regions: Illinois, USA; Orenburg Oblast, Russia; and Kostanay Oblast, Kazakhstan. The crop development through the season depicted by NDVI shows consistent negative anomalies with regard to a 10-year average during critical development stages, with the highest discrepancies during the peak crop-development period. In 2012, crops in the US, southern Europe and the Black Sea region suffered from prolonged high temperatures and low soil moisture, which resulted in significantly reduced production. The negative impact on crops was seen in the satellite imagery well ahead of harvest. And while speculation often starts between seasons, any improvement in production forecasts during the season should have a positive impact on price stability. Increased global transparency brought by Earth observations, harmonized methodologies

and international coordination and cooperation will have a positive impact on both production forecasts and price volatility, making international markets for agricultural commodities more effective – the stated intention of the G20. The map was produced by the University of Maryland (UMD) in collaboration with the National Aeronautics and Space Administration (NASA) and the United States Department of Agriculture (USDA). Currently, Argentina, Australia, Brazil, Canada, China, the European Commission, France, Germany, India, Japan, Kazakhstan, Mexico, Russia, South Africa, Thailand, Ukraine, USA, the Asian Development Bank (ADB), the Committee on Earth Observation Satellites (CEOS), FAO, IFPRI, IAGLR and IRMO are actively participating in GEOGLAM. The early efforts are focusing on the four main commodities – corn, rice, soybeans and wheat. Activities are designed for the major producing countries (development of a global agricultural monitoring system), countries that may be both producing and at risk (development of national capabilities) and for countries at risk (development of regional capabilities).

Like any other GEO initiative, participation is voluntary and open to all GEO Member countries (90 to date) and any of the nearly 70 Participating Organizations (including international organizations with an interest in Earth observations, UN agencies, and scientific associations). In November 2012, GEO Members approved broadening stakeholder engagement in GEO to include foundations, development banks, other non-governmental organizations and commercial entities. GEO would welcome additional participation and contributions to this important initiative. There are few greater needs than creating and ensuring a food secure world.

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Topics for Discussions

- Data access and processing product generation
 - What are current options
 - Overlap with GFOI
 - ESRI solution? NASA solution? Vega? Others?
 - What are our min requirements
 - Accessibility
 - Cloud data sharing
 - Processing levels
 - Data policy, sharing and tracking
 - Processing levels
- What has the CEOS Phase 1 endorsement translated into?
- Are data being acquired- if so- how are they being tracked?
- Do we have the timeline & objectives right?
- Lessons learned from Phase 1 to inform phase 2
- Funding strategy
- reporting