



**Institute of Remote Sensing and Digital Earth  
Chinese Academy of Sciences**

# **CropWatch**

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**Institute of Remote Sensing and Digital Earth (RADI)  
Chinese Academy of Sciences**







# Goal 2: Zero Hunger



- Pledges to end hunger, achieve food security, improve nutrition and promote sustainable agriculture
- Achieving food security requires an integrated approach
  - Sustainable Food Production and Resilient Agricultural Practices
  - Ensure Stable Food Commodity Markets and Timely Access to Information



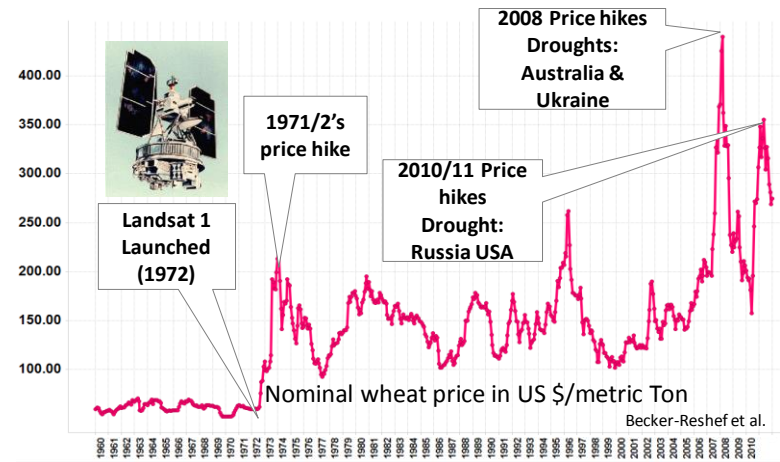


# Information gap is a big issue for food security

## More mouth to feed

- ◆ By 2050 the world's population will reach 9.8 billion, **29 percent higher** than today.
- ◆ Nearly all of this population increase will occur in **developing countries**.

## Food Price Volatility



We have to producing **70 percent more food** for **an additional 2.2 billion people** by 2050(FAO. How to Feed the World in 2050)

## Hunger Map 2015



Prevalence of undernourishment in the population (percent) in 2014-16



The data from the prevalence of undernourishment in the population in 2014-16 is based on the 2014-16 survey. The survey was conducted in 2014-16 and the data was published in 2015. The survey was conducted in 2014-16 and the data was published in 2015. The survey was conducted in 2014-16 and the data was published in 2015.



# Situation and requirements



- **The paucity of adequate capacity in obtain and accessing up-to-date staple crop production information**, which is essential for a country economic governance and securing food supply.
- **Over-dependence on information provided by third parties** and often poses the danger of taking decisions based on delayed and on not easily verifiable information.
- **Constrain developing countries to set-up, operate, and maintain** such crop monitoring facilities due to big financial input and operational cost as well as adequate technical skills, thereby.
- By taking advantage of technology evolution in cloud computing and free available satellite data, **CropWatch cloud** will facilitate to generate crop production information for their own countries without input on investment and system development.



# CropWatch Mission

*CropWatch aims at improving food information availability, quality and transparency*

- To improve access to global information about the worldwide production of major cereals and soybean
- Serve as a science-based Chinese voice on global food security perception
- To provide additional, reliable information for developing countries to fight against hunger
- Offer cloud-based services





# CropWatch<sup>®</sup> Development



- Kick off in 1998
- Supported by CAS, NDRC ,MOST,NSFC, GEOGLAM, SIGMA
- Release first bulletin in August, 1998;
- Release first English bulletin in November, 2013.
- Improvement and development (20 Years)
  - Monitoring China -> Global
  - From manual judgment to quantitative monitoring
  - From instant investigation to dynamic monitoring
  - From after harvest measurement to early prediction. The crop production data can be available one month before its harvest.



# CropWatch Cloud platform



Cropwatch Pro

Enter

## CropWatch-Pro

- An online tool for people to produce crop monitoring products at any time and anywhere.



CropWatch Explorer

Enter

## CropWatch-Explorer

- An online interface for people to explore and analysis all the crop information data easily.



Cropwatch Project

Enter

## CropWatch-Project

- An online platform for people to create and write the crop bulletin.



Cropwatch Bulletin

Enter

## CropWatch-Bulletin

- An webpage for people to read CropWatch bulletin.

CropWatch

Home

About

Update

Bulletin

Methodology

Publications

Contact Us

En

中文



### August 2017 CropWatch bulletin (Vol. 17, No. 3)

August 2017 CropWatch bulletin. The August 2017 CropWatch bulletin reports on agroclimatic conditions and the condition of crops that were growing or harvested between April and July this year. CropWatch analyses are done on various scales (particularly including 148 sub-national regions for 31 key countries), with special attention paid to the major worldwide producers of maize, rice, wheat, and soybean. The bulletin also describes current crop condition and prospects in China nationwide and by region and presents an updated estimate for global and national production of crops to be harvested throughout 2017. The focus section highlights the dire situation in the Horn of Africa and presents an update on El Niño events.

Bulletin →

### CropWatch Sub System



CropWatch Pro <sup>dev</sup>

Enter >



CropWatch Explorer

Enter >



CropWatch Analysis

Enter >



CropWatch Bulletin

Old Webpage >



About



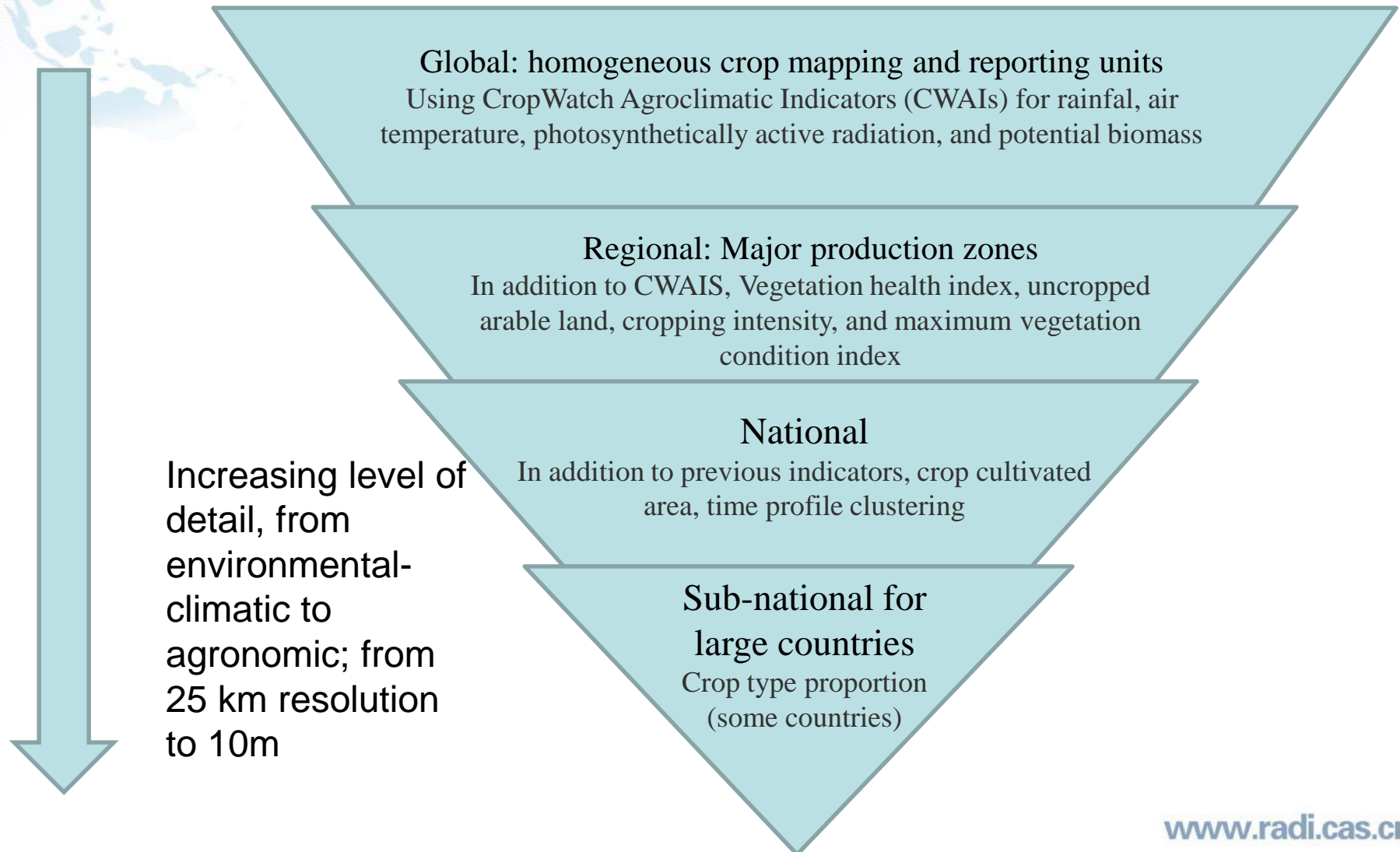
Bulletin



Publications

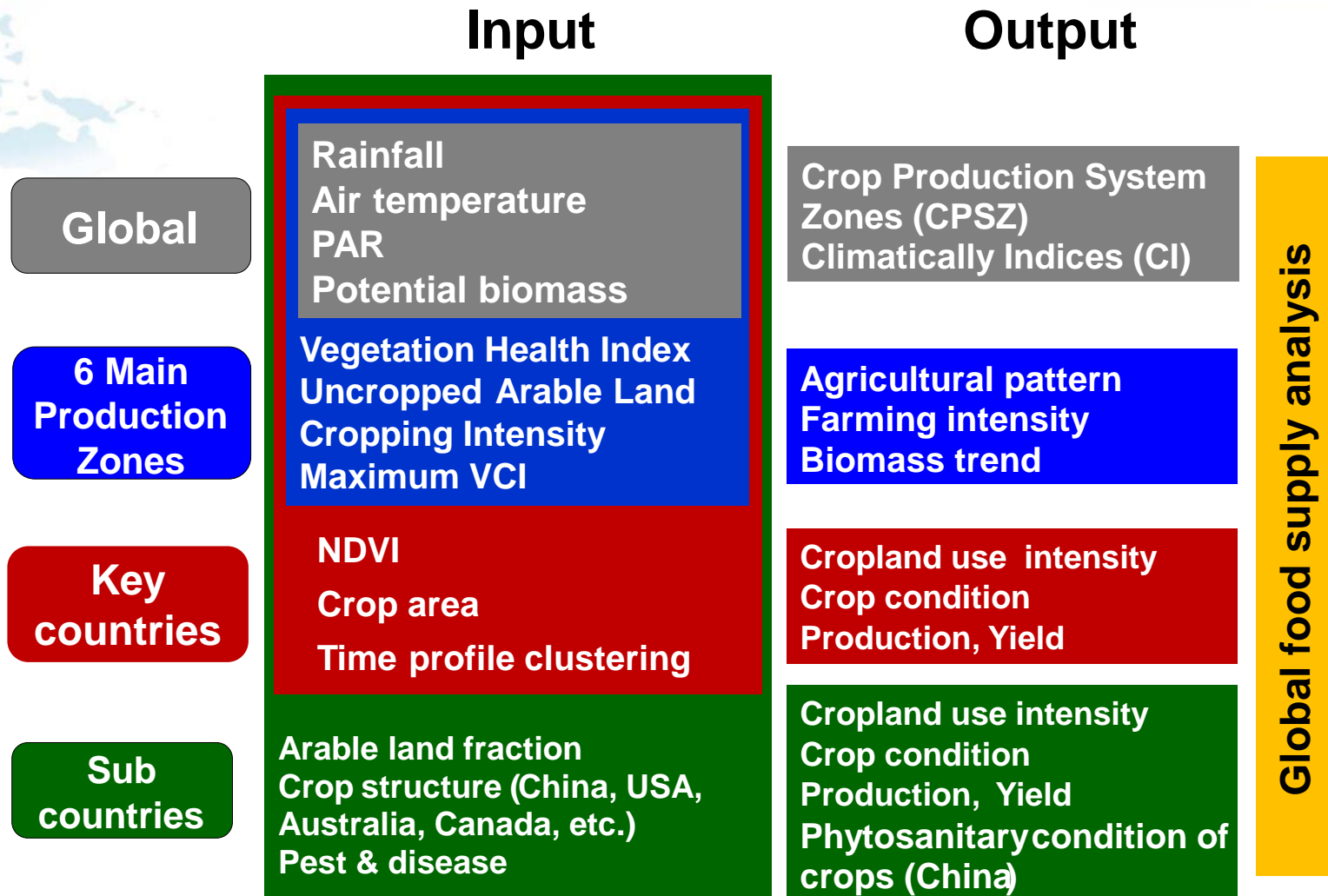


# CropWatch Hierarchical approach





# CropWatch Hierarchical approach







# CropWatch-Pro



CropWatch

## Models / Algorithms on Cloud

English Login

### Agro-climatic Index



Rainfall index



Temperature Index



PAR Index



Biomass

### Agronomic Indicators



Maximum VCI



Minimum Vegetation  
health Index



Cropped arable land  
classification



Cropping intensity

### Crop Condition



Crop Condition  
based on NDVI  
anomaly



Crop Condition  
Classification



Crop condition  
clustering



Minimum Vegetation  
health Index (China)

### Popular models



Remote Sensing  
Index Model



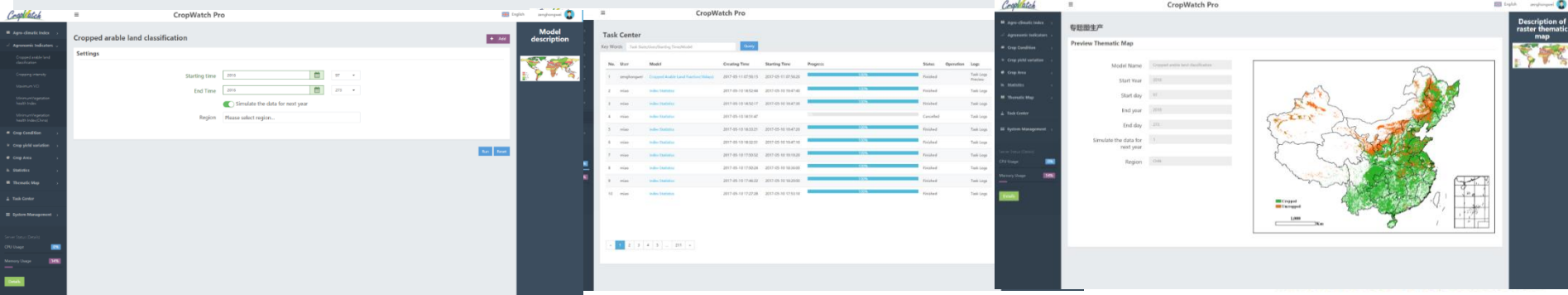
Area Estimation  
based on CALF



Statistics



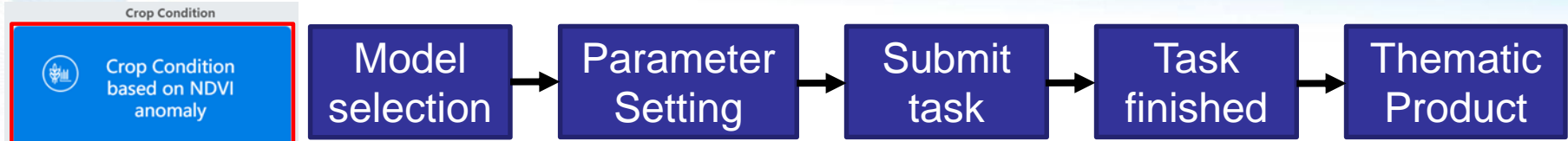
Produce Thematic  
Map







# NDVI Anomaly



CropWatch Pro

Crop Condition based on NDVI anomaly

Settings

Region Type: Key Countries

Region Name: South Africa

Starting time: 2017

End Time: 2017

Reference Year: Previous 5 year's average

Run

Reset

Model description

Parameter Setting

CropWatch Pro

Task Center

No.	User	Model	Creating Time	Starting Time	Progress	Status	Operation	Logs
1	zenghongwei	Crop Condition based on NDVI anomaly	2017-05-11 08:58:41	2017-05-11 08:58:41	100%	To be processed	Pause Cancel	Task Logs
2	zenghongwei	Crop Condition based on NDVI anomaly	2017-05-11 08:59:30	2017-05-11 08:59:40	100%	Finished	Task Logs Preview	Task Logs
3	zenghongwei	Rainfall Index	2017-05-11 08:59:39	2017-05-11 08:59:40	100%	Finished	Task Logs Preview	Task Logs
4	zenghongwei	Crop Condition based on NDVI anomaly	2017-05-11 07:56:15	2017-05-11 07:56:20	100%	Finished	Task Logs Preview	Task Logs
5	miao	Index Statistics	2017-05-10 18:52:44	2017-05-10 19:47:40	100%	Finished	Task Logs	Task Logs
6	miao	Index Statistics	2017-05-10 18:52:17	2017-05-10 19:47:39	100%	Finished	Task Logs	Task Logs
7	miao	Index Statistics	2017-05-10 18:51:47	2017-05-10 19:47:39	100%	Cancelled	Task Logs	Task Logs
8	miao	Index Statistics	2017-05-10 18:53:21	2017-05-10 19:47:20	100%	Finished	Task Logs	Task Logs
9	miao	Index Statistics	2017-05-10 18:52:51	2017-05-10 19:47:10	100%	Finished	Task Logs	Task Logs
10	miao	Index Statistics	2017-05-10 17:50:52	2017-05-10 18:10:20	100%	Finished	Task Logs	Task Logs

Queue in task list

CropWatch Pro

Task Center

No.	User	Model	Creating Time	Starting Time	Progress	Status	Operation	Logs
1	zenghongwei	Crop Condition based on NDVI anomaly	2017-05-11 08:58:41	2017-05-11 08:58:50	100%	Finished	Task Logs Preview	Task Logs
2	zenghongwei	Crop Condition based on NDVI anomaly	2017-05-11 08:59:30	2017-05-11 08:59:40	100%	Finished	Task Logs Preview	Task Logs
3	zenghongwei	Rainfall Index	2017-05-11 08:59:39	2017-05-11 08:59:40	100%	Finished	Task Logs Preview	Task Logs
4	zenghongwei	Crop Condition based on NDVI anomaly	2017-05-11 07:56:15	2017-05-11 07:56:20	100%	Finished	Task Logs Preview	Task Logs
5	miao	Index Statistics	2017-05-10 18:52:44	2017-05-10 19:47:40	100%	Finished	Task Logs	Task Logs
6	miao	Index Statistics	2017-05-10 18:52:17	2017-05-10 19:47:39	100%	Finished	Task Logs	Task Logs
7	miao	Index Statistics	2017-05-10 18:51:47	2017-05-10 19:47:39	100%	Cancelled	Task Logs	Task Logs
8	miao	Index Statistics	2017-05-10 18:53:21	2017-05-10 19:47:20	100%	Finished	Task Logs	Task Logs
9	miao	Index Statistics	2017-05-10 18:52:51	2017-05-10 19:47:10	100%	Finished	Task Logs	Task Logs
10	miao	Index Statistics	2017-05-10 17:50:52	2017-05-10 18:10:20	100%	Finished	Task Logs	Task Logs

Task status updating/finished

CropWatch Pro

专题图生产

Preview Thematic Map

Model Name: Crop Condition based on NDVI anomaly

Region Type: Country

Region Name: ZAF

Start Year: 2017

Start day: 1

End year: 2017

End day: 1

Reference Year[1]: 1

01/01/2017-01/16/2017

Preview thematic product and output to database





# CropWatch-Pro



CropWatch Pro

English

zhangxin



Agro-climaticIndex

Agronomic Indicators

Crop Condition

Crop Yield

Crop Area

Statistics

Thematic Map

Task Center

System Management

Server Status

CPU usage 12%

Memory Usage 31%

Details

## Create Thematic Map

### Show Result

模型名称: 作物长势聚类分析

指标名称: ndvi

区域类型: Country

区域名称: IRN

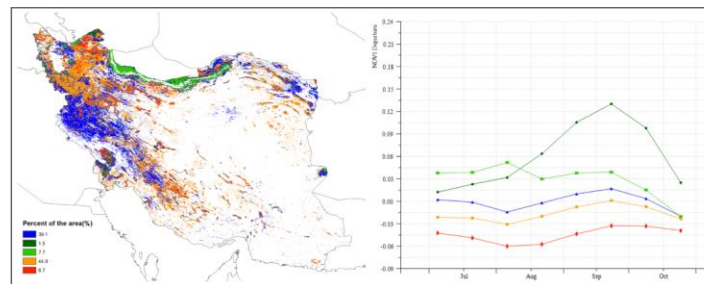
起始年: 2016

起始期: 177

结束年: 2016

结束期: 289

计算方法: departure



## Description of Thematic map

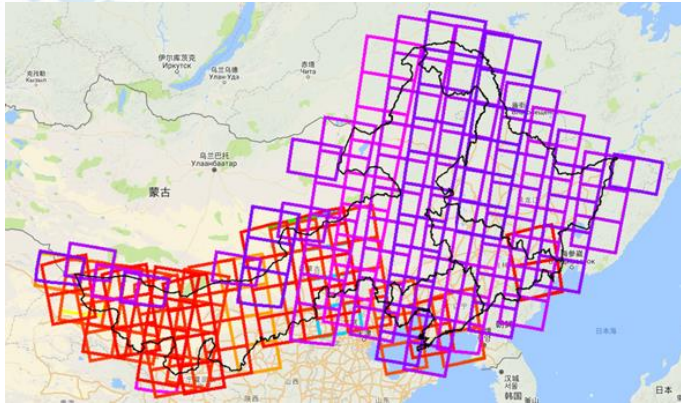
### Introduction





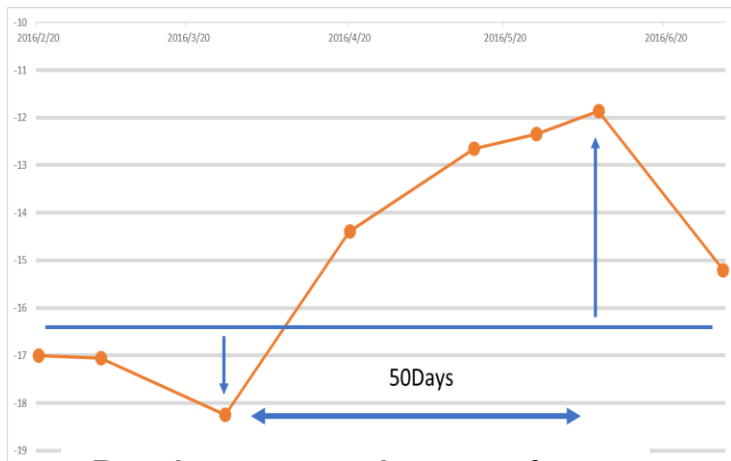
# Crop and cropland mapping on GEE

Decision tree using backscatter coefficient / vegetation index at key stage, from transplanting to post flowering

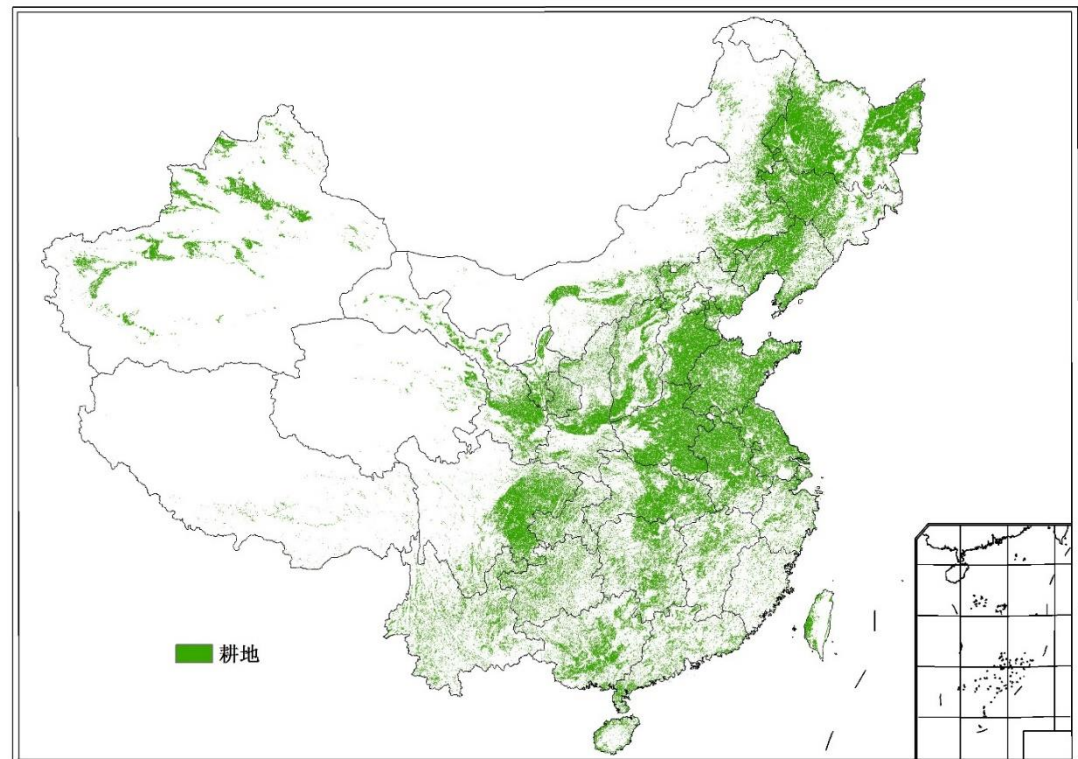


National 10m cropland was extracted using ~20,000 S1, S2 on Google Earth Engine, and ~2,000 China GF-1/2, ZY-3 imageries

Sentinel-1 composite and process on GEE



Backscatter change from transplanting to flowering





# Big challenge: field points (Crop type and mapping at medium to high resolution)



- USGS/NASA Global Food Security Analysis-Support Data at 30 Meters (GFSAD30) Project
- Matthew C. Hansen 30m cropland
- ESA/JRC cropland
- RADI/CAS 10m Landcover

Supervised classification based on Machine learning (RF,SVM,CART)







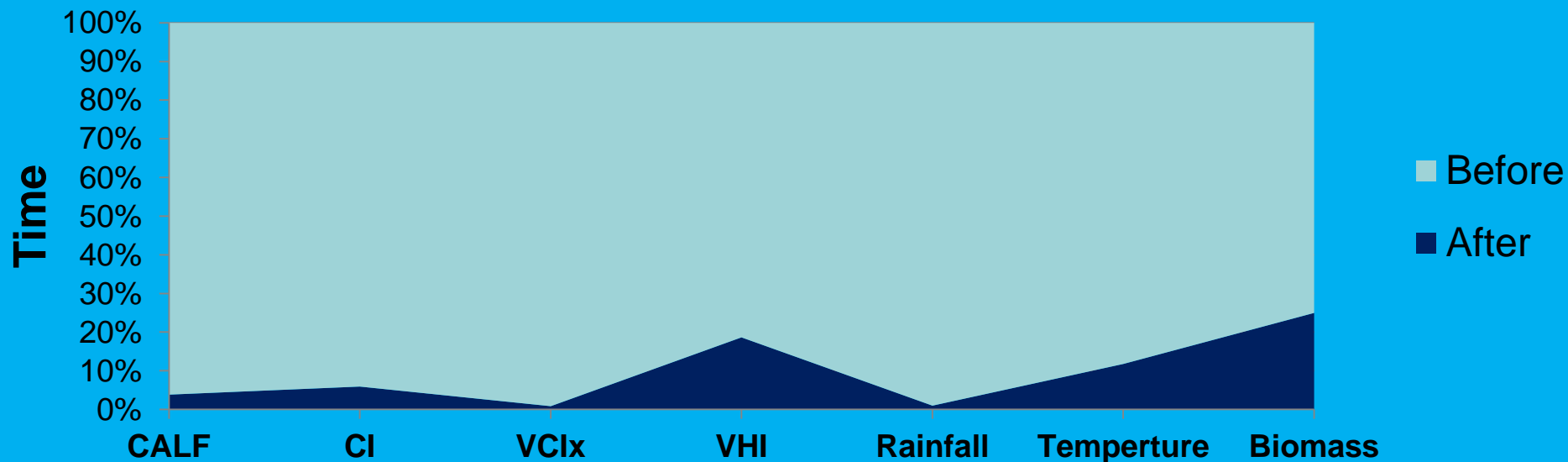
# Improve efficiency by using cloud computing



+



=

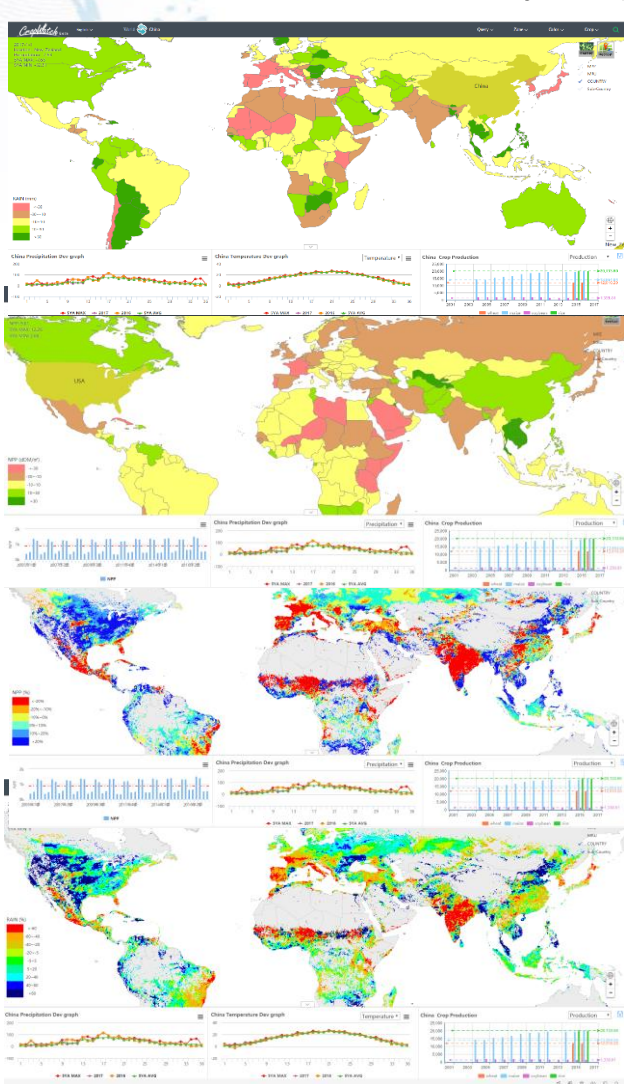






# CropWatch-Explore

- CropWatch-Explore provide a web service for users to conveniently explore and visualize our data.



## CropWatch-Explore

Visual  
Type

Scale  
Type

Crop  
Type

Vector

Raster

Cluster

MPZ

MRU

Country

Sub-Country

Wheat

Maize

Rice

Soybean

RAIN

TEMP

PAR

BIOMASS

NDVI

VCIX

VHI

CALF

CI

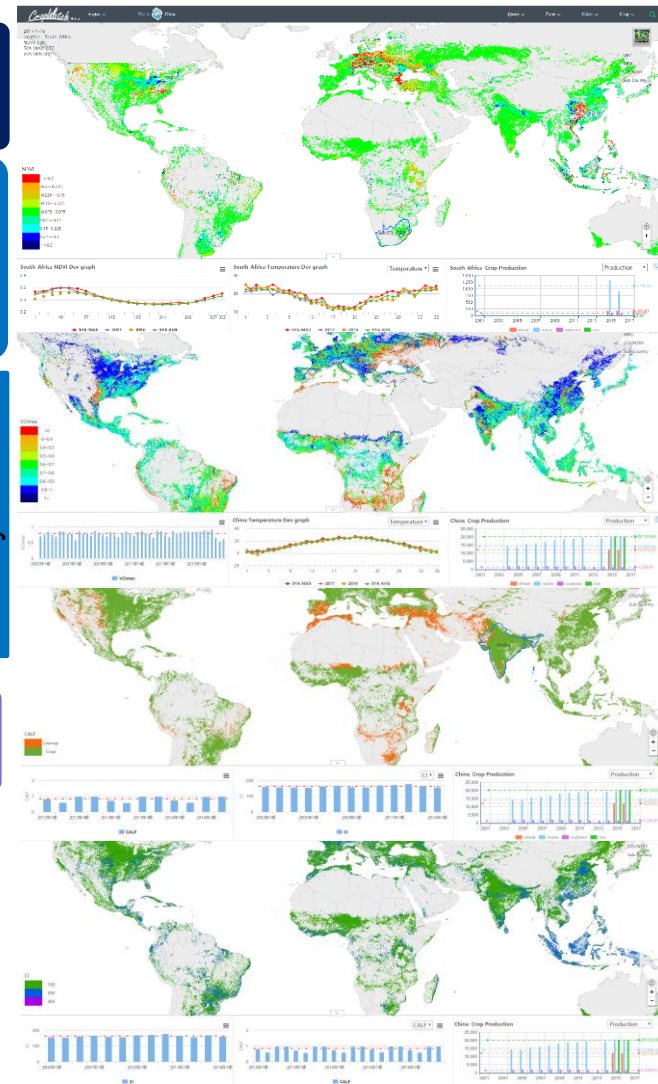
Area

Yield

Production

Early  
warning

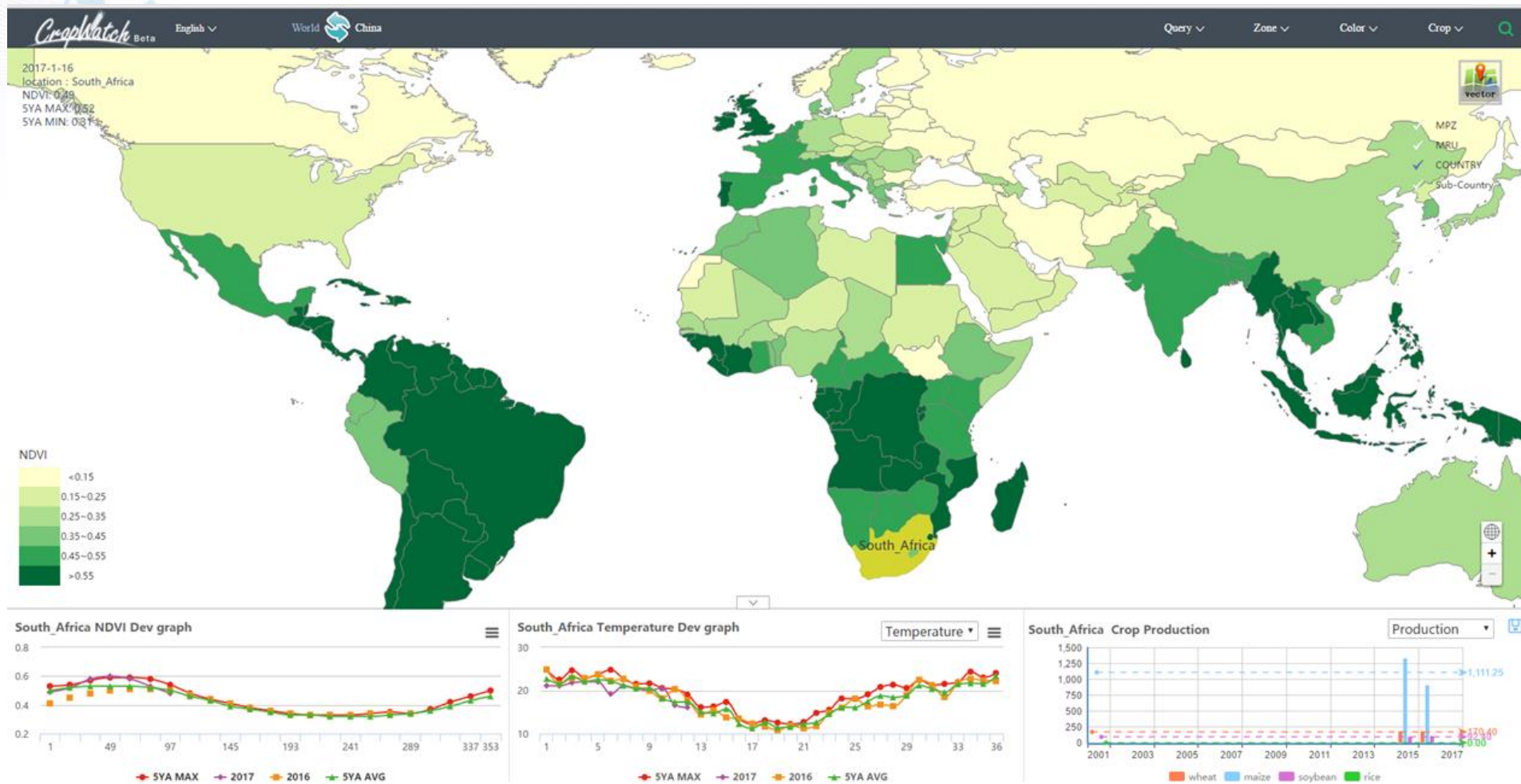
Price







# CropWatch-Explore-vector







# CropWatch-Explore-raster



CropWatch Beta

English ▾

World  China

Query ▾

Zone ▾

Color ▾

Crop ▾

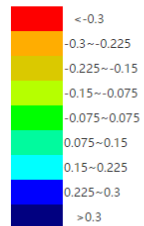


2017-1-16  
Location : South Africa  
NDVI: 0.49  
5YA MAX: 0.52  
5YA MIN: 0.31

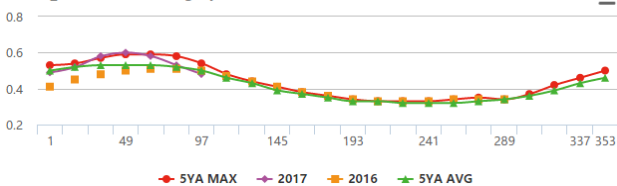


MPZ  
MRU  
COUNTRY  
Sub-Country

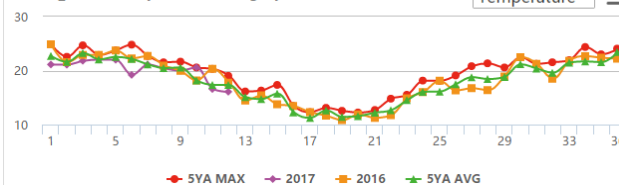
NDVI



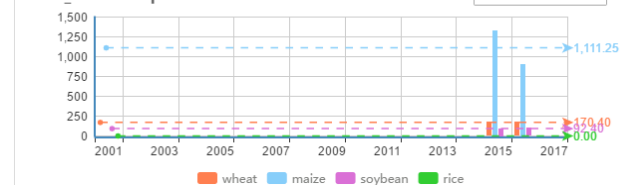
South\_Africa NDVI Dev graph



South\_Africa Temperature Dev graph



South\_Africa Crop Production



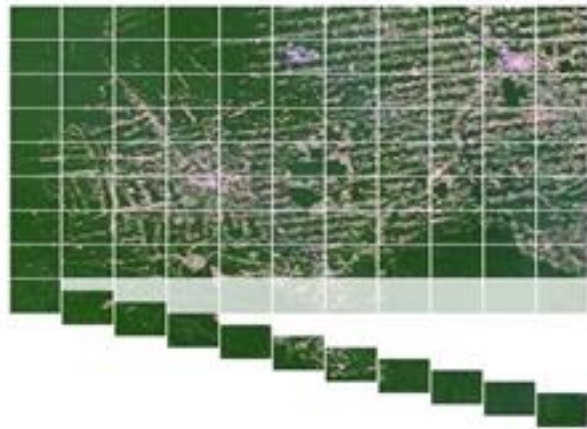




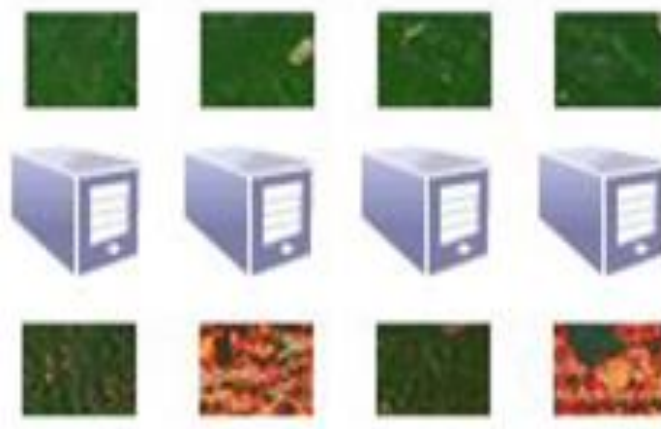
# CropWatch-Explore



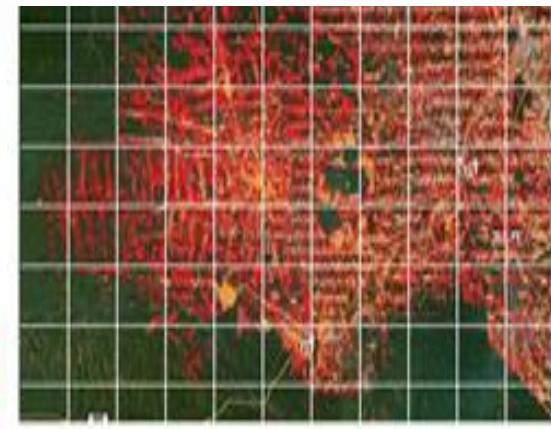
- Near real time map visualization and online service based on GeoWebCache



Segmentation



Parallel computing



Aggregation





# CropWatch-Analysis



CropWatch Analysis is cloud based participatory tool for the CropWatch teams or invited people from over the world analyzing their CropWatch indicators anywhere. It provides create document, allocate and manage tasks, monitor schedule and publish the document online functions which let people over the world finish their documents together on the cloud platform.



CropWatch Team

All experts over the world

In November 2017 CropWatch bulletin (Vol. 17, No. 4), 37 colleagues from 9 countries and 4 teams from China have joined the CropWatch analysis platform.





# CropWatch-Analysis

## Task assignment

CropWatch

✎

🔍

🔔

Reports

Report

Work

Settings

Auth

Tag

🌐

🔔

Home > Reports > November 2017 CropWatch bulletin

November 2017 CropWatch bulletin

🔍 Publish 🔍 View 🔍 Update + Create Chapter

tanshen created at 2017-11-01 16:37:57, current status is Created.

Chapter 1. Executive summary 🔍 🔍

#	Section	Author	Status	Options
1	Executive summary 2	rene	Submitted	🔍 🟢 🟡 🟠

Chapter 4. Crop and environmental conditions in major production zones 🔍 🔍

#	Section	Author	Status	Options
1	Overview 2	yanan luwengun	Submitted	🔍 🟢 🟡 🟠
2	West Africa 2	cpiao luwengun	Submitted	🔍 🟢 🟡 🟠
3	North America 2	zenghongwei yanin	Submitted	🔍 🟢 🟡 🟠
4	South America 2	Mao	Submitted	🔍 🟢 🟡 🟠
5	South and Southeast Asia 2	zhaod jiparhar	Submitted	🔍 🟢 🟡 🟠
6	Western Europe 2	zhuweiwei Mingchao	Submitted	🔍 🟢 🟡 🟠
7	Central Europe to Western Russia 2	zhuweiwei Mingchao	Submitted	🔍 🟢 🟡 🟠

Chapter 2. Global agroclimatic patterns 🔍 🔍

#	Section	Author	Status	Options
1	Overview 1	rene zhaoliang	Submitted	🔍 🟢 🟡 🟠

Chapter 9. Main producing and exporting countries 🔍 🔍

#	Section	Author	Status	Options
1	Overview 2	rene zhaodan	Submitted	🔍 🟢 🟡 🟠
2	Country analysis 2	crop_lmy	Submitted	🔍 🟢 🟡 🟠
3	Argentina 2	Mao	Submitted	🔍 🟢 🟡 🟠
4	Australia 2	xingqiang	Submitted	🔍 🟢 🟡 🟠
5	Bangladesh 2	Changsheng HEZhaoxin jiparhar	Submitted	🔍 🟢 🟡 🟠
6	Brazil 2	Mao zenghongwei	Submitted	🔍 🟢 🟡 🟠
7	Canada 2	zenghongwei zhaodan	Submitted	🔍 🟢 🟡 🟠
8	Germany 2	zhuweiwei zhangpin	Submitted	🔍 🟢 🟡 🟠
9	Egypt 2	malaberry luwengun Mohan	Submitted	🔍 🟢 🟡 🟠
10	Ethiopia 2	mach Olpa luwengun	Submitted	🔍 🟢 🟡 🟠
11	France 2	zhuweiwei songjie	Submitted	🔍 🟢 🟡 🟠
12	United Kingdom 2	zhuweiwei fulgan	Submitted	🔍 🟢 🟡 🟠
13	Indonesia 2	xingqiang Mingchao	Submitted	🔍 🟢 🟡 🟠
14	India 2	Changsheng jiparhar gaoxw	Submitted	🔍 🟢 🟡 🟠







# CropWatch-Analysis

Write and revise the analysis using the products (maps, graphs, tables, etc) as well as internal thematic products

Reports

Report >

Work >

Settings

Auth >

Tag >

Home > Sections > CropWatch November Bulletin 2016 > South America > Write

#4 South America English Delete

T B I U

This reporting period essentially covers the growing period of winter crops in the region. Main crops are in the vegetative stages (maize) or at the beginning of planting (soybean). According to national sources, soybean area is expected to increase slightly in the coming season in Brazil, and to decrease in Argentina, due to variations in wheat and maize areas. Figure 2.3 summarizes the CropWatch agroclimatic and agronomic indicators for the area.

In general, the RAIN index showed reductions compared to average, with some variability among areas: negative departures in the Pampas, Patagonia, and semi-arid and Andean regions, and increments in northeast Brazil, the Amazon, and central-north Argentina. Increments in TEMP over average were more consistent among areas. Potential growth estimated through the BIOMSS indicator points at reductions in areas with a higher degree of RAIN deficit, while indicating increments in most areas with high RAIN. Maximum VCI highlights the variability of crop condition in the region. Despite the reductions in RAIN, Argentina showed in general higher maximum VCI values than Brazil, probably related to a higher retention of soil water from the previous season's rains (with strong El Niño effect) over temperate areas. Low VCI values occur locally in areas such as in the south of Buenos Aires province (Argentina) and Rio Grande do Sul and Paraná states (Brazil); they are associated with negative anomalies in precipitation. Low VHI values are observed for these areas, as well as in the northern areas of Brazil. BIOMSS reductions for the Pampas and Rio Grande do Sul due to lower rainfall do not always result in reductions in vegetation health index (VHI), probably also due to the soil water retention from the extremely wet last campaign. For the central Pampas, changes in crop proportions from last year could also explain the high VHI values observed.

Overall, conditions are average to favorable for crops in the South America MPZ.

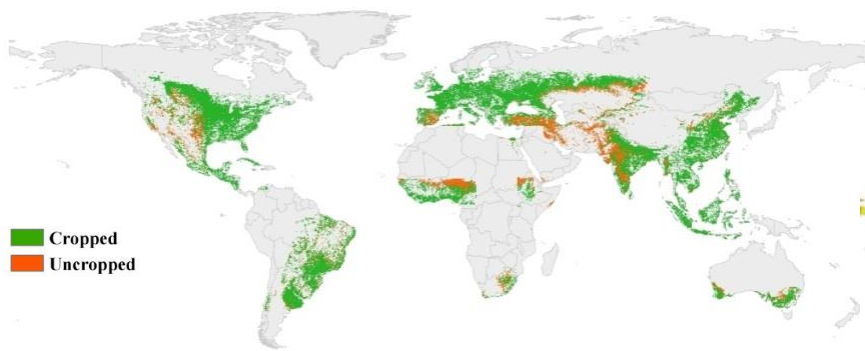
English zenghongwei

f. Cropped arable land

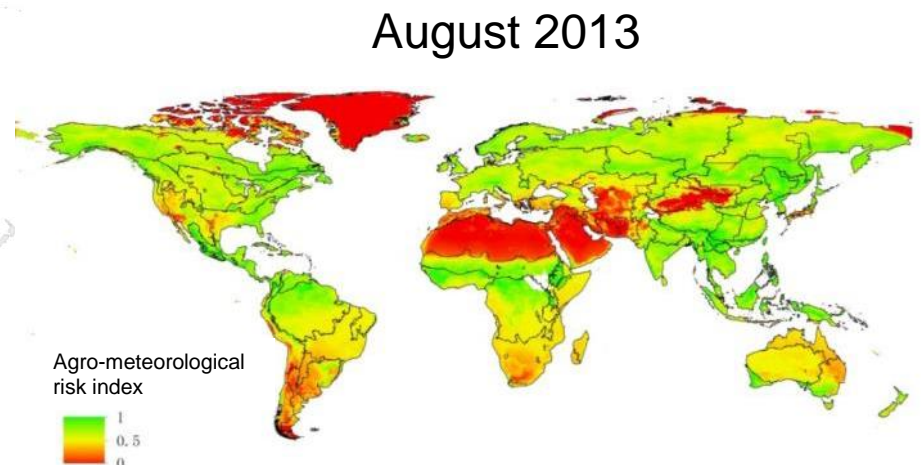


# Food security early warning

- Cropped arable land fraction (CALF) represents the total cropping proportion at early growing stage
- Agro-meteorological risk index (AMRI) considering meteorological suitability for crops at different growing stage is used for yield alarming



July to October 2015



Agro-meteorological  
risk index

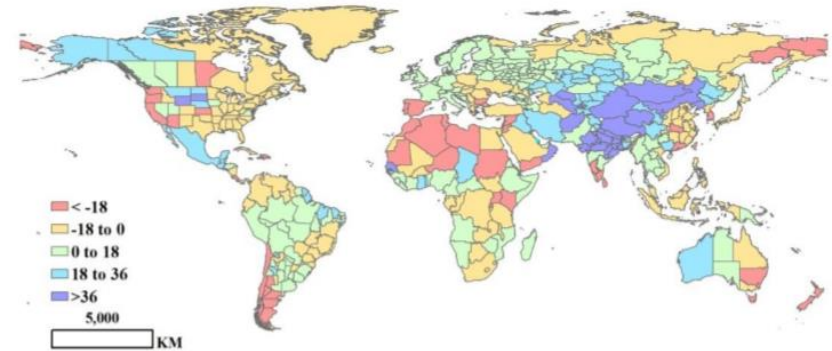
1  
0.5  
0



# Early outlook based on CropWatch

	Environmental indices departure from 12YA (2001-2013)				Crop indicators departure from 5YA (2008-2013)	
	Rainfall total (%)	Temperature average (°C)	PAR accumulation (%)	Biomass accumulation (%)	Uncropped arable land in % of pixels (Absolute difference in % points)	Maximum VCI (absolute difference)
Argentina	5	1.0	0.1	-1	0.7	-0.05
Australia	-27	0.3	3	3	9.2	0.01
Bangladesh	11	-0.5	-0.5	33	-0.2	0.06
Brazil	-1	0.2	-0.4	2	-0.4	0.01
Cambodia	5	-0.8	5	8	0.5	-0.01
Canada	8	-1.3	6	-2	10.7	0.01
China	19	0.5	8	21	-3.3	0.03
Egypt	-24	0.2	3	26	-1.0	0.05
Ethiopia	28	0.3	0.2	16	-4.3	0.01
France	-3	0.8	0.1	4	-2.0	0.07
Germany	5	1.2	0.4	9	10.7	0.11

Figure 3.1. Global map of biomass accumulation by country and sub-national areas, departure from twelve-year average (2001-13) average (percentage)



Overall, CropWatch tentatively summarizes the ongoing season as follows:

*Mostly unfavorable:* Armenia, Azerbaijan, Canada, Georgia, Philippines, Poland, Spain, Turkey, Ukraine, Moldova, Morocco, United States, and Vietnam.

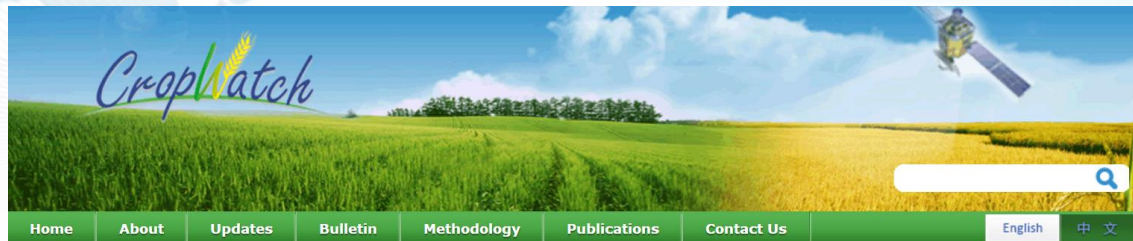
*Mixed:* Argentina, Brazil, China, Denmark, Egypt, France, Hungary, Indonesia, Iran, Italy, Nigeria, Romania, Russia, South Africa, United Kingdom, and Uzbekistan.

*Mostly favorable:* Bangladesh, Czechia, Germany, India, Kazakhstan, Mexico, Myanmar, Pakistan, and Thailand.





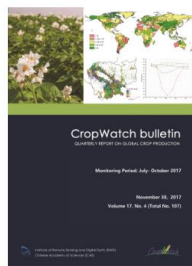
# CropWatch-Bulletin



Home >> Bulletin >> November 2017 CropWatch bulletin (Vol. 17, No. 4)

## November 2017 CropWatch bulletin (Vol. 17, No. 4)

[All bulletins >>](#)



November 2017 CropWatch bulletin. This bulletin features the latest and final CropWatch estimates for 2017 production of maize, rice, wheat, and soybean. Focusing on the months of July–October, chapters cover global, national, and regional-level agroclimatic conditions and the condition of crops that were growing or harvested during this time. For China, the bulletin presents 2017 crop production and crop conditions for each of seven key agro-ecological areas, as well as regional impacts of pests and diseases. The focus section reports on recent disaster events with an impact on agriculture, the possibility of a La Niña event, and an analysis of rangeland management in Africa.

[Full report](#)

[报告全文](#)

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### Key messages from the report:

- Global agroclimatic patterns. Disasters took a heavy toll on all continents; key events included (1) the continuation of the complex emergency situation with a drought component in the Horn of Africa, (2) heat waves around the Mediterranean and in North America, (3) more than ten tropical storms and cyclones, essentially in Asia and the Caribbean, and (4) exceptional floods in southern Asia.
- Updated and final 2017 global production estimates. CropWatch presents its revised and final estimates for 2017 production; they include estimates of 2,509 million tons of total 2017 output for major grains and 326 million tons of soybeans.
- Total cereal production of the three major cereal producers. The total 2017 cereal output of China reached 519,584 thousand tons (down -1.9% compared with 2016), while estimates are 435,918 thousand tons for the United States (+0.1%) and 275,676 thousand tons for India (+5.4%).
- China total production. The final CropWatch estimate for 2017 total summer crops production in China is 403.0 million tons, a significant decrease (-3.0%) compared to 2016. The total annual crop production (including cereals, tubers, and legumes) is put at 562.3 million tons (-1.0%).
- China production of maize, wheat, rice and soybean. The combined production of winter and spring wheat in China increased 0.3% compared to 2016, while maize production was reduced by 5.2%, mainly resulting from a 3.7% decrease in planted area for maize. Overall rice output for China did not change from 2016. Soybean production is up 3.4% over last year.

### Introduction

This CropWatch bulletin summarizes global crop condition developments and agroclimatic factors from July 1 to October 31, 2017. Chapters 1 through 4 zoom in from a global overview of agroclimatic indicators (Chapter 1) to detailed descriptions of crop and environmental conditions in large production zones (Chapter 2), to individual country analyses covering 30 major producers and exporters including sub-national agro-ecological regions (Chapter 3) and China (Chapter 4). A special focus section is included in Chapter 5, covering this time revised and final 2017 CropWatch food production estimates, disaster events, focus on rangeland management in Africa, and an update on El Niño. This first part of the report includes the cover, table of contents, abbreviations, and a short overview of the different sections of the bulletin

### Download

[Introduction](#)

### Chapter 1. Global agroclimatic patterns

Chapter 1 describes the CropWatch agroclimatic indicators for rainfall (RAIN), temperature (TEMP), and radiation (RADPAR), along with the agronomic indicator for potential biomass (BIOMSS) for sixty-five global Mapping and Reporting Units (MRU). Indicator values for all MRUs are provided in Annex A.

### Download

[Chapter 1. Global agroclimatic patterns](#)

### Chapter 2. Crop and environmental conditions in major production zones

Chapter 2 presents the same indicators—RAIN, TEMP, RADPAR, and BIOMSS—used in Chapter 1 and combines them with agronomic indicators—cropped arable land fraction (CALF), maximum vegetation condition index (VCix), and minimum vegetation health index (VHIn)—to describe crop and environmental conditions in six global major production zones (MPZ): West Africa, North America, South America, South and southeast Asia, Western Europe, and Central Europe to western Russia. (See also Annex C for more information about these zones.)

### Download

[Chapter 2. Crop and environmental conditions in major production zones](#)

### Chapter 3. Main producing and exporting countries

Building on the global patterns presented in previous chapters, this chapter assesses the situation of crops in 30 key countries that represent the global major producers and exporters or otherwise are of global or CropWatch relevance. First, the overview section (3.1) pays attention to all countries worldwide, to provide some spatial and thematic detail to the overall features described in section 1.1. In section 3.2, more detail is provided for each of the CropWatch monitored countries, including analyses by key agro-ecological regions within the country. For each country, maps are included illustrating NDVI-based crop condition development graphs, maximum VCI, and spatial NDVI patterns with associated NDVI profiles. Additional information about indicators per country is provided in Annex A, while Annex B provides 2017 production estimates for select countries.

### Download

[Chapter 3. Main producing and exporting countries](#)

### Chapter 4. China

After a brief overview of the agroclimatic and agronomic conditions in China over the reporting period (section 4.1), Chapter 4 presents an updated estimate of national winter crop production (4.2) and describes the situation by region, focusing on the seven most productive agro-ecological regions of the east and south: Northeast China, Inner Mongolia, Huanghuaihai, Loess region, Lower Yangtze, Southwest China, and Southern China (4.3). Section 4.4 presents the results of ongoing pests and diseases monitoring, while sections 4.5 and 4.6 describe trade prospects (import/export) of major crops (4.5) and an updated outlook for domestic prices of maize, rice, wheat and soybean (4.6). Additional information on the agroclimatic indicators for agriculturally important Chinese provinces are listed in table A.11 in Annex A.

### Download

[Chapter 4. China](#)

### Chapter 5. Focus and perspectives

Building on the CropWatch analyses presented in chapters 1 through 4, this chapter presents revised CropWatch food production estimates for 2017 (section 5.1), as well as sections on recent disaster events (5.2), the rangeland management in Africa (5.3), and an update on El Niño (5.4).

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[Chapter 5. Focus and perspectives](#)

### Annex A. Agroclimatic indicators





# CropWatch-Bulletin

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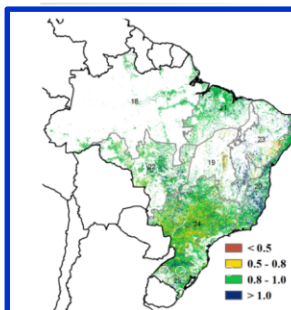
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## AUGUST 2018 CROPWATCH BULLETIN

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### Executive summary Executive summary

Author: [zenghongwei](#) [rene](#) Editor: [Changsheng](#)[cropwatch](#)

### Executive summary

The current CropWatch bulletin is based mainly on remote sensing tools and methods for both climatic and crop condition data. It focuses on crops that were growing or have been harvested between April and July 2018. The bulletin covers prevailing weather conditions, including extreme factors, at different spatial scales, starting with global patterns in Chapter 1. Chapter 2 focuses on agro-climatic and agronomic conditions in major production zones in all continents. Chapter 3 covers the major agricultural countries that, together, make up at least 80% of production and exports (the "top 30") while chapter 4 zooms into China. Detailed data and narratives about crops and environmental conditions are exposed in both chapters. Special attention is paid to the major producers of maize, rice, wheat, and soybean. The bulletin then presents a global production estimate for crops to be harvested throughout 2018 (Chapter 5.1), revised from our first estimate published in May 2018; 90% of the current estimates are based on modeled data and 10% are based on statistical projections. Subsequent sections of Chapter 5 describe the global disasters that occurred from April to July 2018.

This bulletin is issued at a time when almost all winter crops in the northern hemisphere, including China, have been harvested and summer crops are in their late stages; in the southern hemisphere winter crops are growing and the planting of the summer season/monsoon season will start in a month or so.

resulting mainly from adequate rainfall during the previous monitoring period.



Figure.X Crop calendar for Brazil



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and include. amona

[www.radi.cas.cn](http://www.radi.cas.cn)

## Section navigation

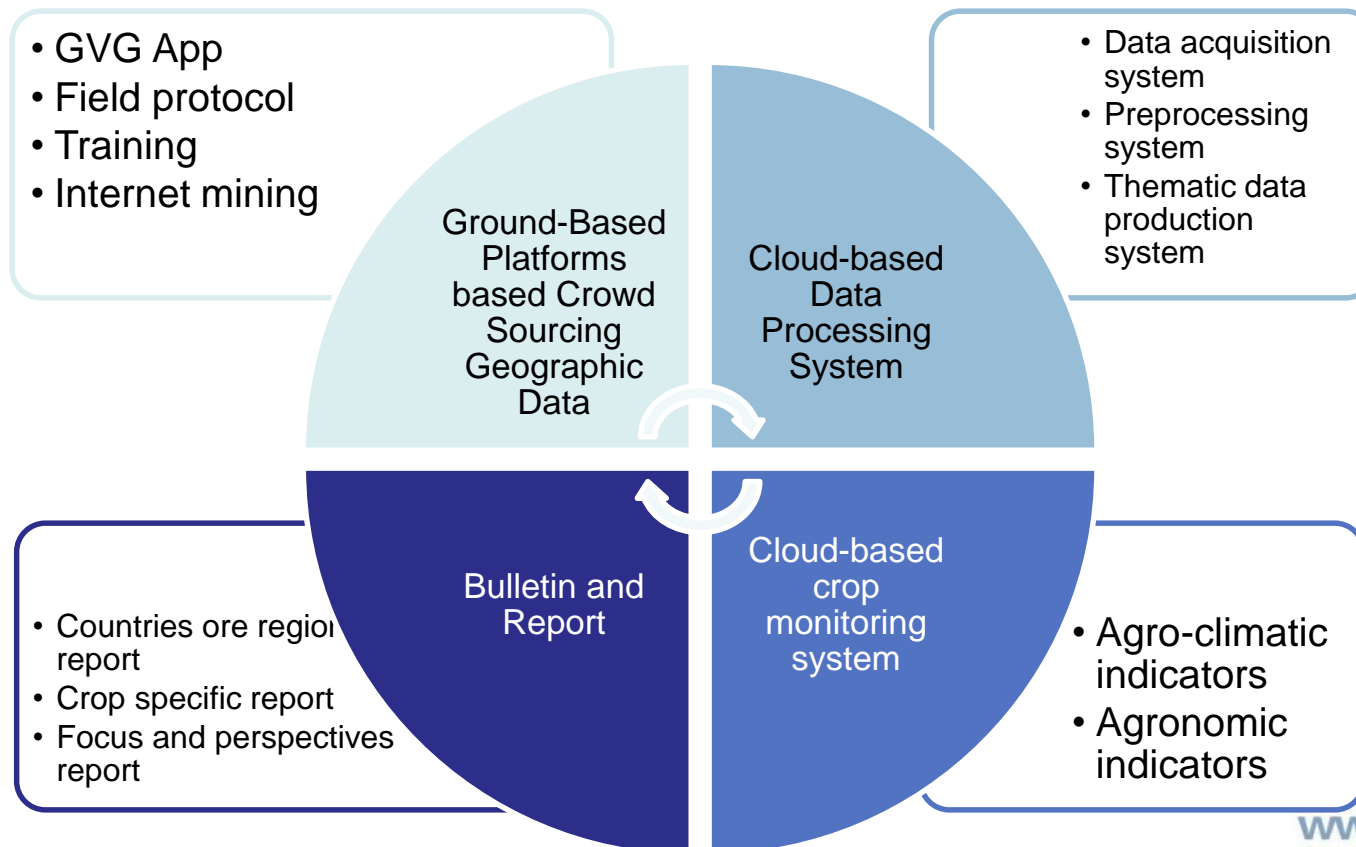
## Figure navigation



# How to work together with each nation?



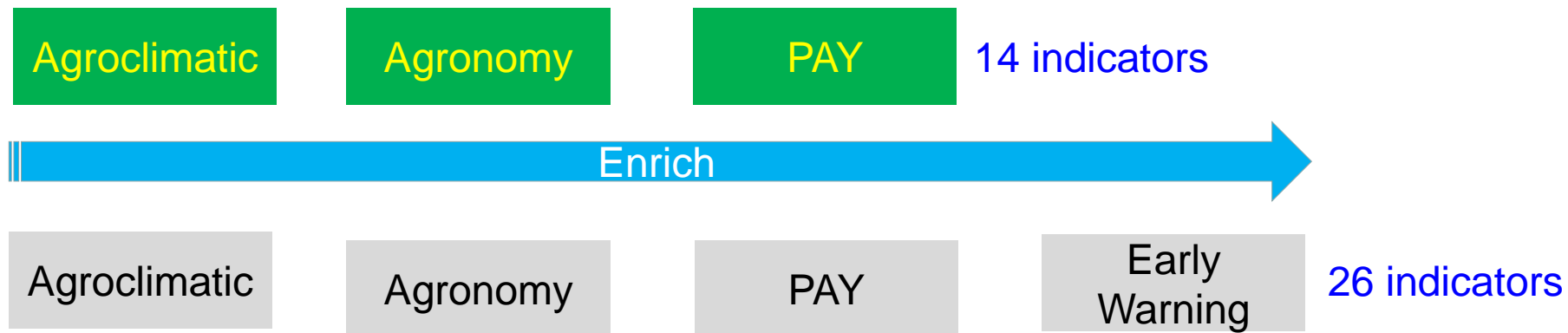
- CropWatch Cloud services
- Customization and localization
- Integration with local technical system
- Utilization of local knowledges





# Expanding the indicators

CropWatch will enrich the indicators on agroclimatic, agronomic, PAY and early warning through combination of the different cropping patterns and agricultural ecosystems, taking the user or region/country preference into account, and promote the capacity of information dissemination.



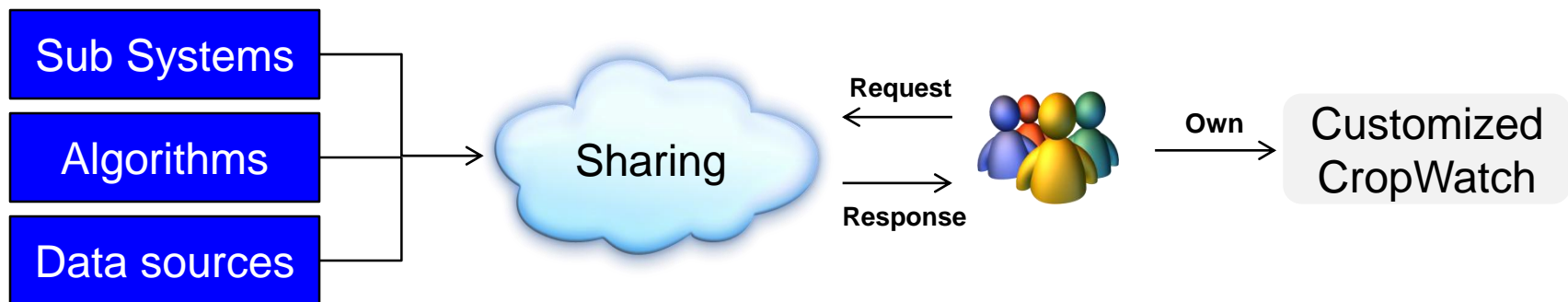


# Share algorithm and data resources



Open the existing sub system to facilitate partners to carry out their own agronomic monitoring and analysis, including CropWatch Pro, CropWatch Online, CropWatch Project and CropWatch bulletin.

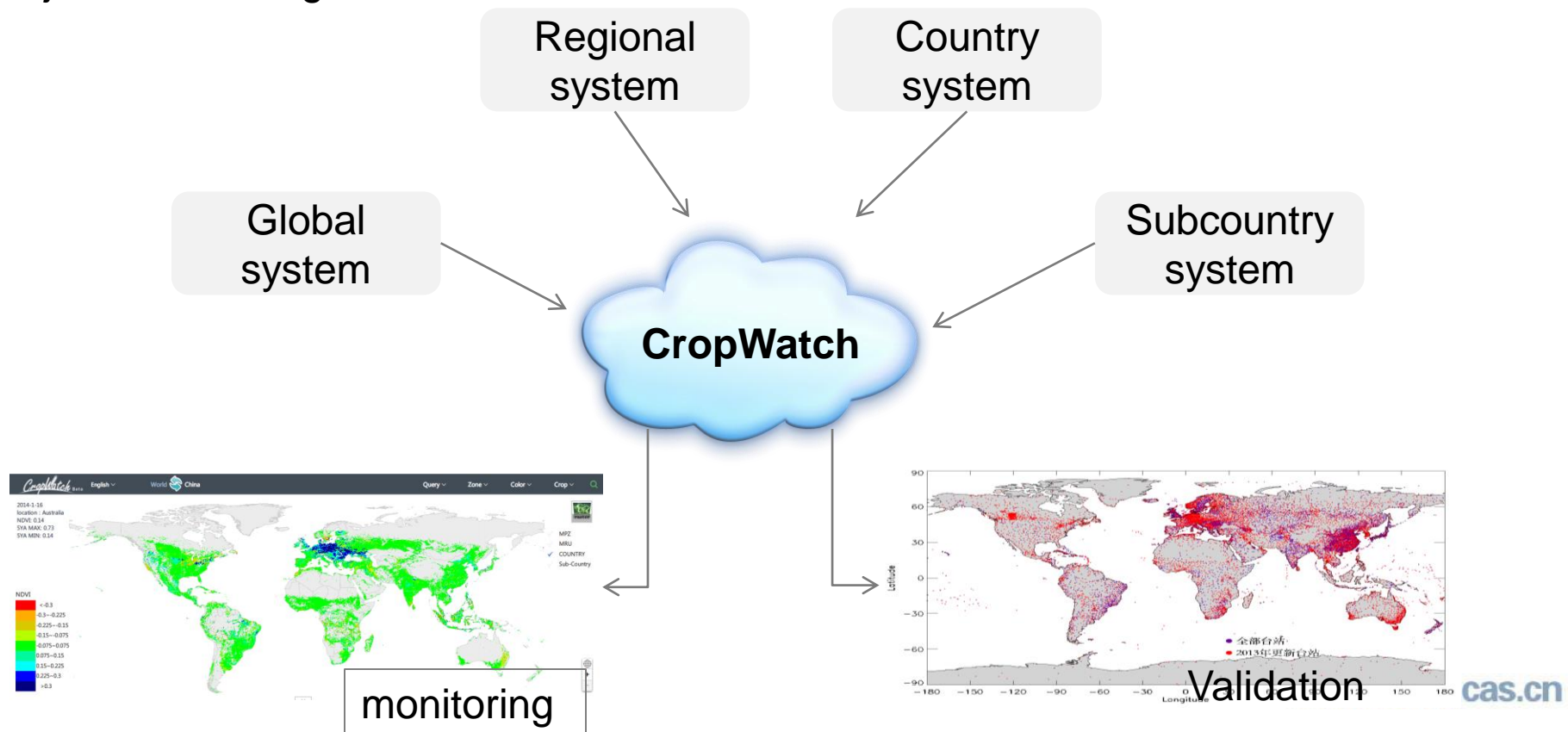
Open and share its algorithm and data resources, thus authorized partners will have the ability to customize the tools and data of their own system, which will significantly enhance the capacity of agronomic monitoring of food-insecure countries and strength their capacity of food governance, **as an online store of Alibaba.**





# Build the bridge for existing system

Using web service, Docker, CropWatch will provide the communication port for existing agronomic monitoring system in B&R, avail them to the public and share the monitoring information, thereby create a fair environment to carry out joint monitoring and cross validation.







# Customization for Mozambique



- Include Portuguese language in CropWatch website interface
- Include every provinces of Mozambique
- Adapt crop phenological information from local experts from MOAFS
- The monitoring results (NDVI profile and NDVI based condition map generated using CropWatch Cloud) were officially incorporated into the Mozambique National Agro-Meteorological Bulletin in June 2018



CropWatch Pro

Portuguese 

- Índices Agro-climáticos
- Composição de dados
- Indicadores Agronômicos
- Condições das Culturas
  - Condições das culturas baseado nas anomalias do NDVI
  - Classificação das condições das culturas
  - Agrupamento das condições das culturas
- Variação do rendimento das culturas
- Área de cultivo
- Estatísticas
- Mapa Temático
- Centro de Tarefas
- Gestão do Sistema

## Agrupamento das condições das culturas

### Configurações

Tipo de Indicador	NDVI
Tipo da Região	Países chave
Nome da Região	Nome da Região
Périodo de Início	Périodo de Início
Período de Término	Périodo de Início
Tipo de cálculo	Partida

[Executar](#) [Report](#)

### ÍNDICE DE SATISFAÇÃO HÍDRICA DAS CULTURAS

O Índice de Satisfação Hídrica (WRSI) das culturas da 1ª época em geral foi considerado bom para região Norte, médio a medíocre para a região Centro e pobre para a região Sul do país (Fig. 3).

Na Região Sul, as culturas da 1ª época foram colhidas até o mês de Março. O índice de satisfação hídrica (WRSI) foi pobre, o que pressupõe produtividade das culturas baixa e consequentemente produção não satisfatória.

Na Região Centro, as culturas da 1ª época foram colhidas até o mês de Abril. Em geral, o WRSI nesta região é considerado de médio, pese embora em alguns distritos da província de Tete, Manica, Sofala e Zambézia, o índice ter sido afectado pela irregularidade da precipitação.

Na Região Norte, as culturas foram colhidas até finais do mês de Maio. O WRSI foi considerado bom a muito bom, o que pressupõe boa produtividade e produção nas principais culturas da 1ª época.

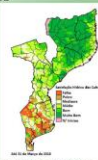


Fig. 3. WRSI por região de Moçambique

### ANÁLISE DE NDVI

A análise de desenvolvimento das culturas baseado no NDVI a nível nacional (Fig. 4), demonstram que as condições para desenvolvimento das culturas foram desfavoráveis desde o início do mês de Março, estas condições foram recuperando, chegando a situar-se próximo da média dos últimos 5 anos.

O gráfico analisa (Fig. 5), mostra que os padrões de partida de NDVI espacial associados aos perfis de NDVI, indicam diversidade de comportamento antes do mês de Fevereiro, com partes das províncias de Cabo Delgado, Nampula, Tete e Gaza acima da média e outras abaixo (5.6%). A partir de Fevereiro, os padrões de NDVI estiveram situados notavelmente perto da média. Em resumo, entre os meses de Janeiro a Abril de 2018, a maior parte das áreas cultivadas (43%), estavam em condições abaixo da média dos últimos cinco anos.

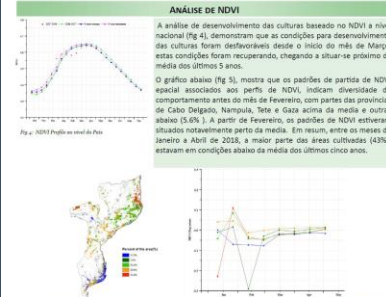


Fig. 4. NDVI Perfil no final do mês

Fig. 5. Padrão de partida de NDVI espacial

### ANÁLISE E DESEMPENHO DA CAMPANHA AGRÍCOLA 2017/18

De avaliação preliminar da campanha agrícola 2017/18 reportar-se-á boa produção sobretudo nas regiões Norte e Centro, tendo sido em geral superior a produção em relação ao planejado em 2017, e acompanhado um crescimento no orden de 4.4% em relação a campanha passada. O aumento das áreas de cultivo, poderão ter tido o aumento da produção.

Nas culturas alimentares, as estimativas apontam para produção mais de 5.1 milhões tons cereais, 322 mil tons leguminosas, 14.9 milhões tons medicina e batata-doce. Nas hortícolas, as estimativas preliminares apontam para uma produção de 5.1 milhões tons. Nas oleaginosas espera-se 148 mil tons, 320 mil tons batata-rei.

Nas culturas de rendimento, o destaque vai para a produção de capa em 140 mil tons, algodão em 80 mil tons, semente de soja em 5.2 milhões de kg.

### PREÇO DAS PRINCIPAIS CULTURAS ALIMENTARES

No regime 1st, em 1 de 18 de Maio, os principais mercados foram classificados com relação ao preço da produção local, com excepção dos mercados de Maputo que foram abastecidos com o milho proveniente de Manica e Sofala. O milho chinês foi colhido no primeiro da região Norte, enquanto que o milho proveniente da região Centro. O primeiro da produção local e do primeiro de Maputo, com os preços muito mais com tendência a base para o milho, milho chinês e milho maninge e o amendoim. (Gráfico 10/18/18)

No regime 2nd, em 1 de 18 de Maio, os principais mercados foram classificados com relação ao preço da produção local, com excepção dos mercados de Maputo que foram abastecidos com o milho proveniente de Manica e Sofala. O milho chinês foi colhido no primeiro da região Norte, enquanto que o milho proveniente da região Centro. O primeiro da produção local e do primeiro de Maputo, com os preços muito mais com tendência a base para o milho, milho chinês e milho maninge e o amendoim. (Gráfico 10/18/18)

Fig. 6. Preço das principais culturas alimentares

### COLABORADORES:



Ministério da Agricultura e Pesca  
Algarve



Instituto Nacional de Investigação Agrária



BIO (Original Research Unit)



Instituto Nacional de Gestão de Recursos Hídricos de Alentejo (IGRHA)



Instituto de Remote Sensing and Digital Earth  
Chinese Academy of Sciences



UFPA



AgroClimate

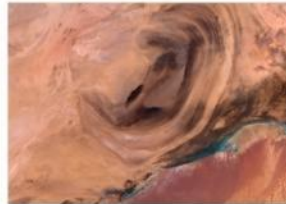
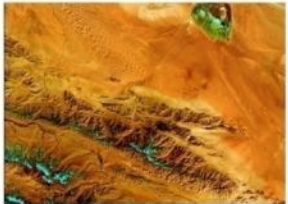


# CropWatch for Mongolia

- Odbayar was invited to Sanya meeting in last August,
- One student is studying Crop Monitoring for Mongolia
- Customizing CropWatch for local requirements
- Following the regional drought mechanism
  - ESCAP coordination and support
  - Ownership and full technical transfer
  - CAS support and comittement



# Thanks!



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