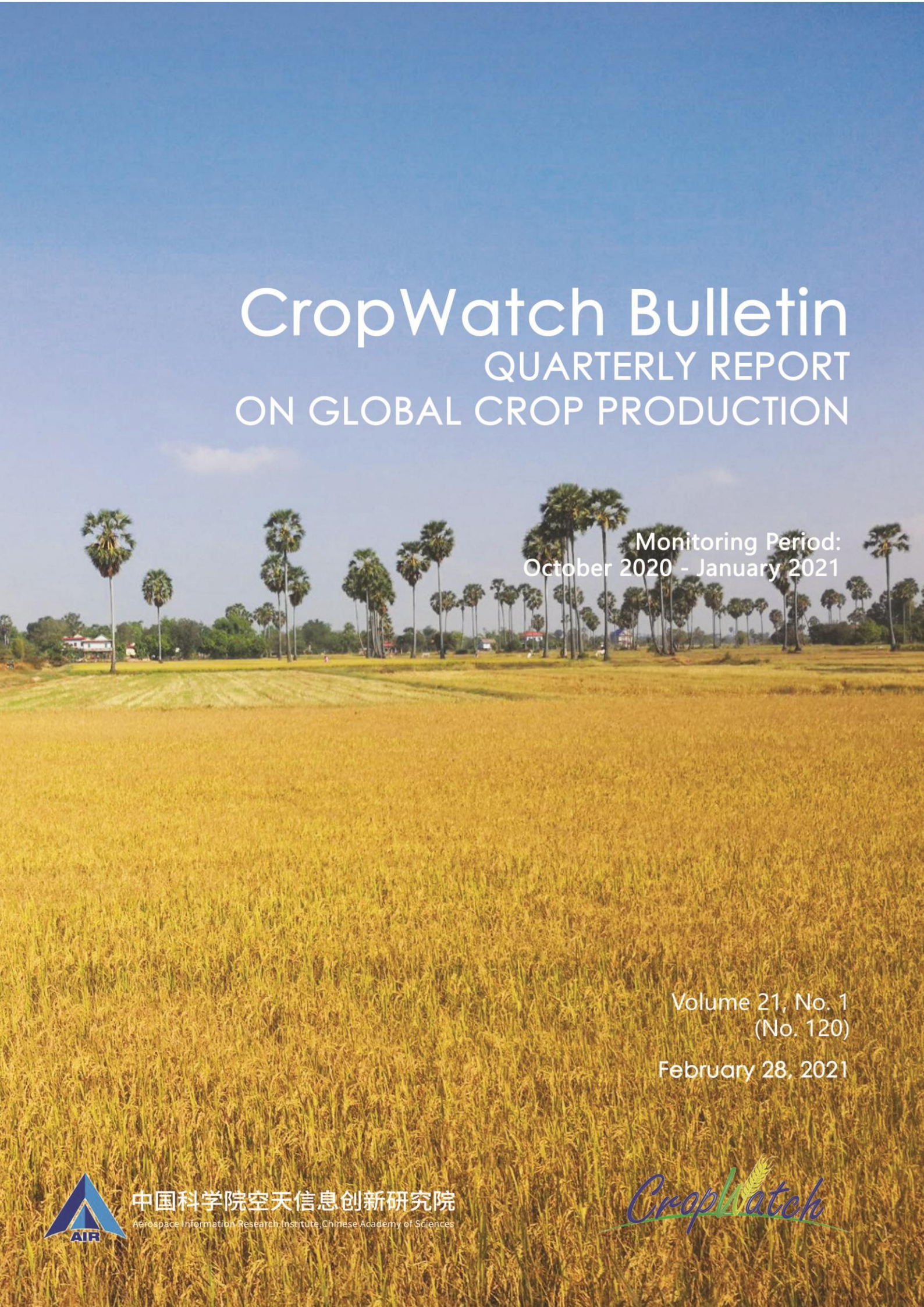

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CropWatch Online Resources: This bulletin along with additional resources is also available on the CropWatch Website at http://cloud.cropwatch.cn and http://cloud.cropwatch.com.cn/.

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Abbreviations

5YA	Five-year average, the average for the four-month period from October to January for 2016-2020; one of the standard reference periods.
15YA	Fifteen-year average, the average for the four-month period from October to January for 2006-2020; one of the standard reference periods and typically referred to as “average”.
AEZ	Agro-Ecological Zone
BIOMSS	CropWatch agroclimatic indicator for biomass production potential
BOM	Australian Bureau of Meteorology
CALF	Cropped Arable Land Fraction
CAS	Chinese Academy of Sciences
CWAI	CropWatch Agroclimatic Indicator
CWSU	CropWatch Spatial Units
DM	Dry matter
EC/JRC	European Commission Joint Research Centre
ENSO	EI Niño Southern Oscillation
FAO	Food and Agriculture Organization of the United Nations
GAUL	Global Administrative Units Layer
GVG	GPS, Video, and GIS data
Ha	hectare
Kcal	kilocalorie
MPZ	Major Production Zone
MRU	Mapping and Reporting Unit
NDVI	Normalized Difference Vegetation Index
OISST	Optimum Interpolation Sea Surface Temperature
PAR	Photosynthetically active radiation
PET	Potential Evapotranspiration
AIR	CAS Aerospace Information Research Institute
RADPAR	CropWatch PAR agroclimatic indicator
RAIN	CropWatch rainfall agroclimatic indicator
SOI	Southern Oscillation Index
TEMP	CropWatch air temperature agroclimatic indicator
Ton	Thousand kilograms
VCIx	CropWatch maximum Vegetation Condition Index
VHI	CropWatch Vegetation Health Index
VHIn	CropWatch minimum Vegetation Health Index
W/m^2	Watt per square meter

Bulletin overview and reporting period

This CropWatch bulletin presents a global overview of crop stage and condition between October 2020 and January 2021, a period referred to in this bulletin as the ONDJ (October, November, December, and January) period or just the "reporting period." The bulletin is the 120th such publication issued by the CropWatch group at the Aerospace Information Research Institute (AIR) of the Chinese Academy of Sciences, Beijing.

CropWatch indicators

CropWatch analyses are based mostly on several standards as well as new ground-based and remote sensing indicators, following a hierarchical approach.

In parallel to an increasing spatial precision of the analyses, indicators become more focused on agriculture as the analyses zoom in to smaller spatial units. CropWatch uses two sets of indicators: (i) agroclimatic indicators—RAIN, TEMP, RADPAR, and potential BIOMSS, which describe weather factors and its impacts on crops. Importantly, the indicators RAIN, TEMP, RADPAR, and BIOMSS do not directly describe the weather variables rain, temperature, radiation, or biomass, but rather they are spatial averages over agricultural areas, which are weighted according to the local crop production potential; and (ii) agronomic indicators—VHIn, CALF, and VCIx and vegetation indices, describing crop condition and development. (iii) PAY indicators: planted area, yield and production.

For each reporting period, the bulletin reports on the departures for all seven indicators, which (with the exception of TEMP) are expressed in relative terms as a percentage change compared to the average value for that indicator for the last five or fifteen years (depending on the indicator).For more details on the CropWatch indicators and spatial units used for the analysis, please see the quick reference guide in Annex B, as well as online resources and publications posted at www.cropwatch.com.cn.

CropWatch analysis and indicators

The analyses cover large global zones; major producing countries of maize, rice, wheat, and soybean; and detailed assessments for Chinese regions, 42 major agricultural countries, and 201 Agro-Ecological Zones (AEZs).

This bulletin is organized as follows:

Chapter	Spatial coverage	Key indicators
Chapter 1	World, using Mapping and Reporting Units (MRU), 65 large, agro-ecologically homogeneous units covering the globe	RAIN, TEMP, RADPAR, BIOMSS
Chapter 2	Major Production Zones (MPZ), six regions that contribute most to global food production	As above, plus CALF, VCIx, and VHIn
Chapter 3	42 key countries (main producers and exporters) and 210 AEZs	As above plus NDVI and GVG survey
Chapter 4	China and regions	As above plus high resolution images; Pest and crops trade prospects
Chapter 5	Production outlook, and updates on disaster events and El Niño.	

Regular updates and online resources

The bulletin is released quarterly in both English and Chinese. E-mail **cropwatch@radi.ac.cn** to sign up for the mailing list or visit CropWatch online at **http://cloud.cropwatch.cn**, **http://cloud.cropwatch.com.cn/**

Executive summary

The current CropWatch bulletin describes world-wide crop condition and food production as appraised by data up to the end of January 2021.

The assessment is based mainly on remotely sensed data. It 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 "core countries") while chapter 4 zooms into China. Special attention is paid to the production outlook of major cereal and oil crops (maize, rice, wheat and soybean) countries in the Southern Hemisphere and some tropical and sub-tropical countries. Subsequent sections of Chapter 5 describe the global disasters that occurred from October 2020 to January 2021.

This bulletin covers the beginning of the rainy season in the Southern Hemisphere, as well as the sowing period and early vegetative growth of (winter) wheat in the Northern Hemisphere.

Agro-climatic conditions

Global agroclimatic conditions are assessed based on CropWatch Agroclimatic Indices which describe weather and climate over agricultural areas only. They are referred to as RAIN, TEMP and RADPAR and expressed in the same units as the corresponding climatological variables (rainfall, temperature and photosynthetically active radiation). BIOMSS is an estimate of the plant biomass production potential.

Weather conditions for food production were generally favorable during this monitoring period. Conditions for harvest of the summer crops were good in the Northern Hemisphere, except for the rice producing countries in South-East Asia that got hit by several tropical cyclones. No large-scale floods were observed. However, some regions were affected by droughts: The drought conditions in the Western USA, as well as in Mexico continued. The dry conditions in Brazil caused record low water levels of the Parana river. The late start of the rainy season in Brazil delayed planting of soybeans. Subsequently, rains stayed below average. Argentina was also affected by drier than normal conditions. In both countries, the drought caused a reduction in maize and soybean production. Two other regions that were affected by drought were the Volga region in Russia and Central Asia. However, it is too early to tell whether this will have a big impact on yield of winter wheat.

No extreme temperatures that would cause yield losses were recorded during this monitoring period. Solar radiation remained close to normal as well. It tended to be above average in regions that were affected by drier than normal conditions.

Agronomic conditions

CropWatch closely monitors the conditions of these crops: wheat, maize, rice and soybean.

Maize: Moisture conditions for maize production in southern Africa as well as in South- and South-East Asia were quite favorable. Above average production can be expected. In Mexico, as well as in Argentina and Brazil, droughts caused a reduction in area planted and yield. Production is estimated to decrease in Argentina (-11%), Brazil (-6%) and Mexico (-4%).

Rice: Harvest of rainfed rice in China, Pakistan, India, Bangladesh and South-East Asia was completed by December. Rainfall in South-East Asia returned to normal levels, aided by several typhoons. They caused local damage only. Nevertheless, rice output from Asian countries is expected to remain stable.

Production in the other parts of the world is minor in relation to Asia. It is expected to remain stable in Nigeria and West Africa as a whole, while production in Argentina is forecasted to decline because of drier than normal conditions. In Brazil, conditions for rice production were average. Overall, rice production remains stable.

Wheat: Sowing of winter wheat in the Northern Hemisphere took place between September and October. Most winter wheat production regions in the USA, Europe, North Africa, the Middle East, South Asia and East Asia experienced favorable conditions for germination and early growth. The only regions affected by drought were the Western USA, Mexico, as well as the Volga region of Russia and the Central Asian countries. Ample precipitation during the winter months and spring will be key in these countries to ensure a normal production.

Soybean: Soybeans are predominantly grown during the respective summer months in both hemispheres. Drought conditions in Argentina and Brazil have negatively impacted production. They are expected to decrease by 13% in Argentina and 6% in Brazil.

All in all, production prospects are quite unfavorable for the four major staple crops during the reporting period.