



esa

GEOGLAM RAPP

Rangeland and Pasture Productivity



5TH GEOGLAM RAPP WORKSHOP

Joint Expert Meeting on Pasture Analysis and Remote Sensing

ESRIN 16 & 17 May 2017


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European Space Agency, Earth Observation Directorate

ESA UNCLASSIFIED - For Official Use



European Space Agency - ESA




ESA is an intergovernmental organisation with 22 Member States

ESA purpose: *"...provide for and to promote, for exclusively peaceful purposes, cooperation among European States in **space research and technology and their space applications**"*

Article II of the ESA convention

ESA achieves this through:

- Space activities and programmes
- Implementing a long term space policy
- A specific industrial policy
- Coordinating European with national space programmes



Sentinels watching over Agriculture

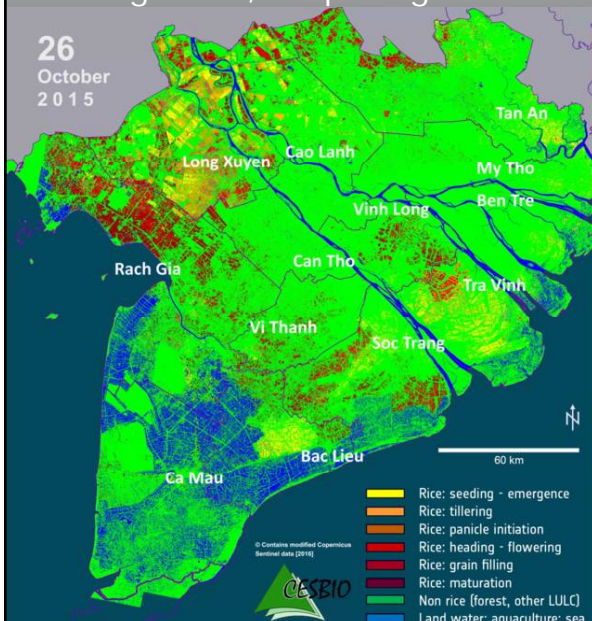


0 days 00 hours 00 minutes
Sentinel-2 constellation:
summer solstice

Sentinel-1: Rice mapping Mekong Delta, Crop Stages and Crop Area



26
October
2015

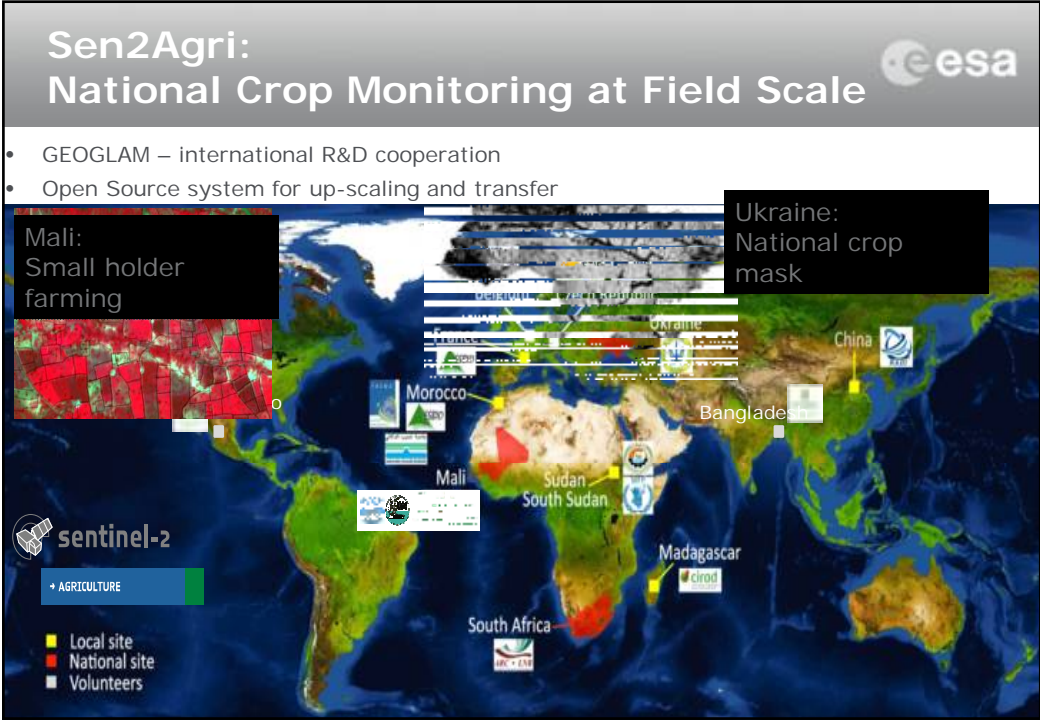
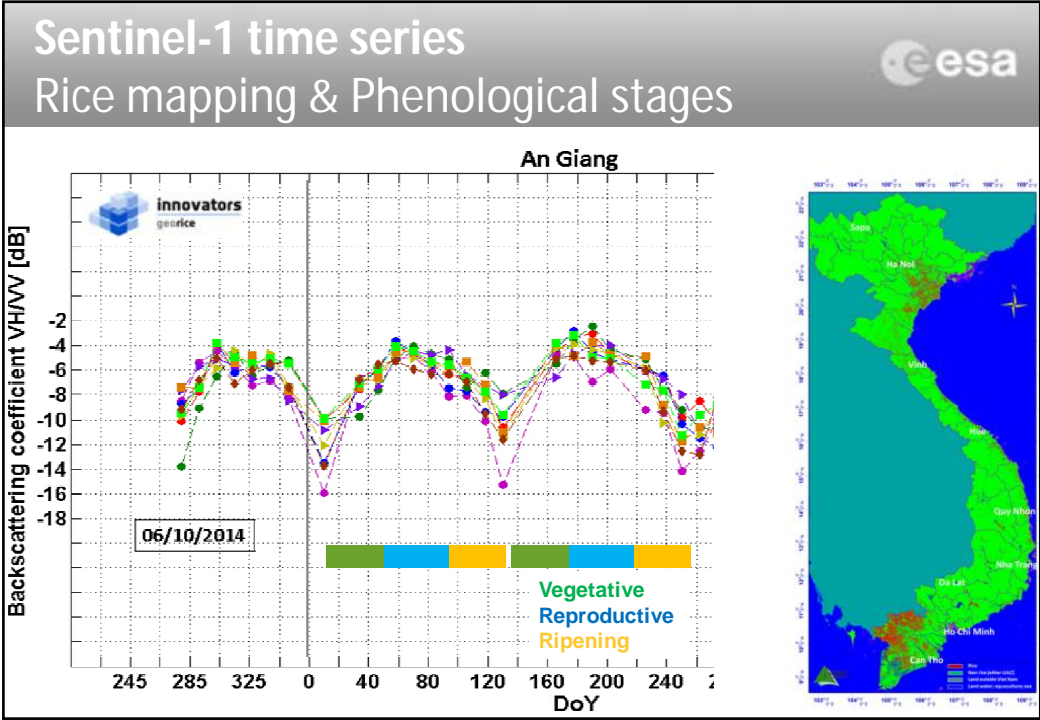


Winter-Spring Rice 2015/16

- March 2016: 1.4 Million ha rice
- March 2015: 1.7 Million ha rice
- **16.5% loss in rice area** due drought and salt water intrusion caused by El Nino
- 976.000 people affected, 67 Mil. \$ estimated damage (UN estimates)
- Based on unprecedented S1 time series

The Mekong Delta, Vietnam
300 km x 300 km, 20 m resolution

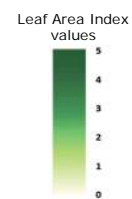
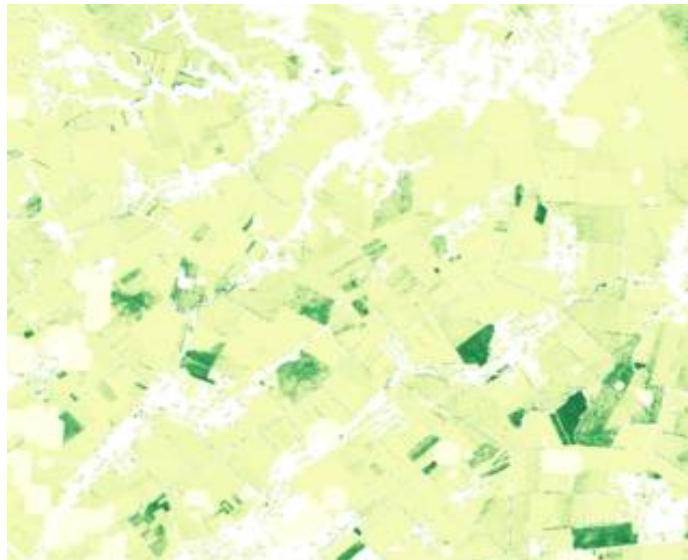




Sentinel-2: Crop status monitoring Ukraine 2016



- 18 Feb. 16
- 18 Apr. 16
- 28 Apr. 16
- 17 Jun. 16
- 17 Jul. 16
- 8 Sept. 16



G20 Action Plan on Food Price Volatility Paris 2011



The G20 Ministerial Declaration (2011) states that GEOGLAM "will strengthen global agricultural monitoring by improving the use of remote sensing tools for crop production projections and weather forecasting".



Sentinels and Agriculture: GEOGLAM Primary missions for all Targets Products



Req#	Spatial Resolution	Spectral Range	Effective observe frequency (cloud free)*	Sample Type	Field Size	Target Products						
						Crop Mask	Crop Type Area and Growing Calendar	Crop Condition indicators	Crop Yield	Crop Biophysical Variables	Environ. Variables	Ag Practices / Cropping Systems
Coarse Resolution Sampling (>100m)												
1	500 - 2000 m	Thermal IR + optical	Daily	Wall-to-Wall	All			Sentinel-3				
2	1000 m	Visible + NIR	Daily	Wall-to-Wall	All	X	X	X	L	L	L	
3	1000 m	Visible + NIR	Daily	Wall-to-Wall	All			X	X	X	X	
4	1000 m	Visible + NIR	Daily	Wall-to-Wall	All	X	L/M	Sentinel-2			X	
5	1000 m	Visible + NIR	Daily	Wall-to-Wall	All	X	X	Sentinel-2			X X	
6	1000 m	Visible + NIR	Daily	Wall-to-Wall	All	X	X	Sentinel-1			X X	

RAPP Products

Source: CEOS ACQUISITION STRATEGY FOR GEOGLAM PHASE 1



Seed Questions: Sentinels supporting RAPP products



- Key technical characteristics and data requirements for an operational RAPP global monitoring system?
 - National to global?
 - Products or tools?
- Additional layers to the RAPP Map?
 - Global rangeland biomass
 - Vegetation cover at 30 meter resolution
 - Conservation areas
 - Tree density and cover
- Data Cube opportunities?
 - Analyze ready data
 - DIAS