



sentinel-2

→ AGRICULTURE

SUDAN-White Nile Site



Ministry of Agriculture and Forests Planning and Agricultural Economic Administration GIS&RS Unit

Demonstration objectives; use case benefits and uptake

- Assess the products accuracy and relevance with regards to the local context within the in situ data collection campaign.
- Assess the overall system performances and possible improvements.
- Time product (Crop Mask & Crop Type)

12 min talk for local sites + questions

20 min talk for national sites + questions

European Space Agency

Site features



- *Sudan, White Nile*
- *Season:2015-206*
- *Agricultural practices, key crops*

Site Name main Characteristics Crops and Calendar In-situ data and EO data capabilities pros &Cons

Q.pdf | file:///G:/Reading%20Material/Q.pdf

3 of 16	lot of mixed crops			
Morocco, Tensift	<ul style="list-style-type: none"> Northern hemisphere Semi-arid climate Field size: 0.5–40 ha Mainly irrigated crops and a lot of tree crops 	<ul style="list-style-type: none"> Wheat (41%–83%), barley (25.5%–0%), wheat-oat (0%–11%) From December to June (winter cereals) 	<ul style="list-style-type: none"> Sen2-Agri Site manager responsible for in situ data collection Full Sentinel-2 time series 	<ul style="list-style-type: none"> (+) Support of the CESBIO team for data collection (+) Very limited cloud coverage
Sudan, White Nile /South Sudan	<ul style="list-style-type: none"> Northern hemisphere Continental climate Field size: 1–50 ha Rainfed and irrigated crops South-Sudan: coverage of food insecure region without any accessibility 	<ul style="list-style-type: none"> Sorghum (57%), wheat (39%) and millet (4%), sesame. Some irrigated crops and mechanized agriculture Sugarcane agroindustry Land preparation in April/May; planting in July/early Aug.; harvest in November. 	<ul style="list-style-type: none"> Champion user responsible for in situ data collection Full Sentinel-2 time series 	<ul style="list-style-type: none"> (+) Great representative of food insecure regions (+) Support of the WFP team for data collection (-) Extended local site to combine Sudan and South Sudan cases (-) Never considered in the context of the Sen2-Agri benchmarking

4 Sen2-Agri products and their respective timing

In line with the GEOGLAM core products

Activate Windows
Go to Settings to activate Windows.

10:53 AM 6/15/2017

EO and in-situ dataset



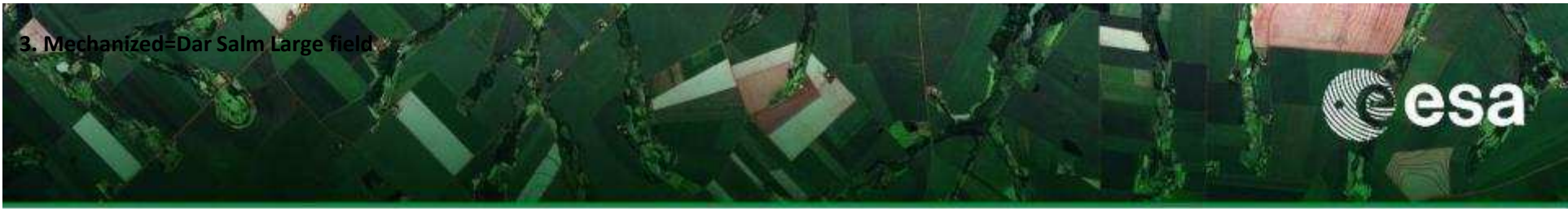
- *Field campaign and in-situ dataset :Strata*
 - Mechanized PSU this will be in 500mm -Meganis- , South
 - Traditional PSU this will be in 300mm-Kosti- , Centre
 - Irrigated PSU this will be in 200mm -Algitina- ,North
- *S2 and L8 (cloud-free) acquisitions along the season*
 - October – November 2016



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017

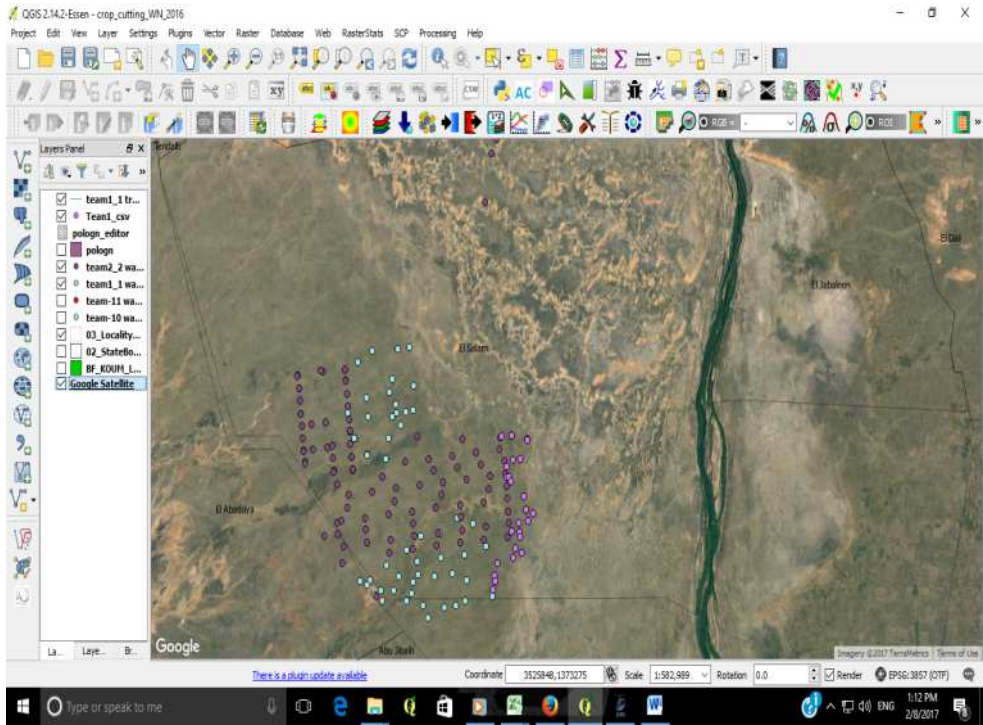
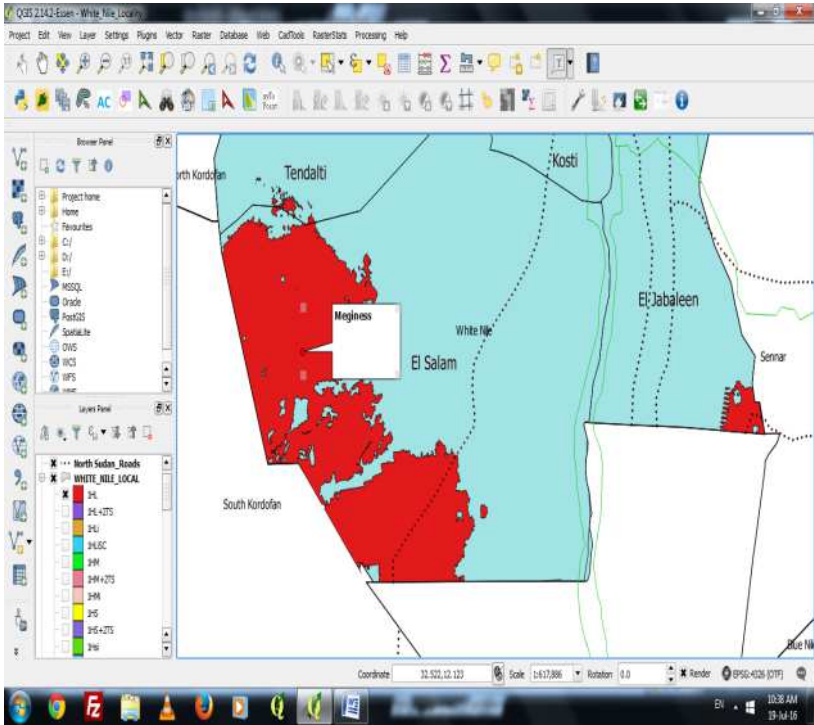


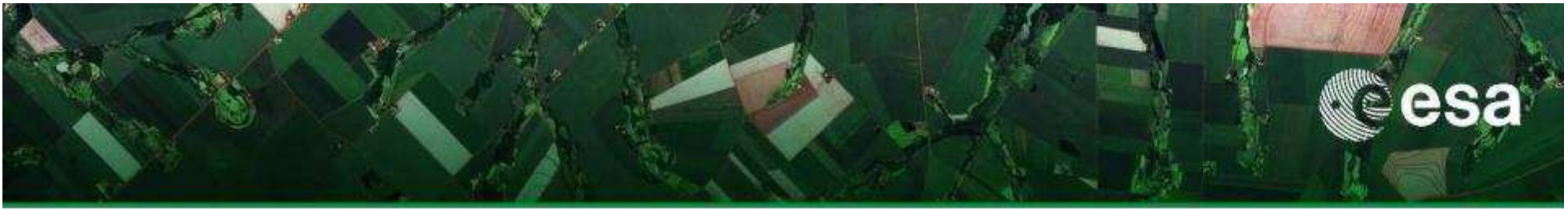


3. Mechanized=Dar Salm Large field

1. Mechanized=Dar Salm Large field

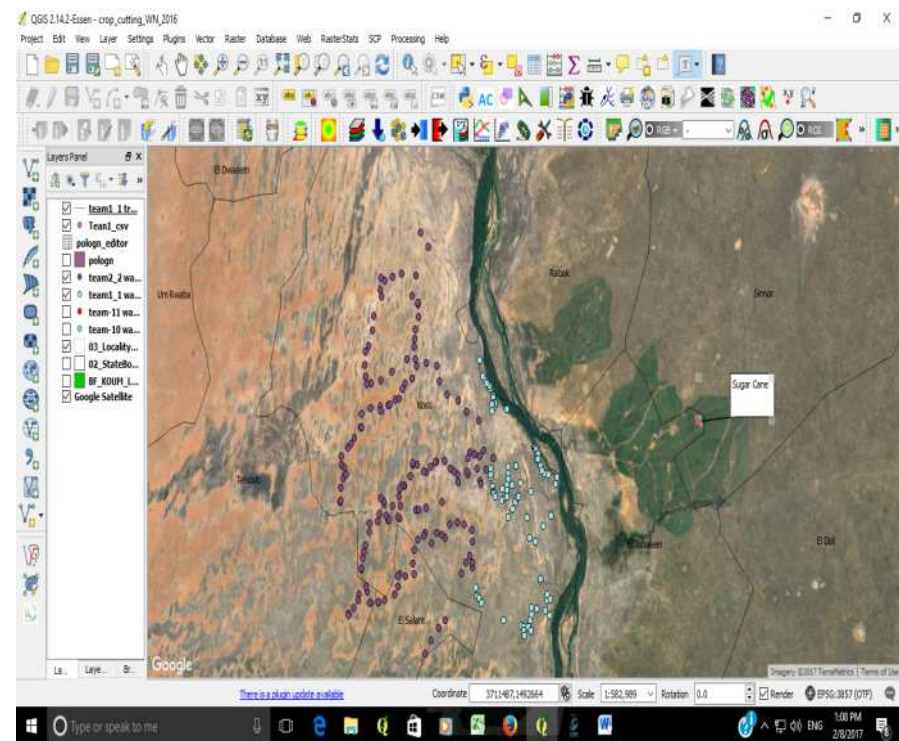
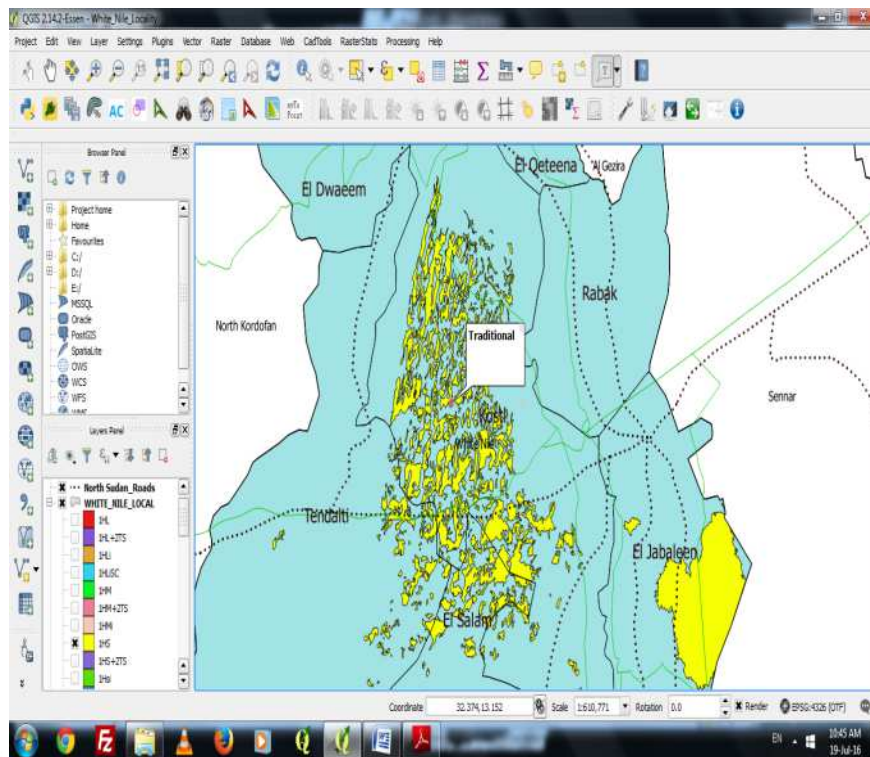
No_samples=158





2.Traditional=Kosti

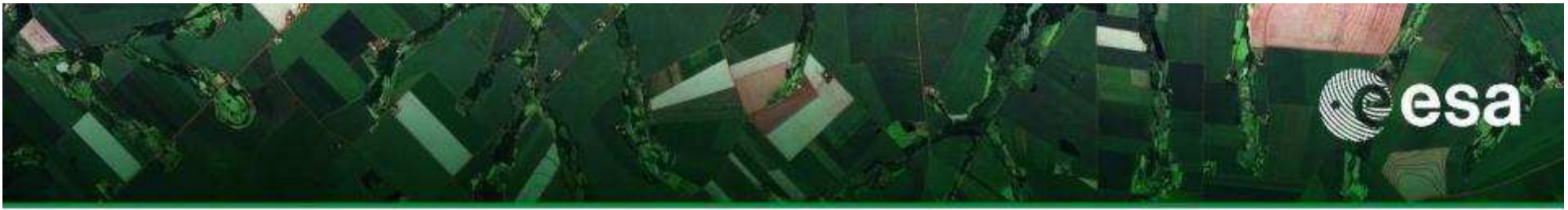
No_samples=175



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017

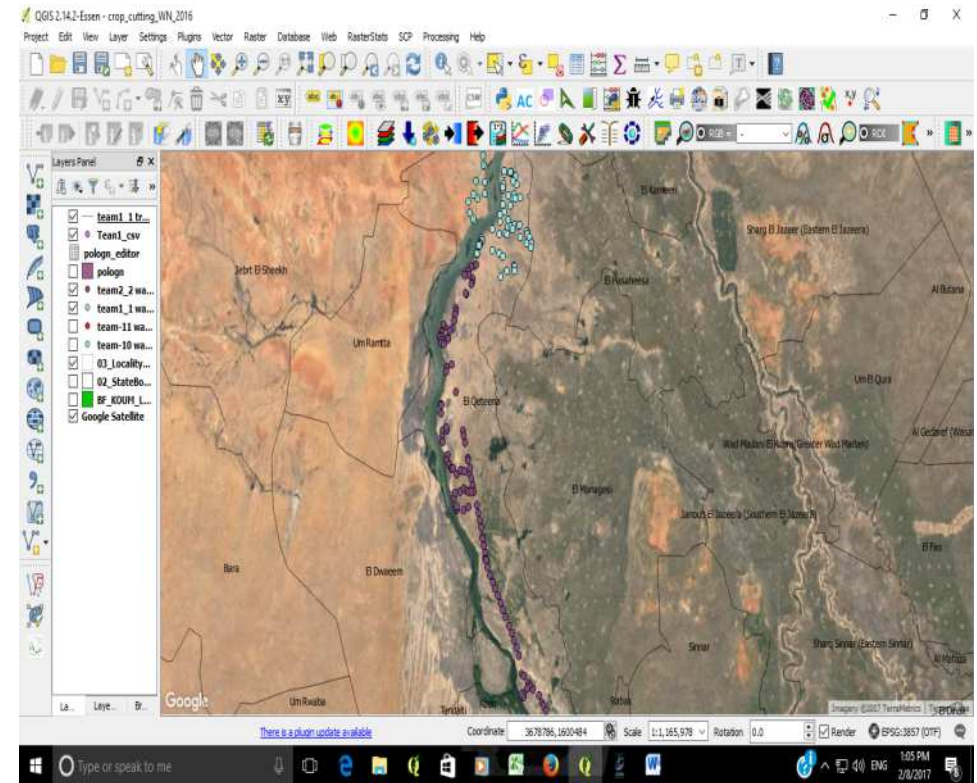
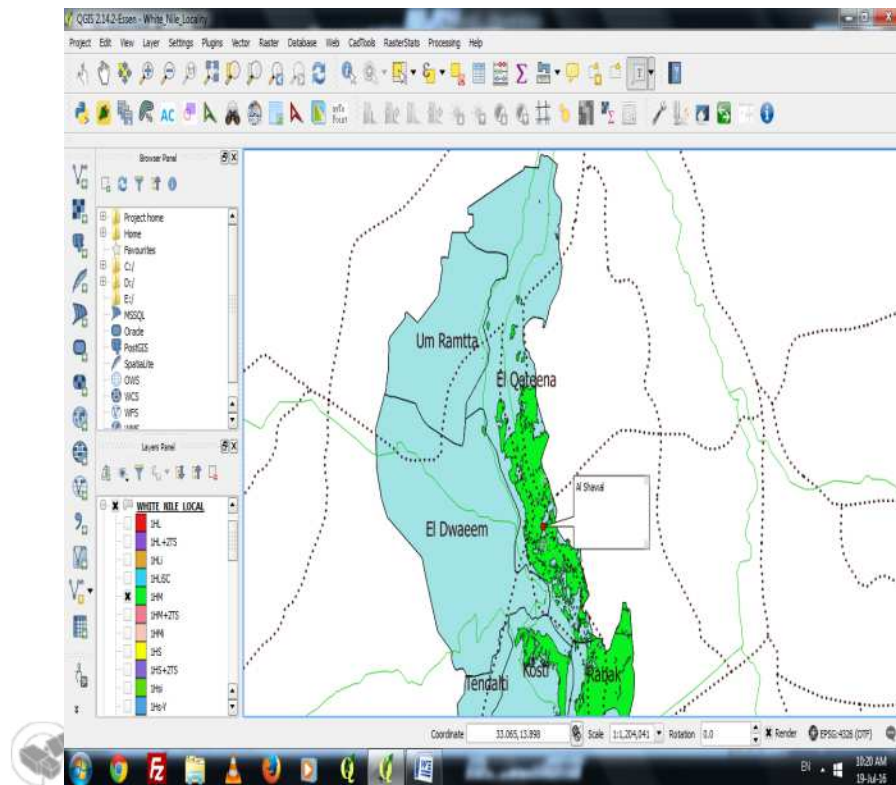




3. Irrigated=Quteeina Medium Field

No_samples=190

sum=523



3rd Sen2Agri User Workshop - Rome, 28-29 June 2017

Sen2-Agri products assessment



- *Monthly cloud-free composites*
- *LAI*
- *Monthly crop masks*
- *Crop type maps*

=> Products to be shown:

=> Accuracy to be discussed:

=> Comparison with other existing products would be welcome (if possible)

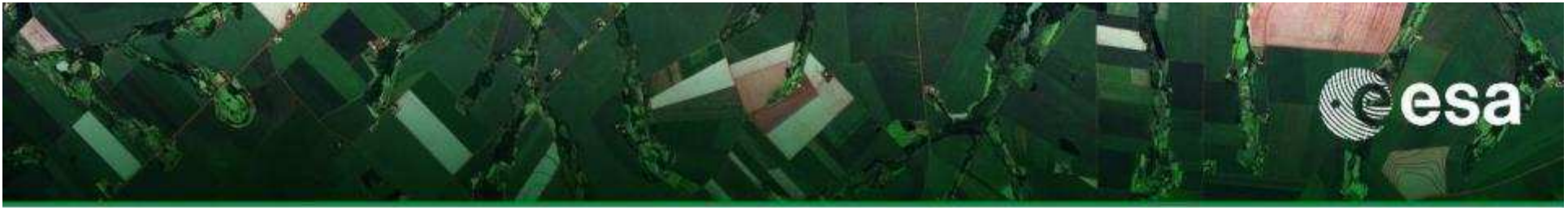
*=> **Sudan Fapar Maps***



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017

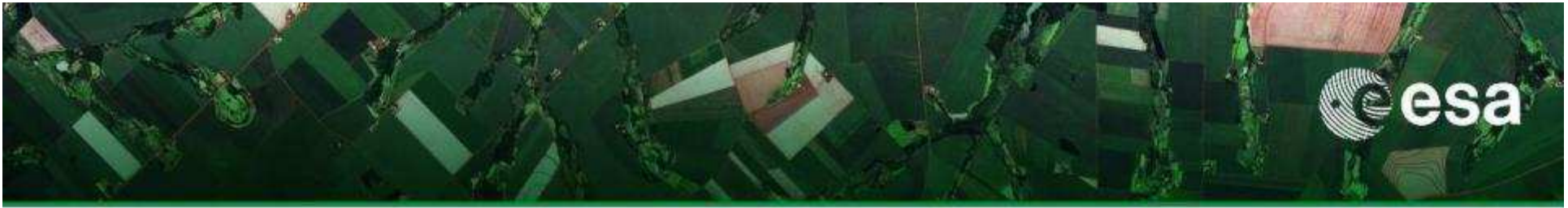




- Crop mask

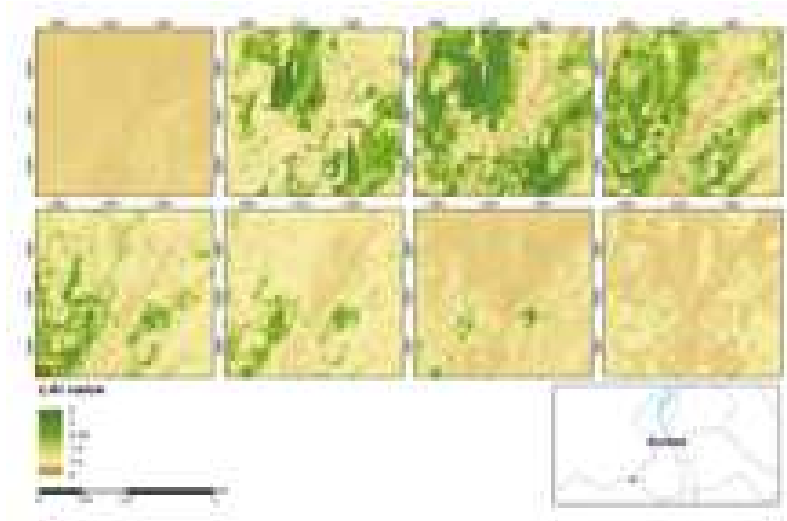
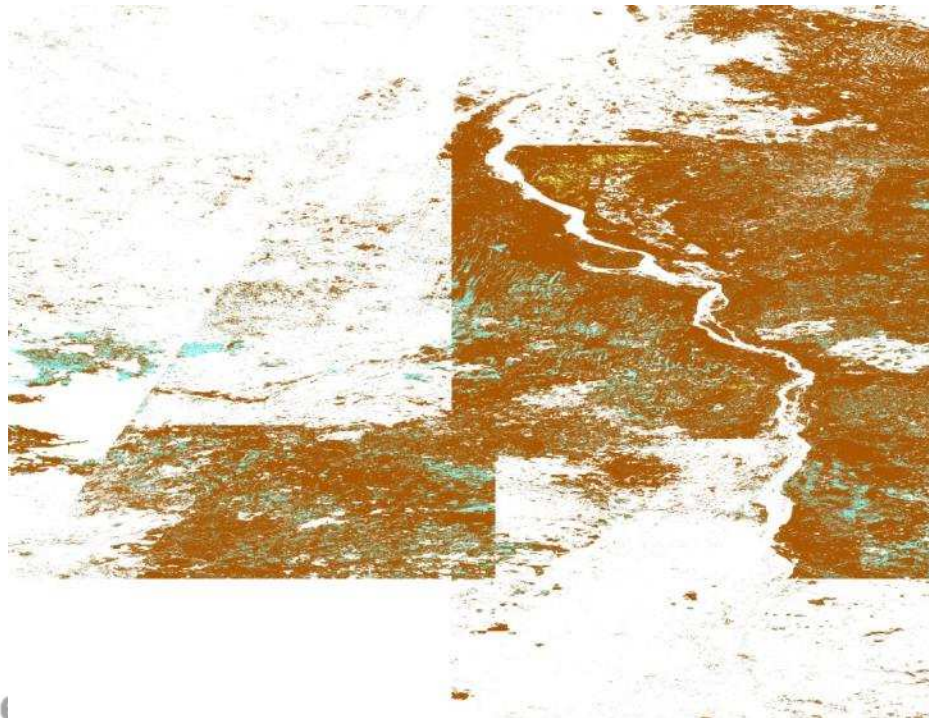
- Mid of season – in situ: using the in situ data that you sent and all the Sentinel-2 and Landsat 8 acquisitions from July to September 2016 [2] ;
- End of season – in situ: using the in situ data that you sent and all the Sentinel-2 and Landsat 8 acquisitions from July to November 2016 [3] ;
- End of season – reference map: using the Sudan landcover map as reference and all the Sentinel-2 and Landsat 8 acquisitions from July to November 2016 [4].

Supervised classifier using	Period	Precision	Recall	Fscore	Precision	Recall	Fscore	Kappa	OA
In situ data	Mid of season (3 months)	0.576	0.748	0.651	0.965	0.926	0.945	0.597	0.905
	End of season (5 ½ months)	0.704	0.745	0.723	0.965	0.958	0.962	0,685	0,933
Sudan and South Sudan Land cover database	End of season (5 ½ months)	0.474	0.704	0.567	0.949	0.876	0.911	0.482	0.853



Sudan/04_L4B_CropTypeMap/S2AGRI_L4B_PR
D_S4_20170606T142622_V20160702_2016083

1



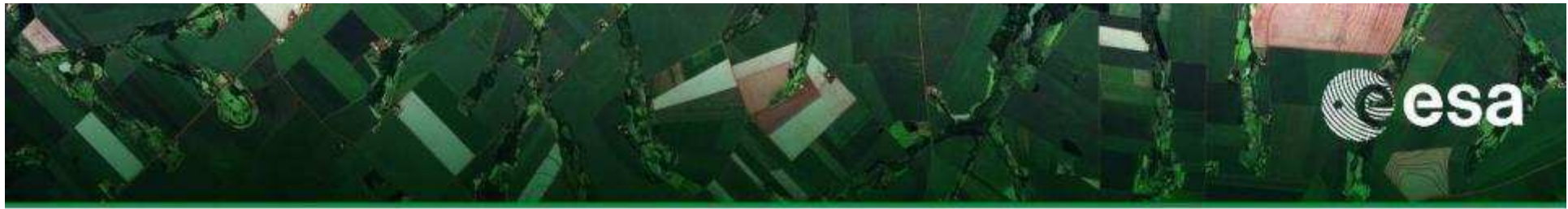
LAI



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017





Sen2Agri_PreparationM x Sen2Agri_PreparationMater +

file:///E:/Sentinel_Summary_2016/April_2016/New%20folder/Sen2Agri_PreparationMaterial_DemonstrationPhase.pdf

Table 1. Validation strategy for each Sen2-Agri demonstration product

	Confidence-building procedure	Statistical accuracy assessment	Comparison with other products
Cloud-free composites	spatial or temporal gaps, anomalies, artefacts		With Landsat mosaics
Dynamic cropland mask	confusion between crop and no-crop, temporal inconsistency	With in-situ data Confusion matrix	With existing maps
Cultivated crop types and area map	confusion between crop types	With in-situ data Confusion matrix	With existing maps and national statistics
Crop status map	temporal consistency	With in-situ data	With coarse product, or crop growth model

Type here to search

10:36 AM 6/15/2017



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017



Use case



- *Illustrate how one / several Sen2-Agri product(s) is used or could be used in relevant manner in your context (it can be very specific to your context)*
- *Explain and, as much as possible, show concrete applications and results*
 - *Food Security Monitoring: Mandate of Ministry*
 - *Agricultural Acreage Estimation: Planning*
 - *Dynamic cropland masks on a monthly basis starting after 6 months of observation;*
 - *Main cultivated crop types after 6 months of observation and at the end of the agricultural season;*
 - *Vegetation status indicators every 10 days.*



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017



Users assessment



- *If applicable (if you had a direct feedback from information users or officers), please share their feedback with regards to the Sen2Agri products*
- *Feedback :*
 - *Points: Time of Delivery*
 - *Generate the products*
 - *Knowledge Transfer*



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017



Feedback on system and products

- *Did you have the opportunity to operate the Sen2Agri system ?*
- *What is your experience?*
- *What are your recommendations for the future for the system ?*
- *What are your recommendations for the future for the Sen2Agri products?*

➤ **2 second workshop –training session**

➤ *System: to be install in the Ministry-more operationally friendly.*

➤ *Sen2Agri products: Accuracy*



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017



Recommendations



1. *Do you consider the demonstration phase relevant for testing the operational capabilities of the Sen2-Agri system ?*
 2. *Do you consider the demonstration phase relevant with respect to your objectives?*
 3. *Which improvements do you expect in the future (priority ranking)?*
 4. *What are the top priority you would recommend to contribute to the system uptake by your team?*
- *Other feedback welcome*
 - *1. Local case=No*
 - *2. Yes, from FS point of view , EW*
 - *3. Crop Type and Crop Mask*
 - *4. create the products by the teams + if we could integrate the products with current Ministry FAPAR Maps*



→ AGRICULTURE

3rd Sen2Agri User Workshop - Rome, 28-29 June 2017

