



WORKSHOP ON COPERNICUS APPLICATIONS FOR THE AGRICULTURAL SECTOR

Conclusions of the survey “Needs of Copernicus users”

The "Workshop on Copernicus applications for the Agricultural Sector" took place in Seville on 11th May 2017.

The technical session aimed at the **promotion of the Copernicus programme within the Spanish Agriculture Sector and the use of Sentinels data and Copernicus Services to monitor the state of the environment and the agriculture (Copernicus Relays)** in particular involving **regional governments and the private sector.**

The Spanish Coordination of the Copernicus user's forum organizes every year technical sessions and workshops in order to identify the requirements of the Spanish users as well as gaps and benefits of the Sentinels applications for the developments of their activities

This event was organized by the Regional Government of Andalusia, the Ministry of Agriculture and Fisheries, Food and Environment, together with the General Secretariat for the Industry and the Small and Medium-Sized Enterprises and the CDTI (MINECO). The Copernicus Support Office participated on behalf of European Commission.

At the end of the workshop a survey was addressed to the participants in order to identify the needs of not only specialized users but also end users. Two of the questions of the survey were aimed **at identifying obstacles, gaps and potential improvement of the service within the agricultural sector as well as to identify the actions that the Spanish administration and the EU must implement to promote the knowledge and improve the use of Copernicus.**

The summary of the responses received.

1. In order to improve the needs of current and future users:

What aspects would you improve? What data or services don't offer Copernicus compared to other satellite images and other products that you would like to have?

- **Thermal image of enough resolution for the monitoring of agricultural plots (above 50 m, or to the extent allowed by technology) –very interesting for the water stress issue.**
- **Possible insufficient frequency in S-2 for agricultural decision making during spring (fertilisation recommendations for instance) due to the presence of clouds. The objective would be reaching daily resolution.**
- **Lack of complete coverage of the territory with very high resolution data from “contributing missions” with a biannual frequency and quick access. If the mosaic is built with images from April, May and June, the product should be available in July. The quick availability of the**



products is critical for the administration to develop its tasks. Nowadays, layers are arriving with a delay of nearly one year after the date of capture.

- Improvement of spatial resolution. Improvement of availability of temperature measurements of crops for determination of water status.
- Hyperspectral sensor with information on the NIR/SWIR region to tackle composition issues and quality of the vegetation: protein, nitrogen and fibre content, etc.
- More cross-checking of products atmospherically corrected in different situations is needed. It is important to ensure a good correction to accurately determine changes in the development of crops, and current products do not offer a sufficient guarantee.

Does the current pixel size meet your needs (spatial resolution)?

- Yes, the 10m of S-2 are generally enough for the monitoring of arable ploughed crops and precision agriculture. Nevertheless, a higher resolution would provide new possibilities; there is, therefore, room for improvement.
- For the obtaining of basic or thematic cartography, scales between 1/5,000 and 1/10,000 only fulfil these needs partially.

Would you need a summary of observations from previous dates?

- Yes. It would be interesting to make monthly or fortnight ~~biweekly~~ packages of vegetation indexes or biophysical variables with a 10m resolution. Similarly to what is done with ground services (vegetation) at a global scale.

What product precision do you need?

- Focusing on Sentinel-2, the objective would be reaching a daily resolution maintaining or improving the spatial resolution in the current 10m bands. It would be necessary to incorporate a thermal sensor of about 30 m allowing to assess the use of water in agriculture and the natural environment, as well as mapping the heat islands. Both topics are especially sensitive for European southern countries regarding future climate change scenarios. The current temporal and spatial resolution is very satisfactory for agricultural applications; a higher resolution would cause difficulties in the processing and handling of data that would probably result in a reduced profitability of the increased resolution.



2. Please suggest actions that you would like or that you believe should be carried out by the Spanish Administration or the European Commission to improve the use of Copernicus data and products (especially in your own particular case) in Spain:

- **Generate mosaics of images accessible through the Open Geospatial Consortium services (inter-operable from GIS), so that access to recent images would be ~~is easy~~ easier for the user and the product does not need to be downloaded completely. For instance, a WMS or a TMS service that shows the most recent NDVI value available. This is a very frequent use that should be facilitated.**
- **Generate higher quality images for agriculture, crop adjustment and thermal images.**
- **Organise training workshops on summary and use of these data sources and work group sessions on exchange of information between researchers and managers/administrators.**
- **A quicker image processing with better quality assurance.**