



Press Information

Results of the Farming by Satellite Prize

Initiators



Partners



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For further information about the competition and the winning entries contact:



Andrea King (English speaking media): +44 7920 107903



Marie Menard (French speaking media): +420 234 766 627 and Koji Fukuhara +33 684 519 116



Christian Radons (German speaking media): +49 1 60 90 13 37 26 or Reinhard Blasi +420 602 619 859

Farming by Satellite Prize Results

Position	Name/ Team Name	Country	Title of submission
1st Place - €5,000	Team ISA Lille	France	Optimization of plant cover properties using satellite imagery
2nd Place - €3,000	Team TTT Solutions	Czech Republic	Crop Type Detection and Evaluation System
3rd Place - €1,000	Ambrogio Zanzi	Italy	A new forecasting system for rice production
Special Africa Prize - €4,000	Team Shamballite	Kenya	Smart Agricultural Resource Optimization System (SAROS)



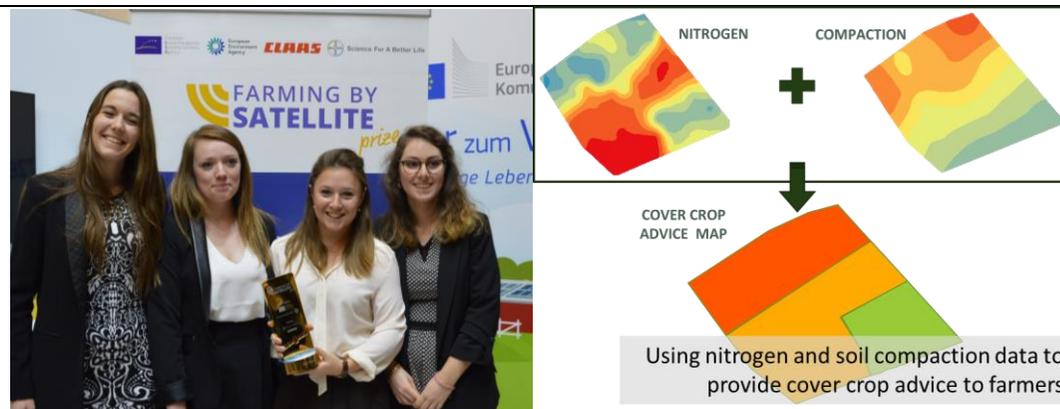
The European winners at the Farming by Satellite Award Ceremony in Berlin

1st Place

Team ISA Lille – France

Students at Institute of Live Science in Lille

Title of Entry: Optimization of plant cover properties using satellite imagery



About ISA Lille:

The Team is composed of four students: (left to right) Geneviève Baumann, Louise Vernier, Charlotte Lejoyeux and Marie Rolloy. They are all studying in fourth year in the school ISA (Institute of Live Science) in Lille (North of France). They all come from different places: Genevieve and Marie both come from Paris whereas Charlotte comes from Le Mans (West of France) and Louise from a small village in the North of France.

Except Louise, all the students had no experience in agriculture before studying at ISA Lille. This school offers the opportunity to learn about environment, food industry, landscape or agriculture and to become an engineer. They chose to take part in this prize because they are all interested in improving agriculture with techniques respecting the environment. Moreover, this was the opportunity for them to work on a transdisciplinary project.

Mentors: Bertrand Vandoorne and Eric Taisne

About their Entry:

Cover crops improve the soil structure and its level of organic matter, reduce erosion and leaching, and avoid phenomena of slaking. Team ISA Lille's model will optimize the properties of the cover crops to improve soil composition. The main purpose is to create a simple guide for farmers on how to best apply cover-crops to improve the nitrogen and compaction levels.

This requires mapping of an agricultural plot, bringing together information of the last crop nitrogen deficiency, the soil moisture and its structure. Then we select the best species from each zone: a specific mixing of plants for each kind of agricultural plot of land. With this map, we can give some advice about the composition of the mixing to maximize the benefits related to each plant species.

Judges' comments;

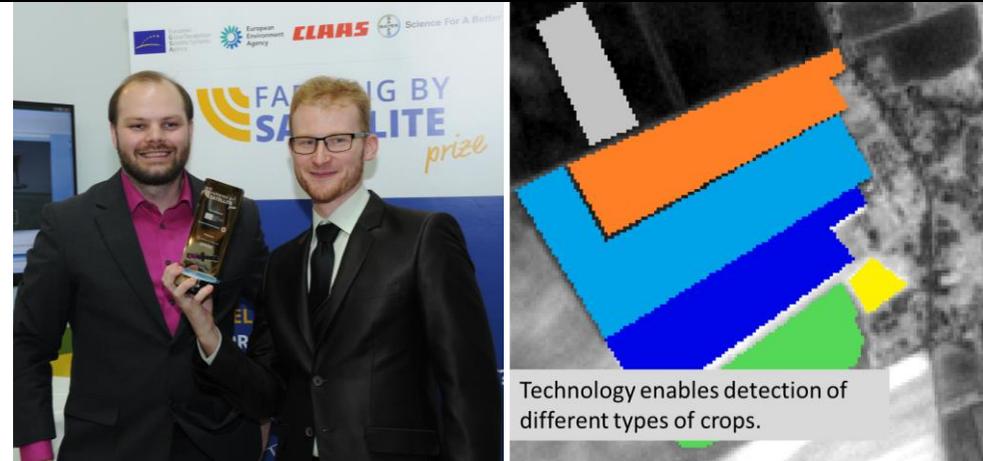
This team really impressed us with their "smart" concept which is a great use of earth observation data. We particularly liked the idea of pairing the issues of managing nitrogen levels together with soil compaction, and using cover crops to address this in an environmentally sensitive way. They showed great teamwork, everyone contributed to the project and we think their idea has potential for further development, linking satellite navigation systems to field operations, using all the instruments in the 'orchestra' of effective agri-business.

2nd Place

TTT Solutions – Czech Republic

Ph.D. students at Palacky University, Czech Republic

Title of Entry: Crop Type Detection and Evaluation System



About TTT Solutions:

All three members of TTT Solutions are ph.D students at Palacky University at Department of Geoinformatics in Olomouc, Czech Republic.

Tomáš Pour: (left) His specialization is remote sensing, image analysis and thermography. He studied both bachelor and master degrees at the department of Geoinformatics.

Tomáš Pohanka: (middle) He specializes in administering spatial databases, creating Python scripts for spatial analysis and data mining.

Antonin Benc: (right) His work focuses on Geoinformatics in environmental applications, modelling and prediction of landscape units. Since 2015 he is the owner of the company SpatialComp, which deals with the collection of spatial data, analysis for municipal administration, property records, and environmental applications.

About Team TTT Solutions Entry:

Crop type Detection and Evaluation System (CDES) is a project focused on improving the control capabilities of government regarding subsidies for agricultural purposes, agricultural market predictions and precision farming.

The project uses Sentinel 2 system data supported by national LPIS (Land Parcel Information System) data. This workflow will serve not only as a practical tool but as a scientific platform as well. That will allow us to improve the methodology in the future and extend the range of applications.

Judges' Comments:

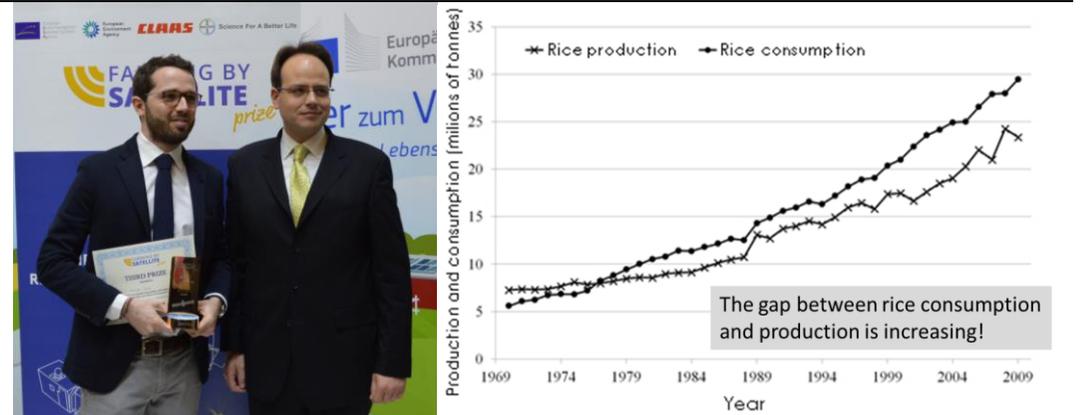
TTT solutions is a very strong team, comprising software, sensing and environmental specialists and they made great use of Sentinel satellite data. We noted the excellent teamwork which looks beyond the existing regulation to make sure that a larger agricultural community can benefit from it. Their project will improve the control capabilities of government regarding subsidies for agricultural purposes, agricultural market predictions and precision farming.

Third Place

Ambrogio Zanzi (Glorify) – Italy

GIS solutions Consultant

Title of Entry: A new forecasting system for rice production



About Ambrogio Zanzi:

Ambrogio Zanzi holds a bachelor and a master degree in agricultural science both from Università degli Studi di Milano (Italy).

He graduated magna cum laude with a dissertation on the development of a new crop forecasting system – the subject of this entry – to foresee both quantitative and qualitative aspects of rice harvest. Then, he completed his studies at University of Massachusetts Amherst (USA). He is currently working as a consultant for his family company all over Italy promoting the use of GIS solutions into the fields of arboriculture and urban environmental management. Moreover, he has been involved in different European founded projects regarding environmental protection and agricultural working safety, such as the Interreg project “Pro Arbora” and the Erasmus Plus project “Vet Safety”.

Mentor: Dr. Giovanni Cappelli

About his Entry:

Glorify is a new forecasting system that combines earth observation and crop modelling to provide estimates of the rice production both on quantitative and qualitative aspects. It has been tested in the Northern Italian rice district considering as quality variable the Head Rice Yield (HRY) – one of the main determinants of rice market price – with encouraging statistical results.

Applying this combined forecasting method to different crops, it can be possible to have more reliable prevision of the agricultural performance under different conditions, allowing authorities to better control and foresee agricultural production.

Judges' comments:

Ambrogio Zanzi presented a solid approach to mathematical modelling to a high academic standard. His idea focusses on rice, a highly relevant crop that feeds the world, but one that we don't tend to see in European precision agriculture applications. He has proven his concept in Italy, but it could apply to other regions of the world.

Special Africa Prize Winners

Shamballite – Kenya

Environmental Engineers and Lawyers

Title of Entry: A Mobile and Satellite based Farm Information System



About Shamballite:

Catherine (left) is an environmental lawyer and sustainability enthusiast with a Bachelor of Law (LL.B) from the University of Nairobi and a MSc. in Environmental Governance at the University of Freiburg. She works at a renewable energy company, undertaking land securing; social economic and environmental impact assessments: and other aspects of project development.

Stephen (middle) is an alumnus of Jomo Kenyatta University of Agriculture and Technology where he gained knowledge in both agriculture and technology. As a Civil Engineer, he has a keen interest in water resources, environmental engineering and farming. He is currently involved in design of wastewater recycling plants in Nairobi.

Abe (right) is a Geospatial Engineer who works in the spatial Industry with interests in energy, entrepreneurship and diverse environmental matters. He has worked with various agencies that deal with environmental related issues and in local engineering projects. He hopes to provide solutions to problems faced by Kenyan and African people.

About Their Entry:

The lack of timely and actionable information is a major challenge to many farmers. Our idea envisions the gathering of information from terrestrial measurements, airborne sensors and satellite-based systems, to benefit farmers from an information access system. The proposed solution leverages on mobile technology to provide farmers with real-time information on rainfall, soil fertility, crop health, best crops to plant and markets, using satellite technologies. Information will be communicated to farmers through mobile platforms, allowing them to make timely decisions. This technology will enable data collection, prediction and integration as a tool for improved agriculture production.

Judges' comments:

Team Shamballite presented their idea on a farmer information service very clearly. The concept had been very well thought through and addresses many issues that farmers in Kenya and the rest of Africa face with a very simple solution. Their concept works by processing NDVI satellite data and soil analysis data and then providing recommendations to farmers in real time. We also liked how their team members had a range of backgrounds, including; environmental engineers and an environmental lawyer.

The prize



About the Prize

The prize is an initiative of the European GNSS Agency (GSA), the EU agency responsible for European satellite navigation activities, and the European Environmental Agency, who provide sound and independent information on the environment for decision makers and the public. The prize is sponsored by CLAAS, a leading manufacturer of agricultural engineering equipment, and crop protection experts Bayer CropScience. It ran for the first time in 2012. This is the third issue of the prize.

The aim of the competition is to promote the use of satellite technologies in agriculture and its benefits to end users and the environment.

Entrants must be under the age of 32 and can take part as individuals or as a team. They can submit case studies of trials, or new ideas and innovations, particularly those relying upon European Geostationary Navigation Overlay Service (EGNOS), the forthcoming GALILEO system and COPERNICUS (the European Earth Observation Programme).

The winning team/individual receives €5,000. Second and third placed teams/individuals will receive €3,000 and €1,000 respectively.

There is a Special Africa prize of €4,000 for the best submission to the judges relating to Farming by Satellite in or for Africa.

Statistics

The 3rd Farming by Satellite Prize, promoting the use of satellite technologies in agriculture generated 85 registrations and 45 eligible submissions from 13 European and 8 African countries. From those 45 entries, an independent judging panel selected seven European teams and three African teams to take forward to the final round.

The winners were announced on Monday 23rd January 2017 at 14:00 on the European Commission stand at the International Green Week exhibition in Berlin.

Additional information:

UK consultancy Helios has been contracted to manage the Farming by Satellite Prize. For further information about the prize please contact Andrea King from Helios on +44 1252 451 651 or email: info@farmingbysatellite.eu

Leaflet download link:

http://www.farmingbysatellite.eu/fileadmin/downloads/Farming_by_Satellite_Prize_Leaflet_2016.pdf

About the European GNSS Agency (GSA) – www.gsa.europa.eu

As an official European Union Agency (EU), the European GNSS Agency's (GSA) mission is to support EU objectives and achieve the highest return on Europe's investment in global navigation satellite systems (GNSS) both EGNOS and Galileo, in terms of benefits to users and economic growth and competitiveness, by:

- Designing and enabling services that fully respond to user needs, while continuously improving the European GNSS services and Infrastructure;
- Managing the provision of quality services that ensure user satisfaction in the most cost efficient manner;
- Engaging market stakeholders to develop innovative and effective applications, value-added services and user technology that promote the achievement of full European GNSS adoption;
- Ensuring that European GNSS services and operations are thoroughly secure, safe and accessible.

For further information about the GSA contact: com@gsa.europa.eu

About the European Environment Agency (EEA) - www.eea.europa.eu

The EEA is an agency of the European Union tasked with providing sound, independent information on the environment. It is a major information source for those involved in developing, adopting, implementing and evaluating environmental policy, and also for the general public. The EEA's mandate is:

- To help the Community and member countries make informed decisions about improving the environment, integrating environmental considerations into economic policies and moving towards sustainability;
- To coordinate the European environment information and observation network.

Proper management of environment and cultural heritage needs amongst other timely and accurate information on land cover and land cover changes, which is why the EEA is also in charge of the implementation of the land monitoring service of Copernicus: <http://land.copernicus.eu/> , and of the Copernicus in situ data coordination.

For further information about EEA contact: info@eea.europa.eu

About Farming by Satellite Prize –

The competition will promote the use of GNSS and earth observation in agriculture, the reduction of environmental impacts, and benefit to end-users. Entries must therefore clearly demonstrate how the use of GNSS is either a) already realising significant benefits to users or b) could enable new innovative services in the near future.

Particular attention should be paid to the additional value offered by:

EGNOS in providing a free-to-air higher accuracy augmentation to Global Positioning System (GPS) to about one metre, access to integrity data which validates the signals transmitted by GNSS satellites along with alerts in near real time (less than six seconds) of any shortcomings in the reliability of the positioning signals and benefits from accurate and reliable synchronisation with Universal Time Coordinated (UTC).

Galileo, the new European satellite service starting at the end of 2016, providing a highly accurate, guaranteed global positioning service under civilian control. It is interoperable with GPS and Glonass, the US and Russian global satellite navigation systems. By offering dual frequencies as standard, Galileo is set to deliver real-time positioning accuracy down to the metre range.

Copernicus, the European system for monitoring the earth from space, which is operational since 2012 and which processes satellite observations into information services in six thematic areas: land, marine, atmosphere, climate change, emergency management and security. Coverage is global, pan-European or local depending on the nature of the service.

www.farmingbysatellite.eu

Types of entry

Entries may take any of the following forms:

1. Success stories about the application of GNSS, earth observation and precision agriculture, or new ideas and innovations, including for example:
 - Precision agriculture
 - Soil, vegetation, disease and yield mapping
 - Traceability of products
 - Environmental management
2. Technical proposals for equipment/software/systems
3. Applications for small producers and/or cooperative groups
4. Wide area application of GNSS in agriculture, forestry, fisheries and the improvement of their environmental impacts.

The entry must be supported by references and justification for values used. Entries must be submitted by 15 December 2016.

All entries must include a form of presentation suitable for the prize awarding event. Shortlisted entries will be expected to present their ideas using an MS PowerPoint or Open Office Impress slideshow, prior to the final decisions from the judges.

Some examples of entries received for previous editions of the Prize included:

Integrated Farm Management Data and Information System	Soil electrical conductivity mapping
Mobile Sample Collector	Minimising soil compaction through analysing weather patterns and water levels
Virtual Pastures	Gamification of erosion prevention strategies
Zero Draught and Scatter Robotic Seed Establishment	Nitrogen sidedressing in seed potatoes based on reflectance measurements and an advice system
Total Field Management Programme	Agricultural decision support systems for a country/state
Vitismart: Digital Maps for limited-size vineyards	Livestock e-surveillance system
Agroplanning: Integrated Precision Farming	A system to manage aerial spray drift of agrochemicals
Advanced GPS guidance	Integrating predictive analytics for decision making
Accurate monitoring of the machinery movement	Harnessing satellite information to establish the most effective yearly migration route for beehives while assessing the bee pastures' carrying capacity
Active sprayer boom levelling	
A satellite aided bale collection system	
Smart irrigation systems	

Who is eligible?

The competition is open to all students and young people below the age of 32 studying or resident in any of the following countries: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lichtenstein, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom.

Additionally, entries from African countries (either independent or with partners from the above countries) will be accepted for the 2016 Prize. A special prize will be awarded to ideas or applications relating to farming by satellite in African regions.

Individual or team entries are welcomed. A team may comprise up to 4 people.

About EGNOS and Agriculture:

EGNOS is essentially Europe's 'pre-Galileo' system, its first concrete venture into satellite navigation. EGNOS delivers services based on GPS and GLONASS signals, providing augmentation signals re-transmitted by geostationary satellites and a network of ground stations.

EGNOS represents a European solution for the Satellite-Based Augmentation System (SBAS). There are also other SBAS systems in the world, e.g. Wide Area Augmentation System (WAAS) in the USA. EGNOS augments the two satellite navigation systems now operating, the US GPS and Russian GLONASS systems. Crucially for agriculture, EGNOS also increases the accuracy of existing satellite positioning services to about one metre or better.

Precision agriculture refers to the use of satellite navigation sensors, aerial images, and other tools to determine optimum sowing density, fertiliser cover and other inputs. It also refers to the use of GNSS for supporting machine guidance, virtual fencing, and land parcel identification. These techniques allow farmers to save money, reduce their impact on the environment and increase their productivity. EGNOS can offer an affordable precision solution.

EGNOS can support:

- Variable ploughing, seeding and spraying – Variable Rate Technology (VRT)
- Tractor guidance
- Individual livestock positioning
- Virtual fencing
- Land parcel identification and geo-traceability
- Post-harvest pick-up
- Supervised livestock tracking
- Field measurement
- Field boundary mapping and updating

EGNOS will help to:

- Enhance precision
- Eliminate waste and over-application of fertilisers and herbicides
- Save time
- Reduce fatigue
- Extend equipment lifetime by optimising its use
- Provide geo-traceability
- Optimise crop yields
- Increase profit margins

www.egnos-portal.eu/discover-egnos/about-egnos

www.egnos-portal.eu/agriculture-sector

About Galileo

Galileo is a satellite system currently being built by the EU aiming to be the single European GNSS. Up to now, GNSS users in Europe have had no alternative other than to use American GPS or Russian GLONASS satellite signals. Yet the military operators of these systems can give no guarantee to maintain uninterrupted service.

Meanwhile, satellite positioning has already become the standard and essential tool for navigating and related applications. As the use of satellite navigation spreads, the implications of signal failure increase, jeopardising not only the efficient running of transport systems, but also human safety.

By being interoperable with GPS, Galileo aspires to be a new cornerstone of GNSS. This worldwide system will henceforth be under civilian control. And with its full complement of satellites, more than the current GNSS systems, Galileo will allow positions to be determined accurately even in high-rise cities, where buildings obscure signals from today's satellites.

Galileo will also offer several signal enhancements making the signal more easy to track and acquire and more resistant against interference and reflections.

By placing satellites in orbits at a greater inclination to the equatorial plane, Galileo will also achieve better coverage at high latitudes, making it particularly suitable for operation over northern Europe, an area not well covered by current GPS signals.

www.gsa.europa.eu/galileo/why-galileo

About Copernicus

The European Earth Observation programme is an initiative led by the EU. The coordination and management of the Copernicus programme is ensured by the European Commission.

Copernicus consists of a complex set of systems which collects data from multiple sources (Earth observation satellites and in situ sensors such as ground stations, airborne and sea-borne sensors), processes these data and provides users with reliable and up-to-date information. Some of these systems and data sources already exist today, as well as prototype services, but many developments are still required in all domains.

Policymakers and public authorities - the major users of Copernicus - use the information to prepare environmental legislation and policies with a particular focus on climate change, monitor their implementation and assess their effects. Copernicus also supports the critical decisions that need to be made quickly during emergencies, such as when natural or man-made catastrophes and humanitarian crises occur.

Users will be (and to a certain extent are already) provided with information through services dedicated to a systematic monitoring and forecasting of the state of the Earth's subsystems. The following six thematic areas are developed:

- Land monitoring
- Marine monitoring
- Atmosphere monitoring
- Emergency management
- Security
- Climate change

www.copernicus.eu

About Copernicus Land Monitoring

The objective of the Copernicus Land monitoring service is to provide land cover information to users in the field of environmental and other terrestrial applications. Information priorities are defined by the results of consultations with stakeholders and of user communities. Final priorities and their relevance to users are validated by the European Commission with the advice of the Copernicus User Forum.

The Land monitoring service focuses on the priority for multi-purpose information common to a large community of users. Four components have been identified:

- pan-European land cover, land cover change and land cover characteristics;
- a 'global' component producing biophysical variables at global scale;
- a 'local' component providing very high resolution information on specific areas of interest; and
- access to a reference data building on INSPIRE¹ architecture and useful for several Copernicus services.

www.land.copernicus.eu

¹ Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)