



*Operational tools in
forestry using remote
sensing techniques*

Programme

<http://forestsat2010.usc.es>

*7 – 10th of September,
Lugo and Santiago de Compostela*

Monday, 6th of September 2010

6pm Opening session - Registration



8pm Reception and buffet. Poster Session

Tuesday, 7th of September 2010

8.30am Registration

Official opening of the conference (Main Hall)

ROOM A

- 9am
- D. Juan J. Casares Long, Rector Magnificus of the University of Santiago de Compostela
 - D. José López Orozco, Mayor of the city of Lugo
 - D. Samuel Juárez Casado, Regional Minister of Rural Affairs, Xunta de Galicia
 - D. José Ramón Gómez Besteiro, Lugo County Council President

10 - 11am Exhibitions -Poster Session

11 - 11.20am Coffee break



FORESTRY MAPPING AND CARTOGRAPHIC APPLICATIONS

- ROOM A
- involvement in the GMES service element for forest monitoring
Stefanie Linser, Jo Van Brusselen, Gernot Ramminger
 - DRUID: new opportunities for earth-observation and IT tools in support of the forest-based market
Ana Sebastián, David De La Fuente, Anne Lönnqvist, Yrjö Rauste, Tuomas Häme, Hanna Paroianen, Guillermo Fernández
 - KNN-Sweden - Current map data on Swedish forests
Mikael Egberth, Mats Nilsson
 - An open source-based Web-GIS system for the creation of forest management units
Francisco Ónega, Dorinda Sarmiento, David Miranda, Rafael Crecente, Juan Porta, José Carlos Toucedo, Jorge Parapar, Juan Touriño, Ramón Doallo
 - Production and application of a K-NN based forest map
Arnt Kristian Gjertsen, Jan-Erik Nilsen, Birger Vennessland

BIOMASS (I)

- ROOM B
- Radiometric calibration of images from digital photogrammetric cameras to estimate biomass
Flor Álvarez, Jose Ramón Rodríguez Pérez, Vicente del Blanco
 - Knowledge-based classification of very high spatial resolution remote sensing data for a model of organic carbon stocks in riparian forest soils
Leonhard Suchenwirth, Michael Förster
 - Assessing biomass in *Eucalyptus globulus* plantations in Galicia using different LiDAR sampling densities
Eduardo González Ferreiro, Ulises Diéguez Aranda, Luis Gonçalves Seco, Rafael Crecente, David Miranda
 - Biomass estimates by satellite data and ground measurements
Gherardo Chirici, Piermaria Corona, Marco Marchetti, Daniela Tonti, Davide Travaglini
 - Mapping the biomass of Gola forest reserve in Sierra Leone with remote sensing data and neural networks
Gaia Vaglio Laurin, Qi Chen, David Coomes, Fabio del Frate, Giorgio Antonino Licciardi, Jeremy Lindsell

1pm **Keynote Speaker:** *Pedro Duque, Director General of DEIMOS Imaging, S.L (Spain)*

1.30 - 3pm Lunch



RISK MANAGEMENT (I)

- ROOM A
- The use of Rapideye data for fuel type mapping
Vasileios Kalogirou, Chiara Solimini
 - Intercomparison of satellite-derived burned area products. An application to the Galician forest fires occurred in 2006
Federico González Alonso, Margarita Huesca, Silvia Merino de Miguel, José Miguel Cuevas
 - Water stress detection in a Mediterranean conifer forest under decline based on the Photochemical Reflectance Index (PRI)
Rocío Hernández Clemente, Rafael Navarro Cerrillo, Pablo Zarco Tejada, Lola Suárez, Jose Enrique Frieyro de Lara, Antonio Hayas López
 - Forest fire risk mapping in Poland using MODIS data
Edyta Wozniak

GMES Forest user session

Tim Green^a, Jo van Brusselen^a, Stefanie Linser^b and Nuria Blanes^c (European Forest Institute^a, Austrian Environmental Agency^b and ETCLUSI-UAB^c)

ROOM B

Coffee break

5 - 5.30pm

VEGETATION TYPES

- ROOM A
- Estimation of *Acacia tortilis* tree attributes in Bou-Hedma, Tunisia: an object-based approach
Frieke Van Coillie, Kevin Delaplace, Robert De Wulf, Donald Gabriels, Koen De Smet, Mohammed Ouessar, Azaïez Ouled Belgacem, Houcin Taamallah
 - Using aerial photographs and VHR satellite data as an auxiliary information in airborne LiDAR-based estimation of species-specific forest characteristics
Jussi Peuhkurinen, Susana González, Jaakko Ketola
 - A mixed pixel-object approach for mapping priority habitats using IRS-LISS III imagery and ancillary data
Rubén Valbuena, Juan Suárez, Daniel McInerney, Francisco Mauro
 - Potential and limits of multispectral airborne digital sensor (ADS40 / 80) data for large-area tree species classification
Lars Waser, Christian Ginzler, Meinrad Küchler
 - A high resolution PAN-European forest type map based on multispectral and multi-temporal remote sensing data
Pieter Kempeneers, Fernando Sedano, Lucia Seebach, Jesus San Miguel Ayanz
 - Tree species classification using full-waveform airborne laser scanning data based on a two-stream radiative transfer model
Gábor Molnár, Lothar Eysn, Markus Hollaus, Norbert Pfeifer

BIOMASS (II) // ECOLOGY AND BIODIVERSITY

- ROOM B
- The relationship between dual polarization PALSAR data and forest biomass in a peat swamp forest affected by drainage from canals in Central Kalimantan
Tomoaki Takahashi, Yoshio Awaya, Yoshiyuki Kiyono, Hideki Saito, Suwido Limin, Masanobu Shimada, Nengah Surati Jaya, Buce Saleh, Sen Nishimura, Tamotsu Sato, Jumpei Toriyama
 - Allometry between crown area and stem diameter and above-ground biomass estimation in mangrove forests derived from high-resolution satellite data
Yasumasa Hirata, Ryuichi Tabuchi, Pipat Patanaponpaiboon, Sasitorn Poungharn, Reiji Yoneda, Yoshimi Fujioka
 - Fragmentation and connectivity analyses of African forest protected areas
Florian Gollnow, Christine Estreguil, Grégoire Dubois, Philippe Mayaux, Giovanni Caudullo
 - Using Landsat time series stacks and a vegetation change tracker to map young forest habitats
Mark Nelson, Kirk Stueve, Charles Perry, Dale Gormanson, Chengquan Huang
 - Objects based image analysis for mapping Natura 2000 sites to improve forest management
Ana Hernando, Javier Velázquez, Rosario Tejera, Santiago Saura
 - 3D wildlife corridor mapping based on airborne laser scanning data
Werner Mücke, Markus Hollaus

PLENARY SESSION 7.30pm

Conclusions of GMES Forest user Session

7.45pm

Galician wine (Protected Designation of Origin) and appetizer courtesy of the Regional Minister of Rural Affairs



8.30am

Keynote Speaker: Ross Nelson, Biospheric Sciences Branch, NASA/Goddard Space Flight Center (USA)

PLENARY SESSION

ROOM A

REDD APPLICATIONS

GSE FM REDD pilot project developments in the Congo basin region

Thomas Haeusler, Sharon Gómez, Rene Siwe, Gernot Ramming, Joseph Amougou

9.30am

Estimation of above ground biomass across forest types at different degradation levels in central Kalimantan (Borneo) using LiDAR and field inventory data

Karin Kronseider, Uwe Ballhorn, Florian Siegert

Operational optical multi-temporal global tropical forest monitoring

Owen Hawkins, Heiko Balzter, Kevin Tansey, Katarzyna Wisniewska, Zeger de Groot, Stephen Mackin, Katarzyna Kozan

Applying remote sensing techniques and field inventories to estimate carbon emission from forest degradation the REDD Cameroon pilot project

René Siwe, Gernot Ramming, Sharon Gómez, Joerg Seifert Granzin, Armathé Amougou



Coffee break

10.50 - 11.20am

3D ANALYSIS

ROOM A

REE3D. A completed solution for forest inventory using terrestrial laser scanner

Manuel de la Calle, Diego Gómez Deck, Juan Carlos Giménez Fernández, Antonio Blanco

Height characterisation in a UK forest using multi-temporal airborne and terrestrial laser scanning

Vishal Bandugula, Mark Danson, F. Alberto Ramirez, Richard P. Armitage, Rachel Gaulton

The Salford advanced laser canopy analyser (SALCA): a full waveform, multispectral, terrestrial LiDAR for improved vegetation characterisation

Mark Danson, Rachel Gaulton, Guy Pearson, Philip E. Lewis, Mathias Disney

Global 3D forest structure mapping with Tandem-L: monitoring the earth's dynamics

Florian Kugler, Irena Hajnsek, Kostas Papanastasiou, Gerhard Krieger, Alberto Moreira

The stem location mapping from single scan TLS using automatic detection and manual edition

Xinlian Liang, Harri Kaartinen, Juha Hyypä, Paula Litkey

Estimating forest stand variables using 3D data from the Z/I DMC system

Jonas Bohlin, Jörgen Wallerman, Johan E.S. Fransson

REED structure mapping in airborne laser scanning data

Werner Mücke, Markus Hollaus, Christian Briese

MODELLING (I)

ROOM B

New approach to estimate forest canopy indices from digital hemispherical images

Mait Lang, Ave Kodar, Ülle Püttsepp

Estimation of biophysical parameters in a Mediterranean conifer forest under decline using AHS airborne imagery

Rocío Hernández Clemente, Rafael Navarro Cerrillo, Pablo J. Zarco Tejada, Lola Suárez, Jose Enrique Frieyro de Lara, Antonio Hayas López, Guadalupe Sepulcre Canto

Histogram matching for calibration of KNN stem volume estimates

Michael Gilichinsky, Janne Heiskanen, Andreas Barth, Jörgen Wallerman, Mikael Egberth, Mats Nilsson

Co-registration and checking of LiDAR models by land surveying measurements

Cristina Pascual, Luis Gonzaga García Montero, Lara A. Arroyo, Susana Martín Fernández, Antonio García Abril, Irene Toro, Esperanza Ayuga, Concepción Martínez

Bootstrap approaches to inference for satellite image-based maps

Ronald E. McRoberts

Natural landscape features detection and woodland stock extraction by multisource remote sensing data: the new role of high resolution SAR and large scale DSM

Daniele Biscontini, Filippo Britti, Roberto Ligi, Giulio Monaldi, Livio Rossi

The evaluation of densities of forest mass employing high resolution digital images (Quickbird) through the identification of local maxima at digital numbers

Eduardo Corbelle, María Luz Gil, Juan Ortiz

PARALLEL SESSIONS

11.20am

1.40 - 3pm

Lunch



MONITORING (I)

ROOM A

Laser polarimetry for forestry applications: ALOS and RADARSAT-2 studies in Canada

Shane Cloude, Armando Marino, David Goodenough, Hao Chen, Ashlin Richardson, Belaid Moa

Forest monitoring with interferometric X-band SAR

Svein Solberg, Rasmus Astrup, Dan J. Weydahl, Erik Næsset, Terje Gobakken, Ole Martin Bollandsås

Mountainous vegetation change quantification by using surface landscape metrics in lancang watershed, Yunnan province, China

Zhiming Zhang, Robert De Wulf, Fricke van Coillie, Eva M. de Clercq, Xiaokun Ou

Monitoring forest degradation with Rapideye data in central Kalimantan

Jonas Franke, Peter Navratil, Markus Mitterer, Vanessa Heinzl, Florian Siegert

The global forest remote sensing survey

Rémi D'Annunzio, Adam Gerrand, Erik Lindquist, Mette Løyche Wilkie

Enhancing post-classification change detection using morphological analysis: a study of 1990 and 2000 forest cover changes in Denmark

Lucia M. Seebach, Peter Strobl, Peter Vogt, Jesús San Miguel Ayanz, Annemarie Bastrup Birk

RISK MANAGEMENT (II)

ROOM B

Blending of Landsat and MODIS imagery to generate a high spatial and temporal resolution sequence of stand-replacing disturbance events for western Alberta, Canada

Rachel Gaulton, Thomas Hilker, Michael Wulder, Nicholas Coops, Gordon Stenhouse

Mapping paludification attributes of northern Canadian boreal forests using PALSAR, RADARSAT-2 and Landsat satellite imagery

André Beaudoin, Philippe Villemare, Luc Guindon, Osvaldo Valeria, Ahmed Laamrani, Pierre Bernier, Michèle Bernier Cardou

Early cartography of burned areas by means of MODIS indexes and active fire data

Carmen Recondo González, Federico González Alonso, Adán Abajo Chic, Juan José Peón García, Ástor Rodríguez Quevedo, Víctor Salgado González

XERRAC - A software for the application of LiDAR to forest fire risk and fuel maps analysis

Miguel Fabra Crespo, Blas Mola Yudego, Jose Carlos Garcia González, J. Alejandro Poveda López

A novel approach to fire detection and characterisation using optical remote sensing

Jose L. Gómez Dans, Philip Lewis, Mathias Disney, Martin Wooster, David Roy

PARALLEL SESSIONS

3pm



Coffee break

5 - 5.30pm

PLENARY SESSION

ROOM A

REDD Round Table (Main Hall)

Chair: **Ronald McRoberts, U.S. Forest Service (USA)**

Introduction: Delivering UN-REDD carbon accounting and reporting systems

5.30pm

THEMES

- Construction of a definition for "forest degradation" and determination of methods for objectively assessing and reporting degradation.
 - Development of sampling and estimation designs.
 - Work on remote sensing-base change detection.
- Development of methods that accommodate the IPCC Good Practice Guidelines for managing, reducing, and reporting uncertainty.
 - The need to create a Global Forest Observatory.

9.30pm

Official Conference Dinner



9am **Keynote Speaker: Manuel Gallego, Deputy Director of SITGA (Spain)**

FOREST INVENTORY

MODELLING (II)

PARALLEL SESSIONS

ROOM A

ROOM B

9.30am

Crown-fibre attribute relationships for Canadian forest inventories
Art Groot, Doug Pitt

Using sample plot databases to reduce the cost of field campaigns in LiDAR based forest inventory
Virpi Junttila, Tuomo Kauranne

Mapping large areas of northern boreal forest using satellite images at several scales
Antoine Leboeuf, Richard Fournier, André Robitaille

Airborne waveform LiDAR for estimation of forest structure
Francesco Pirotti

The effects of rectification and Global Positioning System errors on satellite image-based estimates of forest area
Ronald E. McRoberts

Estimating LAI and height using LIDAR on pine forests in southern Spain
Rafael Navarro Cerrillo, Rocío Hernández Clemente, Raquel Gómez, Alfonso García Ferrer, Manuel Sánchez de la Orden

Quality control of digital elevation model generated with LiDAR technology
Laura Barreiro Fernández, Eduardo González Ferreiro, Eduardo Corbelle Rico, Sandra Buján Seoane, David Miranda

Regression techniques and neural networks for estimating LAI from remote sensing data: an application case using forest-BGC
Leónia Nunes, Carmen Hernandez, Miguel Veganzones, Margarida L. R. Liberato, Manuel Graña, Domingos Lopes

Sensor and target effects on LiDAR simulation of forest structure
Jacqueline Rosette, Peter North, Juan Suárez, Jeremy Rubio, Jon Ranson, Bryan Blair

Robust canopy matching using local shape analysis
Ruedi Boesch, Christian Ginzler, Zuyuan Wang

Coffee break

11 - 11.30am

PARALLEL SESSIONS

ROOM A

ROOM B

11.30am

MONITORING (II)

FOREST PLANNING //LAND COVER

Medium spatial resolution satellite data for detecting new deforestation frontiers in the Brazilian Amazon
Lorena Hojas Gascon, Hugh D. Eva, Dario Simonetti, Oliver Arino

Change detection by the IR-MAD and Kernel-MAF methods in Landsat TM data covering a Swedish forest region
Allan A. Nielsen, Håkan Olsson

Recent developments in wall-to-wall monitoring of Russian forests using high-resolution optical and radar space imagery
Alexander Maslov

Assessing the accuracy of maps derived from new time-series approaches for monitoring forests with Landsat data
Warren B. Cohen, Zhiqiang Yang, Robert Kennedy, Chengquan Huang

National forest inventory update using the medium resolution optical satellite images from the ESA archive
Juan Suárez, Christine Brown, Iain Bye

Using the spatio-temporal patterns of forest change patches to diagnose forest change type
Karen Schleeweis, Samuel N. Goward, Chengquan Huang, Nancy Thomas

Designing a specific forest planning instrument from LiDAR data using linear programming techniques
Javier Pasalodos, David Miranda, Ulises Diéguez, Eduardo González

Using SPOT satellite data time series for locating plantations in need of pre commercial thinning of deciduous shrubs
Håkan Olsson, Anders Persson, Lars Björk, Mats Rosengren

Forest cover map of continental south east Asia based on the segmentation of medium spatial resolution satellite data of 2009-2010
Lucia Morales Barquero, Hugh Douglas Eva, Hans Juergen Stibig

Extraction of rural tree cover from high-resolution imagery using independent component analysis
Greg C. Liknes, Dacia M. Meneguzzo, Mark D. Nelson

Land cover classification of forest areas using LiDAR and spectral data
Laura Barreiro Fernández, Jorge García, Eduardo González Ferreiro, Sandra Buján Seoane, Luis Gonçalves Seco, David Miranda

1.30 - 3pm

Lunch

3pm

Keynote Speaker: Ronald Eastman, Professor of Geography and Director of the Clark Labs and the IDRISI Project at Clark University (USA)

PLENARY SESSION

ROOM A

4 pm

Sensors / Industry Round Table (Main Hall)

Chair: **Juan Suárez, Forest Research (UK)**

Industry will have the opportunity to do a short presentation about:

- The way it sees the future of the remote sensing industry applied to forest management.
- The developments that each one of the participants have in the pipeline for the next 5-10 years. This includes investment on R&D+I, links with universities and research organizations, research programmes and available funding.
- The role of industry in major international projects like REDD, GMES, GEOSS, etc...
 - Education programmes for students.
- Available sensors and how industry is responding in terms of tools, training, integration to GIS, etc...
- Level of collaboration with other businesses, partnerships, joint ventures, etc...

6pm

Conference reflections and conclusions
Official close of the conference (Main Hall)

Friday, 10th of September 2010

8.30am Leave Lugo-Santiago de Compostela

11am Guided tour of cathedral roofs

12.30pm Gastronomy Tour



Lunch - O 42 Restaurant

2.15pm

5pm University Heritage Tour

6.30pm Return Santiago de Compostela - Lugo



A probabilistic framework for inverting leaf reflectance data using the prospect model

Jose Gómez-Dans, Mathias Disney, Philip Lewis

An estimation of forest cover using remote sensing derived forest maps. A case study based on Czech Nfi ground truth data

Radim Adolt, Filip Hájek

Analysis of classification algorithms of LiDAR data for the estimation of understory parameters in different forest types

Víctor Zaldo, Gerard Moré, Xavier Pons

Assessment of bioenergy potential from European forests using a spatially explicit method

Katja Gunia, Jo Van Brusselen, Sergey Zudin, Steffen Fritz, Hannes Böttcher

Assessment of fire risk employing AVHRR satellite images. Case study: Galicia (Spain)

María Luz Gil, Ana Caudevilla, Teresa Rego

Biomass estimation as function of vertical forest structure and forest height. Potential and limitations for Remote sensing (RADAR and LiDAR)

Astor Toraño Caicoya, Florian Kugler, Irena Hajnsek, Kostas Papathanassiou

Changes of mangrove seaward margin in Camau Cape

Van Tran Thi, Tamara Van Dam, Phong Doan Ha, Nico Koedam

Comparison of six classification approaches based on hyperspectral data to discriminate tree species in a temperate mixed pine forest

Fabian Faßnacht, Holger Weinacker, Barbara Koch

Description of the anisotropic reflectance characteristics of forest cover types observed by a digital aerial frame camera

Tatjana Koukal, Werner Schneider

Determination of burnt areas in the province of Pontevedra (Spain) by multi-temporal analysis of Landsat TM data

María Luz Gil, María José Iniesto, Eva Carreira

Determination of forest variables from LiDAR data by means of a polynomial interpolation method of a geostatistical tool in a geographic information system

Irene Romero-Toro Gascuña, Susana Sastre Merino, Jara Vicente Guillén, Esperanza Ayuga Télléz, Cristina Pascual Castaño, María Jesús García García, Concepción González García, María de los Ángeles Grande Ortíz

Estimating moose habitat and abundance from satellite-derived indicators across the province of Ontario, Canada

Jean-Simon Michaud, Nicholas C. Coops, Margaret E. Andrew, Michael A. Wulder, Glen S. Brown

Fire and biodiversity: monitoring wildfire effects over biodiversity conservation in Galicia (NW Iberian Peninsula)

Susana Martínez, Pablo Ramil, Belén de Novoa, Ramón Díaz, Javier Ferreiro, Boris Hinojo, Marco Rubinos, Carmen Recondo, Carlos Cabo, Xurxo Dorrego

Forest attribute estimation using ASTER data and KNN algorithm

Shaban Shataee, Syavash Kalbi, Asghar Fallah, Dieter R. Pelz

Forest fire detection and forecasting

Miguel Ángel Almoril, José-Luis Casanova, Francisco Regodón, Julia Sanz, Enrique Onrubia, Abel Calle, Javier del Campo, Pablo Salvador

Hyperspectral versus multispectral data for estimating leaf area index and chlorophyll concentration in *Pinus sylvestris* and *P. nigra* plantations in southern Spain

Rafael Navarro-Cerrillo, Rocío Hernández-Clemente, Jose Enrique Frieyro de Lara, Antonio Hayas-López



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2010

Increasing the accuracy of tree height estimation in a tropical forest from Landsat ETM+ data through using super-resolution analysis

Doreen S. Boyd, Anuar Muad, Giles M. Foody, Ross A. Hill, Chris Hopkinson

Leaf area index measurements and mapping of forest canopies in Valeri Estonian test site in Järvselja

Ave Kodar, Mait Lang, Tiit Nilson

LiDAR and aero photo data processing that corresponds to Latvian forest inventory data structure and quality requirements

Ingus Šmits, Gints Prieditis, Salois Daģis, Dagnis Dubrovskis

Management of hydrologic-forest restoration areas through the integration of data from remote sensing, geographical information systems and Global Positioning Systems (GPS)

María José Iniesto, Mariluz Gil, Pablo Carballo, María Fernandez

Map-based assessments of threats to forest sustainability

Ronald E. McRoberts, Susan M. Stein, Lisa G. Mahal

Mapping forest fire fuel types in Tenerife Island using ASTER data

Alfonso Alonso-Benito, Manuel Arbelo, Pedro Hernández-Leal, Alejandro González-Calvo

Modelling aboveground NPP of portuguese forest, at regional scale, using field inventory data and NDVI from Landsat 5 TM, MODIS and SPOT vegetation imagery

Helder Viana, Domingos Lopes, José Aranha

New way of teaching remote sensing in forestry: online delivery of courses

Brigitte Leblon, Armand Larocque, María Luz Gil

Operator variability in remote sensing image analysis

Soetkin Gardin, Frieke M.B. Van Coillie, Robert R. De Wulf, Sébastien M.J. Van Laere, Frederik Anseel, Wouter Duyck

Pilot investigation of phenology information for forest classification using SPOT VGT NDVI time series

Nicola Clerici, Christof Weissteiner

Radar remote sensing applied to the forest management: measurement of stem volume with bark

David de la Fuente Blanco, José Luis Casanova Roque, Abel Calle Montes, Julia Sanz Justo

Remote sensing based services to monitor vegetation dynamics in Kenya: the Endeleo tool

Flore Devriendt, Robert De Wulf, Josefien Delrue, Lieven Bydekerke, Toon Westra, Christian Lambrechts And Charles Situma

Spatial and temporal study on burned area detection from LTDR V.3 dataset for boreal forests and burned timing analyses compared to MODIS product

Laia Núñez-casillas, José Andrés Moreno Ruiz, Manuel Arbelo

Testing application of LiDAR for the measurement of forest inventory parameters

Blas Mola-Yudego, Miguel Fabra-Crespo, J. Alejandro Poveda-López, Jose Carlos García-González

The use of LiDAR remote sensing for red squirrel habitat mapping in abernethy forest, Scotland, UK

Silvia Flaherty, Genevieve Patenaude, Peter Lurz

Using earth observation data to calibrate a coupled fire and ecosystem model

Jose Gómez-Dans, Martin Wooster, Philip Lewis, Allan Spessa

Using GIS tools in the identification of potential habitats for two endemic birds in south Chilean temperate forests

Roberto Moreno, Juan Ramón Molina, Miguel Ángel Herrera, Ricardo Zamora, Angélica Vasquez

Water stress indexes obtained from satellite data. A case study to estimate forest fire risk

Alejandro González-Calvo, Pedro Hernández-Leal, Manuel Arbelo, Alfonso Alonso-Benito