



Thematic Actions

Coordinating Universities for the Proposal: UCM and UPM

Title of Action	Creating a Remote Sensing and Monitoring Laboratory		
Participating partners	UCM-CSIC, UPM, UCM	Other participants	IGN, IGME, CSIC (MNCN); GMV; EADS, INTA, CIEMAT, AEMET, Ministry of the Environment and Civil Protection
Personnel involved (indicate institution)	UCM-CSIC (IGEO: Department of Earth Dynamics and Earth Monitoring), UCM (Geology, Physics, Mathematics, Biology, Pharmacy), UPM (School of Telecommunications Engineering, Aeronautics, Mines, Forestry, Agronomists, Civil Engineers, Institute of Microgravity).		
Start date	2010	End date	2013
Cluster	Global Change and New Energies	Other clusters	
Areas of action	Research / Teaching Improvement and EHEA Deployment / Knowledge Transfer		
Location	UCM-CSIC (IGEO) and UPM (School of Telecommunications/Aeronautics)		
Infrastructures involved			
Keywords	Remote sensing; Space geodesy; Earth monitoring (geosphere, biosphere), data processing.		
Objectives:			
The main goal of this laboratory is to create a facility that is capable of monitoring the Earth's surface using data captured from space and the Earth. Area of interest: Iberian Peninsula, North Africa and Canary Islands.			
Description of the action:			
<ol style="list-style-type: none"> 1. Development of algorithms that use remote sensing data to monitor the Earth's surface (e.g., to classify ground cover, to monitor natural disasters, to study deformations associated with anthropic structures and infrastructures, to identify soil humidity and temperature changes, to study erosion processes, to identify the effects of the anthropic footprint on the biosphere, to study forest fires, etc.). 2. Creation and maintenance of a laboratory (encompassing the Iberian Peninsula, North Africa and the Canary Islands) for monitoring natural hazards (earthquakes, volcanic activity, landslides), studying soil and desertification processes (with special emphasis on their impact on agriculture), studying forest fires and links between surface and deep processes on the Earth. For this purpose, the use of terrestrial and satellite data (GPS, InSAR, etc.) will be combined. 			
Planned key results:			
<ul style="list-style-type: none"> • Obtaining new methodologies for processing, combining and interpreting remote sensing data. • Creation of a facility for monitoring the Earth's surface in Southwest Europe and Northwest Africa. • Development of multi and pluridisciplinary studies (geosphere, biosphere, atmosphere). 			
Rationale for the action:			
The synergy between the UPM and UCM in the remote sensing field is deemed of great strategic value for both universities, because the scientific and technical capabilities of the two universities complement each another. Furthermore, the amount of space data available continues to grow and this type of data will multiply in the near future. Finally, the two universities are home to a large number of internationally renowned research groups that will be able to utilise the results of the remote sensing studies.			



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<p>Annual investment in the European Space Programme is €10,000 M/year, of which Spain provides 8%. These funds are allocated to new satellite missions and to framework R&D programmes that support the processing, analysis and commercialisation of satellite data for increasing knowledge on the active processes that control the Earth's surface.</p> <p>The Mediterranean system is especially sensitive to the global changes that are occurring. It is therefore essential to set up networks for monitoring the most sensitive ecosystems, tracking changes, understanding processes, making predictions and managing the territory.</p> <p>The seismicity of the Ibero-Maghreb area and the volcanic and seismic activity of the Canary Islands make these regions special candidates for investigating the mechanisms that control the active surface processes and for improving the prediction methods through the integration of new techniques.</p>	
<p>International aspects:</p> <p>Numerous research groups of the organisations involved are currently taking part in R&D projects funded by international programmes: European framework programme (FP7), INTERREG IV, GEMS, ESA, IGOS, etc.</p> <p>This laboratory will complement the ESF Eurocores TOPOEUROPE initiative. At present, Spain is the most advanced country in this initiative through the CONSOLIDER TOPO IBERIA project (ICE participants, UCM: Geology, Geophysics, Geodesy, UPM: Mining). It is also participating in the ESA GlobVolcano project.</p>	
<p>Planned impact:</p> <ul style="list-style-type: none">• The project will place the participants in a privileged position in the development of cutting-edge technology applicable to the study of Earth Systems (geosphere, biosphere, atmosphere) and in cooperation with other institutions (scientific institutions, decision-making bodies, companies, etc.).• As a result of the multi-disciplinary collaboration of engineers and scientists from different fields, the project will allow the groups to make great progress in terms of excellence and their level of research. This would be hard to achieve separately and without the proposed cooperation.• Last of all, the proposed partnership will place the Moncloa Campus and Spain at the forefront of R&D in this field.	