CALL FOR HUB 1 ACTIVITIES

Title of the proposed activity: **Applications of the Copernicus satellite (European Space Agency)**

Participant universities:
Universidad Autónoma de Madrid
National and Kapodistrian University of Athens
Universite Libre de Bruxelles
Stockholms universitet

Participant academics (indicating university, department, e-mail) ……
Jose Antonio Rodríguez-Esteban, Dept. of Geography, josea.rodriguez@uam.es
GIS + Remote Sensing (Geospatial techniques); cities in various processes (imperviousness, roofs, vegetation…); dunes, salt marshes, vegetation and cities in desert areas.
Vicente Torres-Costa, Dept. of Applied Physics, vicente.torres@uam.es
Physics and technical fundamentals of remote sensors, sensor development, multi/hyper spectral remote sensing.
Emmanuel Vassilakis, Dept. of Geography & Climatology, evasilak@geol.uoa.gr
Coastal erosion with the use of optical data dense time series; drone VHR imaging for mapping ancient tsunami deposits; terrestrial LiDAR is also available for use in the educational procedure.
Taïs Grippa, Dept. of Geosciences, tais.grippa@ulb.ac.be
Urban geography; Sub-Saharan African cities; GIS and optical remote sensing; Open-source software (QGIS, GRASS GIS); Automated object-based image analysis for VHR imagery (big data); Land use & land cover mapping; Machine Learning and deep learning; Volunteered geographic information (OSM).
Eleonore Wolff, Dept. of Geosciences, Eleonore.Wolff@ulb.ac.be
Urban geography; Sub-Saharan African cities; GIS and optical remote sensing; Object-based image analysis; Land use & land cover mapping.
Ian Brown, Dept. of Physical Geography, Ian.Brown@natgeo.su.se
Synthetic aperture radar, mangrove forests, environmental and climate change.

Kind of activity:

Individual courses
□ Virtual mobility courses/modules
□ Short courses/workshops (1-2 ECTS)
X Summer School
□ Workshops/Days
Terms/semesters
□ Erasmus research exchanges/traineeships

□ Independent projects (e.g. joint supervision of thesis work)
□ Erasmus-term semesters (30 ECTS)
Various
□ **Other** (please elaborate):
Activities within the scope of the Copernicus proposals: hackathons and training sessions

Capacity (total # of participants): **10-25**

Brief description of the activity (Aims and Scopes, content, etc.):

Remote sensors are an essential tool for the global and local study of climate change. But to speak of remote sensors is to deal with a broad set of techniques, ranging from passive to active sensors, and from those that fly at near-surface heights to those that orbit Earth. The objectives of remote sensors are also multiple, from the analysis of land and oceans, to the composition of gases in the atmosphere. For this reason, the project presented is aimed at delving into various techniques, exploiting the specialization the team members have developed in different fields, but without forgetting the overall vision that the Copernicus project offers on climate change. Copernicus is the largest ever European investment in satellite capabilities providing six types of remote sensing satellite and a constellation of global navigation satellite systems (GNSS) that will serve Europe into the 2030s. There is a demonstrable need for Copernicus training within academia and industry as evidenced by the Copernicus Academy Network and related activities of the Copernicus Office of the EU and national actors.

This CIVIS activity will contribute to the advanced training of the next generation of European environmental and Earth scientists providing an insight into the exploitation of the latest geospatial methods. The proposed course will present the students with the global vision that the Copernicus satellites provide on climate change, and at the same time, different remote sensing techniques will be used to perform local studies. Examples will be taken from the research expertise of the participating lecturers. This will lend a diversity to the case studies used whilst maintaining a theme of Copernicus in the service of climate change. Demonstrating the potential of Copernicus for open science, the course will profile tools for monitoring key at-risk regions such as north Africa and the southern periphery of Europe.

Therefore, the proposed summer school will consist on the one hand of lectures given by the participant experts on remote sensing techniques applicable to the study of climate change and related phenomena, and on the other, of using those techniques in practical sessions to perform local studies focused on a different topic each summer school edition. Complementary activities such as visits to institutions or facilities relevant to the course topic are also planned.

It is intended that this summer school be held annually at different participant universities, and each edition be devoted to a different topic.

The research and practicum carried out within this framework at the Autonomous University of Madrid will be held at the Copernicus Laboratory (Dept. Geography[1]). In the same way, a similar facility is available at Navarino, Greece, for future editions of this summer school.

Scheduled time (if flexible, please write "flexible"):

Summer School Madrid: June 2021, 10-15 days (flexible)

Other remarkable features of the proposal (interdisciplinary/multidisciplinary character; contribution to CIVIS goals; etc):

The proposal is truly integrational, with members from four CIVIS universities from the north to the south of Europe, west to east and including the heart of Europe. It is our goal to expand the participation to include all CIVIS universities to further exploit the diversity that is one of the strengths of European academia. Furthermore, the proposed course is interdisciplinary encompassing different fields such as Physics, Geography, Climatology and Geosciences. This multidisciplinarity will provide the students with a broader point of view on remote sensing and climate studies. This diversity will provide students with an inclusive and holistic education which represents the European vision of the CIVIS strategy and goals. Most of the CIVIS universities involved in this proposal are also members of the Copernicus Academy network.

Travel expenses of lecturer will be covered by Erasmus+, but this activity will need budgetary support to finance travel and subsistence expenses for students from CIVIS institutions, as well as some of the course activities (I.e., bus transportation and catering during planned visits).
Partial funding will be collected through reasonable fees to non-students and to non-CIVIS students, and through sponsorships.

[1] https://georemote.webnode.es/?_ga=2.241710209.2010116310.1594033340-993674640.1563191196