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EXCELSIOR Project

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Project full title:	ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment
Project acronym:	EXCELSIOR
Work Package:	WP1 Project Management and Coordination
Deliverable:	D1.17 Impact Assessment Report for RP 4
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Executive Summary

This document serves as the impact assessment report for RP4 (M49-M66) of the EXCELSIOR project. It offers an overview of the project's achievements during this reporting period, outlining a methodology for monitoring the impact of the ERATOSTHENES Centre of Excellence (ERATOSTHENES CoE) and its partners' activities in alignment with predefined targets.

The list of Key Performance Indicators (KPIs), initially outlined in D1.12, have been revised based on feedback received during the project review in November 2022, and was implemented within the previous Reporting Period (RP3). Monitoring the impact during RP4 provides insights into the actions required to meet the KPIs in future reporting periods.

This impact assessment document fulfils an essential function in scrutinizing the implementation of the work plan while also directing requisite modifications in conjunction with Work Package (WP) and task leaders to guarantee the attainment of the project's strategic objectives. WP1 delineates the foundational framework for Key Performance Indicator (KPI) monitoring and overarching quality assurance processes, whereas WP3 specifies tangible actions that influence all other WPs to realize the designated Impact KPIs. Engagement with WP3 initiatives regarding strategy formulation guarantees that human resources, infrastructure procurement, and the comprehensive work plan are revised to accommodate emergent priorities. The report systematically assesses a range of activities, including proposals, dissemination initiatives, publications, academic contributions, and collaborative networks, in relation to the predefined KPIs, thereby offering valuable insights into their efficacy and impact.



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Abbreviations

ACTRIS	The Aerosol, Clouds and Trace Gases Research Infrastructure
ACTRIS IMP	ACTRIS Implementation project
BIC	Business Incubation Centre
CAMS	Copernicus Atmosphere Monitoring Service
CCRSS	Concrete Corrosion Remote sensing system
CUT	Cyprus University of Technology
DLR	German Aerospace Centre
DMRID	Deputy Ministry of Research, Innovation and Digital Policy
ECoE	Eratosthenes Centre of Excellence
EMMENA	Eastern Mediterranean, Middle East, and North Africa
EO	Earth Observation
ESA	European Space Agency
EXCELSIOR	Eratosthenes: Excellence Research Centre for Earth Surveillance and Space-based Monitoring of the Environment
FTE	Full-Time Equivalent
GAW	Global Atmospheric Watch
GBS	Ground-based Remote Sensing Station
GEO	Group on Earth Observations
HR	Human Resources
IA	Impact Assessment
KPIs	Key Performance Indicators
MoU	Memorandum of Understanding
NOA	National Observatory of Athens
RP	Reporting Period
RS	Remote Sensing



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1 Introduction

Impact assessment (IA) systematically examines the immediate and enduring ramifications of developmental interventions or projects. The central emphasis of IA is directed towards comprehending the transformations that transpire and the mechanisms that facilitate these transformations rather than merely concentrating on the activities or outputs involved. IA encompasses the identification of the characteristics of impact, the articulation of activities and their potential repercussions, and the estimation of the anticipated extent of influence. Furthermore, it considers how project impacts may converge with other effects arising from existing or anticipated developments, alongside any possible transboundary impacts. Key Performance Indicators (KPIs) are fundamental to this evaluative process, as they quantify a project's advancement towards its established objectives. Functioning as essential management instruments, KPIs facilitate the monitoring of progress, bolster evidence-based decision-making, and assist in the formulation of future strategic initiatives.

Extensive details on the Impact Assessment Methodology, as well as on the Key Performance Indicators (KPIs), can be found in the previously submitted deliverables:

- D 1.12 "Impact Assessment Methodology"
- D 1.13 "Update of the Impact Assessment Methodology"
- D 1.14 "Impact Assessment for RP1"
- D 1.15 "Impact Assessment for RP2"
- D 1.16 "Impact Assessment for RP3"

As described in the previously submitted deliverables D1.13 and D1.16, the EXCELSIOR KPIs were revised (following external reviewers and project officer's feedback in November 2022), as well as the updated workflows were followed during RP3 and RP4.

The present document will not cover the KPI revisions and new additions further, as they were reported in the abovementioned deliverables, where their efficacy was demonstrated.



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2 Activities and Impact Assessment for RP4

In order to accurately ascertain the ramifications of the ERATOSTHENES Centre of Excellence, a thorough evaluation was undertaken utilizing the Key Performance Indicators (KPIs) pertinent to the Reporting Period (RP) 4. The investigation concentrated on the activities executed during the M49 to M66 (RP4) interval, thereby furnishing comprehensive insights into their resultant effects. The impact assessment scrutinized the implications at three distinct tiers: the participating organizations, the affiliated scientific community, and the overarching societal consequences. This exhaustive evaluation encompassed a rigorous analysis, which included the quantification of KPIs as delineated in Table 2.1 of the Grant Agreement. Throughout the ensuing sections of this chapter, explicit citations are made to the particular KPIs enumerated in the annex section of this deliverable, thereby ensuring a nuanced comprehension of the realized impact. This systematic methodology presents a thorough appraisal of the ECoE's influence on diverse stakeholders.

KPI **P01** addresses the procurement of crucial equipment fundamental to the effective operation of the Centre of Excellence. This encompasses a satellite ground receiving station and a Ground-based atmospheric remote sensing station (GBS), which is intended to serve as a supersite for monitoring aerosols and clouds. Furthermore, the KPI includes other indispensable equipment required to execute innovative research endeavours. Through the acquisition of such apparatus, the Centre aspires to augment its research capabilities, thereby enhancing its competitiveness in securing research proposals and devising customized applications for various stakeholders. This capital investment in sophisticated technological equipment is imperative to assure the Centre's competency in performing cutting-edge research and delivering significant solutions to diverse stakeholders. This metric is subdivided into three components: **P01a** for the satellite ground receiving station, **P01b** for the supersite designated for aerosol and cloud monitoring, and **P01c** for all supplementary equipment (e.g., geodetic instruments, sensors, spectroradiometers, information technology, etc.).

Following the extensive and rigorous evaluation process that was conducted at the previous period RP3, for the **antenna (DAS)** that will be placed at CYTA's premises, the company entitled with its delivery started manufacturing it. The estimated delivery date is set on October 2025 (falls under the forthcoming RP5).

To facilitate the research purposes of the research departments, ERATOSTHENES acquired the following equipment during the RP4:

Department of Environment and Climate:

Field and laboratory equipment for the Environment and Climate department

This table briefly overviews the equipment purchased after two open tender procedures, of the tenders 019/2023 "Agricultural equipment" (March 2023) and 018/2024 "Agricultural equipment II" (March 2024). This equipment is dedicated for measuring basic soil - water - plant parameters, mainly for the activities (living labs, project implementation, research excellence, potential applications, and services) of the Environment and Climate Department. Depending on their use, each equipment was grouped in three main categories, which are laboratory equipment, field equipment and sensor network. A brief description of the equipment per category is given below:




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Table 1 List of Environment and Climate Dept. Equipment.

Instrument	Description
1.1 Laboratory equipment	The Laboratory equipment measures basic soil and hydrological parameters, which are essential for the proper characterization of a soil sample. Besides the characterization of the parameters, which will provide essential insights for assessing current conditions and practices across the fields, the resulting information will serve as an important tool for integrating ERATOSTHENES CoE's laboratory measurements with remote sensing data.
- Digital weighing scale	<p>The platform scale (EOE 30K-2, KERN, Germany) is a weighing scale characterized by high mobility due to its compact and lightweight construction. The main use of the platform scale is for weighing soil samples, which is required in many research applications, such as soil texture analysis and bulk density measurements. The instrument is used to characterize soil samples collected in the context of the CARBONICA and GreenCarbonCy projects.</p> 
- Hydrometer	The hydrometer (PARIO, METER group, GERMANY) offers automated soil particle analysis with temperature correction. PARIO consists of the PARIO sensor, a standby glass sedimentation glass cylinders, a sedimentation glass cylinder with an outlet, a rubber stopper, a Beaker and a USB cable for connecting to a laptop. The hydrometer will be used for soil texture characterization (clay, silt, sand).





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<p>- Water potential measuring system</p>	<p>The WP4C (METER group, Germany) is a water potential measuring system that measures a sample's combined matric and osmotic potential (e.g., leaf, soil) using fundamental thermodynamics. The instrument is used to characterize water stress in plants, which is directly relevant to the work carried out in the framework of the CERBERUS project.</p> 
<p>- Saturated hydraulic conductivity measuring system</p>	<p>Based on the Darcy equation, the device (KSAT, METER group, Germany) measures the hydraulic conductivity of saturated soil samples. The device consists of various components, which are shown in the figure below:</p>

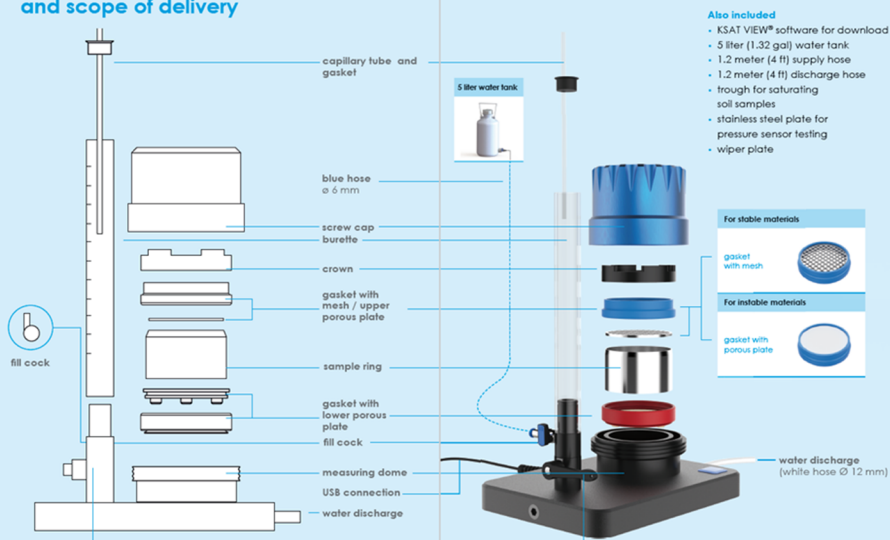



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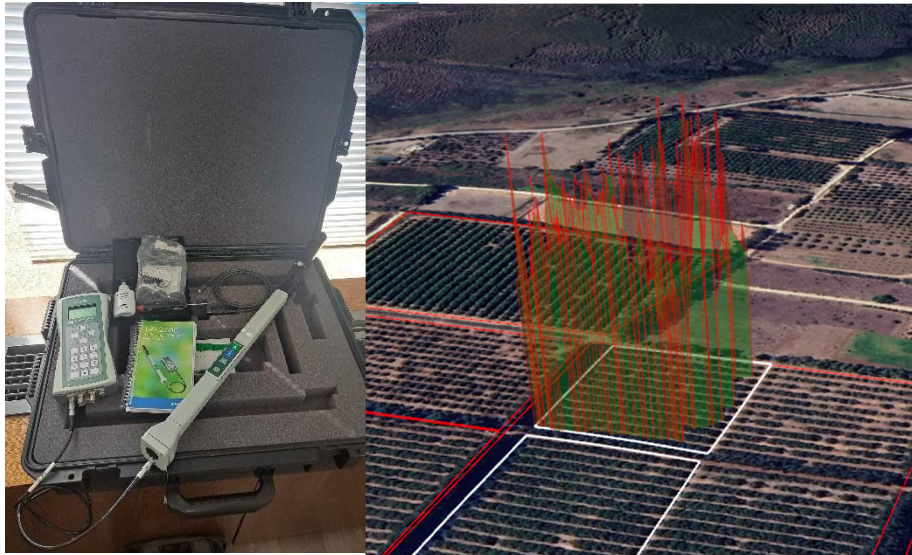

	<p>Parts of the device and scope of delivery</p> 
<p>- Laboratory system for unsaturated hydraulic conductivity of soils</p>	<p>The laboratory system for unsaturated hydraulic conductivity of soils (HYPROP 2, METER group, Germany) is a fully automated measuring and evaluation system based on Schindlers evaporation method (1980) used to determine the hydraulic properties of soil samples. The device has tensiometers at two depths, measuring soil water tension and unsaturated hydraulic conductivity.</p> 
<p>1.2 Field Equipment</p>	<p>The field equipment offers basic information on key ecohydrological parameters deemed essential for establishing agricultural living labs and other research pilot sites. The resulting information will be crucial in linking ERATOSTHENES CoE's in-situ measurements and soil sample collection with remote sensing data. This integration will enhance the accuracy and reliability of large-scale assessments, enabling more informed decision-making for sustainable land management and agricultural practices.</p>
<p>Plant Canopy Analysis System</p>	<p>The system (model LAI-2200C, LI-COR, USA) calculates Leaf Area Index (LAI) and other canopy attributes from light measurements made with a fisheye sensor. The system consists of a control unit (LAI-2270C), an optical sensor (LAI-2250), view restricting caps, connecting and data cables and other</p>



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	<p>accessories (carrying case, cleaning kit, manual, certificate of calibration). LAI measurements are taken once per week in Phassouri Citrus plantations to examine plant growth patterns over time, while additional measurements for other citrus varieties and olive/other crops are planned for the following months. The long-term observations of LAI will allow the extraction of basic information on crop health and development and will be used to validate satellite LAI products.</p> 
<p>- Groundwater level sounder</p>	<p>The groundwater level sounder is used to measure the groundwater level in boreholes by releasing acoustic and LED indication signals as soon as they reach the water surface. The BFM-200 (PASI, Italy) consists of a water level dip meter (piezometer) with flat cable, stainless steel tape with two copper wires, coated with external anti-scratch protective film. Groundwater measurements offer a better understanding of the available water resources over an area.</p> 
<p>- Porometer</p>	<p>The porometer (SC-1, METER group, Germany) measures the stomatal conductance of plant pores by putting the conductance of a leaf in series with two known conductance elements and comparing the relative</p>




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	<p>humidity (RH) measurements between them. SC-1 consists of a measuring probe, control unit and accessories (carrying case, calibration and cleaning kit, replacement filters, manual). Plant stomatal response provides insights into transpiration rate and the plants' adaptability to environmental changes (e.g., droughts). The porometer is useful for characterizing the water stress levels of plants and has been used in the framework of the CARBONICA project. At the same time, additional measurements are planned for the CERBERUS project.</p> 
<p>Field unsaturated hydraulic conductivity instrument</p>	<p>The mini-disk infiltrometer (METER group, Germany) measures unsaturated hydraulic conductivity (the rate at which water can move through the soil under certain conditions and hydraulic gradients) in field conditions. The measuring principle relies on cumulative infiltration versus time. The mini-disk infiltrometer provides immediate information on the hydraulic properties of soils, which can be used for the initial site characterization of potential research pilots. The instrument is used to characterize soil properties at the CARBONICA and GreenCarbonCy project pilot sites.</p>




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Soil pH meter	<p>The soil pH meter (MW805 MAX, Milwaukee, USA) measures pH, electric conductivity (EC), total dissolved solids (TDS) and temperature in various solutions. The instrument consists of a control unit, the 4-in-1 parameter probe, and accessories (carrying case, calibration solutions, manual, quality certificate). These four parameters provide a basic understanding of a given sample's water and soil quality status. The instrument is used to characterize soil properties at the CARBONICA and GreenCarbonCy project pilot sites.</p>	
Soil sampling kit	<p>The sample ring kit (model E53, eijkelkamp, Nederlands) heavy has a heavy duty sample ring holder for sampling in hard soils for depths of up to 2 metres. The kit includes 24 soil sample rings with a diameter of 53 millimetres. The soil sample ring kits are primarily used for undisturbed soil sampling, which is needed for the proper bulk density determination of soil. The instrument is used to characterize soil properties at the CARBONICA and GreenCarbonCy project pilot sites. Beyond addressing the needs of both mentioned projects, the acquired equipment will be essential for assessing various soil properties that require undisturbed soil samples. These include microporosity, soil structure, saturated and unsaturated hydraulic conductivity, and other key parameters critical for understanding soil functionality.</p>	





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<p>- Soil sampling toolbox</p>	<p>These are a set of field sensors for measuring soil & plant indicators to evaluate Good Agricultural Practices. It supports the consultant agronomist or the producer in properly managing the field, in-situ measurement procedures with the field diagnostic toolbox. The instrument is used to characterize soil properties at pilot sites of the CARBONICA project.</p> <ul style="list-style-type: none"> • Sampling of undisturbed soil • Soil infiltration • Soil moisture/ EC/ soil temperature sensor • CO₂ 	
<p>- Earth auger</p>	<p>The engine-powered earth auger is used to drill holes in the ground with a depth of up to 800 mm and includes 3 drill bits of 100 mm, 150 mm and 200 mm in diameter. It is widely used in agricultural applications for exposing the soil profile, allowing soil sampling and analysis at higher depths and installation of sensors (e.g., soil moisture).</p>	




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<p>1.3 Sensor Network</p>	<p>The sensor network includes all the sensors installed at research sites for long term observations on key environmental variables. By establishing a sensor network to monitor key parameters such as soil moisture, soil water potential, and meteorological conditions, the ERATOSTHENES CoE is strengthening Cyprus’s capacity for environmental monitoring and climate adaptation. The continuous data flow will enhance the Centre’s ability to provide accurate and robust services by integrating in-situ and remote sensing data. Additionally, this initiative will support the development of a comprehensive monitoring framework, which will be crucial for securing future funding opportunities through research and innovation activities.</p>
<p>- Soil moisture and soil water potential network sensor network</p>	<p>In total, 39 soil moisture sensors (TEROS 12, METER Group, Germany) and 20 soil water potential (TEROS 12, METER Group, Germany), all connected to 10 dataloggers (ZL6 pro, METER Group, Germany) sensors were installed in Phasouri plantations on October 2024. This network offers 15-minute records on essential soil variables (moisture, temperature, electric conductivity, matric potential). These data are currently exploited for many activities of the ECoE, such as the validation of the PRECIRRI app, the development of the Agro living lab, the implementation of on-going projects</p>





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	<p>(e.g., CARBONICA, PURGE) and for supporting future research proposals.</p> 
<p>- Evapotranspiration system</p>	<p>The LI-710 (LI-COR, USA) sensor provides direct measurements of actual evapotranspiration at the plot scale. It applies the eddy covariance method to measure vertical wind and water vapor concentration. The LI-710 has a range of applications, such as irrigation management, drought monitoring and verification of remote sensing estimates on evapotranspiration. The system will be installed in the following months on agricultural land in Akrotiri watershed. It will validate the Precirri app and other research activities of the Environment and Climate Department (Agro Living labs).</p> 
<p>- IoT meteo station</p>	<p>The meteorological station (ATMOS 41, METER group, Germany) has an integrated hardware (INSIGHIO, Greece) which provides a LORAWAN network to enable real-time IoT-based environmental monitoring. This station will be established within the Acheleia pilot sites as part of the Nostradamus project, supporting the development and validation of key modules under Task 4.4: Sustainable and Efficient Pest Management. In addition to aiding pest management strategies, the meteorological station will also contribute to replicating the Early Warning System for Drought and</p>



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Vegetation Stress Monitoring under Task 4.1. The collected high-frequency meteorological data—including temperature, humidity, wind speed, precipitation, and solar radiation—will enhance the predictive accuracy of these models by improving microclimatic assessments and supporting data-driven decision-making for sustainable agricultural practices. Furthermore, Third Parties joining through Open Calls will leverage the established IoT network, facilitating the development of data-driven decision-making and policy-shaping applications. By integrating real-time meteorological data with the Nostradamus Data Cubes, this network will enable advanced analytics and predictive modeling, enhancing the scalability, interoperability, and effectiveness of sustainable land management and climate resilience strategies. This integration will play a crucial role in strengthening EU Food Security and reducing dependency on external resources, ensuring a more resilient, data-driven approach to agricultural sustainability and environmental monitoring. In total, 39 soil moisture sensors (TEROS 12, METER Group, Germany) and 20 soil water potential (TEROS 12, METER Group, Germany) sensors, all connected to 10 dataloggers (ZL6 pro, METER Group, Germany), were installed in Phasouri plantations in October 2024. This network offers 15-minute records on essential soil variables (moisture, temperature, electric conductivity, matric potential). These data are currently exploited for many activities of the ECoE, such as the validation of the PRECIRRI app, the development of the Agro living lab, the implementation of on-going projects (e.g., CARBONICA, PURGE) and for supporting future research proposals.





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<p>- Meteorological station</p>	<p>A meteorological station that will provide information on the weather conditions and support research activities (CARBONICA and CERBERUS projects) has been installed in Phasouri plantations. The station consists of wind speed and direction sensor, relative humidity, temperature and solar radiation sensors. All the sensors are connected to a data logger (YDOC) which logs meteorological data in 10-minute intervals. A 40W solar panel and a 12V battery power the station. Recently, a data sim card was purchased to transmit the data via a GSM network to a local server. These data will be used to compute the reference evapotranspiration which will be then used to validate the PRECIRRI app outputs. In addition to this, meteorological data will be used to implement the CARBONICA project.</p> 
<p>- Sap flow sensors</p>	<p>6 Heat Ratio Method sap flow sensors (ICT international, Australia) were installed on 03/01/2025 in 6 individual citrus trees, providing hourly sap flow measurements. Sap flow is a basic variable in plant studies which shows water movement within the plant. Thus, it provides direct estimates of tree transpiration and tree water use. Long-term observations on sap flow provide insights on the plant-water relations and the response of trees to meteorological variables.</p>




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<p>Soil respiration systems</p>	<p>The CFLUX-1 (PP Systems, USA) is A dedicated, self-contained system for long-term deployment and unattended operation to measure soil CO₂ flux. The equipment was acquired to support the objectives of the GreenCarbonCY and CARBONICA projects. Specifically, the acquisition of the GreenCarbonCY project was driven by the need to establish a comprehensive monitoring system within the Acheleia pilot sites in Paphos. This initiative aims to evaluate the effects of selected regenerative management practices on soil health, focusing on soil respiration dynamics and CO₂ flux measurements. The acquired state-of-the-art system enables high-precision, real-time monitoring of soil carbon dynamics, facilitating a deeper understanding of carbon sequestration potential and GHGs under different land management strategies. The collected data will provide critical insights into soil-atmosphere carbon exchange processes, informing climate mitigation efforts and contributing to the development of sustainable land management practices in the studied agroecosystems.</p>

In the context of the EXCELSIOR project, the ERATOSTHENES CoE has acquired a series of high-quality instruments to obtain long-term and episodic measurements of cloud and aerosol properties, radiative fluxes, precipitation, and related atmospheric characteristics in diverse climate regimes of Cyprus. The Atmospheric Cluster of the Department of Climate and Environment of the ECoE coordinates the Cyprus Atmospheric Remote Sensing Observatory (CARO). CARO is a national facility consisting of a multi-instrument platform unique with the latest modern standards and only available in a few regions globally.

The establishment of the Ground Remote Sensing Station (GBS) as the Cyprus Atmospheric Remote Sensing Observatory National Facility (CARO NF) is a strategic initiative aimed at enhancing our understanding of atmospheric processes, improving climate models, and supporting environmental and public health policies and satellite mission through its participation to the European Research Infrastructures (ESFRI). The GBS is designed to enhance our understanding of atmospheric processes by leveraging advanced remote sensing technologies to collect real-time, high-resolution data on key atmospheric parameters such as aerosols, clouds, and precipitation. As climate change, air quality, and weather prediction become increasingly critical global concerns, the GBS will serve as a hub for interdisciplinary research and collaboration, supporting compliance with international environmental



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agreements. Its primary objectives include providing continuous and accurate atmospheric data to improve climate and weather models, developing predictive tools for air quality and public health, and advancing scientific knowledge of human impacts on atmospheric systems.

GBS will impact environmental, economic, social, and scientific domains. Environmentally, it will enhance climate predictions and air quality monitoring, providing valuable data to support mitigation and adaptation strategies to reduce pollution and combat climate change. Economically, the GBS will benefit stakeholders who rely on precise weather forecasting, such as agriculture, aviation, and renewable energy, while also attracting funding from national and international research grants. Socially, the station will contribute to public health by supplying real-time air quality data for advisories and policy-making and offering educational opportunities through partnerships with universities and research institutions. Scientifically, the GBS will generate high-quality atmospheric data to fill critical gaps in global monitoring networks, fostering advancements in climate science, meteorology, and remote sensing technology. The GBS will play a key role in supporting sustainability efforts and global climate initiatives by integrating these benefits.

The CARO's instruments continually operate to obtain long-term and episodic measurements of cloud and aerosol properties, precipitation, and related atmospheric characterization in the region's diverse climate regimes. The state of the instrumentation of CARO, as of February 2025, is illustrated in the following.

Table 2 GBS Components.

Aerosol Remote sensing Platform	
Dual field of view Polly-XT lidar	<p>The Polly XT DualFOV lidar is an advanced multi-wavelength Raman and polarization lidar system developed by the TROPOS (Leibniz Institute for Tropospheric Research). The Polly XT lidar operates at multiple wavelengths (355 nm, 532 nm, and 1064 nm) and includes elastic backscatter, Raman scattering, depolarization, and water vapor Raman channels for humidity profiling.</p> <p>The main use of this PollyXT-DualFOV lidar includes:</p> <ol style="list-style-type: none"> 1) Measures the vertical distribution of aerosol optical properties (backscatter and extinction coefficients). 2) Aerosol types classification (dust, smoke, urban pollution, marine aerosols, etc.). 3) Tracks long-range aerosol transport events (e.g., Saharan dust or wildfire smoke). 4) Cloud Studies such as cloud microphysics, distinguishing between liquid and ice clouds using Dual-FOV depolarization measurements. 5) Atmospheric Monitoring & Climate Studies. 6) Contributes to climate research by assessing aerosol-cloud interactions. 7) Monitors volcanic ash plumes and their dispersion.



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	8) Satellite Validation by providing ground-based reference data to validate satellite missions like CALIPSO, Aeolus, and EarthCARE.
Sun Photometer - 8 Wavelength	<p>AERONET (Aerosol Robotic Network) sun photometers measure atmospheric aerosols by detecting how sunlight is absorbed and scattered as it passes through the atmosphere. The sun photometer provides data on:</p> <ol style="list-style-type: none"> 1) Aerosol Optical Depth (AOD) – Measures the total amount of aerosols in a vertical column of the atmosphere. 2) Ångström Exponent – Indicates the size distribution of aerosols. 3) Single Scattering Albedo (SSA) – Determines how much light aerosols absorb vs. scatter. 4) Water Vapor Content – Measures the total columnar water vapor in the atmosphere. 5) Aerosol Size Distribution – Estimates the range of aerosol particle sizes. <p>These measurements help in climate research, air quality monitoring, and validation of satellite observations.</p>
Cloud Remote Sensing Platform	
Ceilometer - LUFT-CHM 15k	<p>The CHM 15k ceilometer is designed for continuous, unattended atmospheric profiling. It is a single-wavelength, diode-laser-based lidar system that operates at 1064 nm to measure cloud height, aerosol layers, and atmospheric structures up to 15 km in altitude.</p> <p>The main use of this CHM 15k ceilometer includes:</p> <ol style="list-style-type: none"> 1) To measure cloud base height and identify multiple cloud layers. 2) Used for aviation safety, meteorological monitoring, and climate research. 3) Monitoring the planetary boundary layer (PBL) evolution is crucial for weather forecasting and climate modeling. 4) Supports studies on air mass transport and stability conditions. 5) To provide data for atmospheric studies, including fog detection and convection processes. 6) Satellite & Model Validation.
Doppler Wind Lidar (Snoopy) - Halo StreamLine XR	<p>The Halo StreamLine XR is a scanning Doppler wind lidar for atmospheric wind profiling and turbulence measurements.</p> <p>The main use of the Halo StreamLine XR Doppler Wind Lidar includes:</p> <ol style="list-style-type: none"> 1) To measure wind speed, direction, and turbulence from the surface up to 4km.



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	<p>2) Supports meteorological and climate research, wind energy assessment, and aviation safety.</p> <p>3) Boundary Layer Studies: Monitors the evolution of the planetary boundary layer (PBL).</p> <p>4) Tracking wind fields within storms, hurricanes, and severe weather systems.</p> <p>5) Assists in nowcasting and improving weather prediction models.</p> <p>6) Used for renewable Energy & Wind Farm Optimization: Used for wind resource assessment to determine optimal locations for wind farms.</p>
<p>35-GHz scanning polarimetric cloud Doppler radar - MIRA35</p>	<p>The MIRA-35 cloud radar is a 35 GHz (Ka-band) scanning polarimetric cloud Doppler radar designed for high-resolution observations of clouds and precipitation, providing detailed information about cloud microphysics, dynamics, and particle properties.</p> <p>The main use of the MIRA-35 cloud radar includes:</p> <p>1) Cloud Microphysics & Dynamics: Measures cloud structure, vertical motion, and turbulence.</p> <p>2) Distinguishes between liquid, ice, and mixed-phase clouds using polarimetric parameters.</p> <p>3) Precipitation and Drizzle Studies: Detects and quantifies light precipitation and drizzle that conventional weather radars may miss.</p> <p>4) Monitors cloud evolution, convection, and cloud lifetime, contributing to weather prediction and climate models.</p> <p>5) Studies the role of clouds in radiative forcing and climate change.</p> <p>6) Aerosol-Cloud Interactions: Supports studies on how aerosols influence cloud formation and precipitation.</p> <p>7) Satellite Validation: Provides ground-based reference data for validating satellite missions such as EarthCARE.</p>
<p>1-d precipitation disdrometer</p>	<p>The PARSIVEL (Particle Size and Velocity Laser) disdrometer is an optical precipitation measurement instrument designed to classify and quantify different hydrometeors.</p> <p>The main uses of the PARSIVEL disdrometer include:</p> <p>1) Precipitation Classification & Microphysics: Differentiates between rain, snow, sleet, drizzle, and hail based on particle size and velocity.</p> <p>2) Provides drop size distribution (DSD), which is crucial for understanding rainfall formation.</p>



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	<p>3) Weather and Climate Research: Helps study the microphysical processes of precipitation in different climate regions.</p> <p>4) Hydrology & Flood Forecasting: Provides real-time rainfall intensity data for use in hydrological models.</p> <p>Helps improve flood early warning systems by monitoring heavy rainfall events.</p> <p>5) Numerical Weather Prediction & Radar Calibration: Improves precipitation parameterization in numerical weather models.</p> <p>6) Aviation & Transportation Safety: Monitors precipitation type and intensity at airports, highways, and railways. Supports icing condition detection for aviation safety.</p> <p>7) Satellite & Lidar Validation: As a ground truth reference for validating satellite-based precipitation estimates (e.g., GPM, CloudSat, EarthCARE).</p>
<p>Microwave Radiometer - HATPRO</p>	<p>The RPG profiling radiometers are mainly used to derive vertical profiles of atmospheric temperature and humidity (RPG-HATPRO). The infrared radiometer extension allows cloud base height and ice cloud detection. The radiometer covers high-resolution temperature profiling of the boundary layer, low-humidity applications, and accurate total amounts of atmospheric water vapor and cloud liquid cloud. The HATRO microwave radiometer provides data on:</p> <ol style="list-style-type: none"> 1) vertical profiles of atmospheric temperature 2) vertical profile of atmospheric humidity (relative and absolute humidity) 3) Liquid Water Path (LWP) 4) Integrated Water Vapor (IWV) 5) wet delay 6) dry delay 7) stability indices
<p>Supportive Infrastructures</p>	
<p>Specialized Container</p>	<p>Specialized Container for housing the radar, MWR, Doppler LIDAR and computer infrastructure of the ground-based atmospheric remote sensing station supersite for aerosol and cloud monitoring (GBS)</p>
<p>GBS Servers</p>	<p>The GBS consolidates all necessary infrastructure to set up a supersite for aerosol and cloud monitoring. The server system will be used for the operation and acquisition of the GBS equipment and the processing and storage of GBS observations.</p>



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The last batch of the sensors that pertain to the solar network were installed in the municipalities of 1) Kyperounda, 2) Athalassa, 3) Frenaros, 4) Polis Chrysochous, 5) Limassol thus complementing the existing sensors placed during the RP3.



Figure 1 The ERATOSTHENES team with Ilias Fountoulakis (from NOA; EXCELSIOR strategic partner) during the various sensor installations.

Civil Engineering Equipment

Further to the IT equipment, during RP4 ERATOSTHENES CoE purchased civil engineering and geodetic equipment to accommodate centre’s needs for digitization, accurate measurements of the research conducted at its departments. Table 3 mentions analytically the various components:

Table 3 Geodetic and Civil Engineer Equipment.

#	Quantities	Name	Short Description
1	5	Trimble R980 GNSS system	The Trimble R980 GNSS system unlocks peak accuracy and productivity for land surveyors with proven GNSS performance.
2	5	Trimble TDC6 data collector	The Trimble TDC6 data collector is a powerful, versatile, cost-effective field data collection solution for surveying and mapping professionals. The TDC6 can be used standalone as a GIS data collector,



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			paired with a GNSS receiver, or as an onboard total station controller.
3	2	Trimble X9 3D laser scanning	The Trimble X9 3D laser scanning platform leverages proven Trimble technology to deliver the range, accuracy, speed and sensitivity you need to do more.
4	2	Trimble T10x tablet	To tackle large scanning datasets and workflows confidently with the Trimble T10x tablet. With powerful processing capability, this slim, ultra-rugged tablet delivers peak performance and unmatched efficiency.

General Other IT equipment and Infrastructure

As mentioned, the purchase of technology equipment in the ERATOSTHENES CoE is essential to support data analysis, computational simulations, and the secure storage of research findings. Modern equipment improves efficiency, facilitates collaboration among researchers, and ensures the reliability and security of data. Additionally, it contributes to process automation, the development of innovative solutions, and compliance with the technological requirements of modern scientific research.

Below is a table of the IT equipment and infrastructure that was delivered during RP4:

Table 4 IT equipment

Type & Model	Specs
Laptop x20 Dell Precision Workstation 3580	Monitor: 15.6" FHD CPU: Intel Core i7-1360P RAM: 32GB Disk: 1TB SSD GPU: RTX A500 4GB
Laptop x10 Lenovo ThinkPad T16 Gen1 AMD	Monitor: 15.6" FHD CPU: AMD Ryzen i7-1360P RAM: 32GB Disk: 1TB SSD GPU: RTX A500 4GB
Laptop x10 HP ProBook 455 15.6 G10	HP 15.6 FHD Ryzen 5 7530U HP 512GB PCIe NVMe SSD 32GB RAM DDR4 3200
Monitor X30 Dell Monitor	27" FHD C13 Power Cord 250
x1 MultiBoard Prestigio PMB000L864	86" 4K Touchscreen i5 (10th Gen) 8GB RAM 256GB SSD
x1 VR Glasses	Meta Quest 3 White 128 GB RAM



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x1 Projector EPSON EH-TW740	Full HD 1080p Video Projector, 1920 x 1080, 16 9, 3300 Lumens, 16,000 1 Contrast
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Additionally, the following equipment has been ordered to meet the current needs of the Landshift and Nostradamus Projects. It is expected to be delivered by the end of March 2025 (within the closing turn of RP4).

Table 5 Infrastructure will be delivered to ERATOSTHENES and used by Landshift and Nostradamus projects.

Type & Model	Specs
x1 Data Processing Server (CPU Power)	Supermicro AS -1125HSTNR 19" 1U CPU 2X AMD Genoa 9654 DP/UP 96C/192T 2.4G RAM: 12XMicron 96GB DDR5 Num. SSD (Raid 1) 2X Intel Solidigm D3 S4520 3.84TB
x1 GPU Processing Server	Supermicro GPU A+ Server AS - 4125GSTNRT 4U CPU: 2X AMD Genoa 9474F DP/UP 48C/96T 3.6G GPU: 4X NVIDIA Ada L40S 48GB GDDR6 PCIe Gen 4 th RAM: 12x Micron 96GB DDR5 Number of SSD (Raid 5): 5X Micron 5400 MAX 3.84TB
x1 Big Data Storage	Supermicro SSG- 640SPE1CR60 4U 60 3.5"/2.5" Hotswap SAS3/SATA3 drives, 2x Fixed slim SATA SSD, 2x NVMe M.2 CPU: 2X Intel® Xeon® Platinum 8352V Processor 2P RAM: 4X Supermicro (Samsung) 32GB 288-Pin DDR4 3200 Number of NVMe SSD (Raid 1): 2X Samsung PMSA3 Sc0GB NVMe PCIe4x4 M.2 Number of HDD (Raid 6 configuration, 4 hot spares): 48X Seagate 3.5",24TB
x20 Laptops	Lenovo ThinkPad P16v Gen2 (Intel)
x25 Monitors	27" QHD 2560x1440 165 Hz HDMI, Display Port
x5 Hard Drives	Toshiba 4TB N300 NAS 3.5" SATA

Dept. of Big Earth Data Analytics Equipment

Big Earth Data Analytics department is responsible for the Apollo system, which constitutes a high-performance server designed for demanding tasks. It features dual AMD EPYC 7452 processors, providing substantial CPU power for parallel processing and heavy workloads. A large 512GB of RAM enables the handling of extensive datasets and complex computations. Four NVIDIA L40 GPUs deliver significant parallel processing capabilities, making it ideal for AI, machine learning, high-performance computing, and graphics-intensive applications. This combination of powerful components makes the system well-suited for tasks ranging from deep learning to large-scale data analytics and virtualization. This infrastructure was delivered within the context of the AI-Observer project.



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Apart from the aforementioned, during the previous RP the centre had acquired 4 powerful workstations that are operating 24/7 handling the complex tasks of ERATOSTHENES’ departments, as well as it provided laptops and monitors to the staff to conduct their research, while the instrument’s of Cyprus Meteorology dept. continue their operation.

2.1 Trainings and capacity building activities

During RP4, **nine (9) capacity building activities (P02a)** were carried out with the collaboration of the advanced partners of the EXCELSIOR project: the Leibniz Institute for Tropospheric Research (TROPOS), the National Observatory of Athens (NOA) and the German Aerospace Centre (DLR). They were carried out either through physical presence and/or the Microsoft Teams online conferencing tool. In-detail information can be found at the submitted deliverable D 6.4 “Workplan for transfer of knowledge and experience (update 3)”. The impact of these capacity building activities was materialised into 6 proposals submitted for competitive funding, 12 conference publications and 3 journal articles.

Overall, **11.43 person-months (P02b)** were allocated by the ECoE in the capacity building activities (incl. secondments; check section below).

Table 6 Capacity building activities held during RP4

Partner / Lecturer	Capacity Building / Knowledge Transfer Activity	Type of Activity	Month, Week	# of days	Thematic Area	# of participants
NOA	<p>Causal & Explainable AI in Agriculture</p> <p>Description: This session will focus on the theory and practical use of Causal and Explainable AI in Agriculture.</p> <p>Specifically, it will cover: a) invariant learning for robust predictions under different environments, b) explainable and interpretable predictions for trustworthiness and c) causal effect estimations for assessment of digital agriculture. The aforementioned</p>	Training Workshop	M50, W4 (November 2023)	3	Agriculture	11



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	methods will be applied in two real life applications around pest and yield prediction.					
TROPOS	pyLARDA tutorial seminar	Online Seminar	M48, W2 September 2023	1	Atmosphere	2
NOA	Seminar on the development of automatic processing chains for data collection and preprocessing. Description: This knowledge transfer activity will benefit ECoE members to enhance their knowledge on earth observation for fire applications. The activity will offer the background, context, and motivation behind the aforementioned domain and the technologies and models used (state-of-the-art, beyond state-of-the-art). Finally, it will highlight the research capabilities of ECoE, assist in the demonstration scenarios, promote ideas creation, sharing, evaluation and dissemination.	Training Workshop	M50, W2 November 2023 M51, W2 December 2023	2	Disaster Risk Reduction	10



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NOA	<p>Seminar on holistic multi-parameter flood risk assessment and management planning at high spatial resolution.</p> <p>Description: This knowledge transfer activity will benefit ECoE members to enhance their knowledge on holistic multi-parameter flood risk assessment and management planning at high spatial resolution (building block level) to support public actors and stakeholders in decision-making and flood management.</p>	Training Workshop	M48, W3 September 2023	2	Disaster Risk Reduction	13
NOA	<p>Training course on InSAR time-series analysis using Sentinel-1 images and ISCE software.</p> <p>Description: This knowledge transfer activity will benefit ECoE members by allowing them to become familiar with new methods and implement them in future research activities. It will highlight the research capabilities of ECoE, assist in the demonstration scenarios later on, and promote ideas</p>	Hands-on training	M48, W4 September 2023	2	Disaster Risk Reduction	9



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	creation, sharing, evaluation and dissemination.					
NOA	<p>Seminar on Machine Learning and Geospatial Analytics for Fire Risk Management.</p> <p>Description: This knowledge transfer activity will benefit ECoE members to enhance their knowledge on earth observation for fire applications. The activity will offer the background, context, and motivation behind the aforementioned domain and the technologies and models used (state-of-the-art, beyond state-of-the-art). Finally, it will highlight the research capabilities of ECoE, assist in the demonstration scenarios, promote ideas creation, sharing, evaluation and dissemination.</p>	Training Workshop	M56, W4 May 2024	2	Disaster Risk Reduction	15
NOA	<p>Synergizing Street-Level Data with Satellite Imagery in Agriculture.</p> <p>Description: This session will focus on the integration of street-level data with satellite imagery,</p>	Training Workshop	M54, W2 March 2024	1	Big Data	9



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	specifically tailored for agricultural applications. Throughout the session, these methods will be practically applied to the task of crop identification.					
TROPOS	Lecture about microwave and radar remote sensing	Lecture (online)	M49, WK1 to M52, WK14 (October 2023 – January 2024)	14	Atmosphere	2
TROPOS	Lecture about optical remote sensing lidar and radar remote sensing	Lecture (online)	M49, WK1 to M52, WK14 (October 2023 – January 2024)	14	Atmosphere	2

2.2 Research institute networks

In this section, the research institute networks that the ECoE is either in the process of joining or has already joined are presented in detail along with the status of the ECoE. During RP4, the ECoE collaborations on the previous 6 RI networks (**P03**) (namely the Global Atmosphere Watch Programme (GAW), the Copernicus Academy, EaRSEL, ISPRS, GEO, EU-BIC) continued. While during the RP4 ECoE has joined the Copernicus Atmospheric Monitoring Service (CAMS NCP).

Considering these collaborations, the team has already achieved the YR7 target.

2.3 Calibration/ Validation capacities – Monitoring networks

During RP4, the activities that started during RP1 with collaboration with the EARLINET and PollyNET networks continued, where with the assistance of TROPOS, ERATOSTHENES provides pilot Near Real-Time (NRT) data of ACTRIS/EARLINET lidar-derived aerosol optical properties profiles to the Copernicus Atmosphere Monitoring Service (CAMS). During the previous reporting period, the PollyXT-CYP system participated in the first pilot campaign coordinated by ACTRIS. This activity was restarted in September 2023 (RP4) and aimed to continue and enhance the activities and developments achieved during the previous CAMS21b contract. A major step towards recognition of the value of the infrastructure built



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in Limassol was represented by participation in the cal/val pilots for the future mission EarthCARE, which launched by ESA/JAXA in 2024. During RP4, aside of the above activities that continued, a notable achievement was achieved, ERATOSTHENES became the national contact point for Copernicus Atmospheric Monitoring Service (CAMS) for the island of Cyprus. The ERATOSTHENES CoE leads an effort to integrate CAMS products into national systems, tailoring the data to Cyprus' specific geographical and climatic conditions. With participation in international research infrastructures (e.g., ACTRIS-ERIC) and the advanced equipment of the Cyprus Atmospheric Remote Sensing Observatory (CARO). The strategy being followed is to prioritize incorporating CAMS products within existing national air quality networks, engaging stakeholders, and collaborating with key national entities to ensure the tools developed to meet regulatory and practical needs. The project also emphasizes capacity building to train local experts in using CAMS products for enhanced decision-making. Additionally, by disseminating UVI forecasts, the public is anticipated to be educated about optimal sun exposure durations, and relevant authorities leveraged climatological UV radiation data specific to Cyprus to mitigate potential risks associated with prolonged sun exposure. By connecting advanced European atmospheric data with local environmental management, this holistic approach aims to substantially improve Cyprus's (and in extent the ERATOSTHENES) capacity to monitor, forecast, and manage air quality.

2.4 Researchers, administrative and technical staff

2.4.1 Employment of personnel

The ERATOSTHENES CoE has planned to attract and employ high calibre research and technical staff, offering a dynamic environment for basic and applied research in EO. Following the employments appointed during RP3, additional research and administration staff were employed through several job announcements¹ for researchers, administrative and technical staff.

More specifically, during RP4 96 employment positions were announced, from which 86 offers were made to candidates, leading to 67 being eventually appointed. The positions announced concerned the hiring of 111 researchers/scientific staff, 4 technical personnel, 1 in management and 24 in administrative roles. The 67 positions that were filled were distributed into 51 researchers/scientific staff, 1 technical staff, 1 manager and 14 administration personnel. The aforementioned numbers do not include hired internships, or any transfers from the Cyprus University of Technology (CUT) Furthermore, these include also staff transfers to cover centre's needs on key positions upon thorough evaluation, hence the number of researchers who employed for first time at ERATOSTHENES was 47 (P05a).

More details on the positions' announcement categorisation can be found at the end of this document under Annexes section (see Annex 1). Some of the employment positions that opened in RP4 will be filled within the next three months (first months of the RP5), and among the 67 appointed personnel, some will commence their roles within this period.

Thus, complementing the above analysis with the rest of the data for RP4, the ERATOSTHENES CoE has 88 personnel in total. The figure below (Figure 2) shows the gender balance of the ERATOSTHENES Centre of Excellence during RP4; amongst the 88 personnel, 53 are males and 35 are females corresponding to 60% and 40% respectively.

¹ ECoE open positions: <https://eratosthenes.org.cy/open-positions/>



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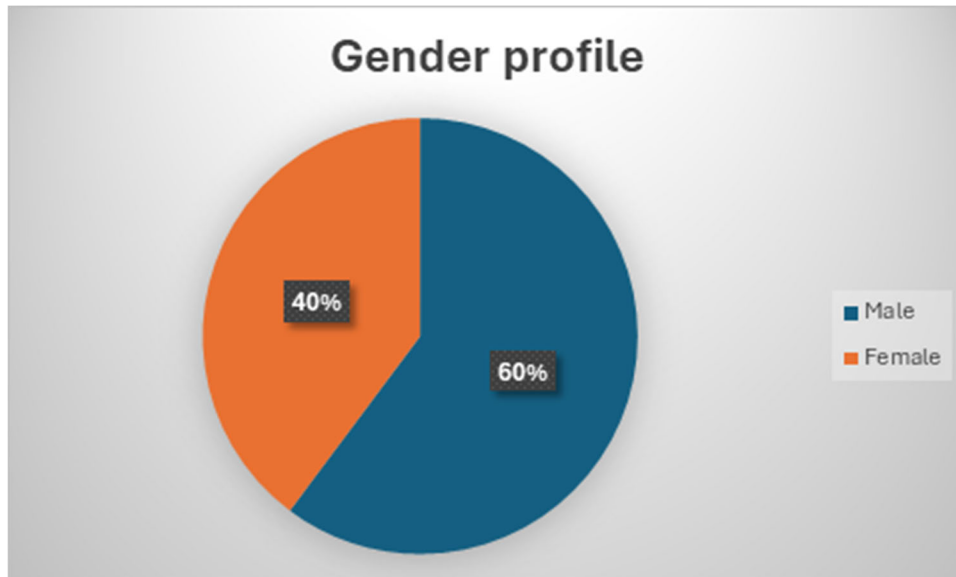


Figure 2 Gender Balance of the ERATOSTHENES CoE during RP4.

Out of the 88 personnel, 73 researchers/scientific staff, 2 technical staff, 4 managers and 9 administration personnel are employed, with the salaries paid until the end of RP3 (30 September 2023) being €4.201.818,11 (S01). Moreover, 43% of them were attracted from abroad (S02) in RP4, and more specifically from Greece, Italy, Germany, Poland, Republic of Belarus, India, Iran, Lebanon, Pakistan and Sri Lanka. In total 36% of the personnel are foreign nationals.

Another goal of the ECoE is within the P05b KPI to host researchers (MSC fellows, European Research Council grants ERC, etc.) to increase the exchange of ideas, develop knowledge transfer and capacity building, in various sectors of EO. Various MSC proposals were submitted but unfortunately none was funded, hence this KPI number remains 0. New efforts will be made for the new MSC calls (during 2025).

2.4.2 Researchers' mobility

During RP4, **7 ERATOSTHENES CoE personnel were seconded to other organisations** in Cyprus and/or abroad, while **no personnel from external organisations visited and/ or used the ERATOSTHENES CoE facilities, but 4 interns were employed (SC05)**. Their diverse backgrounds include physics, food technology, space engineering, agriculture, and civil engineering. On the other hand, this is not to be viewed as a negative thing, as within EXCELSIOR project and the ERATOSTHENES CoE diversity is seen as a driving force for innovation and progress. Each intern was assigned a team member in charge who guided her/him during the whole internship period.

Secondment from NOA to ERATOSTHENES – Dr. Ilias Fountoulakis

The objective of this training was to focus on solar radiation instrumentation installation and training. During this secondment, Dr. Ilias Fountoulakis conducted hands-on training at the ERATOSTHENES CoE in Cyprus, focusing on installing, operating, and calibrating newly acquired solar radiation instrumentation. The training included site selection, instrument setup, and software integration for the Bentham spectroradiometer, BSRN station, and sky camera. Online support was provided by Dr.



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Stelios Kazadzis (PMOD-WRC) to ensure optimal instrument placement and data acquisition settings. Additionally, field training on maintenance and quality control procedures for broadband and spectral solar radiation measurements was conducted.

The secondment concluded with a visit to the Polis Chrysochous meteorological station, where new pyranometers were installed in collaboration with the Cyprus Meteorological Service. A series of lectures on solar radiation monitoring networks, data handling, and solar energy research were also delivered at the Cyprus University of Technology (CUT). The knowledge transfer during this secondment significantly strengthened the capacity of ECoE personnel in solar radiation measurement techniques and instrument maintenance, ensuring the effective operation of the Cyprus solar monitoring network.



Figure 3 Secondment of Dr. Ilias Fountoulakis to ERATOSTHENES; Equipment display to Mrs. Georgia Charalambous

Secondment #1 to PMODWRC and ETH Zurich - Georgia Charalambous

The objective of this training was focused on Solar instrument calibration, data analysis, and knowledge transfer. During Georgia's secondment at PMODWRC in Davos, she gained hands-on experience with solar radiation instrumentation and calibration techniques. She also participated in training sessions with experts, including Dr. Stelios Kazadzis and Dr. Hülsen Gregor, on instrument calibration quality assurance and quality control (QA/QC). She was also introduced to GRASP inversions for aerosol optical property retrieval and urban rooftop solar potential assessments. Additionally, she had the opportunity to present the solar radiation and atmospheric monitoring activities of the ERATOSTHENES CoE and exchange knowledge with researchers working on solar forecasting and radiative transfer modeling.

In the second week at ETH Zurich, Georgia focused on radiative transfer simulations, particularly the "Assessment of Dust Impact on Shortwave Surface Irradiance" using LibRadtran. She also collaborated with Dr. Kazadzis on a research paper and refined methodologies for integrating observational and modeled data. This secondment strengthened her expertise in solar radiation measurement and analysis while fostering collaborations that will support future research and publications.



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Figure 4 Secondment of Georgia to PMODWRC and visit to ETH Zyrich.

Secondment #2 to PMODWRC – Georgia Charalambous

This secondment primarily focused on the Solar data analysis, calibration techniques, and EarthCare campaign preparation. During Georgia's second secondment in January 2025, she expanded on her previous experience by refining measurement protocols and advancing my understanding of solar data processing. She worked on updating instrument calibration procedures to align with PMODWRC standards and participated in in-depth workshops on EarthCare satellite solar products. A significant part of her activities included preparing for the EarthCare campaign, where she actively contributed by incorporating the ERATOSTHENES CoE solar instrument into the measurement campaign.

In the final phase of the secondment, she attended seminars on aerosol radiative effects under realistic 3D atmospheric conditions and revised key sections of a collaborative research paper. Additionally, discussions with Dr. Stelios Kazadzis and Dr. Kyriaki Papachristopoulou helped shape my PhD research plans, integrating insights gained during the secondment. This experience further solidified her expertise in solar radiation analysis and strengthened collaborations for future joint research efforts.



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Figure 5 Second secondment of Georgia Chalambous to PMODWRC.

Secondment to TROPOS – Maria Poutli

The objective of the training was to familiarize Eratosthenes CoE personnel with the data analysis process of the lidar PollyXT retrievals and to introduce the basic software tools for conducting the required QC/QA tests.

During the secondment at TROPOS, the ECoE staff member was introduced to PollyNET data processing utilizing software and tools used in the lidar community, such as the ATLAS software and LabView. At the beginning of the secondment, ECoE staff member was introduced to the ATLAS software, by installing it on her business laptop to analyze some quality tests for the PollyNET data from Cyprus. Dependencies were installed, and various examples were executed to become acquainted with the tool and perform quality assurance tests. The necessary setting and configuration files were then analyzed to gain a better understanding of the entire process. Additionally, python codes relevant to data analysis were provided and tested. The next step involved installing the LabView program on her business laptop to learn how to manually analyze the Lidar data and obtain more reliable outputs. The “depolcal.” program was also installed to acquire the necessary depolarization calibration values, which are essential inputs for running the LabView program. Examples for cases in Dushanbe and Limassol were made to get familiarized with this tool and additional tests were conducted. An introduction to SCC (Single Calculus Chain) configuration was also provided. Communication with TROPOS staff was consistently available throughout the duration of the secondment.



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Figure 6 Secondment of Maria Poutli to TROPOS

Secondment to NOA – Maria Prodromou

This section describes a three-day training workshop conducted from November 11-13, 2024, in Athens, Greece, focused on developing machine learning algorithms for wildfire risk prediction in Cyprus. As part of the second phase of the FIRES Demonstration Project, this training involved knowledge transfer from NOA (National Observatory of Athens) to ERATOSTHENES Centre of Excellence staff, with one participant Maria Prodromou attending in person and two others George Leventis and Panagiotis Vasiliou joined online. The workshop covered essential aspects of machine learning workflows, including data preparation, handling missing values, feature correlation analysis, and model development using Random Forest and Extra Trees algorithms, with emphasis on evaluation metrics like accuracy, precision, recall, and F1-score derived from cross-validation techniques.

Stella Girtsou conducted the training from NOA, who was praised for her expertise in both theoretical and practical aspects of machine learning for fire risk prediction. Participants found the training valuable for enhancing their knowledge of machine learning applications for fire risk prediction and suggested follow-up sessions on advanced topics like deep learning for spatial data. The collaboration with NOA, which owns Firehub, aims to improve wildfire preparedness and response in Cyprus by developing a next-day fire risk prediction model, which will serve as a foundation for creating a user-friendly decision-support platform for authorities and stakeholders to help reduce fire risks and protect natural resources.



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Figure 7 Stella Girtsou (left, NOA) and Maria Prodrinou (right, ERATOSTHENES) during the secondment in Athens.

Secondment to DLR – Nikos Christoforou, Dr. Kyriacos Themistocleous and Valentinos Evripidou

As part of the efforts of transferring knowledge from DLR to the ERATOSTHENES CoE and the overall collaboration on the Maritime awareness application that is expected to be deployed from Cyprus via the utilisation of DAS, an ECoE delegation consisting of Dr. Kyriacos Themistocleous, Nikos Christoforou and Valentinos Evripidou visited DLR's premises in Neustrelitz. The visit took place from the 27th -29th of November.

On the first day of the visit, a general overview of the activities performed by ECoE on the establishment of the Maritime awareness platform in Cyprus was provided, and the status of the ESA PECS project was discussed. During the same day DLR's experts Detmar Kraus and Sergey Voinov provided a system overview and analysis of the configuration of the Marine Demonstrator, the Virtual machine systems deployment and status as well as a live demo and instructions on how to access the environment.

On the second day of the secondment, the training got into an in-depth analysis and explanation of the ECoE's Maritime demonstrator and the Workflow Management Platform and provided an overview and introduction of the ESA IPF and repository. On the same day, the AIS workflow extension and how this is incorporated into the Maritime Awareness platform was explained. At the end of the session DLR provided a demo of the NRT application following the whole process of acquiring a satellite downloading and processing the data through the application.

On the last day, the discussion evolved around the plans that have already been carried out as well as future work that needs to be completed for a smooth installation and operation of the DAS. Specifically, the teams discussed the deployment of virtual machines to Cyta in order to host the IPF,



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DLRs front-end processor, as well as the maritime awareness application. An overall review of the DAS was provided as well as a description of the infrastructure that will support the DAS operations.

Through this three-day visit the Cyprus delegation had the opportunity to get a deep understanding of the maritime awareness application, to discuss about the next steps and to get a general overview of the operation of the DLR EO data acquisition antennas and software.

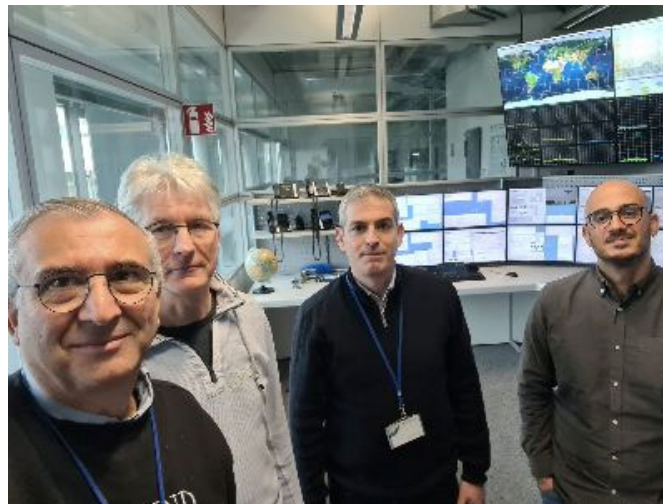


Figure 8 Secondment to DLR from Kyriacos, Nikos and Valentinos.

Secondment of Dr. Constantinos Panayiotou to NOA

The specific secondment outlines a collaborative flood risk assessment project between the ERATOSTHENES Centre of Excellence (ECoE) and the National Observatory of Athens (NOA), structured in three stages. In Stage 1 (February 17-28, 2025), Dr. Panayiotou from ECoE worked with NOA's team at their facilities to collect data from high-risk flood regions in Greece, particularly the Mandra River Basin. This involved reviewing 50 journal publications to identify relevant flooding factors, screening and finalizing 17 criteria based on data availability and redundancy and conducting preliminary statistical analysis. The stage also included strategic meetings with local authorities, including the Mayor of Mandra-Eidyllia and civil protection volunteers, to promote the ERATOSTHENES CoE's network, build synergies, and understand the operational aspects of flood monitoring systems for potential implementation in Cyprus's Garyllis river basin. Stage 2 (March 3-16, 2025) continues the work remotely, focusing on generating a flood inventory map using emergency call data from national authorities as ground truth information to train machine learning models with the identified criteria as input features. Stage 3 (March 16-28, 2025), which had not begun at the time of writing, will involve advanced hydraulic modeling using HEC-RAS and HEC-HMS, processing raw input data, and deeper exploration of hydraulic and hydrological concepts. The expected outcome is the generation of final flood hazard maps for the Garyllis River Basin in Cyprus and the compilation of a joint journal publication between the ECoE and NOA teams.



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Figure 9 Photos during Constantinos' secondment to NOA.

Secondment to TROPOS – Constantinos Chrysostomou

The purpose of the secondment to Leibniz Institute for Tropospheric Research (TROPOS) between the 10th - 21st of March 2025, is to transfer knowledge on aerosol-cloud interactions, particularly focusing on the Dual Field-of-View (FOV) lidar technique. This knowledge transfer is essential to enhance the ERATOSTHENES/CARO atmospheric cluster's capabilities in applying advanced lidar techniques for atmospheric studies. This secondment aims to foster better understanding and application of lidar technology in aerosol-cloud interaction research by sharing expertise in data acquisition, processing, and analysis. The knowledge transfer is expected to encompass both theoretical foundations and practical applications, including lidar system setup, data collection, calibration, validation, and advanced analysis of aerosol-cloud interactions.

The schedule of the secondment is listed below, as provided by TROPOS:

Week 1: Fundamentals of Aerosol-Cloud Interactions and the Dual FOV Technique

Day 1: Introduction to Aerosol-Cloud Interactions



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Day 2: Basics of the Dual FOV Technique.

Day 3: Dual FOV System Configuration and Operation

Day 4: Basics of data analysis: calibration, quality control, cloud identification, microphysical retrieval and visualization.

Day 5: Hands-on exercise on Data analysis: Case study from Limassol.

Week 2: Advanced Analysis and Applications of the Dual FOV Technique

Day 6: Retrieval of Aerosol properties in cloudy scenarios

Day 7: Advanced Data Analysis Techniques and Multi-Sensor Integration

Day 8-9: Hands-on characterization of the aerosol, cloud and meteorological situation for the case study.

Day 10: Research Applications and Future Directions

2.5 Memoranda of Understanding

The ERATOSTHENES CoE has entered into 35 Memoranda of Understanding (MoU) to foster stronger connections with national and international stakeholders in the Earth Observation domain. These agreements involve diverse stakeholders, including governmental departments, public authorities, academic institutions, research organizations, and industry partners (Table 7). Among these MoUs, **26** were signed with local/national public and private organizations (P06a), while **9** were established with international public and private entities (P06b). The ERATOSTHENES CoE aims to enhance cooperation, knowledge exchange, and collaborative efforts within the Earth Observation field through strategic partnerships.

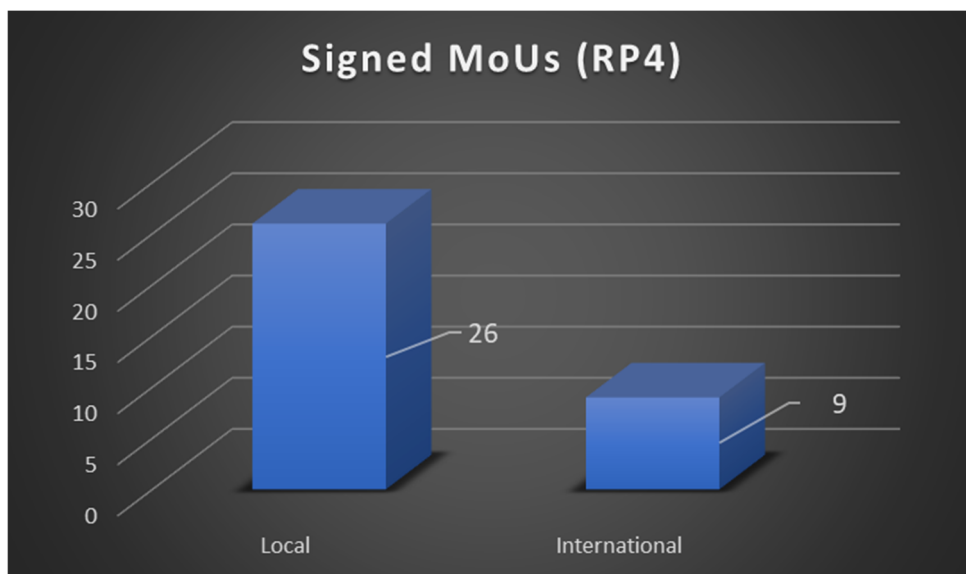


Figure 10 Total MoUs signed during RP4.



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Table 7: Memoranda of Understanding signed during RP4

#	Entity Name	Signature Date	Country	Entity Type
1	HELLAS GIS	13/10/2023	Greece	Private company
2	Z_GIS	16/10/2023	Switzerland	Private company
3	Ministry of Agriculture, Rural Development and Environment	20/10/2023	Cyprus	Governmental organisation
4	Sewerage Board of Limassol-Amathus	5/12/2023	Cyprus	Governmental organisation
5	FORTH-IMS	12/12/2023	Greece	Research centre
6	State Health Services Organisation	18/12/2023	Cyprus	Governmental organisation
7	Miden	30/1/2024	Cyprus	Private company
8	Community Council of Koili	31/1/2024	Cyprus	Public entity
9	Community Council of Stroumpi	31/1/2024	Cyprus	Public entity
10	Community Council of Innia	12/2/2024	Cyprus	Public entity
11	Community Council of Argaka	12/2/2024	Cyprus	Public entity
12	CaSToRC	19/2/2024	Cyprus	Research centre
13	Municipality of Agios Athanasios	4/3/2024	Cyprus	Governmental organisation
14	SPECTRUM	14/3/2024	Cyprus	Private company
15	Regional Center for Remote Sensing of North Africa States (CRTEAN)	9/4/2024	Tunisia	International organisation
16	Stremble	22/4/2024	Cyprus	Private company
17	Department of Public Works	30/5/2024	Cyprus	Governmental organisation
18	Electi Consulting Ltd	9/7/2024	Cyprus	Private company
19	Kampakis and Co	6/8/2024	United Kingdom	Private company
20	Cyprus Agriculture Payment Organisation (CAPO)	27/8/2024	Cyprus	Governmental organisation
21	Paphos Services Complex B	15/10/2024	Cyprus	Governmental organisation
22	Complex (G) of Diarizos and Xeropotamos Valleys	16/10/2024	Cyprus	Governmental organisation



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23	Multibuild Ltd	25/10/2024	Cyprus	Private company
24	CERTH/ITI	15/11/2024	Greece	Research centre
25	Municipality of Paralimni - Deryneia	13/11/2024	Cyprus	Public entity
26	So Easy Insurance Brokers Ltd	21/11/2024	Cyprus	Private company
27	Ierokipia Municipality	17/1/2025	Cyprus	Public Entity
28	Interstellar Institute	22/01/2025	Cyprus	Private Company
29	Information Center for Natural Environment Elements	31/10/2024	Cyprus	Governmental organisation
30	Open University Cyprus	27/01/2025	Cyprus	Public entity
31	UCLAN Cyprus	27/01/2025	Cyprus	Public entity
32	UN	17/02/2025	Austria	International organisation
33	Veterinary Services	10/2/2025	Cyprus	Governmental organisation
34	Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME)	11/2/2025	Jordan	Governmental organisation
35	Ben-Gurion University of the Negev	17/03/2025	Israel	Academia

The following figure (Figure 11) depicts the distribution of the nature of the organisations with which the ERATOSTHENES CoE signed MoU during the current reporting period. More specifically, private companies and research centres account for the **39%** (i.e. 17 MoUs), while the rest are divided into the other categories: Universities – 1 MoU (2%), Governmental organisations – 12 MoU (27%), International Organisations– 1 MoU (2%), Public entities – 13 MoU (30%).



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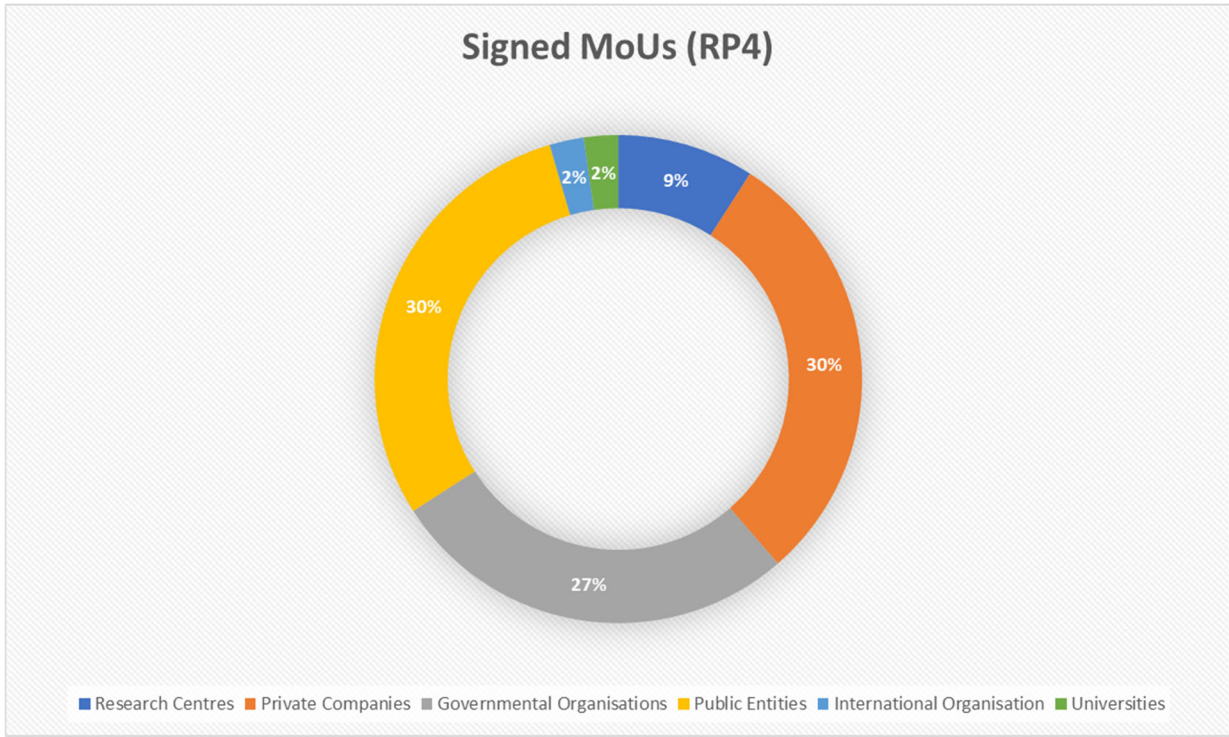


Figure 11 Distribution of organisation's type with which ERATOSTHENES signed MoU during RP4

Considering the significant number of MoUs signed, a selection of photographs is provided that document the various meetings held, where mutual goals were established and the MoUs were signed (Figure 12).



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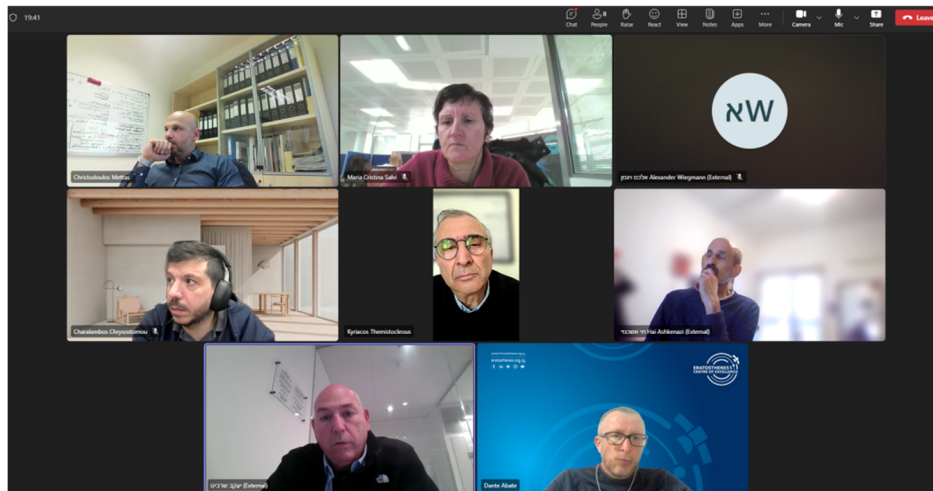


Figure 12: Memoranda of Understanding signed between ECoE and organisations during RP4 (selected images)

2.6 Professional skills development programs

The Skills Development Centre continues to play a crucial role in the continuous technical and scientific development of the ERATOSTHENES CoE’s staff by organizing targeted training activities based on identified knowledge and skills development needs. These training sessions cover a wide range of topics and are delivered through the strategic partners DLR, NOA, PMOD-WRC (affiliated partner), and TROPOS, as part of capacity-building activities. Additionally, invited experts provide specialized training on advanced technical subjects, while certified trainers deliver sessions on essential soft skills. The variety of training activities—including 7 trainings, 8 seminars, 11 workshops, 4 webinars, 2 lectures, 8 secondments, 11 invited experts, 1 summer school and 1 flight campaign—ensures that ECoE staff



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remain up to date with cutting-edge scientific advancements and interdisciplinary methodologies. The details of these activities within RP4 are presented in the deliverable **D 3.4 – Report on the Research & Education Strategic Plan**.

Along the same lines, through the professional skills development program of the ERATOSTHENES CoE, several talks were conducted by inviting experts over to ECoE's premises (Table 8) to share their expertise and knowledge with the research personnel.

Table 8 Invited experts' talks

#	Expert's Name	Date	Organisation	Topic	Thematic Area
1	Prof. Ioannis Gitas	08-09/02/2024	Aristotle University of Thessaloniki	Fuel mapping and fire spread	ALL
2	Prof. Evangelos Baltas	09/02/2024	National Technical University of Athens	Hydrology and Water Resources Development Laboratory at the National Technical University of Athens	Water
3	Mr. Stelios Zervos	13/02/2024	Public Works Department/Coastal Sector	Coastal Zone Management in Cyprus	Disaster Risk
4	Prof. Steffen Kuntz	08-09/04/2024	Universität Freiburg	New market opportunities and challenges for remote sensing services	ALL
5	Prof. Philippe Blanc	30/09/2024	MINES Paris – PSL Research University	Solar Resource Assessment and Forecasting Using Earth Observation and Data Sciences	Energy
6	Dr Dimitris Sykas	30/10/2024	National Observatory of Athens (NOA)	EU AI Act, intro business aspects of AI, combination of AI Act and product/business design	ALL
7	Assoc. Prof. Anis Chekirbane	24/10/2024	INAT	Status of Water Resources in Tunisia and Joint Activities between INAT-ECoE	Water
8	Mrs. Vana Karayianni	30/10/2024	ENSO	HR Strategy	HR



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9	Dr. Nicola Masini	30/01/2025	CNR-ISPC - Institute of Heritage Science	Earth Observation Based Approaches for Archeological Interpretation and Cultural Heritage Protection and Conservation	Cultural Heritage
10	Dr. Chryssi Laspidou	20/11/2024	University of Thessaly	The Gender Dimension in the Science of Geoinformatics and Remote Sensing	ALL
11	Ms. Betty Charalampopoulou	20/11/2024	Geosystems Hellas	The Gender Dimension in the Science of Geoinformatics and Remote Sensing	ALL
12	Dr. Nikos Panagioto-poulos	20/11/2024	University of Athens	The Gender Dimension in the Science of Geoinformatics and Remote Sensing	ALL
13	Ms. Vassia Madesi	20/11/2024	Yellow Window	The Gender Dimension in the Science of Geoinformatics and Remote Sensing	ALL
14	Dr. Corrado Alberto Sigfrido Camera	06/02/2025	Università degli Studi di Milano	Data-driven models for digital soil mapping and landslide susceptibility assessments and their integration with Earth Observations	Environment and Climate
15	Dr. Martin Sudmanns	24/02/2025	Paris Lodron Universität Salzburg - Department of Geoinformatics	Semantic Earth observation data cubes	Big Earth Data Analytics
16	Xinwei Wang	03/12/2024	Queen Mary University of London (QMUL)	Agile Earth Observation Satellite Scheduling: Formulations, Methods, and Future Directions	ALL
17	Yiannis Proestos	27/02/2025	Climate and Atmosphere	Climate Change Impacts: Projections of Heat-Related Mortality in the	Environment & Climate



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			Research Center (CARE-C), Cyl	MENA Region and the Global Health Burden of Accelerating Effects of Non-Optimal Temperatures Compared to Air Pollution	
18	Salvatore Stramondo	13/03/2025	Sapienza University (Rome)	Satellite Earth Observation for protecting infrastructures from natural and anthropogenic hazards	Disaster Risk
19	Prof. Konstantinos Karantzalos	17/03/2025	Ministry of Digital Governance of Greece	Greek National Small Satellite Program: Opportunities for Greece-Cyprus Collaboration	ALL
20	Dr. Younes Abouyoub	17/03/2025	State-Building Division for the MENA Region United Nations	Collaborative Governance for Crisis Management in the MENA Region	ALL
21	Prof. Nikolaos Panagiotou	17/03/2025	Aristotle University of Thessaloniki	The potential of integrating remote sensing and geospatial technologies into crisis communication	ALL
22	Prof. Ioannis Gitas	17/03/2025	Aristotle University of Thessaloniki	MedRIN Nasa Network	ALL
23	Tim Lemmens	17/03/2025	European Commission	Copernicus for Environment Monitoring: status and future outlook	ALL

In-detail information can be found at the submitted deliverable **D6.10 - “Report on visiting experts Seminars and trainings (update 1)”**

2.7 Collaborating networks/institutions

During RP4, 1 collaborating network/ institution has requested access to the ECoE’s data for implementation of scientific projects/field campaigns and common scientific research agenda (**P08**). More specifically, the ERATOSTHENES CoE provides data to the Copernicus Atmospheric Monitoring Service (CAMS) through the in-house research instruments that are available.

As a result of the strong collaboration between the ERATOSTHENES and the CAMS, an imminent contract of collaboration is at place, so for the centre to amplify to Cyprus the uptake of CAMS



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products. Through CAMS Project a collaboration agreement involving Eratosthenes CoE (ECoE), ECMWF, and CAMS National Collaboration Programme (NCP) was initiated where the primary goal is to enhance the use of CAMS products, starting with air quality and pollen/dust monitoring and expanding to CO₂ and GHG emissions verification. This collaboration aims to contribute to climate mitigation and environmental sustainability in Cyprus.

2.8 Postgraduate students

During the RP4, three announcements for PhD positions were made², with a total of 42 PhD positions in Earth Observation, Remote Sensing and Geoinformatics being announced. During this period, **14 PhD candidates** registered. Details³ of these PhD candidates are presented in Table 9 below. During RP4, 1 PhD candidate defended his dissertation.

Table 9 PhD registrations during RP4

#	Research area	Gender	PhD supervisor
1	Earth Observation and Atmospheric Monitoring	F	Diofantos Hadjimitsis
2	Earth Observation and Agriculture	F	Diofantos Hadjimitsis
3	Earth Observation and Agriculture	M	Diofantos Hadjimitsis
4	Earth Observation and Soil Monitoring/Health	M	Diofantos Hadjimitsis
5	Earth Observation and Land Use	F	Diofantos Hadjimitsis
6	Earth Observation and Water Resources Management	F	Diofantos Hadjimitsis
7	Earth Observation and Atmospheric Monitoring	F	Diofantos Hadjimitsis
8	Earth Observation and Disaster Risk Assessment	F	Diofantos Hadjimitsis
9	Earth Observation and Artificial Intelligence	M	Diofantos Hadjimitsis
10	Earth Observation and Artificial Intelligence	M	Diofantos Hadjimitsis
11	Earth Observation and Atmospheric Monitoring	M	Diofantos Hadjimitsis
12	Earth Observation and Cultural Heritage	M	Diofantos Hadjimitsis
13	Earth Observation and Agriculture	F	Diofantos Hadjimitsis

There are **35 MSc students** attending the two MSc courses offered by the Department of Civil Engineering and Geomatics (CUT); i.e. the MSc in Geoinformatics and Geospatial Technologies. From these, **15 postgraduate (MSc and PhD) students** registered during RP4, three (3) come from abroad: 2 are from Greece and 1 from Netherlands, i.e., constituting **2%** of the total number of students (**P09b**). The MSc in Geoinformatics and Earth Observation, developed through the collaboration of the CUT, the ECoE, and the participants of the EXCELSIOR H2020 Teaming Project, officially commenced on September 4, 2023, following its approval by the CYQAAE on 25 November 2022. The program has successfully attracted **15 students in its first 2 academic years**.

The MSc program is jointly delivered by faculty and researchers from CUT and ECoE, ensuring a high level of academic and scientific expertise. Several distinguished personnel serve as module coordinators, contributing their specialized knowledge to different aspects of the curriculum. These include Prof. Diofantos Hadjimitsis, Dr. Kyriacos Themistocleous, Dr. Rodanthi-Elisavet Mamouri, Dr. Argyro Nisantzi, and Dr. Christiana Papoutsas. Their involvement reinforces the strong collaboration between CUT and ECoE, fostering an interdisciplinary approach that combines academic research with

² PhD positions announcement: <https://www.cut.ac.cy/studies/phd/PhD+vacant+positions/ceg-pg/>

³ Due to the General Data Protection Regulation, details do not include name/surname of each PhD candidate.



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practical applications in geoinformatics and Earth observation. Through this program, students gain access to cutting-edge research, hands-on training, and real-world applications, positioning them for careers in academia, industry, and research institutions.

2.9 Project proposals, tenders, services, and funding

In this section, the research project proposals submitted and/or started during RP4, i.e., 1 October 2023 – 31 March 2025, are presented in the table below. Additionally, the funding received from these projects, the partnerships formed with the Industry and the public sector, the tenders submitted, and the services developed by the ECoE during RP4, are presented in detail.

One hundred and nine (109) project proposals were submitted for funding (P10a) until the end of the RP4, budgeted for ECoE’s involvement at **€ 37,319,322.43**. These were submitted in various national and international calls for funding, as shown at the below table. Please check **ANNEX 2** for a complete list of the proposals submitted.

Table 10 Research project proposals submitted under national and international calls during RP4

	Submitted	Coordinator	Partner
H2020/Horizon Europe	29	5	24
ESA-PECS	10	5	5
ERASMUS+	6	5	1
ECHO	1	1	0
Interreg	12	5	7
LIFE	0	0	0
PRIMA	2	1	1
Other European	11	6	5
RIF	36	32	4
Other National	2	2	0
TOTAL	109	62	47

Out of the aforementioned proposals, **seventeen (17) (P10b)** were granted, receiving funding from Horizon Europe, Prima, ESA-PECS, ERASMUS+, Cyprus Research and Innovation Foundation and Other Cyprus as presented in Figure 13, with an overall budget of **€ 5.928.914,53 (P10c)** for ECoE. However, the decision for 28 proposals is still pending, with these having a total budget of € 7.666.017,40 for the ERATOSTHENES CoE.



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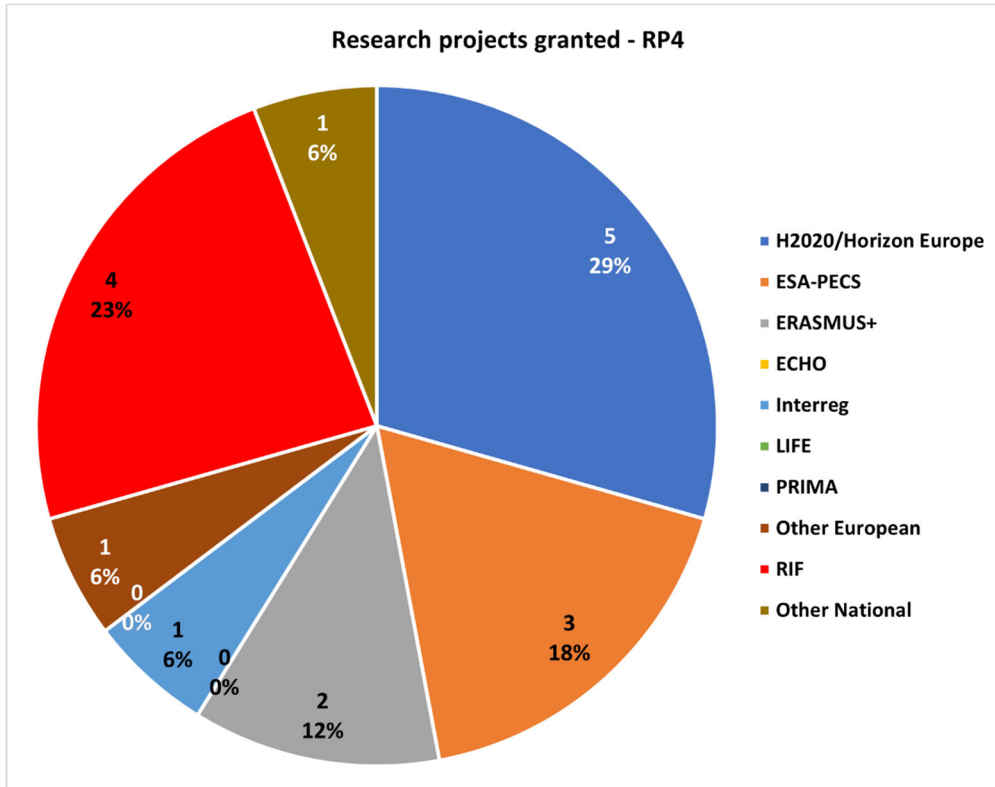


Figure 13 Research projects granted during RP4

The abovementioned granted proposals are distributed to the 3 departments: 5 at the Big Earth Data Analytics, 4 at the Environment and Climate and 8 at the Resilient Society (Figure 14). Figure 14 Granted Research Proposals Distribution to the 3 ERATOSTHENES Departments.

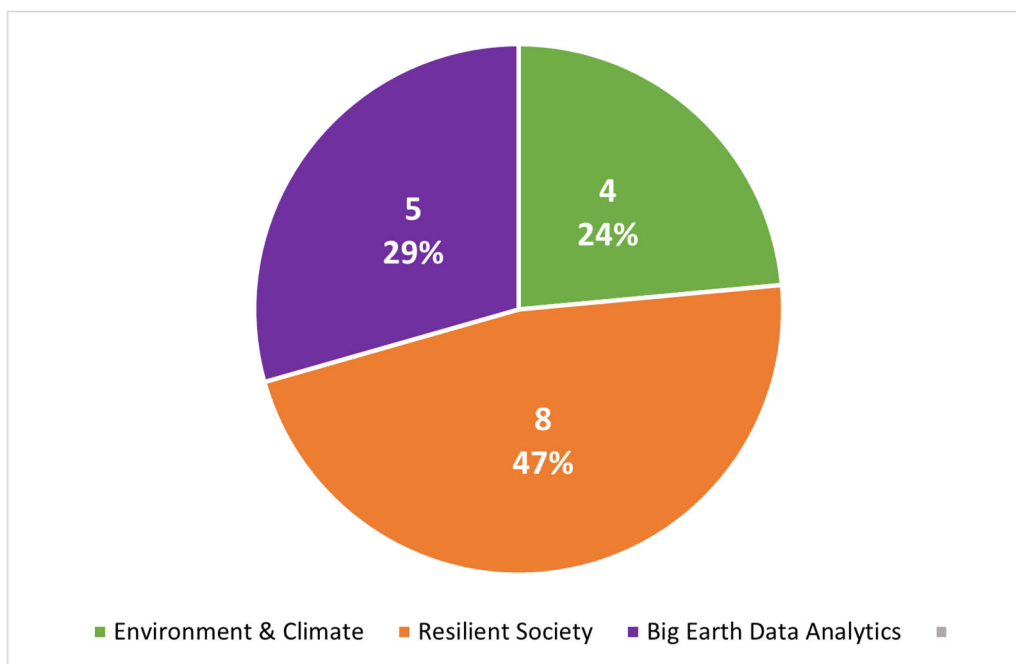


Figure 14 Granted Research Proposals Distribution to the 3 ERATOSTHENES Departments.



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During RP4, the ECoE also participated in the submission of eight tenders for services to local stakeholders.

The awarded tenders represent a comprehensive initiative to enhance local infrastructure and services through a diverse array of projects. These initiatives range from advanced consultancy services for park developments—including the management of the Linear Park “Vathkia” project and the extension of Garilli Linear Park connecting to Berengaria Park—to innovative cultural and technological upgrades, such as transforming warehouse spaces in Latchi into a state-of-the-art Sea and Culture Centre with immersive digital experiences. At the same time, significant efforts are underway to improve data-driven municipal management. One project focuses on auditing existing systems and establishing the requirements for a holistic Geographic Information System (GIS) for the Limassol Sewerage Board, while another aims to create a centralized GIS database for Limassol district municipalities, enhancing decision-making and operational efficiency. Additional projects include the development of an interactive Android application designed to elevate the visitor experience at the Polis Chrysochous Reptile Park, and providing maintenance, upgrades, and consultancy services for the PreciRRI software to optimize irrigation and water conservation practices. Finally, in response to agricultural challenges, a tender has been issued to prepare ten Emergency Action Plans to address key pest threats, safeguarding local agriculture.

These eight projects, with budgets ranging from €5,000 to over €642,200 and diverse timelines, demonstrate a strategic commitment to improving urban infrastructure, public engagement, and environmental resilience across multiple municipalities and organizations.



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Table 11 Tenders for Services during RP4.

#	Service Name	Municipality/Organisation Name	Starting Date	End Date	Budget
1	Consultancy services and project management for the project: Linear Park "Vathkia"	Amathounta Municipality	4/3/2024	4/12/2025	35000
2	Upgrading and landscaping of the warehouses of the Ports Authority in Latchi in the Municipality of Polis Chrysochous into a Multipurpose Sea and Culture Centre	Polis Chrysochous Municipality	10/2/2023	31/7/2024	574200
3	Consultancy services and project management for the project: Garilli Linear Park with extension to the Polemidia Dam and connection to the metropolitan park "Berengaria"	Polemidia Municipality	6/10/2023	31/8/2024	20000
4	Study of the existing systems, infrastructure, and geographic data for the Limassol - Sewerage Board of Limassol - Amathus	Limassol District Local Government Organization	5/6/2024	5/11/2024	54720
5	Creation of a database and development of a Geographical Information System (GIS) for the municipalities of the Limassol district	Lemesos Municipality	7/8/2024	30/12/2029	642200



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6	Consultancy service for the uplifting of the visitor experience of the Reptile park of the Polis Chrysochous Municipality	Polis Chrysochous Municipality	10/1/2025	15/5/2025	5000
7	The use of ‘PRECIRRI’ software and provision of maintenance and upgrades and provision of consultancy services regarding irrigation needs	The Phassouri Plantations co. LTD	January 2025	September 2026	35000
8	Preparation of 10 Emergency aCtion Plans for the Department of Agriculture 2024-2025	Department of Agriculture	December 2024	November 2025	5000

Successful Partnerships with **57 stakeholders** from public authorities, governmental departments, ministries, academia, and research organisations (**S06**), as well as with **42** from the industry and the private sector (**S07**) in general, have been achieved through the submission and funding of research proposals and/or tenders, in which the aforementioned organisations and agencies are part as members of the proposal consortia. This distribution is dispersed over 3 continents as can be seen at the figures below.

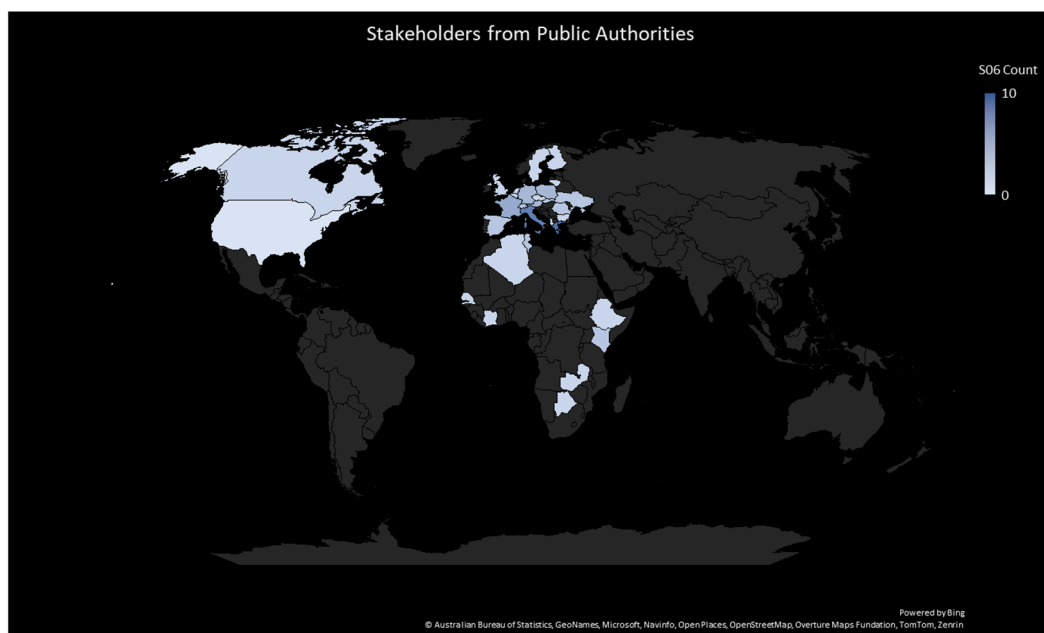


Figure 15 S06 - Distribution of Public Stakeholders at Successfully Funded Proposals During RP4.



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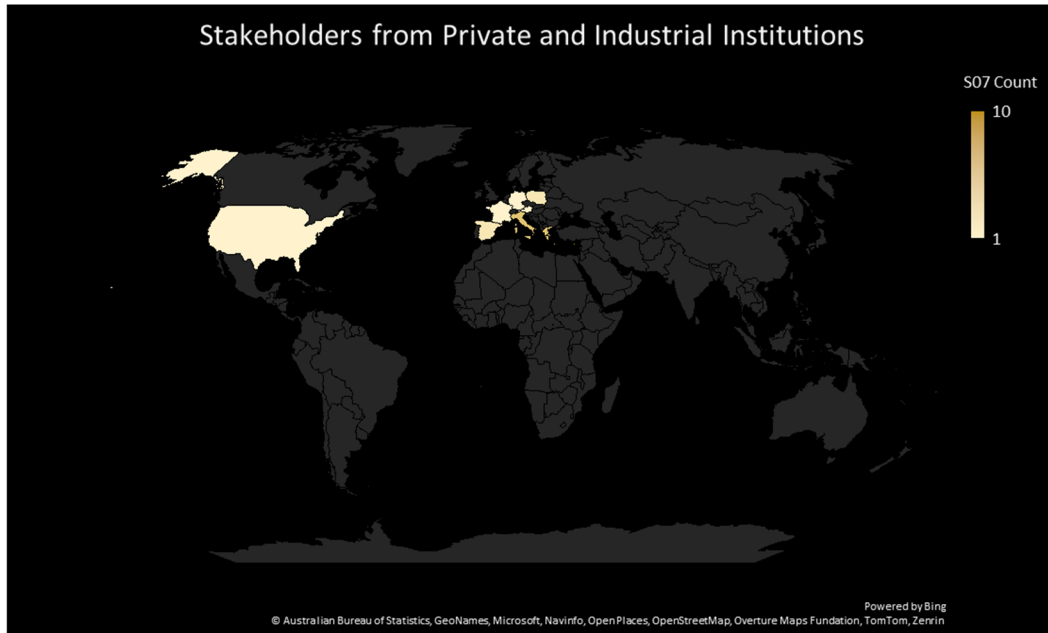


Figure 16 S07 - Distribution of Private and Industrial Stakeholders at Successfully Funded Proposals During RP4.

All the above have assisted in the formation of strong partnerships between the ECoE and the public sector, Academia, and Industry.

Furthermore, the ERATOSTHENES CoE clusters during RP4 continued the development of applications for services either more mature than others, that will become available to the general public aiding and act in an advising role to stakeholders’ needs. The below tables briefly present these services, while more in-detail information can be found at the submitted **D3.14 “Report on joint exploitation strategy and IPR management for RP4”**.

Fully Developed Applications Available for Commercial Exploitation

Table 12 Developed Applications Ready for Commercial Exploitation.

Application	Thematic Area	Partners	Key Features	Status
PRECiRRI	Agriculture	ERATOSTHENES Centre of Excellence, Spectrum External Consultant	- AI & machine learning for irrigation optimization -Real-time recommendations by crop/soil/environment - Cloud-based data storage -Satellite data integration	- Contract signed with Phassouri Plantations (Jan 2025) - In negotiations with P.A. Panaoulas Trading LTD and Elysee



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NADI-RISK	Disaster Risk Reduction	ERATOSTHENES Centre of Excellence	<ul style="list-style-type: none"> - Risk analysis for earthquakes, landslides, floods, fires - GIS & satellite data integration - Building-specific risk assessment - Damage ratios & annual loss estimates 	<ul style="list-style-type: none"> -Advanced negotiations with Ernst & Young (Cyprus) -Presented to multiple insurance companies
UVI Risk Assessment Tool	Access to Energy/Atmosphere	ERATOSTHENES Centre of Excellence, PMOD-WRC, NOA	<ul style="list-style-type: none"> - UV irradiance monitoring & forecasting - Human health impact metrics -Plant growth/damage assessments - Photosynthetically Active Radiation data 	<ul style="list-style-type: none"> - Discussions with Ministry of Health and Cyprus Cancer Patients Organization
Maritime Situational Awareness Tool (MARS)	Big Data Analytics - Marine Security	ERATOSTHENES Centre of Excellence, DLR	<ul style="list-style-type: none"> - EEZ monitoring system - Marine pollution detection - Illegal activity tracking - Oil spill forecasting 	<ul style="list-style-type: none"> - AIS Antenna installed - Satellite Data Acquisition System in development - Expected completion: end of 2026
CyCLOPS Positioning Service	Big Data Analytics/Geoinformatics	ERATOSTHENES Centre of Excellence, CUT	<ul style="list-style-type: none"> - Positioning in ITRF/IGb & CGRS93 frames - GNSS constellation support - 11 GNSS stations with auxiliary equipment - Trimble Pivot Platform integration 	<ul style="list-style-type: none"> - Operational web platform established



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Applications Under Development

Table 13 Applications Under Development by ERATOSTHENES and Strategic Partners.

Application	Thematic Area	Partners	Key Features	Status
EO4CH	Cultural Heritage	ERATOSTHENES Centre of Excellence, DLR	<ul style="list-style-type: none"> - Endangered cultural site monitoring - Archaeological site identification -Damage/looting detection -Conservation assistance 	- In discussions with Department of Antiquities
CARO Tools	Atmosphere	ERATOSTHENES Centre of Excellence, TROPOS	<ul style="list-style-type: none"> -Mediterranean atmospheric parameter monitoring - Aviation regulation support -Air mass identification -Aerosol impact quantification 	- Four tools in development
Potato Crop Tool	Agriculture	ERATOSTHENES Centre of Excellence, NOA	<ul style="list-style-type: none"> -Optimal sowing/harvesting timing - Daily risk assessment maps - Satellite & field data integration 	- Under development
Carbon Farming	Agriculture	ERATOSTHENES Centre of Excellence, iBEC	<ul style="list-style-type: none"> - Carbon footprint measurement - Farming solution guidance - Soil analysis & satellite data integration 	- Discussions with Ministry of Agriculture & other stakeholders



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Cyprus Geohazards Observatory	Disaster Risk Reduction	ERATOSTHENES Centre of Excellence, NOA	<ul style="list-style-type: none"> -Subsidence monitoring - Landslide mapping -Ground displacement tracking - Sentinel data analysis 	- Fully developed monitoring/mapping tool
Cyprus Flood Observatory	Disaster Risk Reduction	ERATOSTHENES Centre of Excellence, NOA	<ul style="list-style-type: none"> - Drought monitoring via vegetation dynamics - Flash flood risk assessment - Evacuation pathway planning 	- Two tools under development
Cyprus Fire Observatory	Disaster Risk Reduction	ERATOSTHENES Centre of Excellence, NOA	<ul style="list-style-type: none"> - Real-time fire risk assessment - AI analysis of environmental factors - Prevention planning support 	- Under development with guidance from Aristotle University
EV Charging Allocation	Energy	ERATOSTHENES Centre of Excellence, FOSS	<ul style="list-style-type: none"> - Optimal EV charging station placement -GIS-based infrastructure planning 	- Pilot in Strovolos region (Nicosia)
GIS4PV Tool	Energy	ERATOSTHENES Centre of Excellence, FOSS	<ul style="list-style-type: none"> - PV energy production calculation - Solar potential assessment - Web-based PVGIS interface 	- Under development



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2.10 Publications

During RP4, **116** publications were carried out by ERATOSTHENES Research Centre/ECOE researchers, from which **28** are published in Journals (**SC01**), while the rest **88** in conferences (**SC02**). Furthermore, to showcase the strong bonding amongst the EXCELSIOR consortium, out of the 116 publications, the **45** are drafted collaboratively and constitute products derived from either capacity-building activities, secondments and/or mutual research endeavours. More specifically, the **12** were submitted in journals (**P12a**), while the **33** were submitted at conference proceedings (**P12b**).

A complete list of the publications in the form of citations is provided in the tables below.

Table 14 Journal papers published during RP4

#	Journal Publication
1	M. Mavrovouniotis, M. N. Anastasiadou, D. Hadjimitsis. Measuring the performance of ant colony optimization algorithms for the dynamic traveling salesman problem. <i>Algorithms</i> , vol. 16, no. 12, 2023.
2	F. M. Müller, I. S. Bonilha, V. A. Schneider, V. B de Souza, G. d-R. da Cruz, M. Mavrovouniotis. GATeS: A hybrid based on genetic algorithm and tabu search for the direct marketing problem. <i>IEEE Access</i> , vol. 12, pp. 20867-20884, 2024.
3	K. Manousakis, G. Savva, N. Papadouri, M. Mavrovouniotis, A. Christofides, N. Kolokotroni, G. Ellinas. A practical approach for resource-constrained project scheduling. <i>IEEE Access</i> , vol. 12, pp. 12976-12991, 2024.
4	Fragkos K, Fountoulakis I, Charalampous G, Papachristopoulou K, Nisantzi A, Hadjimitsis D, Kazadzis S. Twenty-Year Climatology of Solar UV and PAR in Cyprus: Integrating Satellite Earth Observations with Radiative Transfer Modeling. <i>Remote Sensing</i> . 2024; 16(11):1878. https://doi.org/10.3390/rs16111878
5	Mamouri, R.-E., Ansmann, A., Ohneiser, K., Knopf, D. A., Nisantzi, A., Bühl, J., Engelmann, R., Skupin, A., Seifert, P., Baars, H., Ene, D., Wandinger, U., and Hadjimitsis, D.: Wildfire smoke triggers cirrus formation: lidar observations over the eastern Mediterranean, <i>Atmos. Chem. Phys.</i> , 23, 14097–14114, https://doi.org/10.5194/acp-23-14097-2023 , 2023.
6	Michailidis, K., Koukoulis, M.-E., Balis, D., Veefkind, J. P., de Graaf, M., Mona, L., Papagianopoulos, N., Pappalardo, G., Tsikoudi, I., Amiridis, V., Marinou, E., Gialitaki, A., Mamouri, R.-E., Nisantzi, A., Bortoli, D., João Costa, M., Salgueiro, V., Papayannis, A., Mylonaki, M., Alados-Arboledas, L., Romano, S., Perrone, M. R., and Baars, H.: Validation of the TROPOMI/S5P aerosol layer height using EARLINET lidars, <i>Atmos. Chem. Phys.</i> , 23, 1919–1940, https://doi.org/10.5194/acp-23-1919-2023 , 2023.
7	Papetta, A., Marengo, F., Kezoudi, M., Mamouri, R.-E., Nisantzi, A., Baars, H., Popovici, I. E., Goloub, P., Victori, S., and Sciare, J.: Lidar depolarization characterization using a reference system, <i>Atmos. Meas. Tech.</i> , 17, 1721–1738, https://doi.org/10.5194/amt-17-1721-2024 , 2024.
8	Prodromou M, Theocharidis C, Gitas IZ, Eliades F, Themistocleous K, Papasavvas K, Dimitrakopoulos C, Danezis C, Hadjimitsis D. Forest Habitat Mapping in Natura2000 Regions in Cyprus Using Sentinel-1, Sentinel-2 and Topographical Features. <i>Remote Sensing</i> . 2024; 16(8):1373. https://doi.org/10.3390/rs16081373
9	Eliades M, Neophytides S, Mavrovouniotis M, Panagiotou CF, Anastasiadou MN, Varvaris I, Papoutsas C, Bachofer F, Michaelides S, Hadjimitsis D. Temporal Dynamics of Global Barren



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	Areas between 2001 and 2022 Derived from MODIS Land Cover Products. Remote Sensing. 2024; 16(17):3317. https://doi.org/10.3390/rs16173317
10	Argyriou AV, Prodromou M, Theocharidis C, Fotiou K, Alatza S, Loupasakis C, Pittaki-Chrysodonta Z, Kontoes C, Hadjimitsis DG, Tzouvaras M. Integration of Multi-Source Datasets for Assessing Ground Swelling/Shrinking Risk in Cyprus: The Case Studies of Pyrgos–Parekklesia and Moni. Remote Sensing. 2024; 16(17):3185. https://doi.org/10.3390/rs16173185
11	Koumoulidis D, Varvaris I, Pittaki Z, Hadjimitsis D. Sewage Sludge in Agricultural Lands: The Legislative Framework in EU-28. Sustainability. 2024; 16(24):10946. https://doi.org/10.3390/su162410946
12	Theocharidis C, Doukanari M, Kalogirou E, Christofi D, Mettas C, Kontoes C, Hadjimitsis D, Argyriou AV, Eliades M. Coastal Vulnerability Index (CVI) Assessment: Evaluating Risks Associated with Human-Made Activities along the Limassol Coastline, Cyprus. Remote Sensing. 2024; 16(19):3688. https://doi.org/10.3390/rs16193688
13	M. Poutli, D. Hadjimitsis, A. Nisantzi, A. Ansmann, and R. E. Mamouri "Smoke optical properties: lidar observations in Cyprus during 2021-2023", Proc. SPIE 13212, Tenth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2024), 1321218 (13 September 2024); https://doi.org/10.1117/12.3037306
14	A generalized machine learning approach for cost-effective monitoring of irrigation suitability: A demonstration case in El Fahs aquifer (Tunisia). C.F. Panagiotou, C. Konstantinou, A. Chekirbane Groundwater for Sustainable Development 27, 101324 doi.org/10.1016/j.gsd.2024.101324
15	Identification of feasible regions for managed aquifer recharge in the Republic of Cyprus using a co-participative multi-criteria decision analysis CF Panagiotou, S Eisenreich, OT Barouta, A Chekirbane, T Martins, ... Groundwater for Sustainable Development 27, 101323. doi.org/10.1016/j.gsd.2024.101323
16	Advancements in field development planning through mathematical analysis for reserves estimation, casing design, accidental events and carbon dioxide storage. M Giakoumi, C Konstantinou, N Papadimitriou, CF Panagiotou, ... Gas Science and Engineering 130, 205420. doi.org/10.1016/j.jgsce.2024.205420
17	Proposal for a managed aquifer recharge feasibility index for southern Portugal using multi-criteria decision analysis. TN Martins, TE Leitão, MM Oliveira, CF Panagiotou, C Stefan, Anis Chkirbene, Maria Manuela Portela. Groundwater for Sustainable Development 26, 101280 doi.org/10.1016/j.gsd.2024.101280
18	Assessing the groundwater quality of El Fahs aquifer (NE Tunisia) using multivariate statistical techniques and geostatistical modeling. CF Panagiotou, A Chekirbane, M Eliades, C Papoutsas, E Akylas, et al. Applied Water Science 14 (8), 170. doi.org/10.1007/s13201-024-02233-z
19	Temporal Dynamics of Global Barren Areas between 2001 and 2022 Derived from MODIS Land Cover Products M Eliades, S Neophytides, M Mavrovouniotis, CF Panagiotou, et al.



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	Remote Sensing 16 (17), 3317 doi.org/10.3390/rs16173317
20	E. CARSTEA, K. FRAGKOS, Solar radiation characteristics at the INO BSRN station, Optoelectronics and Advanced Materials - Rapid Communications, 18, 11-12, November-December 2024, pp.562-571 (2024).
21	Neophytides, S.P., Eliades, M., Mavrovouniotis, M. et al. Improved water resources management for smart farming: a case study for Cyprus. Sci Rep 14, 31751 (2024). https://doi.org/10.1038/s41598-024-82797-7
22	Milidonis, K., Abate, D. and Blanco, M.J., 2024. Heliostat geometrical characterization by UAV-assisted, close-range photogrammetry. Solar Energy, 280, p.112849.
23	Malinverni, E.S., Abate, D., Agapiou, A. et al. SIGNIFICANCE deep learning based platform to fight illicit trafficking of Cultural Heritage goods. Sci Rep 14, 15081 (2024). https://doi.org/10.1038/s41598-024-65885-6
24	Bombardieri, Luca; Violaris, Yiannis; Iosephides, Demetrios A.; Abate, Dante; Rehren, Thilo; Perna, Massimo. FROM MARKING TO WRITING? A PICROLITE INSCRIBED PLAQUE FROM ERIMI IN CYPRUS. Studi Micenei ed Egeo-Anatolici, 2023, Issue 9, p9
25	Charalampos Konstantinou, Matheos Giakoumi, Constantinos F. Panagiotou (2025), A game-theoretic framework for sustainable water allocation in agriculture: Enhancing economic and water efficiency in Akrotiri district (Cyprus), Science of The Total Environment, Volume 966, 178691, doi:10.1016/j.scitotenv.2025.178691 .
26	Papachristopoulou, K., Fountoulakis, I., Bais, A. F., Psiloglou, B. E., Papadimitriou, N., Raptis, I.-P., Kazantzidis, A., Kontoes, C., Hatzaki, M., and Kazadzis, S.: Effects of clouds and aerosols on downwelling surface solar irradiance nowcasting and short-term forecasting, Atmos. Meas. Tech., 17, 1851–1877, https://doi.org/10.5194/amt-17-1851-2024
27	Theocharidis C, Eliades M, Kolokoussis P, Miltiadou M, Danezis C, Gitas I, Kontoes C, Hadjimitsis D. Exploring Sentinel-1 Radar Polarisation and Landsat Series Data to Detect Forest Disturbance from Dust Events: A Case Study of the Paphos Forest in Cyprus. Remote Sensing. 2025; 17(5):876. https://doi.org/10.3390/rs17050876
28	Theocharidis C, Prodromou M, Doukanari M, Kalogirou E, Eliades M, Kontoes C, Hadjimitsis D, Neocleous K. Integrated Coastal Vulnerability Index (ICVI) Assessment of Protaras Coast in Cyprus: Balancing Tourism and Coastal Risks. Geographies. 2025; 5(1):12. https://doi.org/10.3390/geographies5010012

Table 15 Conference papers published during RP4

#	Conference Publication
1	Tzouvaras, M., Alatzas, S., Prodromou, M., Theocharidis, C., Fotiou, K., Argyriou, A., Loupasakis, C., Apostolakis, A., Pittaki, Z., Kaskara, M., Kontoes, C., and Hadjimitsis, D.: Synergy Of Advanced Processing Techniques Using Copernicus Sar And Optical Satellite Imagery To Detect Ground Displacements: The Case Studies Of Pyrgos And Parekklesia Villages In Cyprus, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XLVIII-1/W2-2023, 1581–1587, https://doi.org/10.5194/isprs-archives-XLVIII-1-W2-2023-1581-2023 , 2023.
2	C. Theocharidis, Marinos Eliades, Christiana Papoutsas, Diofantos Hadjimitsis, Ioannis Gitas, Chris Danezis, "What do Long-Term Satellite Data Reveal about Forest Dynamics in the Paphos Forest?," IGARSS 2024 - 2024 IEEE International Geoscience and Remote Sensing



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	Symposium, Athens, Greece, 2024, pp. 3650-3654, doi: 10.1109/IGARSS53475.2024.10641705.
3	Leventis G., Argyriou A.V., Abate D., Hadjimitsis D., Spatial Dynamics of Urbanisation: Analyzing The Impact on Amathus Archaeological Landscape, IEEE IGARSS 2024, 7-12 July, Athens, Greece, 2024.
4	Themistocleous, K. and Prodromou, M.: The Impact Of Dust Pollution From Unpaved Roads In The Akamas Peninsula, Cyprus, Using Uav And Sentinel-2 Images, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XLVIII-1/W2-2023, 505–510, https://doi.org/10.5194/isprs-archives-XLVIII-1-W2-2023-505-2023 , 2023.
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Cyprus University of Technology

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48	C. Danezis et al., "Enhancing Geohazard Resilience in Cyprus: The Cyclops+ Integrated GNSS and InSAR Strategic Monitoring Infrastructure," IGARSS 2024 - 2024 IEEE International Geoscience and Remote Sensing Symposium, Athens, Greece, 2024, pp. 3802-3807, doi: 10.1109/IGARSS53475.2024.10640814.

The following publications were submitted to the 11th International Conference on Remote Sensing and Geoinformation of Environment, Paphos Cyprus, namely RSCy 2025, which ERATOSTHENES co-organizes annually. The proceedings are expected to be published in due time though for purposes of better reporting, the following are accounted at the respective KPIs for RP4:

Table 16 RSCY 2025 Publications.

#	Corresponding ERATOSTHENES Author	Publication Title
1	Dimitrios Koumoulidis	Employing Spatial Queries in Qgis: Identification and Evaluation of Potential Sites for Forest Nurseries Installation in the Limassol Region.
2	Georgia Charalampous	One Year of Ground-Based Solar Irradiance Measurements: Data Quality Assessment and Insights from Limassol Cyprus Site
3	Muhammad Amjad Iqbal	CFAR-Based Automatic Ship Detection Exploiting Polarimetric Correlation Descriptors
4	Konstantinos Christofi	Deep Learning-Based Grassland Mapping with Sentinel-2: Prioritizing Key Spectral Bands and Time Periods



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5	Eleni Loulli	Investigating the Impact of Drought Dynamics on Vine Yield Production in Cyprus
6	Thrasos Stylianou	Applying remote sensing to automatically detect and monitor Xylella fastidiosa in olive orchards
7	Stelios P. Neophytides	An Empirical Comparison of Machine Learning Algorithms for Groundwater Quality Classification
8	Eirini Nikolaou	Evaluating Carbon Farming Practices for sustainable soil management in Citrus Cultivation
9	Stavroula Dimitriadi	Integrating Carbon Farming Practices in Potato Cropping Systems: A Pathway to Sustainable Agriculture
10	Marianna Hadjichristodoulou	Assessing Mediterranean Fruit Fly Infestation Risk with Satellite and Ground-Based Monitoring
11	Eleni Neofytou	Assessment of Drought and Soil Moisture Relationship: A case study in Cyprus using Remotely sensed data
12	Muhammad Amjad Iqbal	Accelerating Ocean Currents Analysis: Tiling-Based Parallel Computing for SAR Imagery
13	Despina Makri	Habitat types mapping using remote sensing techniques in Cyprus
14	Ioannis Varvaris	Nostradamus: Harnessing Data Cubes and Multiple Sources of Data for Sustainable Agriculture and Food Security
15	Ioannis Varvaris	LandShift: Co-Creating Living Spaces to Resolve Land-Use Conflicts for Climate-Resilient Landscapes
16	Ioannis Varvaris	AfroGrow: Co-Creating Living Labs for Sustainable Agroforestry and Climate Resilience Across Africa
17	Spyroula Georgiou	Identify the drought in Cyprus by Using Hydrological, Hydraulic and Satellite data
18	Marina Doukanari	Optimizing Urban Expansion Using GIS-Based Multi-Criteria Decision Analysis (MCDA)
19	Josefina Kountouri	Proactive Disaster Notification: Utilizing Smart Home Networks for Emergency Response
20	Constantinos F. Panagiotou	Holistic multicriteria framework to assess flood risk in Garyllis river basin, Cyprus
21	Francesco Scarlatti	A future centre for climate and weather research in the Eastern Mediterranean: the ATARRI project
22	Constantinos Chrysostomou	Seasonal wind analysis in Limassol, Cyprus, using the ground-based Doppler LiDAR of the CARO National Facility
23	Athina Savva	HETEAC-Flex Model: Comparative Evaluation of 6 Forward model configurations for Dust Cases using Ground-based Lidar Observations in Limassol
24	Konstantinos Roussos	Byzantine fortifications within their Landscape and Environmental Context: A GIS and a Remote Sensing Approach
25	Maria Poutli	EarthCARE satellite mission: Calibration and Validation activities in the Cyprus region
26	Eleftheria Kalogirou	Using SAR Data Fusion for Near Real-Time Applications to Improve Maritime Situational Awareness in the Eastern Mediterranean



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27	Maria Prodromou	Bridging the Skills Gap in Remote Sensing and GIS: Insights from the ReSENSE Project
28	Maria Prodromou	Leveraging Machine Learning for Wildfire Risk Assessment Using Multimodal Geospatial and Climate Data in Cyprus
29	Georgios Leventis	Proxy Remote Sensing and Data Fusion for the Protection of Cultural Heritage Monuments
30	Christos Theocharidis	Monitoring Pine Processionary Moth (<i>Thaumetopoea pityocampa</i>) Defoliation in Paphos Forest, Cyprus Using Sentinel-2 and Google Earth Engine
31	Hossein Panahifar	Multi-instrument platforms for investigating the aerosol-cloud-dynamic interaction in Eastern Mediterranean
32	Christodoulos Dimitriou	Assessing thermal stress on cultural heritage in Limassol: A multi-scale remote sensing approach using Sentinel-3 and Landsat 9 land surface temperature data
33	Christodoulos Dimitriou	Machine Learning for identifying damage patterns on cultural heritage – case study the Tomb of the Kings in Paphos, Cyprus
34	Demetris Christofi	Assessing Water Loss and Sediment Deposition at Mavrokolympos Dam Using Multimodal Methods: TLS, UAV, and Satellite Imagery
35	Kyriacos Themistocleous	Bridging Past and Present: Advancing Cultural Preservation Through 3D Digitization
36	Andreas Livadiotis	Digitizing the Churches of Limassol: Processing Photogrammetric Point Clouds for Cultural Heritage Preservation and Public Access
37	Filippos Charalambous	Mainstreaming carbon farming practices in Cyprus Oliviculture: The Carbonica Project
38	Marios Tzouvaras	Artificial Intelligence and Earth Observation towards Disaster Risk Reduction: The AI-OBSERVER's research exploratory project
39	Mahmoud Mardini	Fostering Innovation and Entrepreneurship in Cultural Heritage: A Business Workshop for Young Researchers in Cyprus
40	Nikos Christoforou	Establishing a 9m S/X/Ka Band Antenna in Cyprus: A Strategic Leap in Earth Observation

The aforementioned publications fall under the various ECoE's departments, where the majority of them (54) belong to the Resilient Society department, while 48 are linked to the Environment and Climate department and the remaining 14 are focused on Big Earth Data Analytics.

A more thorough analysis sheds light on the type of publication per research department. As far as the Resilient Society department is concerned, most of the publications are conference papers (45), whereas 9 journal papers were published during RP4. On the other hand, the Environment and Climate department has published 15 journal papers and 45 conferences ones. The Big Earth Data Analytics department has published 10 in conferences, and 4 in journals.



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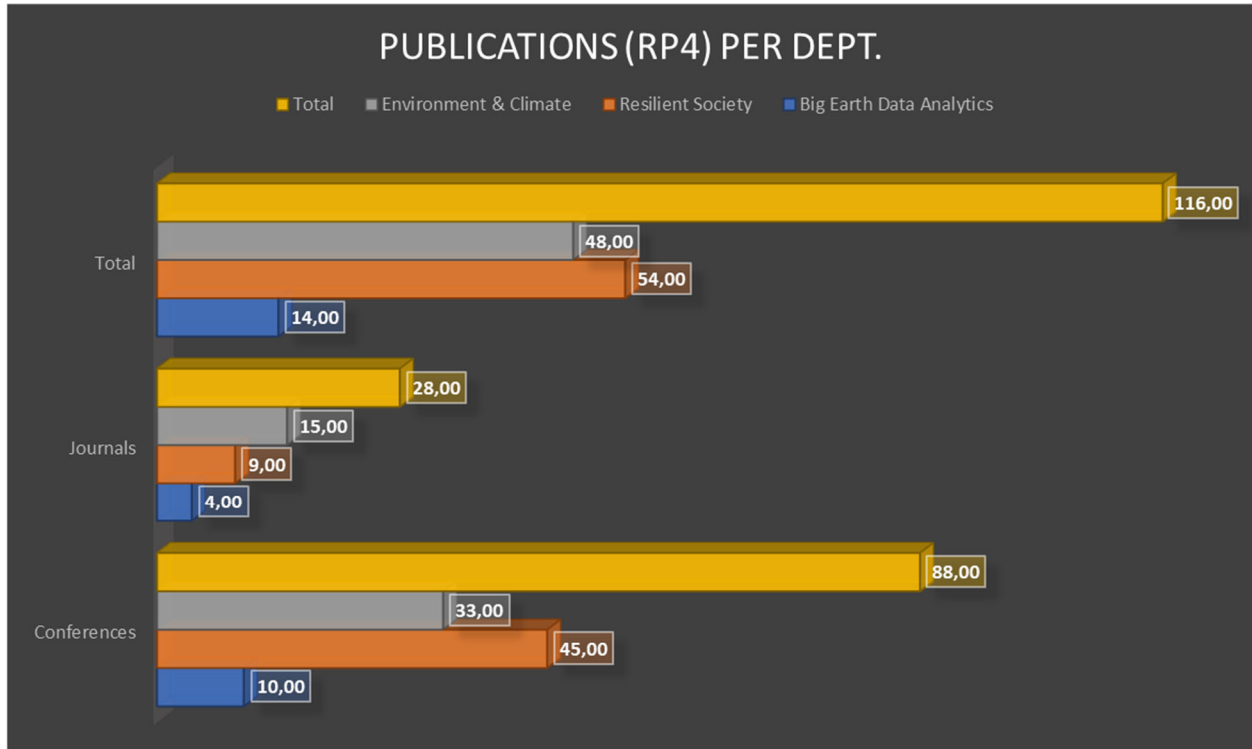


Figure 17 Publications Per Department at RP4.

Scopus⁴ and Google Scholar⁵ were used to calculate the grouped h-index and the citations during RP4. To calculate these statistics from Scopus and Google Scholar, the ERATOSTHENES researchers were grouped as did in previous submitted analyses.

In Google Scholar, a dedicated profile of the ECoE⁶ (Figure 18) was created in order to be able to monitor the ECoE’s staff publications and their citations continuously and more efficiently, whereas in Scopus, a list of publications has been created for monitoring purposes, and to export publication statistics.

⁴ Scopus: <https://www.scopus.com/>

⁵ Google Scholar: <https://scholar.google.com/>

⁶ ECoE’s Google Scholar profile: https://scholar.google.com/citations?user=u_U65_8AAAAJ&hl=en



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TITLE	CITED BY	YEAR
<input type="checkbox"/> Quantitative microbial risk assessment (QMRA) for setting health-based performance targets during soil aquifer treatment CF Panagiotou, C Stefan, P Papanastasiou, C Sprenger Environmental Science and Pollution Research 30 (6), 14424-14438	16	2023
<input type="checkbox"/> Application of geostatistical methods to groundwater salinization problems: A review CF Panagiotou, P Kyriakidis, E Tzirilis Journal of Hydrology 615, 128566	29	2022
<input type="checkbox"/> Monitoring and integrating the changes in vegetated areas with the rate of groundwater use in arid regions M Morsy, S Michaelides, T Scholten, P Dietrich Remote Sensing 14 (22), 5767	5	2022

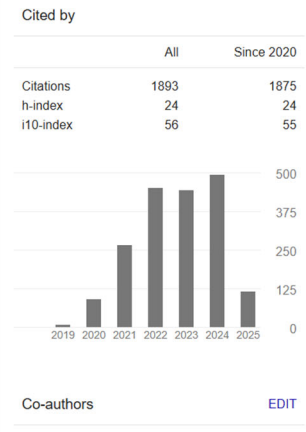


Figure 18 ECoE’s Google Scholar profile

The ERATOSTHENES CoE’s publications have reached **1875 citations** in Google Scholar and **1983 citations** in Scopus (**SC03**). Based on these publications and their respective citations, the **grouped h-index (P11)** of the ECoE researchers by the end of RP4 is **24 in Google Scholar and 39 in Scopus**. The citations and the h-index figures are cumulative, starting from 1 October 2019.

It is noted that based on the KPIs of the three departments (i.e. Environment and Climate, Resilient Society and Big Earth Data Analytics), the cumulative citations until the end year of 2027 of the EXCELSIOR – Phase 2 project are expected to be 6500. It becomes obvious that this target is challenging to achieve, but the cumulative nature of citations makes it difficult to forecast the number of citations in the long-term. However, over the next few of years, it is expected that the number of publications will increase significantly, and thus, the ECoE’s publications citations are expected to meet the final goal.

Furthermore, ERATOSTHENES CoE’s researchers participated in various **conferences/workshops**, carrying out **54 oral and/or poster presentations (SC04)** regarding their research outputs and/or for promoting the ERATOSTHENES CoE.

2.11 Patents

The “Concrete Corrosion Remote Sensing System (CCRSS)” project of the ERATOSTHENES CoE has been selected for the 4th Cycle of Cyprus Seeds, a leading program that supports the commercialization of innovative research projects in Cyprus. The selection of the CCRSS project is a significant recognition of the Centre’s innovation and scientific excellence, paving the way for the commercial exploitation of research outcomes. The CCRSS project team consists of Dr. Andreas Christofe, Professor Andreas Anayiotos, and Marina Doukanari. The 4th Cycle kick-off event took place on 17 February, 2025, at the PwC Experience Center in Nicosia, bringing together key figures from the academic, business, and governmental sectors. As part of the program, the CCRSS team will benefit from funding, expert mentorship, and networking opportunities with investors and leading innovation stakeholders, enhancing the potential for the project’s commercial success. Professor Diofantos Hadjimitsis, Managing Director of the ERATOSTHENES CoE, stated: “ With a team of 90 highly skilled experts committed to cutting-edge research and innovation, and equipped with state-of-the-art technology, the ERATOSTHENES CoE develops solutions with a tangible impact on society by leveraging Space Technology, Remote Sensing, and geoinformation, Through strong international collaborations and a



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focus on applied research, the Centre promotes sustainable development and technological progress in the region. The selection of the CCRSS project for the 4th Cycle of Cyprus Seeds is a significant acknowledgment of the pioneering research conducted at the ERATOSTHENES CoE. The support from Cyprus Seeds will enable us to advance the commercial potential of our technology further, contributing to both scientific progress and economic growth in Cyprus. We are proud of our team and look forward to seizing this opportunity to bring our research one step closer to the market, contributing to scientific and economic growth in Cyprus.



Figure 19 ERATOSTHENES Cyprus Seeds Patent to be Commercialised into Start-Up.

2.12 Demonstration Projects

Throughout the RP4, various demonstration projects were planned to mainly highlight the collaboration between the advanced partners within the EXCELSIOR consortium with a higher purpose apart from the knowledge transfer to produce also scientific publications and proposals jointly with them (i.e. new KPIs added following externals reviewers' evaluation). These demonstration activities allow the ERATOSTHENES CoE teams to achieve excellence in the three thematic clusters through the development of scientific capabilities and technical skills. Indicatively mentioning the below:

1. Development of the National Next-Day Wildfire Risk Prediction AI Model for Cyprus

The second phase of the Fires demonstration project aims to develop a national next-day wildfire risk prediction AI model for Cyprus, building upon the fire data cube created during the first phase. This initiative will leverage state-of-the-art machine learning algorithms to predict fire risk. The key objective is to identify the most effective AI-based machine learning algorithm for this purpose. The project involves close collaboration between the ERATOSTHENES CoE and the National Observatory of Athens (NOA), focusing on capacity building and showcasing the research capabilities of ECoE while addressing domain-specific challenges to ensure high-quality results.

The implementation of this project is structured into two phases: Phase A (October 2024 - June 2025) will involve enhancing the existing multimodal dataset, establishing it on the ERATOSTHENES server, and implementing various machine learning and deep learning algorithms for fire risk prediction,



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followed by an assessment of their accuracy. Phase B (June - July 2025) will focus on disseminating findings through publications and webinars. The project includes specific knowledge transfer activities, including training on classical ML fire risk prediction algorithms in October 2024 and on Deep Learning models in December 2024. Key performance indicators include publishing at least two scientific articles, conducting at least two knowledge transfer activities, involving at least five participants in seminars, and developing at least one demo application.

2. Aerosol and Cloud Observation

The Aerosol and Cloud Observation demonstration project focuses on leveraging the Ground-Based Station (GBS) in Limassol to conduct continuous atmospheric observations for monitoring atmospheric processes and generating aerosol and cloud-related products. The project aims to demonstrate the capacity of the GBS as part of the newly established Cyprus Atmospheric Remote Sensing Observatory (CARO) National Facility to monitor extreme atmospheric processes using state-of-the-art remote sensing techniques. Key objectives include continuous monitoring of the atmospheric state, linking GBS observations with Research Infrastructure networks and data portals, increasing the visibility of CARO at European and EMMENA regional levels, developing a framework for climate monitoring, and demonstrating statistical analysis capabilities.

The project will be implemented in collaboration with TROPOS (Leibniz Institute for Tropospheric Research) and will follow procedures to integrate the ERATOSTHENES CoE and CARO into the ACTRIS-ERIC (Aerosol, Clouds and Trace Gases Research Infrastructure). Implementation activities include GBS data acquisition and processing, Earth Observation data processing, model data acquisition, statistical analysis, case study selection, result interpretation, scientific dissemination, and communication with stakeholders. The project schedule spans from September 2024 to June 2025, with major milestones including establishing the CLOUDNET processing chain by October 2024, initiating ACTRIS labeling processes, creating a datacube of atmospheric observations by the end of 2024, and submitting an overview paper on GBS capabilities to an open-access scientific journal.

3. Semantic Enrichment of Cyprus Data Cube

The Semantic Enrichment of Cyprus Data Cube demonstration project aims to use novel Machine Learning methodologies for Land Cover classification on satellite images. The project will investigate deep unsupervised learning techniques to address the time-consuming nature of data annotation for ML tasks. The output of the ML model will transform the Cyprus Data Cube into a Semantic Data Cube, with necessary ML Operations pipelines established to provide users with information about different land covers in a user-friendly environment. This project aligns with several Sustainable Development Goals and will help understand different aspects of land cover changes in Cyprus over time, with future potential to extend to a regional semantic Data Cube covering the Eastern Mediterranean, Middle East, and North Africa region.

The project will be implemented in collaboration with the German Aerospace Centre (DLR) and is structured into three phases: Phase A (September-December 2024) involves evaluating the Cyprus Data Cube Analysis Ready Data, identifying state-of-the-art technologies in Unsupervised Deep Learning and Semantic Data Cubes, and developing an unsupervised Deep Learning model for land semantic classification. Phase B (January-May 2025) will focus on completing the Deep Learning task and transforming the Cyprus Data Cube into a semantic one. Phase C (May-July 2025) will involve disseminating findings through publications and webinars to external stakeholders. Key performance



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indicators include publishing at least two scientific articles, conducting at least eight hours of knowledge transfer activities, involving at least six ECoE participants, establishing partnerships with at least two public authorities, and developing at least one scientific product and one service for public administration.

4. Flood Risk Assessment Toward Disaster Risk Reduction

This demonstration focused on showcasing the skills and knowledge gained during a capacity-building training course provided by NOA as part of WP6. Conducted by Alexia Tsouni (in-person), and Stavroula Sigourou and Vasiliki Pagana (online), this activity aimed to enhance flood risk assessment capabilities to support disaster risk reduction. The project demonstrated the application of research enablers in flood risk assessment by leveraging existing data, new observational tools, and advanced models. It also highlighted the capabilities of the ERATOSTHENES CoE through collaboration between its staff and NOA/IAASARS/BEYOND as a strategic partner. Following the project, ERATOSTHENES CoE personnel are expected to train new employees from other thematic clusters and conduct a gap analysis to identify future needs in flood risk assessment. The project included a practical case study on the Mandra river basin in Attica, Greece, using a methodology that integrated remote sensing, geospatial data, in-situ observations, and hydrological and hydraulic simulations. This activity involved ERATOSTHENES CoE experts in hydrology, hydraulics, GIS, and remote sensing, covering key aspects such as flood vulnerability, exposure assessment, and mitigation measures for worst-case scenarios. By promoting idea creation, sharing, and evaluation, this demonstration project showcased ERATOSTHENES CoE's capacity to effectively contribute to disaster risk reduction.

More information can be found at the deliverable(s): **D6.4 Workplan for transfer of knowledge and experience (update 3)** that were previously submitted.

2.13 Start-ups and spin-offs

During RP4 (**SC07, SC08**), there was a lack of start-ups or spin-offs established by the ERATOSTHENES Center of Excellence, resulting in no achievement in terms of turnover. Despite this setback, ECoE's efforts were not diminished. Building upon previous progresses, a significant achievement was reached during the RP4; the signing for the onset of **Space BIC**. The official contract signing took place on 17 March 2025 during the 11th International Conference on Remote Sensing and Geoinformation of the Environment (RSCy 2025) that was held in Paphos. The agreement was signed by Mr. Georgios Komodromos, Acting Permanent Secretary of the Deputy Ministry of Research, Innovation, and Digital Policy of Cyprus, and Professor Diofantos Hadjimitsis, Managing Director of the ERATOSTHENES CoE.

The establishment of the Space BIC marks a significant step forward in fostering a thriving Space Innovation ecosystem, benefiting Cyprus in several ways:

- Supporting ESA Membership Prospects: The Space BIC will play a key role in strengthening Cyprus' position in the global space sector and facilitating its potential membership in the European Space Agency (ESA). Furthermore, establishing and operating the Space BIC in Cyprus, which will support Cypriot start-ups developing space-related solutions and services, will contribute to advancing new space technologies and applications. At the same time, it will foster synergies with industries from other ESA Member States participating in ESA programs, further enhancing Cyprus' prospects of becoming an ESA member.
- Empowering Entrepreneurs: The incubator will support entrepreneurs with space-based business ideas, helping them develop, refine, and commercialize their solutions.



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- Creating Space Start-up Clusters: This initiative will promote the formation of collaborative networks and clusters of innovative start-ups in the space industry, fostering cooperation, knowledge exchange, and technological progress.
- Through a structured selection process, start-ups will have the opportunity to apply for support in developing their space-related business ideas, whether in the upstream (satellite and hardware development) or downstream (data and applications) sectors. Selection rounds will take place two to three times per year, ensuring continuous support for emerging enterprises.

This initiative reinforces ERATOSTHENES CoE's commitment to positioning Cyprus as a hub for Space Research, Innovation, and Entrepreneurship, paving the way for a dynamic and competitive Space sector in the country.



Figure 20 Mr. George Komodromos and Prof. Diofantos Hadjimitsis during the Contract Award Signing for The Establishment of Cyprus SPACE BIC.

2.14 Various activities

In this section, a compilation of the workshops, meetings, and various activities organized and/or attended by the ECoE during the period spanning from October 1st, 2023, to March 30th, 2025 (RP4) is presented in Table 17. These activities were specifically designed to engage local authorities, public and private stakeholders, and academic institutions. It's important to note that all of these events were made widely accessible through the ECoE's website, particularly in the News & Events section. Additionally, these events were communicated through the EXCELSIOR project newsletters.

In a broader context, the activities featured in this section are anticipated to yield several significant impacts. Firstly, they are expected to foster network development for the ERATOSTHENES CoE, potentially leading to an expansion of its stakeholder base. Furthermore, activities oriented towards non-academic audiences hold educational and societal significance as they aim to enhance Cyprus's scientific awareness and culture. Additionally, meetings and events where the EXCELSIOR project and its various initiatives were introduced are regarded as impactful for dissemination purposes. Lastly,



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engagements with public authorities and governmental departments and presentations to students contribute to education and societal growth.

Table 17 Various activities during RP4 of the EXCELSIOR project (indicative list)

#	Event	Date
1	GIS Day 2023	13/11/2023
2	GIS Day 2024	20/11/2024
3	Presentation within the framework of the Space EDUnity program at Latsia Gymnasium, Nicosia	17/11/2023
4	School visit (Space EDUnity)	21/11/2023
5	Space EDUnity Presentation (Level 1)	6/12/2023
6	Presentation within the framework of the Space EDUnity program at Agios Ioannis High School, Limassol	14/12/2023
7	Presentation within the framework of the Space EDUnity program at Linopetra High School, Limassol	18/12/2023
8	Presentation within the framework of the Space EDUnity program at Ypsonas High School, Limassol	19/12/2023
9	Presentation within the framework of the Space EDUnity program at Ayia Paraskevi High School, Yeroskipou, Pafos	20/12/2023
10	Smart Cyprus	18/1/2024
11	Presentation within the framework of the Space EDUnity program, Geri Nicosia	1/11/2024
12	Visit at Ay. Athanasiou Gymnasium in the framework of the International Day of Girls and Women in Sciences	12/2/2024
13	Presentation at 3rd elementary school in the framework of the International day of Girls and Women in Sciences	13/2/2024
14	Info day "Training pupils on geosciences through Virtual Field Trips" (TRiPGiFT)	22/2/2024
15	School visit at Secondary School of Egkomi, in the framework of EXCELSIOR. Students had their Group Day celebration, at the thematic area of Space, and invited us to give a speech and a hands-on training (EO Browser).	13/2/2024
16	Visit to Regional Center for Remote Sensing of North Africa States (CRTEAN)	26/2/2024
17	School visit at the High School of Agios Athansios	12/2/2024
18	school visit Theklio High School	16/4/2024
19	School visit at the 3rd Elementary School of Limassol- 13/2/2024	13/2/2024
20	School visit from KD Primary School of Polemidion - 04/04/2024	4/4/2024



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21	School visit from Technical School of Larnaka at CUT premises	14/3/2024
22	School visit at Secondary School of Geroskipou (G.Talioti)	9/2/2024
23	School visit at the Lyceum of Agios Neofitos in Paphos	1/11/2023
24	School visit from Technical School of Paphos at CUT premises	22/3/2024
25	Career Day 2024 CUT	28/3/2024
26	Collaboration with CYENS - Marketing	6/6/2024
27	Meeting with Novamechanics Ltd and Eratosthenes Center of Excellence	11/6/2024
28	ESA PECS Industry Days in Croatia	20/3/2024
29	16th European Space Conference - Brussels, Belgium	23/1/2024
30	EUROPE DAY 2024	9/5/2024
31	Radio Interview	12/12/2023
32	Invited Talk at the InART2024 Conference, Oslo	3/6/2024
33	School visits during the summer months	25/7/2024
34	Presentation of Solar Radiation Station to children	25/7/2024
35	Carbonica - Round table discussion (Online - I-BEK)	16/7/2024
36	Carbonica - Toolbox training (Online I-BEK)	24/7/2024
37	European Researchers Night 2024	27/9/2024
38	EARLINET General Assembly Meeting	10/12/2024
39	Dr. Maria Anastasiadou on the radio show Morning Route of the Third Program of RIK	22/5/2024
40	Invited Talk at InART2024 Conference	4/6/2024
41	ERATOSTHENES CoE / Open Day / Info Day 2024	14/11/2024
42	Invited Talk by Prof. Phillipe Blanc: "Solar Resource Assessment and Forecasting using Earth Observation and Data Sciences"	30/9/2024
43	Invited talk by Dr. Xinwei Wang: "Agile Earth Observation Satellite Scheduling: Formulations, Methods, and Future Directions".	12/3/2024
44	Invited Talk by Dr. Ali Nadir Arslan: "Opportunities of Earth Observation in the Official Statistics: Smart Statistics".	27/1/2025
45	Earth Observation Based Approaches for Archaeological Interpretation and Cultural Heritage Protection and Conservation	30/1/2025
46	Invites Talk by Prof. Corrado Alberto Sigfrido Camera: "Data-driven models for digital soil mapping and landslide susceptibility assessments and their integration with Earth Observation"	6/2/2025



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47	Presentation for Forest Fires monitoring using EO to Archbishop Makarios III Lyceum – Dasoupolis for the Junior Achievement Cyprus (JA Cyprus).	26/4/2024
48	CUT - Open Day 2025 Limassol	9/3/2025
49	Talked with Mr. Marios Papapetrou (Department of Agriculture) in a roadtrip to Agios Theodoros	7/11/2024
50	Online conversation about the potential of submitting a proposal for Troodos Grazing with University of Thesally experts and Mountmed institute	10/9/2024
51	visiting the vineyard - Zambartas	13/9/2024
52	Launching the WEF4MED Community of Practice (Med NCoP)	25/9/2024
53	Invited Talk by Nicola Masini	30/1/2025
54	Invited talk by Corrado Camera	6/2/2025
55	Invited Talk by Martin Sudmanns	24/2/2025
56	invited talk by Yiannis Proestos	27/2/2025
57	Invited talk by Sven Gilians	13/3/2025
58	Invited talk by Salvatore Stramondo	13/3/2025
59	New trends in Mediteranean Fruit Fly Management	13/3/2025

The ERATOSTHENES CoE organised and/or participated in **76 events (S03)** during the RP4 with the aim to expand their network, disseminate the EXCELSIOR project outputs, promote innovation, and promote the activities of the ECoE to public authorities, governmental departments, and schools to increase the societal and educational impact.

An important highlight of the RP4 was the development of the Cyprus Data Cube. ECoE Data Cube developed through EXCELSIOR’s WP7 ECoE Excellence Research Clusters and Task 7.2 ECoE Data Cube. Earth Observation Data Cubes are powerful tools for leveraging Big Earth Data and therefore enhance the capabilities for research, community services and marketable downstream applications. Moreover, Earth Observation Data Cubes enables faster and easier time-series analysis, availability of offline data, Analysis Ready Data, big data visualizations for various applications, organization of data from different sources under a common scheme, and promotion of open sharing and open access principles.

The ECoE Data Cube was developed using the widely accredited Open Data Cube (ODC) framework, which the Geoscience Australia developed. The ODC is a free and open access software package that simplifies managing and analyzing large amounts of satellite images and other earth observation data.

Now, ECoE Data Cube contains the following data for the area of Cyprus:

1. ESA’s Sentinel-2 Multispectral Instrument optical images
2. ESA’s Sentinel-1 Synthetic Aperture Radar C-Band images
3. NASA’s MODIS Terra MOD16A2 Net Evapotranspiration



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4. NASA's MODIS Aqua MYD16A2 Net Evapotranspiration
5. NASA's MODIS Terra MOD13Q1 Vegetation Indices
6. NASA's MODIS Aqua MYD13Q1 Vegetation Indices'
7. NASA's MODIS Terra MOD44B Vegetation Continuous Fields
8. NASA's MODIS Terra MOD15A2H Leaf Area Index
9. NASA's MODIS Aqua MYD15A2H Leaf Area Index
10. NASA's MODIS Terra MOD17A2H Gross Primary Productivity
11. NASA's MODIS Aqua MYD17A2H Gross Primary Productivity
12. NASA's MODIS Terra MOD11A1 Land Surface Temperature/Emmissivity
13. NASA's MODIS Aqua MYD11A1 Land Surface Temperature/Emmissivity
14. NASA's MODIS Terra MOD14A1 Thermal Anomalies/Fire
15. NASA's MODIS Aqua MYD14A1 Thermal Anomalies/Fire

With the temporal coverage and the insightful products of NASA's MODIS constellation and the high-resolution radar and optical images from ESA's Sentinel-1 and Sentinel-2, ECoE Data Cube can cover various research fields and applications like vegetation mapping, vegetation growth, land cover, water resources management, urban heat island, fire mapping, and carbon sequestration among others.

The ECoE Data Cube supports various features like the analytics and browser platforms. Analytics platform is a JupyterHub as shown in figure 1 where users can access with the creation of an account and use it for research and analysis. The JupyterHub hosts the following main environments: 1) Earth Observation Data Cube which is equipped with python libraries for image and geospatial analysis, 2) Artificial Intelligence which is equipped with the required libraries for the application of AI on earth data and 3) the Atmospheric Data Cube which is a pyLARDA environment that can be used for analysis of atmospheric data from ECoE's infrastructure and not only.



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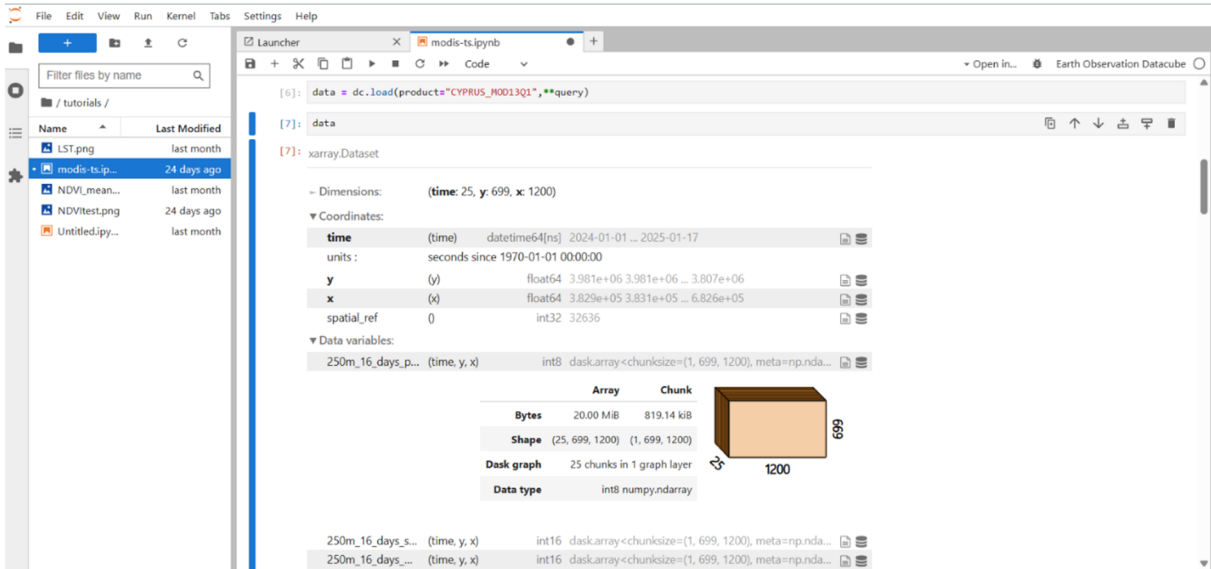


Figure 21 ECoE Data Cube Analytics Platform.

The browser platform is developed using the terriajs framework which was developed also by Geoscience Australia, as a visualization Javascript-based framework for Open Data Cube instances. Through browser platform as shown in figure 2 users can visualize all the available data of ECoE Data Cube and spectral indices of ESA’s Sentinel-2 images. Moreover, offers 3D capabilities of visualization, pixel value retrieval, and time-series visualization among others.

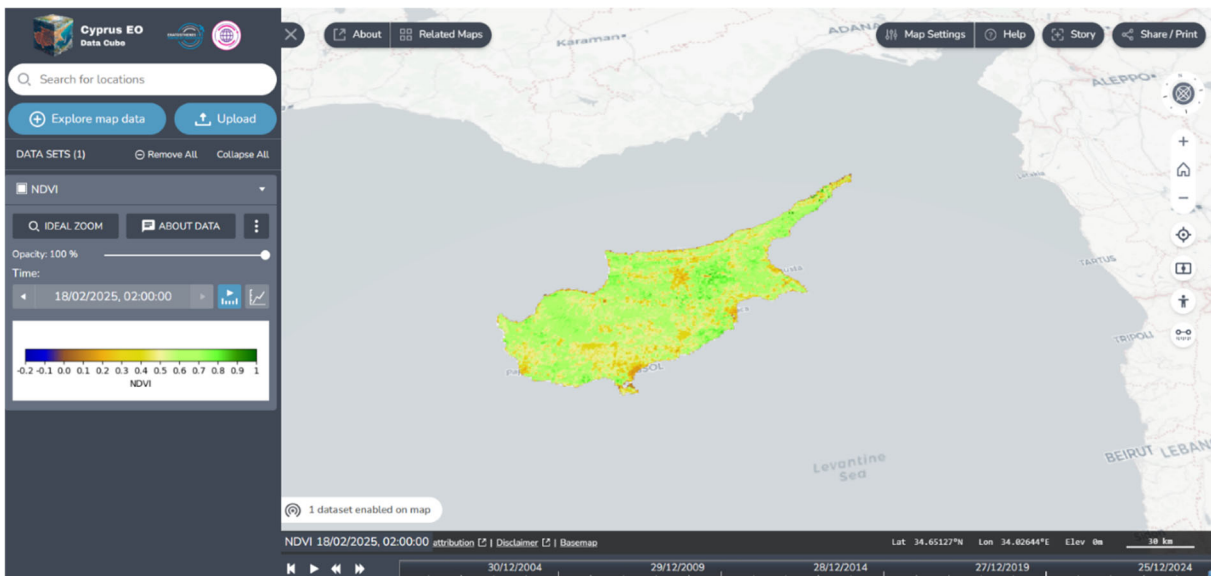


Figure 22 Data Cube Browser Platform.

In addition, ECoE Data Cube supports the everyday actions of ECoE’s PreciRRi application for precise irrigation management. The ECoE Data Cube was developed through the partnership of ECoE, NOAA and TROPOS, led by Mr. Stelios Neophytides.



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Two highlights of the current reporting period were the organisation of the Fifth and Sixth Virtual EXCELSIOR Workshops entitled: "Entrepreneurship & Innovation in Earth Observation" on 8 April 2024 and "Earth Observation Applications and Services in the Eastern Mediterranean, Middle East, and North Africa (EMMENA): Earth Observation Business Opportunities" on 17 March 2025. Both workshops were organised through virtual participation by interested parties residing within the EMMENA region and in Europe, USA and Asia.

The topic of the Fifth EXCELSIOR Annual Hybrid Workshop focused on "Big Data in Earth Observation: Trends and Challenges." Efforts were made to enhance gender diversity in the panel by actively reaching out to female researchers. However, despite these efforts only one woman participated as a speaker, highlighting the persistent imbalance in the EO research field. This underscores the need for further initiatives and targeted actions to support and promote the involvement of women in EO research and technology. As in the previous successful workshops, the 5th EXCELSIOR Annual Hybrid Workshop, the workshop dissemination policy followed a comprehensive and strategic dissemination policy to maximize outreach and engagement. The workshop was actively promoted across multiple digital platforms, including Facebook, Twitter and LinkedIn.

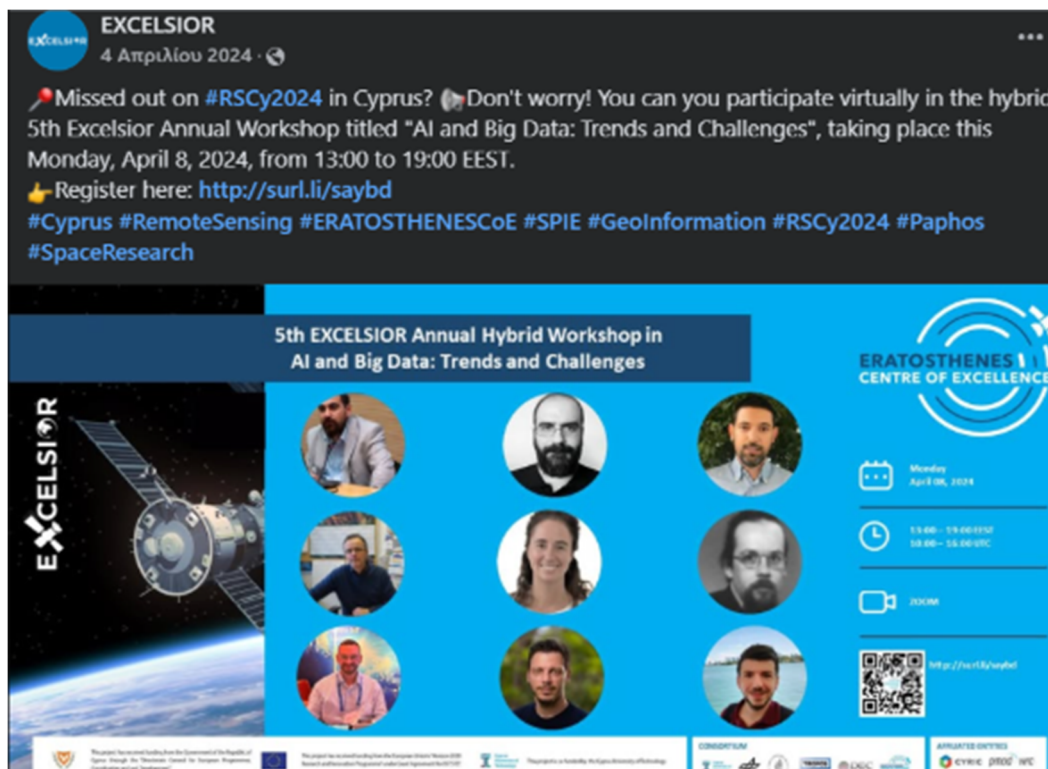


Figure 23 Facebook post promoting the 5th EXCELSIOR Annual Hybrid Workshop.

Overall, the 5th EXCELSIOR Annual Hybrid Workshop attracted a total of 37 registered participants for the online session, out of which 10 ultimately joined the workshop, resulting in an attendance rate of 27%. This highlights the challenge of virtual engagement, where interest does not always translate into actual participation. On the other hand, the physical attendance was significantly higher, with 73 participants joining in person, demonstrating a strong preference for face-to-face networking, direct knowledge exchange, and interactive discussions. The high physical turnout underscores the importance of in-person events in fostering deeper engagement, collaboration and meaningful



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connections among researchers, stakeholders and industry professionals. Figure 24 provides a clear overview of the distribution of countries from which they registered and participated in the Workshop. The diversity is evident, showcasing the global interest and reach of the event. Figure 25 indicates the percentage of registrations and physical attendance per country in the Workshop. The light-blue highlighted entries indicate countries from the EMMENA region, reflecting the regional engagement in the workshop. Figure 24 presents the distribution of different types of organisations that have made an online registration for the Workshop, and Figure 25 presents the types of organisations which attended in physical presence. Additionally, from the 37 registrations, 31 answered “Yes” in the question if they would like to receive updates from the EXCELSIOR H2020 Teaming Project and the ERATOSTHENES Centre of Excellence, and 6 answered “No” indicating that they might already be well informed or have other preference for communication.

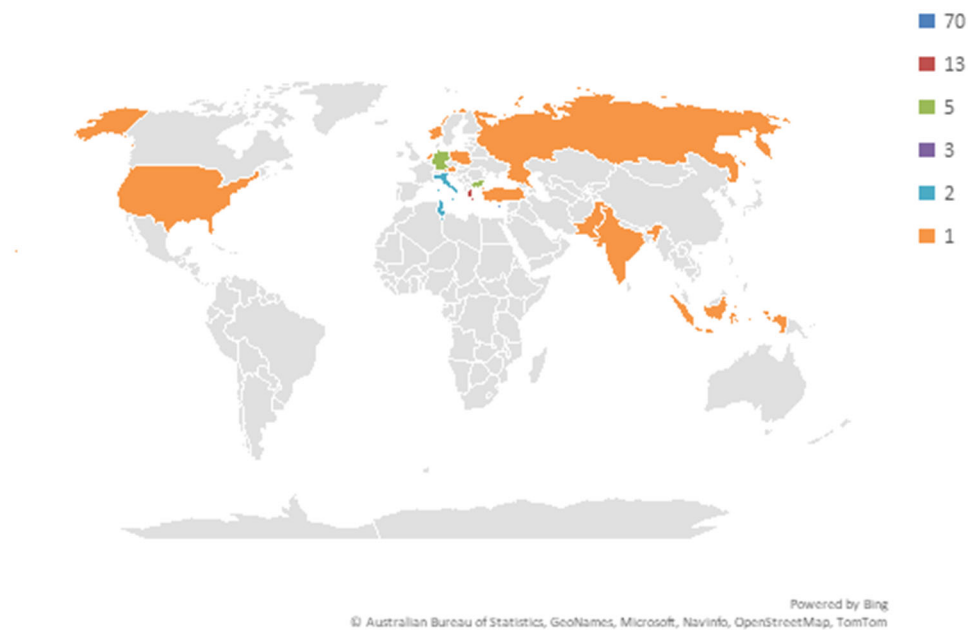


Figure 24 Countries distribution from which registrations have been made for the 5th Virtual EXCELSIOR Workshop. The legend at the right indicates the number of registrations per country.



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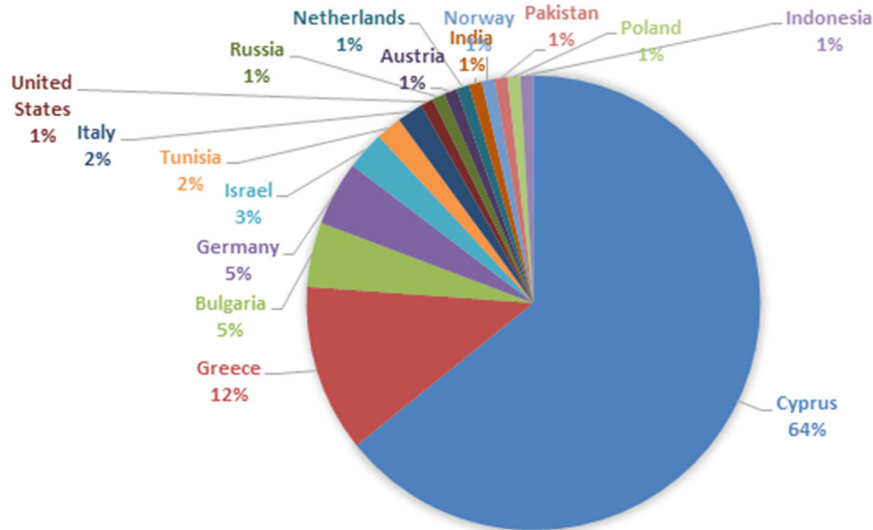


Figure 25 Registrations and physical attendance in percentage per Country in the 5th EXCELSIOR Annual Hybrid Workshop.

Moving to a more entrepreneurial aspect, the topic of the 6th EXCELSIOR Annual Hybrid Workshop focused on the available business prospects, the wider region has. Entitled Earth Observation and Business Opportunities it highlighted through the experiences of the invited speakers the needs the region faces and how does the EO help in their resolution. The workshop was actively promoted across multiple digital platforms, including Facebook, Twitter and LinkedIn.

Figure 26 Banner of the 6th Annual Hybrid Workshop.



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The RSCY2025 workshop demonstrates impressive international reach and sectoral diversity among its participants. The geographic distribution spans multiple continents, with significant representation from Europe, the Middle East, Asia, Africa, and North America. The map below details this distribution, revealing that while Cyprus dominates attendance with 60% of participants, the workshop has successfully attracted international registrants from diverse countries including the United Kingdom (4%), Romania (3%), and various other nations each contributing 1% of attendees. This geographic spread underscores the growing international recognition of the ERATOSTHENES Centre of Excellence and highlights its successful engagement with the global Earth Observation community, particularly within the EMMENA region as targeted in the Centre's strategic objectives.

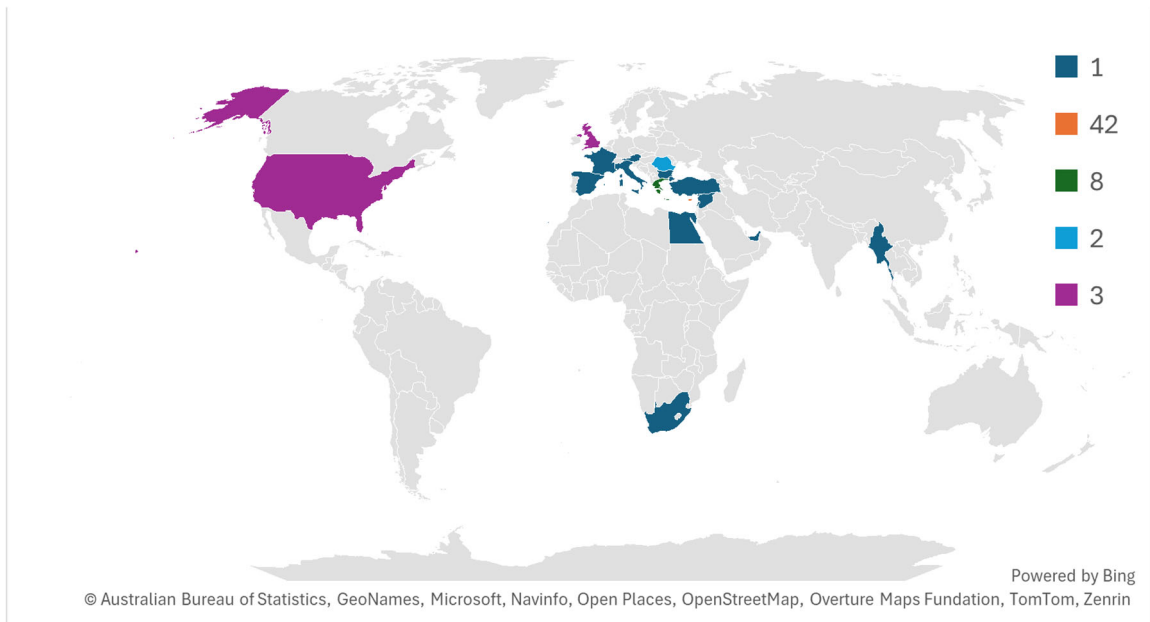


Figure 27 Countries distribution from which registrations have been made for the 6th Virtual EXCELSIOR Workshop. The legend at the right indicates the number of registrations per country



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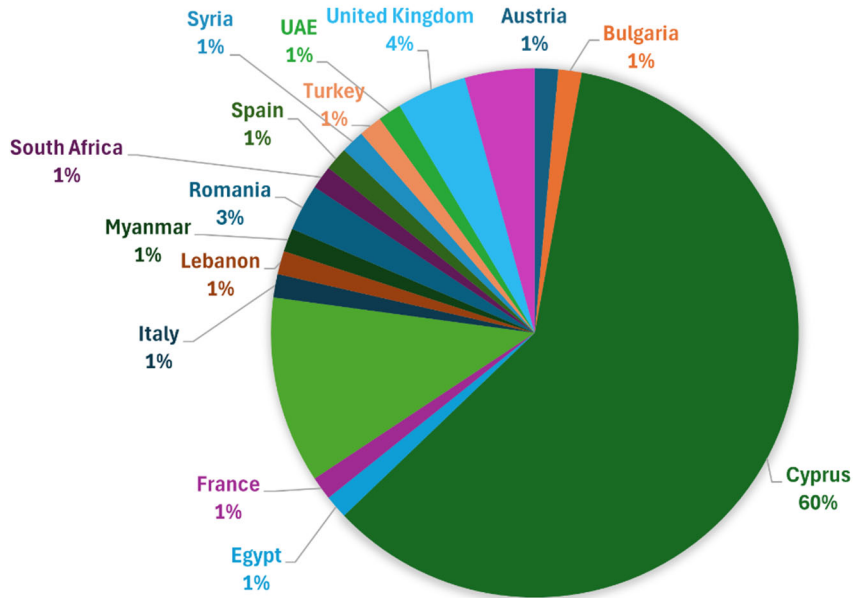


Figure 28 Registrations and physical attendance in percentage per Country in the 6th EXCELSIOR Annual Hybrid Workshop

The sectoral analysis presented below reveals that the workshop has attracted participants predominantly from the scientific community (42 participants or approximately 60% of attendees), followed by industry representatives (15 participants or approximately 21%). This distribution aligns with the Centre's priorities in building scientific capacity while fostering industry partnerships. The relatively lower representation from policy makers (2 participants) suggests an area for potential growth in future events, particularly given the Centre's exceptional performance in public authority collaborations as noted in the KPI analysis. The "Other" category with 9 participants indicates additional diversity in attendance, potentially including consultants, NGOs, or educational institutions not categorized in the main sectors.

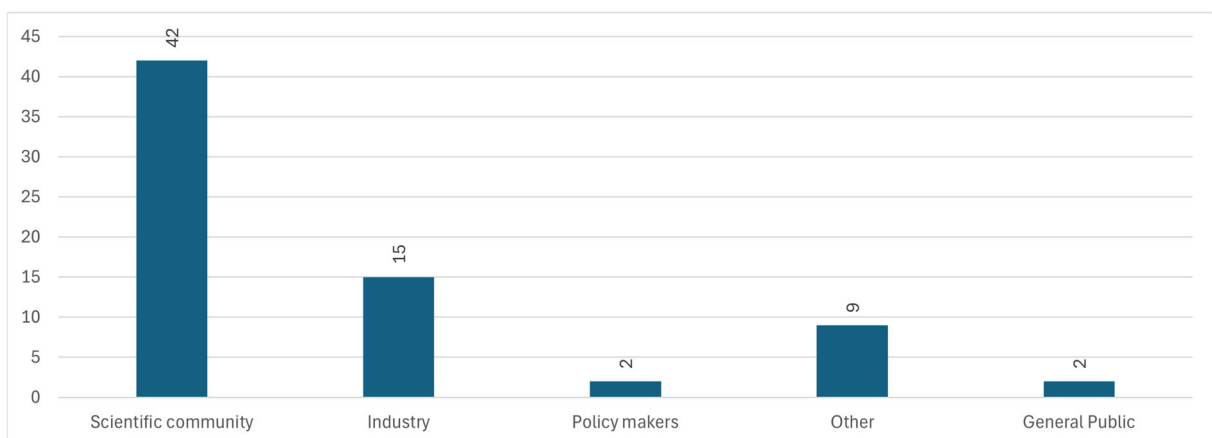


Figure 29 Distribution of participants coming from the various sectors.



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GIS Day 2023 and 2024

On International GIS Day, the Department of Civil Engineering and Geomatics of the Cyprus University of Technology collaboration with the ERATOSTHENES Center of Excellence, the EXCELSIOR H2020 project and the Cyprus Agronomists and Surveyors Association organize a conference with invited distinguished speakers from Cyprus and abroad. The conferences celebrated the GIS day 2023 and 2024 at the premises of Cyprus University of Technology and was broadcasted online.



Figure 30 GIS Day 2023.



Figure 31 GIS Day 2024



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Hyperspectral Research Campaign in Cyprus 9-14 October 2023 From 9 to 14 October 2023

The DLR's Dornier 228-212 research aircraft flew over Cyprus for a hyperspectral research campaign. The aircraft arrived in Cyprus on 8 October 2023 at Paphos airport, which was its base for the campaign days. On 9 October 2023, the ERATOSTHENES Centre of Excellence (CoE) team welcomed the aircraft crew and held a meeting at Paphos airport. This campaign took place in the framework of the EXCELSIOR H2020 Teaming Project (EXCELSIOR Project) and during the flights, several groups from our team were simultaneously taking in-situ measurements at different areas of interest, such as archaeological sites, agricultural sites, forests, dams, coastal areas, including water, urban areas, etc. In-situ measurements included spectro-radiometric measurements, soil and/or water samples, temperature, humidity and atmospheric data. This was a unique opportunity to gather hyperspectral measurements to be exploited during DLR's training as part of the Centre's capacity building.



Figure 32 DLR Flight Campaign to Cyprus.

RSCY 2024

The 10th International Conference on Remote Sensing and Geoinformatics of the Environment, known as RSCy 2024, was held on 8 and 9 April 2024 in Paphos by the ERATOSTHENES Center of Excellence, the "EXCELSIOR" project of the Cyprus University of Technology and the Cyprus Remote Sensing Society. The Conference was organized with the contribution and support of the Department of Electronic Communications of the Deputy Ministry of Research, Innovation and Digital Policy and the European Space Agency. The participants, who came from 30 different countries, had the opportunity to learn from distinguished speakers about the latest developments in over 22 topics in cutting-edge fields through the use of satellite data, remote sensing, space technologies, Earth Observation, geoinformatics and artificial intelligence (AI), which are applied in various sectors such as agriculture, atmospheric studies, cultural heritage protection, blue economy, maritime safety, natural disasters (e.g. floods, fires, earthquakes, landslides, etc.), meteorology, environment, hydrology, water resources, land use, big data, and more.

Within the framework of RSCy2024, six specialized workshops were successfully held, covering various topics in remote sensing, Earth observation, and geoinformatics. These included the Annual Hybrid Workshop on 'AI & Big Data: Trends and Challenges,' organized by the EXCELSIOR H2020 Teaming Project, and the Workshop for ReSENSE (Remote Sensing Technologies Training) Project, which focused on capacity building in remote sensing applications. Additionally, a Workshop and Round Table on Earth Observation and Geoinformatics for the Protection of Cultural Heritage facilitated discussions



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on the role of advanced geospatial technologies in heritage conservation. The event also featured a Matchmaking Event and Workshop in Cyprus, organized under the Framework Partnership Agreement on Copernicus User Uptake (FPCUP), to foster collaborations among stakeholders. Moreover, the Beyond the Horizon: The Second Workshop on Maritime Security, Surveillance, and Awareness in Cyprus, jointly organized by the EXCELSIOR H2020 Teaming Project, CUT, the ERATOSTHENES CoE, and DLR, provided insights into maritime monitoring strategies. The “ERATOSTHENES CoE Living Labs & Opportunities and Challenges in Carbon Farming” Workshop, co-organized by the EXCELSIOR H2020 Teaming Project and the CARBONICA Horizon Europe Project, explored innovative approaches in sustainable agriculture and carbon farming. These workshops were crucial in fostering knowledge exchange and strengthening collaborations within the remote sensing and Earth observation community.



Figure 33 RSCY 2024 Group Photo.

RSCY 2024 “Eratosthenes CoE Living Labs & Opportunities and Challenges in Carbon Farming” organized by the EXCELSIOR H2020 Teaming Project & CARBONICA Horizon Europe Project

During the RSCy2024, the workshop "ERATOSTHENES CoE Living Labs & Opportunities and Challenges in Carbon Farming for a Success Story in Cyprus and the EU" took place on the 9th of April. The workshop, chaired by Dr. Papoutsas and co-chaired by Dr. Varvaris and Dr. Eliades, was organized collaboratively by EXCELSIOR and CARBONICA projects.

Various institutions, including the EC: JRC, DG AGRI & DG CLIMA, ENoLL, ERATOSTHENES CoE, and AUTH, addressed topics related to carbon farming and living labs for sustainable agriculture.



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Contribution was added as well from members of the panels and the panel coordinators Dr. Papadavid (ARI) and Prof. Anayiotos (ERATOSTHENES CoE [Eratosthenes Centre of Excellence](#)).



Figure 34 Living Labs workshop during RSCY 2024.

Career Fair 2024

The University Career Fair took place on Thursday, March 28, in CUT’s premises. The event was open to all students, regardless of their program, level, or year of study. It was an excellent opportunity for attendees to meet, discuss, and network with notable organizations and companies that were interested in exploring specific career prospects and opportunities for a strong professional start. Many of these organizations also accepted CVs, so students were encouraged to bring them in both digital and printed formats.

More than 50 companies and organizations had expressed interest in participating, with representation primarily from executives in the Human Resources departments, those responsible for graduate recruitment processes, requirements, and part-time employment or internship opportunities for students. Additionally, a series of seminars and presentations, each lasting 30 minutes, were conducted by a diverse group of managers and professionals from fields such as Human Resources, Engineering, Health, Marketing, Management, Information Technology, Multimedia, and more. The experience from the previous year’s event was highly successful, with a significant number of graduates securing employment following their interactions with companies at the University's Career Fair.



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Figure 35 Career Fair 2024.

HR Strategy Meeting

On 30 October 2024, the "HR Strategy" workshop with Mrs. Vana Karayianni provided an insightful discussion on key human resource management aspects. The session began with an in-depth review of HR challenges, identifying critical organizational effectiveness issues. Participants then explored ways to enhance the HR framework, focusing on refining policies and processes to support sustainable growth. A structured approach to developing a strategy for improved efficiency was introduced, emphasizing best practices for optimizing HR operations. The workshop concluded with formulating an action plan and next steps, outlining practical measures to implement the discussed strategies and drive meaningful progress.



Figure 36 HR strategy workshop.



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EUROPE Day 2024

As part of the Europe Day 2024 celebrations, the President of the Republic of Cyprus paid a special visit to the kiosk hosted by the Eratosthenes Centre of Excellence (CoE). The event, held in honor of Europe Day, highlighted the importance of innovation, research, and collaboration in addressing global challenges and advancing scientific excellence. The Eratosthenes CoE showcased its latest projects and initiatives at the kiosk. The President's visit underscored the Centre's significant contributions to science and technology, as well as its alignment with European values of sustainability, innovation, and progress. During the visit, the President engaged with researchers and representatives from the Eratosthenes CoE, learning about their groundbreaking work and its impact on both local and global scales. The kiosk featured interactive displays, demonstrations, and presentations, offering attendees a glimpse into the Centre's efforts to leverage advanced technologies for environmental monitoring, disaster management, and climate change mitigation. The President commended the Eratosthenes CoE for its dedication to excellence and its role in positioning Cyprus as a key player in the European and international scientific community. The visit also emphasized the importance of fostering strong partnerships between research institutions, government bodies, and the private sector to drive innovation and address pressing global issues. Europe Day celebrations served as a reminder of the shared values and collaborative spirit that unite European nations. The President's presence at the Eratosthenes CoE kiosk highlighted the critical role of science and technology in shaping a sustainable and prosperous future for Europe and beyond.



Figure 37 President of the Republic of Cyprus at ERATOSTHENES kiosk.



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European Researchers' Night 2024

The ERATOSTHENES CoE participated in the European researcher's night 2024. The team created many activities to show to the public, especially the children's science related to the Centre by playing games, answering questions, watching a live experiment and some other fun activities. Different interactive activities were organized to engage the public, especially children, in science related to remote sensing techniques.



Figure 38 ERATOSTHENES booth at ERN 2024.



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Excavation of the medieval church of Panagia Karmiotissa – from 01 October 2024 to 31 October 2024

The Department of Antiquities under the Deputy Ministry of Culture has announced the successful conclusion of the second excavation season of the “Panagia Karmiotissa” project. The archaeological investigation was carried out in the vicinity of the Panagia Karmiotissa church, led by Dr. Andreas Nicolaides and Dr. Margot Hoffelt. This initiative is the outcome of a three-year collaboration between the ERATOSTHENES Centre of Excellence and the CNRS Laboratoire d’archéologie médiévale et moderne en Méditerranée (LA3M). The research team includes Dr. Margot Hoffelt, Dr. Andreas Nicolaides, Dr. Kyriacos Themistocleous, and Dr. Andreas Anayiotos. The excavation at Panagia Karmiotissa aims to uncover the origins of the church and gather historical and archaeological data about the site. Based on secondary sources, topography, toponymy, and oral traditions, it was hypothesized that the site might have been established by the Carmelites in Cyprus during the 13th century. However, the current structure of the church, according to architectural analysis, is believed to date back to the 14th century. To explore this discrepancy, the team focused on uncovering the deeper archaeological layers to assess the site's stratigraphic potential.

The 2023 excavations continued on one of the northern terraces and behind the church’s apse. In the northeastern terrace pit, several occupation levels from the 13th century were examined. These levels featured dry-stone masonry that enclosed a partially excavated space, likely linked to domestic activities. Beneath this, a limestone floor was uncovered, with evidence suggesting the presence of a possible water distribution system beneath it. In the pit located behind the church’s apse, approximately twenty human-sized, oriented pits were discovered, which the excavators interpreted as burial sites. All of these pits appeared to have been carefully emptied. At least five phases of inhumation were identified, one of which included the construction of a flight of stairs leading to an area beneath the church’s apse. This finding, combined with ground-penetrating radar surveys conducted inside the church by the Eratosthenes Centre of Excellence, points to the existence of underground structures. In the upper layers, numerous fragments of wall paintings, including inscriptions and clothing patterns, were recovered. Additionally, several partially preserved earthen walls were found, connected to a regular arrangement of postholes. Radiocarbon analysis is expected to provide precise dating for these structures. This discovery is particularly significant, as such well-preserved and extensive features are rarely encountered in archaeological contexts.



Figure 39 Photo taken during the Panagia Karmiotissa Excavation.



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3rd Teaming Club Conference – 09 Oct 2024 – 11 Oct 2024

Dr. Silas Michaelides, the Chief Operating Manager of the Eratosthenes Centre of Excellence, took part in the 3rd Teaming Club Conference, which was held in Novi Sad, Serbia, from 9 to 11 October 2024. The Centres of Excellence, established through the Widening tool of the European Union, gather annually to share their experiences and insights on implementing their respective Teaming projects. This forum serves as a platform for identifying synergies, exploring potential collaborations, and exchanging innovative ideas to advance sustainability and long-term success.



Figure 40 Dr. Silas Michaelides at the TEAMING conference.

School Activities (highlight)

Mrs. Maria Prodromou contributes to school activities by sharing her expertise in remote sensing techniques to monitor forest fires with SilvALERT, a student company from Archbishop Makarios III Lyceum – Dasoupolis. The team earned third place at the 2024 Company of the Year Finale and Awards Ceremony, organized by Junior Achievement Cyprus (JA Cyprus). This year marked the 11th successful edition of the event, which took place on Friday, April 26, 2024.



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Figure 41: Visit to Archbishop Makarios III Lyceum - Dasoupolis.

Mrs Maria Prodromou, was invited, to the "Copernicus for Cultural Heritage Summer School Workshops" (31/10/2023-3/11/2023) conducted in the Framework Partnership Agreement on Copernicus User Uptake (FPCUP), presenting on the topic: "The importance of Earth Observation for monitoring cultural heritage sites affected by Fire events: The Case Study of Arakapas, Cyprus using Sentinel 2 data."

UN-SPIDER @ ERATOSTHENES CoE

The United Nations Office for Outer Space Affairs (UNOOSA) and the ERATOSTHENES Centre of Excellence signed a Memorandum of Understanding to create the Cyprus Regional Support Office (RSO) of UNOOSA's programme 'United Nations Platform for Space-Based Information for Disaster Management and Emergency Response (UN-SPIDER)', with Dr Marios Tzouvaras, Research Coordinator of the Centre, being the Cyprus RSO's head. The addition of ERATOSTHENES CoE to this network adds significant expertise on satellite technology to the UN-SPIDER network, and especially in the Eastern Mediterranean, Middle East and North Africa region. Through the MoU, UNOOSA and ERATOSTHENES CoE will work together in areas including emergency response, disaster risk reduction and management, capacity-building on space-based technologies for disaster management, technical advisory support, and the dissemination of methods and results from Earth Observation. The agreement is effective from 17 February 2025 for a period of 3 years.



Figure 42: ERATOSTHENES CoE as the Cyprus Regional Support Office of UN-SPIDER.

Visit from Harvard Students and Faculty with the ERATOSTHENES Centre of Excellence

Hosting in Limassol students from the MSc in Environmental Health program at Harvard T.H. Chan School of Public Health, Boston, on January 21, 2025. This visit provided an excellent opportunity to discuss collaborative prospects in the fields of remote sensing and geoinformation for the environment, core areas of expertise at the ERATOSTHENES Centre of Excellence. Dr. Christiana Papoutsas, Deputy Coordinator of the Environment and Climate



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Department, and Mr. Hossein Panahifar, Researcher from the Atmosphere Cluster, presented to the Harvard team the potential for synergy between the three key departments of ERATOSTHENES:

- (1) Climate and Environment
- (2) Resilient Society
- (3) Big Earth Data Analytics

The visit was an inspiring exchange of knowledge and ideas, reinforcing the importance of international collaboration in advancing geoinformation science and its applications for a sustainable future, particularly in addressing critical challenges in Environmental Health through innovative remote sensing and geospatial analysis.



Figure 43 Group photograph during the students' visit.

RSCY 2025

The 11th International Conference on Remote Sensing and Geoinformation of Environment (RSCy2025) took place from 17 to 19 March 2025 in Paphos, Cyprus. Organized by the ERATOSTHENES CoE and the Cyprus Remote Sensing Society, the conference brought together experts, researchers, and professionals from nearly 30 countries to discuss advancements in remote sensing and geoinformation. The program featured both oral and poster presentations covering 22 major themes, including hazards, fires, forestry, marine and coastal studies, cultural heritage, synthetic aperture radar (SAR), remote sensing applications, atmospheric and ionospheric research, meteorology, agriculture, water resources, land use and land cover, urban applications, artificial intelligence, and big data.



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Beyond the main sessions, RSCy2025 also hosted 11 specialized workshops from various funded projects, offering participants in-depth insights into cutting-edge research and technological innovations. The event provided an excellent platform for networking and collaboration, as distinguished speakers and authors shared their expertise on the latest developments across all 22 themes. Attendees had the opportunity to exchange knowledge, explore interdisciplinary applications, and engage in discussions on emerging challenges and solutions in remote sensing and geoinformation science.



Figure 44 RSCY 2025 Group Photo.

NADIRISK Tool

In the framework of the EXCELSIOR project, the NaDiRi (Natural Disaster Risk Assessment) tool has been developed by the Cluster's researchers, assessing the vulnerability and risk from earthquakes, landslides, forest fires and floods on national scale. This tool utilises Earth Observation and geospatial data, and maps risk indicators of multiple hazards using multicriteria decision analysis techniques. These maps have been already developed by the research and development team of the Centre, whereas the Business and Management team of the Centre is currently promoted these products to potential clients (e.g. insurance companies). NDA has already been signed with Ernst & Young and discussions are in progress with other clients for the commercialisation of this tool.



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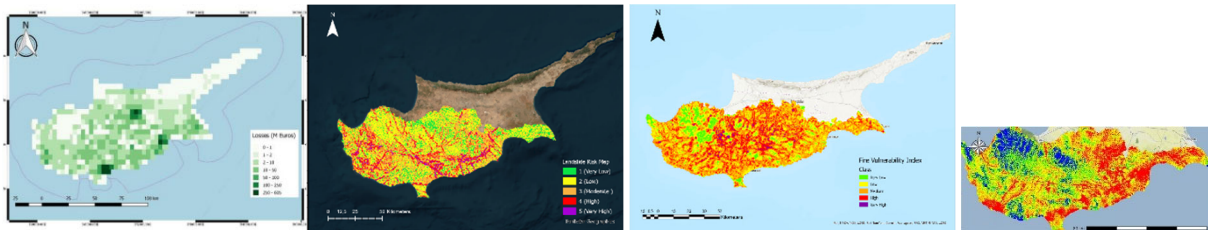
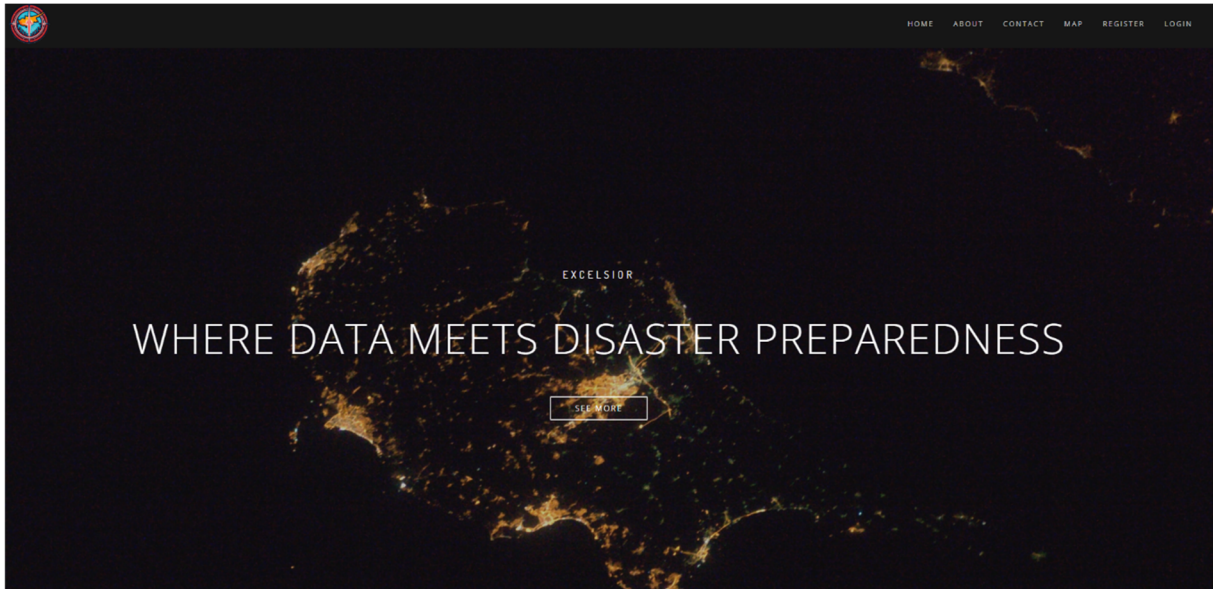


Figure 45: The NaDiRI tool

Development of the UVI Forecasting Service

The Eratosthenes UVI Forecast provides hourly UV Index (UVI) predictions for Cyprus, covering the next two days with a high spatial resolution (0.1° x 0.1°). The forecasts rely on radiative transfer model simulations (libRadtran) and are evaluated using ground-based UVI measurements from a network of five Kipp & Zonen SUV-E radiometers installed in Cyprus. This system is accessible via the UVI Nexus Hub (<https://uvinexushub.eratosthenes.org.cy/web/>), enabling public access to real-time UV forecasts.

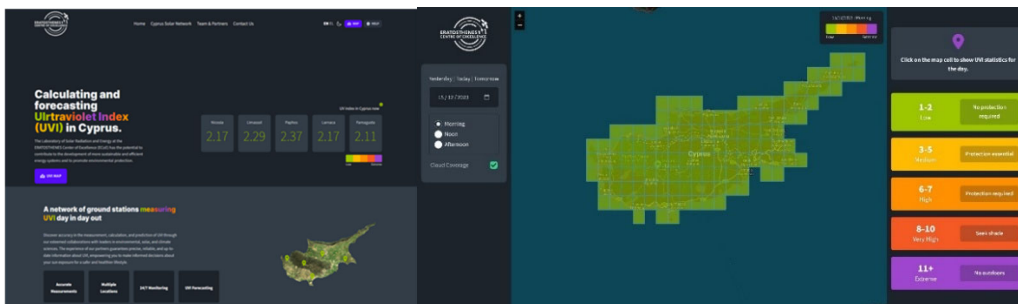


Figure 46 UVI Forecast Service.



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PRECiRRI Tool

PRECiRRI is a comprehensive smart irrigation platform designed to revolutionize agricultural practices through advanced technologies such as artificial intelligence, machine learning, and cloud computing. It utilizes satellite data through a connection with Sentinel Hub API, Planet Scope and other satellite image providers as the satellite imagery data sources. The platform empowers users with precise, data-driven insights to optimize irrigation, reduce costs, and enhance sustainability. With a modular, user-friendly design, PRECiRRI caters to the diverse needs of private sector clients, public organizations, and specialized institutions. The tool provides real-time irrigation recommendations tailored to crop type, soil conditions, and environmental factors. It minimizes water waste by integrating advanced weather models and evapotranspiration rates. It supports optimal crop health and maximizes yields through precise water delivery schedules. It leverages AI algorithms to analyse real-time and historical data, providing actionable insights for users. It integrates data from sensors, weather forecasts, and satellite imagery to enhance decision-making. It continuously improves through machine learning, ensuring increasingly accurate recommendations over time. It offers secure, cloud-based data storage (Agri-DB) for historical records on crop health, water usage, and operational metrics. It enables users to import, store, and analyse data for better long-term planning and strategy. Finally, it can generate detailed reports and analytics to support operational excellence and informed decision-making.



Figure 47 Demonstration of the PRECiRRI tool.

Human Resources Excellence in Research Award by the European Commission

The ERATOSTHENES CoE has been officially granted the HR Excellence in Research Award (HRS4R) by the European Commission on February 20, 2025. This prestigious recognition reflects the Centre's commitment to creating a supportive, inclusive, and dynamic research environment. By aligning with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, the organization ensures fair recruitment practices, promotes professional development, and fosters a culture of innovation and ethical research.

This achievement marks a significant milestone in the ERATOSTHENES CoE's journey to empower researchers and contribute to a stronger, more competitive European Research Area. The HRS4R certification acknowledges the Centre's dedication to implementing human resources policies that



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prioritize researcher career development and establish transparent, merit-based recruitment processes across all levels of the organization.



Figure 48 HRS4R Award.



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3 Measuring Impact through KPIs for RP4

Within the specialized domain of Earth observation and remote sensing research, the ability to quantitatively evaluate the influence, reach, and societal contributions of research organizations is of paramount importance. This is accomplished through a systematic and rigorous framework of Key Performance Indicators (KPIs). These KPIs offer a comprehensive and accurate means of assessing the organization's efficacy and the extent of its impact.

The process of measuring impact mandates measurement expertise and a transparent participatory approach to ensure that the KPIs used in EXCELSIOR's Impact Assessments are valid and reliable. These KPIs transcend mere metrics; they encapsulate performance targets, enabling ERATOSTHENES to systematically and accurately track progress toward the goals that were set. They serve as tangible evidence, shedding light on whether or not impactful changes have occurred and assisting in making highly informed decisions.

The advantage of employing matrices, as exemplified in Table 18 for the EXCELSIOR project, lies in their capacity to offer a comprehensible, visual representation across all impacts. These KPIs exhibit the impact at three distinct levels with precision:

- Impact at the level of participating organizations: Reflecting the organization's internal development and growth.
- Impact at the level of the related scientific community: Demonstrating the precise influence and contributions to the broader research ecosystem.
- Impact at the societal level at large: Accurately showcasing how research benefits society and addresses global challenges.

By adopting this meticulous approach to measuring impact through KPIs, ERATOSTHENES CoE can conduct precise assessments of its personnel's contributions, ensuring that their work continues to drive positive and verifiable change on a global scale.



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Table 18: List of Key Performance Indicators

		Impact: Participating organisations					
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
P01a	The acquisition of equipment necessary to establish a Centre of Excellence in Cyprus, including a satellite ground receiving station	The purchase of equipment for the operation of a satellite ground receiving station at the Centre of Excellence	Specs are prepared. The tender is currently in preparation (CUT-DLR)	Finalisation of tender (expected to be issued in approximately 2 months)	0	0	1
P01b	The acquisition of equipment necessary to establish a Centre of Excellence in Cyprus, including a supersite for aerosol and cloud monitoring	The purchase of equipment for the operation of research facilities of the Centre of Excellence	Specs and tender are prepared and submitted to CUT tendering committee. PollyXT lidar, part of TROPOS' commitment, has been received.	Tender was issued. Results/ prices are expected by end of February 2022	3	9	6
P01c	The acquisition of equipment necessary to establish a Centre of Excellence in Cyprus and utilize	The purchase of equipment for the operation of research facilities of the Centre of Excellence	Market Research	Discussions and market research	0,51	4,2	5



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		Impact: Participating organisations					
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
	equipment that can be used in remote sensing and Earth observation						
P02a	Utilise synergies between all partners and dedicated staff visits for training, skills improvement, and empowerment	Number of trainings and capacity building activities (staff exchange, secondments, etc.)	N/A	3 (2 by NOA, 1 by DLR)	11	18	62
P02b	Utilise synergies between all partners and dedicated staff visits for training, skills improvement, and empowerment	Person-months allocated for training and capacity building activities	N/A	5.07	5,64	11,43	63,07
P02c	Utilise synergies between all partners and dedicated staff visits for training, skills improvement, and empowerment	Number of people participated in demonstration projects	N/A	0	33	31	40
P03	Participation to Research and	Number of research institute	7 (GEO, CyDI-Hub, IEEE SA, Copernicus)	0	6	1	6



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Impact: Participating organisations							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
	Infrastructure Networks, Technological Platforms and Clusters with focus on Space Technologies and EO	networks that ECoE participate in	Academy, MedRIN, NEREUS, GEO-CRADLE)/ 1 in progress (IEEE GRSS)				
P04	Establish and operate a Calibration and Validation site for satellite data at the ECoE	Number of associations with calibration and validation networks	2 (EARLINET, PollyNet) 1 in progress (ACTRIS)	1 (ACTRIS IMP)	1	2	2
P05a	Strengthen the critical mass of researchers by offering a dynamic environment for basic and applied research in EO	Number of researchers employed	In progress (Announcement for 3 open positions for Senior Researchers A or B) FTE=3.06 from CUT 9 positions for researchers and technicians announced (31 applications received)	3 researchers	41	47	80



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Impact: Participating organisations							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
P05b	Attract European Research Council and Marie Curie grants as hosting Centre	Number of Researchers (MSC Fellows, ERC, etc.) hosted at ECoE	In progress (MSC=0, ERC=0)	In progress (MSC=0, ERC=0)	0	0	MSC=12 ERC=1
P06a	Strengthen the relationship with national stakeholders through specific agreements in EO domain	Number of MoU signed with various local/national public and private organisations	N/A	12	17	26	30
P06b	Strengthen the relationship with international stakeholders through specific agreements in EO domain	Number of MoU signed with various international public and private organisations	N/A	4	12	9	9
P07	Maintain and enhance the capacity of training in EO to new users including those from non-EU	Number of external participants in professional skills development	N/A	0	13	4	60



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		Impact: Participating organisations					
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
	and developing countries	programs offered by the ECoE					
P08	Provision of advanced observing platforms and calibration/validation facilities to Trans-national Access to the benefit of a large user community	Number of collaborating networks/institutions that access the ECoE's data for implementation of scientific projects/field campaigns and common scientific research agenda	N/A	0	1	0	2
P09a	Development of one innovative MSc programme (conventional and distance learning) and one innovative PhD programme in the wider area of EO	Number of MSc and PhD students registered annually at CUT, carrying out research at the ECoE	41	28	58	13	100



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		Impact: Participating organisations					
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
P09b	Attract MSc and PhD students from abroad	Percentage of MSc and PhD students from abroad	35.7% (6 students from Greece, 2 from Italy, 1 from Serbia and 1 from UK)	3.57%	3,45%	3%	15-20%
P10a	Research project proposals submitted for funding through participation as partner or coordinator	Number of research project proposals submitted for funding	38 (CUT and ECoE)	36	63	109	185
P10b	Success rate for the submission of research project proposals	Number of successful research project proposals submitted for funding	6	6	12	17	26
P10c	Funding secured from the development of research project proposals	The total amount of funds received from the successful submission of research project proposals	€1,543,578.22 (Yearly average) for CUT €306,912.5 under review	€245,389,60	2.331.084,34	5.928.914,53	€13M
P10d	Research project proposals for	Number of research project			7	19	26



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Impact: Participating organisations							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
	funding, jointly submitted with EXCELSIOR partners	proposals for funding, jointly submitted with EXCELSIOR partners					
P11	Citations from publications related to the ECoE, which result in a h-Index	h-index from ECoE related publications (Scopus, Google scholar)	47*	Scopus: 7 Google Scholar: 9	Scopus: 15 Scholar: 16	Scopus: 39 Scholar: 24	45
P12a	Joint Publications with EXCELSIOR partners in peer-reviewed scientific journals	Number of articles jointly published with EXCELSIOR partners in peer-reviewed scientific journals			4	12	46
P12b	Joint Publications with EXCELSIOR partners in the proceedings of International Conferences	Number of articles jointly published with EXCELSIOR partners in the proceedings of International Conferences			20	33	72



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Impact: Scientific community							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
SC01	Publication of Journal papers resulting from research conducted at the ECoE	Number of articles in peer-reviewed scientific journals	32	37	13	28	195
SC02	Publication of Conference papers resulting from research conducted at the ECoE	Number of articles published in the proceedings of International Conferences	32	15	28	88	285
SC03	Citations listed in Scopus and Google Scholar from publications related to the ECoE	Number of citations on ECoE related publications from Scopus and Google Scholar	1268*	Scopus: 285 Google Scholar: 395	Scopus: 335 Scholar: 1084	Scopus: 1983 Scholar: 1875	6500
SC04	Participation in International Conferences/workshops	Number of presentations (oral/ posters) in International Conferences/workshops	14	22	43	54	75
SC05	Foster mobility among researchers (towards and from the Centre) with Universities,	Number of personnel visiting and/ or using the ECoE facilities and Number of ECoE	N/A	0	10	3	18



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Impact: Scientific community							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.
	research Centres and the private sector, excluding EXCELSIOR consortium	personnel seconded to other organisations					
SC06	Development of integration tools to fully exploit the use of multiple EO/RS at ground-based stations, in particular for the calibration/ validation/ integration of satellite sensors.	Number of patents/ new methodologies/prototypes /designs developed	In progress (Significant progress is made for 3 services as CUT and ECoE)	In progress (Significant progress is made for 3 services as CUT and ECoE)	0	2	3
SC07	Promotion of innovation through incubators, accelerators, and spin-offs	Number of start-ups and/ or spin-offs created utilising products or expertise gained from the ECoE Research Areas	In progress (Meetings with CyRIC, GRAVITY incubator; ESA BIC)	In progress (Meetings with CyRIC, GRAVITY incubator; Space BIC)	0	0	3
SC08	The turnover (profit) of start-ups and spin-off companies that are directly related to ECoE activities	Turnover (Profit) of companies; start-ups and/ or spin-offs directly related to ECoE activities	0	0	0	0	180.000 euros



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Impact: Society							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.)
S01	Provision of new job opportunities for highly educated researchers/scientists and highly skilled technical staff in Cyprus	The number of research and technical staff that are employed at the ECoE. Salaries paid (€)	12 (The ECoE management team was appointed) FTE=3.06 from CUT 9 positions for researchers and technicians announced (31 applications received)	7 researchers and technical/administrative personnel. €48,973	48	48	90
S02	Provision of new job opportunities for highly educated researchers/scientists and skilled technical staff in Cyprus to people from abroad	Percentage of the research and technical staff attracted from abroad	In progress (9 positions for researchers and technicians announced and 31 applications received)	14.3%	13	16	15-25%
S03	Continuous interaction with stakeholders nationally, in the EMMENA region and in	Number of events (workshops, info days, etc.) that the ECoE organised/participated	86	68	131	76	250



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Impact: Society							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.)
	Europe through dedicated events						
S04	Establishment of new partnerships with public authorities, the industry, and SMEs in the EO domain locally and across the EMMENA region, Europe and beyond	Number of meetings with local authorities, public and private stakeholders, academia, etc.	20	25	29	58	17
S05	Development and provision of services/ tools in collaboration with local/ EMMENA stakeholders/ public authorities based on their specific needs	Number of services developed for the needs of public authorities/industry	4 (1 pending)	2 (3 pending)	1	8	12
S06	Capitalisation on existing and new partnerships with stakeholders from public authorities in the domain of EO technologies	Number of stakeholders from public authorities that participated in successfully funded research proposals/tenders	27	39	2	57	40



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Impact: Society							
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)				Target
			During RP1	During RP2	During RP3	During RP4	By YR7 (31/12/2027)*extension incl.)
		together with the ECoE					
S07	Capitalisation on existing and new partnerships with stakeholders from industry in the domain of EO technologies	Number of stakeholders from industry that participated in successfully funded research proposals/tenders together with the ECoE	14	63	39	42	50
S08	Promotion of spin-off creation and entrepreneurship culture in EO businesses in Cyprus and in the EMMENA region	Number of start-ups and/or spin-offs created utilising products or expertise gained from the ECoE Research Areas	In progress (Meetings with CyRIC, GRAVITY incubator; ESA BIC)	In progress (Meetings with CyRIC, GRAVITY incubator; Space BIC)	0	0	3
S09	Involving civil society and citizens, to influence the adaptation of the culture to the new technological EO environment through responsible research and innovation activities	Number of activities targeting to non-academic audiences to increase of scientific culture of the country	25	19	11	36	15



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4 Overall Impact

The ERATOSTHENES CoE continues to demonstrate exceptional impact on society during RP4, building upon the strong foundation established in previous reporting periods. The Centre's performance in the societal dimension remains its most impressive achievement, with most KPIs either exceeding or on track to surpass the YR7 targets.

Equipment acquisition has shown substantial progress during RP4, addressing previous delays noted in RP3. The satellite ground receiving station tender that was in preparation during RP3 is now in the final stages, expected to be operational in the coming months. Atmospheric and solar sector equipment acquisition has progressed significantly, with 9 pieces of equipment procured in RP4 compared to 3 in RP3 (P01b). Additional remote sensing equipment (P01c) increased from 0.51 to 4.2, showing accelerated procurement.

Training and capacity building activities increased from 11 in RP3 to 18 in RP4, with person-months doubling from 5.64 to 11.43. These represent 29% and 18.1% of YR7 targets, respectively, indicating steady progress.

The number of researchers employed increased from 41 in RP3 to 47 in RP4, representing 58.8% of the YR7 target (80). However, the Centre has not yet attracted MSC Fellows or ERC grants, with this KPI showing no progress. ERATOSTHENES CoE has already motivated staff to submit an ERC during RP5.

MoU signatures with national stakeholders increased from 17 in RP3 to 26 in RP4, exceeding the YR7 target (30) by 86.7%. International MoU signatures decreased slightly from 12 to 9, with the cumulative total of 25 exceeding the YR7 target (9) by 177.8%. This suggests excellent progress in formalizing partnerships.

Research proposal submissions increased dramatically from 63 in RP3 to 109 in RP4, with successful proposals increasing from 12 to 17. Funding secured more than doubled from €2.33M to €5.93M in RP4, bringing the total to €10.05M, or 77.3% of the YR7 target (€13M). Joint proposals with EXCELSIOR partners increased from 7 in RP3 to 19 in RP4, representing 73.1% of the YR7 target (26).

Joint publications with EXCELSIOR partners tripled from 4 to 12 for journal articles (26.1% of YR7 target) and increased from 20 to 33 for conference papers (45.8% of YR7 target). While progress is steady, these areas may require additional focus to meet YR7 targets.



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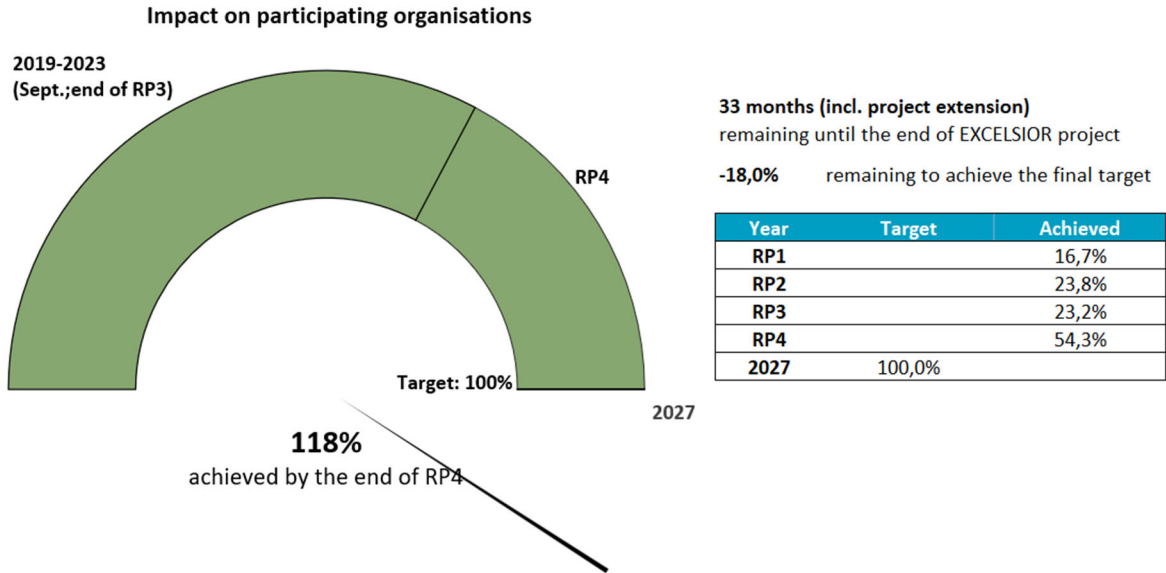


Figure 49 Metric Gauge for the Participating Organisations KPIs.

As far as the ERATOSTHENES' impact on scientific community is concerned the ECoE shows substantial improvement in scientific output during RP4 compared to RP3, with acceleration in multiple KPIs toward YR7 targets. Journal publications increased from 13 in RP3 to 28 in RP4, bringing the cumulative total to 110 articles, which represents 56.4% of the YR7 target (195). Conference papers saw a dramatic increase from 28 in RP3 to 88 in RP4 (a 214% increase), bringing the total to 163 papers, or 57.2% of the YR7 target (285). This acceleration suggests the Centre is building significant research momentum, though sustained effort will be required to meet the YR7 targets.

Conference presentations increased from 43 in RP3 to 54 in RP4, bringing the total to 136, which already exceeds the YR7 target of 75 by 81.3%. This indicates exceptional visibility and engagement in scientific forums. Citations saw extraordinary growth, with Scopus citations increasing from 335 in RP3 to 1,983 in RP4 (a 492% increase) and Google Scholar citations growing from 1,084 to 1,875 (a 73% increase). While still below the YR7 target of 6,500, the dramatic acceleration suggests growing recognition of the Centre's research impact. The h-index increased from 15/16 (Scopus/Scholar) to 39/24, approaching the YR7 target of 45. Patent/prototype development progressed from 0 in RP3 to 2 in RP4, achieving 66.7% of the YR7 target (3). This indicates accelerated innovation activity, though commercialization through startups remains at 0% progress toward YR7 targets. The establishment of Cyprus SPACE BIC along with the Cyprus Seeds received funding are expected to contribute to the progress of this KPI.



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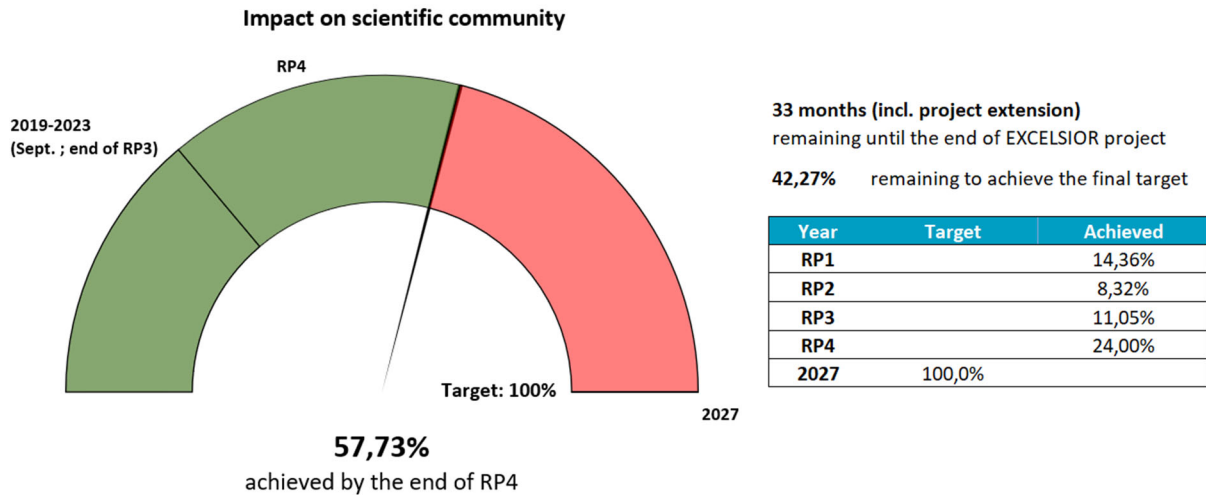


Figure 50 Metric Gauge for Impact on the Scientific Community KPIs.

During RP4, the Centre organized or participated in 76 events, which is a decrease from the 131 events in RP3. However, the cumulative count of 344 events (RP1-RP4) substantially exceeds both the YR4 target (150) and the YR7 target (250) by 137.6%. This demonstrates the Centre's continued commitment to stakeholder engagement, despite the reduction in event count from the previous period.

The number of meetings with stakeholders doubled to 58 in RP4 from 29 in RP3, bringing the cumulative total to 127 meetings. This is more than seven times the YR7 target of 17, highlighting exceptional progress in building partnerships with public authorities, industry, and SMEs. This acceleration in stakeholder meetings is particularly notable and suggests intensified efforts to establish strategic relationships.

Service development saw significant advancement in RP4, with 8 services developed compared to just 1 in RP3. The total of 15 services now exceeds the YR7 target of 12 by 25%. This remarkable progress addresses the shortfall noted in RP3 where service development was behind schedule, and demonstrates the Centre's ability to accelerate technical outputs when needed.

The participation of public authority stakeholders in successfully funded proposals increased dramatically from 2 in RP3 to 57 in RP4. This brings the total to 125, far exceeding the YR7 target of 40 by 212.5%. Similarly, industry stakeholder participation increased slightly from 39 in RP3 to 42 in RP4, with a cumulative total of 158, exceeding the YR7 target of 50 by 216%. These figures demonstrate the Centre's extraordinary success in translating stakeholder relationships into tangible collaborations.

Staffing levels remained stable at 48 personnel in RP4, identical to RP3, maintaining 53.3% progress toward the YR7 target of 90. The percentage of international staff increased slightly from 13% to 16%, placing it within the YR7 target range of 15-25%. This indicates successful internationalization efforts, though overall staff growth has plateaued.

The Centre tripled its public engagement activities from 11 in RP3 to 36 in RP4, bringing the total to 91 activities targeting non-academic audiences. This exceeds the YR7 target of 15 by over 500%, highlighting exceptional commitment to public science communication and outreach.



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Despite ongoing meetings with incubators and accelerators, no startups or spin-offs have been established yet, similar to RP3. This remains an area requiring attention to meet the YR7 target of 3 startups/spin-offs; an effort that will be substantially boosted by the Cyprus SPACE BIC.

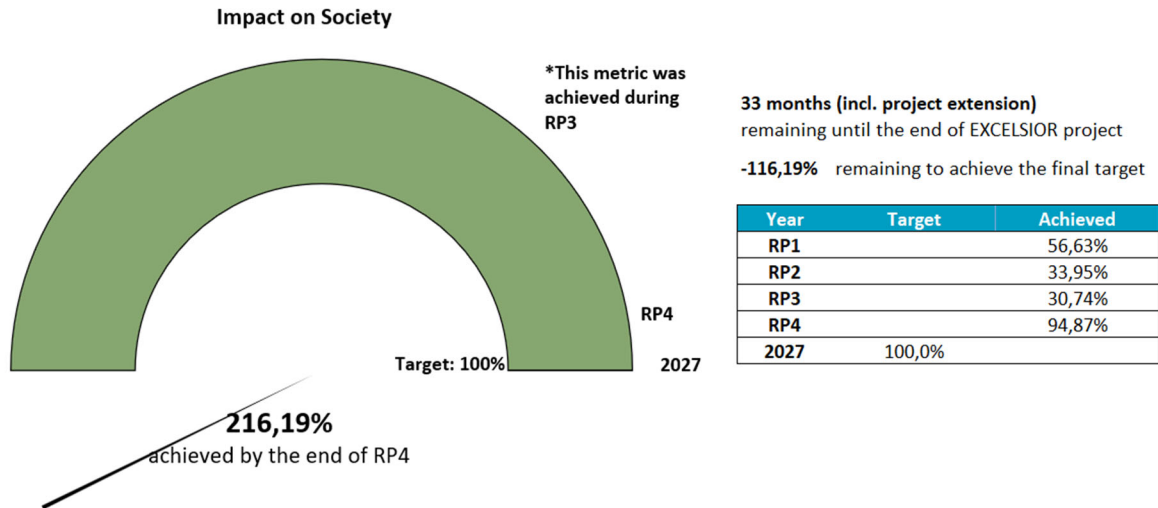


Figure 51 Metric Gauge for Impact on Society KPIs Table.



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5 Conclusions

The Impact Assessment conducted for the EXCELSIOR project extending to ERATOSTHENES CoE has yielded significant insights into teams' performance, influence, and contributions across various domains. Several key conclusions can be drawn from this comprehensive evaluation:

The ERATOSTHENES CoE has made remarkable progress during RP4, with substantial acceleration in multiple KPIs compared to RP3. The Centre continues to demonstrate its strongest impact in the societal dimension, where most targets have already been exceeded. Scientific output has seen significant acceleration, particularly in citations, conference papers, and h-index growth, indicating increasing research recognition and impact.

Key achievements in RP4 include:

- Important increase in scientific output, with conference papers tripling and citations growing nearly five-fold
- Substantial growth in stakeholder meetings and collaborations
- Accelerated service development, exceeding YR7 targets
- Significant progress in equipment acquisition
- Dramatic increase in research proposal submissions and funding secured
- Signing of the Cyprus SPACE BIC endeavour
- Establishment of the Cyprus Data Cube
- Set-up of GBS components
- Construction of DAS by the awarded party
- UN-SPIDER Office for Disaster Risk Reduction at the ERATOSTHENES CoE
- DLR Hyperspectral Flight Campaign
- Cyprus Seeds Funding
- Important secondments to the Advanced Partners

As the EXCELSIOR project enters its final phase, the Centre's strategic priorities should include:

- Commercialization Acceleration: Establishing a structured innovation pipeline from research to market, potentially including entrepreneurship training, dedicated innovation management resources, and closer integration with regional innovation ecosystems.
- Research Excellence Consolidation: Leveraging the dramatic increase in citations and scientific visibility to target high-impact publications, prestigious grants, and strategic international collaborations.
- Talent Acquisition and Development: Implementing a comprehensive human resources strategy to attract international talent, reinvigorate researcher mobility programs, and develop specialized expertise aligned with the Centre's research priorities.
- Strategic Infrastructure Completion: Ensuring timely operationalization of acquired equipment, particularly the satellite ground receiving station, and integration into research workflows and service development.
- Sustainable Partnership Model: Transforming the exceptionally strong stakeholder engagement into sustainable, long-term partnerships that extend beyond the project timeline.



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The ERATOSTHENES Centre of Excellence has established itself as a significant player in the Earth Observation domain, with exceptional performance in stakeholder engagement, growing scientific impact, and infrastructure development. The dramatic acceleration in multiple KPIs during RP4 demonstrates institutional momentum and effective strategy implementation.

With most societal impact targets already exceeded, substantial progress toward scientific impact objectives, and accelerating funding acquisition, the Centre is well-positioned to achieve comprehensive success by YR7. By addressing the identified strategic challenges, particularly in commercialization and specialized talent acquisition, the Centre can complete its transformation into a fully sustainable and internationally recognized Centre of Excellence that delivers significant scientific, economic, and societal benefits to Cyprus and the broader region.

The trajectory established during RP4 suggests not only that the Centre will meet or exceed most YR7 targets, but that it is building the foundations for long-term impact that will extend well beyond the EXCELSIOR project timeline. This represents a significant return on investment for all stakeholders and positions the Centre for continued growth and impact in the years ahead.

In conclusion, the current deliverable has provided a comprehensive overview of the EXCELSIOR project and ERATOSTHENES CoE's performance and contributions. It has reaffirmed its commitment to excellence, sustainability, and inclusivity in Earth Observation and Remote Sensing. As it moves forward, the organization will continue to leverage state-of-the-art technologies, engage with stakeholders, and utilize evidence-based metrics to drive positive change and further its mission in the field.



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Annexes

Annex 1 – Employment Positions During RP4

Department	Positions Needed	Persons Hired	Persons Appointed	Positions Need Filling
- Management	7	4	1	2
- Support	16	3	1	12
- Administration	9	4	2	3 (1 for Accounting, 2 for IT Support)
- Environment & Climate	34	14		20
- Resilient Society	40	19		21
- Big Earth Data Analytics	27	5		22

*Following the personnel needs analysis conducted in early September 2024 with the department Coordinators and Cluster Leaders, the ERATOSTHENES CoE identified a total need for 129 personnel (some are hired on a temporary basis for specific projects) for RP4 across all departments incl. their current projects needs.



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Annex 2 – Proposals Submitted During RP4

#	Funding Source	Call	Submission Date	Project Acronym	Project Title	ECoE Department	Total Budget (€)	ECoE Budget (€)	Coordinator/ Partner
1	ERASMUS+	KA210-VET - Small-scale partnerships in vocational education and training	4/10/2023	CO-DIRES	Training Courses for Professional Engineers on Disaster Risk Assessment and Management towards a Resilient Built Environment	Resilient Society	60.000,00	36.000,00	Coordinator
2	ERASMUS+	KA210-SCH - Small-scale partnerships in school education	4/10/2023	T3-SENSE	“Train-The-Trainer” to Adapt the STEAM-based Earth Observation Education for students with SEN and LD	Education	60.000,00	32.500,00	Coordinator



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3	RIF	CODEVELOP-AG-SH-HE/0823	20/10/2023	SMARTPLAIGO	ADVANCING PUBLIC HEALTH SERVICES THROUGH AI DRIVEN GIS OPTIMIZATION	Big Earth Data Analytics	599.520,00	273.240,00	Coordinator
4	RIF	CODEVELOP-AG-SH-HE/0823	20/10/2023	RECEPTOR	RemoteSensing techniques for crop health monitoring	Environment & Climate	599.496,00	364.080,00	Coordinator
5	RIF	CODEVELOP-AG-SH-HE/0823	20/10/2023	ReWheats	Holistic Web-Based Decision Support Tool for Enhancing Wheat Resilience and Sustainability in Cyprus	Environment & Climate	599.346,00	254.016,00	Coordinator
6	RIF	CONCEPT/0823	10/11/2023	ATTRACT	Artificial Intelligence for smart early insect detection	Big Earth Data Analytics Environment & Climate	40.000,00	40.000,00	Coordinator



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7	RIF	CONCEPT/0823	10/11/2023	CyReel	Seismic Risk Assessment and Loss estimation GIS-based Platform for Cyprus	Resilient Society	39.984,00	33.600,00	Coordinator
8	RIF	CONCEPT/0823	10/11/2023	CYSeaGrass	Protection and Conservation System for Benthic Habitat	Resilient Society	39.312,00	39.312,00	Coordinator
9	RIF	CONCEPT/0823	10/11/2023	FUEGO	Forest Fuel Mapping at Regional Scale Using Remote Sensing Techniques	Resilient Society	39.690,00	39.690,00	Coordinator
10	RIF	CONCEPT/0823	10/11/2023	PATHO WEB	Pathogen hazard assessment using an integrated web-based tool for the design of	Resilient Society	39.991,00	30.800,00	Coordinator



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					optimal water management policies				
11	RIF	CONCEPT/0823	10/11/2023	SPICE-AI	Space-born Identification of Clandestine Excavations using AI	Resilient Society	40.000,00	40.000,00	Coordinator
12	RIF	CONCEPT/0823	10/11/2023	TUNING	Tree moisture sensors for precision irrigation	Environment & Climate	40.000,00	40.000,00	Coordinator
13	RIF	CONCEPT/0823	10/11/2023	NotifyMESH	The Proactive Emergency Notification System based on Household Data	Resilient Society	39.900,00	11.900,00	Partner
14	Other European	European Partnerships - Clean Energy	22/11/2023	ENFORCES	Enhanced Forecasting For integrated Regional	Resilient Society	1.215.855,00	199.920,00	Coordinator



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		Transiti on			I ENergy sysTems				
15	Horizon Europe	HORIZO N-CL3- 2023- BM-01- 01	28/11/2 023	BorderF orce	Flexible system extendi ng automa ted border surveilla nce by increase d situatio nal aware ness adaptab le to uncertai n times with unforsee n events	Big Earth Data Analytic s	3.992.7 75,16	328.743 ,13	Partner
16	Horizon Europe	HORIZO N- MSCA- 2023- DN-01- 01	28/11/2 023	DITCH	Digital Intensiv e Technol ogies for Cultural Heritag e	Resilien t Society	3.993.7 68,00	470.160 ,00	Partner



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17	ESA	9th ESA-PECS call	7/12/2023	-	Enabling Cyprus for the European Earth Observation Ground Segment Operations	Big Earth Data Analytics Resilient Society	244.699,00	115.584,00	Coordinator
18	ESA	9th ESA-PECS call	7/12/2023	MOGS-CyX2	Mobile Optical Ground Station - Cyprus eXperimental Phase II	Environment & Climate	249.700,00	35.000,00	Partner
19	ESA	9th ESA-PECS call	7/12/2023	-	Cyprus Ground-Based DOAS for Air-Quality Observations	Resilient Society	395.000,00	61.524,00	Partner



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20	Other European	DIGITAL-2023-CLOUD-DATA-AI-05-CULTHERITAGE	23/1/2024	Lip3D	Living forever the Past through a 3Digital world	Resilient Society	1.041.966,00	103.255,00	Partner
21	Interreg	Interreg VI-A Greece-Cyprus 2021-2027 (2-stage)	31/1/2024	ΜΟΥΣ-ΧΕΛ 1	Cross-Border Cooperation on the topic of sea turtle, highlighting the natural heritage and strengthening sustainable tourism	Environment & Climate Resilient Society	1.340.000,00	550.500,00	Coordinator
22	Interreg	Interreg VI-A Greece-Cyprus 2021-2027 (2-stage)	31/1/2024	Eco-Beach	Nature-based solutions for the protection of touristic and ecologic	Resilient Society	2.018.330,00	445.650,00	Partner



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					ally important beaches from flooding and erosion under a changing climate				
23	Interreg	Interreg VI-A Greece-Cyprus 2021-2027 (2-stage)	31/1/2024	WATERS OS	Natural WATER Retention measures for flash floods and droughts	Resilient Society	1.733.000,00	0,00	Coordinator
24	Interreg	Interreg VI-A Greece-Cyprus 2021-2027 (2-stage)	31/1/2024	Blue Clusters	Δημιουργία θαλάσσιων κόμβων ανάπτυξης (τουριστικοί λιμένες) και δικτύων τοπικών επιχειρήσεων (Clusters) που θα προάγουν την	Resilient Society	2.314.031,85	420.080,00	Partner



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					Γαλάζια Ανάπτυξη				
25	Interreg	Interreg VI-A Greece-Cyprus 2021-2027 (2-stage)	31/1/2024	iCRISIS	Intelligent Crisis Management and Emergency Response Platform	Big Earth Data Analytics Resilient Society	1.395.000,00	462.000,00	Coordinator
26	PRIMA	Thematic Area 1 Water management in Nexus	3/2/2024	MEDIRR NEX	Integrating innovative, community-led, and WEFE-NEXUS-aligned irrigation solutions for sustainable agriculture development in the Mediterranean region	Environment & Climate	4.599.000,00	774.000,00	Coordinator



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27	PRIMA	Thematic Area 2 Farming systems in Nexus	3/2/2024	ADAPT-MED	Priming Resilience to drought through tailored decision support toolkit in Mediterranean Dry Farming for Long-Term Sustainable Nexus	Environment & Climate Resilient Society	4.793.173,00	370.000,00	Partner
28	Horizon Europe	HORIZON-CL2-2024-HERITAGE-01	7/2/2024	PROPHETCY	Pythons' Revival: Orchestrating Pythian Heritage and European Cultural Yearnings	Resilient Society	3.348.250,00	258.750,00	Partner
29	Horizon Europe	HORIZON-EUSPA-2023-SPACE-01-43	20/2/2024	EO4N2K	EARTH OBSERVATION TO PROTECT NATURAL 2000 AREAS	Environment & Climate Resilient Society	1.939.375,00	321.250,00	Partner



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30	Horizon Europe	HORIZON-CL6-2024-CLIMAT-E-01-4	22/2/2024	Landshifting	Community-Led Creation of Living Spaces in Shifting Landscapes for Climate-Resilient Land Use Management and Supporting the New European Bauhaus	Environment & Climate Resilient Society Big Earth Data Analytics	5.996.281,25	754.500,00	Coordinator
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31	Horizon Europe	HORIZO N-CL6-2024-FARM2F ORK-01-10	22/2/2024	Afrogr ow	Informe d Decicio n-Making for Agrofor estry Systems in Africa through a Networ k of Living Labs	Environ ment & Climate Resilien t Society Big Earth Data Analytic s	5.998.801,25	787.812,50	Coordin ator
32	Horizon Europe	HORIZO N-CL6-2024-CLIMAT E-01-1	22/2/2024	GEORGI A	Green dEal cOmplia nt iRriGati on Increasi ng Europe' s Agricult ure resilienc e to drought	Environ ment & Climate Resilien t Society	4.996.607,24	245.750,00	Partner



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33	Horizon Europe	HORIZON-CL6-2024-BIODIV-02-1 (2-stage)	22/2/2024	WATER-INVESTOR	Advancing sustainable water management through innovative nature-based solutions adaptive to extreme droughts	Resilient Society Environment & Climate	7.890.12,00	1.000.000,00	Coordinator
34	RIF	CODEVELOP-REPowerEU/1223	28/2/2024	Rooftop SUN	Determination of the urban rooftop photovoltaic potential	Resilient Society	599.760,00	129.000,00	Partner
35	ERASMUS+	Small-scale partnerships in vocational education and training (KA210-VET)	5/3/2024	SATCULT	Closing a knowledge gap by vocational training about satellite-based services in cultural heritage	Resilient Society	60.000,00	20.000,00	Partner



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					preservation				
36	ERASMUS+	Cooperation partnerships in higher education (KA220-HED)	5/3/2024	CHANGES	Cultural Heritage and Archaeology for the study and dissemination of Natural, Geological, Environmental and Social events due to climate changes in antiquity: learning from the past for a better awareness in the future	Resilient Society	400.000,00	55.000,00	Coordinator
37	ERASMUS+	KA210-VET - Small-scale partnerships in	5/3/2024	ProDRAM	Training of Professional Engineers on	Resilient Society	60.000,00	36.000,00	Coordinator



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		vocational education and training			Disaster Risk Assessment and Management towards a Resilient Built Environment				
38	ERASMUS+	KA210-SCH - Small-scale partnerships in school education	5/3/2024	SENse of Earth	STEAM-based Earth Observation Education for students with SEN and LD	Education	60.000,00	32.500,00	Coordinator



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39	Horizon Europe	HORIZON-WIDERA-2023-ACCESS-07-01	7/3/2024	SHERIFF	Strategic Hub of Excellence for Research and Innovation in Fires and Floods	Resilient Society	5.971.217,50	294.375,00	Partner
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40	Horizon Europe	HORIZON-WIDERA-2023-ACCESS-07-01	7/3/2024	CircuLife	Initiative for Circular Community-Led Nature-Based Solutions for Peri-Urban and Rural Development Integrating the Principles of the New European Bauhaus	Resilient Society Environment & Climate	5.964.656,25	480.000,00	Partner
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41	Horizon Europe	HORIZON-WIDERA-2023-ACCESS-07-01	7/3/2024	ENERGETIC	Excellence Hubs Against Heritage and Archaeological Theft and Trafficking	Resilient Society	6.000.000,00	862.750,00	Coordinator
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42	Horizon Europe	HORIZON-WIDERA-2023-ACCESS-07-01	7/3/2024	VitiWin eHub	Excellence Hub for Vine and Wine	Environment & Climate	5.949.589,00	250.000,00	Partner
43	Horizon Europe	HORIZON-CL4-2024-SPACE-01-36	21/3/2024	MARINE SEC	AN INTEGRATED SOLUTION FOR MARITIME SURVEILLANCE AND SECURITY	Resilient Society	4.283.065,40	241.250,00	Partner
44	RIF	PHD IN INDUSTRY/1123	29/03/2024	SLUDGE UFORIA	SLUDGE Use FOR soil heAlth	Environment & Climate	150.000,00	10.000,00	Partner



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45	ESA	CYPRUS AWARENESS RAISING AND EDUCATION STUDY	5/4/2024	CARES	CYPRUS AWARENESS RAISING AND EDUCATION STUDY	Education	249.497,00	57.182,00	Partner
46	ECHO	UCPM-2024-KAPP-PP	25/4/2024	Pre-FACED	Enhanced Preparedness Capacities through the Fusion of Geospatial and AI Technologies	Resilient Society	832.916,04	180.779,18	Coordinator
47	Other European	AGROECOLOGY 1st Co-funded call (2-stage)	26/4/2024	VINELAB	Setting a new paradigm in vineyard sustainability by combining innovative agro-ecological practices and genetic resources in a living	Environment & Climate	2.077.00,00	395.000,00	Coordinator



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					lab approach				
48	Interreg	Next-MED	30/5/2024	MedPro TecT	MEDiterranean heritage PROtection through innovative TEChnologies and sustainable Tourism	Resilient Society	2.706.100,00	534.800,00	Coordinator
49	Interreg	Next-MED	30/5/2024	OBSERVE	An Eastern Mediterranean Integrated Observatory System utilizing EO and in situ data to monitor and manage the Risk of	Resilient Society	2.482.874,49	447.150,00	Partner



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					Coastal Erosion due to the Impact of Climate Change				
50	Interreg	Next-MED	30/5/2024	SAND	Smart mediterranean Network to manage and prevent risks related to Desertification and climate change	Resilient Society	2.789.900,00	359.000,00	Partner
51	Interreg	Euro-MED - 4th call	12/6/2024	ROOTS	Revitalising Our Overgrown Territories Sustainably to achieve climate resilience by mitigating wildfire hazards and enhancing	Resilient Society	1.499.917,00	299.991,00	Coordinator



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					ng food security				
52	Interreg	Euro-MED - 4th call	12/6/2024	SKY-FIELD	Strategies in the sKY For Innovative applications of Drones	Environment & Climate	2.499.270,00	309.940,00	Partner
53	RIF	EXCELLENCE/0524	5/7/2024	ARISEN	Afforestation in semi-arid regions	Environment & Climate	199.990,00	120.960,00	Coordinator
54	RIF	EXCELLENCE/0524	5/7/2024	CARoL	Cloud and Aerosol Research over Limassol	Environment & Climate	199.500,00	199.500,00	Coordinator
55	RIF	EXCELLENCE/0524	5/7/2024	SMART	Sustainable management and advanced research in viticulture and	Environment & Climate	249.200,00	117.600,00	Coordinator



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					winemaking				
56	RIF	POST-DOC/0524	5/7/2024	PURGE	Impact of Dust Storms on Agriculture	Environment & Climate	149.310,00	149.310,00	Coordinator
57	RIF	EXCELLENCE/0524	5/7/2024	URBAN-OBSERVER	Effective space-based monitoring of urban infrastructure in coastal areas	Resilient Society	199.950,93	119.590,93	Coordinator
58	RIF	EXCELLENCE/0524	5/7/2024	CHARMANDER	Cypriot High fire-risk Area Monitoring and Detection for Effective Resilience	Resilient Society	199.710,00	199.710,00	Coordinator
59	RIF	EXCELLENCE/0524	5/7/2024	IMISS	Inorganic Materials Incorporating Space	Resilient Society	141.542,34	51.998,80	Partner



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					Simulants				
60	RIF	EXCELLENCE/0524	5/7/2024	ENERGETICS	Enhanced Forecasting for Integrated Energy Systems with Focus on PV Powerplants in Cyprus	Resilient Society	198.228,34	119.828,34	Coordinator
61	RIF	EXCELLENCE/0524	5/7/2024	SEENCLASS	Classification System of Existing buildings before and after an integrated seismic and energy renovation	Resilient Society	162.000,00	148.000,00	Coordinator
62	RIF	EXCELLENCE/0524	5/7/2024	SPICE-AI	SPace-born Identification of Clandestine Excavations using AI	Resilient Society	119.999,99	89.999,99	Coordinator



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63	RIF	POST-DOC/0524	5/7/2024	MedFor tS	Remote sensing and GIS techniques for the understanding of Mediterranean fortified sites during the Middle Byzantine period	Resilient Society	117.600,00	117.600,00	Coordinator
64	RIF	POST-DOC/0525	5/7/2024	TRACE MILK	Tracing and Enhancing Milk Supply Chain using Causal Machine Learning	Big Earth Data Analytics	149.940,00	140.000,00	Coordinator
65	RIF	EXCELLENCE/0524	5/7/2024	MANIFESTO	Machine Learning for Intelligent Insect Monitoring	Big Earth Data Analytics	199.959,20	169.960,00	Coordinator
66	RIF	EXCELLENCE/0525	5/7/2024	DIOPOLIS	Data-Driven Irrigation	Big Earth Data	199.990,00	177.590,00	Coordinator



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					n Optimization and Policy Development for Agricultural Water Sustainability Using Deep Learning	Analytic s			
67	ESA	CY_ADO3 - EARTH OBSERVATION CAPABILITIES AND SERVICE NEEDS IN CYPRUS	16/7/2024	CEOPS	Cyprus Earth Observation for Public Sector	Environment & Climate Resilient Society Big Earth Data Analytics	242.289,90	146.709,90	Coordinator
68	Other European	EUREKA Eurostars 3	12/9/2024	N2K-Watch	Earth Observation Solutions for Natura 2000 Sites Network Management	Environment & Climate Resilient Society	482.563,00	124.062,00	Partner



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69	Horizon Europe	CL6-2024-FARMT OFORK-02	17/9/2024	HOLD-HLB	HOLISTIC STRATEGIES FOR ORCHestrating LONG-TERM DEFENCE AGAINST CITRUS HLB IN THE MEDITERRANEAN BASIN	Environment & Climate	6.883.000,00	230.000,00	Partner
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70	Horizon Europe	HORIZON-CL4-2024-HUMAN-03-02	18/9/2024	EXAct.AI	Enhancing explainability, Accountability, and Trustworthiness in AI	Big Earth Data Analytics Resilient Society	7.499.930,00	271.500,00	Partner
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71	Horizon Europe	HORIZON-MISS-2024-CLIMA-01-06	18/9/2024	LAST MILE	Addressing Bankability and Economic Feasibility of Climate Change Adaptation solutions	Resilient Society	8.999.068,75	187.812,50	Partner
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72	Horizon Europe	HORIZON-MISS-2024-CLIMA-01-07	18/9/2024	Move2Resilience	Integrated Decision-Making System for Climate Resilient Landscape Management Using Digital MRV Tools to Address Extreme Weather Events related to climate change	Environment & Climate	8.000.000,00	450.000,00	Partner
73	Other European	Internal Security Fund (NTOC)	20/9/2024	PROTECT	ImProved pRevention, deTecti on and invEstigation of illegal trafficki ng in Cultural goods through the	Resilient Society	604.764,00	105.449,00	Partner



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					Training of LEA personnel in State of the Art digital tools				
74	Horizon Europe	HORIZON-CL6-2024-FARM2FORK-03	24/9/2024	SPODOTICON	SURVEILLANCE AND CONTROL OF SPODOTERA FRUGIPERDA	Environment & Climate	4.997.388,75	496.250,00	Partner
75	Interreg	Euro-MED - 5th call (2-stage)	26/9/2024	ECOWATER	Developing Water Management Practices through Ecolabel Adoption in Mediterranean Islands	Environment & Climate	0,00	0,00	Partner



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76	Interreg	Euro-MED - 5th call (2-stage)	26/9/2024	WATERS OS	WATER scarcity mitigation adaptation SOLUTIONS for Mediterranean islands	Resilient Society	0,00	400.000,00	Partner
77	Governmental	AΔ/1124	27/9/2024	Troodos Grazing Tender	Provision of Consultant Researcher Services for the development of a Pasture Management Plan for the study area of the Communities of the National Strategy for the Development of Mountain	Environment & Climate	42.000,00	21.000,00	Coordinator



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					Communities				
78	Horizon Europe	HORIZON-MISS-2024-SOIL-01-01	8/10/2024	Nemesis	Co-creating solutions for soil health in Living Lab	Environment & Climate Resilient Society Big Earth Data Analytics	11.999.402,50	2.257.500,00	Coordinator



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79	Horizon Europe	HORIZON-MISS-2024-SOIL-01-03	8/10/2024	TERRA	Leading Transformation towards soil Erosion Reduction for a Resilient Agriculture in Europe	Environment & Climate	11.495.263,75	528.312,50	Partner
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80	Horizon Europe	HORIZON-MISS-2024-SOIL-01-07	8/10/2024	C-FARMIN G	High-definition integrated monitoring solutions for carbon farming	Environment & Climate	11.653.017,00	243.500,00	Partner
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81	Horizon Europe	HORIZO N-MISS-2024-SOIL-01-07	8/10/2024	CarbonSense	Approved and harmonized frameworks to bridge the gap between carbon farming and climate action through advanced monitoring	Environment & Climate	11,417,133.75	442.500,00	Partner
82	Horizon Europe	HORIZO N-MISS-2024-SOIL-01-09	8/10/2024	SH4A	Soil Health 4 Africa	Environment & Climate	6.999.988,14	150.000,00	Partner



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83	Horizon Europe	HORIZO N-MISS-2024-SOIL-01-04	8/10/2024	NICE2030	NICE2030: NITROGEN CLIMATE ENVIRONMENT	Environment & Climate Big Earth Data Analytics	11.499.323,75	317.500,00	Partner
84	Horizon Europe	HORIZO N-MISS-2024-SOIL-01	8/10/2024	Soil2Be	Understanding synergy between building soil health and promoting ground-nesting pollinators in EU agriculture	Environment & Climate	7.810.043,75	358.750,00	Partner



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85	Other European	European Urban Initiative - 3rd call	14/10/2024	SmartLE MESOS	Smart Digital Twin for Sustainable Urban Management in Central Limassol: Enhancing Spatial Planning and Optimizing Energy, Transportation, and Air Quality for a Greener Future	Resilient Society	5.606.774,80	1.638.637,60	Partner
86	Other European	Enabling City Transformation - NET ZERO CITIES	14/10/2024	FUSION	Federated Urban data System with Intelligent Technology and Citizen Wisdom	Resilient Society	1.500.000,00	100.000,00	Partner
87	Other European	Cascade funding	30/10/2024	ARTEMIS	Advancing Real Time Ecosystem	Environment & Climate	144.700,00	144.700,00	Coordinator



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					Monitoring with Intelligent Sensors				
88	Other National	4th Cyprus Seeds	3/11/2024	CCRRS	Concrete Corrosion Remote Sensing System	Resilient Society	29.000,00	29.000,00	Coordinator
89	Horizon Europe	HORIZON-CL3-2024-DRS-01-04	20/11/2024	ACRON ATE	Advanced Cross-border Response and Recovery after NaTech Disasters	Resilient Society	302.500,00	3.999.335,00	Partner



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90	Horizon Europe	HORIZO N-CL3-2024-INFRA-01-03	20/11/2024	infraBR AIN	Pan-European, hazard agnostic, AI-based evolutionary digital brain for lifeline infrastructure management	Resilient Society	199.906,25	4.997.979,51	Partner
91	RIF	CODEVELOP/0824	27/11/2024	CLIMED	Advanced Remote Sensing and AI for Environmental Health Monitoring	Big Earth Data Analytics	677.880,00	260.400,00	Coordinator
92	RIF	CODEVELOP/0824	27/11/2024	DARTS	Drones for Agricultural Resilience and Targeted Solutions	Environment & Climate	570.160,00	280.000,00	Coordinator



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93	RIF	CODEVE LOP/08 24	27/11/2 024	SHIELD	Soil Health Initiative for Environment and Agricultural Lands	Environment & Climate	598.880 ,00	322.800 ,00	Coordinator
94	RIF	CODEVE LOP/08 24	27/11/2 024	SoilGuard	Soil Health Decision Support System for d Advancing Compliance with the Forthcoming Soil Monitoring Law	Environment & Climate	599.919 ,60	309.999 ,60	Coordinator
95	Other European	EEA and Norway Grants	1/12/20 24	HARMONY	Smart Health Monitoring Platform for Early Risk Detection and Improved Public Health Outcomes	Big Earth Data Analytics	975.000 ,00	500.000 ,00	Coordinator



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96	Other European	EEA and Norway Grants	1/12/2024	MilQTrack	Enhancing Dairy Quality and Health through Traceability	Big Earth Data Analytics	962.400,00	500.000,00	Coordinator
97	ESA	10th ESA-PECS	13/12/2024	CLARITY	CARO Integration to ESA Scientific and CAL/VAL activities	Environment & Climate	69.457,00	69.457,00	Coordinator
98	ESA	10th ESA-PECS	13/12/2024	EDAFOS 2	Satellite data-driven Ecological and Environmental Monitoring and Assessment Tool	Environment & Climate	200.000,00	64.873,00	Partner
99	ESA	10th ESA-PECS	13/12/2024	FUEGO	Forest Fuel Mapping at Regional Scale Using Remote Sensing Techniques	Resilient Society	195.000,00	195.000,00	Coordinator



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100	ESA	10th ESA-PECS	13/12/2024	NEPHOS	Novel cloud Extraction Processing for High-efficiency Onboard Satellite systems	Resilient Society	200.000,00	35.084,00	Partner
101	ESA	10th ESA-PECS	13/12/2024	STEPS II	coaSTal Erosion in cyPrus from Space II	Resilient Society	245.029,00	186.029,00	Coordinator
102	Horizon Europe	HORIZON-CL2-2024-HERITAGE-ECCCH-01-05	24/1/2025	EXCALIBUR	Advanced toolkits for interdisciplinary and enhanced study, conservation, and restoration in burial excavations and findings	Resilient Society	4.192.573,75	310.000,00	Partner



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103	Other European	CREA-CULT-2025-COOP-UA-3	6/2/2025	GMP	Great Meadow Project	Resilient Society	1.000.000,00	153.700,15	Coordinator
104	Horizon Europe	HORIZON-MISS-2024-CIT-01-04	11/2/2025	SPRING	Sustainable Peri-urban Integration of climate-Neutral mobility and Green energy	Resilient Society	9.085.678,00	335.500,00	Partner



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105	RIF	BILATERAL/GREECE/1124/	27/2/2025	RESILIENCE	Integrating TLCA and crop suitability for climate-resilient land-use planning in Cyprus and Greece	Environment & Climate	99.999,68	60.000,00	Coordinator
106	RIF	BILATERAL/GREECE/1124/	27/2/2025	SHIELD	Strategic HLB Intervention using Efficient Low-altitude Drones	Environment & Climate	100.000,00	60.000,00	Coordinator
107	RIF	BILATERAL/GREECE/1124/	27/2/2025	SOFIA	Decision Support Tool for Regenerative Farming Optimization and Carbon Credit Certification	Environment & Climate	91.999,80	59.999,80	Coordinator
108	RIF	BILATERAL/GREECE/1124/	27/2/2025	SHIFT	Development of Sustainable, High-	Environment & Climate	100.000,00	60.000,00	Coordinator



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					performance, Insect-based Feeds: Circular Economy in Animal Production in Practice				
109	RIF	BILATERAL/GREECE/1124/	27/2/2025	MilkID	Holistic Profile of Sheep and Goat Milk in Conventional and Biological Farms	Environment & Climate	100.000,00	60.000,00	Coordinator