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EXCELSIOR Project

H2020-WIDESPREAD-2018-2020 | Grant Agreement No 857510	
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:	**D1.16 Impact Assessment Report for RP 3**
Version:	**Final D1.16**
Dissemination level:	**Public**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 857510.

This project has received funding from the Government of the Republic of Cyprus through the Directorate General for the European Programmes, Coordination and Development.

	**H2020-WIDESPREAD-2018-2020/ H2020-WIDESPREAD-2018-01** **Grant Agreement No 857510** This project is funded by the **EUROPEAN COMMISSION** in the Framework Programme for Research and Innovation (2014-2020).
Call / Topic:	**H2020-WIDESPREAD-2018-01 /** **WIDESPREAD-01-2018-2019** **Teaming Phase 2**
Project full title:	**ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment**
Project acronym:	**EXCELSIOR**
Work Package (WP): Task (T):	**WP1 Project Management and Coordination** **T1.4 Impact Monitoring and Re-assessment**
Deliverable (D):	**D1.16 Impact Assessment Report for RP 3**
Due date of deliverable:	**30 September 2023** **(Month 48 of the project)** — **Version: Final D1.16**
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Start date of project:	**1 October 2019** — Duration: **84 months**
Dissemination Level:	**Public**

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Document Sign-off

Nature	Name	Role	Partner	Date
DRAFT	Georgios LEVENTIS	WP1 Participant	ECOE	1/8/2023
REVIEWED	Kyriacos Themistocleous	Project Manager	ECOE	14/9/2023
REVIEWED	Diofantos Hadjimitsis	Project Coordinator	CUT	22/9/2023
APPROVED	All partners			29/9/2023

Work Package 1: Project Management and Coordination

D1.16: Impact Assessment Report for RP 3

Sections to be protected	Description	Owner	Access Rights	
			Period	Type*
2.4.2	Section included names of PhD students and were removed to avoid disclosure to the public.		**2030**	**CA**

*PD: Public dissemination CA: Confidentiality Agreement required for disclosure

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Executive Summary

This document serves as the impact assessment report for RP3 (M31-M48) 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 ERATOSTHENES Centre of Excellence (ECoE) 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. This updated list now reflects the activities undertaken in RP3. Monitoring the impact during RP3 provides insights into the actions required to meet the KPIs in future reporting periods. This impact assessment report plays a crucial role in evaluating the work plan's implementation and guiding necessary adjustments in collaboration with WP and task leaders to ensure the project's strategic goals are met. WP1 establishes the framework for KPI monitoring and general quality processes, while WP3 defines concrete actions affecting all other WPs to achieve the Impact KPIs. Coordination with WP3 activities on strategy definition ensures that human resources, infrastructure acquisition, and the overall work plan are updated to address new priorities. The report evaluates various activities, such as proposals, dissemination events, publications, academia, and networks, against the established KPIs, providing insights into their 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
GEE	Google Earth Engine
GEO	Group on Earth Observations
HR	Human Resources
IA	Impact Assessment
IP	Intellectual Properties
KPIs	Key Performance Indicators
MoU	Memorandum of Understanding
NITCA	Novel Integrated Technology for the Characterization of Asphalt
NOA	National Observatory of Athens
PSI	Persistent Scatterer Interferometry
RI	Research Infrastructure
RIF	Research and Innovation Foundation
RP	Reporting Period
RS	Remote Sensing
SCWV	Smart 'CropWATER' Valve

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1 Introduction

Impact assessment (IA) analyses the short- and long-term consequences of development interventions or projects. Its primary focus lies in understanding the changes that occur and the pathways leading to these changes, rather than solely focusing on activities or deliverables. IA involves identifying the nature of impact, describing activities and potential effects, and estimating the expected magnitude of influence. Additionally, it considers how project impacts might intersect with other impacts from existing or planned developments, as well as potential cross-border effects. Key Performance Indicators (KPIs) are integral to this process as they measure a project's progress towards its objectives. Serving as vital management tools, KPIs enable progress tracking, support evidence-based decision-making, and aid in formulating future strategies.

Extensive details on the Impact Assessment Methodology as well as on the Key Performance Indicators (KPIs) can be found at 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"

Following the recommendations by the external reviewers during the RP2 review meeting of the EXCELSIOR project (that was held on November 2022), the consortium took immediate actions to address and revise properly the necessary KPIs, while added new to better highlight certain aspects of the research impact section. The following two sub-sections provide a brief overview of the changes, though more information can be found at the "**D1.13 – Update of the Impact Assessment Methodology**".

1.1 Revised Key Performance Indicators

The KPIs that were considered for revision (based on the evaluators' received feedback) are presented at the following table along with their metrics:

Table 1 Revised KPIs following evaluators' comments.

			Original based on GA (cumulative)		**Re-adjusted (cumulative)**	
KPI Category	**KPI Code**	**Description**	**By YR4**	**By YR7**	**By YR4**	**By YR7**
Impact: Participating organisations	P10a	Number of research project proposals submitted for funding	180	370	**100**	**185**
Impact: Participating organisations	P10b	Number of successful research project proposals submitted for funding	18	38	**12**	**26**
Impact: Scientific community	SC01	Number of articles in peer-reviewed scientific journals	80	250	**75**	**195**
Impact: Scientific community	SC02	Number of articles published in the proceedings of International Conferences	120	300	**75**	**285**

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1.2 New Key Performance Indicators

Based on the external evaluators' comments the EXCELSIOR consortium to better highlight the synergies amongst the partners, included three KPIs that pertain to the submission of joint research proposals and publications, as shown below:

Table 2 New KPIs to show the collaboration among the EXCELSIOR consortium.

KPI Category	KPI Code	Description	By YR4	By YR7
Impact: Participating organisations	P10d	Number of research project proposals for funding, jointly submitted with EXCELSIOR partners	10	45
	P12a	Number of articles jointly published with EXCELSIOR partners in peer-reviewed scientific journals	5	55
	P12b	Number of articles jointly published with EXCELSIOR partners in the proceedings of International Conferences	15	100

1.3 Weights and Modifications to the Descriptions of Certain KPIs

1.3.1 Implementation of weights to KPIs

During RP3, the persons liable of the Impact Assessment adhering to the external evaluators' report deemed it necessary to include weights on the KPIs as crucial for statistical reasons when evaluating the ERATOSTHENES' impact. This enables to the KPIs to be ranked according to their importance and their overall contribution to the evaluation of impact.

Weights assist in balancing different aspects, dealing with differences in data quality, and guaranteeing fair comparisons throughout the running years of the EXCELSIOR project, as well as it yields several benefits:

1) **Prioritization of KPIs**: Assigning weights allows the consortium to prioritize KPIs based on their relative importance. This ensures that critical indicators, aligning with project objectives, receive greater consideration in the overall assessment.
2) **Balancing Different Dimensions**: EXCELSIOR KPIs expand to 3 different aspects (impact on participating organisations, impact on scientific community, and impact on society), hence representing various dimensions, such as economic, environmental, and social aspects. Weights help balance these dimensions, preventing any single aspect from dominating the overall evaluation.
3) **Data Quality and Reliability**: KPIs may vary in terms of data quality and reliability. By incorporating weights, assessments can reflect the confidence level associated with each KPI, giving more weight to indicators with reliable data.
4) **Comparability and Aggregation**: When evaluating multiple projects, weighted KPIs facilitate fair comparisons. Adjusting weights to account for differences in project scale, scope, or objectives ensures meaningful comparisons.
5) **Mitigating Biases**: Unweighted KPIs may introduce biases, skewing the overall assessment. Weights help mitigate biases by providing a more objective evaluation of the project's impact.
6) **Transparency**: Incorporating weights enhances transparency, as it clarifies how each KPI contributes to the final result.

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In summary, incorporating weights in impact assessment ensures a nuanced and accurate understanding of the project's impact. It supports well-informed decision-making by prioritizing critical indicators and balancing different dimensions. Moreover, it enhances transparency, reduces biases, and fosters accountability, leading to more effective evaluations and informed decision-making processes.

1.3.2 Revised descriptions of KPIs

To ensure better coherence to the overall progress of the EXCELSIOR project, the consortium modified the descriptions of the following KPIs by encapsulating the underlined words:

Table 3 Revised KPIs following external reviewers' comments

P04	Establish and operate a Calibration and Validation site for satellite data at the ECoE	Number of associations with calibration and validation activities/networks
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 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

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2 Activities and Impact Assessment for RP3

To precisely determine the impact of the ERATOSTHENES Centre of Excellence, an evaluation was conducted using the Key Performance Indicators (KPIs) specific to the Reporting Period (RP) 3. The analysis focused on the activities completed during the period between M31 and M48 (RP3), providing detailed information on their outcomes. The impact assessment examined the effects at three levels: participating organizations, the associated scientific community, and the broader societal impact. This comprehensive assessment involved a meticulous analysis, including the quantification of KPIs as outlined in Table 2.1 of the Grant Agreement. Throughout the subsequent sections of this chapter, explicit references are made to the specific KPIs listed in the annex section of this deliverable, ensuring a thorough understanding of the achieved impact. By utilizing this rigorous approach, a comprehensive evaluation of the ECoE's impact on various stakeholders is provided.

KPI **P01** pertains to the acquisition of crucial equipment for the effective operation of the Centre of Excellence. This includes a satellite ground receiving station and a Ground-based atmospheric remote sensing station (GBS), designed to act as a supersite for aerosol and cloud monitoring. Additionally, the KPI encompasses other essential equipment necessary to conduct cutting-edge research. By acquiring such equipment, the Centre aims to enhance its research capabilities, enabling it to be more competitive in receiving research proposals and developing tailor-made applications for stakeholders. This investment in advanced technological equipment is vital to ensure the Centre's ability to conduct state-of-the-art research and provide valuable solutions to various stakeholders. This indicator is distinguished into three parts, **P01a** for the satellite ground receiving station, **P01b** for the supersite for aerosol and cloud monitoring and **P01c** for all other equipment (e.g., geodetic equipment, sensors, spectroradiometers, IT, etc.).

During RP3, after an extensive and rigorous evaluation process, the ERATOSTHENES CoE reached the final stage of the tendering procedure for the **antenna** that will be placed at CYTA's premises. The tender submission deadline officially expired, marking the closure of the tender for further submissions. ERATOSTHENES' evaluation committee diligently reviewed all received bids, meticulously assessing each proposal in accordance with the predetermined criteria and guidelines. After thorough analysis and consideration, the organization has identified a successful bid. The nominated bid aligns closely with the EXCELSIOR project's requirements and objectives, demonstrating a strong commitment to quality, expertise, and cost-effectiveness. This decision was reached after careful deliberation and is based on a comprehensive evaluation of each bid's technical merits, financial feasibility, and overall suitability for the project and the centre.

To facilitate the research purposes of the Solar Radiation cluster, ERATOSTHENES acquired six (6) Pyranometers, five (5) UV Radiometers, one (1) Pyrheliometer, one (1) Pyrgeometer and one (1) Spectrophotometer UV/VIS. Table 3 below depicts the use of these instruments in terms of measured quantity:

Table 4 List of the Solar Radiation cluster equipment

Instrument Type	**Measured Quantity**
Pyranometer	Downwelling total shortwave irradiance (W/m2)
Pyrheliometer	Direct shortwave irradiance (W/m2)
Pyrgeometer	Downwelling longwave irradiance (W/m2)

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UV Radiometer	Erythemal UV irradiance (W/m2)
Spectrophotometer UV/VIS	Global spectral (290–500 nm) irradiance (W/nm·m2)

The first batch of the radiation instruments were installed at the Department of Meteorology Cyprus – CYMET, which will constitute part of the ERATOSTHENES Cyprus Solar Network. The rest are anticipated to be installed within the first three months of the next reporting period (RP4) at the stations of CUT in Limassol as well as at CYMET's in Polis Chrysochous, Xylofagou and Kyperounta.

Apart from the aforementioned, the centre has 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.

2.1 Trainings and capacity building activities

During RP3, **eleven (11) 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. Overall, **5.64 person-months** (**P02b**) were allocated by the ECoE in these eleven capacity building activities.

Table 5 Capacity building activities held during RP3

Training Name	Date(s)	Held by	Number of ERATOSTHENES CoE participants	Scope
Time series analysis: Calculation of trends and driving variables	07/06/2023	DLR	11	This training covered the analyses of vegetation dynamics and drought patterns over Cyprus using remote sensing time series for the last two decades. Specifically, trends and driving variables of vegetation were evaluated. For this purpose, MODIS data and other climatic variables were utilized. The trainees were expected to have relevant knowledge in R, Python, and Jupyter Notebook. Basic scripts were provided to the trainees, and they were encouraged to develop and conduct further advanced analyses based on this foundation.
Modeling of solar radiation	07 – 08/06/2023	PMODWRC and NOA	5	The training was a continuation of the one that took place in November 2022 at Davos, Switzerland. It was aimed at enhancing the trainees' knowledge of modelling aspects and related applications. The trainees were already model users, and during the training, they had a closer look at atmospheric aspects and published results using such tools. The knowledge

				transferred included both technical aspects and seminar-based sessions, where ideas were shared for possible scientific research outcomes by ERATOSTHENES CoE scientists.
Principles of SAR-based maritime information retrieval for maritime safety and security	07-09/02/2023	DLR and Remote Sensing Technology (IMF)	8	The training aimed to equip participants with a comprehensive understanding of oceanographic processes, anthropogenic structures, and natural phenomena as represented in Synthetic Aperture Radar (SAR) images. Through real-life examples, attendees learned how to extract vital information about the maritime domain from SAR images, including wind and wave data, detection of oil spills, coastal morphodynamic change, application of AI and machine learning for maritime information products, as well as direct and indirect detection of maritime objects. Additionally, participants were trained in ship classification and parameter estimation techniques. By the end of the training, attendees gained valuable skills in SAR image analysis, enabling them to interpret and utilize SAR data effectively for studying oceanographic phenomena and maritime activities.
An Introduction to Optical Remote Sensing Data Analysis in Google Earth Engine, with Applications to Cultural Heritage	20 – 23/03/2023	DLR	27	The conservation and monitoring of natural and cultural heritage sites depended on several characteristics of the changing environment that hosted them, such as land cover use, agricultural practices, air and water quality, damages caused by extreme events like fires and floods, and urban dynamics. Earth observation satellites gathered valuable information about these phenomena. During the hands-on sessions, the participants relied on Google Earth Engine, a recent web-based interface that allowed them to download, process, and visualize over twenty Petabytes of harmonized geospatial data. The attendees performed environmental applications at both small and large scales, utilizing data from ESA's Sentinel satellites in the Copernicus program, as well as other additional data sources.

				Moreover, the training included applications focused on Cultural Heritage risk analysis, allowing the attendees to explore and analyze the impact of changing environmental factors on cultural heritage sites.
Training workshop on Solar Radiation/Energy measurements, modeling and applications	17 – 18/11/2022	PMODWRC and NOA	5	The past training workshop was meticulously designed to achieve the seamless transfer of knowledge on solar radiation applications, radiative transfer modeling, and quality assurance and control procedures for solar monitoring. It was a collaborative effort between esteemed scientists from PMODWRC and NOA, who imparted their expertise to the scientists at the Eratosthenes Center of Excellence (ECoE). The training workshop held immense significance for the ECoE's energy cluster, as it directly contributed to advancing solar radiation and solar energy-related research and applications. By delving into theoretical aspects and practical demonstrations, the workshop aimed to equip the attendees with a comprehensive understanding of solar measurements, calibration techniques, and quality control aspects. The trainees exhibited a high level of knowledge, boasting MSc and PhD qualifications, particularly in atmospheric processes. Some already possessed experience in solar radiation applications, enriching the overall learning experience. To facilitate hands-on learning, the workshop took place at the World Radiation Center in Davos, Switzerland, which serves as the premier institute for instrument calibration and characterizations. The access to state-of-the-art facilities enhanced the practical aspects of the training, enabling the attendees to delve deeper into radiative transfer modeling applications. Throughout the training, the participants were provided with comprehensive theoretical insights, followed by practical demonstrations and practical sessions that covered solar measurements, instrumentation, and software-related aspects. This comprehensive approach ensured that the trainees not only acquired

				theoretical knowledge but also developed crucial skills through practical application. **In summary**, the training workshop achieved its objectives by fostering the successful transfer of knowledge and expertise in solar radiation applications, radiative transfer modeling, and quality control procedures. The participants left the workshop equipped with valuable insights and practical experience that will contribute significantly to their research and applications in solar energy and related fields.
Sentinel-1 Products, Data Access and Processing	08 – 09/11/2022	DLR and DFD (German Remote Sensing Data Centre)	18	The training's main objective was to impart participants with a basic understanding of Sentinel-1 products, data availability, and processing levels. Through practical sessions, attendees learned about the PSM and WMP processing framework, with the aim of enabling them to use the application in upcoming demonstration projects and develop their own code and applications based on the framework.
Doppler Wind Lidar – Operation and Management	05/04/2023	TROPOS	1	The focus of the training was on the basic operation procedures of the DWL, covering various aspects such as turning off/on the instrument, starting/stopping the measurements, operational modes, scanning patterns, acquisition parameters, preprocessing, file types, archiving and folder structure, and onsite maintenance of the instrument. The attendee gained valuable insights into effectively operating the DWL, understanding its functionalities, and learning about maintenance protocols to ensure optimal performance.
PollyXT-CYP – Maintenance of the emission	05/04/2023	TROPOS	1	On April 5, 2023, the first training session on the maintenance emission of the Polly-CYP was held online via TEAMS and recorded. Dr. Ronny Engelmann from the advanced partner TROPOS conducted the training, providing essential guidance to Dr. Dragoș Ene from Eratosthenes CoE. The training was focused on inspecting the emission optics and alignment of the Polly-CYP. Dr. Ene learned crucial steps, such as logging in as an admin on the Innolas software, bringing the laser into the long-pulse mode, delaying the

				pump light of the amplified rod, and checking for burned spots on the emission mirrors. In case of burned spots, the mirrors were rotated, and the system was realigned. These maintenance procedures ensure the proper functioning and alignment of the Polly-CYP instrument, and the recorded session serves as a valuable resource for future reference and guidance.
PollyXT-CYP – Telecover test	30/03/2023	TROPOS	2	A virtual workshop took place on March 30, 2023, where Dr. Ronny Engelmann from the expert partner TROPOS led a training session on how to execute the telecover test for PollyXT-CYP. This training was aimed at Dr. Rodanthi Elisavet Mamouri and Dr. Dragoș Ene from Eratosthenes CoE. During the session, participants were guided through the essential steps necessary to successfully conduct the telecover test for PollyXT-CYP. These steps included starting and stopping measurements, controlling different sections of the telescope, and archiving data obtained during the measurements. By following these procedures accurately, testers can effectively evaluate performance and ensure optimal functioning of the instrument. The recorded session serves as a valuable resource for future reference, providing recipients with confidence in conducting their own telecover tests and handling various aspects of telescope operation efficiently.
Seminar on holistic multi-parameter flood risk assessment and management planning at high spatial resolution by NOA	18 - 19/09/2023	NOA	13	This knowledge transfer activity benefited ERATOSTHENES CoE members in enhancing their knowledge on holistic multi-parameter flood risk assessment and management planning at high spatial resolution (building block level) in order to support public actors and stakeholders in decision-making and flood management. The NOA/BEYOND/FloodHub team presented the background, context, and motivation behind the aforementioned domains, but also the state-of-the-art technologies and models used for their implementation.

				The case study of the Mandra river basin in Attica, Greece, was presented, where flood risk assessment was recently implemented in the framework of the Programming Agreement that was signed in March 2021 between the Prefecture of Attica and the National Observatory of Athens, entitled "Earthquake, fire, and flood risk assessment in the Region of Attica" (Part A) in selected and most vulnerable areas, funded by the Region of Attica. The methodological framework integrated different data sources, including remote sensing, geo-spatial data, in-situ observations, and hydrologic and hydraulic simulations (developed by the FloodHub research group of the BEYOND/IAASARS/NOA in cooperation with the ITIA research group of NTUA), and was characterized by considerable added value. Lastly, the activity highlighted the research capabilities of ECoE, assisted in the flood demo project that followed, promoted ideas creation, sharing, evaluation, and dissemination. The existing knowledge of the relevant ERATOSTHENES CoE team, which worked on the respective flood demo project, was about hydrology, hydraulics, GIS, and remote sensing. The dedicated ECoE team was composed of members who were all experts in these fields. The content of the activity was: ● Background, context, and motivation on flood risk assessment ● Presentation of the area of the case study ● Collection of all available data, quality check, and enrichment by photo-interpretation ● Conduction of detailed field visits according to a standardized methodology ● DEM modification ● Update of the land cover data ● Design of sub-basins ● Update of ombrian curves ● Hydrological simulations for three flood scenarios (T 50, 100, 1000 years) ● Hydraulic simulations for three flood scenarios (T 50, 100, 1000 years)

				● Flood vulnerability assessment ● Flood exposure assessment ● Flood risk assessment ● Validation of the flood risk assessment ● Identification of critical points ● Proposal of mitigation measures for the worst-case scenario, including definition of refuge areas and design of escape routes, following a multi-criteria analysis
Capacity Building on Geohazards	28 – 29/09/2023	NOA	10	This knowledge transfer activity benefited ECoE members in getting familiar with new methods and implementing them in future research activities. It highlighted the research capabilities of ECoE, assisted in the demonstration scenarios later on, promoted ideas creation, sharing, evaluation, and dissemination. The content of the activity included: • Demonstration of multi-temporal SAR interferometry techniques with ISCE software. • Instructions and guidelines on permanent scatterers interferometry techniques. • Application of PSI and SBAS techniques with StaMPS software

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 RP3, the **ECoE joined 6 RI networks** (**P03**): the Global Atmosphere Watch Programme (GAW), the Copernicus Academy, EaRSEL, ISPRS, GEO, EU-BIC. Considering these collaborations, the team has achieved the YR7 target.

2.3 Calibration/ Validation capacities – Monitoring networks

The ECoE is actively engaged in ongoing activities from RP1, by participating in the EARLINET and PollyNET networks. A notable initiative involves the PollyXT-CYP system, in collaboration with TROPOS, providing pilot Near Real-Time (NRT) data of ACTRIS/EARLINET lidar-derived aerosol optical properties profiles to the Copernicus Atmosphere Monitoring Service (CAMS)[1]. This pilot data provision began in October 2020 at the Potenza test site and expanded to cover 9 stations across Europe in January 2021, representing the entire ACTRIS/EARLINET network. Additionally, the PollyXT-CYP, as part of PollyNET, was actively involved in the German initiative for experimental Aeolus validation. Aeolus, launched by the European Space Agency (ESA) in 2018, is the first direct detection Doppler wind lidar in space. Its global coverage and precise measurements aim to improve numerical weather prediction by filling gaps in the global observing system. Aeolus stopped its operational activities on 30 April 2023, thus completing its validation circle.

The ECoE's active participation in these initiatives showcases its commitment to advancing cutting-edge research and contributing to the scientific community.

During RP3 of the EXCELSIOR Phase 2 project, as a result of the full operation of the aerosol component of the GBS, the CARO team of the ERATOSTHENES CoE participated in a pilot campaign for NRT (near real time) lidar observation provision for assimilation into forecast models provided by CAMS. The PollyXT-CYP system participated in the first pilot campaign coordinated by ACTRIS. This activity is estimated to restart in September 2023 and to continue and enhance the activities and developments achieved during the previous CAMS21b contract. The second major direction of the Atmospheric sector is represented by the cal/val activities of ESA space missions. For these, the space missions of interest are: Sentinel 5P, AEOLUS and EarthCARE. A major step towards recognition of the value of the infrastructure build in Limassol is represented by participation to the cal/val pilots for the future mission EarthCARE that will be launched by ESA/JAXA in 2024. In the pilot ERATOSTHENES CoE will participate with both aerosol and cloud profiling remote sensing instruments of CARO, and will address, together with the Energy sector of Eratosthenes CoE, all three remote-sensing components (lidar, cloud radar, radiation) of the EarthCARE satellite.

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 RP2, additional research and administration staff were employed through several job announcements[2] for researchers, administrative and technical staff.

More specifically, during RP3 37 employment positions were announced, from which 25 offers were made to candidates, leading to 21 being eventually appointed. The positions announced concerned

[1] Copernicus Atmosphere Monitoring Service, https://atmosphere.copernicus.eu/
[2] ECoE open positions: https://eratosthenes.org.cy/open-positions/

the hiring of 20 researchers/scientific staff, 7 technical personnel, 1 in management and 9 in administrative roles. The 21 positions that were filled were distributed into 15 researchers/scientific staff, 1 technical staff, 1 manager and 3 administration personnel. The aforementioned numbers do not include hired internships, or any transfers from the Cyprus University of Technology (CUT). More details on the positions' announcement categorisation can be found at the end of this document under Annexes section (see Annex 1).

Thus, complementing the above analysis with the rest of the data for RP3, in total ERATOSTHENES CoE has 48 personnel **(P05a)** with its most recent hire (starting date: 01/09/2023) to be 1 female researcher placed in the Big Earth Data Analytics department.

The figure below (Figure 1) shows the gender balance of the ERATOSTHENES Centre of Excellence during RP3; amongst the 48 personnel, 28 are males and 20 are females corresponding to 58,3% and 41,7% respectively.

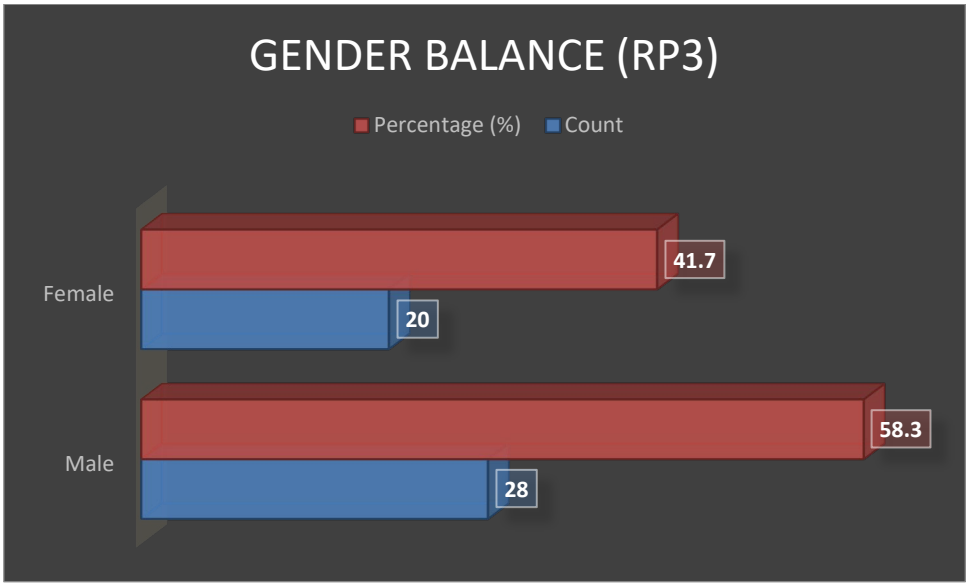

Figure 1 Gender Balance of the ERATOSTHENES CoE during RP3

Out of the 48 personnel, **41 researchers and 7 technical/administrative personnel** were employed, with the salaries paid until the end of RP3 (30 September 2023) being **€ 2.078.709,03** (**S01**). Moreover, **27.08%** of them were attracted from abroad (**S02**), and more specifically from Greece, Romania and Italy.

Cumulatively, the EXCELSIOR consortium comprises of 36 males and 23 females, accounting for 61.02% and 39.98% respectively (Figure 2). These numbers include EXCELSIOR's Executive Committee, along with the hires of the RP2, totaling 59 people employed and paid from the start of the project (S01), thus exceeding the YR4 target of 50 people.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 857510.

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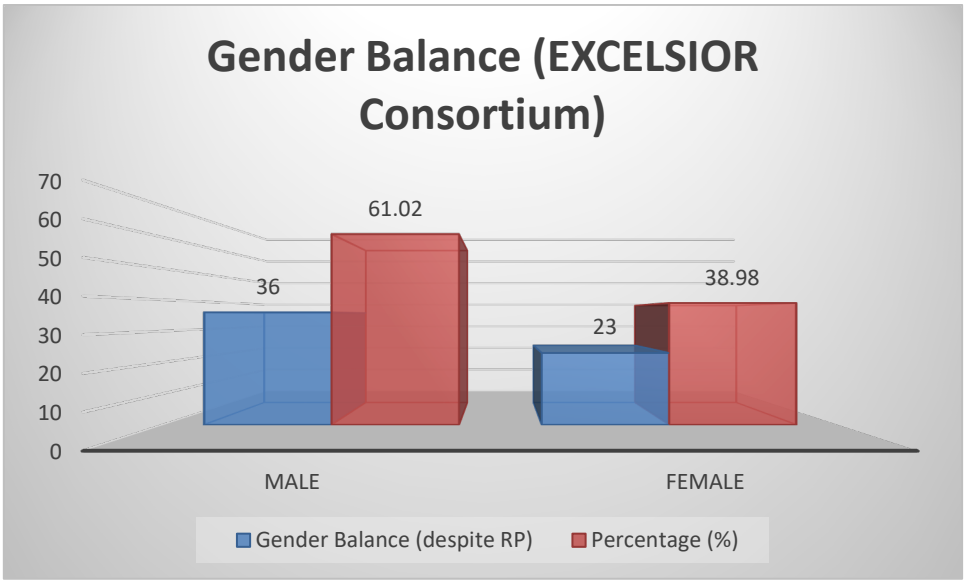

Figure 2 Gender balance of the EXCELSIOR consortium (despite RP)

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. More specifically, there are plans to host 4 MSC fellows by year 4 of the project.

Towards that scope one ERATOSTHENES CoE cluster (Atmosphere) initiated discussions with foreign colleague from Iran to explore the possibility of preparing (and submitting) 1 Marie Sklodowska Curie proposal until mid-September. Towards that end, they submitted an MSC proposal (acronym: CRESCENT), with focus on utilizing a state-of-the-art multi-instrument remote sensing platform, to assess the impacts of wildfire smoke, pure and aged aerosols, coated mineral dust, and urban haze on cloud development. This platform plans to offer cutting-edge capabilities, available in only a few locations globally. The project's ambition lies in its ability to provide vertically resolved data on aerosols and clouds (via dual-FOV lidar and cloud radar) and different vertical wind scenarios (Doppler wind lidar). This holistic approach will enable a comprehensive investigation into aerosol-cloud interactions and their effects on cloud evolution, pushing the boundaries of current knowledge.

There were also ongoing discussions with ERATOSTHENES Water cluster, in collaboration with a Tunisian peer, aiming to develop a research proposal focused on optimizing managed aquifer recharge in semi-arid regions. However, this ambitious project that would implement a smart monitoring network that integrates cutting-edge technologies like Artificial Intelligence and Remote Sensing in the end it was decided due to time restrains not to be submitted to the funding agency for consideration.

As of the moment being the number of MSC Fellows, European Research Council grants, etc. that are hosted at the ECoE is **0** (**P05b**), though hopefully the mentioned number is expected to change.

2.4.2 Researchers' mobility

During RP3, 2 **ECoE personnel were seconded to other organisations** in Cyprus and/or abroad, while **no personnel from external organisations visited and/ or used the ECoE facilities, but 9 interns were employed** (**SC05**). Their backgrounds are diverse coming from physics, food technology, space engineering, agriculture as well as civil engineering. On the other hand, this is not to be viewed as negative thing as within EXCELSIOR project and the ERATOSTHENES CoE diversity is seen as a driving

force for innovation and progress. Each of the interns was assigned a team member in charge who guided her/him during the whole internship period.

During the previous reporting period, a secondment of one of our researchers, Ms Eleni Loulli, to TROPOS was planned, but unfortunately due to COVID-19, it was cancelled (tickets paid); though her secondment took place on RP3 (more details are available below).

Secondment of Eleni Loulli at TROPOS

In the framework of the EXCELSIOR H2020 Teaming Project, and the collaboration between the Leibniz Institute for Tropospheric Research e.V. (TROPOS) and ERATOSTHENES Centre of Excellence, Ms Loulli was hosted at TROPOS premises in Leipzig for the period between the 9th of May 2022 and 21st of May 2022 (Figure 3).

During her stay in Leipzig, Ms. Loulli was supervised by Dr. Johannes Bühl (researcher at the institute). The main purpose of her visit at TROPOS was to transfer the knowledge from TROPOS to ECoE about ground-based weather radars operation, data processing and usage.

Ms. Loulli processed ground-based weather radar data, using H5View to explore the .h5 file hierarchy and attributes. For data visualization, she employed Panoply software, enabling plotting with different scales and colors. During data processing, she converted data from bits to linear, creating new .h5 files with essential variables. She devised multiple data hierarchies to optimize efficiency for each task. Ms. Loulli drew conclusions and derived results by regridding the data onto a universal grid covering Cyprus. She applied rainfall retrieval algorithms like Marshal-Palmer and Zh-R to obtain quantitative precipitation and precipitation classification maps.

Figure 3 Eleni Loulli with TROPOS team during her secondment

Summer Internships at the premises of ERATOSTHENES CoE

During summer 2022, we hosted the first interns (Figure 4) of ERATOSTHENES Centre of Excellence, Eleni Charitonos, Stylianos Tsolakis and Anastasis Georgiou. Eleni worked together with Eleni Loulli on radar applications for precipitation monitoring. Stylianos worked together with Dr. Rodanthi Mamouri and Dr Argyro Nisantzi on atmospheric remote sensing applications. Anastasis worked together with the team member Maria Prodromou on the use of remote sensing for forest fire monitoring and mapping. Through these summer activities, the ERATOSTHENES personnel involved was able to

transfer knowledge to young people, stimulating them at the same time their research curiosity. In the context of their internships, the interns had the opportunity to witness the research facilities and were taught the principles and workflows of the remote sensing and satellite imagery as well.

Figure 4 The interns at the research facilities (upper); Maria Prodromou lecturing the interns (bottom)

Secondment of Stelios Neophytides at NOA

In the framework of the EXCELSIOR H2020 Teaming Project, and the collaboration between the National Observatory of Athens, Beyond EO Research Center (NOA) and ERATOSTHENES Centre of Excellence (ECoE), Mr Stelios Neophytides was hosted at NOA premises in Athens, Greece for the period between the 12th of June 2023 and 16th of June 2023, which it was also a part of Agriculture Demonstration Project held between ECoE and NOA (Figure 5).

During his stay in Athens, Mr. Stelios Neophytides was supervised by Mr. Georgios Giannarakis and Mr. Thanassis Drivas (researchers at the Centre). The main purpose of his visit at NOA was to transfer the knowledge from NOA to ECoE about modern ML technologies like Causal Inference and Causal Machine Learning as also to work with Mr. Thanassis Drivas on Docker architecture for ECoE's Data

Cube. Furthermore, during Day 1 and Day 3 he received an extensive lecture on the theoretical basics of Causal Inference, Quasi experiments and Causal Machine Learning. Also, explanation on scripts for basic methodologies like Difference in Difference were explained. An extensive demonstration of a script for an end-to-end Causal Analysis in Agriculture took place by Mr. Georgios Giannarakis.

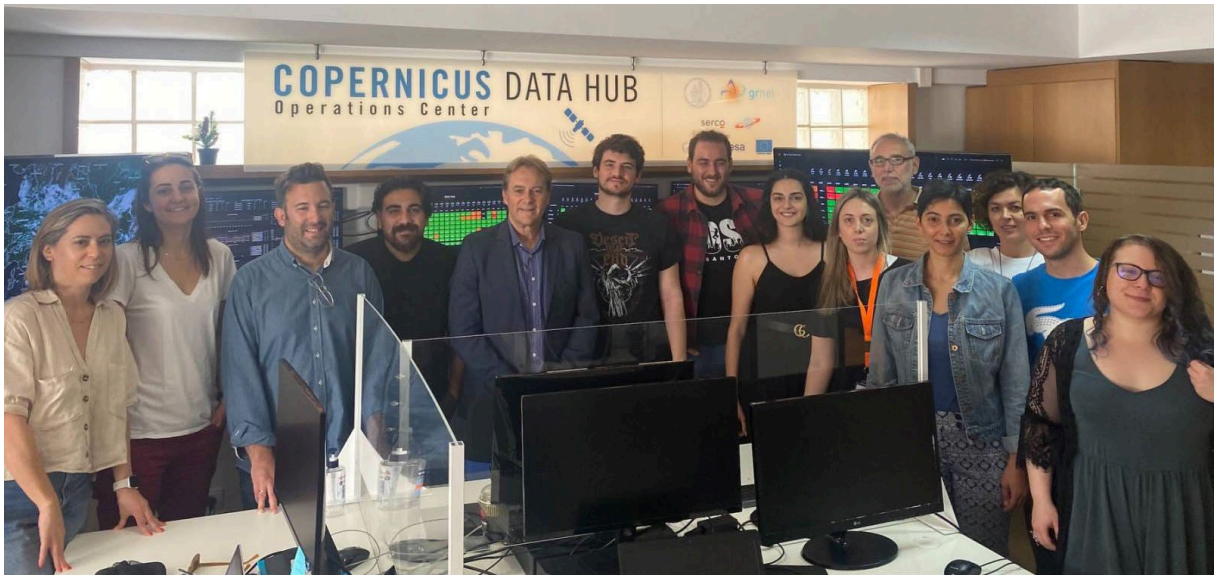

Figure 5 Stelios Neophytides with NOA team during his secondment

2.5 Memoranda of Understanding

To foster stronger connections with both national and international stakeholders in the Earth Observation domain, the ECoE has entered into **29 Memoranda of Understanding (MoU)**. These agreements involve diverse stakeholders, including governmental departments, public authorities, academic institutions, research organizations, and industry partners (Table 6). Among these MoUs, **17** were signed with local/national public and private organizations (**P06a**), while **12** were established with international public and private entities (**P06b**). Through these strategic partnerships, the ERATOSTHENES CoE aims to enhance cooperation, knowledge exchange, and collaborative efforts within the Earth Observation field.

Table 6: Memoranda of Understanding signed during RP3

#	NAME	DATE	COUNTRY	OWNERSHIP
1	PV Technology Lab FOSS Research Centre	4/4/2022	Cyprus	Public
2	Frederick University	11/5/2022	Cyprus	Private
3	Aratos Space P.C.	8/6/2022	Greece	Private
4	Aratos Systems BV	8/6/2022	Greece	Private
5	AG Futura	22/6/2022	Republic of North Macedonia	Private

6	International Centre for Research in Agroforestry	5/7/2022	Kenya	Public
7	CMMI Cyprus Marine and Maritime Institute	14/7/2022	Cyprus	Private
8	Atlantis Enviroment & Innovation ltd	20/7/2022	Cyprus	Private
9	Cyta	21/9/2022	Cyprus	Public
10	Deputy Ministry of Shipping	27/9/2022	Cyprus	Public
11	Alexander College	3/11/2022	Cyprus	Private
12	University of Aegean	3/11/2022	Cyprus	Public
13	Metrica SA	12/12/2022	Greece	Private
14	Metrica Ltd	19/12/2022	Cyprus	Private
15	EMME-CARE	5/1/2023	Cyprus	Private
16	Limassol Municipality	26/1/2023	Cyprus	Public
17	Magnetar Ltd	2/2/2023	Cyprus	Private
18	ITC Innovation Technology Cluster	3/2/2023	Slovenia	Private
19	Coordinating Council of Limassol Cultural Organizations	13/2/2023	Cyprus	Public
20	Metereology Department	20/2/2023	Cyprus	Public
21	Cyprus Phassouri Plantations Co. Ltd	28/2/2023	Cyprus	Private
22	Phoenix Association	9/3/2023	Greece	Private
23	Pancyprian Farmers Union	30/3/2023	Cyprus	Private
24	Development Agency Cyprus	30/3/2023	Cyprus	Public
25	Certe Water Research and Technologies Center	16/4/2023	Tunisia	Public
26	Transilvania University of Brasov	25/4/2023	Romania	Public
27	National Institute of Agronomy of Tunisia	12/5/2023	Tunisia	Public
28	Centre National De La Recherche Scientifique and AIX-Marseille Universite	28/6/2023	France	Public
29	CIHEAM Chania	28/8/2023	Greece	Public

The figure below (Figure 6) visually presents the distribution of Memoranda of Understanding (MoU) signed, represented by blue elevations, across 8 different countries. The illustration highlights the number of partnerships established by the ECoE in each location during this phase.

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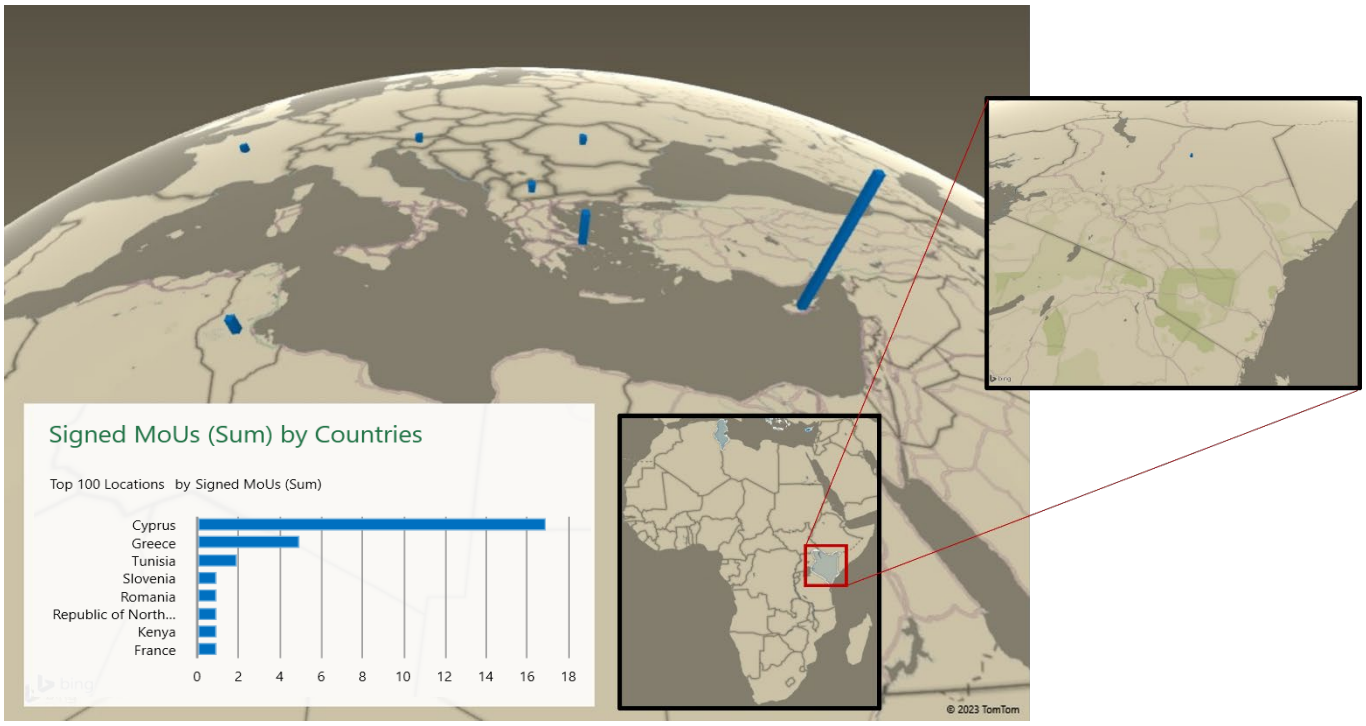

Figure 6 Distribution of signed MoUs during RP3

The following figure (Figure 7) depicts the distribution of the nature of the organisations with which ERATOSTHENES signed MoU during the current reporting period. More specifically, private companies and research centres account for the **52%** (i.e. 15 MoUs), while the rest are divided into the other categories: Universities – 6 MoUs (20**.7%**), Governmental organisations – 3 MoU (**10.3%**), Semi-Governmental – 1 MoU (**3.4%**), Associations – 2 MoU (6**.8%**), Public entities – 2 MoU (**6.8%**).

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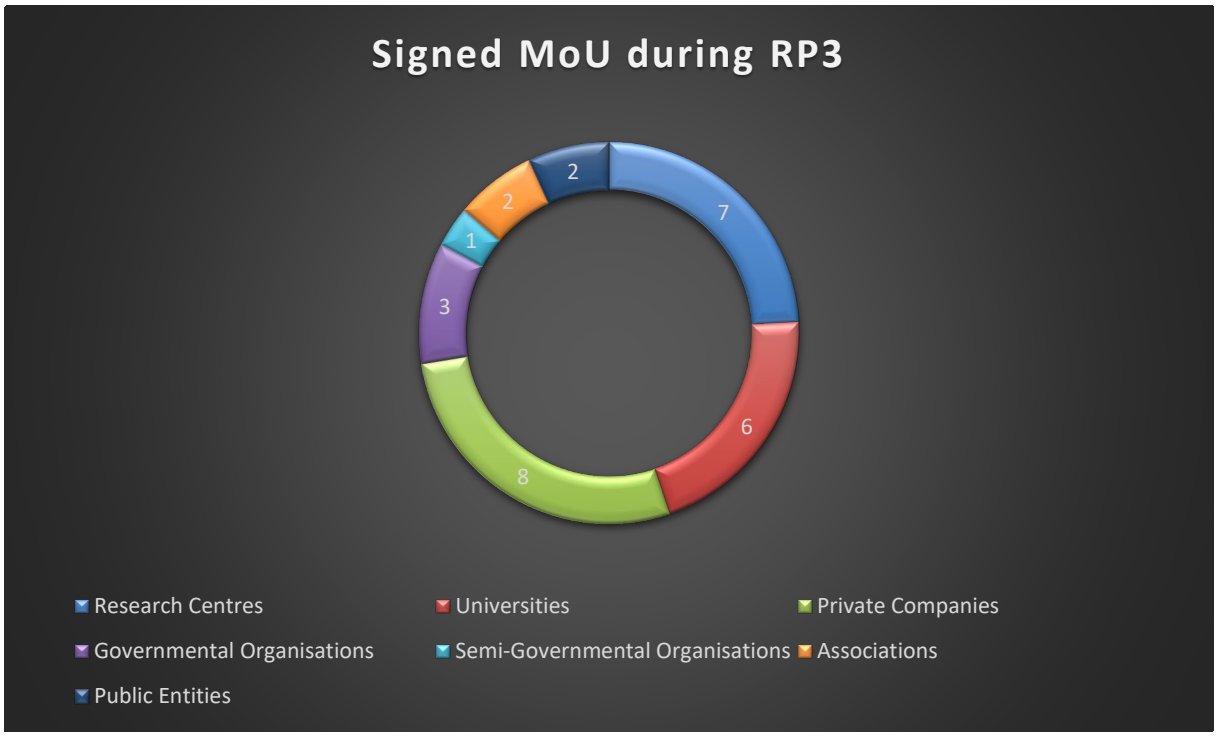

Figure 7 Distribution of organisation's type with which ERATOSTHENES signed MoU during RP3

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 8).

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Figure 8: Memoranda of Understanding signed between ECoE and stakeholders during RP3 (selected images)

2.6 Professional skills development programs

Throughout the running months of RP3, ERATOSTHENES CoE organised as part of the **P07,** 1 training and 7 talks/hands-on workshops by inviting experts on fields relevant to remote sensing and of interest to public authorities. The activities were held at the premises of either ERATOSTHENES's or at the various public authorities and stakeholders' to transfer them knowledge essential to their activities.

Training to the Hydrogeology team of Cyprus Geological Survey Department

A comprehensive two-day training session was recently conducted, focusing on the theory and practical applications of remote sensing. This training delved into the fundamental principles and advanced techniques of remote sensing technology, equipping participants with valuable insights into its wide-ranging applications. One notable highlight of the training was the engaging discussion regarding potential collaborative activities with the hydrogeology team of the Cyprus Geological Survey Department. This conversation revolved around exploring synergies between remote sensing and hydrogeology, with a shared objective of enhancing our understanding and management of groundwater resources. The fruitful exchange of ideas and expertise during this discussion paved the way for future collaborative efforts in this crucial field. Overall, this training served as a platform for knowledge exchange and networking, fostering stronger ties between experts in remote sensing and hydrogeology. It is anticipated that the outcomes of this training and the collaborative initiatives discussed will contribute significantly to advancements in both fields (Figure 8).

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Figure 9 Group photo after the training to the GSD team.

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 7) to share their expertise and knowledge with the research personnel.

Table 7 Invited experts' talks

#	Expert's Name	Organisation	Topic	Thematic Area	Number of ERATOSTHENES Participants
1	Prof. Dan G. Blumberg	Israel Space Agency	"Remote Sensing of Arid Lands"	All	28
2	Prof. Hesham El-Askary	Egyptian Space Agency	"The interplay of data science and EO addressing Env. Challenges"	Big Data / All	25
3	Prof. Ioannis Gitas	Aristotle University of Thessaloniki	"EO Applications in Forest Fire Management: A European Mediterranean perspective"	Resilient Society	26
4	Prof. Thomas Hasiotis	University of the Aegean	"Investigation of a vertically integrated approach to the study and treatment of coastal erosion (example from the Greek area)"	Resilient Society	24

5	Dr. Cristian Rossi	University of Oxford	"A Journey Through Earth Observation: From Basics To Applications"	Resilient Society	28
6	Dr. John Dehls	Geological Survey of Norway (NGU)	"From National to Continental-scale Hazard Mapping – Experience Using Massive InSAR Datasets"	Disaster	25
7	Mr. Marios Zervas and Mr. Petros Artemi	Cyprus University of Technology	"CUT Library Bibliometrics"	All	10

In-detail information can be found at the submitted deliverable D6.9 - "**Report on visiting experts Seminars and trainings**"

2.7 Collaborating networks/institutions

During RP3, 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, ERATOSTHENES CoE provides data to the Copernicus Atmospheric Monitoring Service (CAMS) through the in-house research instruments that are available. The site of the GBS along with the rest instruments is located in Limassol, less than 2 km from the coastline and consists of a sun photometer, multiwavelength Raman lidar, a Doppler wind-lidar, a ceilometer, a disdrometer, a microwave radiometer, and by March 2024 a 35 GHz cloud-radar will be installed.

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 products. In an upcoming collaboration agreement involving Eratosthenes CoE (ECoE), ECMWF, and CAMS National Collaboration Programme (NCP), 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. Another collaboration between ECoE and C3S focuses on improving our understanding of climate dynamics and their impacts. This partnership seeks to empower stakeholders to address climate challenges more effectively through knowledge exchange and innovative tools, promoting a resilient and sustainable future.

2.8 Postgraduate students

During the RP3, three announcements for PhD positions were made[3], with a total of 42 PhD positions, in the fields of Earth Observation, Remote Sensing and Geoinformatics being announced. During this period, **11 PhD candidates** registered. Details[4] of these PhD candidates are presented in Table 8 below. During RP3, 1 PhD candidate, supervised by Professor Diofantos G. Hadjimitsis, completed and successfully defended his PhD thesis titled "Non-Destructive Evaluation of Corrosion in Concrete Using

[3] PhD positions announcement: https://www.cut.ac.cy/studies/phd/PhD+vacant+positions/ceg-pg/

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

Field Spectroscopy and Remote Sensing" on 16 May 2023. Significant part of his PhD thesis is under evaluation to receive patent number and be treated like this.

Table 8 PhD registrations during RP3

#	Research area	Gender	PhD supervisor	Semester
1	Earth Observation, Remote Sensing and Geoinformatics	M	Diofantos Hadjimitsis	1st
2	Remote Sensing and Solar Energy/Radiation	F	Diofantos Hadjimitsis	1st
3	Earth Observation, Remote Sensing and Geoinformatics	F	Diofantos Hadjimitsis	1st
4	Earth Observation, Remote Sensing and Geoinformatics	M	Diofantos Hadjimitsis	1st
5	Earth Observation and Remote Sensing in the Research Field of Atmospheric Remote Sensing	M	Diofantos Hadjimitsis	1st
6	Study of the Atmosphere and Atmospheric Remote Sensing	F	Diofantos Hadjimitsis	1st
7	Agriculture and Management of Water Resources	F	Diofantos Hadjimitsis	1st
8	Earth Observation, Remote Sensing and Geoinformatics in "Environment and Climate (land uses, natural and structural environment)"	M	Diofantos Hadjimitsis	1st
9	Earth Observation, Remote Sensing and Geoinformatics	F	Diofantos Hadjimitsis	1st
10	Artificial Intelligence and Earth Observation	M	Diofantos Hadjimitsis	1st
11	Earth Observation, Remote Sensing and Cultural Heritage	M	Diofantos Hadjimitsis	*

* In January 2023, EcOE has announced through CUT 16 (sixteen) PhD positions on thematic areas covered by the Centre and the applications that have been received have already been appraised. In line with the Decision taken by the BoD of ECoE regarding this PhD candidate, he has been accepted to carry out his PhD with CUT will be transferred to ECoE and his contract is under preparation. Due to visa permit delays, he will start on October 2023 but he is counted in the total of the accepted PhD students during RP3.

There are **47 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, of which **13** of them use the RI and facilities of the CUT/ECoE for their thesis. From these **13 postgraduate** (MSc and PhD) **students** registered during RP3, two (2) come from abroad: 1 is from Greece and 1 from Egypt, i.e., constituting **3.45%** of the total number of students (**P09b**).

2.9 Project proposals, tenders, services, and funding

In this section, the research project proposals that were submitted and/or started during RP3, i.e., 1 April 2022 – 30 September 2023, are presented in Table 9 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 RP3, are presented in detail.

Table 9 Research project proposals submitted during RP3

#	Funding source	Date submitted	Project acronym	ECoE budget (€)	Coordinator/ Partner	Funded
1	Horizon Europe	12/4/2022	INNHOCLIMA	494.375,00	Partner	No
2	Horizon Europe	20/4/2022	TRIQUETRA	300.188,00	Partner	Yes
3	Horizon Europe	20/4/2022	ENIGMA	383.750,00	Partner	Yes
4	RIF	17/5/2022	GreenCarbon CY	270.600,00	Coordinator	Yes

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5	RIF	19/5/2022	Green-HIT	65.280,00	Partner	Yes
6	RIF	19/5/2022	GreenDBL	131.250,00	Partner	No
7	RIF	19/5/2022	AMPHITRITE	200.000,00	Partner	No
8	ESA	20/6/2022	ReCarbonSoil	140.264,00	Coordinator	No
9	ESA	20/6/2022	Sen4LANDRISK	149.470,00	Coordinator	No
10	ESA	20/6/2022	AMPHITRITE	88.162,00	Partner	No
11	ESA	20/6/2022	MICROS II	29.666,00	Partner	No
12	Cyprus Environment Foundation	1/8/2022	-	5.000,00	Coordinator	Yes
13	British Council	26/8/2022	-	186.091,48	Coordinator	No
14	PRIMA	13/9/2022	PAS-AGRO-PAS	186.000,00	Partner	Yes
15	Horizon Europe	27/9/2022	Gaia4Soil	1.524.000,00	Coordinator	No
16	Horizon Europe	27/9/2022	AgRemedy	426.750,00	Partner	No
17	Horizon Europe	27/9/2022	carbonDEMETRA	306.250,00	Partner	No
18	Horizon Europe	27/9/2022	FlowWave	1.172.500,00	Coordinator	No
19	LIFE	30/9/2022	Reclaim	82.882,20	Partner	No
20	ERASMUS+	4/10/2022	ReSens	19.500,00	Partner	No
21	ERASMUS+	4/10/2022	SpaceEDUnity	30.993,34	Partner	Yes
22	Interreg	27/10/2022	AQUA4CLIMA	510.076,00	Coordinator	No
23	Interreg	27/10/2022	MEDWASTE	300.000,00	Partner	No
24	RIF	9/11/2022	ADAMASTOS	179.400,00	Partner	No
25	RIF	9/11/2022	GaiaDrone	147.600,00	Partner	No
26	Horizon Europe	17/11/2022	ENFIELD	260.625,00	Partner	Yes
27	Horizon Europe Partnership scheme	23/11/2022	ENFORCES	200.000,00	Partner	No
28	Horizon Europe	23/11/2022	CASSANDRA	424.875,00	Partner	No
29	Horizon Europe	23/11/2022	ONTIME	636.250,00	Coordinator	No
30	Other European	31/1/2023	EnergyPorts	83.460,00	Partner	No
31	ESA	10/3/2023	STEPS	99.912,00	Coordinator	Yes
32	ESA	10/3/2023	MICROS II	17.986,00	Partner	Yes
33	Horizon Europe	14/3/2023	PANOPTICH	341.000,00	Partner	No
34	Horizon Europe	14/3/2023	CITEX	250.375,00	Partner	No
35	Horizon Europe	14/3/2023	TERMA	168.125,00	Partner	No
36	RIF	15/3/2023	SustainCyCitrus	23.280,00	Partner	No
37	PRIMA	22/3/2023	CEMENA	540.000,00	Coordinator	No
38	Horizon Europe	23/3/2023	CERBERUS	691.250,00	Partner	Yes
39	ERASMUS+	24/3/2023	S2TEAM	15.750,00	Partner	No

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40	ERASMUS+	24/3/2023	UpFarming	50.000,00	Partner	No
41	ERASMUS+	24/3/2023	LCEOAgro	89.528,00	Partner	No
42	ERASMUS+	24/3/2023	ReSENSE	19.500,00	Partner	Yes
43	Horizon Europe	28/3/2023	LEGACEES	440.125,00	Partner	No
44	Horizon Europe	12/4/2023	RuVive	300.000,00	Partner	No
45	Horizon Europe	12/4/2023	NUTRILINX	217.875,00	Partner	No
46	Horizon Europe	12/4/2023	BRIDGE-FOOD	333.375,00	Partner	No
47	Horizon Europe	18/4/2023	Clima4Regen	700.000,00	Coordinator	No
48	Horizon Europe	23/4/2023	Nostradamus	840.000,00	Coordinator	No
49	RIF	27/4/2023	ARTEMIS-CY	546.000,00	Coordinator	No
50	RIF	27/4/2023	Data-Centric AI	346.200,00	Partner	No
51	RIF	27/4/2023	ARGUS	470.060,00	Coordinator	No
52	RIF	2/5/2023	PEGASUS	2.281.600,00	Coordinator	No
53	Other Cyprus	25/5/2023	ΣΑΝ	75.000,00	Coordinator	Under review
54	Horizon Europe (Marie Curie)	13/9/2023	CRESCENT	15.600,00	Coordinator	Under review
55	Horizon Europe	20/9/2023	MeDSoLL	1.320.625,00	Coordinator	Under review
56	Horizon Europe	20/9/2023	Move2Neutral	584.375,00	Partner	Under review
57	Horizon Europe	20/9/2023	MeD4Soil	316.250,00	Partner	Under review
58	Horizon Europe	20/9/2023	PRESERVE-MED	450.000,00	Partner	Under review
59	Horizon Europe	21/9/2023	CENTAURUS	250.000,00	Partner	Under review
60	Horizon Europe	28/9/2023	SoilGrow	600.000,00	Coordinator	Under review
61	Horizon Europe	28/9/2023	REVITALISER	600.000,00	Coordinator	Under review
62	Horizon Europe	28/9/2023	ATARI	700.000,00	Coordinator	Under review
63	Horizon Europe	28/9/2023	EO4Natura	120.000,00	Partner	Under review

Sixty-three (63) project proposals were submitted for funding (**P10a**) until the end of the RP3, budgeted for ECoE's involvement at €22.749.049,02. These were submitted in various national and international calls for funding, as shown in Figure 9 below.

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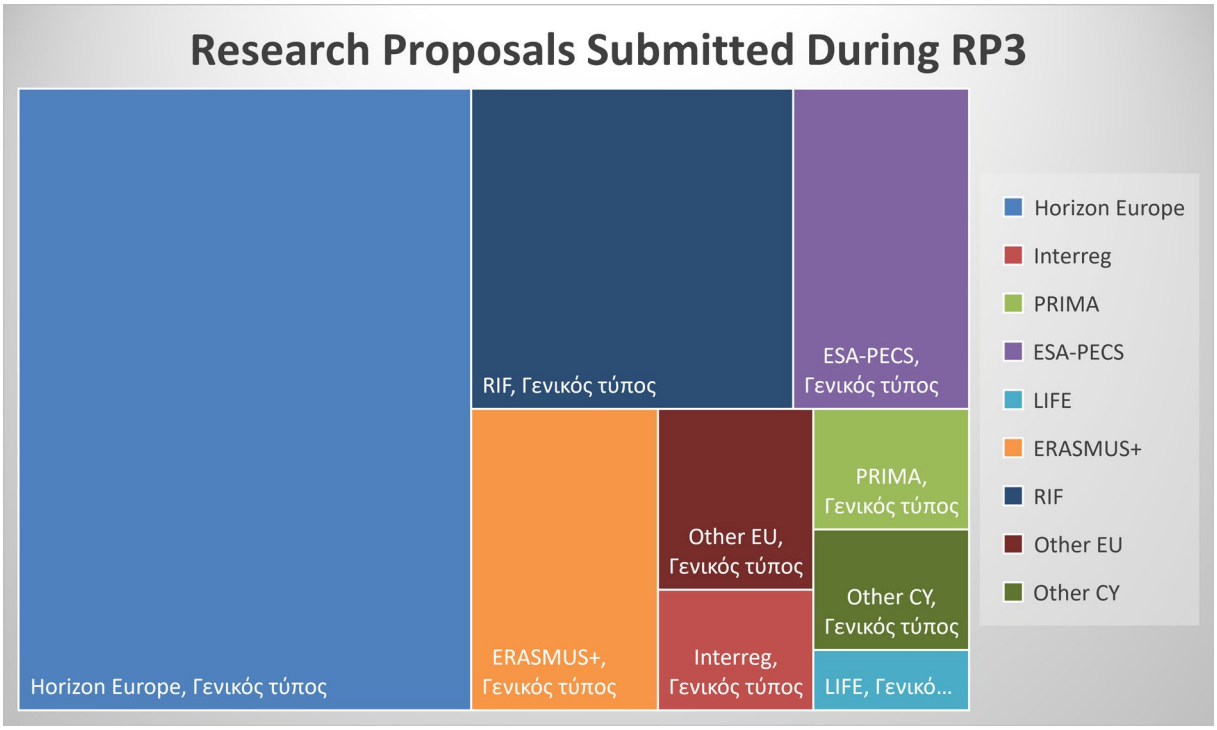

Figure 10 Research project proposals submitted under national and international calls during RP3

Out of the aforementioned proposals, **twelve (12)** (**P10b**) were granted, receiving funding from Horizon Europe, Prima, ESA-PECS, ERASMUS+, Cyprus Research and Innovation Foundation and Other Cyprus as presented in Figure 10, with an overall budget of **€ 2.331.084,34** (**P10c**) for ECoE. However, the decision for 11 proposals is still pending, with these having a total budget of € 5.031.850,00 for the ERATOSTHENES CoE.

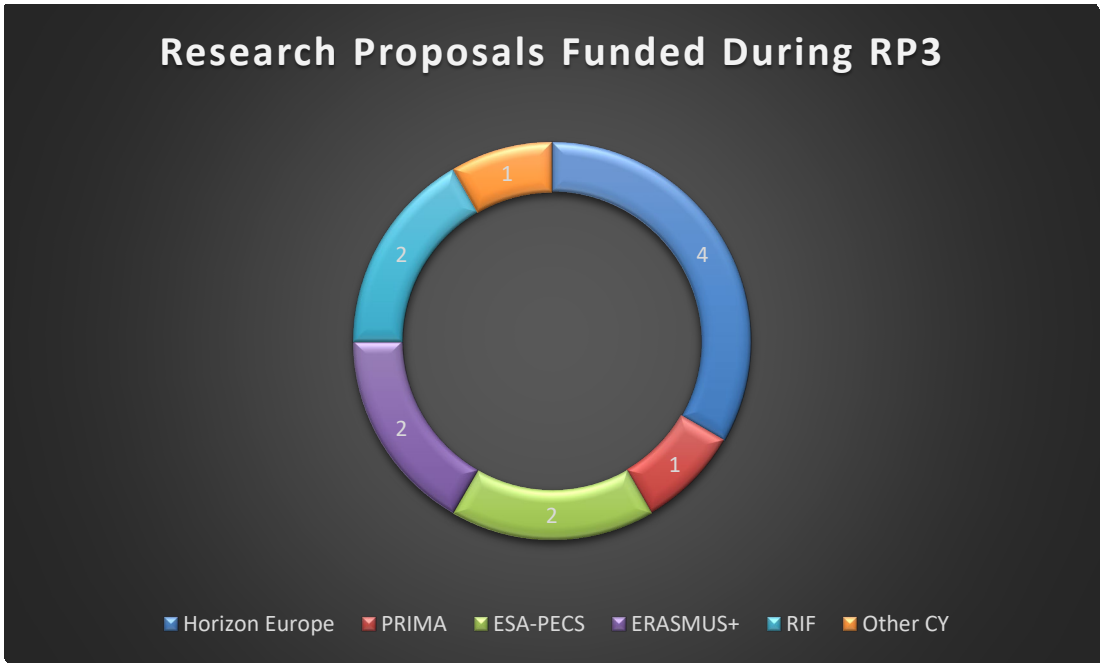

Figure 11 Research projects granted during RP3

During RP3, the ECoE also participated in the submission of three tenders for services to local stakeholders. The first tender listed at Table 10 between the ERATOSTHENES Centre of Excellence and the Municipality of Polis Chrysochous is the provision of consulting services and the implementation of the Project: Upgrading and beautification of the warehouses of the Ports Authority in Latsi in the Municipality of Polis Chrysochous in a Sea and Culture Multispace. Based on the proposed division of the Multipurpose Sea and Culture Center into four different rooms for the entertainment / education of the public, the final themes of the rooms are presented in the image below (Figure 11). The project is co-financed by the European Union (European Maritime and Fisheries Fund 2014-2020) by 75% and by the Republic of Cyprus by 25% within the framework of Priority 4.3: Local Development Strategy of Paphos Fishing Areas 2014-2020 implemented by TODA DEVELOPMENT COMPANY OF PAFOS APHRODITE.

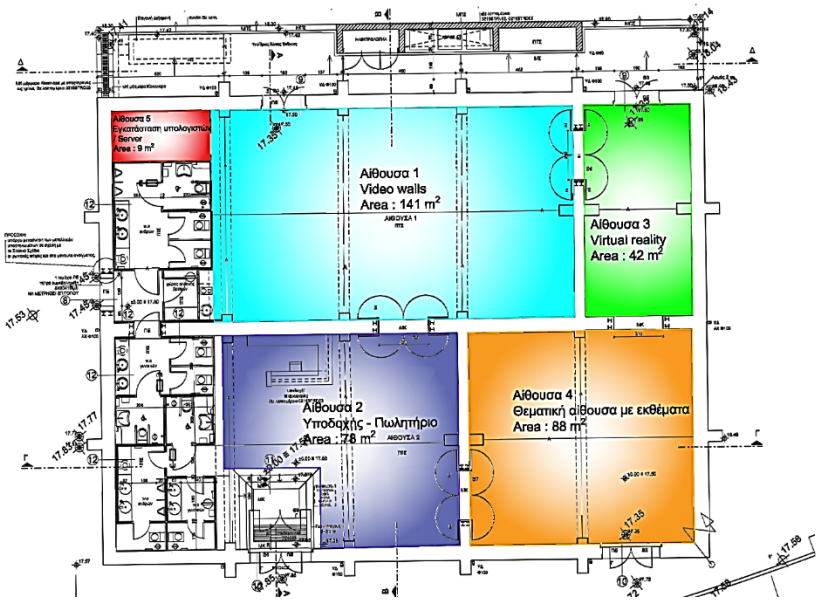

Figure 12 Blueprints of the space configuration and interactive installations

While for the rest two tenders listed below, are currently under the preparation of contracts and signing, hence any financial information is not disclosed in this deliverable. The object of these two agreements pertain:

- between the Municipality of Kato Polemidion and the ERATOSTHENES Centre of Excellence concerns the provision of consulting services for the maturation period of the project to be financed, but also the management of the procedures during the period of project execution after joining the financing projects. The project concerns the extension of the Garyllis Linear Park from the "Berengaria" Metropolitan Park to the Polemidion Dam.
- between the Limassol-Amathus Sewerage Board (SALA) and the ERATOSTHENES Centre of Excellence concerns the creation of a unified Geographical Information System (GIS) that will integrate all the necessary descriptive information useful for SALA. The implementation stages concern the recording of the existing operational environment, the recording of user needs and system requirements as well as the implementation of the design of the GIS architecture.

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Table 10: Tenders submitted during RP3

#	Contracting authority	Date submitted	Subject of tender	ECoE budget (€)	Funded
1	Municipality of Polis Chrysochous	*	Upgrading and beautification of the warehouses of the Ports Authority in Latsi in the Municipality of Polis Chrysochous in a Maritime and Cultural Complex	€ 112.500 (phase A') € 461.700 (phase B'; starting during RP4) Total: € 574.200 (for both phases)	Yes
2	Municipality of Kato Polemidia	*	Provision of Consulting services and Management of project processes for the Project: Garyllis Linear Park with extension to the Polemidion dam and connection to the "Berengaria" metropolitan park	**	**
3	Municipality of Limassol - SALA	*	Technical proposal/description for the design and implementation of a unified GIS system at the Limassol-Amathus Sewerage Board	**	**
4	Joint Research Centre (JRC)	07/09/2022	Copernicus Emergency Management Service - Rapid Mapping	24M (total budget requested)	No

*For these tenders there is not any specific submission date as there were continuous efforts, communications and signed MoU before the strong cooperation realizes into the tender(s) listed above.
** The total value of each tender cannot be disclosed here due to confidentiality and ongoing negotiations till signed.

Successful Partnerships with **2 stakeholders** from public authorities, governmental departments, ministries, academia, and research organisations (**S06)**, as well as with **39** 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 Europe (namely Cyprus, Greece, Slovenia, Sweden, Norway, Estonia, Portugal, Poland, Austria, etc.), Asia (India), and Africa (Tunisia, Morocco, Egypt).

All the above have assisted in the formation of strong partnerships between the ECoE and the public sector, Academia, and Industry. The distribution of these stakeholders internationally is presented in Figure 13 below.

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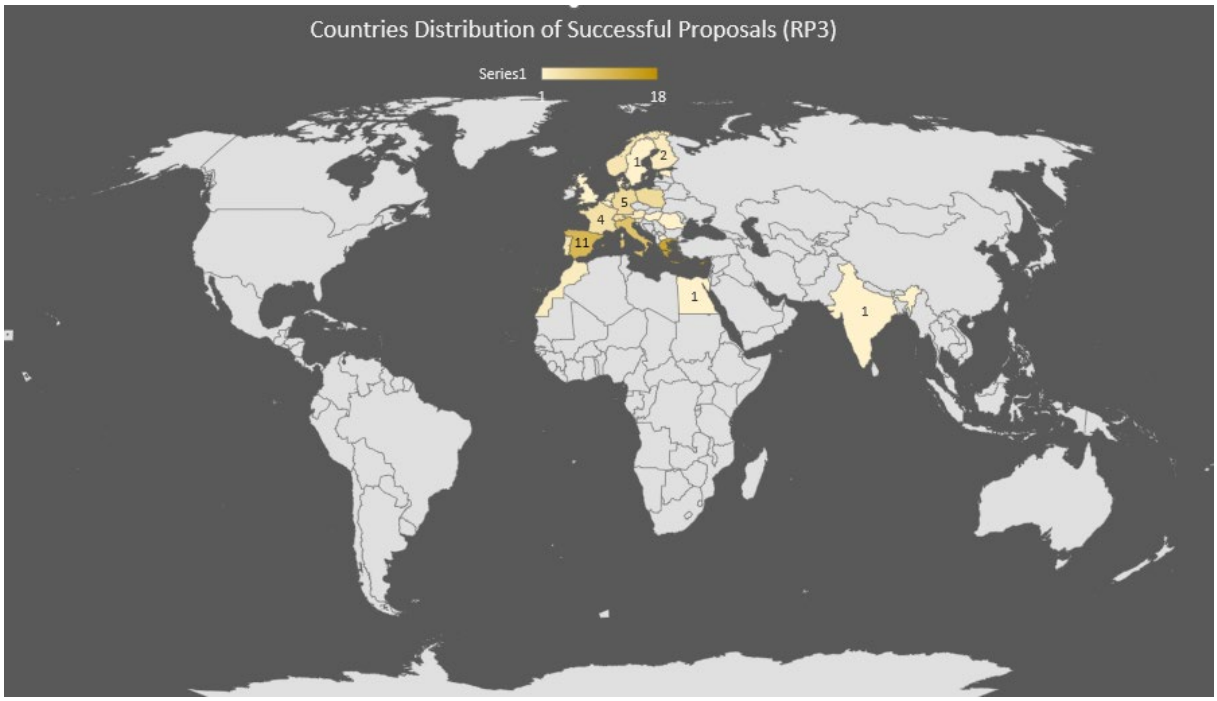

Figure 13 Countries' Distribution of Successful Proposals during RP3

Furthermore, the ERATOSTHENES CoE clusters during RP3 have started developing 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. Table 11 briefly presents these services, while more in-detail information can be found at the submitted **D3.13 "Joint Exploitation Strategy"**.

Table 11 Applications for services developed or are still under development by ERATOSTHENES CoE. With green are the most matures, while the respective indicated in blue are less.

Category	Title	TRL	Partners
Agriculture	Agri-Nexus-Hub	5	ECoE
Energy/Atmosphere	UVI Risk assessment tool	5	ECoE, PMOD, WRC NOA
Disaster Risk Reduction	Cyprus Geohazards Observatory (Landslides/Earthquakes)	4	ECoE NOA
Disaster Risk Reduction	Earthquake risk assessment tool	4	ECoE ,CUT, U Sheffield
Energy	Allocation of Electric Vehicle Charging Locations	4	ECoE FOSS
Agriculture	Sowing & Harvesting tool for agricultural applications	2	ECoE , NOA
Disaster Risk Reduction	Cyprus Fire and Flood Observatory (Fires, Floods)	2	ECoE, NOA, AUTh

Atmosphere	Atmosphere parameter Identification Tools (GBS infrastructure)	3	ECoE, TROPOS
Marine Safety and Security	Marine Identification System (Early Warning System)	2	ECoE, DLR
Marine Safety and Security	Marine Pollution Monitor	2	ECoE, DLR

2.10 Publications

During RP3, 41 publications were carried out by researchers of the ERATOSTHENES Research Centre/ECoE, from which 13 are published in Journals (**SC01)**, while the rest in conferences (**SC02**). There is also one book chapter that was published during the RP3, though it is not counted in favor of the publications -related KPIs.

A full list of the publications in the form of citations is provided in *the tables* below, together with the date of publication, the publication type, and the journal or conference they were published in.

Table 12 Journal papers published during RP3

#	Publication Details (Citation)	Publication Type
1	Adam M, Fragkos K, Solomos S, Belegante L, Andrei S, Talianu C, Mărmureanu L, Antonescu B, Ene D, Nicolae V, Amiridis V. Methodology for Lidar Monitoring of Biomass Burning Smoke in Connection with the Land Cover. Remote Sensing. 2022; 14(19):4734. https://doi.org/10.3390/rs14194734	Journal Paper
2	Polydorou T, Kyriakides N, Lampropoulos A, Neocleous K, Votsis R, Tsioulou O, Pilakoutas K, Hadjimitsis DG. Concrete with a High Content of End-of-Life Tire Materials for Flexural Strengthening of Reinforced Concrete Structures. Materials. 2022; 15(17):6150. https://doi.org/10.3390/ma15176150	Journal Paper
3	Morsy, M.; Michaelides, S.; Scholten, T.; Dietrich, P. Monitoring and Integrating the Changes in Vegetated Areas with the Rate of Groundwater Use in Arid Regions. Remote Sens. 2022, 14, 5767.	Journal Paper
4	Panagiotou, C.F., Stefan, C., Papanastasiou, P. et al. Quantitative microbial risk assessment (QMRA) for setting health-based performance targets during soil aquifer treatment. Environ Sci Pollut Res (2022). https://doi.org/10.1007/s11356-022-22729-y	Journal Paper
5	Constantinos F. Panagiotou, Phaedon Kyriakidis, Evangelos Tziritis (2022), Application of geostatistical methods to groundwater salinization problems: A review, Journal of Hydrology, Volume 615, Part A, 128566,https://doi.org/10.1016/j.jhydrol.2022.128566.	Journal Paper

6	Papachristoforou A, Prodromou M, Hadjimitsis D, Christoforou M. 2023. Detecting and distinguishing between apicultural plants using UAV multispectral imaging. PeerJ 11:e15065 https://doi.org/10.7717/peerj.15065	Journal Paper
7	Michailidis, K., Koukouli, 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, Atmos. Chem. Phys., 23, 1919–1940, https://doi.org/10.5194/acp-23-1919-2023, 2023.	Journal Paper
8	Floutsi, A. A., Baars, H., Engelmann, R., Althausen, D., Ansmann, A., Bohlmann, S., Heese, B., Hofer, J., Kanitz, T., Haarig, M., Ohneiser, K., Radenz, M., Seifert, P., Skupin, A., Yin, Z., Abdullaev, S. F., Komppula, M., Filioglou, M., Giannakaki, E., Stachlewska, I. S., Janicka, L., Bortoli, D., Marinou, E., Amiridis, V., Gialitaki, A., Mamouri, R.-E., Barja, B., and Wandinger, U.: DeLiAn – a growing collection of depolarization ratio, lidar ratio and Ångström exponent for different aerosol types and mixtures from ground-based lidar observations, Atmos. Meas. Tech., 16, 2353–2379, https://doi.org/10.5194/amt-16-2353-2023, 2023.	Journal Paper
9	Antonescu, B., Ene, D., Boldeanu, M. et al. Future changes in heatwaves characteristics in Romania. Theor Appl Climatol (2023). https://doi.org/10.1007/s00704-023-04412-5	Journal Paper
10	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 (Cyprus), EGUsphere [preprint], https://doi.org/10.5194/egusphere-2023-988, 2023.	Journal Paper
11	Feloni E, Anayiotos A, Baltas E. A Spatial Analysis Approach for Urban Flood Occurrence and Flood Impact Based on Geomorphological, Meteorological, and Hydrological Factors. Geographies. 2022; 2(3):516-527. https://doi.org/10.3390/geographies2030031	Journal Paper
12	Michaelides, S. Editorial for Special Issue "Remote Sensing of Precipitation: Part III". Remote Sens. 2023, 15, 2964. https://doi.org/ 10.3390/rs15122964	Journal Paper
13	Eliades M, Michaelides S, Evagorou E, et al. Earth Observation in the EMMENA Region: Scoping Review of Current Applications and Knowledge Gaps. Remote Sensing. 2023;15(17):4202.	Journal Paper

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Table 13 Conference papers published during RP3

#	Publication Details (Citation)	Publication Type
1	R. Teeuw, M. Cannata, A. V. Argyriou And O. Lieberman, "Geoinformatics For Caribbean Hurricane Risk Management And Improved Community Resilience," 2023 Joint Urban Remote Sensing Event (Jurse), Heraklion, Greece, 2023, Pp. 1-4, Doi: 10.1109/Jurse57346.2023.10144191.	Conference Paper
2	Prodromou, M., Cerra, D., Themistocleous, K., Schreier, G., Krauss, T., And Hadjimitsis, D.: The Importance Of Earth Observation For Monitoring Cultural Heritage Sites Affected By Fire Events: The Case Study Of Arakapas, Cyprus Using Sentinel 2 Data, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., Xlviii-M-1-2023, 263–269, Https://Doi.Org/10.5194/Isprs-Archives-Xlviii-M-1-2023-263-2023, 2023.	Conference Paper
3	Kalogirou E, G. Hadjimitsis D, Melillos G. Wind Speed And Direction Estimation From Radar Sar Using Sentinel -1 In The Cyprus Region.	Conference Paper
4	Kalogirou E, Makri D, Kountouri J, Et Al. Detect Plastic Litter In Cyprus Region Using Sentinel-2.	Conference Paper
5	Kalogirou E, Melillos G, G. Hadjimitsis D, Makri D. Detecting Vessels In Exclusive Economic Zone (Eez) Of The Republic Of Cyprus Using Sentinel-1.	Conference Paper
6	Melillos, G. Et Al. (2023, April). Oil Spill Detection And Monitoring In The Cyprus Region. Spie. In Press.	Conference Paper
7	Themistocleous, Kyriacos. (2022). The Study Of Urban Heat Island Effect In Cyprus Using Sentinel-3 Data. 26. 10.1117/12.2636333.	Conference Paper
8	Themistocleous, Kyriacos & Evagorou, Evagoras & Mettas, Christodoulos & Hadjimitsis, Diofantos. (2022). The Use Of Digital Twin Models To Document Cultural Heritage Monuments. 13. 10.1117/12.2636332.	Conference Paper
9	Themistocleous, Kyriacos & Ioannides, Marinos & Tryfonos, George & Pritchard, Douglas & Cliffen, Harriet & Katiri, Maria & Joncic, Nenad & Osti, Giulia & Rigauts, Thomas & Ripanti, Francesco & Anayiotos, Andreas. (2022). Hbim For Cultural Heritage: The Case Study Of Panayia Karmiotissa Church. 12. 10.1117/12.2636331.	Conference Paper
10	Makri D, Melillos G, Kalogirou E, Hadjimitsis D. Seagrass Mapping In Cyprus Area Of Interest With Pixel-Based Classification. Spie Defense + Commercial Sensing. Accessed May 26, 2023. Https://Spie.Org/Defense-Commercial-Sensing/Presentation/Seagrass-	Conference Paper

	Mapping-In-Cyprus-Area-Of-Interest-With-Pixel-Based/12543-19?Sso=1.	
11	Prodromou, M., Cerra, D., Themistocleous, K., Schreier, G., Krauss, T., And Hadjimitsis, D.: The Importance Of Earth Observation For Monitoring Cultural Heritage Sites Affected By Fire Events: The Case Study Of Arakapas, Cyprus Using Sentinel 2 Data, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., Xlviii-M-1-2023, 263–269, Https://Doi.Org/10.5194/Isprs-Archives-Xlviii-M-1-2023-263-2023, 2023.	Conference Paper
12	R. Teeuw, M. Cannata, A. V. Argyriou And O. Lieberman, "Geoinformatics For Caribbean Hurricane Risk Management And Improved Community Resilience," 2023 Joint Urban Remote Sensing Event (Jurse), Heraklion, Greece, 2023, Pp. 1-4, Doi: 10.1109/Jurse57346.2023.10144191.	Conference Paper
13	Fragkos K, Nisantzi A, Fountoulakis I, Michaelides S, Charalampous G, Papachristopoulou K, Kontoes C, Hadjimitsis D, Kazadzis S. Introducing The Solar Radiation And Energy Laboratory Of The Eratosthenes' Centre Of Excellence: Overview Of Activities. Environmental Sciences Proceedings. 2023; 26(1):45. Https://Doi.Org/10.3390/Environsciproc2023026045	Conference Paper
14	The Use Of Remote Sensing Data For The Fire Damage Assessment In A Burnt Area In Cyprus Maria Prodromou, Ioannis Gitas, Kyriacos Themistocleous, Argyro Nisantzi, Rodanthi-Elisavet Mamouri, Dragos Ene, Chris Danezis, Johannes Bühl, Diofantos Hadjimitsis Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 1278608 (2023) Https://Doi.Org/10.1117/12.2685554	Conference Paper
15	The Potential Of Using Satellite Remote Sensing For Identifying The Impact Of Climate Change On Existing Reinforced Concrete (Rc) Structures Stella Stylianou, Christiana A. Filippou, Elia Tantele, Renos Votsis, Nicholas Kyriakides Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127860z (2023) Https://Doi.Org/10.1117/12.2682040	Conference Paper
16	Satellite Ozone And Uv Measurements Over Cyprus G. Charalampous, K. Fragkos, A. Nisantzi, I. Fountoulakis, K. Papachristopoulou, D. Hadjimitsis, S. Kazadzis Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 1278610 (2023) Https://Doi.Org/10.1117/12.2683103	Conference Paper

17	A Holistic High-Resolution Monitoring Approach In Studying Coastal Erosion Of A Highly Touristic Beach, Coral Bay, Cyprus Thomas Hasiotis, Olympos Andreadis, Antonis Chatzipavlis, Christodoulos Mettas, Evagoras Evagorou, Josefina Kountouri, Diofantos Hadjimitsis, Dimitris Christofi, Myria Loizidou, Et Al. Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 1278611 (2023) Https://Doi.Org/10.1117/12.2682605	Conference Paper
18	Building Of A Database For Cyprus Beaches I. Monioudi, D. Chatzistratis, Th. Chalazas, C. Savva, T. Hasiotis, A. Velegrakis, J. Kountouri, C. Mettas, E. Evagorou, Et Al. Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 1278612 (2023) Https://Doi.Org/10.1117/12.2682612	Conference Paper
19	Ship Detection Using Sar Images Based On Yolo (You Only Look Once) George Melillos, Eleftheria Kalogirou, Despoina Makri, Diofantos G. Hadjimitsis Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 1278613 (2023) Https://Doi.Org/10.1117/12.2681665	Conference Paper
20	Creating A Strong Rain Danger Map For Cyprus Open Access Thomas Krauss, Christodoulos Mettas, Josefina Kountouri, Constantinos F. Panagiotou, Athanasios V. Argyriou, Evagoras Evagorou Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 1278617 (2023) Https://Doi.Org/10.1117/12.2681731	Conference Paper
21	Comparative Analysis Of Sentinel-1 And Planetscope Imagery For Flood Mapping Of Evros River, Greece Christos Theocharidis, Athanasios V. Argyriou, Alexia Tsouni, Mariza Kaskara, Charalampos Kontoes Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861b (2023) Https://Doi.Org/10.1117/12.2682775	Conference Paper
22	Impact Assessment Of The Catastrophic Earthquakes Of 6 February 2023 In Turkey And Syria Via The Exploitation Of Satellite Datasets Kyriaki Fotiou, Athanasios V. Argyriou, Stavroula Alatza, Christos Theocharidis, Constantinos Loupasakis, Maria Prodromou, Alexis Apostolakis, Zambella Pittaki-Chrysodonta, Mariza Kaskara, Et Al. Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861c (2023) Https://Doi.Org/10.1117/12.2682926	Conference Paper

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 857510.

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23	Wind Speed And Direction Estimation From Radar Sar Using Sentinel-1 In The Cyprus Region Eleftheria Kalogirou, George Melillos, Diofantos G. Hadjimitsis Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861g (2023) Https://Doi.Org/10.1117/12.2681683	Conference Paper
24	Enhancing Risk Assessment And Monitoring For Cultural Heritage Sites Through Data Cubes: A Multidimensional Approach Georgios Leventis, Athanasios Argyriou, Daniele Cerra, Diofantos Hadjimitsis Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861i (2023) Https://Doi.Org/10.1117/12.2683023	Conference Paper
25	Determination Of Heavy Metals In Soils Using Diffuse Reflectance Spectroscopy: A Case Study In Northern Greece George Galanis, Dimitris Gkoutzikostas, Vasilis Rousonikolos, Nikoletta Tiliopoulou, Argyro Papastergiou, Kostas Karyotis, George Zalidis Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861j (2023) Https://Doi.Org/10.1117/12.2683122	Conference Paper
26	The Effect Of Business Models In The Financial Viability And Competitiveness As Advisory Tools In The Greek Dairy Cow Sector Maria Tsiouni, Christos Konstantinidis, George Kountios, Dimitrios Gourdouvelis, Christiana Papoutsa, Georgios Papadavid Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861n (2023) Https://Doi.Org/10.1117/12.2682700	Conference Paper
27	Detect Plastic Litter In Cyprus Region Using Sentinel-2 Eleftheria Kalogirou, Despoina Makri, Josefina Kountouri, Thrasos Stylianou, Kyriacos Themistocleous, Christiana Papoutsa, George Melillos, Diofantos G. Hadjimitsis Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861y (2023) Https://Doi.Org/10.1117/12.2681679	Conference Paper
28	Identification And Forecasting Of Coastal Erosion Using Aerial And Uav Images K. Themistocleous Proceedings Volume Ninth International Conference On Remote Sensing And Geoinformation Of The Environment (Rscy2023), 127861z (2023) Https://Doi.Org/10.1117/12.2683057	Conference Paper

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Table 14 Book chapter(s) published during RP3

#	Publication Details (Citation)	Publication Type
1	Themistocleous, Kyriacos. (2023). Monitoring Cultural Heritage Sites Affected by Geohazards in Cyprus Using Earth Observation. 10.1007/978-3-031-13810-2_19.	Book Chapter

The aforementioned publications fall under the various ECoE's departments (Figure 14), where the majority of them (21) belong to the Resilient Society department, while 20 are linked to the Environment and Climate department and the remaining 1 is 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 (19), whereas 1 journal paper and 1 book chapters were published during RP3. On the other hand, the Environment and Climate department has published more journal papers (12) than conferences ones (8). As of the moment the Big Earth Data Analytics department has published in a conference, but it is expected more to come in the near future as the sector's activities now begin more actively due to the employment of new personnel.

Table 15 Publications per department during RP3

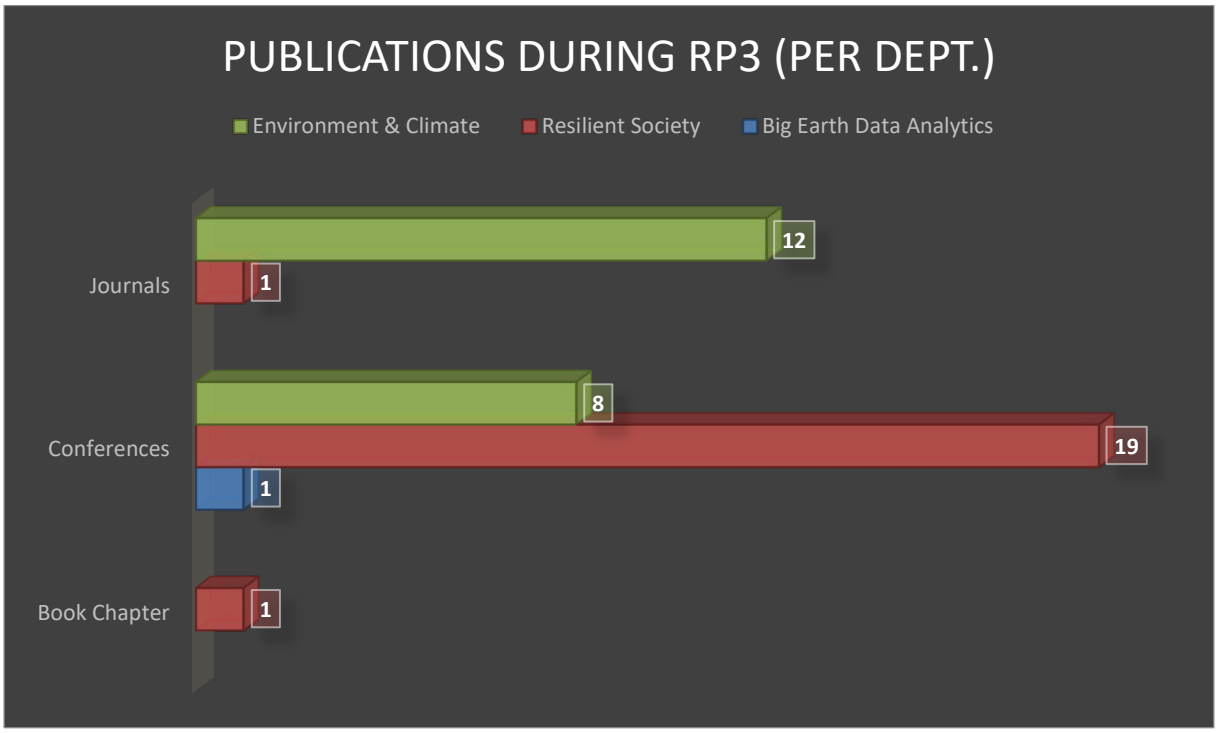

Figure 14: Publications per ECoE department during RP3

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Scopus[5] and Google Scholar[6] were used to calculate the grouped h-index and the citations during RP3. To calculate these statistics from Scopus and Google Scholar, the following researchers were grouped: Prof. Diofantos Hadjimitsis, Prof. Andreas Anayiotos, Prof. Evangelos Akylas, Dr Chris Danezis, Dr Nicholas Kyriakides, Dr Silas Michaelides, Dr Kyriacos Themistocleous, Dr Kyriacos Neocleous, Dr Rodanthi-Elisavet Mamouri, Dr Athos Agapiou, Dr Constantinos Panagiotou, Dr Argyro Nisantzi, Dr Christiana Papoutsa, Dr Thomaida Polydorou, Dr Athanasios Argyriou, Dr Marinos Eliades, Dr Konstantinos Fragkos, Dr George Melillos, Dr Ioannis Varvaris, Dr Zampela Pittaki, Dr Michalis Mavrovouniotis, Dr Marios Tzouvaras, Dr Christodoulos Mettas, Mr Evagoras Evagorou, Mr Andreas Christofe, Mr Georgios Leventis, Ms Eleni Loulli, Ms Maria Prodromou, Ms Despina Makri, Mr Christos Theocharidis, Ms Kyriaki Fotiou and Ms Marina Pekri.

In Google Scholar, a dedicated profile of the ECoE[7] (Figure 15) 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.

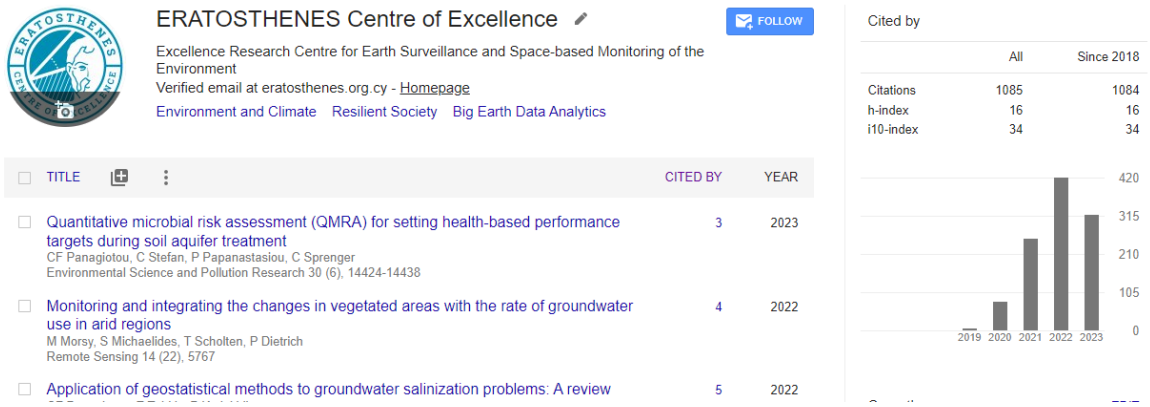

Figure 15 ECoE's Google Scholar profile

ECoE's publications have reached **1084 citations** in Google Scholar and **335 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 RP2 is **16 in Google Scholar and 15 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 for the first four years of the EXCELSIOR – Phase 2 project are expected to be 3000. It becomes obvious that this target was missed, 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, ECoE's researchers participated in **20 international conferences/workshops**, carrying out **92 oral and/or poster presentations** (**SC04**) regarding their research outputs and/or for promoting

[5] Scopus: https://www.scopus.com/
[6] Google Scholar: https://scholar.google.com/
[7] ECoE's Google Scholar profile: https://scholar.google.com/citations?user=u_U65_8AAAAJ&hl=en

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the ERATOSTHENES Centre of Excellence. A list of the conferences along with the date and subject of the respective presentations is provided below in Table 16.

Table 16 Participation in international conferences/workshops during RP3

#	Conference	Date	Type of presentation	Topic of presentation
1	41st EARSeL Symposium 2022	13 – 16 September 2022	Orals and Posters	• Wildfire Damage Assessment Over Arakapas Village in Cyprus Using Sentinel-2 Imagery • The implementation of Forest Canopy Density model in Cyprus forests using Landsat-8 and Sentinel-2 satellite data for the assessment of the fire impacts on canopy density • Promoting The Benefits Of Earth Observation In Secondary And Higher Education In Cyprus • Agricultural Land Use Forecasting – Preliminary Results for a Case Study in the Paphos district, Cyprus • Satellite-Based Monitoring of An Active and Fast-Moving Landslide Using Psi And Dinsar Analysis: The Case Study Of Pissouri Village In Cyprus • Potentiality of landslide detection in open-pit mines using satellite-based techniques: The case study of Vasiliko Open-Pit Mine in Cyprus • Comparison Of Rainfall Rate Retrieval Algorithms Using Ground-Based Radar Data, Intended for Drought Monitoring In Cyprus • Use of remote sensing for assessing water quality in open-surface water systems in Cyprus • Remotely-Sensed early warning signals of critical transitions of forest ecosystems • Detecting ships in the Cyprus region using Sentinel-1 SAR data: A comparison of results using Sentinel Application Platform (SNAP) and Arc GIS Pro - deep learning • Flood Risk Assessment in catchment areas in Cyprus using Earth Observation • Monitoring drought events in Germany and Cyprus using more than 20 years of MODIS data • Correlation of abrupt shifts in forest phenology with amplitude changes in Sentinel-1 SAR data and Land Surface Temperature from Landsat-8 • The use of Sen4CAP in an attempt to perform Common Agricultural Policy monitoring in Cyprus

				• The Establishment of the CyCLOPS Integrated Strategic Research Infrastructure Unit for Geohazard Monitoring Activities: Considerations, Performance Assessment and Initial Results • A Review of Current GNSS Interference Detection and Localisation Techniques Towards the Development of Resilient GNSS Strategic Infrastructure • Estimation of solar radiation at ground level using SENTINEL 3 data and machine learning techniques: a case study in Cyprus • What do the male and female testimonials from the Women in Copernicus survey tell? • Optimizing ground-based observations of global precipitation patterns
2	EGU General Assembly 2022	23-27 May 2022	Oral	• The implementation of the Forest Canopy Density (FCD) model for Coniferous ecosystems in Cyprus forests, using Landsat-8 and Sentinel-2 satellite data.
3	EGU General Assembly 2023	23 – 28 April 2023	Orals and Posters	• Comparing reflectivity measurements between satellite- and ground-based radar observations: A case study for precipitation and drought monitoring in Cyprus • A coupled GIS-MCDA approach to map the feasibility of Managed Aquifer Recharge • Earth observation time series for the monitoring of droughts in Cyprus: Patterns and drivers of vegetation dynamics • Assessment of groundwater quality and piezometric levels using geostatistical methods in Grombalia aquifer, Tunisia. • Afforestation in water scarce environment under Climate Change: Will trees survive and thrive? • Research infrastructure for the observation of clouds and aerosol in Cyprus • Modelled-based Photosynthetically Active Radiation climatology for Cyprus: Validation with measurements and trends. • Evolution of biologically active ultraviolet doses in Cyprus • Demonstrating the enhanced research capacity of the ERATOSTHENES Centre of Excellence for

				detecting ground displacements in Cyprus using advanced SAR satellite image processing techniques • Investigation of 2021 summer wildfires in the Eastern Mediterranean: The ERATOSTHENES Centre of Excellence capabilities for atmospheric studies • Satellite times-series analysis and assessment of the BFAST algorithm to detect possible abrupt changes in forest seasonality utilising Sentinel-1 and Sentinel-2 data. Case study: Paphos forest, Cyprus • Sea Surface Temperature and ocean Wind Speed data in the Cyprus region from Sentinel-3 using Sentinel Application Platform (SNAP) and ArcGIS Pro • Exploring the benefits of building a data cube towards the efficient risk monitoring and assessment of cultural heritage assets • Satellite remotely-sensed data for studying the impact of climate change on crop evapotranspiration in Cyprus • Monitoring natural and geo- hazards at cultural heritage sites using Earth observation: the case study of Choirokoitia, Cyprus • Wildfire smoke triggers cirrus formation: Lidar observations over the Eastern Mediterranean (Cyprus) • GIS-based morphotectonic and geomorphometric assessment for the Moroccan High Atlas mountain ranges, Morocco. • Fusion of Sentinel-1 and Sentinel-2 satellite imagery to rapidly detect landslides through Google Earth Engine • The synergy of Sentinel missions for fire damage assessment on land surface and atmosphere: the Arakapas village case study
4	Achieving Sustainable Groundwater Management: Promising Directions and Unresolved	6 – 8 October 2022	Oral	• The development of a prototype living lab for sustainable agricultural applications in Cyprus using remote sensing • Tracking farm parcels in arid regions of Egypt to estimate groundwater use

	Challenges (Sustain 2022)			
5	9th International Conference on Remote Sensing and Geoinformation of Environment (RSCY 2023)	3 – 5 April 2023	Orals and Posters	• Eratosthenes Centre Of Excellence - The Excelsior Project • Classification Assessment Of Wheat Plots In Peristerona, Cyprus With The Use Of Multivariate Statistical Methods • The Use Of Remote Sensing Data For The Fire Damage Assessment And The Monitoring Of Post-Fire Vegetation Recovery In A Burnt Area In Cyprus • Mapping Of The Emmena Region: Earth Observation Applications And Knowledge Gaps • Comparing Reflectivity Measurements Between Gpm Dpr And X-Band Dual Polarization Radars: A Case Study For Precipitation And Drought Monitoring In Cyprus • Detection And Discrimination Of Apicultural Plants Using Uav Multispectral Imaging • Developing Seismic Mitigation Measures For Sustainable Cities: A Structured Database Approach • A Study Of Aerosol Properties Over Limassol, Cyprus, Using Lidar Observation • Investigation Of 2021 Summer Wildfires In The Eastern Mediterranean Using Ground Based And Space Born Remote Sensing Observation • How Complex Is The Complexity And Quality In 3d Digitisation Of Tangible Cultural Heritage? • A Web-Based Application For The Spatiotemporal Monitoring Of The Impact Of Nature-Based Solution (Nbs) On The Urban Environment And The Wellbeing Of Citizens: "The Eupolis Visualization Platform" • The Potential Of Using Satellite Remote Sensing For Identifying The Impact Of Climate Change On Existing Reinforced Concrete (Rc) Structures • Satellite Ozone And UV Measurements Over Cyprus • The Solar Radiation And Energy Laboratory Of Eratosthenes Centre Of Excellence: Establishment And Research Directions

				• Assessing The Groundwater Quality Of Fahs Aq uifer (N E Tunisia) Using Unsupervised Machine Learning And Geostatistical Methods • Ship Detection At Cyprus Coasts Using Sar Imag es Based On Yolo (You Only Look Once) • Optimum Life Cycle Maintenance Strategy Subj ected To Seismic And Corrosion Hazard • Comparative Analysis Of Sentinel-1 And Planetscope Imagery For Flood Mapping Of Evros River, Greece • Impact Assessment Of The Catastrophic Earthq uakes Of 6 February 2023 In Turkey Via The Exp loitation Of Satellite Datasets • Wind Speed And Direction Estimation From Rad ar Sar Using Sentinel -1 In The Cyprus Region • Enhancing Risk Assessment And Monitoring For Cultural Heritage Sites Through Data Cubes: A Multidimensional Approach • Quantitative Microbial Risk Assessment Applied To Soil-Aquifer Passage To Achieve Health Standards • The Data Cube Of Eratosthenes Centre Of Excell ence To Empower The Space-Based Environmental Monitoring In The Emme na Region • Presentation Of Agri-Living Lab • Presentation Of Atmo-Living Lab • Introduction To Excelsior Demonstration Projec ts • Monitoring Geohazards From Space: Demonstr ating New Capabilities Towards The Establishm ent Of The Cyprus Geohazards Observatory • Assessment Of Vegetation Dynamics And Driver s Of Drought For The Republic Of Cyprus • Earth Observation Data Cube For Crop Monitori ng • Solar Applications For Health And Agriculture In Cyprus
6	4th Atlas Georesources International Congress (AGIC2023)	20 March 2023	Oral	• Quantitative Microbial Risk Assessment for predicting the microbial removal during soil aquifer treatment to achieve health-based targets

				• Identification of wheat crops usages using Sentinel-2 Time Series and Unsupervised Learning via Google Earth Engine
7	Mediterranean Geosciences Union (MedGU) 2022	27 – 30 November 2022	Poster	• Multi-sectorial approach for mapping the feasibility of managed aquifer recharge in the Mediterranean region
8	11th European Conference on Severe Storms	8 – 12 May 2023	Poster	• Convective indices trends in Cyprus
9	3rd International Conference TMM-CH Transdisciplinary Multispectral Modelling and Cooperation for the Preservation of Cultural Heritage	20-23 March 2023	Oral	• Monitoring Cultural Heritage Sites Using Earth Observation to Manage Potential Risks from Natural Hazards: The Case Study of Choirokoitia, Cyprus
10	International Conference on "Integrate Groundwater Management of Mediterranean Coastal Aquifers"	27-30 September 2022	Oral	• Inclusion of hydrological information for classifying groundwater quality data • Assessment of the impact of including hydrological information in the classification of groundwater quality data • Identification of suitable regions for intentional recharge of aquifers through multi-criteria decision analysis and stakeholders' involvement
11	8th International Conference on Drylands, Deserts & Desertification	27 November – 1 December 2022	Oral	• Monitoring forest health through remote sensing time series analysis to assess the effects of extreme drought events in forest seasonality
12	6th European Space Generation Workshop 2022	9 – 10 April 2022	Oral	• Eratosthenes Centre of Excellence
13	Cloud Remote Sensing Community workshop	26 May 2023	Oral	• Discussion about the improvement of the available SOPs, defining new strategies for measurements, and calibration of DCR

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14	CIPA 2023	25-30 June 2023	Oral	• Artificial Intelligence o Fight Illicit Trafficking Of Cultural Property
15	2nd International Workshop on Artificial Intelligence for Digital Humanities	11 September 2023	Oral	• Protecting Cultural Property: Embracing a Holistic Approach to a Multifaceted Challenge
16	2nd International Conference on Infotmation Technology, Multimedia, Architecure, Design and E-Bussiness	25 August 2022	Oral	• Answering Geospatial-related Questions using Agent based Modeling
17	SPIE Sensors + Imaging Conference	3 – 6 September 2023	Posters	• Monitoring coastal erosion in Cyprus: An analysis utilizing Sentinel-1 SAR data • Maritime surveillance in Cyprus using Sentinel-1 SAR
18	ISPRS Geospatial Week	2 – 7 September 2023	Orals	• The Impact Of Dust Pollution From Unpaved Roads In The Akamas Peninsula, Cyprus Using Uav And Sentinel-2 Images • Understanding The Impacts Of Crop Diversification In The Context Of Climate Change: A Machine Learning Approach • Synergy Of Advanced Processing Techniques Using Copernicus Sar And Optical Satellite Imagery To Detect Ground Displacements: The Case Studies Of Pyrgos And Parekklisia Villages In Cyprus
19	European Meteorological Society Annual Meeting 2023	3 – 8 September 2023	Oral	• Dust impact on surface solar radiation levels in Cyprus
20	16th International Conference on Meteorology, Climatology, and Atmospheric Physics "COMECAP 2023"	25-29 September 2023	Oral	• Introducing the Solar Radiation and Energy Laboratory of the Eratosthenes Centre-of Excellence

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2.11 Patents

The topic of IPR strategy and related activities and actions belongs to the category and series of **deliverables (3.11, 3.12, 3.13)** titled: "**Joint Exploitation strategy and IPR -Management**".

In summary, 3 technologies are being pursued for IPR protection and are being handled by the Eratosthenes Centre of Excellence Technology Transfer Office (INEcOE) through the help of external IPR experts and the Central Knowledge Transfer Office.

Further to that on the 28th of July 2022, the Director of IP-research LTD, Mr Nicos Raftis and ERATOSTHENES CoE Functional Areas Manager, Prof. Andreas Anayiotos announced the establishment of the Office of Innovation at ERATOSTHENES CoE (InECoE) Figure 22 Internal seminar on IPR basics (Figure 16). They presented the procedures for IPR development for the ERATOSTHENES CoE staff. Mr RAFTIS focused on key strategic decisions in the research, development, and product planning.

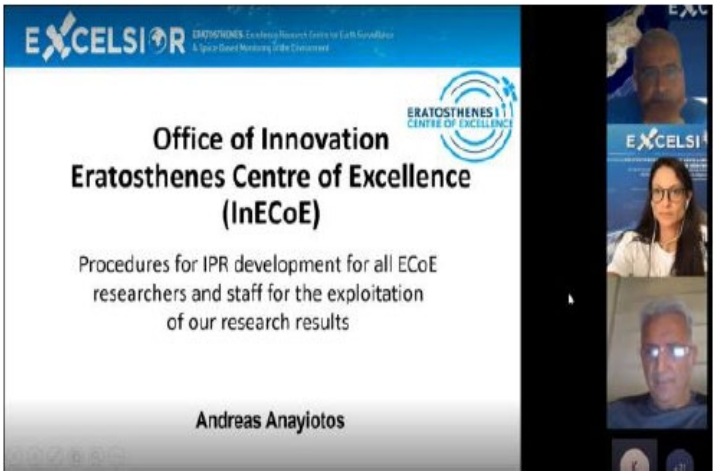

Figure 16 Internal seminar on IPR basics

The description of these activities, progress and current updates is provided in detail in the deliverable **D3.13 – "Intellectual Property Updates"**.

2.12 Demonstration Projects

Throughout the RP3, several demonstration projects were planned (Table 17) 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.

Table 17 Demonstration projects during RP3

ERATOSTHENES Cluster	Name of the Advanced Partner	Demonstration Project Title
Agriculture	NOA	"Agriculture Monitoring"
Water	DLR	"Assessment of Vegetation Dynamics and Drivers of

		Drought for the Republic of Cyprus"
Disaster Risk Reduction	NOA	"Cyprus GeoHazards"
Solar Energy	NOA and PMOD/WRC	"Setup of the RT model for Climatological Analysis, Setup and Initialization of the Forecasting System"

More information can be found at the deliverables: **D6.3 - "Workplan for Transfer of Knowledge and Experience"**, **D7.7 - "Report on Research Capacity Demonstrations: design, implementation and evaluation"** and **D7.8 - "Report on Research Capacity Demonstrations: design, implementation and evaluation (update 1)"** that were previously submitted.

2.13 Start-ups and spin-offs

During RP3 (**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 the progress made in the previous research period, RP2, the ECoE conducted several meetings with key stakeholders to explore avenues for growth (**S08**). These collaborative discussions involved esteemed entities such as CyRIC, GRAVITY incubator and Cyprus Association of Research and Innovation Enterprises (CARIE). The overarching aim of the ERATOSTHENES CoE persists - promoting entrepreneurship and nurturing innovative start-ups and spin-offs centered around space exploration and technology within Cyprus.

2.14 Workshops, meetings, and other 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 April 1st, 2022, to September 30th, 2023 (RP3) is presented in Table 19. These activities were specifically designed to engage local authorities, both public and private stakeholders, as well as 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 ECoE, 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 the scientific awareness and culture within Cyprus. Additionally, meetings and events where the EXCELSIOR project and its various initiatives were introduced are regarded as impactful for dissemination purposes. Lastly, engagements with public authorities and governmental departments, as well as presentations to students, contribute both to education and societal growth.

Table 18 Workshops, meetings, and other activities during RP3 of the EXCELSIOR project

#	Date	Activity
1	21/10/2022	Visiting at CyI Proteas facilities
2	11/4/2022	Meeting with Geological Survey Department

3	13/4/2022	Invited talk: "Ocean Monitoring using remote sensing platforms"
4	13/4/2022	Invited talk: "Ocean monitoring using remote sensing platforms"
5	21/6/2022	Third Virtual EXCELSIOR Workshop: "Entrepreneurship & Innovation in Earth Observation"
6	12/7/2022	Signing of contract for GreenCarbonCY project
7	18/7/2022	Invited talk: "Mediterranean Forest Map"
8	5/9/2022	Kick-off Meeting for AGREEMAR PRIMA Project
9	12/9/2022	The ERATOSTHENES Centre of Excellence and the EXCELSIOR project meet the key stakeholders within Cyprus and the EMMENA region
10	18/9/2022	Invited talk: "Mediterranean forest map"
11	27/9/2022	Meeting with the Department of Meteorology
12	30/9/2022	European Researchers Night 2022
13	2/10/2022	Lanitio High School- information desk for the promotion of Eratosthenes CoE
14	5/10/2022	Gender, Science and Earth Observation: Strategies to support gender responsive leadership
15	11/10/2022	Meeting with Cyprus Civil Defence
16	25/10/2022	Kick Off Meeting of COST Action HARMONIA [CA21119]
17	10/11/2022	Meeting with Assistant Professor Marinos Stylianou at Open University of Cyprus to discuss potential collaborations for research activities
18	16/11/2022	GIS Day 2022
19	17/11/2022	Presentation of the ERATOSTHENES Centre of Excellence in the Greek Embassy of Abu Dhabi
20	28/11/2022	Mediterranean Geosciences Union (MedGU), Annual Meeting 2022
21	15/12/2022	Invited talk: "The Swiss Data Cube: EO Open Science for Environmental Monitoring"
22	18/1/2023	National Info Day "Horizon Europe Work Programme 2023-2024"
23	2/2/2023	Invited talk: Our urban world – Dynamics, dimensions, and forms of global urbanization processes.
24	6/2/2023	1st Stakeholders Meeting of WATERVERSE project
25	8/2/2023	Meeting with the Geological Survey Department regarding EXCELSIOR Demonstration Project for Water cluster
26	10/2/2023	"Schools as EU Ambassadors"

27	13/2/2023	Execution of MoU with the Coordinating Council of Limassol Cultural Organizations
28	3/3/2023	Presentation of the results of the 6th National Report on Entrepreneurship in Cyprus 2021/2022 – GEM REPORT 2021/2022
29	3/3/2023	Meeting with the forest department of Cyprus
30	4/3/2023	"The Interplay of Data Sciences and Earth Observations addressing Environmental Challenges" by invited expert Prof Hesham El-Askary, Vice President of the Egyptian Space Agency
31	4/3/2023	"Remote sensing of arid lands" by Prof Dan G. Blumberg, Vice President Ben-Gurion University of the Negev - Chairman Israel Space Agency
32	5/3/2023	Ninth International Conference on Remote Sensing and Geoinformation of Environment
33	15/3/2023	8th Copernicus user forum
34	4/4/2023	Presentation on RSCy 2023 at Ayia Napa entitled: "Impact Assessment Of The Catastrophic Earthquakes of 6 February 2023 In Turkey Via The Exploitation Of Satellite Datasets"
35	2/5/2023	Webinar : Dust monitoring and forecasting: 2023 events
36	4/5/2023	Atmosphere Living Lab Event - Ninth International Conference on Remote Sensing and Geoinformation of Environment RSCy2023
37	8/5/2023	TEAMING TOGETHER - Meeting of the Cyprus Centres of Excellence
38	13/5/2023	Day of Europe celebrations in Nicosia
39	17/5/2023	Satellite-based Services for Disaster Risk Management
40	4/6/2023	"EO Applications in Forest Fire Management - A European Mediterranean perspective" by Prof. Ioannis Gitas from Aristotle University of Thessaloniki
41	4/6/2023	Expert's talk "Investigation of a vertically integrated approach for the study and treatment of coastal erosion (example from Greece)" by Prof Thomas Hasiotis from University of the Aegean
42	4/6/2023	Workshop with the hydrogeology team of Cyprus Geological Survey Department
43	6/6/2023	High level event "Climate change, Civil protection and Human security-Towards an efficient Euro Mediterranean cooperation" & Launch of PPRD MED and other UCPM programmes and 2nd meeting of the Union for the Mediterranean Regional Dialogue Platform
44	5/7/2023	Participation at Europe Day 2023
45	6/7/2023	Training course within the frame of Water DEMO Project

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46	6/7/2023	SAR Sessions Breakout Session
47	6/7/2023	Formal meeting with the Commercial & Cultural Attaché of the Embassy of Luxembourg in Greece Mr. Nikolaos Kioussi
48	2/8/2023	Workshop with governmental stakeholders from the Department of Geological Survey regarding the activities of the Demonstration Project of the Water Sector with title "Assessment of vegetation dynamics and drivers of drought for the Republic of Cyprus".
49	6/8/2023	Meeting with Deputy Chief of the GEEF Lt. General Mr. Lucas Hatzimichael
50	30/09/2022	European Researchers' Night 2022
51	4/05/2023	Online webinar on the topic of "Radiative effects of water vapor and dust in the Saharan Air Layer"
52	01/2-02/2/2023	ENIGMA project Kick-off Meeting
53	02 - 03/11/2022	Advanced 'Masterclass' workshop for writing Proposals in Horizon Europe
54	03 - 04/11/2022	Visit of Professor Kypros Pilakoutas at ERATOSTHENES Centre of Excellence
55	03-05/04/2023	RSCy2023
56	03-05/4/2023	'Ninth International Conference on Remote Sensing and Geoinformation of Environment'
57	06 - 08/10/2022	Achieving Sustainable Groundwater Management: Promising Directions and Unresolved Challenges (Sustain 2022)
58	07-08/06/2023	Modeling of solar radiation, part 2 and Scientific applications for Cyprus
59	08-09/2/2023	CARBONICA Kick-off Meeting
60	09 - 10/4/2022	Sixth European Space Generation Workshop 2022
61	09/5/2022-21/5/2022	Secondment at TROPOS
62	10-11/5/2023	ENIGMA Face-to-Face Meeting
63	13 -16/09/2022	41st EARSeL Symposium
64	14 - 15/11/2022	ACTRIS Cloud Remote Sensing Workshop Nov. 2022
65	14/09/2022	6th EARSeL Workshop on Developing Countries
66	15/3/2023	Presentation by Aristotle University of Thessaloniki and KIKLO
67	16/1/2023	Meeting with technician from Cyprus Organization of Agriculture Payments to collect a series of data within the frame of the Demonstration Project for the Water Sector with title "Assessment of

		vegetation dynamics and drivers of drought for the Republic of Cyprus".
68	16/1/2023	Memorandum of Understanding with CERTE, Tunisia
69	16/11/2022	GIS Day 2022
70	16-20/3/2023	Meetings with stakeholders from EMMENA region during scientific events
71	17/3/2023	Invited talk in INWAT PRIMA Project Workshop
72	17/5/2023	Satellite-based Services for Disaster Risk Management
73	17-18/11/2022	Training workshop on Solar Radiation/Energy measurements, modeling and applications
74	18/1/2023	National Info Day – HORIZON Europe Work Programme 2023-2024
75	18/3/2023	Oral presentation in AGIC2023 International Conference in Hammamet, Tunisia
76	19/05/2023	CYNET and Amazon Web Services for the Academic and Research Community
77	20 - 23/3/2023	3rd International Conference TMM-CH Transdisciplinary Multispectral Modelling and Cooperation for the Preservation of Cultural Heritage
78	20/10/2022	Workshop on writing an EUSPA proposal
79	20/3/2023	Training course provided by Dr. Constantinos Panagiotou during AGIC2023 International Conference in Hammamet, Tunisia
80	20/3/2023	Workshop at the 4th ATLAS GEORESOURCES INTERNATIONAL CONGRESS (AGIC2023)
81	21/2/2023	GreenCarbonCY kick-off meeting
82	22 - 23/05/2023	CA21133 - Globalization, Illicit Trade, Sustainability and Security (GLITSS) COST Action Kick-Off Meeting
83	22/05/2023	Meeting with the Port and Marine Police
84	23 - 24/05/2023	Data analytics in the era of large-scale machine learning
85	23/05/2023	Participation at a financial project management workshop Restart 2016-2020
86	23/11/22	European Year of Youth - Euraxess
87	23-24/5/2023	SAR Sessions
88	23–27/05/2022	EGU General Assembly - AS1.13 Session: "Precipitation: Measurement, Climatology, Remote Sensing, and Modelling"
89	23-27/5/2022	Participation at the EGU General Assembly 2022

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90	24/1/2023	Meeting with technician from Meteorology Department to collect a series of data within the frame of the Demonstration Project for the Water Sector with title "Assessment of vegetation dynamics and drivers of drought for the Republic of Cyprus".
91	24/10 - 27/10/2022	ACTRIS Week 2022 and ACTRIS Aerosol Remote Sensing Workshop 2022
92	24/11/2022	Meeting with Cyprus Ports Authority
93	25-26/5/2023	Living Labs Seminar (Internal)
94	26/05/2023	Cloud Remote Sensing Community workshop
95	26/1/2023	8th ESA-PECS Call Briefing 2023
96	26/10/2022	AI-OBSERVER project kick-off meeting
97	26/5/2023	Online Meeting with Hellenic Centre for Marine Research
98	27/04/2023	Working meeting between the Cypriot Centers of Excellence and the Public Authorities
99	27/11 - 1/12/2022	The 8th International Conference on Drylands, Deserts & Desertification
100	27-28/3/2023	Bilateral meetings with personnel of Central Water Development Department (WDD)
101	27-30/9/2022	Common (Sustain-COAST and MEDSAL, PRIMA Projects) International Conference on "Integrate Groundwater Management of Mediterranean Coastal Aquifers", Chania, Crete, Greece
102	29/03/2023	Pythia Open Day
103	29/3/2023	Workshop with personnel of Water Development Department
104	30/03/2023	MOU ERATOSTHENES CoE and Development Agency of Lemesos
105	30/11/2022	RMA-WEB1: Webinar on Research Management and Administration
106	30/3/2023	Meeting with Geological Survey within the frame of AGREEMAR (PRIMA Project)
107	30/3/2023	Bilateral meeting with Federation of Environmental Organisations in Cyprus (OPOK)
108	31/05/2023	PhD thesis discussion with DLR (for 1 female researcher in Marine Security cluster)
109	03 – 08/9/2023	Participation at the European Meteorological Society Annual Meeting 2023
110	3-6/10/ 2022	EU SpaceWeek 2022
111	6-20/5/2022	Secondment of our team member Eleni Loulli at TROPOS

112	8 - 12/5/2023	11th European Conference on Severe Storms
113	November 2022 - ongoing	Implementation of ERATOSTHENES Centre of Excellence Promotional video
114	September 2022- ongoing	Implementation of ERATOSTHENES Centre of Excellence Brand Identity
115	Summer 2022	Internships at ERATOSTHENES Centre of Excellence
116	20-21/09/2023	Booth at REFLECT Festival, Limassol
117	29/09/2023	European Researchers Night 2023
118	20/07/2023	Excelsior Capacity Demonstration Phase - Meeting with DLR
119	27/06/2023	Info Day: Atmosphere Living Lab - ALLIVE
120	17/07/2023 – 21/07/2023	IGARSS 2023 - International Geoscience and Remote Sensing Symposium
121	07/07/2023	Agriculture Stakeholders Meeting
122	30/06/2023	Visit of representative of the Cyprus Children's Parliament at the Eratosthenes CoE
123	01/06/2023	Radio Interview at "Universities Treasures"
124	30/05/2023	Collaboration of ERATOSTHENES CoE and the Cyprus Phassouri Plantations
125	12/07/2023	Presenting the Agri Nexus Hub and Agriculture opportunities with Prof. Fabio Del Frate and Dr Gerd Reis
126	03/09/2023 – 07/09/2023	Participation at the SPIE Sensors and Imaging Conference, Amsterdam, Netherlands
127	02/09/2023- 07/09/2023	Participation at the ISPRS Geospatial Week 2023, Cairo, Egypt
128	11/09/2023	Invited talk of Dr. Dante Abate held virtually at the 2nd International Workshop on Artificial Intelligence for Digital Humanities, Udine, Italy
129	15/09/2023	Experiential Workshop "Foreseeing" the Future: Strategic Foresight and the Role of Gender in Tomorrow's Research and Innovation Ecosystem, Nicosia, Cyprus
130	19/09/2023	Installation of solar radiation instruments at Athalassa Nicosia Station
131	26/09/2023	Artificial Intelligence as a factor for creating a development perspective

ERATOSTHENES CoE organised and/or participated in **131 events** (**S03**) during the RP3 with the aim to expand their network, disseminate the EXCELSIOR project outputs, promote innovation, and promote

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the activities of the ECoE to public authorities, governmental departments, and schools to increase the societal and educational impact.

A highlight of the current reporting period was the organisation of the Third and Fourth Virtual EXCELSIOR Workshops entitled: "Entrepreneurship & Innovation in Earth Observation" on 21 June 2022 and "Earth Observation Research Trends in the EMMENA region" held on 5 July 2023. Both workshops were organised through virtual participation by interested parties residing within the EMMENA region, as well as in Europe, USA and Asia.

The Third Virtual EXCELSIOR Workshop had an excellent turnout, with 122 people signing up and 82 joining the event. The attendance rate was 68% and the workshop lasted for 375 minutes. Furthermore, the workshop was well-received and attracted a lot of interest from the community, having also a diverse audience, with registrants from 24 different countries, as shown in the graphs below (Figure 17 ,Table 19).

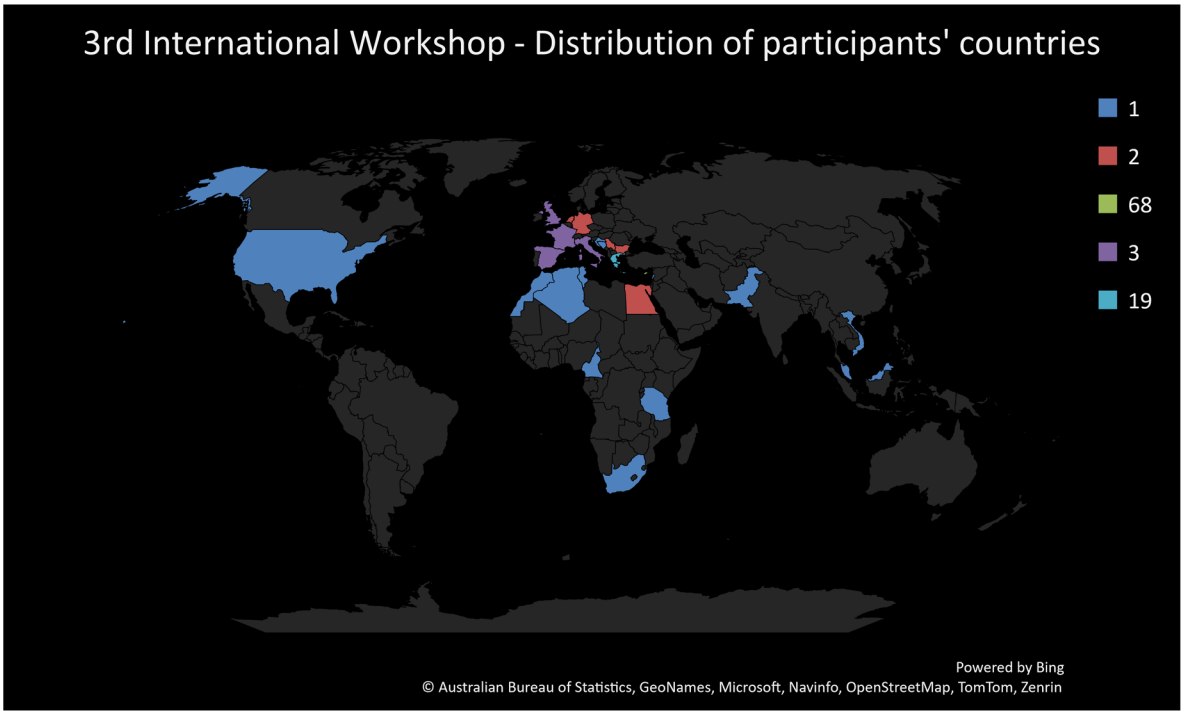

Figure 17 3rd International Workshop – Distribution of Attendees

Table 19 3rd International Workshop: List of Countries and Counts of Registrations

Cyprus	**68**	**Tunisia**	**1**
Greece	19	USA	1
United Kingdom	3	Croatia	1
France	3	Lebanon	1
Italy	3	Vietnam	1

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Spain	3	Tanzania	1
Bulgaria	2	Algeria	1
Egypt	2	Bosnia and Herzegovina	1
Germany	2	Morocco	1
Netherlands	2	Malaysia	1
Serbia	2	Cameroon	1
Pakistan	1	South Africa	1

The Fourth Virtual EXCELSIOR Workshop explored the "Earth Observation Research Trends in the EMMENA region". Speakers from the EMMENA region shared their current Earth Observation research activities in their region and the broader Mediterranean region. ERATOSTHENES main focus was to find female researchers in the EMMENA and invite them as speakers for this workshop, using the databases of networks such as Women in Geospatial, Women in Copernicus and Sisters of SAR. It is worth mentioning that many efforts were not fruitful in ensuring a balanced gender panel in the fourth workshop, as EO research in the EMMENA region is mainly led by male scientists. A total of 76 registrations were recorded, with 52 participants ultimately attending the workshop. This resulted in an attendance rate of 68%, and the workshop itself had a duration of 355 minutes. The graphs (Figure 18, Table 20) below offer an insightful representation of the countries from which participants registered for the workshop. The diverse geographic distribution highlights the widespread global interest and reach of the event.

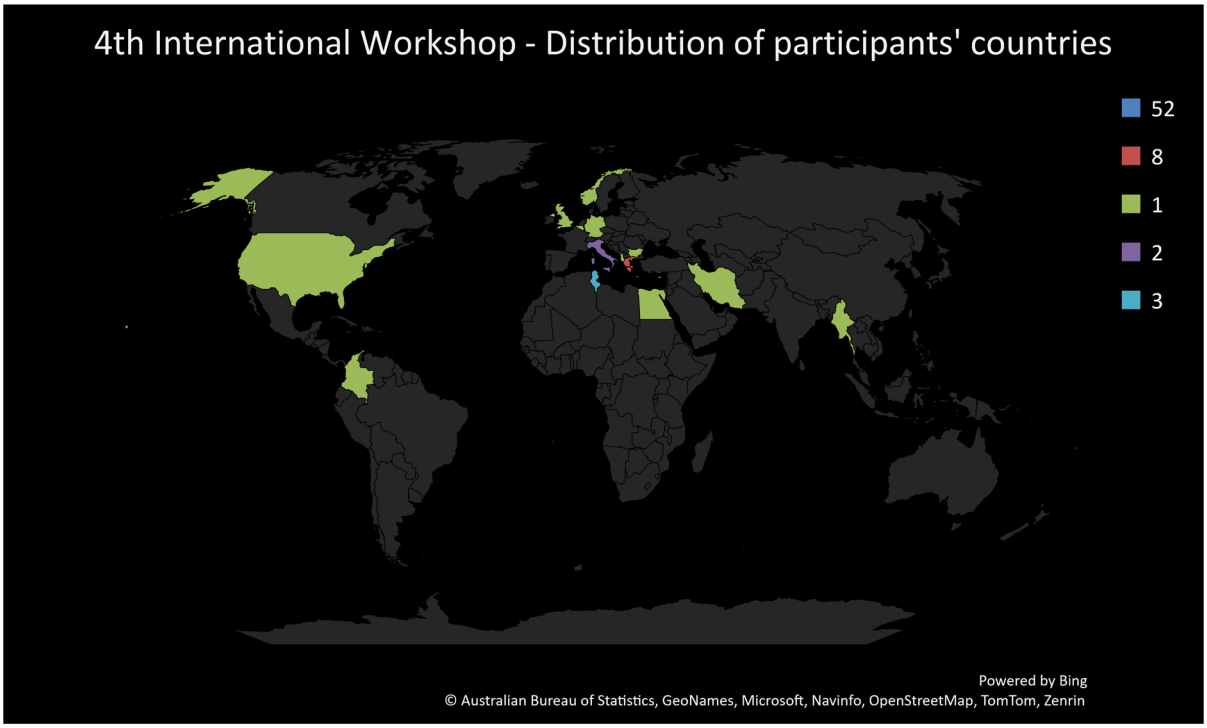

Figure 18 4th International Workshop – Distribution of Attendees

Table 20 4th International Workshop: List of Countries and Counts of Registrations

Cyprus	**52**
Greece	8
Tunisia	3
Italy	2
Bulgaria	1
Egypt	1
USA	1
Iran	1
Colombia	1
Germany	1
United Kingdom	1
Myanmar	1
Norway	1
Albania	1
Belgium	1

In-depth analysis and complimentary insights pertaining the 3rd and 4th Annual Virtual Workshops can be found throughout the pages of the submitted deliverable **D9.14 - "Report on the organisation of the annual ECoE international workshop"**.

Another important milestone was the attendance of **2** internal meetings on **Entrepreneurship Mentality** by CyRIC. The trainings were held on the 18th and 22nd of May 2022 at ERATOSTHENES CoE premises. CyRIC offers Research and Innovation Services to customers in the fields of engineering design and prototyping, electronics, communications, and software solutions. During the training, our team members were introduced to the entrepreneurial mindset and then formed groups, focusing on ideation.

During RP3, in order to facilitate networking and strengthen scientific partnerships between the ERATOSTHENES CoE and other organisations, 7 meetings were held (in person or online) with public authorities, governmental departments, universities, research organisations, international networks and the industry. Three of these meetings were with universities and research centres in Cyprus and abroad:

- Cyl Proteas
- University of Sheffield, meeting with Prof. Kypros Pilakoutas
- ICRAF

The 6th European Space Generation Workshop was held from 9th to 10th of April 2022 at the premises of the Cyprus University of Technology, in Limassol, Cyprus. Experts and professionals from leading European companies, agencies and working groups participated and informed the audience about spacerelated topics. ERATOSTHENES Centre of Excellence Functional Areas Manager, Prof. Andreas

Anayiotos held a presentation with title: "ERATOSTHENES Centre of Excellence of the Cyprus University of Technology is paving the way for Cyprus to enter the space arena through EXCELSIOR H2020 Teaming project" (Figure 19). The European Space Generation Workshop is an international event that aims to bring together students and young professionals to collectively create Europe's future in the space domain. This workshop was a great opportunity for students and young professionals (18-35 years of age) to learn more about space and share ideas on sustainable space applications and the future space sector.

Figure 19 Prof. Andreas Anayiotos promoting the EXCELSIOR project and the ERATOSTHENES CoE during E-SGW 2022.

On 12 September 2022, EXCELSIOR project and the ERATOSTHENES CoE organized a stakeholders event that was held with physical presence during the activities of the 41st EARSeL Symposium at Paphos, Cyprus (ERATOSTHENES CoE co-organised the symposium) Figure 20. The event began with an introductory speech by Prof. Maria KOUTSELINI, President of the Higher Education Quality Assurance and Certification Agency (DIPAE). During the workshop there was a short presentation about the establishment of the ERATOSTHENES CoE as well as an overview of the EXCELSIOR project by Prof. Diofantos Hadjimitsis. The importance of the EXCELSIOR Project in the EMMENA region emphasized by the Consortium members, as well as by the Advisory Committee members that were present at the event. Attendees (39 in total coming from diverse organisations and backgrounds) were also given the opportunity to present the main activities of their organizations. An online survey and a discussion followed, which concluded the event, with the aim of maximizing networking and collaboration opportunities between participants and the ERATOSTHENES CoE.

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Figure 20 41st EARSeL conference in Paphos, Cyprus

ERATOSTHENES CoE initiated a promising collaboration with UAE countries through the Embassy of Greece. Specifically, on November 17, 2022, Mr. Christos Theocharidis, visited the Embassy of Greece in the UAE (Figure 21). During this visit, he informed Ambassador Mr. Antonis Alexandridis and Mr. Vasileios Theocharidis, Head of the Consular Office, about the objectives and ongoing initiatives of ERATOSTHENES CoE. Additionally, Prof. Hadjimitsis, the coordinator of EXCELSIOR, delivered an online presentation outlining the project's vision. Discussions revolved around exploring avenues for future collaborations with strategic partners and stakeholders in the EMMENA region, aligning with ERATOSTHENES CoE's objectives. This significant meeting was conducted in a hybrid format and included the participation of representatives from the EXCELSIOR Project, along with our esteemed strategic partners from the Beyond EO Centre of the National Observatory of Athens.

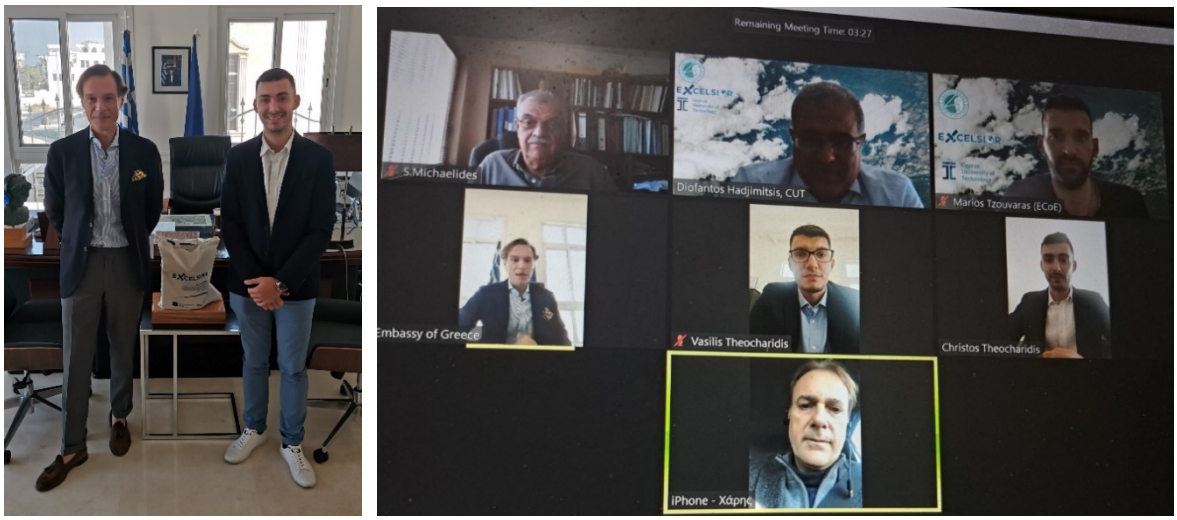

Figure 21 Meeting with the Embassy of Greece in Abu Dhabi, UAE

On Wednesday, June 1st 2023, Prof. Diofantos Hadjimitsis, Prof. Andreas Anayiotos and Dr Christiana Papoutsa hosted by Mr. Costas Constantinou at his broadcast "Universities Treasures" at the Cyprus Broadcasting Corporation/Radio 97.2 Rik 1 (Figure 22). During the interview, the discussion was focused about the EXCELSIOR project, the Eratosthenes Centre of Excellence, and in general around the activities on space and remote sensing. Furthermore, the cooperation of the Municipality of

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Limassol between the Centre of Excellence, as well as the continuous work of the centre's academics and researchers was highlighted.

Figure 22 Radio interview hosted by Mr. Costas Constantinou at his broadcast "Universities Treasures" at the Cyprus Broadcasting Corporation/Radio 97.2 Rik

Another highlight of the current RP is the signing of an agreement between ERATOSTHENES CoE and the RIF in order to incorporate the centre to the EURAXESS Network; a platform where researchers, entrepreneurs, universities and business can interact with each other and exchange information (Figure 23).

Figure 23 Signing of the EURAXESS amendment

On the 6th August 2022, Prof. Diofantos Hadjimitsis gave an interview to the journalist of Phileleftheros newspaper, Dora Christodoulou, about 'EXCELSIOR' Horizon 2020 Teaming Project and ERATOSTHENES Centre of Excellence. Prof. Diofantos Hadjimitsis mentioned that the aim of the project is to create a Digital Innovation Hub for Earth observation, space technology and geospatial information and to be the reference centrein the Eastern Mediterranean, Middle East, and North Africa (EMMENA).

Moreover, during RP3, five (5) invited talks were organised by the ECoE, addressing representatives from academia/scientific community, industry, civil service, policy makers and the general public from Cyprus and abroad. 874 people attended these events coming from various countries from Europe, Middle East, Africa, Asia, and America. More detailed information is provided below in Table 21.

Table 21: Invited talks organised by the ECoE during RP3

#	Date	Speaker	Topic
1	13/04/2022	Dr. Lohitzune Solabarrieta	"Ocean monitoring using remote sensing platforms"
2	18/07/2022	Dr. Virginia Garcia Millan	"Mediterranean forest map"
3	15/12/2022	Dr. Gregory Giuliani	"The Swiss Data Cube: EO Open Science for Environmental Monitoring "
4	02/02/2023	Prof. Dr Hannes Taubeböck	"Our urban world – Dynamics, dimensions, and forms of global urbanization processes.''
5	12/07/2023	Dr. John Dehls	"From National to Continental-scale Hazard Mapping – Experience Using Massive InSAR Datasets"

Last, twenty-nine (29) events targeting stakeholders in Cyprus and the EMMENA region were organised by the ECoE during RP3 (Figure 24), of which two (2) were organised during international conferences to achieve maximum possible visibility. On the 12th September 2022, a meeting was organized with topic: "The ERATOSTHENES Centre of Excellence and the EXCELSIOR project meet the key stakeholders within Cyprus and the EMMENA region". The meeting took place at Aliathon Holiday Village in Paphos and brought together stakeholders from both public and private entities from Cyprus and abroad. EXCELSIOR Coordinator Prof. Diofantos Hadjimitsis gave a brief presentation on the importance of the EXCELSIOR Project in the EMMENA region. The attendees had the opportunity to present the main activities of their organizations. The second meeting was held during the RSCy 2023 conference, at Adams beach hotel, in Ayia Napa, Cyprus on 3 – 5 April 2023. The meeting was attended by plethora of Cypriot stakeholders coming from mainly governmental services and private companies. During the meeting, participants were given overview of the EXCELSIOR project, and the ERATOSTHENES CoE along with its scientific activities. Throughout the current RP several other stakeholders' meetings were held from the departments of Environment and Climate and the Resilient Society's, namely with Hellenic Centre for Marine Research, Geological Survey Department, Cyprus Ports Authority, Agricultural unions etc.

These meetings intended to establish the needs and interests of key stakeholders on Earth Observation and Remote Sensing, with emphasis on Cyprus and the EMMENA region (East Mediterranean, Middle East & North Africa).

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Figure 24 Stakeholders' events organised by the ECoE during RP3

To maintain strong collaboration bonds with so many stakeholders, while searching for new partnerships proved to be a challenging task, hence the ERATOSTHENES decided to develop a platform (Figure 25) that acts as a common ground for networking with others, which eventually will flourish into the provision of paid services, tenders, and proposals. The core of this network is the ERATOSTHENES, the Strategic Partners and their affiliate networks, but the ambition is to build concrete links with other EO and non-EO players in EMMENA through user engagement activities.

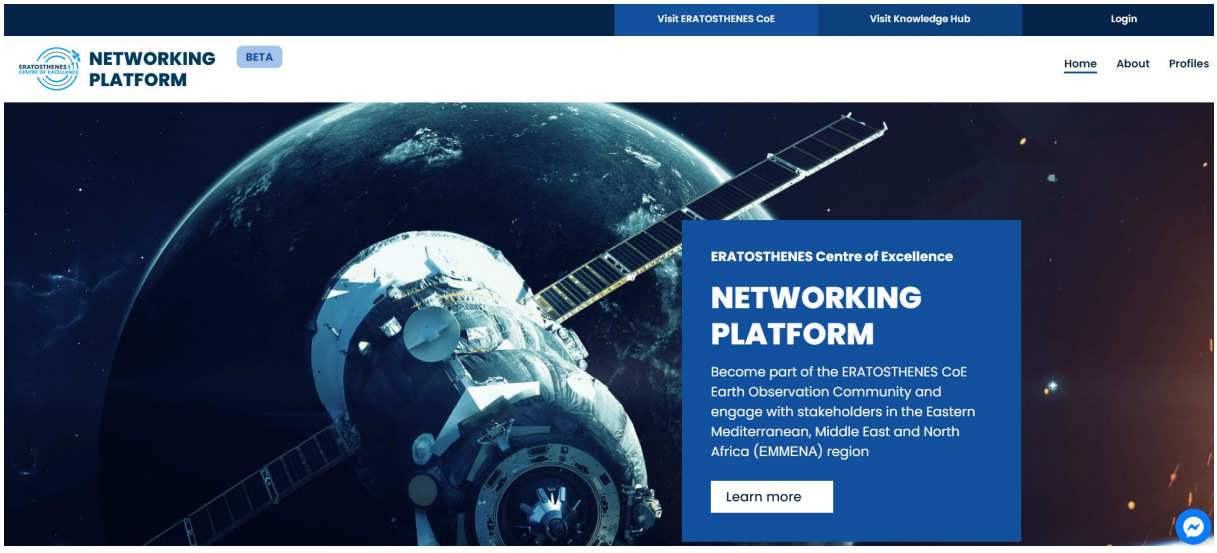

Figure 25 ERATOSTHENES Networking Platform

Regarding non-academic audience, **11 activities** have been organised (**S09**), in the form of school visits, presentations to university students, information days, science cafes, newspaper articles and mass media appearances (radio, TV, podcasts, etc.) to increase of scientific culture of the country. Some of them are the following:

- Visit at Laniteio Lyceum within the framework of "Schools as EU Ambassadors" scheme, where ca. 200 students were informed on the role of the European Commission, the opportunities that exist at the Higher education system research and seeking excellence-wise as well as the existence of European projects and networks.

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- CUT Summer School, 26 July 2022. Mrs. Fotiou held a presentation about the EXCELSIOR H2020 Teaming project and its activities. The audience of this presentation were primary school students, who had the unique opportunity to learn and familiarize themselves with the sciences of Surveying Engineering and Geomatics, Earth Observation and applications developed within EXCELSIOR H2020 Teaming Project.
- Participation to the GIS day 2022
- Gender, Science, and Earth Observation: Strategies to support gender responsive leadership
- Participation in the Career Fair of Polis Chrysochous Secondary School, 26 January 2023
- Participation at Europe Day 2023
- Participation in the European Year of Youth, EURAXESS organized by the EURAXESS service centre in Limassol
- CYNET and Amazon Web Services for the Academic and Research Community
- European Researchers Night 2022
- European Researchers Night 2023
- REFLECT Festival 2023

The ERATOSTHENES Centre of Excellence, and the Department of Civil Engineering and Geomatics of the Cyprus University of Technology participated at the European Researchers' Night 2022 and 2023. The European Researchers' Night 2022 was organized by the Research and Innovation Foundation in Cyprus and took place at Eleftheria Square in Nicosia on the 30th September 2022, while the respective one for 2023 was held at the Exhibition and Trade Centre in Nicosia. The European Researchers' Night is a Europe-wide public event that aims to encourage the public to become familiar with the world of science and research and at the same time to strengthen the public image of researchers, whilst highlighting the important role they play in society. Our team participated with the booths "It's Earth Observation o'clock" (2022, Figure 26) and "One Image, Infinite Information" and "Earth in pixels" (2023, Figure 27), where people of all ages were informed about the science of Earth Observation and Remote Sensing.

Figure 26 Participation of the ECoE at the European Researchers' Night 2022

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Figure 27 Participation of the ECoE at the European Researchers' Night 2023

On the 20th of October 2022, the ERATOSTHENES Centre of Excellence team actively participated in an exclusive gathering of the European Teaming Club (Figure 28). This event marked a unique occasion as it brought together Centers of Excellence from across Europe for the very first time. In attendance were esteemed officials from the European Commission and the European Research Executive Agency (REA). Following the meeting, a distinguished delegation from the European Commission, had the valuable opportunity to familiarize themselves with our ongoing activities and engage in discussions with our team regarding the forthcoming developments and challenges at the ERATOSTHENES Centre of Excellence. It is worth noting that our EXCELSIOR H2020 Teaming Project earned recognition by securing the top award in the Teaming program among the second generation of Teaming Projects.

Figure 28 Meeting of the European TEAMING Club

During the same day, members of the EXCELSIOR team, Dr. Marios Tzouvaras and Ms. Eleni Loulli, actively took part in the Infoday for the EUSPA (EU Agency for the Space Programme) call for proposals. At this event, Dr. Tzouvaras delivered a presentation, highlighting the EXCELSIOR project, ERATOSTHENES Centre of Excellence and its ongoing initiatives and activities.

Professor Kypros Pilakoutas from the University of Sheffield (UoS), UK, paid a visit to the ERATOSTHENES Centre of Excellence on November 3rd and 4th, 2022. The primary purpose of his visit was to explore prospective collaborations between the two institutions, particularly in the domain of Earth Observation (EO) and Remote Sensing (RS). Additionally, discussions revolved around potential

engagements within the scope of the EXCELSIOR H2020 Teaming Project, as the University of Sheffield had already submitted a commitment letter expressing their intent to participate.

In the context of World Geographic Information Systems Day, on 16th of November 2022, the ERATOSTHENES Centre of Excellence and the Cyprus University of Technology organized a conference dedicated to Geographic Information Systems entitled "GIS Day 2022: Services and Applications of Geographic Information Systems in the Public and Private Sectors of Cyprus" (Figure 29). The conference focused on the significance of Geographical Information Systems and their diverse applications in both the public and private sectors of Cyprus.

Figure 29 Flyer for the GIS Day 2022

Furthermore, part of the dissemination of the EXCELSIOR project to non-academic audiences constituted the event that was held on October 5th, 2022, at the premises of the Cyprus University of Technology, in collaboration with the Department of Electronic Communications of the Deputy Ministry of Research, Innovation, and Digital Policy, and the ERATOSTHENES Centre of Excellence, organized an event titled "Gender, Science, and Earth Observation: Strategies for Gender-Responsive Leadership" (Figure 30). Esteemed speakers included Prof. Maria Rentetzi, Head of the Chair of Science, Technology, and Gender Studies at Friedrich-Alexander University, Erlangen-Nürnberg, and Ms. Barbara Ryan, Executive Director of the World Geospatial Industry Council (WGIC) and a Member of the Board of Directors of the ERATOSTHENES Centre of Excellence. Prof. Rentetzi provided historical insights into gender's role in Science and Technology, while Ms. Barbara Ryan discussed gender considerations in Earth Observation. The event also featured a panel discussion focused on fostering gender-responsive leadership within the ERATOSTHENES Centre of Excellence, promoting diversity and inclusivity.

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Figure 30 EXCELSIOR project at the "Gender, Science and Earth Observation" event

Another highlight of the current reporting period constituted the organisation of the 9th International Conference on Remote Sensing and Geoinformation of Environment (RSCy 2023) from 3rd to 5th April 2023. The conference was organised by the EXCELSIOR project and the ERATOSTHENES CoE (Figure 31) hosting more than 100 participants worldwide. During the conference, numerous talks were given to diverse audiences among them general publica and stakeholder groups who are interested in the fields of remote sensing and earth observation.

Figure 31 EXCELSIOR at the RSCy2023

The project was represented through 14 scientific works extending from solar radiation, UV measurements, classification in crops to impact assessment of earthquakes in Turkey, data cubes and groundwater quality.

On 19 September 2023, EXCELSIOR and ERATOSTHENES CoE team members Dr. Argyro Nisantzi, Dr. Konstantinos Fragkos and Mrs. Georgia Charalambous visited the Department of Meteorology Cyprus – CYMET to install the first station of radiation instruments, which will be part of the ERATOSTHENES Cyprus Solar Network (Figure 32). Over the next 1-2 months, our plan is to complete the installation of all stations, including the central station at Limassol (located at Cyprus University of Technology premises) and three additional stations at the Department of Meteorology's premises, specifically in Polis Chrysochous, Xylofagou, and Kyperounta.

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Figure 32 Installation of Solar Radiation equipment

Before the reporting period concludes, members of the EXCELSIOR team participated with a booth at the REFLECT Festival 2023, organized in Limassol from 20 to 21 September 2023. It was an opportunity to present the EXCELSIOR project and the ERATOSTHENES Centre to a wide audience interested in matters of technological progress (Figure 33).

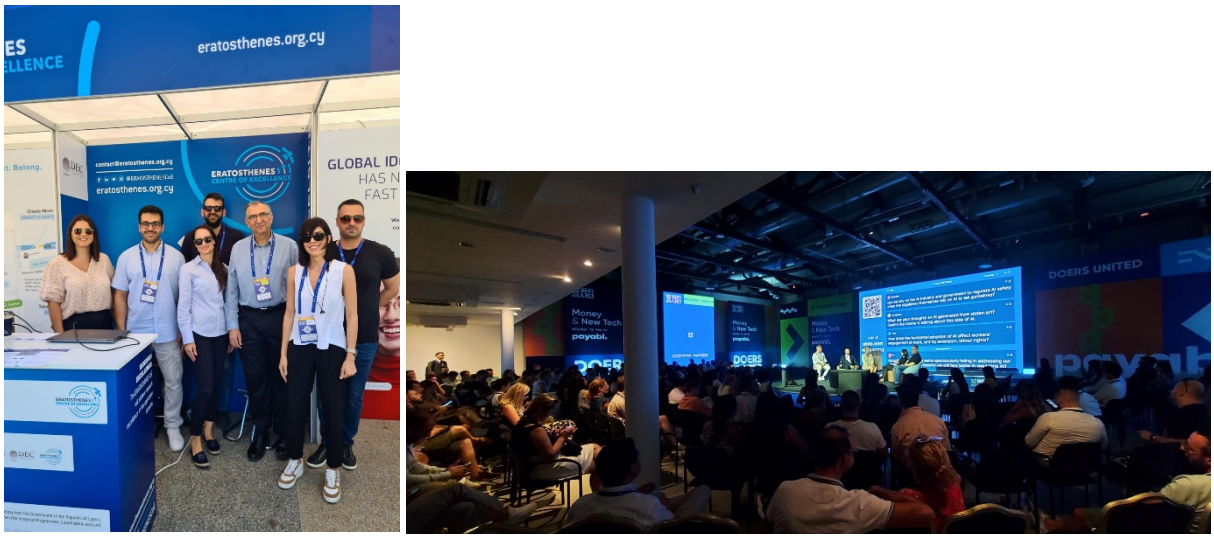

Figure 33 EXCELSIOR Project and ERATOSTHENES CoE at REFLECT Festival 2023

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3 Measuring Impact through KPIs for RP3

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 22 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 22: 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	By YR4 (30/9/2023)
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	Satellite ground receiving station
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	Supersite for aerosol and cloud monitoring; advanced aerosol polarization /Raman Lidar
P01c	The acquisition of equipment necessary to establish a Centre of Excellence in Cyprus and utilize equipment that can be used in remote sensing and Earth observation	The purchase of equipment for the operation of research facilities of the Centre of Excellence	Market Research	**Discussions and market research**	0,51	Field spectroradiometers and accessories; Aerial, ground and water vehicles; Geodetic equipment; In situ sensors and calibration instruments; IT infrastructure; additional equipment
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	Due to Covid-19, a lot of the trainings have been changed to online workshops/trainings
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	Due to Covid-19, a lot of the trainings have been changed to online workshops/trainings

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Impact: Participating organisations						
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)			Target
			During RP1	During RP2	During RP3	By YR4 (30/9/2023)
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	20
P03	Participation to Research and Infrastructure Networks, Technological Platforms and Clusters with focus on Space Technologies and EO	Number of research institute networks that ECoE participate in	7 (GEO, CyDI-Hub, IEEE SA, Copernicus Academy, MedRIN, NEREUS, GEO-CRADLE)/ 1 in progress (IEEE GRSS)	**0**	6	4
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	1
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	40
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	MSC=4 ERC=0
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	20

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Impact: Participating organisations						
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)			Target
			During RP1	During RP2	During RP3	By YR4 (30/9/2023)
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	6
P07	Maintain and enhance the capacity of training in EO to new users including those from non-EU and developing countries	Number of external participants in professional skills development programs offered by the ECoE	N/A	**0**	13	40
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	1
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	80
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%	10-15%
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	180

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Impact: Participating organisations						
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)			Target
			During RP1	During RP2	During RP3	By YR4 (30/9/2023)
P10b	Success rate for the submission of research project proposals	Number of successful research project proposals submitted for funding	6	**6**	12	18
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	€5M
P10d	Research project proposals for funding, jointly submitted with EXCELSIOR partners	Number of research project proposals for funding, jointly submitted with EXCELSIOR partners			7	5
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	30
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	11
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	17

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Impact: Scientific community						
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)			Target
			During RP1	During RP2	During RP3	By YR4 (30/9/2023)
SC01	Publication of Journal papers resulting from research conducted at the ECoE	Number of articles in peer-reviewed scientific journals	32	**37**	13	75
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	75
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	3000
SC04	Participation in International Conferences/workshops	Number of presentations (oral/ posters) in International Conferences/workshops	14	**22**	43	50
SC05	Foster mobility among researchers (towards and from the Centre) with Universities, research Centres and the private sector, excluding EXCELSIOR consortium	Number of personnel visiting and/ or using the ECoE facilities and Number of ECoE personnel seconded to other organisations	N/A	**0**	10	10
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	0
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

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Impact: Scientific community						
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)			Target
			During RP1	During RP2	During RP3	By YR4 (30/9/2023)
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

Impact: Society						
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)			Target
			During RP1	During RP2	During RP3	By YR4 (30/9/2023)
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	50 researchers, administrative and technical staff
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	10-20%
S03	Continuous interaction with stakeholders nationally, in the EMMENA region and in Europe through dedicated events	Number of events (workshops, info days, etc.) that the ECoE organised/participated	86	**68**	131	150
S04	Establishment of new partnerships with public authorities, the industry, and SMEs in the EO domain locally and	Number of meetings with local authorities, public and	20	**25**	29	11

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Impact: Society						
#	Key Performance Indicator (KPI)	Metric	Progress (Separately for each period)			Target
			During RP1	During RP2	During RP3	By YR4 (30/9/2023)
	across the EMMENA region, Europe and beyond	private stakeholders, academia, etc.				
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	5
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 together with the ECoE	27	**39**	2	15
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	10
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
S09	Involving civil society and citizens, to influence the adaptation of the culture to the new technological EO environment though responsible research and innovation activities	Number of activities targeting to non-academic audiences to increase of scientific culture of the country	25	**19**	11	10

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4 Overall Impact

As elaborated extensively in section 2 and succinctly summarized in Table 22 of this report, it is evident that during RP3, and consistent with the RP1 and RP2 trajectories, the ERATOSTHENES Centre of Excellence achieved the most significant impact, particularly concerning the KPIs, in societal aspect.

Societal-wise, based on the diverse range of KPIs and their corresponding metrics outlined within the dedicated impact section, it becomes evident that the ERATOSTHENES CoE has markedly surpassed not only the Year 4 target set by the EXCELSIOR project, but also the final target that was planned to be achieved until YR7 as well (!) as illustrated in Figure 34. More specifically, during RP3, the Centre has actively participated in and/or coordinated a total of 131 events, building upon the 137 events accomplished during RP1 and RP2. Cumulatively, this number (i.e. 268) surpasses the predefined target of 150 events for the project's fourth year, as well as the 250, which consortium set for YR7. Within this event portfolio, during RP3 29 meetings were held with stakeholders from both public and private sectors, amounting to a total of 69 meetings throughout the undergone reporting periods, thus exceeding both goals (YR4: 11, YR7:17).

These meetings, along with other networking activities, have led to the development of one service available to the interested parties by the conclusion of RP3, with another 4 mature services to be expected soon to become available. Although the ECoE did not meet the expected target of five services for RP3, the rest will be available within the early months of RP4. Therefore, considering that as of the submission of this deliverable there are 5 more planned already that are less mature, then the EXCELSIOR project is estimated to reach the YR7 target (i.e., 12) within RP5.

Adhering to the external reviewers' comments the KPIs S06 and S07 that correspond to the proven partnerships with public authorities, along with private sector stakeholders, often in the form of research project proposals, were revised as explained at section 1 to encapsulate the term "successful" in their description. Therefore, the total numbers of different stakeholders of public (S06) and private (S07) sectors with whom the EXCELSIOR project collaborated throughout the 3 reporting periods are 23 and 79 respectively. It is essential to mention that the target for YR4 is surpassed for both KPIs, while the S07 exceeded the corresponding for YR7 (50). As this change was taken into account starting from January 2023, it is highly believed that they are more collaborations made in the past and which leaded to successful proposals, as mentioned at the D1.15, hence the S06 KPI is evidently outnumbered, but the ERATOSTHENES CoE will strive for new successful collaborations to reach (again) the target of the revised KPI for YR7 (40).

Furthermore, during RP3 48 personnel were employed through the EXCELSIOR project (both transferred from Cyprus University of Technology or/and are new hires), out of which 13 are researchers and technicians attracted from abroad; constituting the 27,08%.

Finally, RP3 witnessed the organization of 57 activities aimed at non-academic audiences, designed to foster a greater scientific culture within the country. This substantial effort far exceeded the Year 4 objective of 10 such activities. As was correctly anticipated there was not any formation of any start-ups or spin-offs by Year 4.

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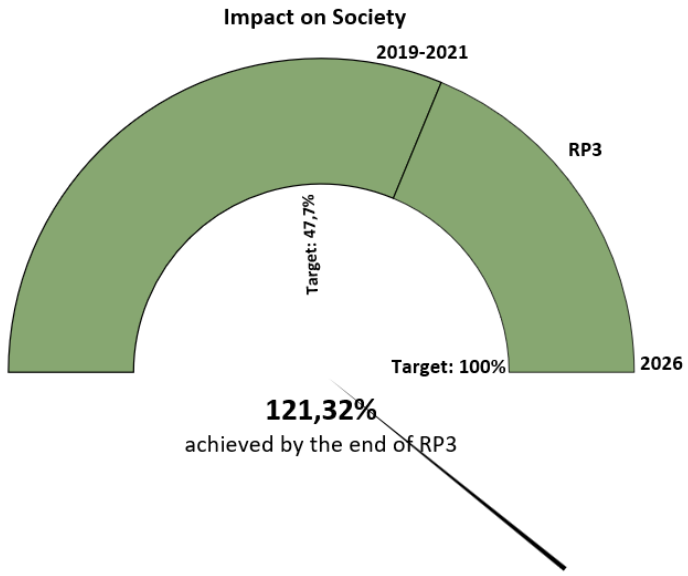

36 months
remaining until the end of EXCELSIOR project

-21,32% remaining to achieve the final target

Year	Target	Achieved
2019-2021		56,63%
2022		33,95%
2023		30,74%
2026	100,0%	

Figure 34 ECoE's impact on society by the end of RP3 and the goals of EXCELSIOR project

Regarding the impact on the scientific community, the ECoE has made significant advancements compared to RP1 and RP2 and is on track to achieve the objectives established by the EXCELSIOR project, as shown in Figure 35. The cumulative target of scientific impact for the YR4 (29,1%) is achieved, and slightly over-performed by 4,63%.

Specifically, ECoE staff contributed 13 journal papers, 28 conference articles and delivered 42 oral/poster presentations during RP3. Compared to the previous reporting periods, the scientific performance of the project was lower, though as new scientific personnel join the project, it is expected that the number of publications will be boosted during the next reporting period.

Cumulatively (all 3 reporting periods), the number of both journal (SC01) and conference (SC02) articles published and the count of oral/poster presentations (SC04) delivered at several international conferences/workshops exceeded the proposed targets set for Year 4 of the project. Overall, it is observed that:

- 83 Journal articles were published so far, reaching the target of 75 (YR4), though ERATOSTHENES CoE is expected to increase its efforts to reach the final target (195) by the end of the EXCELSIOR project (YR7).
- 75 Conference papers have been available to the various conferences' proceedings, therefore the YR4 target (i.e., 75) was reached, but the final target of 285 might be considered for a slight revision in order to be achieved within the rest 36 months of the project.
- 82 presentations and/or posters were presented to the aforementioned conferences and events, surpassing the target for YR7 (75).

Collectively, these efforts have resulted in 335 citations in Scopus and 1084 citations in Google Scholar since October 1, 2019. Although the Year 4 goal of 3000 citations was missed, it is important to note that the cumulative nature of citations makes it challenging to predict the pace at which these figures will evolve over time. The continuous employment of new researchers and the pursuit of new research endeavours are anticipated to significantly contribute to the growth of the h-index. As described at

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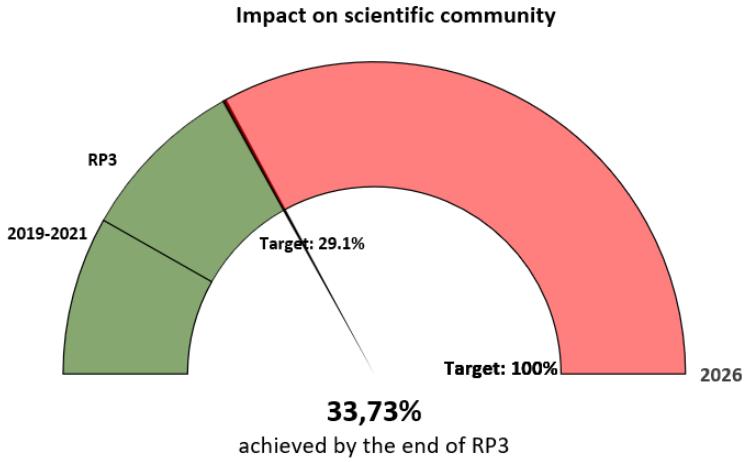
section 2, during RP3 2 team members were seconded to the advanced partners (NOA and TROPOS), while 8 interns took advantage of the ECoE' research facilities. Finally, progress is being made in terms of patents' development, and the creation of start-ups/spin-offs, although none is expected to happen by YR7 of the project.



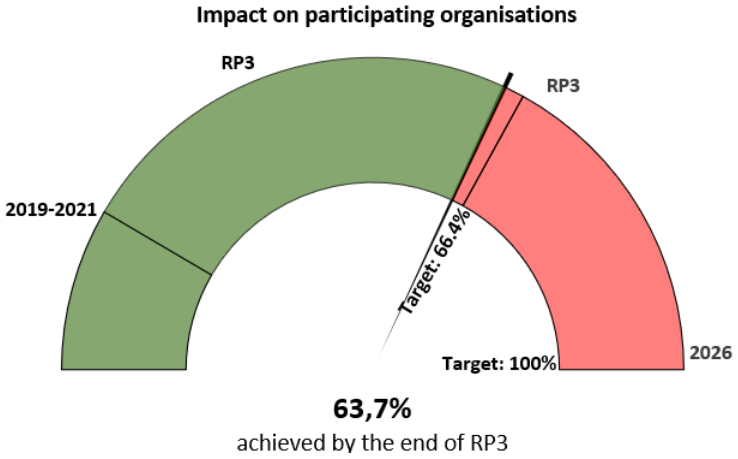
36 months
remaining until the end of EXCELSIOR project

66,27% remaining to achieve the final target

Year	Target	Achieved
2019-2021		14,36%
2022		8,32%
2023		11,05%
2026	100,0%	

Figure 35 ECoE's impact on scientific community by the end of RP3 and the goals of EXCELSIOR project

In terms of **Participating organisations**, the ERATOSTHENES presented almost the same performance as happened during RP2, though the centre has fallen slightly short in achieving (on average) the YR4 target (Figure 36).



36 months
remaining until the end of EXCELSIOR project

36,3% remaining to achieve the final target

Year	Target	Achieved
2019-2021		16,7%
2022		23,8%
2023		23,2%
2026	100,0%	

Figure 36 ECoE's impact on participating organisations by the end of RP3 and the goals of EXCELSIOR project

The various bureaucratic delays concerning the equipment as explained in the previous impact assessment deliverable, were tackled at a significant percentage. As explained at the section 2 of the current document, the tender for the satellite ground receiving station has recently been awarded to the successful bidder and is expected to be installed at CYTA's premises within RP4. Staying in track towards the achievement of the YR7 target, providing near real-time data to the personnel of the ERATOSTHENES CoE. Part of the equipment that will serve the research purposes of the Atmospheric sector (complete advanced aerosol polarization) has been acquired following centre's standard procedures, with more sensors and instruments (lidar related) expected to be purchased through the coming years (GBS). As the use of specialised equipment is considered crucial for the smooth

operational workflow for the Solar sector, ERATOSTHENES CoE has acquired six (6) Pyranometers, five (5) UV Radiometers, one (1) Pyrheliometer, one (1) Pyrgeometer and one (1) Spectrophotometer UV/VIS and are intended to be installed gradually all over the Cyprus territory over the next 2 months in cooperation with the Cyprus Meteorological Department. Advancing with the P01c KPI, the centre during RP3 has secured three (3) field spectroradiometers, five (5) aerial, ground and water vehicles, five (5) geodetic equipment such as GPS/GNSS, total stations, etc. , while 125 quantities of IT equipment were distributed to the researchers extending but not limited to mobile workstations, server to facilitate as of the moment the data handling and storage, as well as 4 workstations which serve the modeling needs of ECoE's sectors on 24/7 basis.

Furthermore, in RP3, the number of researchers employed has reached 41, reaching the Year 4 target of 40, tackling this way the impact of the contract amendment delay experienced during RP2. The employment process is currently in progress to identify suitable candidates for various open vacancies within the ECoE. Notably, no exceptional researchers (such as MSC Fellows, ERC awardees, etc.) were hosted by the ECoE during this period, however the preparation and submission of 1 MSC proposal mid-September allows for space to change the P05b positively at the next RP. During RP3, fifty-eight postgraduate students pursuing MSc and PhD degrees utilized the ECoE's research infrastructure and facilities at CUT/ECoE for their thesis work (P09a). Among these students, 3.45% were from Greece and Egypt. This progress aligns with the Year 4 goal of accommodating 80 postgraduate students, as by the conclusion of RP3, a total of 83 postgraduate students were enrolled. As it seems, the target for Year 7 of hundred (100) students is estimated to be surpassed by mid-2024 (RP4). During RP3, 33 researchers were periodically involved in the various demonstration projects in collaboration with the advanced partners (P02c).

Notable advancements were made with the sign and execution of twenty-nine MoUs during RP3, comprising of 17 agreements with local/national entities and 12 with international stakeholders. This progress aligns with the objective of achieving 26 MoUs by year 4, encompassing 20 with local stakeholders and 6 with international partners. Cumulatively from the 3 reporting periods, the targets of both YR4 and YR7 for the particular KPIs (P06a and P06b) were reached and exceeded. These formalized MoUs are anticipated to bolster stakeholder engagement and foster collaboration, consequently opening doors to new funding prospects.

63 project proposals were submitted during RP3 through partnerships with other universities, research institutes, public authorities, governmental departments, industry, and other organisations, accounting in total 137 proposals, thus achieving the YR4 target of 100. Twelve (12) of these proposals were funded securing €2.331.084,34 by the end of RP3. This amount, as well as the total amount (3.993.626,94 €) secured these years are significantly lower than the target of €5 million set by year 4 of the EXCELSIOR project.

As far as ERATOSTHENES' participation in Research Institute Networks is concerned progress was made to join the Global Atmospheric Watch (GAW), the EARSeL and the Copernicus Academy. This will facilitate the collaboration of researchers and will grant ERATOSTHENES further visibility as well. The YR7 goals have already been surpassed during RP1. During RP3, there were 13 external participants in professional skills development programs offered by the ECoE as described at the section 2 of the current document. Although the target set for year 4 is missed, the professional skills development programs are expected to continuously advance during the next reporting period (RP4), aiming to attract approximately 60 participants from the public and private sector. This will become feasible with the aid of the Educational Officer who recently started his employment at the centre.

During, RP3 there was one (1) formal request from Copernicus Atmospheric Monitoring Service (CAMS) to act as collaborating network(s) or institution(s) seeking access to the ECoE's data for calibration and validation purposes. Additionally, it's noteworthy that the current h-index for the group comprising 41 researchers stands at 16 in Scopus and 16 in Google Scholar. Taking into consideration the sum of the two indexes the YR4 target of 30 was exceeded by 1. However, it's essential to recognize that the cumulative nature of the h-index makes it challenging to anticipate how swiftly this metric will evolve over time. Moreover, the ongoing recruitment of new researchers and the undertaking of fresh research endeavours are anticipated to make significant contributions towards the enhancement of the h-index, reaching the final target of 45 (YR7).

The current reporting period contained the addition of new KPIs following the external reviewers' feedback that was received on November 2022 pertaining to the highlight of synergies amongst the EXCELSIOR consortium. This was focused on the drafting and submission of joint proposals (P10d) that will be considered for funding as well as the submission of joint publications at established journals and conferences (P12a and b). To that end, these numbers were incorporated and counted from January 2023 onwards. More specifically, within the 9 month period of the RP3, 7 joint proposals were submitted, thus reaching the target set for YR4 (5) and will continue to advance towards the YR7 target (26). On the publications' side the EXCELSIOR consortium submitted 24 (journals: 4, conferences: 20) by the end of RP3 and is expected to reach the target of 118 (46 journals, 72 conferences) by the end of YR7.

Since the KPI metrics span a 7-year duration, it's reasonable to anticipate that not all KPIs will be fully achieved within the RP2 or RP3 timeframes. However, it's noteworthy that the majority of the objectives outlined by the KPIs were not only met but often surpassed during RP3. Consequently, as of the RP3 conclusion on September 30, 2023, the ECoE has made substantial strides within the EXCELSIOR project. Looking ahead, the consortium is dedicated to work towards accomplishing the project's ultimate objectives during the forthcoming last 36-month period.

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:

- **Positive Stakeholder Outcomes**: The assessment has reaffirmed that the EXCLESIOR project has made substantial positive contributions to its stakeholders. Through collaborations, projects, and initiatives, it has played a pivotal role in advancing the sustainable management of useful resources in the region.
- **Global Reach and Impact**: The influence of the organization extends far beyond its geographical boundaries. The diverse distribution of workshop registrations showcases the global interest in its activities and underscores its position as a prominent player in the field of Earth Observation. This wide-reaching impact strengthens its network and enhances its ability to drive positive change worldwide.
- **Technological Advancements**: The assessment highlights the EXCELSIOR project and organization's successful integration of cutting-edge technologies, particularly in the domain of remote sensing. These advancements have revolutionized the environmental monitoring capabilities, enabling it to conduct systematic, non-invasive analyses that significantly benefit cultural heritage preservation and natural resource management.
- **Commitment to Gender Inclusivity**: The organization's commitment to gender-responsive leadership was prominently featured in the event on "Gender, Science, and Earth Observation". Expert speakers and panel discussions provided valuable insights into strategies for fostering inclusivity within the organization and the broader scientific community.
- **Strategic Use of KPIs**: The diligent monitoring of Key Performance Indicators (KPIs) has been instrumental in holding the EXCELSIOR project and the organization accountable for its performance. These metrics have provided a transparent and data-driven means of assessing its achievements and impact.
- **Quantitative Impact Assessment**: Through KPIs and metrics, the project has conducted quantitative assessments that enhance its decision-making processes. These data-driven insights have promoted transparency, accountability, and a deep understanding of its impact.
- **Cumulative Progress**: The cumulative nature of the organization's KPIs, as detailed in Table 23, underscores the ongoing success and progress. This approach emphasizes that each accomplishment builds upon past achievements, contributing to the overall success.
- **Multi-level Influence**: KPIs have allowed to assess EXCELSIOR's impact at multiple levels, including within participating organizations, the broader scientific community, and society at large. This multi-level evaluation demonstrates the widespread resonance of its initiatives and the diverse range of stakeholders it engages with.

In conclusion, the current deliverable has provided a comprehensive overview of the EXCELSIOR project and ERATOSHTNES 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 RP3

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Position	Number of positions in announcement	Number of candidates offered the position	Number of candidates appointed	Managerial (M)/ Researcher (R)/ Technical (T)/ Administrative (A)
Assistant Researcher B' at the Resilient Society Department	1	1	1	R
Post-Doctoral Research Fellow at the Environment and Climate Department	1	1	1	R
Assistant Researcher A' at the Resilient Society Department	1	1	1	R
Ground Infrastructure Service Engineer	1	1	0	T
Assistant Administration Officer	1	1	1	A
Researcher C	1	1	1	R
Researcher C	1	1	1	R
Researcher C	1	1	1	R
Assistant Researcher B' at the Resilient Society Department	1	1	1	R
EO Business Development Officer	1	1	0	A
Full Stack Software Developer	1	0	0	T
Post Doctoral Researcher	1	1	1	R
Assistant Researcher A' or B' at the Big Earth Data Analytics Department	4	1 to be decided	1 to be decided	R
Assistant Researcher A' at the Environment and Climate Department	1	1	1	R

EO Business Development Manager	1	0	0	A
Educational Development Support Officer	3	1	1	A
Post-Doctoral Research Fellow at the Resilient Society and/or Big Earth Data Analytics	1	1	1	R
Front End Software Developer	1	0	0	T
Back End Software Developer	1	1	0	T
Post-Doctoral Research Fellow at the Resilient Society Department	1	1	0	R
Assistant Researcher A' at the Resilient Society Department	1	1	0	R
Post-Doctoral Research Fellow at the Environment and Climate Department	1	1	1	R
Assistant Researcher A' at the Environment and Climate Department	1	1	1	R
Back End Software Developer	1	0	0	T
Front End Software Developer	1	0	0	T
Researcher A' or Researcher B' at the Resilient Society Department	1	1	1	R
Post-Doctoral Research Fellow at the Resilient Society Department	1	1	1	R
Assistant Researcher A' at the Resilient Society Department	1	1	1	R

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Information Technology System Administrator	1	1	1	T
Senior Researcher A'	1	1	1	M
Secretary, Administrative Assistant	1	0	0	A
Communication/Events Officer	1	0	0	A
Assistant Accounting Officer	1	1	1	A