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## EXCELSIOR Project

H2020-WIDESPREAD-2018-2020   Grant Agreement No 857510	
Project full title:	<b>ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment</b>
Project acronym:	<b>EXCELSIOR</b>
Work Package:	<b>WP9 Communication, Engagement and Networking</b>
Deliverable:	<b>D9.16 Report on Social Responsibility Activities</b>
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## EXECUTIVE SUMMARY

This deliverable provides an overview of the social responsibility activities that have been conducted through seminars, webinars, lectures and activities related to the 12 thematic research areas. The objective of the activities is to inform and engage with the wider public regarding the beneficial impact of the research conducted in the ECoE for the environment, the society and the economy. This is done through open lectures and activities on a range of topics including food security, sustainable agriculture and forestry, marine and maritime and inland water research, air quality monitoring, climate change, disaster risk reduction, cultural heritage, resource efficiency and raw materials, secure clean and efficient energy, Big Earth data analytics as well as geo-informatics. The social outreach component to inform the public regarding the usefulness of Earth observation data was stipulated in several of the Letters of Support and Letters of Commitment for the EXCELSIOR project.



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## Abbreviations and Acronyms

<b>CoE</b>	Centre of Excellence
<b>CUT</b>	Cyprus University of Technology
<b>DEC- DMRID</b>	Department of Electronic Communications- Deputy Ministry of Research, Innovation and Digital Policy
<b>ECoE</b>	ERATOSTHENES Centre of Excellence
<b>EMMENA</b>	Eastern Mediterranean, Middle East and North Africa
<b>EO</b>	Earth Observation
<b>RS</b>	Remote Sensing
<b>SDGs</b>	Sustainable Development Goals



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## 1. INTRODUCTION

One of the primary goals of the ERATOSTHENES Centre of Excellence (ECoE) is to provide social responsibility through awareness, interaction, involvement and engagement. Social responsibility is considered a moral obligation on the part of an organization to take decisions or actions that are in favour and useful to society. A socially responsible organisation focuses on how they create value for society as expressed through a range of activities focused on the community good and to serve the public interest. Indeed, for many non-profit organizations, providing quality services and acting in a responsible manner are considered as part of social responsibility. As a Centre of Excellence, one of the central issues is how to communicate social responsibility efforts to stakeholders.

Social responsibility at Eratosthenes Centre of Excellence is done through active engagement with the public, thereby creating benefits for the ECoE and wider society. As part of the ECoE's commitment to social responsibility, we seek to improve the quality of life for citizens by connecting, sharing and involving the public through seminars, workshops, and interactive activities. As well, in the academic and educational sector, ECoE aims to inform students about EO, with the goal to increase interest in EO and remote sensing sciences through lectures, research activities and events.

Social responsibility can encompass a wide variety of topics and issues including diversity and inclusion, transparency in reporting, environmentally friendly practices, employee wellness, conflicts of interest, as well as ethical issues.

This report provides a detailed overview of the activities of ECoE related to social responsibility.

- Chapter 2 provides a description of the activities organized by ECoE in the framework of EXCELSIOR Project.
- Chapter 3 gives an overview of the seminars, webinars and lectures our team members participated with presentations.
- Chapter 4 summarizes the activities we co-organized, supported or hosted as ECoE and/or CUT.
- Chapter 5 provides information on our engagement with schools and the general public.
- Chapter 6 describes how we supported stakeholders and local communities and
- Chapter 7 lists planned activities in the framework of ECoE social responsibility.



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## 2. ACTIVITIES ORGANIZED BY ECOE IN THE FRAMEWORK OF EXCELSIOR PROJECT

ERATOSTHENES CoE organised several activities aiming to actively involve various target audience such as:

**General public:** One of the ECoE's major priorities through the EXCELSIOR project is to raise awareness and bring the public closer to various applications of earth observation. Applications aim at everyone who wants to see our planet from a different perspective, offering the possibility for monitoring the environment and climate change. Satellite derived data can support our everyday life in emergencies such as fires, floods, landslides, earthquakes, and other natural disasters. Moreover, there is a possibility to retrieve backdated information using archived data for detecting Land Use Land Cover Changes over the last decades (natural or artificial).

The data provided by satellites can facilitate public and private operations for decision-making to benefit society, such as formulating effective environmental policies to mitigate the effects of climate change, maintain and stimulate socio-economic stability and growth. The abovementioned tasks aim at bridging the gap between the wider public and public services with the satellite data provided freely by the Copernicus services. These data are also vital for the European and global society since they are aligned with a big percentage of the Sustainable Development Goals (SDGs), and their contribution has a substantial impact on addressing several SDGs targets. The UN has established a global list of indicators which will serve as a common benchmark for regular reporting of overall progress. Copernicus, the European Union's flagship Earth Observation (EO) and Monitoring programme, is a powerful instrument to assist in observing these indicators and support the implementation of the SDGs.

The latest compilation of EO contributions to the SDG Targets and Indicators shows that up to 34 indicators can be either directly (17 indicators) or indirectly (17 indicators) can be informed with EO data across 29 SDG targets and 11 SDG goals as indicated in Figure 1.

In summary, the SDGs which Copernicus EO satellite data efficiently contribute are:

- SDG 1 – No Poverty
- SDG 2 – Zero Hunger
- SDG 3 – Good Health and Well-Being
- SDG 4 – Quality Education
- SDG 6 – Clean Water and Sanitation
- SDG 7 – Affordable and Clean Energy
- SDG 9 – Industry, Innovation and Infrastructure
- SDG 11 – Sustainable Cities and Communities
- SDG 13 – Climate Action
- SDG 14 – Life Below Water
- SDG 15 – Life on Land



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## Earth Observation for SDG Monitoring

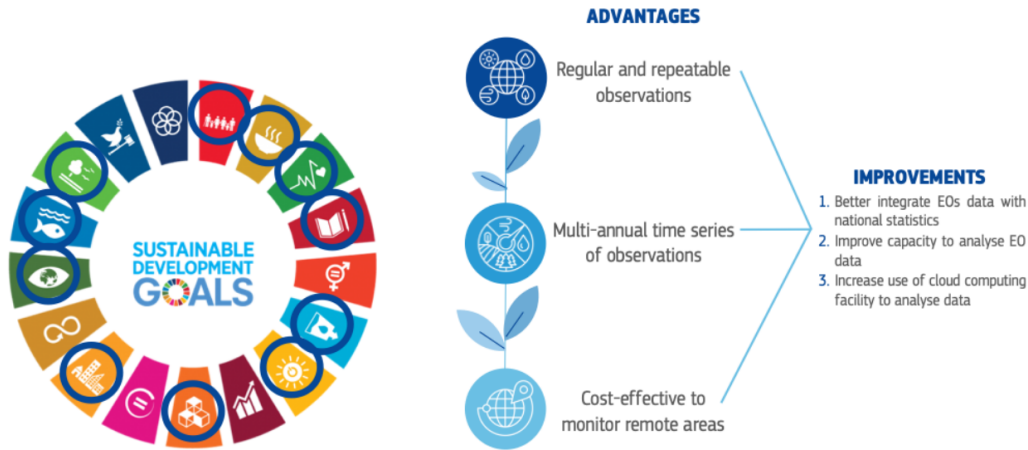


Figure 1: Earth observation contribution to the SDGs

**Students:** Since 2007, the ERATOSTHENES Research Centre at the Cyprus University of Technology supports schools participating in national and European research competitions. One of the aims of the ‘EXCELSIOR’ project and ERATOSTHENES Centre of Excellence (ECoE) is to support students during their first contact with research, science and technology and encourage them to become young researchers. This can be achieved through presentations, seminars, workshops, science cafes and researcher's night. Students participate in research competitions by forming working groups and are guided by their teachers. In addition, researchers from the ‘EXCELSIOR’ & ERATOSTHENES Centre of Excellence are also involved to guide the group through meetings and communication and assist them during all stages of their research work. These include the study of relative publications (literature review), set the question/hypothesis, design the experimental methodology, observation and analysis of the results and finally, conclusions and dissemination of the outcomes of the study.

In the framework of Task 9.6 DEC-DMRID, with the support of the CUT and the Strategic Partners, has developed a series of Seminars and Webinars, designed lectures and planned activities. The aforementioned activities are related to the ECoE thematic areas and aimed to inform and engage with the wider public, regarding the beneficial impact of the research conducted in the ECoE for the environment, the society and the economy.

**Lectures:** Through invited lectures (physical and online), speakers had the opportunity to present and disseminate their work on a range of topics relevant to EO and RS. The organised lectures are summarized below:

- Dr Mark PARRINGTON on “The role of Earth Observation data in Copernicus Atmosphere Monitoring Service for atmospheric composition and air quality” (15/3/2022)
- Dr Chiara LAPUCCI on “Use of satellite and model data to identify the onset of *Ostreopsis ovata* harmful algal bloom in the Ligurian Sea” (15/12/2021)
- In the framework of GIS Day, a scientific lecture on “Trends, challenges and perspectives in GIS” was given by Prof. Marinos Kavouras from National Technical University of Athens on



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November 17 2021. On November 19, 2021, a presentation on the “Features and applications of ArcGIS Geographic Information Systems” was held by Ioannis Kontos and Anastasia Mavridaki from Marathon Data Systems.

- Ms Els Knaeps (VITO) on "Developing tools for marine plastics monitoring" (2/11/2021).
- Ms Mary GASCO (SpaceCrop Technologies) on "Spatial Decision Support Tool for Monitoring and Forecasting Soil Water Requirements" (26/10/2021).
- Mr Stelios BOLLANOS (Planetek Hellas) on “EO based information for the public and the private sector / Today and the future” (12/10/2021).
- Dr. Philippa MASON (Imperial College London) on “Developing quantitative InSAR tools for environmental monitoring” (23/06/2021).
- Prof. Lena HALOUNOVA (Czech Technical University in Prague (Faculty of Civil Engineering) on “Remote Sensing, Land Use/Land Cover Data and Example of Their Harmonisation” (31/3/2021).
- Prof. Evangelos BALTAS (School of Civil Engineering of the National Technical University of Athens) on “Applications in Flood Risk Assessment - Rainfall-runoff estimation and forecasting using novel technologies in the Mediterranean Region” (26/2/2021).
- Dr. Kleanthis NICOLAIDES (Cyprus Meteorological Service, Cyprus) “The science of Meteorology and Remote Sensing Applications” (10/12/2020).
- Dr. Skevi PERDIKOU (Geofem Ltd, Cyprus) on “Landslide susceptibility mapping using satellite radar interferometry” (3/12/2020).
- Dr. Nektarios CHRYSOULAKIS (FORTH, Greece) on “Cities and Climate Change” (16/11/2020).
- Prof. Rosa LASAPONARA (CNR IMAA, Italy) on “Remote sensing for natural and cultural heritage: Data, Science and operational applications” (9/7/2020).
- Dr. Ulla Wandinger on “The European Research Infrastructure ACTRIS and the ERATOSTHENES Centre of Excellence: Exploring the Importance of Atmospheric Sensing for the EMMENA Region” (9/3/2020) – Event with physical participation.

Until now we organised 16 invited talks. For effective dissemination we prepared flyers for each invited talk that were used to disseminate the invited talks through our website and social media platforms (see Figure 2). In total, during the online invited talks we reached 1378 registrations from 62 different countries. The highest registration rate was from Cyprus with 708 registrations (51%) and Greece with 232 registrations (17%). There were also registrations from different parts of the world as shown in Figure 3. Countries from which the participants were two or less, are included in the category 'Other'. The majority of registrants was from the scientific community (70%) as shown in the Figure 4.



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Figure 2: Invitations for invited talks



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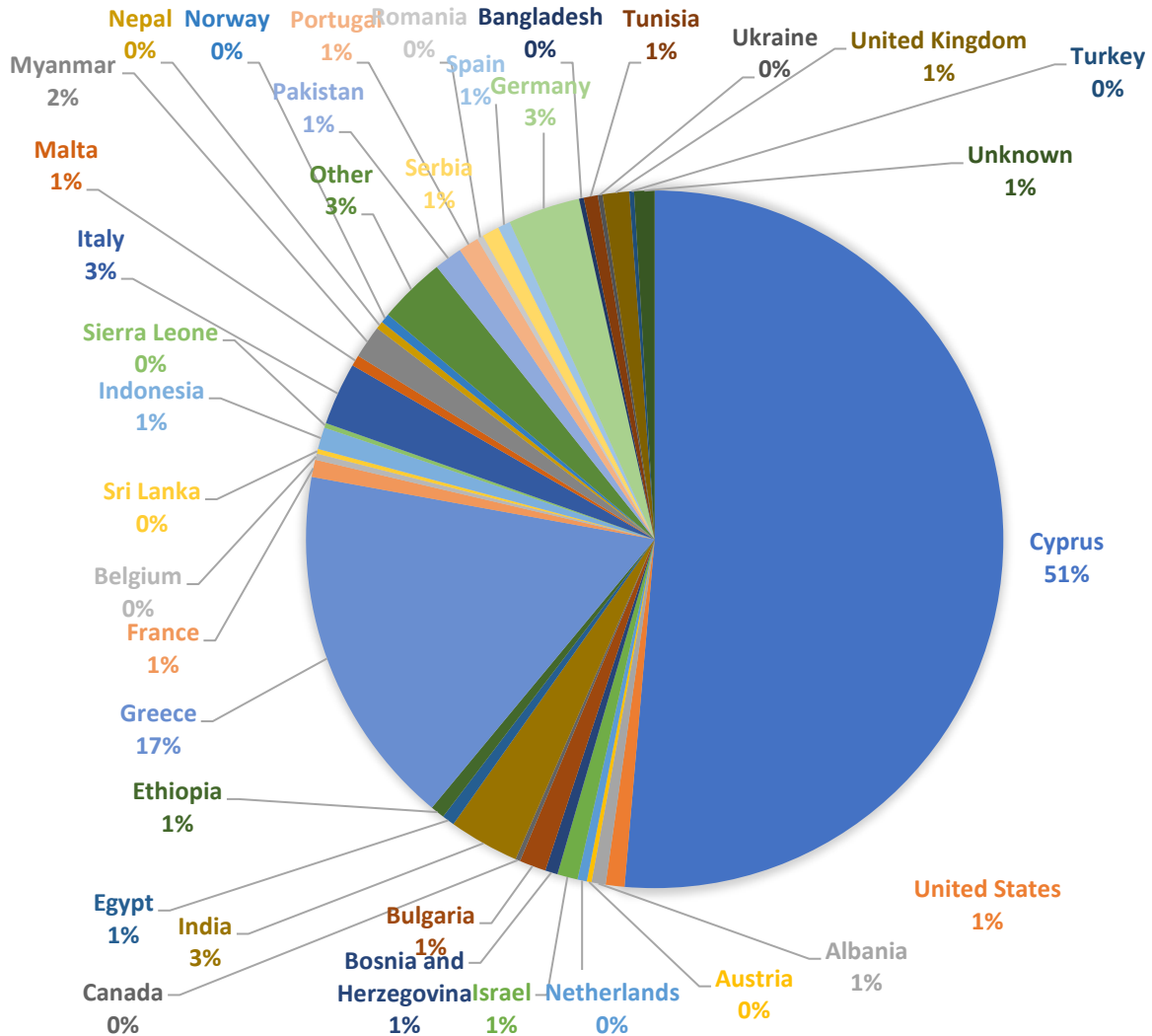


Figure 3: Total registrations per country for the 15 invited talks



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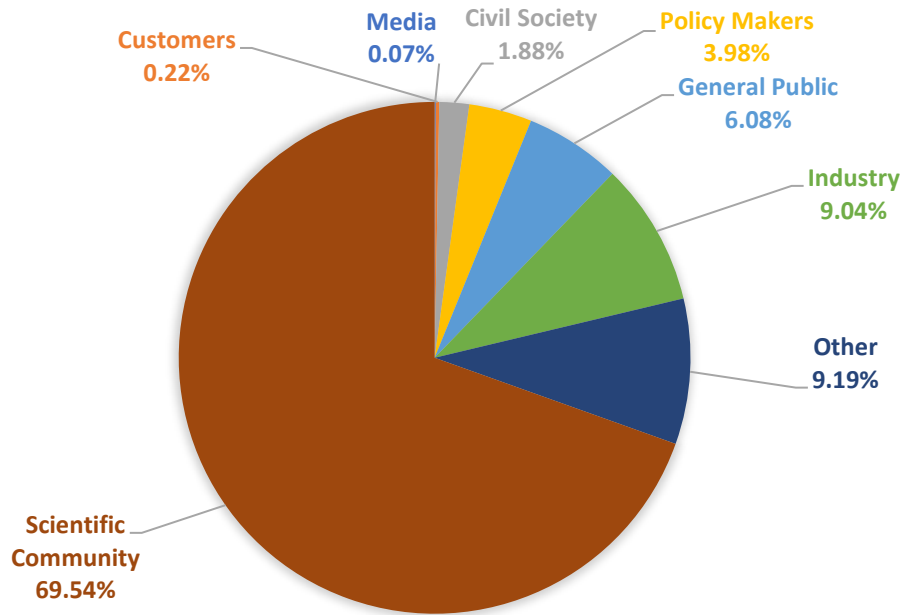


Figure 4: Total registrations per organization type for the 15 invited talks

**International Workshops:** Furthermore, three international workshops were organized on the following topics:

1. 1<sup>st</sup> virtual EXCELSIOR International Workshop: “Space Operations and Environmental Monitoring in Cyprus” - 15/7/2020 (Figure 5).



Figure 5: Invitation of the 1<sup>st</sup> virtual EXCELSIOR International Workshop



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Based on the statistics derived from ZOOM attendees, 210 people from 35 countries attended the workshop Figure 6.

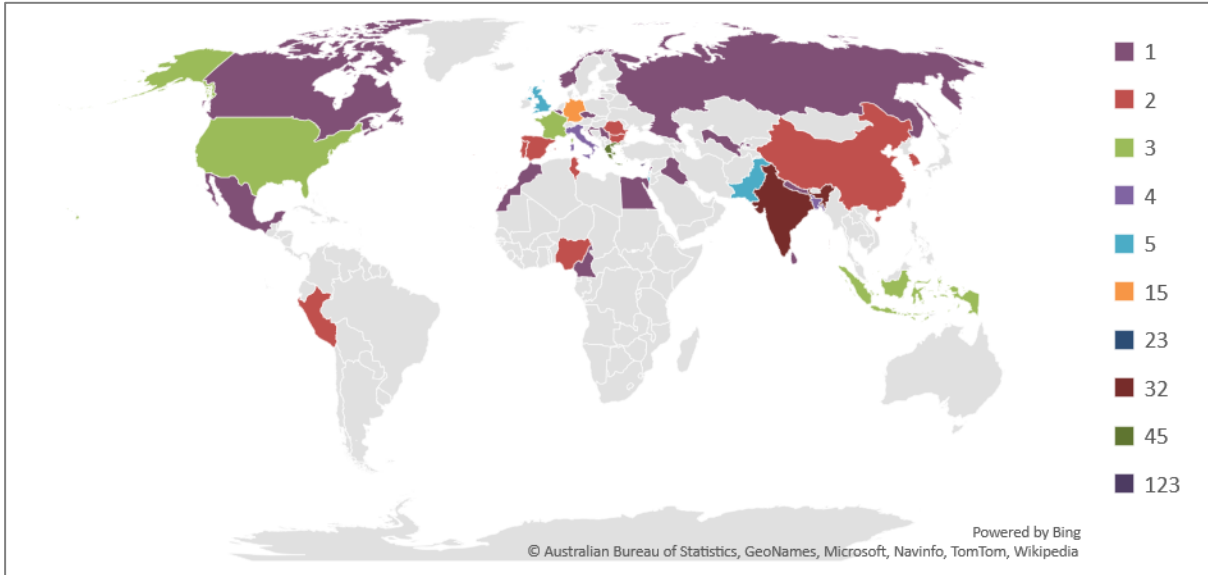


Figure 6: Registrations per country for the 1st Virtual International Workshop

2. 2<sup>nd</sup> virtual EXCELSIOR International Workshop: “Atmospheric & Climate Research in the EMMENA region” – 8/6/2021 (Figure 7)



Figure 7: Invitation of the 2nd virtual EXCELSIOR International Workshop

The final participants’ list included 148 registrations from 29 countries (Figure 8).



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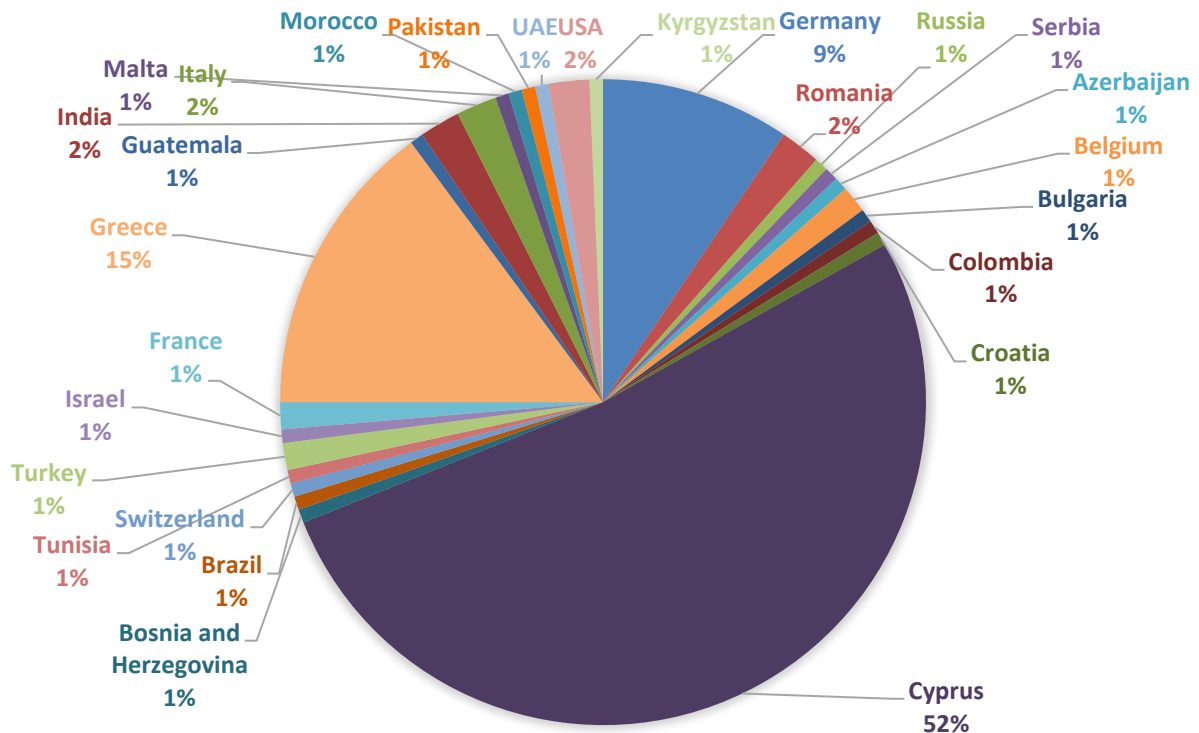


Figure 8: Registrations per country for the 2nd Virtual International Workshop

3. 3<sup>rd</sup> virtual EXCELSIOR International Workshop: “Entrepreneurship and Innovation in Earth Observation” – 21/6/2022 (Figure 9).



Figure 9: Invitation of the 3rd virtual EXCELSIOR International Workshop

In total, there were 119 registrations from 24 different countries (Figure 10).



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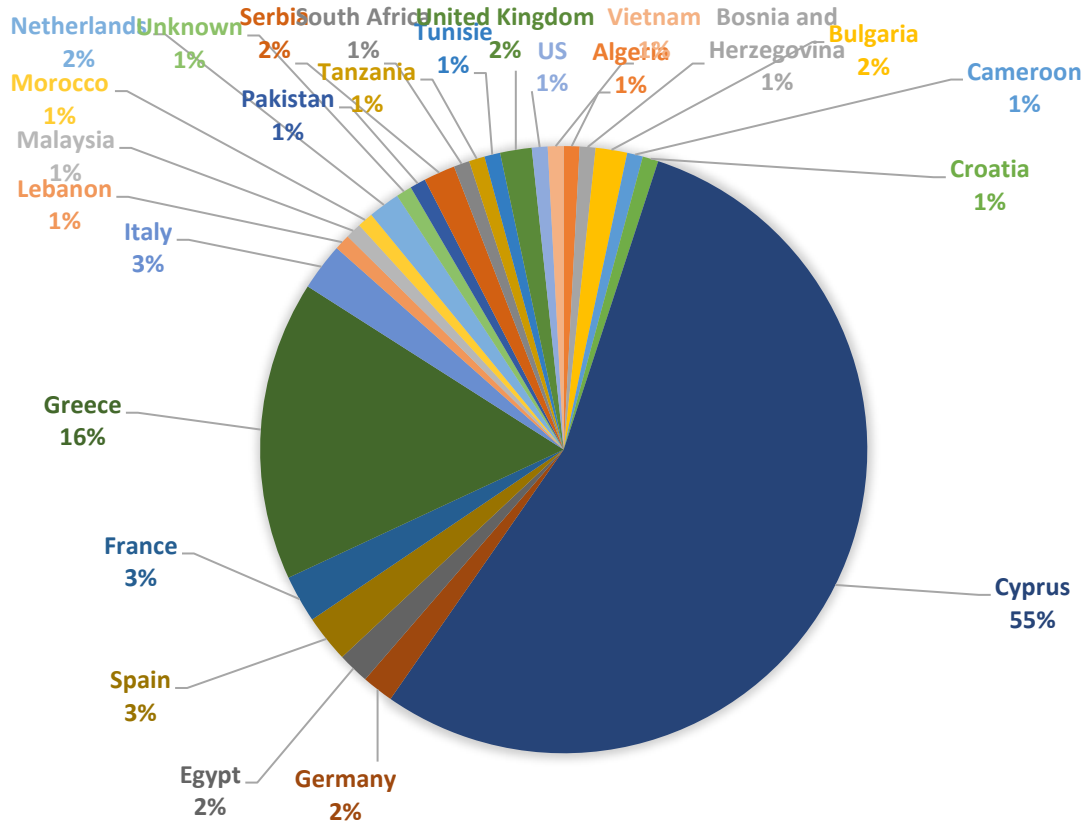


Figure 10: Registrations per country for the 3<sup>rd</sup> Virtual International Workshop

**Webinars:** In addition, a webinar was organized on the topic of Water Resources Management. The webinar invitation is shown in Figure 11. The final list included 88 registrations from 16 countries, whereby the highest rate of participation was from Cyprus (46%) and Greece (37%) (Figure 12) . As shown in Figure 11, most of the registered participants belongs to the scientific community.



Figure 11: Invitation of the EXCELSIOR Webinar



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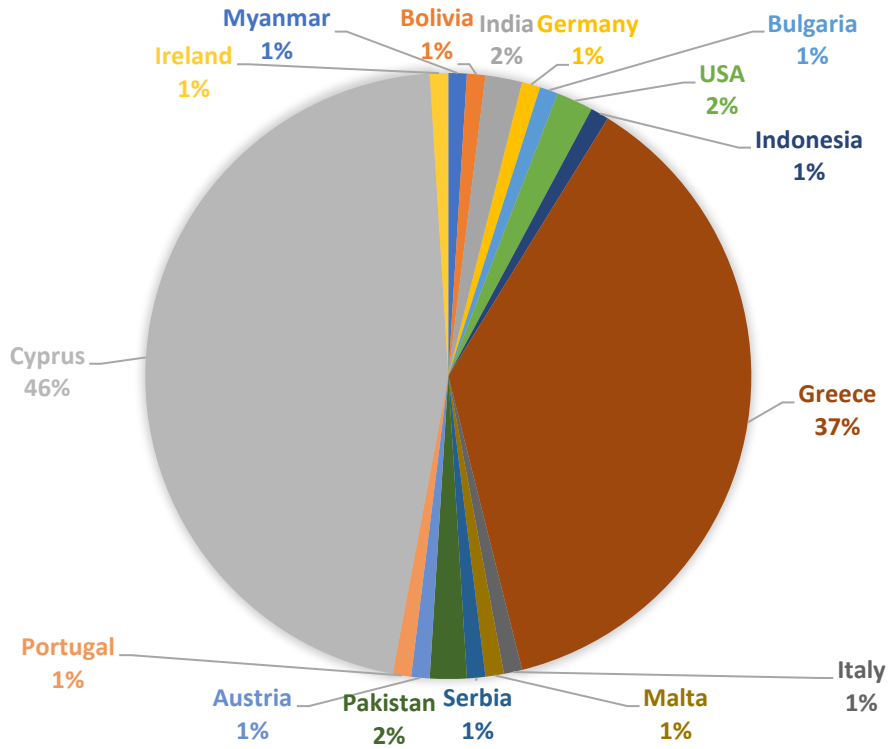


Figure 12: Registration per Country for Webinar

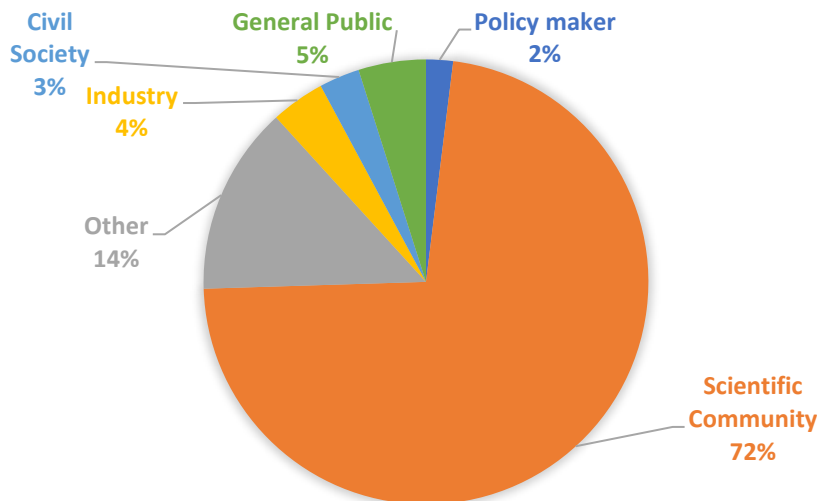


Figure 13: Registrations per organization type for Webinar



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### 3. INVITED EVENTS

Table 1 presents all the events (such as seminars, workshops, etc.) at which we were invited to present and promote EXCELSIOR.

Table 1: List of events at which we were invited to present and promote EXCELSIOR

Activity	Date	Description	Photo	Type
Presentation of the EXCELSIOR Project to MSc students in Limassol, Cyprus	15.10.2019	Dr. Kyriacos Themistocleous gave a presentation of the EXCELSIOR Project to M.Sc. students in Geoinformatics & Geospatial Technologies of the Department of Civil Engineering and Geomatics (CUT) in order to promote and familiarize them with the main idea and purpose of the project.		Lecture
Participation in the seminar “Possibilities and challenges of Copernicus products and services in marine industry, research and management”	23.10.2019	Dr. Marios Tzouvaras participated in a seminar titled “Possibilities and challenges of Copernicus products and services in marine industry, research and management” where he presented the EXCELSIOR Project to the local and regional stakeholders. The seminar/workshop took place at the Institute of Marine Research in Bergen, Norway.		Seminar
Presentation of the EXCELSIOR Project at the Alexander College	18.12.2019	Prof. Diofantos Hadjimitsis, Vice Rector for Academic Affairs of the Cyprus University of Technology and Coordinator of the EXCELSIOR H2020 Teaming Project, presented an overview of the EXCELSIOR Project to the students and staff		Lecture






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Activity	Date	Description	Photo	Type
		of the Alexander College in Pafos.		
Presentation to the undergraduate students (3 <sup>rd</sup> year students) of the Department of Civil Engineering & Geomatics of the CUT	30.01.2020	Prof. Diofantos Hadjimitsis gave a presentation of the EXCELSIOR Project to the undergraduate students (3 <sup>rd</sup> year students) of the Department of Civil Engineering & Geomatics of the Cyprus University of Technology. His presentation aimed to inform the undergraduate students for the upcoming job opportunities capitalizing the benefits of the establishment of the new Centre of Excellence in Limassol.		Lecture
Webinar - Copernicus Academy & Copernicus Relay	20.02.2020	Dr Themistocleous presented the EXCELSIOR project to the Monthly Copernicus Academy & Copernicus Relay. The presentation included current and future activities of the EXCELSIOR program, with the focus on how EXCELSIOR and Copernicus can work together throughout the program.		Webinar
Invited talk at the workshop on Computational approaches to archaeological site detection and monitoring	20.02.2020	Dr. Athos Agapiou, team member the EXCELSIOR Project in the cultural heritage research cluster was one of the invited speakers in a Workshop that was held at the McDonald Institute for Archaeological Research, University of Cambridge.		Invited Talk at workshop



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Activity	Date	Description	Photo	Type
Invited talk by Prof. Hadjimitsis at the ACTRIS IMP Kick-off meeting in Larnaca, Cyprus	03.03.2020	From 2 <sup>nd</sup> to the 6 <sup>th</sup> of March 2020, the ACTRIS community gathered at the Sun Hall Hotel in Larnaca, Cyprus, to kick-off the ACTRIS Implementation Project (IMP). This week-long meeting was attended by over 90 participants, including remote attendees, and it presented the community with the goals and actions planned for the next 4 years to take ACTRIS to a new level of maturity and reach the operational phase.		Invited talk at kick-off meeting
EUROMED 2020 Conference: Invited Talk	04.10.2020	The EXCELSIOR Coordinator Prof. Diofantos Hadjimitsis was a keynote speaker at the EUROMED 2020 Conference with a presentation about “EXCELSIOR H2020 Widespread Teaming phase 2 project: Earth Observation & Geoinformatics Research and Innovation agenda for Cultural Heritage”.		Invited talk
Presentation at the General Assembly of the Paphos Civil Engineers Association: Invited Talk	07.12.2020	EXCELSIOR H2020 Teaming Project Coordinator Prof. Diofantos Hadjimitsis was an invited speaker at the General assembly of the Paphos Civil Engineers Association Spolmik. The Association is one of the 95 organisations that supported ERATOSTHENES Centre of Excellence and EXCELSIOR H2020 Teaming project.		Invited Talk

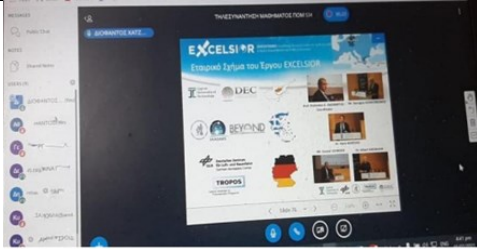




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Activity	Date	Description	Photo	Type
Presentation of the EXCELSIOR H2020 Teaming project to the postgraduate students	15.02.2021	On the 15 <sup>th</sup> of February 2021, Professor Diofantos Hadjimitsis presented the EXCELSIOR H2020 Teaming project & different research topics under the EXCELSIOR H2020 project to the postgraduate students of the MSc in Civil Engineering and Sustainable Design of the Department of Civil Engineering and Geomatics of the Cyprus University of Technology.		Lecture
Invited Talk at the NASA-Mediterranean Regional Information Network Annual Meeting	25.02.2021	During the Mediterranean Regional Information Network of NASA - National Aeronautics and Space Administration annual 2021 meeting, our Coordinator and the European Leader of the MEDRIN network (NASA) Prof Diofantos Hadjimitsis presented the EXCELSIOR H2020 Teaming project by highlighting the needs, opportunities and challenges for the Space Monitoring of the Environment in the Mediterranean region.		Invited talk
Presentations at the First School on Smart Data Processing and Systems of Deep Insight	12-16.04.2021	Four members of our team gave presentations at the “First School on Smart Data Processing and Systems of Deep Insight” organized by DESTINI H2020 Twinning Project, which took place from the 12th until the 16th of April.		Webinar



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Activity	Date	Description	Photo	Type
Presentation at the Workshop on solar energy applications, organised by inDust COST Action co-ordination	11.05.2021	Our team member Ilias Fountoulakis gave a presentation entitled “EXCELSIOR: Solar energy estimation in Cyprus” at the Workshop on solar energy applications, organised by inDust COST Action co-ordination. The topic of the workshop was “DustClim: Development of dust climate services for solar energy”.		Webinar
Presentation at the Earth Observation Network seminar of the Imperial College London	24.06.2021	Prof. Diofantos Hadjimitsis, Coordinator of the EXCELSIOR H2020 Teaming Project, was invited as a speaker at the Earth Observation Network seminar at the Imperial College London.		Seminar
Participation at the Joint NASA MedRIN and SCERIN Virtual Capacity Building Workshop	17-15.06.2021	The Joint Mediterranean Regional Information Network (MedRIN) and South Central and Eastern European Regional Information Network (SCERIN) Capacity Building Workshop (Joint M&S CBW) took place virtually on the 15th to 17th of June 2021/ NASA GOFC-GOLD and START.		Webinar
Presentation of our joint work at the 1st DESIS User Workshop	28.09-01.10.2021	At the 1st DESIS User Workshop, organized by DLR, a joint work on Cultural Heritage by members of the EXCELSIOR H2020 Teaming Project was presented. The work was a collaboration between Dr. Daniele Cerra (DLR), Dr. Athos Agapiou and		Webinar



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Activity	Date	Description	Photo	Type
		Mr. Evagoras Evagorou (CUT).		
Participation at the seminar: “Space technologies: Applications in the public sector”	07.12.2021	Our team member, Dr. Kyriacos Themistocleous was invited for a presentation at the seminar with title: “Space technologies: Applications in the public sector”.		Seminar
Participation at the Webinar: “Copernicus for the preservation of cultural heritage”	22.9.2022	Our team member, Dr. Kyriacos Themistocleous was invited for a presentation at the webinar with title: “Copernicus for the preservation of cultural heritage”.		Webinar



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## 4. CO-ORGANIZED, SUPPORTED OR HOSTED BY THE ECOE AND/OR CUT

### 4.1 Space Generation Workshop

The European Space Generation Workshop (E-SGW) supported by the Cyprus Deputy Ministry of Research, Innovation, and Digital Policy. The workshop hosted by the Cyprus University of Technology and the ERATOSTHENES Centre of Excellence on 9-10 of April 2022 and is took place at Limassol, Cyprus. The European Space Generation Workshop (E-SGW) is an international event that aims to bring together students and young professionals to think and collectively create Europe’s future in space.



Figure 14: European Space Generation Workshop 2022 Promotional Flyer

### 4.2 Co-organisation of the ICOMOS-CYPRUS seminar

As part of the International Day for Monuments and Sites, ICOMOS Cyprus organized a webinar on 24 April 2020 on “Digital Cultural Heritage: Technologies and Challenges”. The seminar was organized by ICOMOS Cyprus and co-organized by the Technical Chamber of Cyprus (ETEK), the UNESCO’s Chair on Digital Cultural Heritage, the Department of Antiquities, the Cyprus University of Technology, the EXCELSIOR.eu H2020 Teaming funded project, the Cyprus Remote Sensing Society, the European Archeology, the European Common Culture and the OPHERA.



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Figure 15: ICOMOS Cyprus Seminar

#### 4.3 Co-organisation of the 1<sup>st</sup> CASSINI Space Data Hackathon

Hundreds of participants came together from June 18th - 20th, 2021 to hack the future of our green spaces with European space technologies. EUSPA supported the hackathon with various experts and market development professionals who helped participants elaborate and fine-tune their solutions. The 1<sup>st</sup> CASSINI Hackathon took place in 10 European locations and tasked participants with leveraging geospatial information from Copernicus Earth observation data and its services, together with positioning technologies from Galileo and EGNOS, to digitise Europe’s green spaces. At the end of the weekend, each location selected their top team to move forward to the European demo day and awards ceremony on the 24th of June. Each team pitched their solution to a jury of experts who engaged the winners in Q&A sessions before evaluating each idea. Prof. Diofantos Hadjimitsis, Coordinator of the EXCELSIOR H2020 Teaming Project was an appointed judge, and members of our team served as mentors for the participants from Cyprus. CASSINI Hackathon Cyprus was organized by CyRIC (Cyprus Research and Innovation Centre certified by European Business Network), in collaboration with the Gravity Ventures Incubator, the ERATOSTHENES Centre of Excellence and the EXCELSIOR H2020 Teaming Project.



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Figure 16: Cassini Hackathon 2021 Promotional Flyer



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## 5. ENGAGEMENT WITH SCHOOLS AND THE GENERAL PUBLIC

In this section some of the other activities that we participated such as school visits, summer school CUT, stakeholder events, science café, European Researchers' Night are described below:

### 5.1 European Researcher's Night

ECoE aims to promote remote sensing science at every scale to the general public, and everyone interested. ECoE tries to achieve this principle by actively participating in the European Researcher's Night.

The European Researcher's Night 2020 was originally scheduled for September 25, 2020. Due to the emergency measures taken as a result of the Covid-19 pandemic, the European Commission decided its virtual organisation on the 27<sup>th</sup> of November 2020. The ECoE team participated with eight booths and one of them was awarded the audience's favourite booth prize at the European Researcher's Night 2020 (Booth Nr. 47 – "Forest monitoring using satellite imagery for understanding the effects of climate change").

As the pandemic situation continued in 2021, the European Researcher's Night 2021 was also held virtually. ECoE targeted to raise awareness and familiarize the public with the world of earth observation, science and research, let people see the faces behind research, as well as highlighting the important role that researchers play in society.

### 5.2 School Visits

In the framework of school visits the main aim is to inform students from several educational levels (primary and secondary schools) about remote sensing techniques through presentations and educational workshops. Also, these visits aim to support students during their first contact with research, science, and technology and encourage them to become young researchers. Furthermore, the presentations and workshops provide information about COPERNICUS services, satellite systems, and earth observation applications in order to contribute to the effort in the development of future highly qualified professionals in the field of Earth Observation.

EXCELSIOR project was presented at various educational activities in Cyprus, including undergraduate and MSc lectures at CUT (physical and online), the European Researcher's Night (held online on 27/11/2020), school visits (physical and online). CUT also presented EXCELSIOR activities at the General Assembly of the Civil Engineers Association in Cyprus. Focused on school visits, our team had the



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opportunity to visit a large number of schools (primary and Secondary) in Cyprus (



Figure 17 as shown in the following Table 2).



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Table 2: List of school visits (Primary and Secondary schools)

A/A	Schools
1	Perivolia Primary School, Larnaca
2	Primary School of Pafos I' - "Evagoras Pallikaridis"
3	Primary School of Erimi - Panikos Hatzihampi, Limassol
4	Aradippou 2nd Primary School, Larnaca
5	"Narek" Primary School, Nicosia
6	Polis Chrysochous Gymnasium, Paphos
7	Gymnasium of Apostolou Pavlou, Pafos
8	Constantinople Gymnasium, Nicosia
9	Egkomi Gymnasium - Kyriakos Neokleous, Nicosia
10	Dianellos and Theodotos Gymnasium, Nicosia
11	Second Regional Gymnasium of Nicosia - Malouda
12	Panagia Theoskepasti Gymnasium, Paphos
13	Aglatzia Gymnasium, Nicosia
14	Pallouriotissa Gymnasium, Nicosia
15	Latsia Gymnasium, Nicosia
16	Polemida Gymnasium, Limassol
17	Evryviadeio Gymnasium, Larnaca
18	Esperino Gymnasium/Lyceum of Pafos
19	American Academy School
20	Lyceum and technical school of the Polis Chrysochous
21	Agios Neophytos High School, Paphos
22	Lyceum of Agios Georgios, Larnaca
23	Vergina Lycium, Larnaca



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Figure 17: EXCELSIOR project presentation in the framework of school visits

In addition, in the context of actions in schools, our team provides support to students to participate in school competitions such as:

- Stockholm Junior Water Prize
- Cyprus Contest for Young Scientists
- Competitions MERA TEKE

In the framework of this action, our team supported the students of the Lyceum Lyceum Apostolon Petrou & Pavlou in their participation in the Stockholm Junior Water Prize 2019 Figure 18 which has been chosen as the finalist. The title of the project was: "Investigating detection of floating plastic litter from Space. The idea was to create a “plastic target” in order to investigate if plastic floating in the sea can be detected, depending on its Spectral Signature using a satellite or drone. Firstly, in-situ laboratory measurements on plastic were taken, under the guidance of ECoE researchers, to create a representative database and discovered its special characteristics which were used as guidelines to identify it. After creating and taking measurements on the target the data were analyzed and created a prototype code. Finally, by testing the prototype code off a plastic bottle was confirmed that accumulated plastic rubbish can be successfully detected using a satellite or drone. Thus, a new effective way of tracking plastic rubbish was introduced which contributed to the protection of the marine environment.



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Figure 18: Participation in the Stockholm Junior Water Prize 2019

This study was further examined and resulted in publication in the peer-reviewed journal of Remote Sensing<sup>1</sup>. Indeed, the research was so innovative that Dr. Themistocleous received the ETEK Engineering Award in 2020 for his research contribution for monitoring of marine pollution from plastic waste. The impact of this study was the recognition by experts of the importance of the research for improving the quality of life for the public by identifying marine pollutants, such as plastic.

Furthermore, our researchers assisted the students from Apostolos Pavlos Gymnasium in Paphos, to participate in the 7<sup>th</sup> Pan-Cypriot Geography Competition of Cyprus. The topic of their study was "Geographic study of the Akama region (Natura 2000 Network) using Copernicus/Sentinel (ESA) and Landsat (NASA) satellite data". The students have received the second 2nd Pancyriot prize.

### 5.3 SpaceUpCyprus 2021 LIVE

SpaceUpCyprus 2021 LIVE took place on the 26<sup>th</sup> of March 2020, in the framework of the First Pancyrian Space Education Week, which was organized by the Cyprus Space Foundation, the

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<sup>1</sup> Themistocleous, K., Papoutsas, C., Michaelides, S., & Hadjimitsis, D. (2020). Investigating Detection of Floating Plastic Litter from Space Using Sentinel-2 Imagery. Remote Sensing. 12. 2648. 10.3390/rs12162648.



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EXCELSIOR H2020 Teaming Project and the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology.

SpaceUpCyprus-LIVE is an online version of the global "space unconference" SpaceUp. The Space Balloon, designed by PASCAL English School Larnaca, was released into the atmosphere, carrying students' experiments into near space altitudes. The payload reached an altitude of 90,000 feet and withstood temperatures of - 50 degrees Celsius and high solar radiation for 6 hours. Some days after its launch, the Space Balloon returned to Cyprus, the findings were analysed, and students drew conclusions about the accuracy of their experimental predictions. "ASTRO 1" (see Figure 19) served as a mobile satellite station from which students could receive live video from micro-satellites they sent to the stratosphere.



Figure 19: "ASTRO 1"



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## 6. SUPPORTING STAKEHOLDERS AND LOCAL COMMUNITIES

ECoE is a well-respected institution within Cyprus and gives back to the community by providing services to stakeholders for the benefit of the local community. Among the several projects that involved the community and stakeholders, this chapter will present four actions that were performed by ECoE at no charge, which also resulted in scientific impact.

### 6.1 Akamas National Park

The Akamas National Park is protected by Natura 2000. Due to increased tourism, there has been significant impact regarding dust levels in the area. The deposits of dust on the surface of vegetation and on the leaves of plants results in a reduction of the light required for photosynthesis and an increase in the temperature of the leaves due to a change in the optical properties of its surface. ECoE, in collaboration with the Department of Forests, surveyed the Akamas area to measure the impact of the dust due to anthropogenic activities.



**Impact:** The Department of Forests recommended to the Cyprus Parliament to restrict activities that cause such dust impacts to sensitive areas of the National Park.

### 6.2 Choulou Fountain

The village of Choulou in the Paphos district is currently undergoing significant renovation and beautification works. The medieval fountain is listed as an ancient monument and was recently restored. In order to document the fountain for the restoration and preservation of cultural heritage, a photogrammetric study was conducted, which produced a detailed 3D model of the fountain. Indeed, the 3D model was designed so that both the interior and exterior of the fountain could be seen. The 3D model was presented to the Mayor of Choulou.



**Impact:** The fountain was restored with the involvement of the Department of Antiquities and the village of Choulou. The fountain is now accessible to the public.



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### 6.3 St. Nicholas of the Cats Monastery

The cultural heritage site of Monastery of St. Nicholas of the Cats was documented using photogrammetry and a depth camera mapping system to create photo-realistic results and to create a 3D model of the monastery. The Bishopric of Limassol requested the assistance of ECoE for the documentation of the site to restore the church. Due to the structural problems, extensive documentation was needed in order to proceed with any preservation and conservation of the church.



**Impact:** ECoE provided the necessary documentation to the Bishopric of Limassol and the Department of Antiquities. The results of the documentation were presented at the SPIE Remote Sensing 2022 conference in Berlin and published in the SPIE conference proceedings “The Use of Digital Twin Models to Document Cultural Heritage Monuments”.

### 6.4 GPR Archaeological Survey for the Municipality of Paphos (AXIA-AUB Mediterranean)

The Municipality of Paphos requested the services of ECoE to examine the area of AXIA, which has been designated for the location of the American University of Beirut Mediterranean campus. A geo-survey of the area was done, in order to proceed with the construction of the University. The geo-survey was able to identify structures under the ground, which were possibly archaeological findings. As well, the area that did not include any underground structures was available for all building activities.



**Impact:** A report was prepared and submitted to the Municipality of Paphos and the Cyprus Department of Antiquities in order to identify any possible archaeological underground remains for the protection of the cultural heritage in the area.



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## 7. PLANNED ACTIVITIES

Hereafter you can find some information related to some of the planned activities that the ECoE will organise and/or participated that are already scheduled and will be implemented in the next months:

### 7.1 European Researcher's Night 2022

The European Researcher's Night 2022 will be held with physical presence on 30 September 2022 at Eleftherias Square in Nicosia. The EXCELSIOR project will be disseminated through two booths: 1) CUT and 2) ECoE, with the participation of about 20 researchers at each booth. During the European Researchers' Night our researchers will organise interactive educational activities, to inform a broad audience of all ages about the actions and applications of the free access Copernicus satellite data.

### 7.2 Public Awareness Campaign

ECoE has a series of public awareness campaigns, through which researchers' (PhD students, postdoc researchers) research carried out at ECoE will be published in newspapers, social media platforms and promoted through TV and radio interviews. The conducted research will be published in the form of small articles, describing each research subject and its benefits and impacts for the society, in simple terms.

### 7.3 Invited talk by Prof Charalambos Charalambous

On 18<sup>th</sup> of October 2022, we have already scheduled an upcoming invited talk by Prof Charalambos Charalambous (Dean of School of Engineering, University of Cyprus). The title of his presentation will be announced at a later date.

### 7.4 Open panel discussion on gender equality in science and earth observation

In the framework of ERATOSTHENES CoE Social Responsibility and Gender Equality Plan, an open panel discussion will be organized on the 5<sup>th</sup> of October 2022. This discussion will be led by Prof. Maria Rentetzi (Head of the Chair of Science, Technology and Gender Studies at the FAU Erlangen-Nürnberg) and Ms Barbara Ryan (Executive Director of the World Geospatial Industry Council (WGIC)). Representatives of the decision-making body of ERATOSTHENES CoE will participate in the panel discussion, which will focus on identifying the barriers that hold women back from leadership positions, and on receiving expert advice from the two leaders of the discussion, on how to overcome these difficulties.



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## 8. CONCLUSIONS

This report provided an overview of the social responsibility activities conducted by the ECoE that provided benefits to both the public and the scientific community. As presented in the report, this is accomplished by awareness, interaction, involvement and engagement with the public, academia, research, education, industry and stakeholders. This has resulted in workshops, seminars, presentations and webinars that have been conducted by ECoE or where ECoE has been invited to present. As well, ECoE has provided services to stakeholders at no charge for the benefit of the local community. The social responsibility activities also had a scientific result and led to the development of further research, data, documentation, publications and dissemination. By supporting local stakeholders and local communities, the ECoE increases its presence as a Centre of Excellence in the region. The impact of these social responsibility activities have results on multiple levels, including the presence and the significance of the Centre of Excellence to the local and EMMENA region.