

## NEWSLETTER

Issue #3

October 2020 – March 2021

@excelsior2020eu



## FIND OUT IN THIS ISSUE

### HIGHLIGHTS

- 
- |  |       |
|--|-------|
| Tour around the ECoE Cyprus Atmospheric Remote Observatory | p. 2  |
| European Researcher's Night 2020                           | p. 5  |
| MedRIN Annual Meeting                                      | p. 8  |
| SpaceUpCyprus 2021 LIVE                                    | p. 9  |
| Dr Athos Agapiou hosted by ESA Web TV Two                  | p. 12 |
| ECoE becomes an associated partner in ACTRIS IMP           | p. 13 |

### More in this issue

- 
- 
- |   |       |
|---|-------|
| Latest news   | p. 14 |
| Invited talks   | p. 21 |
| Our research  | p. 22 |
| EXCELSIOR in media                                    | p. 24 |
| Our PhD students                                      | p. 27 |
| Internship at the Department of Environment & Climate | p. 33 |
| MoU Agreements of the ERATOSTHENES Coe                | p. 35 |
| Recent Selected Publications                          | p. 36 |
| Newly funded projects                                 | p. 38 |

## Highlights

### Tour around the ECoE Cyprus Atmospheric Remote Observatory (CARO)

On the 29<sup>th</sup> of October 2020, the ERATOSTHENES CoE Chairman of the Board of Director, Prof. Evangelos Akylas, the Research Coordinator, Prof. Phaedon Kyriakidis and the Infrastructure Coordinator, Ass. Prof. Christodoulos Danezis visited the field site of the ECoE Cyprus Atmospheric Remote Sensing Observatory (CARO) and had a tour at the PollyXT\_CYP container.

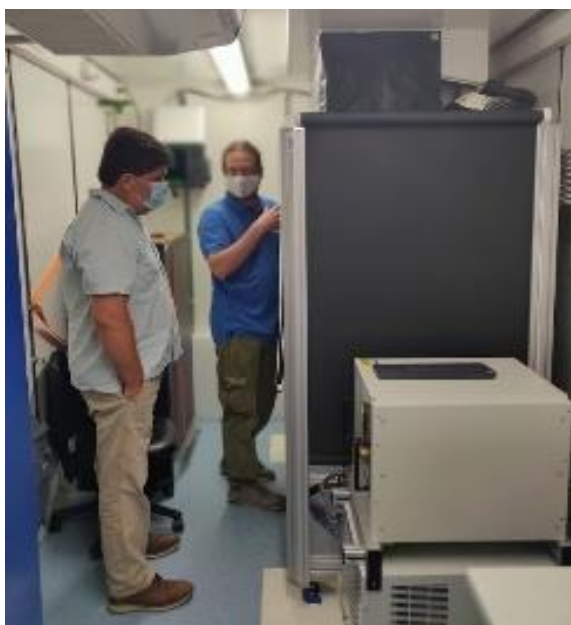
Prof. Diofantos Hadjimitsis and CUT-ECoE team welcomed the TROPOS team at the CUT premises. The visitors had the opportunity to get an insight to the research that is conducted at one of the Centre's of Excellence National Facilities and get first-hand informed about the latest ground-breaking research updates from the TROPOS lidar expert Dr. Ronny Engelman and CUT-ECoE Aerosol and lidar Expert Dr. Rodanthi-Elisavet Mamouri.

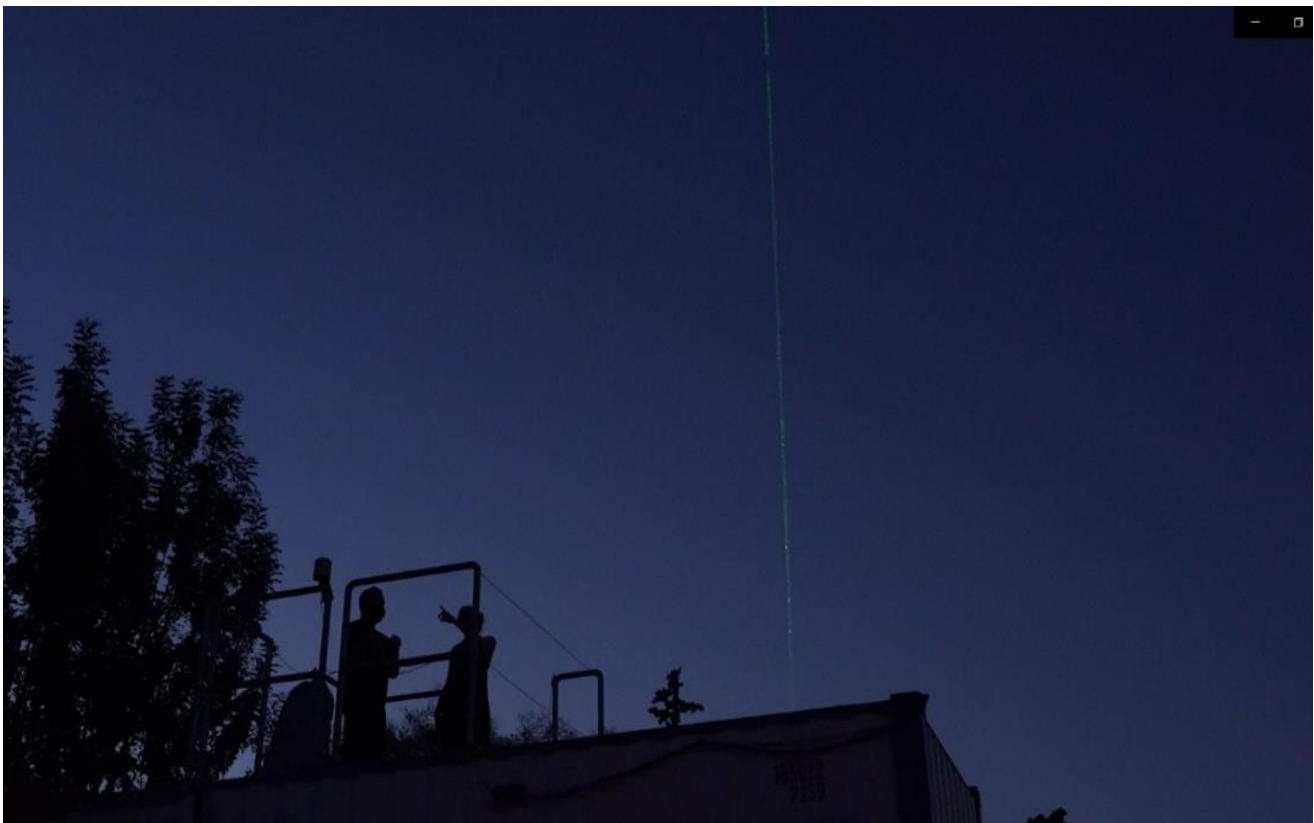


The Lab tour started with some presentations about the conducted research and was followed by a walk through the facilities, where Dr. R. Engelman introduced the various aspects of PollyXT lidar system and the role of the POLLYNET. Dr. Rodanthi-Elisavet Mamouri informed the visitors for the contribution of the

PollyXT as a National Facility of ACTRIS.

Additionally, she answered questions about the applied research and the importance of the undertaken work in getting us closer to the better understanding of the atmospheric processes and climate change.



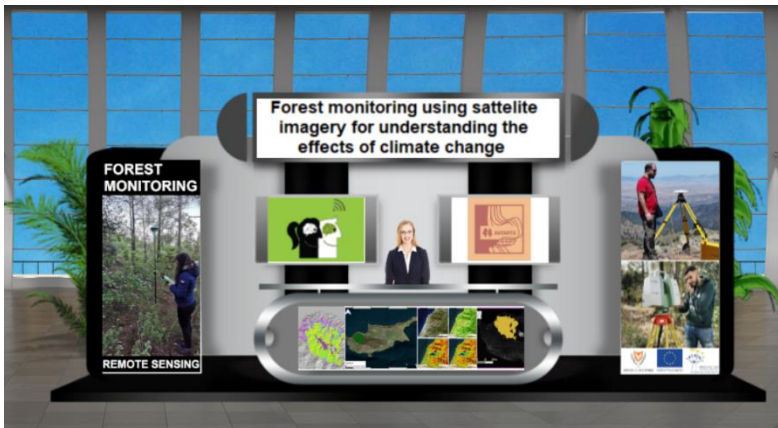


## EXCELSIOR and ECoE at the European Researcher's Night 2020

The 2020 Researcher's Night was originally scheduled for September 25, 2019. Due to the emergency measures taken as a result of the Covid-19 pandemic, the European Commission decided that the its virtual organization on the 27<sup>th</sup> of November 2020.

The ERATOSTHENES Centre of Excellence, the EXCELSIOR H2020 Teaming Project and the Department of Civil Engineering and Geomatics of the Cyprus University of Technology, participated at the European Researcher's Night organised by the Research and Innovation Foundation in Cyprus. The "Researcher's Night" is an event aimed at familiarizing the public with the world of science and research and at the same time strengthening the public image of researchers, as well as highlighting the important role they play in society.

Our team participated with the 8 booths:



#47 Forest monitoring using satellite imagery for understanding the effects of climate change (ASTARTE funded project)

#48 Cyprus Continuously Operating Natural Hazards Monitoring and Prevention System (Cyclops RPF Funded Project)





#49 Earth Observation, Space Technologies & Geoinformatics for Green and Smart Cities Applications (EXCELSIOR H2020 Teaming Funded Project)

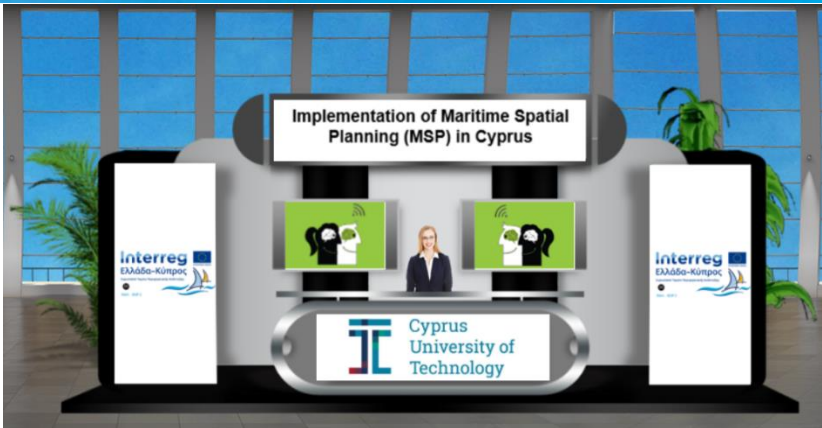
#50 Simulating prehistoric seagoing to/from Cyprus (Sarocy Funded Project)



#52 Copernicus Earth Observation and Big Data for Cultural Heritage (Navigator Funded Project)

#54 Satellite-based offshore wind resource assessment (Geowindsat Funded Project)





#55 Maritime Spatial Planning (THAL-CHOR 2 INTERREG Funded Project)

#56 Aerosol-cloud interaction and Cloud formation (SIROCCO-RESTART Funded Project)



In the context of the event, a prize of 1500 Euros was awarded to Georgia Alexandrou (postgraduate student in the MSc in Geoinformatics and Geospatial Technologies / Department of Civil Engineering and Geoinformatics, CUT), who was distinguished in the competition with theme "Natural Sciences and Engineering". Ms. Alexandrou received the first prize for the elaboration of her master's thesis on "Monitoring the archaeological site in Palmyra (Syria) using Landsat satellite images and the computational cloud of big data of Google Earth Engine" (under the auspices of the EXCELSIOR H2020 Teaming Project). The supervisors of this dissertation are our team members Dr. Athos Agapiou and Prof Diofantos Hadjimitsis. Additionally, our team members Dr Chris Danezis, Dr Milto Miltiadou and Mr Christos Theocharidis have been awarded the audience's favourite booth prize at the European Researchers' Night 2020, for booth Nr. 47 "Forest monitoring using satellite imagery for understanding the effects of climate change".

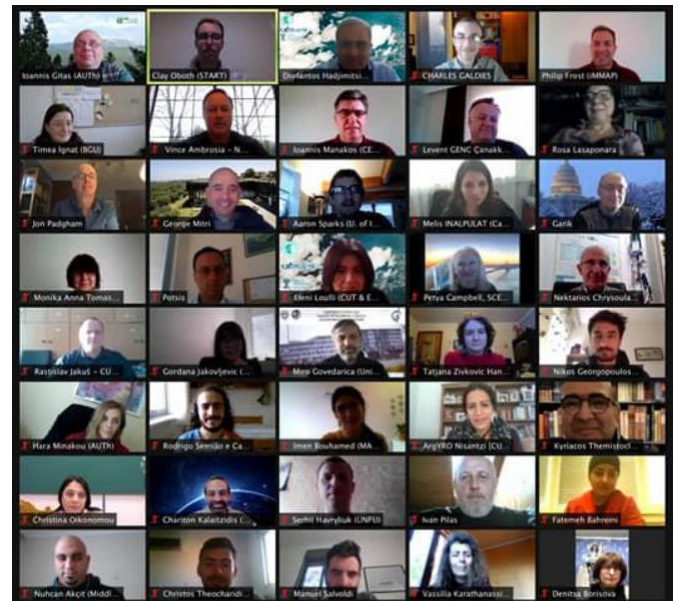
## Invited Talk at the NASA-Mediterranean Regional Information Network Annual Meeting

On the 25<sup>th</sup> of February 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.

MedRIN was established after discussions with European, African,

Asian, and American colleagues and is a new GOCF-GOLD network focusing on the Mediterranean region. It serves as a link between land-cover/land use change remote sensing scientists and stakeholders in the region.

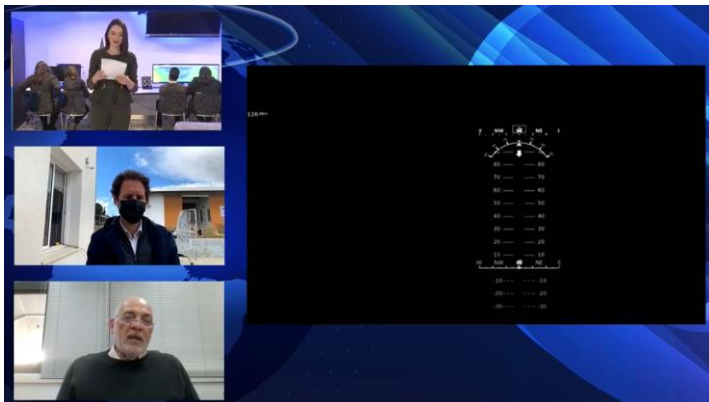
During the meeting, new members had the opportunity to present their field(s) of interest. Representatives from the existing members/partners, as well as new members, had the chance to discuss common interests, and current and potential collaborations between the interested parties.





## SpaceUpCyprus 2021 LIVE

SpaceUpCyprus-LIVE is an online version of the global “space unconference” SpaceUp. The event was welcomed by guest speakers. After the welcoming notes, the Space Balloon, designed by PASCAL English School Larnaka, was released into the atmosphere, carrying students’ experiments into near space altitudes. The payload (the load carried by our Space Balloon) reached an altitude of 90,000 feet and withstood temperatures of - 50 degrees Celsius and high solar radiation for 6 hours. The Space Balloon will return to Cyprus, so the findings can be analysed and students can draw conclusions about the accuracy of their experimental predictions.



### SpaceUpCyprus LIVE

📅 26<sup>th</sup> March ⌚ 12:00 - 13:05 📺 ZOOM/Teams/Youtube

#### Speakers



**DR. NIKOLAS MASTROYIANNOPOULOS**  
Chief Scientist for Research and Innovation



**MENELAOS MENELAOU**  
Executive Director at Youth Board of Cyprus



**DR. KLEANTHIS NIKOLAIDES**  
Director of the Department of Meteorology of Cyprus



**PROF. DIOFANTOS G. HADJIMITSIS**  
Professor, Cyprus University of Technology, Coordinator of the EXCELSIOR H2020 Teaming Project, Managing Director of the ERATOSTHENES Centre of Excellence



**ELPIDOFOROS ANASTASIOU**  
PASCAL Space Centre Project Leader

#### PROGRAMME:

12:00	Welcome & Opening
12:15	Break
12:25	Pico Satellite live video
12:35	Q&A from Schools with Mr. Elpidoforos Anastasiou & Dr. Kleanthis Nikolaides
12:55	Space Bot
13:05	Event Ends

#### Presenter



**GABRIELLA ZARTILA**  
Journalist

SpaceUpCyprus 2021 LIVE took place on the 26<sup>th</sup> of March 2020, in the framework of the First Pancyprrian Space Education Week, which was organized by the Cyprus Space Foundation, the EXCELSIOR H2020 Teaming Project and the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology.

The launching event was broadcast live through Facebook and hosted the following speakers: Dr Nicolas Mastrogiannopoulos, Chief Scientist for Research and Innovation; Mr Menelaos Menelaou, Executive Director of Youth Board of Cyprus, Dr Kleanthis Nicolaides, Director of the Department of Meteorology, Prof Diofantos G. Hadjimitsis, EXCELSIOR H2020 Teaming Project Coordinator and Managing Director of the ERATOSTHENES Centre of Excellence and Mr Elpidoforos Anastasiou, SpaceUpCyprus Project Leader. The live streaming can be accessed [here](#).

# SpaceUpCyprus

**LIVE**

**26<sup>th</sup> March 2021**  
**12:00-13:05**

**1,600 Students**  
**27 Schools**  
**108 Educators**  
**and a LIFETIME EXPERIENCE**  
**from near space altitudes!**

SpaceUpCyprus-LIVE is an online version of the global "space unconference" SpaceUp. The event will host guest speakers and a Space Balloon designed by PASCAL English School Larnaka will be released into the atmosphere, carrying students' experiments into near space altitudes.

The load carried by our Space Balloon will reach an altitude of 90,000 feet and will withstand temperatures of -50 degrees Celsius and high solar radiation for 6 hours. The Space Balloon will then return to Cyprus, so the findings can be analysed and students can draw conclusions about the accuracy of their experimental predictions.



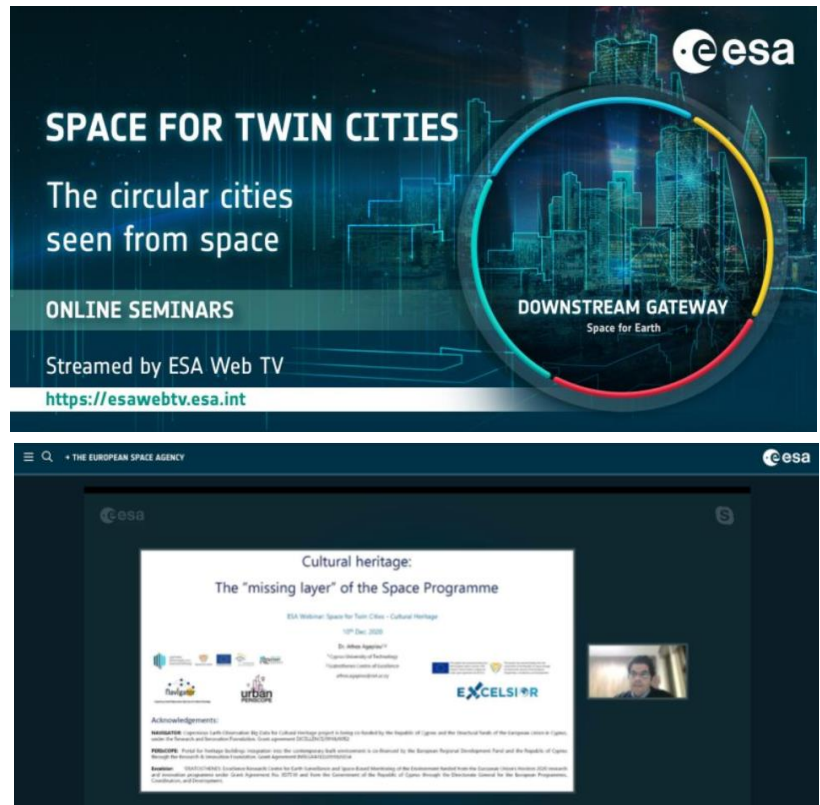


## Dr Athos Agapiou hosted by ESA Web TV Two

On the 10<sup>th</sup> of December 2020, our team member Dr Athos Agapiou was hosted by the internet television of the European Space Agency (ESA WEB TV TWO) at the Online Seminar: Space for Twin Cities. The title of his presentation was “Cultural heritage: The ‘missing layer’ of the Space Programme”. Dr. Agapiou presented showed how satellite data from the Copernicus constellation is and was used in the past for archaeology and cultural landscape investigations. For example, data acquired from Sentinel-1 provide the opportunity to process images before and after an earthquake and blend the information with geographical and ground stations data to perform deformation analysis.

Similarly, optical images from Sentinel-2 can be used to map urban areas. All this data, together with archive information, can be used to estimate the trend and the overall change in the vicinity of the archaeological site in the surrounding areas.

The whole talk can be accessed online via [YouTube](#).



## ERATOSTHENES Centre of Excellence becomes an associated partner in ACTRIS IMP

The Spring ACTRIS IMP Meeting, was held online on March 29-30, 2021. During the general assembly on Monday March 29, the ACTRIS Steering committee and the ACTRIS Head Office approved the application of the ECoE to participate in the Associate partnership program.

### 4. Acceptance of the new ACTRIS IMP Associate Partners

(For approval)

The list of new Associate Partners in ACTRIS IMP

N°	Country	Organisation name [Specific Department / Institute involved]
1	Cyprus	ERATOSTHENES Centre of Excellence of the Cyprus University of Technology, CUT
2	Germany	TSI GmbH
3	Greece	Raymetrics SA, RAYMETRICS
4	Spain	University of Coruña, UDC

ECoE will contribute to the Remote Sensing component of ACTRIS with the Cyprus Atmospheric Remote Sensing Observatory National Facilities (CARO NF). The PollyXT-CYP and the CLOUDNET station will constitute the Aerosol and Cloud Remote Sensing Observational Platforms of Cyprus.

### National Facilities for ACTRIS (3/3)

CARO NF: **Cyprus Atmospheric Remote Sensing Observatory**  
 Organization: ERATOSTHENES Centre of Excellence, Cyprus University of Technology



**Aerosol Remote Sensing Observational Platform**

**PollyXT-CYP: Operational since October 2020**



**Cloud Remote Sensing Observational Platform**

**Ready: 2022**



2021 Spring ACTRIS IMP Meeting virtual – 29-30.03.2021



## CAA-GR 2020 Sessions

9<sup>th</sup> of October 2020

Prof. Phaedon Kyriakides (Research Director of the ERATOSTHENES Centre of Excellence & Dean of the Faculty of Engineering and Technology of the Cyprus University of Technology) presented EXCELSIOR at the CAA-GR 2020 Sessions – “Greece, Cyprus, Turkey.

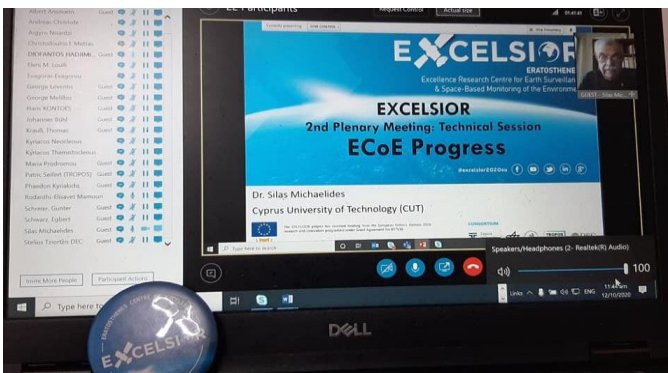
"Current Status and the Future of Digital Archaeology in the Eastern Mediterranean" under the Research and Innovation session. Dr Athos Agapiou was a member of the organising committee.



## Second plenary meeting of the EXCELSIOR

12<sup>th</sup> of October 2020

The EXCELSIOR H2020 Teaming Project organized the second plenary meeting on the 12th of October 2020. The first session of the meeting was open to the participants of the project and focused on the project progress. The second session focused on the project management and was open only to the project PMSC.



## CERES Workshop in Cyprus

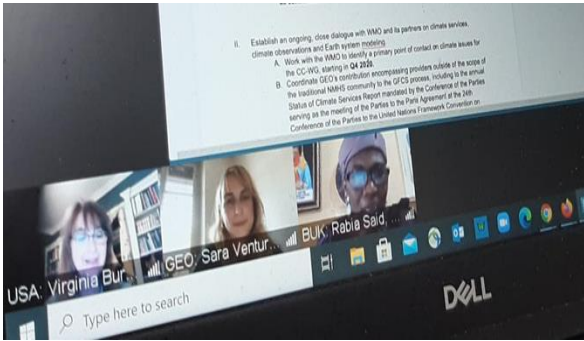
20<sup>th</sup> of October 2020

Three presentations have been made by our team at the CERES Earth Observation Workshop in Cyprus:

- EXCELSIOR H2020 Teaming Project by Prof. Hadjimitsis
- Copernicus and Cultural Heritage and Tourism by Dr Themistocleous
- EO and Space initiatives in Schools by Ms Eleni Loulli.

The workshop was organized by the European Space Agency (ESA) and the Department of Electronic Communications.





## GEO Work Programme & Synergies

20<sup>th</sup> of October 2020

On 20<sup>th</sup> of October 2020, our Coordinator Prof. Diofantos Hadjimitsis participated in the subgroup 1 of GEO: Subgroup 1: Coordination of climate issues across the GEO Work Programme & Synergies with key partners (including WMO) Co-chair: Virginia Burkett, USGS - United States.

## Welcoming our colleagues from TROPOS

22<sup>nd</sup> of October 2020

On the 22<sup>nd</sup> of October 2020 we welcomed at the Department of Civil Engineering & Geomatics premises, our colleagues from TROPOS.

On behalf of the Cyprus University of Technology and the ERATOSTHENES Centre of Excellence, we discussed all the details regarding the delivery of new Cyprus PollyXT Lidar from TROPOS Germany to Limassol during the next few days, under the auspices of the EXCELSIOR 2020 teaming project.

The PollyXT lidar will measure aerosols and clouds over eastern Mediterranean sea.



## EUROMED 2020 Conference: Invited Talk

4<sup>th</sup> of November 2020

**EUROMED 2020**

“THE EXCELSIOR H2020 TEAMING PROJECT: EARTH OBSERVATION & GEOINFORMATICS RESEARCH AND INNOVATION AGENDA FOR CULTURAL HERITAGE  
Cyprus University of Technology, CY

**09:30-10:00 AM (EET)**  
Wednesday 4 November 2020

@DHRLabCUT @Unesco\_DCH

EXCELSIOR #EUROMED2020\_DCH

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”.

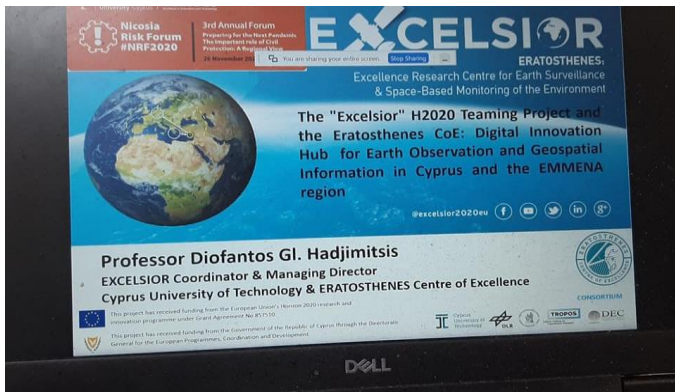
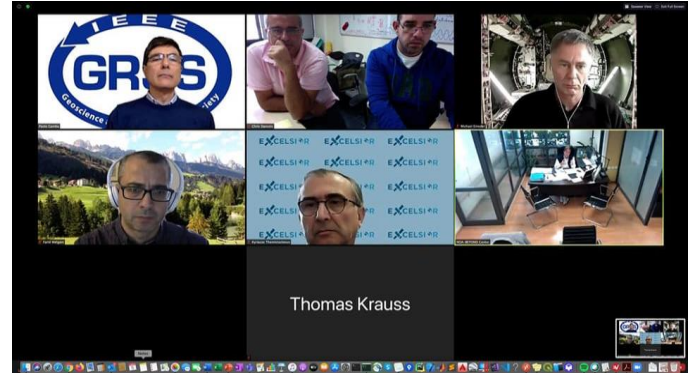
During the presentation, the research and Innovation agenda regarding the use of earth observation and Geoinformatics in cultural heritage of the Project was explained. The contribution of earth observation to the Sustainable Development Goals was presented as well.

## Collaboration with IEEE-GRSS

5<sup>th</sup> of November 2020

EXCELSIOR consortium and ERATOSTHENES Centre of Excellence met virtually with the IEEE-GRSS team. Prof. Diofantos Hadjimitsis presented the EXCELSIOR H2020 teaming project.

On behalf of the IEEE-GRSS, Dr. Paolo Gamba (President) and his colleagues joined the meeting. On behalf of the EXCELSIOR consortium also NOA and DLR participated in the meeting and offered their support. New horizons of future collaboration with IEEE-GRSS have been discussed.



## Nicosia Risk Forum

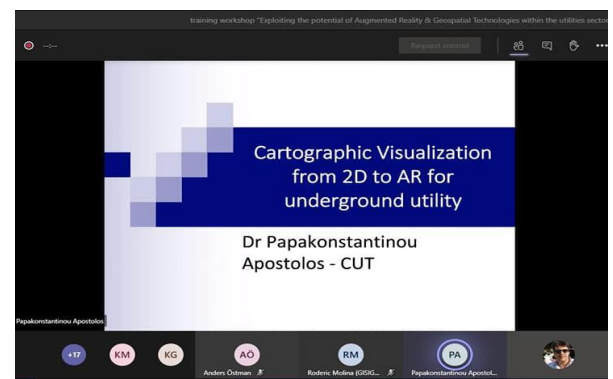
26<sup>th</sup> of November 2020

Prof Diofantos Hadjimitsis participated at the Nicosia Risk Forum, where he presented the EXCELSIOR H2020 Teaming Project and the ERATOSTHENES CoE: Digital Innovation Hub for Earth Observation and Geospatial Information in Cyprus and the EMMENA region.

## Participation at the ARinfuse seminar

3<sup>rd</sup> of December 2020

On the 3<sup>rd</sup> of December 2020, members of our team participated at the ARinfuse seminar about “Exploiting the potential of Augmented Reality & Geospatial Technologies within the utilities sector”. During the event, key material from the ARinfuse catalogue of training modules on Augmented Reality in the utility infrastructure was introduced.





## Presentation at the General Assembly of the Paphos Civil Engineers Association: Invited Talk

7<sup>th</sup> of December 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.

## Collaboration with the Department of Public Works in Paphos

17<sup>th</sup> of December 2020

EXCELSIOR H2020 Teaming Project and the ERATOSTHENES Centre of Excellence have a collaboration with the Public Works Department of Paphos District. Our team supports the Department on issues related to GIS



## Meeting with Cyprus Civil Defence District Office

18<sup>th</sup> of December 2020



On the 18<sup>th</sup> of December 2020 we held a meeting with Cyprus Civil Defence District Office in Pafos for the Excelsior H2020 project, as one of the key stakeholders and supporters.

## Meeting with the Board of Directors: Strategic Plan Approval

22<sup>nd</sup> of December 2020

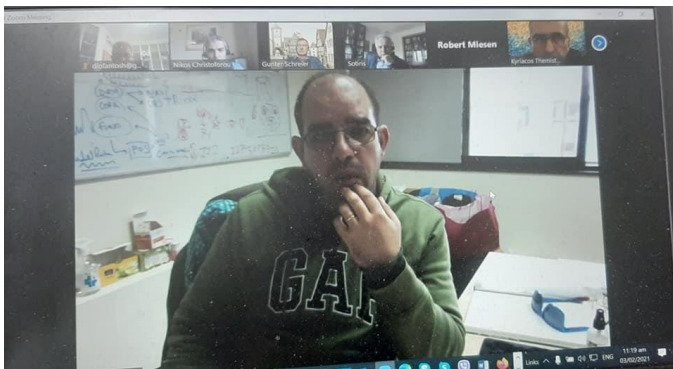


On the 22<sup>nd</sup> of December 2020, we presented the strategic plan for the ERATOSTHENES Centre of Excellence at the Board of Directors meeting of the ERATOSTHENES CoE.

## Final event of ARinfuse Erasmus+ Project: Invited Talk

29<sup>th</sup> of January 2021

Our Project Coordinator Prof. Diofantos Hadjimitsis gave a presentation about the "Integration of Geospatial Information and Augmented Reality for supporting the utility sectors & ERATOSTHENES Centre of Excellence as a Digital Innovation Hub" at the final event of ARinfuse Erasmus+ Project.



## Meeting with Cyta

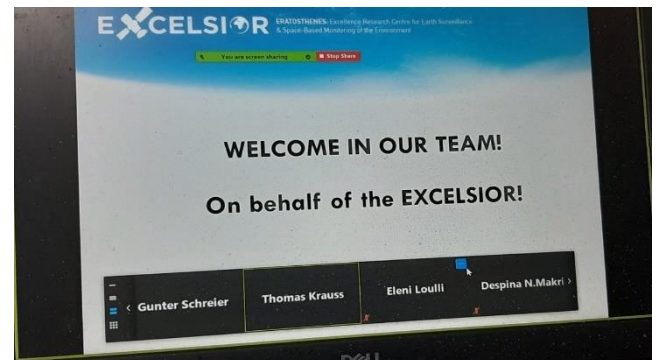
3<sup>rd</sup> of February 2021

On the 3<sup>rd</sup> of February 2021, we held an online Meeting with Cyta for the establishment of the Satellite Ground Receiving Station in Cyprus.

## Introduction of new PhD students to the EXCELSIOR Strategic Partners

12<sup>th</sup> of February 2021

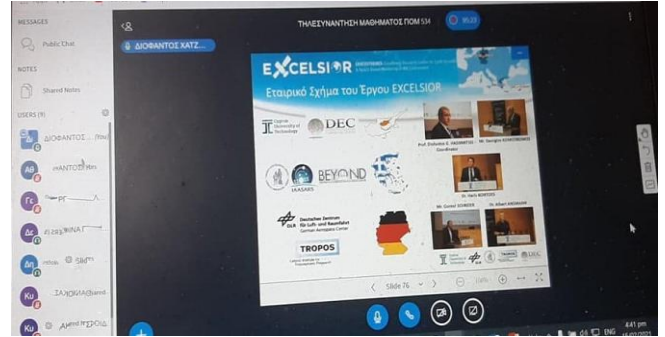
On the 12<sup>th</sup> of February 2021, we had an introduction of our new PhD students. The new students had the chance to present their background and research areas, and get feedback from the EXCELSIOR strategic partners.



## Presentation of the EXCELSIOR H2020 Teaming project to the postgraduate students

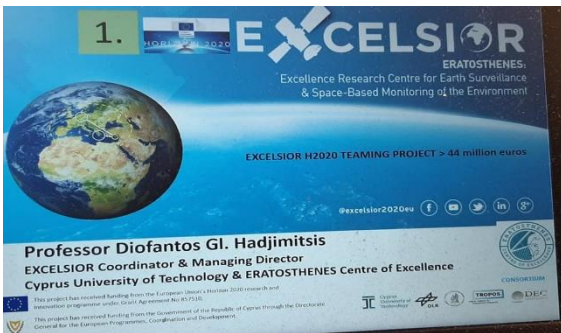
15<sup>th</sup> of February 2021

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.



## Presentation of the EXCELSIOR H2020 Teaming project at the Department of Civil Engineering and Geomatics Evaluation

15-16 of February 2021

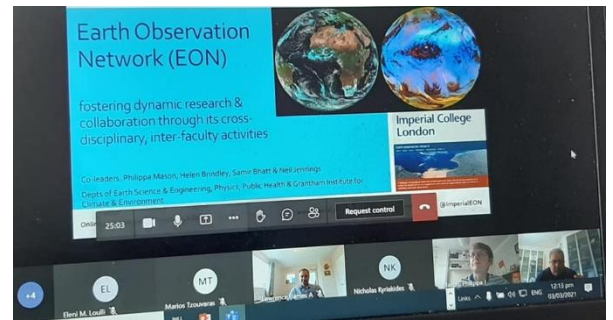


EXCELSIOR has been presented as the great success of the Department of Civil Engineering and Geomatics during the external evaluation of the Department &/MSc/Phd programmes on the 15<sup>th</sup> and 16<sup>th</sup> of February 2021! Several funded projects have also been presented from our team. This evaluation was monitored by the 'The Cyprus Agency of Quality Assurance and Accreditation in Higher Education (CYQAA).

## Meeting with Imperial College

3<sup>rd</sup> of March 2021

On the 3<sup>rd</sup> of March 2021, EXCELSIOR H2020 Teaming Project & ERATOSTHENES Centre of Excellence met with the Imperial College London for establishing a solid collaboration in the areas of Earth Observation.



## Meeting with Norwegian Geotechnical Institute

17<sup>th</sup> of March 2021



On the 17<sup>th</sup> of March 2021, EXCELSIOR H2020 Teaming Project & ERATOSTHENES Centre of Excellence met the NGI - Norwegian Geotechnical Institute and discussed possible future collaborations on Earth Observation for Natural Hazards.

# Examples of MATLAB Integration in Civil Engineering & Geomatics Curricula

24<sup>th</sup> of March 2021

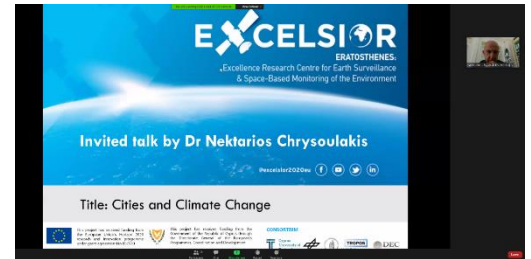
Our team member Dr Chris Danezis gave a presentation about Examples of MATLAB Integration in Civil Engineering & Geomatics Curricula at the Live Event of Math Works: MATLAB & Simulink MENA Academic Forum.



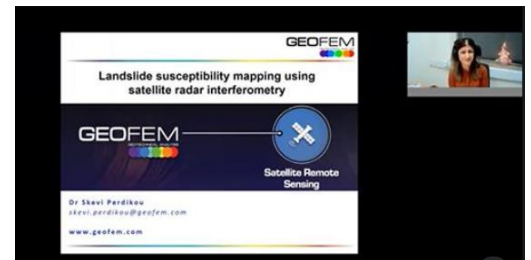
# Invited talks

In the framework of the EXCELSIOR H2020 Teaming Project education activities, we organise invited talks on a monthly basis.

Date: 16<sup>th</sup> of November 2020  
Topic: Cities and Climate Change  
Speaker: Prof. Nektarios Chrysoulakis  
Link: <https://youtu.be/pWcF4YfOtzU>



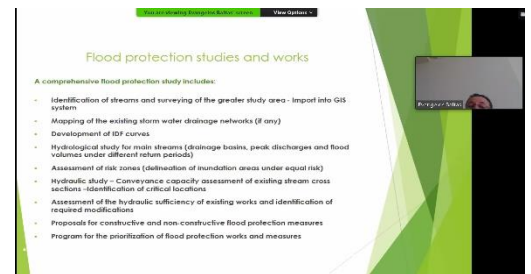
Date: 3<sup>rd</sup> of December 2020  
Topic: Landslide susceptibility mapping using satellite radar interferometry  
Speaker: Dr. Skevi Perdikou  
Link: <https://youtu.be/HcuqooiXVJg>



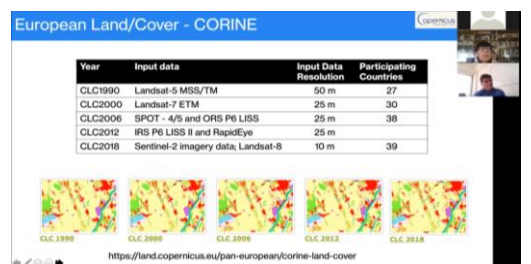
Date: 10<sup>th</sup> of December 2020  
Topic: The science of Meteorology and Remote Sensing applications  
Speaker: Dr. Kleanthis Nicolaidis  
Link: <https://youtu.be/1kOV96kdT9s>



Date: 26<sup>th</sup> of February 2021  
Topic: Applications in Flood Risk Assessment - Rainfall-runoff estimation and forecasting using novel technologies in the Mediterranean Region  
Speaker: Prof. Evangelos Baltas

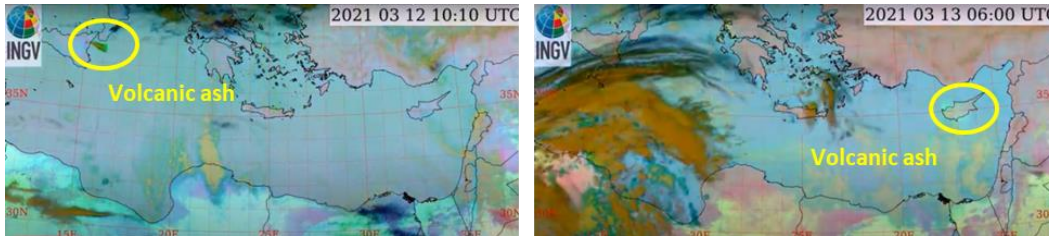


Date: 31<sup>st</sup> of March 2021  
Topic: Remote Sensing, Land Use/Land Cover Data and Example of Their Harmonisation  
Speaker: Prof. Lena Halounova  
Link: [https://youtu.be/GtdU7o\\_RXuU](https://youtu.be/GtdU7o_RXuU)



## Our Research

# The Journey of Volcanic Ash from Mount Etna to Limassol



The volcanic cloud as it was located (a) above the Mediterranean Sea at 10:10 UTC and (b) above ECoE Observatory in Limassol at 06:00 UTC. The retrievals from the MSG-3 (Meteosat Second Generation (MSG)) satellite were made by INGV.

The volcanic ash cloud from the eruption of Mount Etna (March 12, 2021) was recorded by the PollyXT-CYP Lidar system of ECoE that has been operating continuously since October 2020 in Limassol. The layers of the volcanic particles extend from 7.5 km to 12.5 km above sea level.

The recent activity of Mount Etna peaked on March 12, 2021, at 06:18 UTC, according to the Catania Geophysical Observatory (INGV-EO). The emitted ash cloud reached up to 6 km altitude, while the intense volcanic activity continued at 08:45 UTC (10:45 local time) where the ash concentrations reached an altitude of up to 10km above sea level.

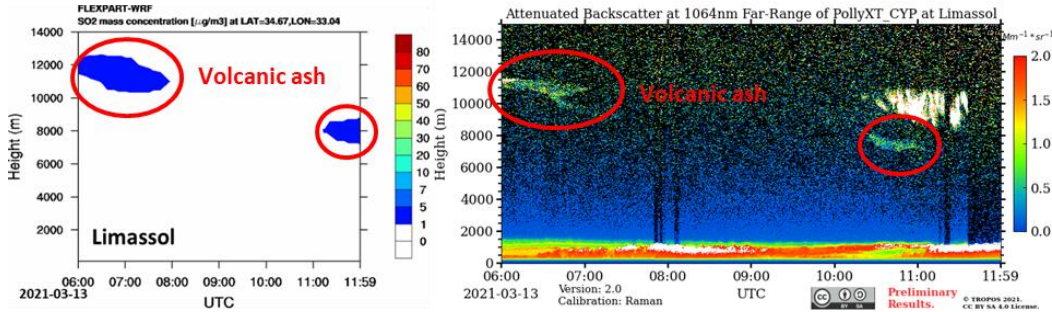


(Left) Volcanic ash and (right) thermal imagery in the southeastern crater of the volcano, source: INGV Catania Webcam)

The mixture of volcanic ash and sulfur gases was transported to Cyprus due to atmospheric circulation and crossed the Cloud and Aerosol Remote Sensing Observatory on March 13, 2021, at 06:00 UTC, as seen by the MSG-3 satellite. The cloud was observed both in Greece and in Cyprus.

As part of Horizon2020-e-shape research project in which the advance partner of EXCELSIOR project, NOA participates as beneficiary, the NOA-ReACT team utilizes the observations of Italian INGV partners to provide real-time forecasts of volcanic ash transport and sulfate suspensions using the FLEXPART-WRF numerical model. The volcanic ash cloud was recorded by the PollyXT-CYP system of ECoE. The volcanic particles layers extend from 7.0 km to 12.0 km above sea level, forming an impressive footprint in the upper atmosphere over Limassol.

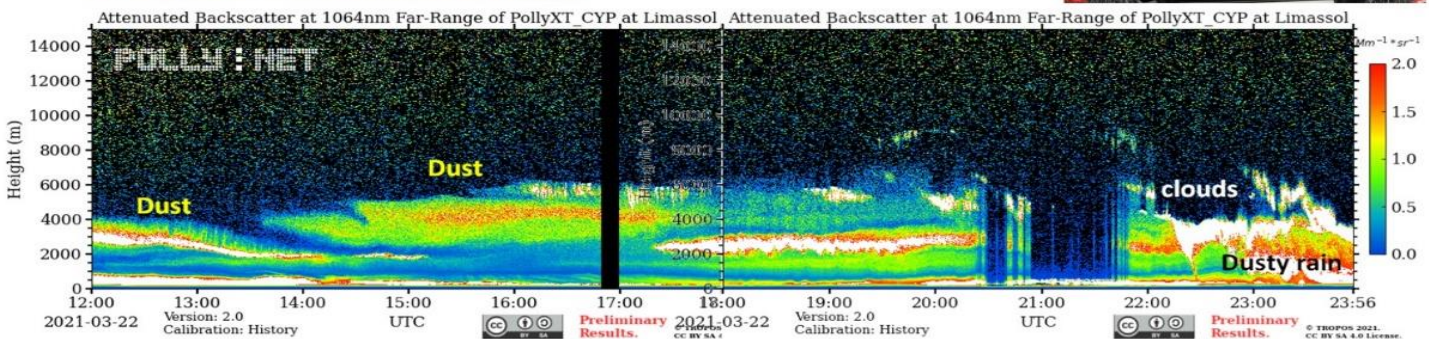
The monitoring and research related to the transport of volcanic ash into the atmosphere is very important for improving early warning systems for Aviation Safety, as volcanic ash particles can cause damages to aircraft engines.



(left) Volcanic ash concentration simulations with the FLEXPART-WRF dispersion model providing by NOAA (March 13, 2021), Monitoring of volcanic ash layers with the PollyXT-CYP lidar system of ECoE (March 13, 2021, 06: 00-12: 00 UTC).

## The dust transfer from North Africa

The dust transfer from North Africa that has been affecting the Eastern on the 23<sup>rd</sup> of March, was recorded by the PollyXT Lidar system of Limassol of the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology. Intense particle load occurs from the ground level up to 6km, significantly affecting human activities and especially vulnerable groups. The occurrence of coloured precipitation that was observed in Cyprus on that day was also due to the transfer of dust.



## EXCELSIOR in media

### Dr Rodanthi Elisavet Mamouri at CUT radio

2<sup>nd</sup> of December 2020

Our team member Dr Rodanthi-Elisavet Mamouri was hosted by CUT radio on the 2nd of December 2020.

There, she informed the public about the advanced state-of-the-art remote sensing system of the ERATOSTHENES Centre of Excellence, lidar PollyXT and its relation to the laser beam often seen in the night sky of Limassol.

The whole interview can be accessed [here](#).



### Article in the newsletter of the Limassol Chamber of Commerce and Industry

February 2021

Our researcher, Ms Eleni Loulli wrote an article about the ERATOSTHENES Centre of Excellence and the Digital Innovation Hub. The article was published in the monthly newsletter of the Limassol Chamber of Commerce and Industry, named “Entrepreneurial Limassol”.

The article can be accessed [here](#).

### EXCELSIOR hosted by Pafos Radio

8-12 of February 2021

The EXCELSIOR Project, ERATOSTHENES Centre of Excellence, and the SOFIA Project were presented to the educational community of Pafos through a thematic section of Pafos Radio with topic “Όλα για την παιδεία/Everything for education”. Our team member Dimitris Antoniadis talked about our activities and the presentations organized in the framework of our research projects and EXCELSIOR for schools.





# Interview of Dr Rodanthi Elisavet Mamouri at Phileleftheros newspaper

19<sup>th</sup> of February 2021

Our team member Dr Rodanthi Elisavet Mamouri, gave an interview in Phileleftheros newspaper. Through her interview she informed about the new lidar PollyXT-CYP and its importance for the future of atmospheric observations in the Eastern Mediterranean Region.

Additionally, she explained the significance of the EXCELSIOR H2020 Teaming Project in the development of the ERATOSTHENES Centre of Excellence.

14 [ **ΚΟΙΝΩΝΙΑ** ] ο ΦΙΛΕΛΕΥΘΕΡΟΣ ΠΑΡΑΣΚΕΥΗ 19 ΦΕΒΡΟΥΑΡΙΟΥ 2021

## Φυσικό Ατμοσφαιρικό Εργαστήριο η Κύπρος

Συνέντευξη με την Ανώτερη Ερευνητριά του ΤΕΠΑΚ Ροδάνθη Ελισάβετ Μαμουρή για το σύστημα lidar PollyXT

**Το Γιώργος ΤΣΙΒΑ\***

Η περιοχή της Ανατολικής Μεσογείου και ιδιαίτερα η Μεσόγειος παράκτια περιοχή, αποτελεί ένα ιδανικό φυσικό εργαστήριο για να μελετήσει κάποιος πως τα αερόλυμα συμβάλουν στο σχηματισμό των νεφών, ένα βασικό των επιστήσεων της κλιματικής αλλαγής. Με την Δρ. Ροδάνθη Ελισάβετ Μαμουρή είχαμε μια πολύ καταπονητική συζήτηση.

**Το Κέντρο Αριστείας ΕΡΑΤΟΣΤΘΕΝΗΣ θα δημιουργήσει το Παρατηρητήριο Ατμοσφαιρικής Τηλεσκοπήσης της Κύπρου**

Η περιοχή της Ανατολικής Μεσογείου και ιδιαίτερα η Μεσόγειος παράκτια περιοχή, αποτελεί ένα ιδανικό φυσικό εργαστήριο για να μελετήσει κάποιος πως τα αερόλυμα συμβάλουν στο σχηματισμό των νεφών, ένα βασικό των επιστήσεων της κλιματικής αλλαγής. Με την Δρ. Ροδάνθη Ελισάβετ Μαμουρή είχαμε μια πολύ καταπονητική συζήτηση.

**Πόσο σημαντικό είναι για την Κύπρο και την ευρύτερη περιοχή μας, η συνεχής καταγραφή της δομής της Ατμόσφαιρας;**

Καθώς βρισκόμαστε ανάμεσα σε τρεις ηπείρους και περιβάλλεται από τη Μεσόγειο θάλασσα τα νησιά της Κύπρου κατέχουν μια μοναδική γεωγραφική θέση. Η Κύπρος βρίσκεται στο σταυροδρόμιο αέριων μαζών που προέρχονται από διάφορες απομακρυσμένες περιοχές. Αυτό σημαίνει ότι μεγάλες αέρια μάζες από όλες τις ηπείρους, που έχουν την ικανότητα να μεταφέρουν πληροφορίες σχετικά με τα ιδιαίτερα χαρακτηριστικά της πηγής προέλευσής τους (π.χ. θερμοκρασία και υγρασία), συναντιούνται ακριβώς πάνω από την Κύπρο, καθιστώντας το νησί ως ένα φυσικό Ατμοσφαιρικό Εργαστήριο με ατμοσφαιρικές συνθήκες και ανάμειξη ρύπων που δεν συναντιούνται σε άλλα μέρη.

Η συνεχής καταγραφή και ο χαρακτηρισμός των αεριοσφαιρικών πληροφοριών εντός της ζώνης των ερήμων, μιας περιοχής η οποία είναι εξαιρετικά ευαίσθητη στις επιπτώσεις της κλιματικής αλλαγής, βάση των προγνώσεων των κλιματικών μοντέλων.

**Ποια τεχνική χρησιμοποιείται για τη συνεχή καταγραφή και χαρακτηρισμό της ατμόσφαιρας;**

Το σύστημα lidar αποτελεί ένα βασικό όργανο το οποίο χρησιμοποιείται για τον χαρακτηρισμό των αεριοσφαιρικών που ακιρύνονται στην ατμόσφαιρα από απόσταση, επιτρέποντας επιπρόσθετα τον ακριβή προσδιορισμό των οπτικών και γεωμετρικών χαρακτηριστικών των διαφόρων ατμοσφαιρικών στρωματισμών. Αυτό συμβαίνει γιατί το σύστημα lidar έχουν τη δυνατότητα εξαγωγή πληροφορίας από τα πρώτα μέτρα της ατμόσφαιρας μέχρι και τα 20km με χρονική ανάλυση της τάξεως των 75 μέτρων και με χρονική ανάλυση της τάξεως των 60 sec.

Επιπρόσθετα το σύστημα lidar PollyXT, καταγράφοντας την αποδοκαστομένη ακτινοβολία σε 8 μήκη κύματος επιτρέπουν τον χαρακτηρισμό και διαχωρισμό των αεριοσφαιρικών πληροφοριών και πληροφορία για την υγρασία και τη συγκέντρωση των υδραερίων στην ατμόσφαιρα.

Τα δεδομένα καταγράφονται και αναλύονται σε πραγματικό χρόνο και είναι διαθέσιμα μέσω της πλατφόρμας του δικτύου PollyNET.

**Τι ακριβώς είναι το σύστημα lidar PollyXT;**

Το σύστημα lidar PollyXT είναι ένα όργανο ενεργούς τηλεσκοπήσεως που χρησιμοποιεί λέιζερ για τη συνεχή παρακολούθηση των αεριοσφαιρικών και των νεφών. Το



σύστημα PollyXT καταγράφει συνεχώς την κατακόρυφη δομή της ατμόσφαιρας με υψηλή χρονική και χωρική ανάλυση, με μόνο μέτρο τη δύση του ηλίου ή πρόσημο δόσης laser γίνεται ορατή στον ουρανό.

Πρόκειται για έναν καθαρά ερευνητικό εξοπλισμό τελευταίας τεχνολογίας ο οποίος σχεδιάστηκε και κατασκευάστηκε από την ερευνητική ομάδα του Ινστιτούτου TROPUS, από τη Λαμία της Γερμανίας με πέπετρο τρόπο έτσι ώστε να είναι εύκολος στη χρήση με πλήρεις αυτοματοποιημένη λειτουργία και κεντρικό σύστημα επεξεργασίας δεδομένων για τη συνεχή παραγωγή ομοιογενών παρατηρήσεων ακόμη και από τις πιο απομακρυσμένες περιοχές.

**Πόσο σημαντικές είναι οι πληροφορίες που αποκτώνται από τα συστήματα lidar;**

Είναι εξαιρετικά σημαντικές, ιδιαίτερα σε περιοχές όπου αεριοσφαιρικοί από διαφορετικές πηγές προέλευσης συναντιούνται και αναμειγνύονται, καθώς επιτρέπουν τον χαρακτηρισμό των στρωματισμών των αεριοσφαιρικών βάσει της πηγής προέλευσής τους, του είδους τους, της κατανομής μεγέθους τους, και της συγκέντρωσής τους. Οι μετρήσεις αυτές μπορούν να μας δώσουν σημαντικές πληροφορίες για τις διαδικασίες μεταφοράς τους. Τα γεγονός αυτό μπορεί να βοηθήσει να κατανοήσουμε ακριβώς καιρικά φαινόμενα και να δημιουργήσουμε συστήματα έγκαιρης προειδοποίησης για αυτά, καθώς και να δημιουργήσουμε καλύτερες προβλέψεις για το πως η κλιματική αλλαγή επηρεάζει τον καιρό.

**Υπάρχουν παραδείγματα όπου από τα συστήματα lidar έχουμε βγάλει και έγκαιρες πληροφορίες για τέτοια αεριοσφαιρικά φαινόμενα;**

Βεβαίως, η πληροφορία της κατακόρυφης κατανομής των αεριοσφαιρικών είναι πολύ σημαντική ειδικά στην περιοχή της Ανατολικής Μεσογείου όπου μπορεί να μεταβληθεί ακόμη από ερημικές περιοχές της Αφρικής και της Μέσης Ανατολής. Επιπλέον, παρέχει τη δυνατότητα ανίχνευσης προεπιστάσεως τείρας αλλά και αεριοσφαιρικών κοπυτών αερίων και από μετρήσεις δοσοειδών παραγωγής.

Ένα χαρακτηριστικό παράδειγμα είναι η έκρηξη που πραγματοποιήθηκε στην Ιαπωνία τον Απρίλιο του 2010 όπου πολλά αερόλυμα αεριοσφαιρικών της πηγής τους και οι παρατηρήσεις με το σύστημα lidar ήταν αυτές που χρησιμοποιήθηκαν για την εκτίμηση ασφαλείας

υψίφων πτήσης.

Η ακόμη και το επεισόδιο μεταφοράς σκόνης από την περιοχή της Σαρδίας, το Σεπτέμβριο του 2015 στην Κύπρο που πολλοί μέρη να θυμούνται, όπου κανένα υπεραστικό μοντέλο μεταφοράς σκόνης δεν προέβλεπε το επεισόδιο για την έκτακτη ενημέρωση του κοινού.

**Ποι βρισκόμαστε εγκαταστημένο το σύστημα, Πού και πότε;**

Στο σημείο αυτό βρισκόμαστε να προσδοκούμε ότι το ΤΕΠΑΚ λειτουργεί αυτόματα lidar από το 2010 καθώς επίσης και ότι δεν είναι η πρώτη φορά που φλεξεί ένα σύστημα PollyXT.

Παρόλα αυτά το σύστημα που έγινε εισήγητη την παρουσία του στον ουρανό της Λεμεσού, τέθηκε σε λειτουργία στις 27 Οκτωβρίου 2020. Βρισκόμαστε επίσης ειδικά σχεδιασμένου container και εγκαταστάθηκε σε καταλλήλα διαμορφωμένο χώρο του Τεχνολογικού Πανεπιστημίου Κύπρου (ΤΕΠΑΚ) για μόνιμη και συνεχή λειτουργία. Το σύστημα PollyXT της Κύπρου θα αποτελεί ένα από τα 13 αυτόματα συστήματα του δικτύου PollyNET αλλά και του Αυτοαξιόνομου σταθμού της Ευρωπαϊκής Ερευνητικής Υποδομής ACTRES.

**Ποι η σχέση του συστήματος με το Κέντρο Αριστείας Ερατοσθένης;**

Το Κέντρο Αριστείας ΕΡΑΤΟΣΤΘΕΝΗΣ σχεδιάζει να εγκαταστήσει τουλάχιστον 6 ακόμη επιστημονικά όργανα τηλεσκοπήσεως για την ολοκληρωμένη μελέτη των Ατμοσφαιρικών διαδικασιών. Αυτό θα κινούνται από τον καταστημένο ρυθμό νεφών για να μας βοηθήσουν να κατανοήσουμε πως το σύννεφο αντανακλώνει το φως, τον ήλιο και παγιδεύουν την υπέρυθρη ακτινοβολία, έως εξελιγμένα συστήματα Doppler-Lidar που μετρούν το πείλο του ανέμου και εξηγούν πως η κλιματική αλλαγή επιδράει στους ανέμους μας - και πολλά άλλα.

\* Διευθυντής Αεροπορικόλετου Αεροναυτιλίας



ΤΙ ΣΗΜΑΙΝΕΙ ΓΙΑ ΤΟ ΤΕΠΑΚ ΚΑΙ ΤΟ ΚΕΝΤΡΟ ΑΡΙΣΤΕΙΑΣ ΕΡΑΤΟΣΘΕΝΗΣ ΑΥΤΟ ΤΟ ΣΥΣΤΗΜΑ;

Το Τεχνολογικό Πανεπιστήμιο Κύπρου μέσω του ευρωπαϊκού προγράμματος EXCELSIOR (επιβεβαιωμένο χρηματοδότηση ύψους 38 εκατομμυρίων ευρώ το οποίο αναλύεται ως εξής, 15 εκατομμύρια από την ΕΕ, 15 εκατομμύρια από την Κυπριακή Δημοκρατία και 8 εκατομμύρια από το Τεχνολογικό Πανεπιστήμιο Κύπρου για τη δημιουργία του Κέντρου Αριστείας ΕΡΑΤΟΣΘΕΝΗΣ. Το Κέντρο Αριστείας ΕΡΑΤΟΣΘΕΝΗΣ αποτελεί τη μεσοδιάση που ενοποιεί την τηλεσκοπήσεως του Τμήματος Πολύμικτων Μετρήσεων και Μετεωρολογίας/Γεωγραφικών Επιστημών.

Όσον αφορά τον τομέα Ατμοσφαιρικής Τηλεσκοπήσεως, από το 2010 που ξεκίνησαν οι πρώτες μετρήσεις lidar από Πανεπιστήμιο, φάνηκε η μεγάλη δυναμική του τομέα. Το έργο επιστημονικό ενδιαφέρον οδήγησε στην κατασκευή πείλου για τη μελέτη των αεριοσφαιρικών των νεφών και της βροχής CY-CARE που πραγματοποιήθηκε στη Λεμεσό κατά την περίοδο Οκτώβριου 2016 - Μαρτίου 2018 σε συνεργασία με το Ινστιτούτο TROPUS. Το πείλο αυτό οδήγησε σε εξαιρετική εξωτερική χρηματοδότηση αλλά και το καλύτερο 8 επιστημονικές δημοσιεύσεις σε έγκαιρα περιοδικά μεγάλης απήχησης.

Το ΤΕΠΑΚ επρόκειτο μέσω του Κέντρου Αριστείας ΕΡΑΤΟΣΘΕΝΗΣ και των νέων υποδομών τεχνολογίας σήμης που θα αποβλέπουν και ένθενη ερευνητική υποδομή δημιουργήσει η νέα γενιά επιστημόνων και θα διαδραματίσει σημαντικό ρόλο στην πρόταση επιστημονικών προγραμμάτων σε σχέση με τη μελέτη των αεριοσφαιρικών και των νεφών.

# EXCELSIOR H2020 Teaming Project at Protoselido (Sigma TV)

25<sup>th</sup> of February 2021

The members of the ERATOSTHENES Center of Excellence and the EXCELSIOR H2020 Teaming project, Dr. Christiana Papoutsou and Maria Prodromou were hosted by the TV show "Protoselido" on the 25<sup>th</sup> of February.

There, they presented the EXCELSIOR project, as well as the actions of the ERATOSTHENES Center of Excellence to promote Earth Observation through #EXCELSIORforschools and other activities. The interview can be accessed [here](#).



## Article in the newsletter of the Limassol Chamber of Commerce and Industry

March 2021

Our researcher, Dr Marios Tzouvaras wrote an article about “Monitoring of the impact of natural hazards on infrastructure using earth observation techniques and space technologies through the ERATOSTHENES Centre of Excellence and EXCELSIOR H2020 Teaming project”. The article was published in the monthly newsletter of the Limassol Chamber of Commerce and Industry, named “Entrepreneurial Limassol”.

The article can be accessed [here](#).

## ASTRO 1 and SpaceUP Cyprus at CyBC

21<sup>st</sup> of March 2021

Our team member Mr Elpidoforos Anastasiou presented ASTRO 1 and SpaceUP Cyprus at the Cyprus Broadcasting Corporation news. SpaceUpCyprus 2021 LIVE took place in the framework of the First Pancyprian Space Education Week, which was organized by the Cyprus Space Foundation, the EXCELSIOR H2020 Teaming Project and the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology.

The video can be accessed [here](#).



## Our PhD students

### Evagoras Evagorou



Evagoras Evagorou has a research experience for more than 6 years and also specialized professional experience as a Land Surveyor for the last 9 years (2012-2021). He has an active role and involvement in a number of research projects funded under H2020, INTERREG and ECHO, and he contributes in writing research proposals for attracting financing in the field of applied geoinformatics and related subjects. He is currently a PhD candidate at Cyprus University of Technology studying techniques using remote sensing for estimating bathymetry. This study focuses on the use optical satellite sensors and on the analytical, semi-analytical and empirical approaches to depth estimation to propose an innovative technique for estimating depth up to 20 meters deep in Cyprus. Evagoras believes that the experience he gained using passive receivers as well as the Satellite-Derived Bathymetry in the coastal waters of Cyprus can be used and developed in various fields through the EXCELSIOR H2020 Teaming Project.

### Kyriaki Fotiou



Kyriaki Fotiou holds a BSc Degree in Survey Engineering and Geomatics from the Cyprus University of Technology (CUT) and a MSc Degree, with distinction, in Geoinformation and Geospatial Technologies from Cyprus University of Technology (CUT), as well. Through her MSc dissertation ‘Deformation monitoring in World Heritage Monuments using SAR satellite data and Interferometry and Geodetic techniques: The Case Study of Choirokoitia Archaeological Site in Cyprus’, Kyriaki obtained advanced knowledge in SAR Geodesy. Topic of Research: Her research mainly focused on Remote Sensing (SAR Satellite Image Processing), SAR Interferometry, Geodesy and GIS Applications. More specifically, the topic of the PhD is the use of SAR Satellite Data in Deformation Monitoring Applications, under the supervision of Dr. Chris Danezis. Using specific techniques such as Differential and Persistent Scatter Interferometry (using Trihedral Corner Reflectors) in combination with GNSS measurements, natural phenomena (earthquakes, landslides, ground movements) can be detected, monitored, validated and analyzed. Throughout her research activity and interests, she strongly believes that her involvement in the EXCELSIOR H2020 Teaming Project, will enrich and specialize her knowledge in her field of study during her PhD studies. Apart from that, the project will expand her horizons, by meeting new academic professionals with similar interests, worldwide, evolving her thoughts and ideas.

## Maria Prodromou



Maria Prodromou received her BSc in Surveying Engineering and Geomatics and she continued her studies in the field of “Geoinformatics and Geospatial Technologies” both from the Department of Civil Engineering and Geomatics, from the CUT. During her BSc, she studied the detection of underground structures using field spectroscopy for defence and security. During her MSc her dissertation was based on Characterize aerosol optical properties observed over Limassol, Cyprus using LiDAR system. In November 2017 she was employed by the CUT at the position of research assistant. Her research focuses on: Satellite Remote Sensing, Spectroradiometers, GIS, Geoinformatics for environmental applications, forest fires, marine applications. Maria is currently a PhD candidate in the exploitation of remote sensing techniques in wildfires. More specifically, her research focuses on the post-fire damage assessment based on time-series image analysis, burned area mapping as well as for burned severity assessment. Forest Fires are within the thematic clusters of the ECoE Digital Innovation Hub, and this will help in her research through the knowledge transfer from the ECoE expertise staff as well as from the EXCELSIOR strategic partners.

Philip Fayad is a GIS and Earth Observation Specialist. Being involved in many research projects, his main research interests focus in Geoinformatics, Geostatistics, Spatial Analysis, Remote Sensing and Geographic Information Systems (GIS) towards spatial problem solving. Additionally, by being involved in many awareness activities, workshops and events (eg. NASA Space Apps Challenge, TEDx, etc.), he describes himself as a Science and Technology enthusiast and an environmentally concerned individual. He holds a bachelor's degree in Surveying Engineering (with honors) as well as an MSc in "Geoinformatics and Geospatial Technologies" from Cyprus University of Technology. Continuing his studies at the Department of Civil Engineering and Geomatics of Cyprus University of Technology (CUT), Philip is a PhD Candidate in the field of Geospatial Big Data Processing and analytics with specific focus in epidemiology, under the supervision of Prof. Phaedon Kyriakidis. He strongly believes that *“his involvement at the newly established ‘ERATOSTHENES Centre of Excellence will theoretically underpin his PhD proposal, providing him all the necessary tools, research support and guidance for conducting a state-of-the-art doctoral research”*.

## Philip Fayad



## Eleni Loulli



Eleni Loulli graduated from the Technical University of Munich with a BSc and a MSc in Environmental Engineering. Currently, Eleni is a PhD candidate in the Department of Civil Engineering and Geomatics of the Cyprus University of Technology under the supervision of Prof Diofantos G. Hadjimitsis and a member of the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology. Her PhD focuses on Drought monitoring and assessment in the East Mediterranean Region using satellite data. Specifically, her work involves the use of both satellite- and ground-based data to develop of automated method for the estimation of the precipitation budget over the area of Cyprus and thus, drought monitoring in the region of the eastern Mediterranean. Through her involvement in the EXCELSIOR H2020 Teaming Project has the chance to work with experts in her field of study and gain important knowledge that will help her achieve her PhD goals. Additionally, the huge network of the Project, enables her to meet internationally recognized earth observation scientists to initiate future collaborations.

## Stylianos Hadjipetrou



Stylianos Hadjipetrou holds a B.Eng. from the Department of Planning and Regional Development of University of Thessaly (2015), as well as an M.Sc. in “Spatial Analysis and Environmental Management” from the same Department, with honours. As of 2017, he is a Ph.D. Candidate in the field of “Geostatistics and Spatial Analysis in Engineering and Geosciences” and he is currently being hosted at the Institute of Earth Surface Dynamics (IDYST) premises of the University of Lausanne for a 12-month research collaboration as a recipient of the Swiss Government Excellence Scholarships awarded by the Federal Commission for Scholarships (FCS). Apart from his research interests which include Geoinformatics, Spatial Analysis, and Remote Sensing as well as their applications in geospatial sciences, he has come to develop a keen interest in geostatistical modeling of geographical variables, along with the relevant applications in engineering and earth and environmental sciences. His Ph.D. research topic is related to the geostatistical characterization and simulation of complex spatial patterns, e.g. offshore wind fields, using Multiple-Point (Geo)Statistics and diverse data sources. Through his involvement in the EXCELSIOR H2020 Teaming Project and the various related activities, he expects to develop the skills and expertise to be at the forefront of research in his field in addition to expanding his network and enhancing his future academic and professional career prospects. Furthermore, the project is an ideal opportunity for knowledge and know-how sharing both within the project’s network as well as with researchers from all around the world.

## Dimitris Kakoullis



Dimitris Kakoullis holds a Dipl. Ing. (5y) from the University of Thessaly (PRD-UTH) Department of Planning and Regional Development and a BSc in Geomatic Engineering from the Cyprus University of Technology (CUT) Department of Civil Engineering and Geomatics. During his BSc studies, he has received several awards because of his performance as a student and graduated first in his class. Dimitris' PhD focuses on Geoinformatics and Geo-Hazards. The main objective of his research, which is relevant to his research activity in “CyCLOPS” project, is the establishment of a novel Strategic Research Infrastructure Unit for monitoring Solid Earth processes and Geohazards in Cyprus and the broader EMENA region. The objective includes (a) the deployment of permanent co-located multi-sensor configurations (Tier-1 GPS/GNSS reference stations, SAR Corner Reflectors, weather stations, tiltmeters et al) throughout Cyprus and (b) the promotion of geohazard monitoring and critical infrastructure resilience. He is a Research Associate at CUT Laboratory of Geodesy and Hydrographic Surveying.

## Marina Pekri



Marina Pekri holds a BSc “Survey Engineering and Geomatics” with Final Research Thesis: Creation of a Digital Terrain Model for wider area of Limassol in Cyprus and a MSc, with distinction, in “Geoinformatics and Geospatial Technologies” with Final Research Thesis: Calculation of Tidal levels in Limassol area through the processing of measurements of the completed tidal station of Limassol from the Cyprus University of Technology (CUT). Marina’s PhD focuses on the Assessment of Satellite Altimetry Performance on the Determination of Tidal Levels and CalVal Applications. The methodology of her PhD until now is all over the background study on Satellite Altimetry (Historical Background, Frequency and range measurements, Level of processing of Altimeter Data, Pulses Reflection, Basic Waveform Shape, Satellite Altimetry Data). Furthermore, she studies the reasons of MSL rising and how important this phenomenon is for the island of Cyprus, and finally, the processing of altimetric data mainly from Sentinel-3 (SRAL Instrument Measurement Mode) using BRAT. She is a Research Associate at the CUT Laboratory of Geodesy and Hydrographic Surveying. Currently she participates in the funded project ‘THAL-CHOR 2’ (Marine Spatial Planning in Cyprus).

## Christos Theocharidis



Christos Theocharidis holds a BSc in Forestry and Management of the Environment and Natural Resources and an MSc in Geoinformatics and Geospatial Technologies. Currently, he is a PhD student in the Field of Earth Observation and Remote Sensing (Earth Surveillance & Space Monitoring of the Environment). Christos’ research work aims to find the causes of degradation and its effects in the Cypriot forests due to climate change, which have not been perceived at first sight. Modern remote sensing technologies will play a key role in conducting the research to understand the impact of climate change in-depth. Through the experienced academic and research staff with many years in the field of remote sensing and GIS, his expectations are to enhance his knowledge in SAR remote sensing and retrieve working experience through various research projects.

## Anastasia Yfantidou

Anastasia Yfantidou has a BSc in Geography from Harokopio University of Athens and an MSc degree with distinction in “Geoinformatics and Geospatial Technologies” from the Department of Civil Engineering and Geomatics of Cyprus University of Technology (CUT), while she is also a PhD Candidate in “Remote Sensing, Geoinformatics and Earth Observation”. Anastasia’s research focuses on fire risk assessment and burn severity assessment in selected areas that are vulnerable, through the combination of modeling of the diachronic wildfires and the expected probability of fire occurrence based on detailed estimations of the dominant climatic conditions. The evaluation of the anticipated impact of the disaster on socio-economic variables will lead to disaster risk reduction and enhancement of the fire management efficiency. Undoubtedly, her involvement in EXCELSIOR is of great importance. Her research is benefited through the capacity building plan from the Strategic Partners like NOA. These trainings and secondments will give a boost to my knowledge and will help me excel in my sector. Furthermore, as ECoE will become a European focal point for cutting edge EO research and for facilitating International cooperation, she would have the chance to get in touch with a broad range of stakeholders and understand any future needs, priorities, and challenges of our end users.



## Mirko Saponaro – visiting PhD Student at EXCELSIOR and CUT (Smart working)



Mirko Saponaro graduated cum laude in Civil and Environmental Engineering at the Polytechnic University of Bari discussing the thesis about the geometric accuracies achievable through the use in photogrammetry of low-cost technologies, such as commercial Unmanned Aerial Vehicles (UAVs) and cheap cameras. A UAV pilot for several years, he started his industrial PhD in November 2018, under the supervision of Prof. Eufemia Tarantino, in Risk and Environmental, Territorial and Building Development. His research work is focused on the generation of a Multi-Resolution Multi-Sensor Big Spatial Data management framework in the field of Remote Sensing for the recognition of territorial elements both in the archaeological field and for the monitoring of critical environmental events. Therefore, his studies investigated the optimization of methodologies useful for the pre-processing of acquisitions from multiple platforms, their processing, and if any fusion for the extraction of innovative and targeted findings. The EXCELSIOR H2020 Teaming Project and CUT is certainly an ideal environment to contribute to new goals, discuss his findings and hone skills. Sharing his research work in this project is an opportunity for growth and he is looking forward to networking with all his colleagues.



# Internship at the Department of Environment and Climate of ECoE

In March and April 2021, Mr. Timotheos Elmeri Siapanis visited the ECoE to undertake an internship at the Department of Environment and Climate.

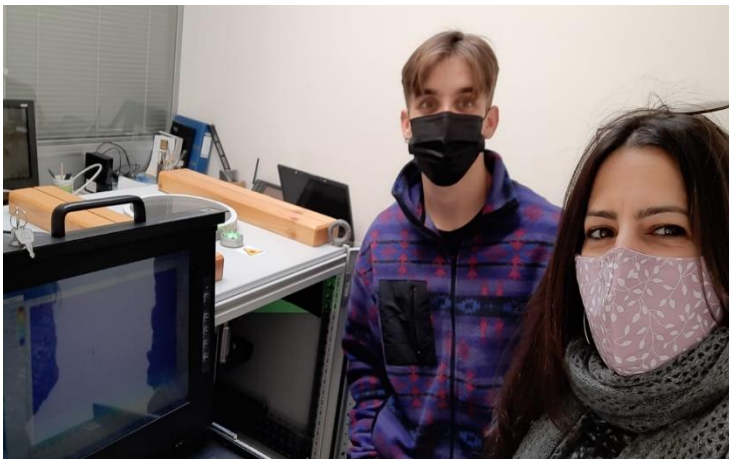


*Dr. A. Nisantzi, Mr. Timotheos Siapanis and Dr. RE Mamouri at the CUT-TEPAK AERONET station*



*Dr. RE Mamouri explains the lidar technique and the observations of the PollyXT\_CYP lidar system.*

Timotheos is currently an undergraduate student of Energy and Environmental Engineering at Tampere University of Applied Sciences in Finland and his internship at the ECoE gave us the opportunity to establish new links with a Northern European University.



*Dr. A. Nisantzi showing the process for performing lidar measurements with CUT depolarization lidar system*



*Dr. RE Mamouri the sun photometer observations of the CUT-TEPAK AERONET*

During his internship, Timotheos worked with the team of Atmosphere supervised by Dr. Rodanthi Elisavet Mamouri. Specifically, based on the background and the interests of the student, his work was focused on the identification of the main air pollution sources in Cyprus with focus on the air pollution from industrial and anthropogenic activities.

Additionally, Timotheos had the opportunity to visit the Atmospheric Remote Sensing Facilities at CUT and ECoE, where he got familiar with the Remote sensing Techniques and experimental processes, and examined the potential to continue his studies pursuing an MSc in Remote sensing in ECoE.



*A. Nisantzi, T. Siapanis and RE Mamouri at the Cyprus Atmospheric Remote Sensing Observatory of ECoE.*



# MoU Agreements of the ERATOSTHENES Coe

## Cyprus Regulatory Authority (CERA)

On the 19<sup>th</sup> of February 2021, the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology and the Cyprus Energy Regulatory Authority (CERA) signed a Memorandum of Understanding. This agreement will help to promote the activities of the two organisations as this cooperation will contribute to supporting investments in national priorities in relation to RES.



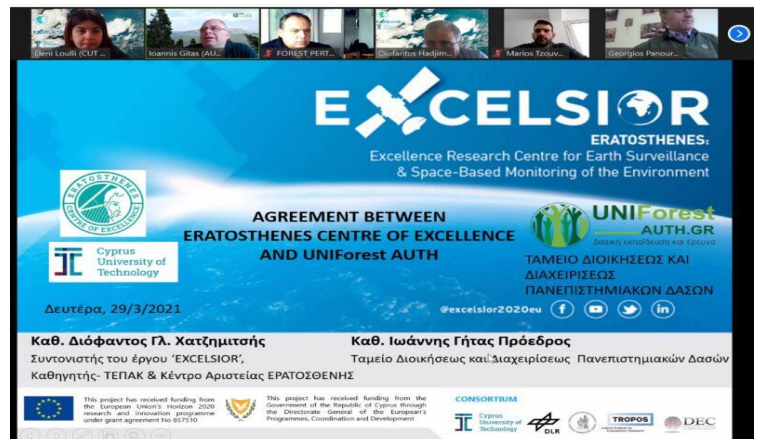
## ERA CHAIR Mnemosyne / Digital Heritage Research Lab at CUT

On the 19<sup>th</sup> of March 2021, the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology and the ERA CHAIR Mnemosyne / Digital Heritage Research Lab at CUT signed a Memorandum of Understanding. During the MoU online meeting, members of both teams presented their backgrounds in order to get to know mutual fields of interest for future collaborations.



## Forest Administration and Management Fund, Greece

On the 29<sup>th</sup> of March 2021, the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology and the Forest Administration and Management Fund, Greece signed a Memorandum of Understanding. The meeting was held to sign the agreement between the two teams and get to know the fields of interest for future collaborations.

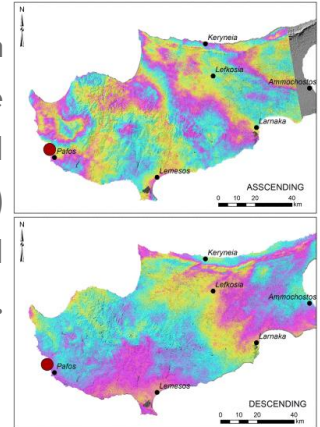


# Recent Selected publications

## Publications under the auspices of the EXCELSIOR H2020 Teaming Project / ERATOSTHENES Centre of Excellence:

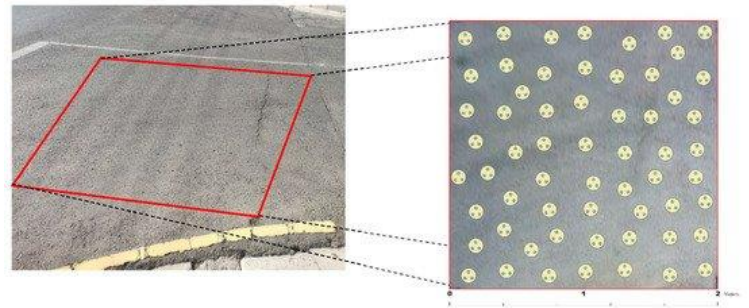
### Journals

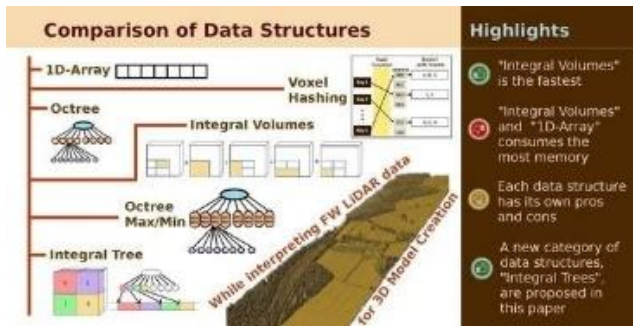
Agapiou, A. and Lysandrou, V. (2020) ‘Detecting Displacements Within Archaeological Sites in Cyprus After a 5.6 Magnitude Scale Earthquake Event Through the Hybrid Pluggable Processing Pipeline (HyP3) Cloud-Based System and Sentinel-1 Interferometric Synthetic Aperture Radar (InSAR) Analysis’, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 13, pp. 6115–6123.  
<https://doi.org/10.1109/JSTARS.2020.3028272>



Agapiou, A. (2020a) ‘Damage Proxy Map of the Beirut Explosion on 4th of August 2020 as Observed from the Copernicus Sensors’, *Sensors*, 20(21), p. 6382.  
<https://doi.org/10.3390/s20216382>

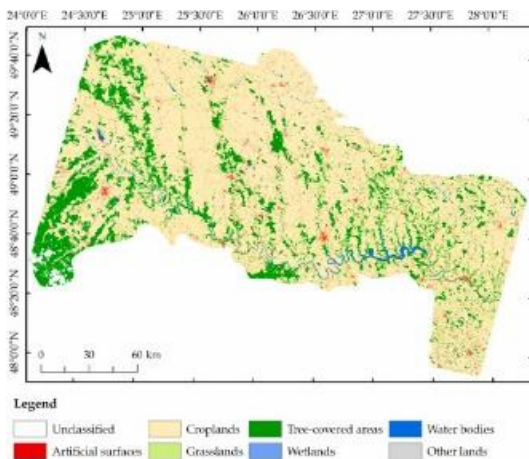
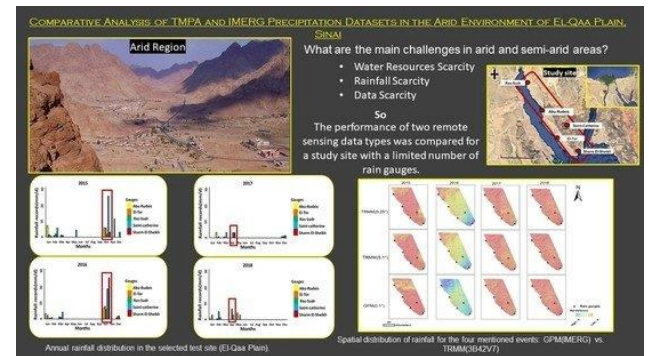
Mettas, C., Evagorou, E., Agapiou, A. and Hadjimitsis, D. (2020) ‘The Use of Colorimeters to Support Remote Sensing Techniques on Asphalt Pavements’, *Remote Sensing*, 12(23), p. 3911.  
<https://doi.org/10.3390/rs12233911>





Miltiadou, M., Campbell, N. D. F., Cosker, D. and Grant, M. G. (2021) 'A Comparative Study about Data Structures Used for Efficient Management of Voxelised Full-Waveform Airborne LiDAR Data during 3D Polygonal Model Creation', *Remote Sensing*, 13(4), p. 559. <https://doi.org/10.3390/rs13040559>.

Morsy, M., Scholten, T., Michaelides, S., Borg, E., Sherief, Y. and Dietrich, P. (2021) 'Comparative Analysis of TMPA and IMERG Precipitation Datasets in the Arid Environment of El-Qaa Plain, Sinai', *Remote Sensing*, 13(4), p. 588. <https://doi.org/10.3390/rs13040588>



Popov, M., Michaelides, S., Stankevich, S., Kozlova, A., Piestova, I., Lubskiy, M., et al. (2021) 'Assessing long-term land cover changes in watershed by spatiotemporal fusion of classifications based on probability propagation: The case of Dniester river basin', *Remote Sensing Applications: Society and Environment*, 22, p. 100477.

<https://doi.org/10.1016/j.rsase.2021.100477>.

Danezis, C.; Nikolaidis, M.; Mettas, C.; Hadjimitsis, D.G.; Kokosis, G.; Kleanthous, C. Establishing an Integrated Permanent Sea-Level Monitoring Infrastructure towards the Implementation of Maritime Spatial Planning in Cyprus. *J. Mar. Sci. Eng.* 2020, 8, p. 861.

<https://doi.org/10.3390/jmse8110861>



## Newly funded projects

### Assessment of climate change effects on pollution in transport in Cyprus (ACCEPT)

*Project promoter:* Department of Environment

*Other Project Partners:* Cyprus Institute, **Cyprus University of Technology**, Department of Labour Inspection, Ministry of Labour, Welfare and Social Insurance, Department of Meteorology, Ministry of Agriculture, Rural Development and Environment, European University of Cyprus

The project aims at providing new scientific knowledge on air pollution that is not currently available in Cyprus, with the expected positive impact of implementing efficient abatement strategies, improving air quality, and reducing human exposure. This will be done through the studies that will contribute to a better understanding of the local versus transported (e.g. transboundary) air pollution and provide air quality forecasts as well as testing of new technologies. The main activities of the project are related to research and innovation.

Main activities shall include:

- development of atmospheric monitoring programme;
- testing of unmanned aerial vehicles (UAVs)-based technology for air pollution;
- air pollution modelling over Cyprus;
- performing climate change projections and risks assessment analyses.

## Coming up in the 4<sup>th</sup> issue:

- EXCELSIOR and ECoE at Cyprus Launch Event for Horizon Europe
- Three of our members, Prof. Phaedon Kyriakides, Prof. Diofantos G. Hadjimitsis and Ass. Prof. Athos Agapiou, included in the top 2% of researchers worldwide by a study published recently (December 2020) in PLOS BIOLOGY.
- EXCELSIOR and ECoE participate as supporters at the CAA2021, 14-18/06/2021, <https://2021.caaconference.org/>
- Second EXCELSIOR Virtual Workshop, <https://tinyurl.com/2EWorkshop>

**2nd Virtual EXCELSIOR Workshop**

**Atmospheric & Climate Research in the EMMENA region**

Tuesday  
**8 June 2021**  
09:00 - 17:00 EEST  
06:00 - 14:00 UTC

**Registrations**  
<https://tinyurl.com/2EWorkshop>

ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring Of the Environment

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 of the European's Programmes, Coordination and Development.

# Get in touch

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

## CONTACT INFO

Department of Civil Engineering & Geomatics  
Faculty of Engineering and Technology  
Cyprus University of Technology  
&  
**ERATOSTHENES** Centre of Excellence



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 of the European's  
Programmes Coordination and Development

## CONSORTIUM



@excelsior2020eu     

E-MAIL: [info@excelsior2020.eu](mailto:info@excelsior2020.eu)

WEBSITE: [www.excelsior2020.eu](http://www.excelsior2020.eu)