



CyCLOPS News Bulletin August 2021

EARSeL Symposium 2021

8 June 2021 - CyCLOPS team was strongly participated at the 40th EARSeL Symposium 2021 in Warsaw, Poland on 07-10th of June 2021; two research studies were presented as oral and poster presentation, respectively. EARSeL is a scientific network of European remote sensing laboratories, coming from both academia and the commercial/industrial sector, which covers all fields of geoinformation and earth observation through remote sensing.

«Multi-Criteria Decision Analysis for the Installation of permanent infrastructures for continuous Space-based Monitoring of Natural Hazards» presented by PhD candidate, Mr. Dimitris Kakoullis.



«Space-based deformation monitoring of Coastal Urban Areas: The case of Limassol's Coastal Front» presented by PhD candidate Mrs. Kyriaki Fotiou





Installation of the CyCLOPS SAR Stations

The Permanent Segment of CyCLOPS MPN includes a total number of twelve (12) specifically designed calibration-grade InSAR Corner Reflectors. The array of Corner Reflectors was established in six (6) sites by installing two (2) Corner Reflectors per site to account for both the ascending and descending tracks of the current SAR satellite missions. Our CRs have significant flexibility in orientation (both in azimuth and elevation angle) to support all current SAR missions, from Sentinel-1 to TerraSAR-X and have been fully compliant with the global array of CRs established by DLR. When combining GPS/GNSS with InSAR measurements, the gaps within the CORS network can be infilled, and various anomalies of a small spatial extent that would potentially be missed within a network of discrete point observations can be eventually captured. Hence, the determination and monitoring of the 3D coordinates and velocities in a common geodetic reference frame can be achieved. Each GNSS CORS station collocated with a pair of calibration-grade corner reflectors, and it is next to the seismograph of the national seismological network.

4 June 2021- SOUN SAR Stations at Souni site



9 June 2021 – MATS SAR Stations at Mathiatis site



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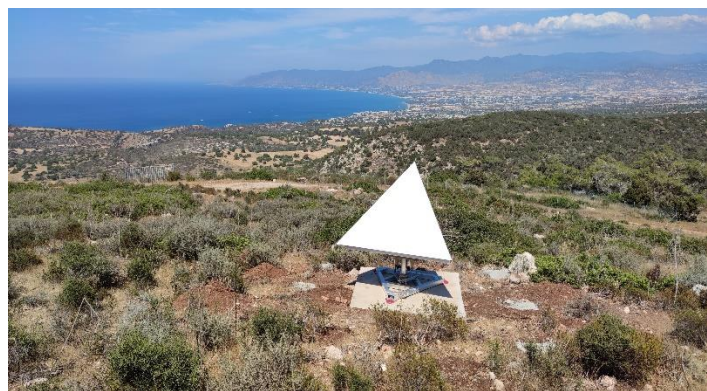
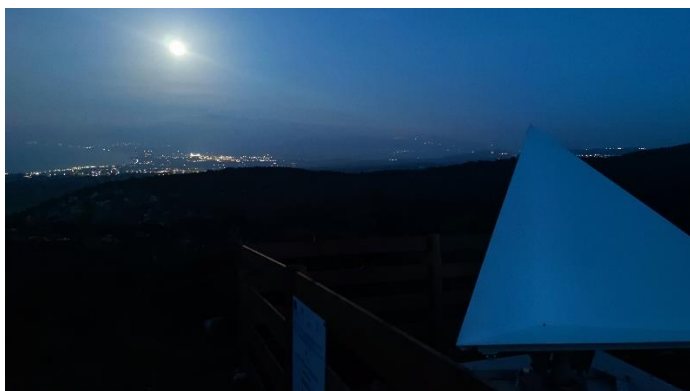
11 June 2021 – TROU SAR Stations at Troulloi site



16 June 2021 – ALEV SAR Stations at Alevga site



18 June 2021 – AKMS SAR Stations at Akamas site



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24 June 2021 – ASGA SAR Stations at Asgata site



IAG 2021 Presentation of CyCLOPS

02 July 2021 - CyCLOPS was presented at the IAG 2021, Beijing China

Assistant Professor Chris Danezis participated at the IAG 2021 "Scientific Assembly of the International Association of Geodesy" which took place virtually on the 28th of June to 02nd of July 2021 in Beijing, China. During the conference he gave an oral presentation entitled "CyCLOPS: A National Integrated GNSS/InSAR Strategic Research Infrastructure for Monitoring Geohazards and Forming the Next Generation Datum of the Republic of Cyprus", on the 02nd of July 2021 (session 5.7: Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction). During the conference, he had the opportunity to promote CyCLOPS infrastructure and discuss with stakeholders and scientists. He highlighted the importance and benefit for Cyprus from establishing a strategic infrastructure unit for natural hazards funded under the CyCLOPS Project, as well as the process of the implementation of the project.



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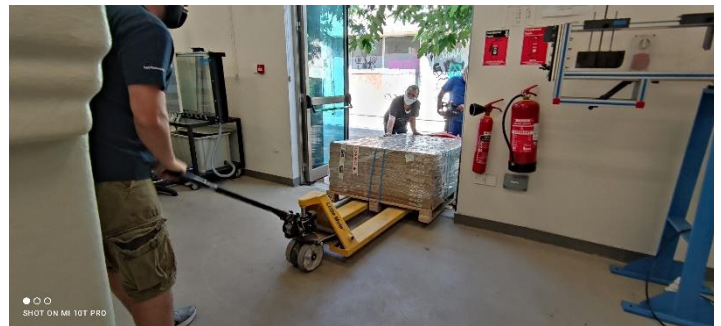


Arrival of CyCLOPS Equipment at CUT

July 2021 - According to the specifications and criteria of the CyCLOPS (Cyprus Continuously Operating Natural Hazards Monitoring and Prevention System (RPF / INFRASTRUCTURES / 1216/0050)) research program of the Department of Civil Engineering and Geoinformatics Engineers of the Cyprus University of Technology, the equipment which will be installed within seven (7) different locations nationwide has been set on track.

A competition has been announced for the equipment and specifications that are required by the program on October 16, 2019.

After the closing of the competition for the GPS / GNSS equipment that will be installed at the appointed locations, the specifications submitted by the interested parties will be thoroughly checked with the aim to make this equipment as efficient as possible in the various locations, which were deemed optimal for the necessary measurements of the CyCLOPS research project. This equipment will operate on a 24-hour basis and will provide daily accurate measurements.





Installation of the CyCLOPS GNSS CORS Stations

Permanent Segment (PS) of CyCLOPS includes six (6) cutting-edge continuously operating high-rate GPS/GNSS reference stations, weather stations, and tilt-meters, which have been installed at specific sites, on top of highly stable monuments to estimate ground displacements. The stations are located all over Cyprus, specifically two (2) in Limassol (ASGA, SOUN) and one in Nicosia Districts (MATS, ALEV) and, one (1) in Larnaca (TROU) and one (1) in Paphos Districts (AKMS), respectively. Each GNSS CORS station collocated with a pair of calibration-grade corner reflectors, and it is next to the seismograph of the national seismological network. The specifications of the equipment and details of the new sites follow:

Monumentation	Shallow-drilled braced Quadpod (according to UNAVCO specs) / Stainless Steel Truss
GNSS Receiver	Trimble® Alloy (GPS+GLN+GAL+BDS+IRNSS+QZSS+SBAS)
GNSS Antenna	Trimble® Ti-v2 Geodetic Choke Ring with SCIGN Radome
Weather Station	Vaisala PTU 307 with solar radiation shield
Tiltmeter	Jewell D-711-A-S
Geology	Bedrock

26 July 2021 – TROU00CYP GNSS CORS Station at Troulloi Site



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27 July 2021 – ASGA00CYP GNSS CORS Station at Asgata Site



28 July 2021 – SOUN00CYP GNSS CORS Station at Souni Site



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29 July 2021 – AKMS00CYP GNSS CORS Station at Akamas Site



30 July 2021 – MATS00CYP GNSS CORS Station at Mathiatis Site



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31 July 2021 – ALEV00CYP GNSS CORS Station at Alevga Site



Publications

August 2021

1. **D. Kakoullis**, K. Fotiou, G. Melillos, and C. Danezis. Considerations and Multi-Criteria Decision Analysis for the Installation of Permanent Infrastructures for Continuous Space-based Monitoring of Natural Hazards. In *40th Earsel symposium*. Earsel, June 2021.
2. **K. Fotiou**, D. Kakoullis, M. Pekri, G. Melillos, R. Brcic, M. Eineder, D. G. Hadjimitsis, and C. Danezis. Space-based Deformation Monitoring of Coastal Urban Areas: The Case of Limassol's Coastal Front. In *40th Earsel symposium*. Earsel, June 2021.



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