HELLENIC REPUBLIC
Ministry of Digital Governance

Hellenic Cadastre

The Hellenic Positioning System (HEPOS)

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HELLENIC CADASTRE

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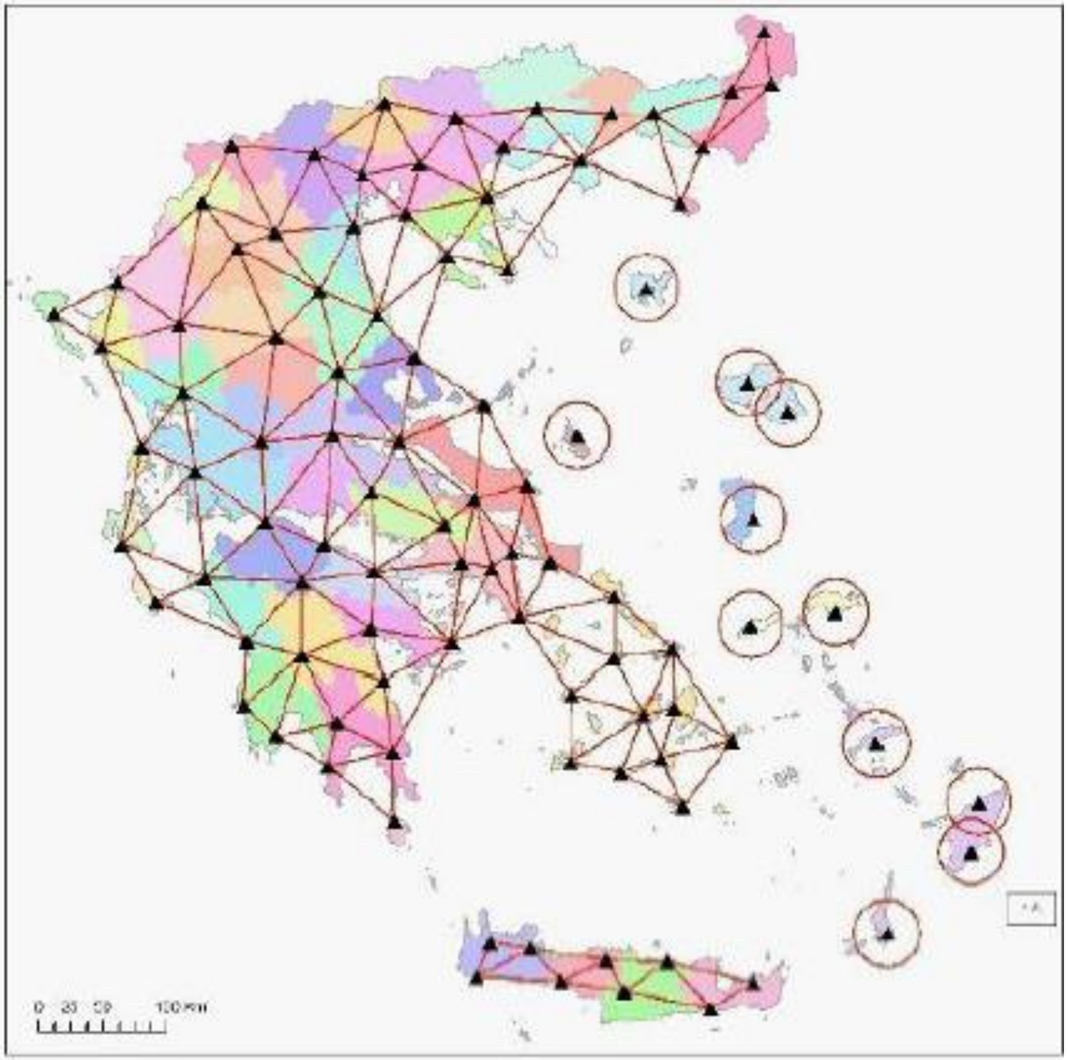
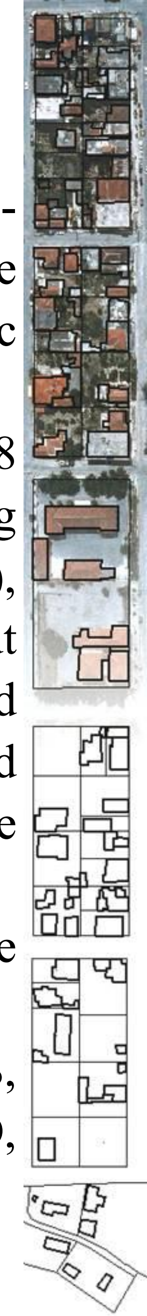
The Hellenic Positioning System (HEPOS)



Network of the HEPOS Continuously Operating Reference Stations

- It was developed in 2004-2007 to cover mainly the development of the Hellenic Cadastre
- It consists of a network of 98 Continuously Operating Reference Stations (CORS), suitably situated throughout the country and connected through primary and secondary VPN lines with the Control Center
- It has been in operation since 2008
- It uses all major GNSS: GPS, GLONASS, GALILEO, BEIDOY and SBAS



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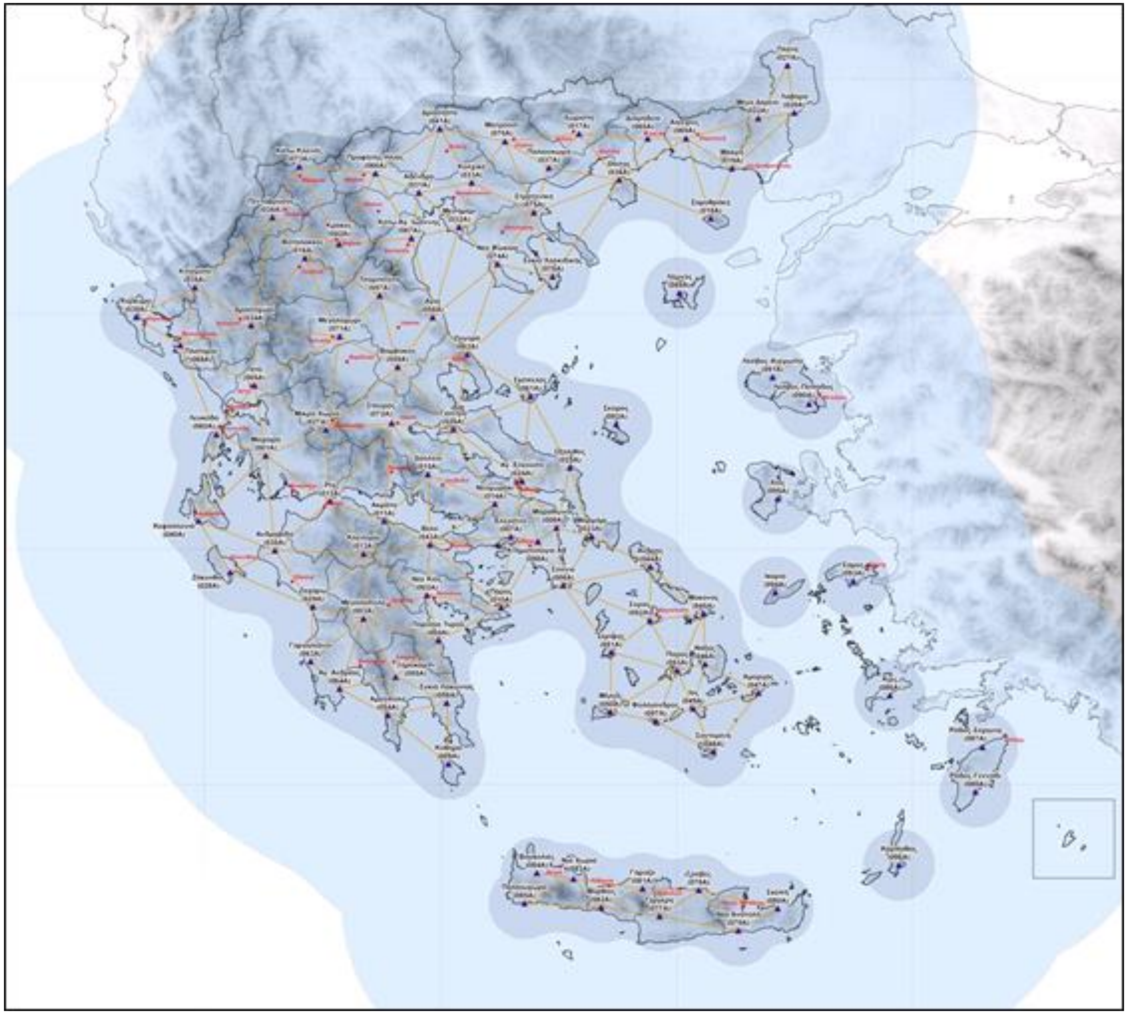

Map of HEPOS coverage
(Areas shaded in dark blue are those that have the potential for high accuracy measurements)

- It offers network solutions (VRS, MAC, FKP) in the continental part of the country and in the island of Crete and single base solutions in the isolated islands

- It offers data for Real Time Kinematic (RTK), DGPS, and post-processing applications.

- Major characteristics:
    - speed in fixing and making measurements
    - High accuracy (~+/-3 cm) ,
    - precision and reliability
    - homogeneity

- It has become the *de facto* realization of the Hellenic Geodetic Reference System ‘87

The Hellenic Positioning System (HEPOS)

Major equipment components of the system

HEPOS Control Center hardware

HEPOS Continuously Operating Reference Station (Antenna)

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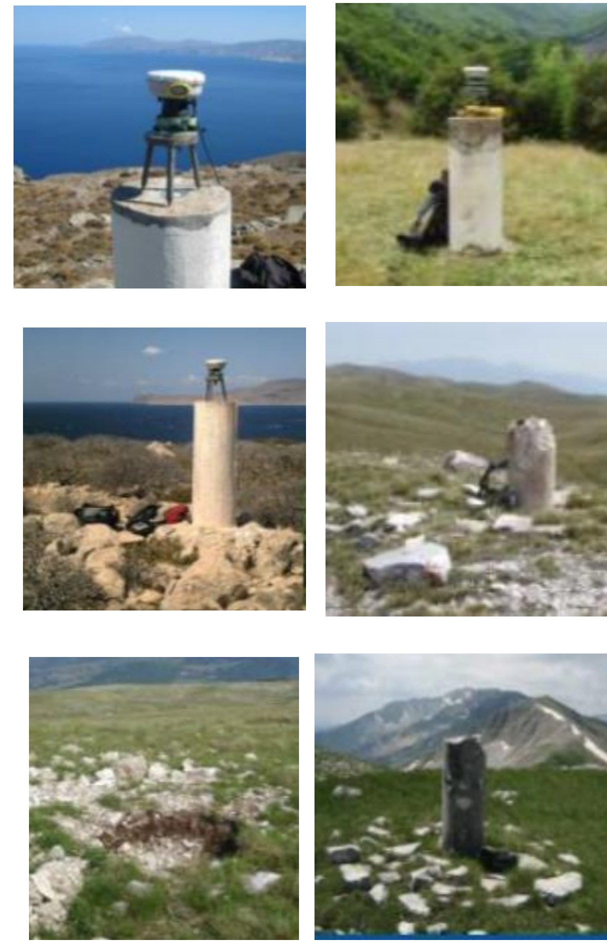


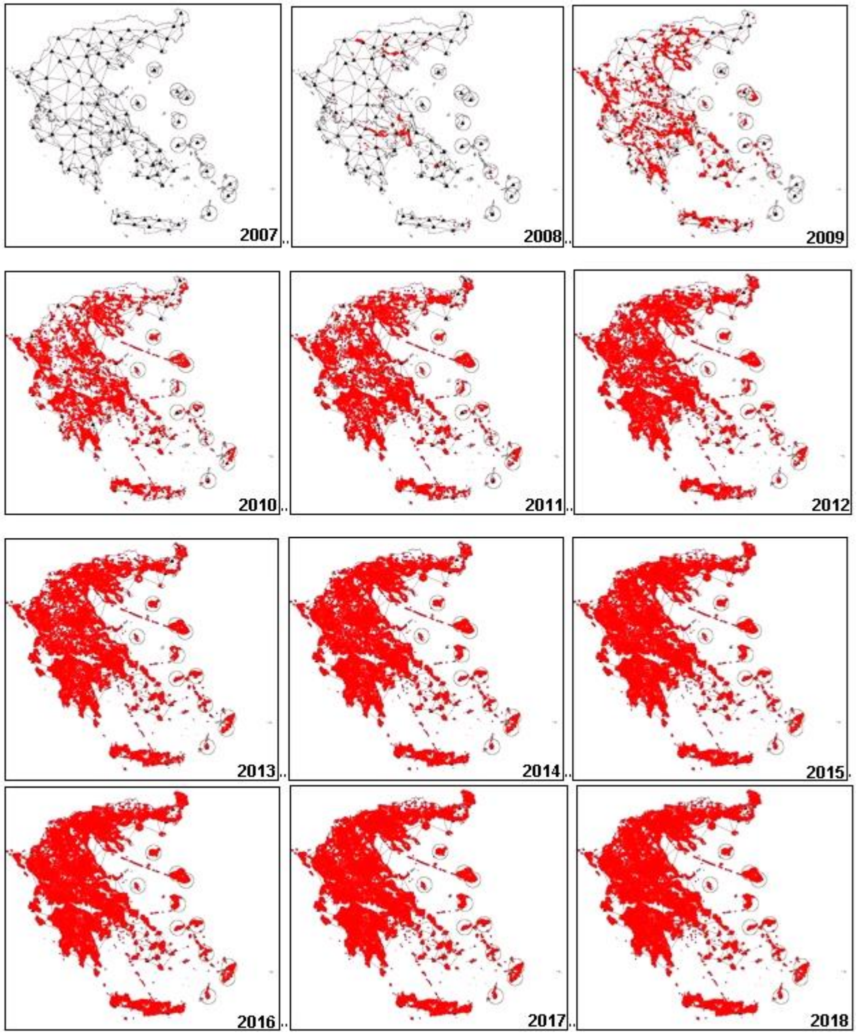
Indicative traditional geodetic network locations (~26.000 locations). Have being replaced by the HEPOS permanent stations

The Hellenic Positioning System (HEPOS)

Office building hosting the Hellenic Cadastre’s Geodesy Division

- The HEPOS Service is situated in the central offices of the Hellenic Cadastre
- It is operated by the Geodesy Division
- The staff consists of three (3) experts, supported, technically, by an external contractor
- Occasionally it is supported from other Hellenic Cadastre personnel for non-technical kinds of works

The Hellenic Positioning System (HEPOS)
Evolution of the use of the system through time



Locations of surveying measurements using HEPOS

The Hellenic Positioning System (HEPOS)
Number of active users and licenses per year

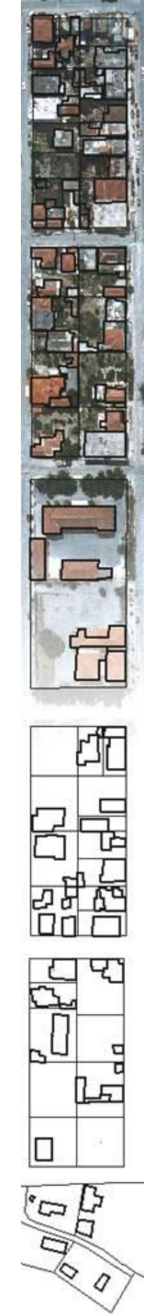
Category of user/Year	2019	2020	2021	2022	2023	2024
Discrete users	1.191	1.255	1.263	1287	1342 (67 HC contractors)	1385 (64 HC contractors)
Discrete user accounts	1.701	1.745	1.771	1867	1953 (319 HC contractors)	2013 (298 HC contractors)
Annual licenses of unlimited use	88	94	139	158	196	247
3-montly licenses of unlimited use	85	68	76	92	99	98
Post-processing and time	48	30	41	28	32	22

The Hellenic Positioning System (HEPOS)
Public sector agencies supported free of charge

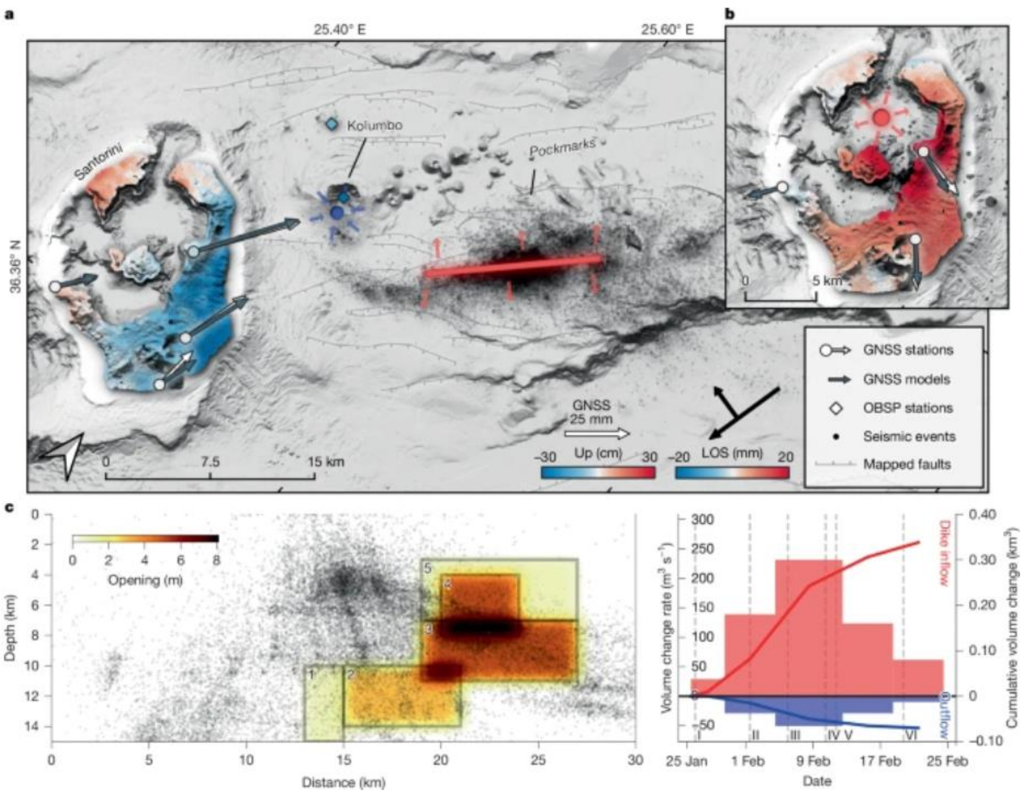
Public sector agencies : 21 (59 annual licencies)

Partial list:

- General Secretariat of the Public Assets Management
- The Hellenic Military Geographical Service
- The Hydrographic Service of the Hellenic Navy
- The Topographic Army Division
- Counter Earthquake Disaster Planning and Protection Organization
- University Forests Management and Administration Fund
- Culture Resource Management and Development Organization
- Hellenic Geological and Metallurgical Research Authority
- …

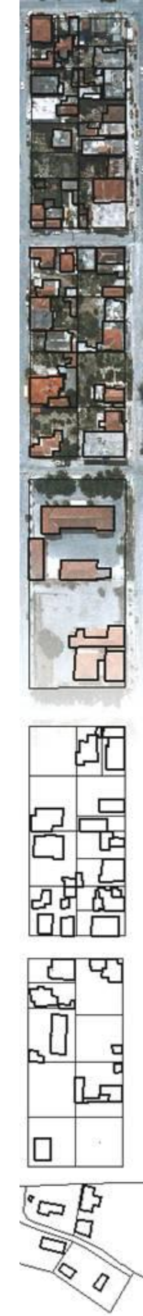


Notable applications during the past year



Monitoring the earthquake sequence in Santorini, Winter 2025
Source: Marius P. Isken et al., 2025, "Volcanic crisis reveals coupled magma system at Santorini and Kolumbo" *Nature* volume 645, pages 939–945 (2025)

- Daily monitoring the earthquake activity in Santorini
- Daily monitoring of the earthquake prone area of the Corinthian Gulf
- Development of a high accuracy and analysis DEM using LiDAR technology
- Use it in precision agriculture
- Train tracking (Legislation)

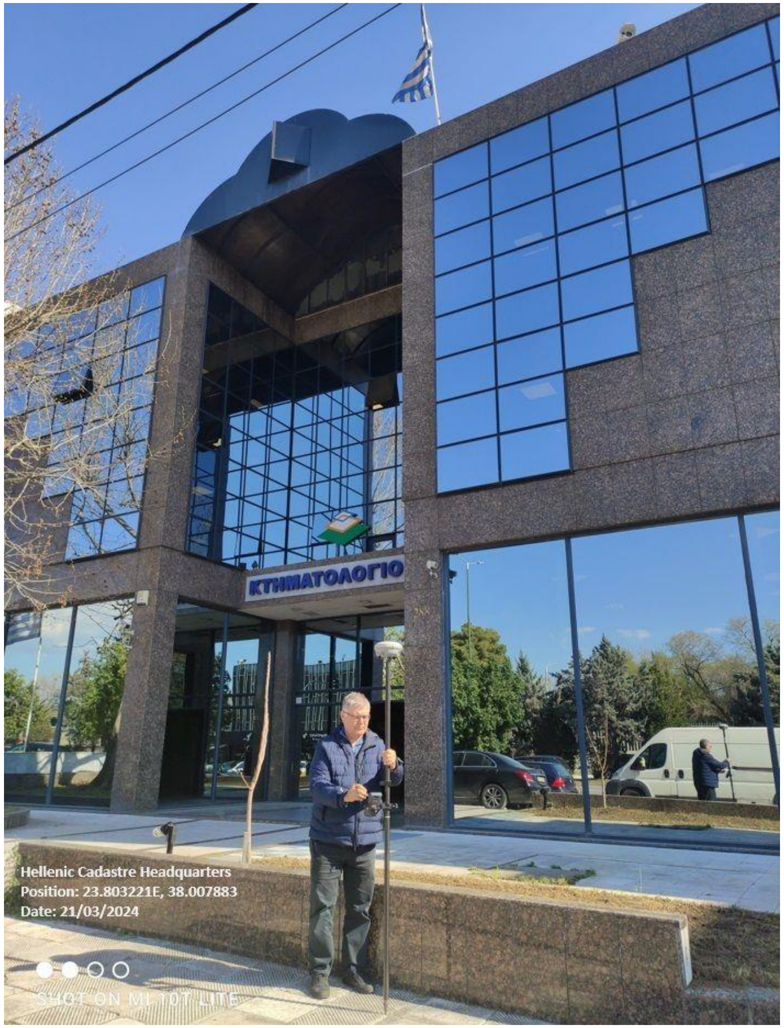


Future plans

Field measurements using a CORS GNSS

- Sustain the system's operation and high levels of service to its users
- Expand user support by upgrading the HEPOS web portal
- Develop the HEPOS e-shop
- Introduce use of chatbot to support users on a 24/7 basis
- Engage more actively in international activities and cooperations (e.g. UN-GGCE, EUPOS etc.)
- Get involved in new emerging application fields (autonomous vehicle navigation, precision agriculture etc.)
- Upgrade the Hellenic Geodetic Reference System

Summary and conclusions



Field measurements using HEPOS

The Hellenic Positioning System:

- **is a state of the art CORS GNSS**
- **has played a pivotal role in the development of the Hellenic Cadastre**
- **supports a significant number of users in non-cadastral operations and works**
- **Acts as a benchmark for other CORS GNSS systems in Greece**
- **Has the potential to support many other modern day emerging applications**
- **Web: https://www.hepos.gr**