

NATIONAL OBSERVATORY OF ATHENS



INSTITUTE FOR ASTRONOMY, ASTROPHYSICS, SPACE
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NELIOTA: ESA's new lunar monitoring project in collaboration with the National Observatory of Athens

NELIOTA is an activity initiated by the European Space Agency (ESA), which was recently launched at the National Observatory of Athens. The project aims to count and characterise the number and distribution of near-earth objects (NEOs). NEOs are meteoroids, comets or asteroids found in the neighbourhood of the Earth. Large NEOs can pose a threat to humans, as some have the potential to impact the Earth. The Earth's atmosphere protects us from impacts of small NEOs, most of which burn up as they enter the atmosphere at great speeds. Only the largest ones have the potential to reach the surface. On the Moon, however, the absence of an atmosphere means that all NEOs that enter the Moon's gravity will impact the surface. Impacts on the non-illuminated side of the Moon cause a visible flash that lasts about 1 second and results in a crater. Scientists are interested in understanding the size distribution and frequency of NEOs in order to assess the threat of small NEO collisions to orbiting spacecraft and to future ESA Moon missions.

The NELIOTA project will use existing facilities at the National Observatory of Athens to establish an operational system that will monitor the Moon, looking for faint NEO impacts. The project involves upgrading the 1.2m Kryoneri telescope, located in the Northern Peloponnese, in Greece, as well as procuring two specialised fast-frame cameras. Specialised software will be developed to control the telescope and cameras, as well as process the resulting images to detect the impacts automatically. The NELIOTA system will then publish the data on the web so it can be made available to the scientific community and the general public.

The objective of this three and a half year activity is to design, develop and implement a highly automated lunar monitoring system. The system will conduct an observing campaign for 2 years searching for NEO impact flashes on the Moon. The impact events will be verified, characterised and recorded. The 1.2m Kryoneri telescope will be capable of detecting flashes far fainter than telescopes currently monitoring the Moon. It is expected that NELIOTA will be able to record NEOs weighing just a few grams.

This activity is being undertaken by a team led by Dr. Alceste Bonanos at the Institute for Astronomy, Astrophysics, Space Applications & Remote Sensing at the National Observatory of Athens, Greece. The upgrade of the 1.2m Kryoneri telescope will be undertaken by DFM Engineering, Inc. The project website can be found here:

neliota.astro.noa.gr

This project forms part of many activities initiated and/or sponsored by the European Space Agency to help have a better understanding of our Space environment. In parallel to this exciting new venture, the Agency is also examining our space weather and the detrimental impact of space debris.

More information are available www.astro.noa.gr

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