Astronomy in Focus
XXXIInd IAU General Assembly, August 2024
Diana M. Worrall, ed.
doi:10.1017/S1743921325000596

Europlanet Telescope Network for promoting international collaboration

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Abstract. The Europlanet Telescope Network (EPN-TN), launched in 2020, is a network of small and medium-size telescopes. The EPN-TN currently comprises 17 observatories with 46 telescopes ranging from 2 m to 30 cm in size. The network is open for new infrastructures. Observatories from Africa are particularly welcome. In 2024, the network is entering a new sustainable operation phase after the end of European Commission's funding via the Europlanet 2024-Reseach Infrastructure project. The network is fostering the international collaboration. Majority of the observatories provide free of charge observing time for the collaborative projects. The overview of the network and success stories are presented.

Keywords. Telescopes: networks, telescopes: optical

1. Introduction

The Europlanet Telescope Network was established in 2020 to provide coordinated observations and rapid responses in support of planetary research and beyond. It is the first network of its kind that combines a diverse set of medium- and small-scale observational facilities in Europe and worldwide in support of planetary research. Together with the Faulkes Telescope Network which provides access to 21 telescopes, the Europlanet Telescope Network currently includes 46 professional telescopes (Table 1) and is open to new facilities.

Through a rolling-call for applications that ran from June 2020 to December 2023, 52 proposals for observing time were submitted. From 335.5 nights requested, the Europlanet Telescope Network's Scientific Advisory Panel awarded 256.5 nights on 12 telescopes and provided travel-support for visits to 5 observatories. Observers from 12 countries were awarded the observing time, with successful applicants spanning three continents. Figure 1 displays the country breakdown of successful observers *vs.* applicants.

Of the successful projects, 10 have focused on asteroids, comets or Trans-Neptunian Objects, 27 were related to exoplanets or their host stars, and one observed lunar impact flashes during the Perseids meteor stream. Time has also been awarded to six non-planetary projects, covering diverse astronomical topics, from a hunt for black holes to understanding protostar environments.

To date, 19 papers published in peer-reviewed journals have credited the Europlanet Telescope Network (Baluev *et al.* 2021, Barkaoui *et al.* 2023, Benni *et al.* 2021, Biagiotti *et al.* 2024, Dudziński *et al.* 2020, Dybczyński et al. 2024a, Hinse *et al.* 2024, Figuera Jaimes *et al.* 2024, Marciniak *et al.* 2023, Marciniak *et al.* 2023, Mieczkowska *et al.* 2021, Rożek *et al.* 2023, Santos-Sanz *et al.* 2022, Scherf *et al.* 2020a,b, Southworth *et al.* 2022, von Essen *et al.* 2021, von Hippel *et al.* 2024, Wlodarczyk *et al.* 2021).

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https://doi.org/10.1017/S1743921325000596 Published online by Cambridge University Press

Table 1. Europlanet Telescope Network.

Observatory	Country	Telescopes
Terskol Peak Observatory	Ukraine	2 m and 60 cm
Rozhen Observatory	Bulgaria	2 m, 60 cm and 50/70 cm
Faulkes Telescope Project	Worlwide	two 2 m, nine 1 m, and ten 40 cm robotic
Moletai Astronomical Observatory	Lithuania	1.65 m and 35/51 cm
Tartu Observatory	Estonia	1.5 m and 60 cm, and 30 cm robotic
Danish telescope at La Silla Observatory	Chile	1.54 m
Skalnate Pleso Observatory	Slovakia	1.3 m and 61 cm
Calar Alto Observatory	Spain	1.23 m
Kryoneri Observatory	Greece	1.2 m
Pic du Midi Observatory	France	1.06 m
Konkoly Observatory	Hungary	1 m and 80 cm
Observatorio Astrofísico de Javalambre	Spain	80 cm
Observatori del Montsec	Spain	80 cm
Observatorio del Teide	Spain	82 cm and 45 cm
Chuguev Observatory	Ukraine	70 cm
Lisnyky Observation Station	Ukraine	70 cm
Beacon Observatory	UK	42 cm

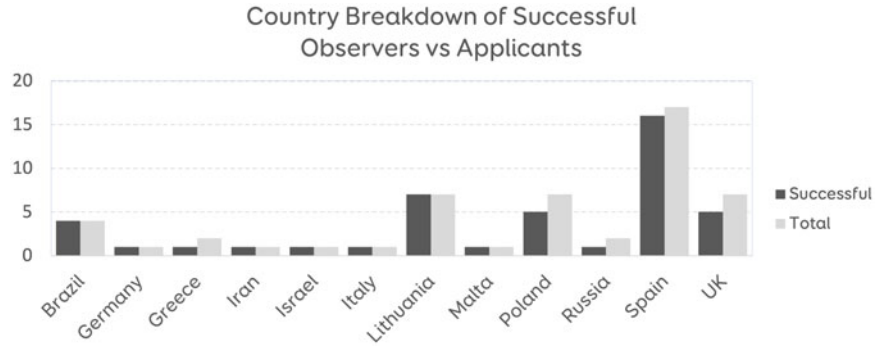

Figure 1. Country breakdown of successful observers *vs.* all applicants.

2. Amateur involvement

Since the beginning, there was a clear indication that the Europlanet Telescope Network had great potential to attract trained amateur astronomers. Almost half the proposals submitted have been led by amateur astronomers, out of which 21 have been granted. In particular, the Europlanet Telescope Network has proved a valuable tool for community-based observation campaigns, such as the ExoClock project† to monitor precise transits of exoplanets in support of the European Space Agency (ESA) mission, Ariel. High professionalism was demonstrated by Spanish amateur observers Mercedes Correa and Florence Libotte and Brazilian amateur observer Andre Oliveira Kovacs. Solar System planet observers responded to the observational allers issued by the Planetary Virtual Observatory & Laboratory (PVOL)‡ to observe Saturn polar storms, Jupiter convective storm in the South Temperate Belt, Venus, Neptune, Uranus and other objects. In the Gaia Ground-based Observational Service for Asteroids website§ always is possible to find for observations objects important at the relevant time. The amateur astronomer from Malta, Charles Galdies, was investigating synodic rotation periods of members pertaining to the Koronis Asteroid Family, Rafael González Farfán from Spain was interested in time-resolved astrometry and photometry of asteroids 5780-Lafontaine, 9560-Anguita, 1485-Isa, 2134-Dennispalm and others.

† https://www.exoclock.space
‡ https://pvol2.ehu.eus/pvol2
§ https://www.gaiagosa.eu

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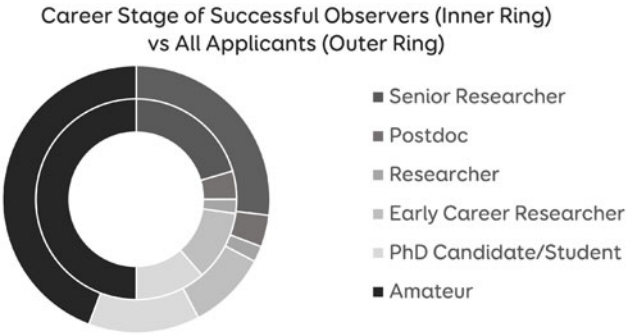

Figure 2. Career stage of successful observers *vs.* all applicants.

3. Widening of involvement and training

The Europlanet Telescope Network has also been successful in supporting diversity and inclusion, with applications from early career scientists, researchers from under-represented states (URS) and female researchers all having high success rates (Figure 2).

We organised more than 20 workshops and summer schools. The meetings attracted participants from 43 countries (11 of them EU URS and 23 Non-EU). E.g., during the pandemic period on the 16–27 September, 2021, we organised the virtual summer school on "Asteroid observations" with 40 participants from 32 countries. Remote observations with the telescope of Moletai Astronomical Observatory in Lithuania were offered. In February 9–11, 2022, we organised the Europlanet Telescope Science Workshop. The goal of this workshop was to encourage community-led proposals and to highlight scientific results achieved with EPN-TN and other medium size and small telescopes. We invited interested astronomers and amateurs to participate, to learn more about the instruments offered, their capabilities, and scientific potential. Among 210 participants, there were 63 early career researchers, 80 amateurs, 22 educators, and 43 senior researchers. The Europlanet professional and amateur comet community had the hybrid workshop in Prague on the 10–12 June, 2022, with 35 onsite and 45 online participants. A summer school "Space missions: ground-based observations and science communication" was organised on the 8–18 August, 2023, at the Moletai Astronomical Observatory in Lithuania with 21 onsite and 47 online participants. Asteroid Research Training Workshop was held on the 21–25 August, 2023, at the Tartu Observatory in Estonia with 19 onsite and 23 online participants.

4. Conclusion

There are many medium-size and small professional telescopes around the world that are under-used. By networking these diverse observatories, we can take advantage of their geographical spread and relative lack of time constraints to carry out exciting, cutting-edge research.

Observatories from all over the world are welcome to join the Europlanet Telescope Network and to promote the international collaboration (Figure 3).

Majority of the Europlanet Telescope Network observatories are providing free of charge observing time for collaborative projects and the Faulkes Telescope Project for the education related projects.

Find out more about the Europlanet Telescope Network at its website†.

† https://bit.ly/EuroplanetTelescopeNetwork2024

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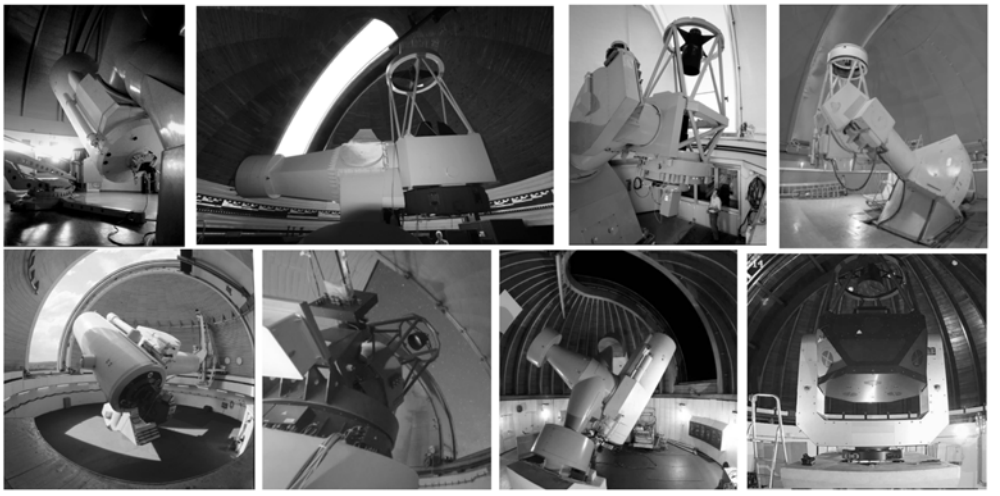

Figure 3. Observatories from all over the world are welcome to join the Europlanet Telescope Network and to promote the international collaboration.

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