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1. **Nature:** R = Report, P = Prototype, D = Demonstrator, O = Other

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PU	PP	RE	CO
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Executive Summary / Abstract:

This annual report provides a comprehensive overview on the activities performed within WP12 NA2, Coordination of Ground-based Observations, over the 2nd project year of Europlanet 2024-RI. These include, among others, the establishment of the Europlanet Telescope Network, collaboration with amateur astronomers, the organization of virtual events and management and dissemination activities. It also gives an overview on the objectives and impact of NA2, as well as deviations from the original work plan due to the COVID-19 pandemic.

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Deliverable

1 Explanation of work & Overview of progress

1.1 Deliverables

Deliverable number	Deliverable name	Lead participant	Dissemination level	Delivery date (month)	Status
D12.1	Observation Campaign Website and Observational Alert System	AMU	PU	12	Delivered on time
D12.2	NA2 Annual Report	IWF-OEAW	PU	12	Delivered on time

1.2 Milestones

Milestone number	Milestone name	Due date (month)	Means of verification	Status
MS9	Kick-Off Meeting of NA2	3	meeting organized and held	held as virtual meeting on March 30, 2020
MS10	Establishment of the Scientific Working Group	3	Scientific Working group Established	established during kick-off meeting on March 30, 2020
MS13	NA2 Website and Observational Support Application Form	4	NA2 website and application form for the observational support online.	published online on June 01, 2020
MS14	Memorandum of Understanding	5	Set up to be signed by Europlanet 2024 and collaborating telescope facilities.	finalized and sent to facilities in June 2020
MS20	Amateur Workshop Guidelines	8	Workshop Guidelines for the regional amateur trainings established	finalized in September 2020
MS32	Year 1 Scientific Working Group (SWG) Telecons	12	4 SWG telecons held to decide on observational	Meeting to discuss review process on March 31, 2020; first review on November 27, 2020

			support applications.	
MS33	Year 1 Amateur Training Workshops	12	At least one big amateur workshop at Pic du Midi held	held as 3 virtual workshops at EPSC 2020 due to COVID-19
MS34	Year 1 Observational Workshops	12	have been organized and held	shifted to PM19 due to COVID-19
MS35	Year 1 Observational Support	12	Up to 50 observation nights agreed to be funded by the project	first observation nights taking place in January 2021
MS58	Year 2 Scientific Working Group (SWG) Telecons	24	SWG telecons held on average every two months depending on incoming proposals	Telecon on 30. Nov. 2021 on implementation of "fast-tracking" follow up observations.
MS59	Maintenance/further updates of the Observational Alert System, 1st iteration		Work in progress as scheduled	www.astro.amu.edu.pl/parsec
MS60	Year 2 Amateur Training Workshops		under progress – but only virtual (already held one virtual training workshop + 3 EPSC splinter sessions)	http://mao.tfai.vu.lt/europlanet2022/ Online Workshop, Postponed to 9. – 11. 2. 2022
MS61	Year 2 Observational Workshops		Hybrid Workshop 16.- 27. 6. 2021	Europlanet Virtual Summer School on "Asteroid Photometry" at Moletai Observatory, Lithuania
MS62	Year 2 Observational Support		Under progress, Rolling call open	55 nights and 39 hours of observational time granted.

1.3 Objectives

1.3.1 Task 12.1 Management of the Work Package

Task 12.1, managed by a core team led by IWF-OEAW, supported by the deputy UoE and advised by the task leaders and its deputies, coordinates and manages NA2. The core team aims to also work closely with NA1 and to exploit the Europlanet Society's Regional Hubs to distribute information on observational campaigns and training events to the wider planetary science community and to bring in new participants.

In this project year, the overall objectives of this task are:

- Overall coordination of the WP and support of all NA2 tasks.
- Distributing and disseminating the campaigns, events and results of NA2.
- Maintaining the NA2 website and updating as required the observational support application form (as part of the general Europlanet website) together with Tasks 12.2 and 12.4 (MS13).
- Preparing the NA2 Annual Report (D12.3).

1.3.2 Task 12.2 Coordination of Observations

This task, led by UoE and supported by AMU, IWF-OEAW, UPV/EHU, VU and OBSPARIS, is organising the cooperation of a network of small telescopes (i.e. the so-called Europlanet Telescope Network) to facilitate and coordinate observation campaigns related to different planetary science topics. It has established a Scientific Working Group (SWG), thereafter called 'Science Advisory Panel' (SAP), including science experts of different research topics. The SAP plays a key role in developing the network of telescope facilities and in supporting and coordinating planetary observation campaigns. The SAP is also reviewing applications for observational support. In addition, Task 12.1, led by AMU, developed a generalized alert system for observations, which notify and allow participating observatories to select appropriate targets across the diverse range of planetary science topics listed above. A dedicated website has been created, gathering easy-to-find information about the observation campaigns and links to the tools for observation planning. Two new members of the SAP have been nominated: Alessandra Migliorini as Deputy and Josselin Desmars as expert for the topic of "Stellar occultation"

In the second project year, the overall objectives of this task are:

- SAP reviewing of incoming application forms for observing time on the telescope network (MS32)
- Upgrading of the Scientific Advisory Panel (MS10) if necessary
- Further work in organising the network of small telescope facilities
- Development of the Observational Support Application Form together with Tasks 12.1 and 12.4 (MS4)
- Development of the observational campaign website and observational alert system (D12.1)

1.3.3 *Task 12.3 Amateur Education & Training*

This task, led by IWF-OEAW and supported by UPV/EHU and OBSPARIS, exploits the amateur community's potential to support planetary science i) by streamlining workflows and cooperation with professional scientists, and ii) by reaching out to the diverse regional communities within Europe and beyond. The main objective of this task is the organisation of dedicated training and education workshops for amateurs. This will include workshops that will be held in the different Europlanet Regional Hubs to engage the different local communities. To assure quality, standardised workshop guidelines and tutorials will be developed in the project.

In this project year, the overall objectives of this task are:

- Two amateur training workshops.
- Supporting amateur observations in planetary sciences

Due to COVID restrictions no face-to-face meetings were possible; instead regional virtual meetings and dedicated splinter meetings were held at the virtual EPSC conference. Several bursaries were issued to enable amateurs to participate in the EPSC 2021 conference.

1.3.4 *Task 12.4 Ground-based Observations Support*

This task, led by VU and supported by IWF-OEAW, UPV/EHU, UoE and OBSPARIS, supports coordinated planetary observation campaigns by (i) supporting scientists and trained amateurs to observe at the telescope network set up in Task 12.2, (ii) supporting professional telescope facilities to observe in dedicated observation campaigns, (iii) supporting workshops for the organisation of coordinated observation campaigns. Task 12.4 (together with Task 12.2) has set up a simple application form to the telescope network and the SAP which recommends which applications could be funded. Observational data produced during supported campaigns are made publicly available through the Virtual Observatory of VESPA and observatory archives. A Memorandum of Understanding (MoU) was set up to facilitate the collaboration between the Europlanet 2024 Research Infrastructure and the telescope facilities.

In this project year, the overall objectives of this task are:

- Expansion of the Europlanet Telescope Network, preparation of a MoU to be signed by Europlanet and new telescope facilities
- Supporting researchers and amateurs to observe at the telescope network
- Organisation of an Observational Workshop (MS61) 16 - 27 June of 2021 at the Moletai Astronomical Observatory in Lithuania (Europlanet Virtual Summer School on "Asteroid Photometry")

1.4 **Explanation of the work carried per WP**

1.4.1 *Task 12.1 Management of the Work Package*

The management structure of NA2 was established at the beginning of the project with IWF-OEAW (Günter Kargl and Manuel Scherf [until 30. 9. 2021]) leading the project and UoE (Colin Snodgrass) as deputy. The core team of NA2 is further

supported by all other beneficiaries within NA2, i.e., UPV/EHU (Ricardo Hueso and Itziar Garate-Lopez), AMU (Edyta Podlewska-Gaca and Grzegorz Dudziński), VU (Grazina Tautvaisiene) and OBSPARIS (Francois Colas).

NA2 website (part of MS13)

The website of NA2 (<https://www.europlanet-society.org/europlanet-2024-ri/telescope-network/>), as part of the main Europlanet website, was prepared and put online on June 1, 2020 together with the NA2 Call for Observations (MS4, <https://bit.ly/EPNObservationCall>). The website is continuously updated to disseminate the information provided by NA2.

Support and communication within NA2

Task 12.1 further coordinated the communication and collaboration between the different tasks of NA2 and with Europlanet 2024-RI. NA2 telecons combining all tasks and beneficiaries took place on a bi-monthly basis. In addition, further online meetings were regularly organized to discuss amateur workshops and guidelines, the application form, proposals to the NA2 Call for observations and other NA2 related issues.

For dissemination activities see Section 22.

1.4.2 Task 12.2 Coordination of Observations

The main objective of this task was the establishment of a network of telescopes providing their facilities for observations to the planetary science community. This network, named the Europlanet Telescope Network, was established over the first months of the project and officially kicked-off with the start of the so-called NA2 Call for Observations on June 1, 2020 at <https://bit.ly/EPNObservationCall>. Through this open call, observers – professionals and amateurs – can apply to observe at the facilities in the network (see Task 12.4 for a full description of the application form and procedure). The Europlanet Telescope Network initially contained 15 different facilities from Europe and beyond and was extended to 17 observatories by the end of 2021. The network seeks to draw in further facilities and had already received interest from additional observatories such as the Entoto Observatory in Ethiopia and the Stefanik Observatory in the Czech Republic. The current facilities in the network are:

1. **Pic du Midi Observatory**, France, 1.06 m
2. **Moletai Astronomical Observatory**, Lithuania, 1.65 m and 35/51 cm
3. **Kryoneri Observatory**, Greece, 1.2 m
4. **Skalnate Pleso Observatory**, Slovakia, 1.3 m and 61 cm
5. **Faulkes Telescope Project**, worldwide, two 2 m, nine 1 m, and ten 40 cm robotic
6. **Tartu Observatory**, Estonia, 1.5 m and 60 cm, and 30 cm robotic
7. **Danish Telescope at La Silla Observatory**, Chile, 1.54 m
8. **Beacon Observatory**, UK, 42 cm
9. **Observatorio del Teide**, Spain, 82 cm and 45 cm
10. **Calar Alto Observatory**, Spain, 1.23 m
11. **Lisnyky Observation Station**, Ukraine, 70 cm

12. **Chuguev Observatory**, Ukraine, 70 cm
13. **Terskol Peak Observatory**, Ukraine, 2 m and 60 cm
14. **Konkoly Observatory**, Hungary, 1 m and 80 cm
15. **Ussuriysk Astrophysical Observatory**, Russia, 25 cm and 50 cm
16. **Rozhen Observatory**, Bulgaria, 2 m, 60 cm and 50/70 cm
17. **Observatorio Astrofísico de Javalambre. Spain, 80 cm (new since the end of 2021)**

Out of these 17 facilities, 6 are in under-represented countries and 3 in Eastern European states that are not part of the EU. Further details on the different observatories, including their equipment, costs and nights/hours provided to Europlanet can be found on the NA2 Call for Observations website (<https://bit.ly/EPNObservationCall>) and, particularly, in a comprehensive telescope summary table (<https://bit.ly/31zYpa1>) that was worked out by Task 12.4 in collaboration with the different facilities.

To counteract travel restrictions in view of COVID-19, 14 out of 17 of the observatories can already provide remote observations, i.e., the observer does not necessarily have to physically go to these facilities.



Figure 1. Location of the different facilities within the Europlanet Telescope Network.

Science Advisory Panel (MS58)

The Science Advisory Panel (SAP), initially called Science Working Group (SWG), was established at the virtual kick-off meeting on March 30, 2020 (MS9). Its main objective is coordinating and reviewing applications and observations of the Europlanet Telescope Network. Their members were chosen by the SAP according to their expertise on specific fields in planetary sciences and with respect to their links to ongoing and upcoming planetary science space missions. Two new members of the SAP have been nominated in 2021: Alessandra Migliorini as Deputy and Josselin Desmars as expert for the topic of “stellar occultation”

Science Advisory Panel:

- **Head:** Colin Snodgrass, UoE, UK (Co-PI of Comet Interceptor)
- **Deputy:** Alessandra Migliorini, INAF, Italy * **new since 2021**
- **Fireballs** (including Lunar Impact Flashes and Jovian fireballs): Detlef Koschny, ESA, The Netherlands
- **Stellar Occultation:** Josselin Desmars, OBSPARIS, France * **new since 2021**
- **Planetary Observations** (in support of upcoming missions such as Juno, BepiColombo, JUICE): Ricardo Hueso, UPV/EHU, Spain
- **Asteroid Light Curves** (including NEOS): Anna Marciniak, AMU, Poland
- **Comets** (upcoming mission Comet Interceptor): Oleksandra Ivanova, Astronomical Institute SAS, Slovakia
- **Exoplanets** (CHEOPS and upcoming missions such as PLATO, Ariel): Monika Lendl, Univ. Geneva, Switzerland

The SAP meets on a bi-monthly basis to discuss, review and rate incoming applications.

Development of the observational campaign website and observational alert system (D12.1)

The aim of this subtask, led by AMU, is to develop a generalized alert system for observations, which will notify and allow participating observatories to select appropriate targets across a diverse range of planetary science topics. This will provide both regular monitoring of targets and alerts for events requiring time-critical and/or spatially distributed observations (e.g., stellar occultation by asteroids). The service is based on the existing alert system software created to coordinate amateur observations of asteroids in support of the ESA Gaia mission (Gaia-GOSA, www.gaiagosa.eu) which currently provides targets for asteroid light curve observations based on the observer's location and the available targets at the time. Targets of interest of the new service will involve atmospheres of the giant planets (like convective storms or planetary disturbances), Mars and Venus observations, and ephemeris for their observation, asteroids, comets, exoplanets and other targets for which observations are needed.

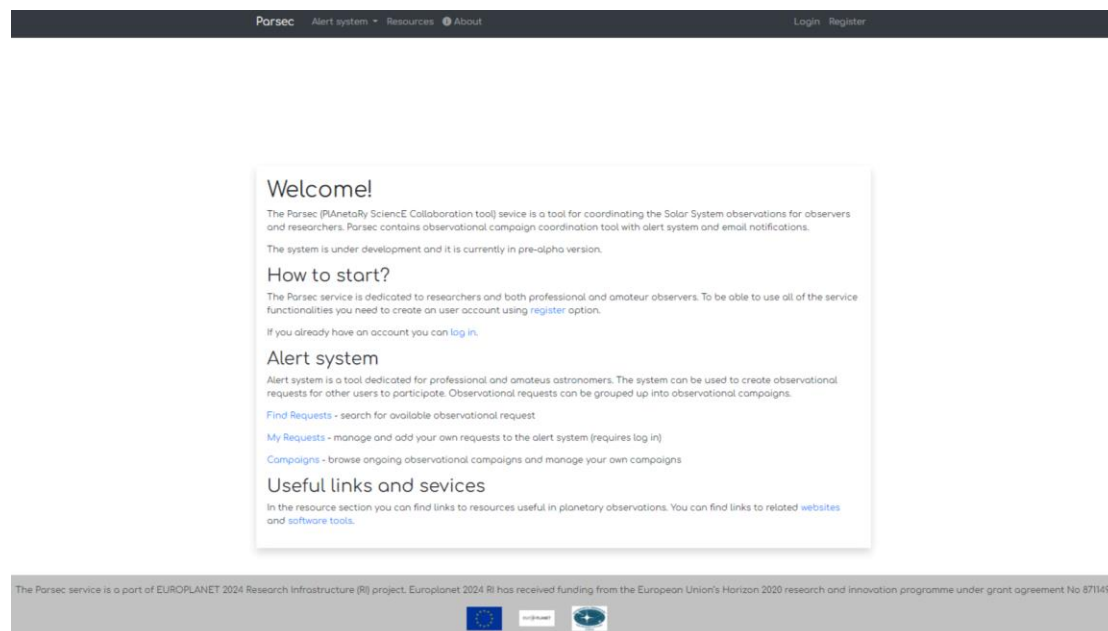


Figure 2. Homepage of the current prototype of the observational alert website.

After a rough concept plan for fulfilling the task was developed, the needs for an alert system have been established during an internal meeting. We have chosen as an optimal tool for service development: PARSEC (PIAnetaRy ScienceE Collaboration tool) which is a webapp created in Python and Flask and bootstrap frameworks. After the early development stage the main features were programmed, thereby enabling request views on the main page, request filtering by observation date, target category, ownership, campaign view and a notification system. The user can also establish their own preferences for notifications and follow requests/campaigns. In the *Requests*-menu there is the possibility of adding, editing, deleting, commenting the observational needs. Similarly, in *Campaigns* the user can start and coordinate observing campaigns of objects or events.

The first early prototype version was finished by the end of 2020, and can be found online at www.astro.amu.edu.pl/parsec; internal tests of the service have started. For further information on the service check the presentation at <https://bit.ly/3luMU5n> and the report on D12.1.

As scheduled, tests and improvements on the system will proceed and new functionalities will be added. The frontpage will be created, thereby joining other existing services for various planetary science topics. After this, the service will be made publicly available for users. The further development will then depend on the users' needs and requests.

Currently, the interface protocol with VESPA is implemented to facilitate data access.

1.4.3 Task 12.3 Amateur Education & Training

Amateur Workshop at Pic du Midi Obs. and virtual amateur workshops

Initially it was planned to organize an amateur workshop during summer 2020 at the Observatory Pic du Midi. Due to COVID-19 however, the observatory is still closed and this was not possible, and we are seeking to catch this up later-on, whenever travel restrictions will again allow face-2-meetings.

A virtual workshop and remote observations were held at the Calar Alto observatory on 15. – 16. May 2021, with about 70 participants.

3 virtual splinter meetings related to amateurs and Task 12.3 were organised instead and held at EPSC 2021 with a total number of about 160 participants; these were:

- Splinter EPSC 2021 / Amateur Training WS: Pro-Am collaborations (I): Juno's Extended Mission at Jupiter, 17 September, 2021, 45 participants.
- Splinter EPSC 2021 / Amateur Training WS: Pro-Am collaborations (II): JWST and the exploration of Giant Planets, 24. September 2021, 50 participants.
- Splinter EPSC 2021 / Amateur Training WS: Pro-Am collaborations (III): the EuropanetTelescope Network and ExoClockproject, 22. September 2021, 30 participants.

The first face-to-face training workshop will take place as soon as travel restrictions due to COVID-19 have been lifted. This will most likely be after late spring or early summer 2022.

A list of workshops can be found in Annex 2.

Amateur observational alerts and campaigns

NA2 additionally issued several observational alerts to the amateur community and supported different amateur observation campaigns during the first project year. These are described below:

Observational alerts:

On October 15th a new impact on Jupiter was discovered. This impact was the first flashing impact discovered by a researcher working actively on impacts: Ko Arimatsu from Kyoto University. He used a system specifically designed and operated to find these kind of impacts. A fast alert was made through PVOL, email lists and social media

on October 16th. Other observers in Japan witnessed the impact. High-resolution observations of the impact region obtained by JunoCam 28 hours after the impact did not show signatures of debris in the atmosphere. Sky and Telescope echoed the new impact on his webpage recommending potential observers to contact R. Hueso and/or Marc Delcroix.

(<https://skyandtelescope.org/astronomy-news/jupiter-whacked-again-japanese-astronomers-record-possible-impact/>).

A new second observer from Singapore found the impact in his video recordings of that night using the software DeTeCt. Analysis of the data is ongoing at UPV/EHU. Compared to the September impact this one is smaller and less bright but the quality of the data acquired is better.

On November 16 a new impact was detected and an alert issued via PVOL; a database on Jupiter impacts is considered to be implemented in PVOL in cooperation with VESPA.

Rencontres Transfrontalières Astronomes Amateurs:

This was an online meeting with Spanish and French amateur astronomers from the Basque Region in both Spain and France. R. Hueso participated with a talk on the role of amateur astronomers in the Juno mission. The talk included highlights on Europlanet activities such as PVOL and the JunoCam service now part of PVOL-VESPA. The event was organized by AstroBasque (Amateur Astronomical Association from French and Spanish Basque region).

Meeting Date: 16 October 2021

Meeting Location: Online, see: <https://www.astrobasque.com/les-rtta-2021/>

Audience(s): Amateur astronomers

Total Number of Attendees: >40

1.4.4 Task 12.4 Ground-based Observations Support

NA2 Call for Observations and application form

Four rounds of observation applications were evaluated during the period of two years. So far, observations of cumulative 55 nights and 39 hours in total have been granted. A list of all applications can be found in Annex 1.

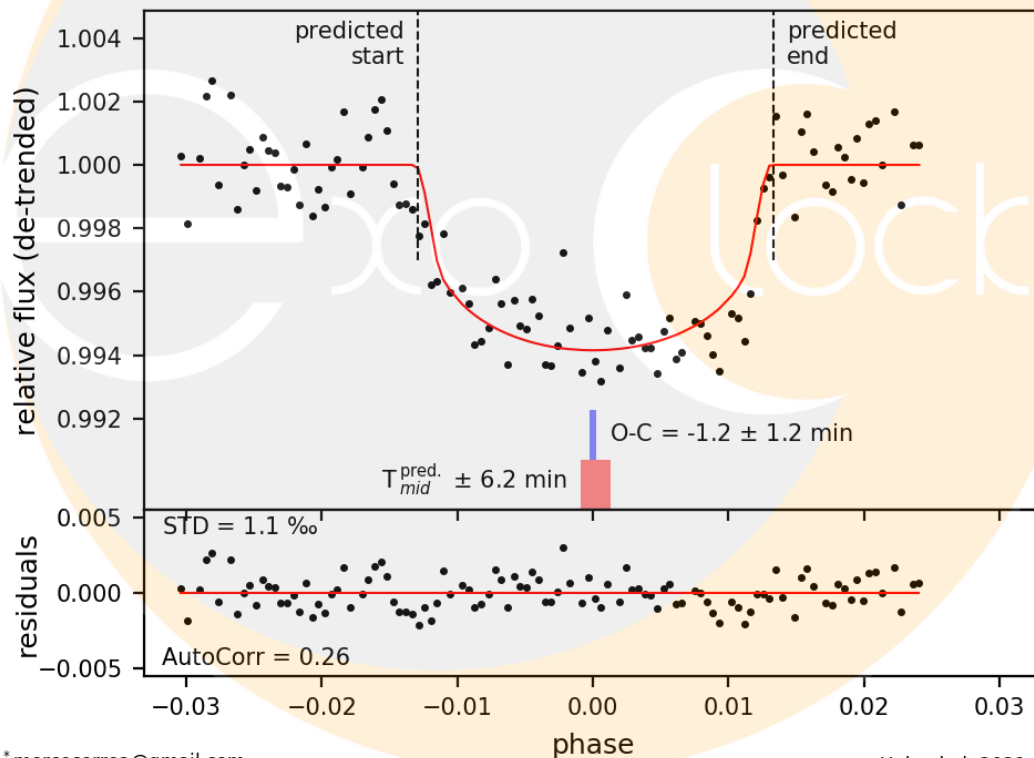
The result of one of the most recent observations is shown in 3.

WASP – 156b

2021-10-15

Mercedes Correa* (Agrupació Astronòmica de Sabadell), Florence Libotte,
Josep M. Vilalta, Albert Morral, Antelm Ginard □
(all Agrupació Astronòmica de Sabadell) □
Funded by Europlanet 2024 RI

Teide Observatory / Telescope: IAC80 (31.5")
Camera: Camelot2 / Filter: R / Exp.: 60.0 s



*mercecorrea@gmail.com

Uploaded: 2021-11-01

Figure 3. Observation of COROT-10b & WASP-156b exoplanets transits by a group of amateurs led by Mercedes Correa at the Calar Alto observatory in service mode.

The observational data gathered by the successful applicants will have to be made publicly available, ideally through the Virtual Observatory of VESPA either through already existing services or through new ones. Currently, 12 out of 17 facilities showed interest to implement their own EPN-TAP service to connect their databases to VESPA. We are working on creation of a special APN-TN repository of observational data at AMU and plan to introduce it in February of 2022 during the Europlanet Telescope Network Science Workshop.

From the applications discussed in four SAP meetings, 56% were submitted by female researchers and 80% from under-represented countries. Having in mind quite a short interval of time since observations were held, already five scientific articles are published in refereed journals, including journals belonging to the first quartile of the Clarivate Analytics Web of Science journal list.

Memorandum of Understanding

In December 2021 another memorandum of understanding was signed by the Observatorio Astrofísico de Javalambre in Spain, bringing the total number of observatories up to 17 sites.

Amateur training workshops

Since the planned workshop at Pic-du-Midi (MS33) was, despite all efforts, not possible due to COVID-19, this milestone was implemented by three splinter sessions at EPSC in 2020. However, we plan to have a workshop on PM25 (February 2022) organised at the Moletai observatory in Lithuania.

Observational workshops (MS34 (postponed from Year 1) and MS61)

In project Year 1, it was initially planned to hold one ground-based observational workshop organized by Task 12.4 dedicated to fireball observations (MS34). This workshop was postponed and held virtually on June 11-12, 2021 as planned.

The project Year 2 observational workshop (MS61) was held in hybrid mode at the Moletai Astronomical Observatory in Lithuania and was dedicated to asteroid observations. 40 participants and 22 lecturers from 32 countries in five continents were involved in remote observations, data reductions and trainings of observing time application writing to Europlanet Telescope Network and other assignments.

1.5 Impact

The Europlanet Telescope Network, which was established during the first project year, is the first network of its kind worldwide that combines a diverse set of small-scale observational facilities in Europe and beyond. Besides space missions, and the well-known big ground-based observatories, relatively small telescopes cover a niche that is, more than ever, particularly important for planetary sciences and for the characterization of exoplanets. Studying planets, asteroids, or comets can require either long-term monitoring or precise timing and collaboration between facilities on different locations around the Earth. A network of small telescope facilities, but also the amateur community, achieve these requirements but can also react relatively fast. All these characteristics provide a unique opportunity that can be covered by the Europlanet Telescope Network.

Due to COVID-19 related restrictions, the future impact of the network is currently difficult to assess. It is clear that the partial closure and still existing travel restrictions have an impact on the number of applications for on-site observations. However, the number of proposals retrieved so far at this stage of the project illustrates the demand within the planetary sciences community and we expect that this demand will rise within the next years and when access restrictions will decrease. This demand will finally also result in a significant number of scientific publications, since we expect

most of the successful applications to culminate in peer-reviewed research articles, but also in a diverse set of publicly available observational data of different scientific topics that can then be further exploited by other research teams around the world.

- Besides the impact of the Europlanet Telescope Network, the support of amateur astronomers will in addition not only integrate new regional communities into the European planetary sciences, but will also result in scientifically valuable observational data.

The three splinter meetings related to NA2 at EPSC 2021 additionally attracted about 125 participants with about 70 – 80% being amateur astronomers.

Besides amateur astronomers, NA2 also tried to draw in early career scientists, females but also researchers from under-represented states in collaboration with NA1 and the Europlanet Regional Hubs, particularly with the Central European Hub. This effort resulted in 6 out of 11 proposals, as of December 2021, submitted to the NA2 Call for Observations being led by women.

1.6 Access provisions to Research Infrastructures (if applicable)

Access provision to the Research Infrastructure within NA2 will be provided through the telescope facilities in the Europlanet Telescope Network, for which their service costs for observations of successful applicants will be reimbursed. An overview on granted observations at these facilities is summarised in the table in Annex I.

2 Update of exploitation & dissemination plan

Say whether the plan described in Annex 1 (Description of the Action – DoA) needs to be updated, and give details.

Due to COVID-19 and the travel restrictions, our dissemination activities had to be slightly adapted and shifted from physical meetings and activities towards dissemination being distributed predominantly through diverse online channels to promote NA2 and the Europlanet Telescope Network. This has the advantage that more people can be reached in a more cost effective manner than in meeting physically.

- Three virtual sessions related to NA2 were held at EPSC 2021 (see Task 12.3) with a total participation of over 125 participants

3 Update of data management plan

NA2 contributed to the general Data Management Plan (DMP) of Europlanet 2024 RI (D1.3); at the current stage of the project no further updates are required for NA2.

4 Deviations from Annex 1 (DoA)

N/A

4.1 Tasks

Due to COVID-19 all face-to-face activities proposed for the second year had to be cancelled or moved into virtual meetings. These are:

- **Amateur Workshop at Pic du Midi.** This was substituted by three amateur related virtual meetings at EPSC 2020. The workshop at Pic du Midi itself is planned to take place as soon as the situation will allow it (planned workshop costs of 10,000€)
- **Observational Workshop on fireballs.** This milestone (MS34) was shifted from PM12 to PM19. A virtual workshop took place in spring 2021. The initially planned budget for this workshop (10,000€) will be used to organize additional virtual and face-2-face workshops later-on. A second fireball workshop together with the Machine Learning WP is already scheduled for February 2022. The follow up workshop tentatively planned for fall 2022 will be face-2-face meeting if possible

Because of COVID-19, activities related to the Europlanet Telescope Network have been delayed due to difficulties to access the sites. However, by now fourteen out of seventeen observatories can provide remote observations and proposals asking for such observations started to come in by October 2020. Since in these cases no travel and accommodation costs need to be reimbursed, this activity uses less budget than initially intended. However, we expect that i) the demand on observations will significantly increase, when travel to the observatories will again be possible, and that ii) we will now be able to reimburse more observation nights in total, since a higher number than initially expected will be remote observations. Initially up to 50 observation nights were expected to be granted per year, during the first two years 55 nights and 39 hours were granted. We expect gradually to increase the number of granted observation nights in the following years as the pandemic situation improves.

4.2 Use of Resources

As mentioned in the previous section, costs for face-to-face workshops could not be used in project Years 1 and 2. All these workshops are intended to be held later in the project or will be replaced with more online workshops which are less costly. Initially about 25,000€ were budgeted per year for supporting observations at the Europlanet Telescope Network. Due to lower costs of the remote or service observations we can afford to grant more observation time once normal travel is possible again. We expect the demand on the network to increase for the upcoming project years.

No deviation from the initially planned person months was caused by COVID-19 or any other issue.

5 Annex 1 – Proposals submitted to the NA2 Call for Observations

Observation proposals:

Nr.	Title	Category	Country	Gender	Career status	Facility	nights/ hours	Funded
1	Reducing the selection effects in asteroid spins, shapes, and thermal parameters	asteroids	Poland	female	senior researcher	Moletai Astronomical Observatory	7 nights	yes
2	Characterization of V-type asteroids outside the dynamical Vesta family	asteroids	Poland	female	senior researcher	Chuguev Observatory	8 nights	yes
3	Precise asteroid volumes from Gaia and ground-based observations I	asteroids	Poland	female	post-doc	Tartu Observatory	6 nights	yes
4	Precise asteroid volumes from Gaia and ground-based observations II	asteroids	Poland	female	post-doc	Observatorio del Teide	5 nights	yes
5	High-precision photometry of known exoplanets and planetary candidates	exoplanets	Russia	male	senior researcher	Moletai Astronomical Observatory	14 nights	no
6	Variable Nebulae: Understanding the protostar environment	other/astronomy	UK	male	amateur	Beacon Observatory	39 hours	yes
7	Project Near Super Earth	exoplanets	Spain	male	senior researcher	LCO	39 hours	no
8	High-precision photometry of known exoplanets and planetary candidates	exoplanets	Russia	male	senior researcher	Moletai Astronomical Observatory	7 nights	yes
9	Photometric follow-up observations of transiting extrasolar planets and related science	exoplanets	Poland	male	senior researcher	1.5m Danish Telescope	14 nights	yes
10	High-resolution spectroscopic follow-up of known exoplanet-hosts and candidates	exoplanets	Lithuania	female	senior researcher	Moletai Astronomical Observatory	7 nights	yes
11	Observation of Corot-10b and WASP-156b exoplanet transits to help preparing Ariel mission	exoplanets	Spain	female	amateur	Observatorio del Teide	1 night	yes

1. **Nature:** R = Report, P = Prototype, D = Demonstrator, O = Other

2. **Dissemination level:**

PU	PP	RE	CO
Public	Restricted to other programme participants (including the Commission Service)	Restricted to a group specified by the consortium (including the Commission Services)	Confidential, only for members of the consortium (excluding the Commission Services)

6 Annex 2 – Workshops organised by NA2

Workshops:

Name	Organizer	Date	Participants	Comments
NA2 Kick-Off Meeting	M. Scherf	30, March 2020	37	WP kick-off meeting
The Europlanet Telescope Network	M. Scherf	30, September 2020	ca.30	Splinter EPSC 2020 /Amateur training WS
Juno Ground-Based Support from Amateur Astronomers	R. Hueso	21, September 2020	ca.50	Splinter EPSC 2020 /Amateur training Workshop
The Ariel mission for exoplanets and support from amateurs	A. Kokori	28, September 2020	ca. 50	Splinter EPSC 2020 /Amateur training WS
Virtual Fireballs Workshop #1 on Fireball Databases and Machine Learning	M. Scherf, U. Amerstorfer, G. Kargl, D. Koschny	11-12, June 2021	100	Pro-Am Workshop
Virtual Workshop on the use of the Europlanet Telescope Network for amateur astronomers	R. Hueso, I. Garate-Lopez	15-16, May 2021	ca. 70	Amateur training workshop + remote observations at Calar Alto Obs.
Virtual Summer School on Asteroid Photometry	G. Tautvaišienė , et al.	17– 27 August, 2021	24 for practical part, +18 for lectures only	Amateur training Summer School at Moletai Observatory
Pro-Am collaborations (I): Juno's Extended Mission at Jupiter	R. Hueso	17, September 2021	ca. 45	Splinter EPSC 2021 / Amateur Training WS
Pro-Am collaborations (II): JWST and the exploration of Giant Planets	L. Fletcher	24, September 2021	ca. 50	Splinter EPSC 2021 / Amateur Training WS
Pro-Am collaborations (III): the Europlanet Telescope Network and ExoClockproject	M. Scherf	22, September 2021	ca. 30	Splinter EPSC 2021 / Amateur Training WS
EUROPLANET TELESCOPE NETWORK SCIENCE WORKSHOP	G. Tautvasiene, R. Hueso, G. Kargl, S. Mikolaitis, E. Podlowska-Gaca, C. Snodgrass	9. – 11. February 2022		Amateur Training WS
Virtual Fireballs Workshop #2 on Fireball Databases and Machine Learning	G. Kargl, U. Amerstorfer, D. Koschny	February 2022		Pro-Am Workshop
Comet Workshop	H. Usher	June 2022		Pro-Am Workshop