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

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Abstract:

During the third year the WP12 (networking activity NA1: Innovation through Science Networking), has continued its activity. We have arranged meetings and planning meetings, as well as topical workshops and expert exchange visit Calls, which facilitate short-term visits and exchange of personnel (including industrial partners) to share best practice and expertise and to expand the horizons of the ERA community. Through these activities, NA1 will enhance the ability of European planetary scientists to participate on the global scene with their own agenda. We have worked on the scientific topics that are currently most relevant to bring together the various sections of the European planetary science communities, under-represented states, early stage researchers, amateur associations, commercial and industrial organizations. During the third project year we organized 24 workshops and several internal planning meetings to accomplish our objectives.

Table of Contents

1. Continuous Reporting.....	4
1.1. Dissemination	4
1.2. Deliverables	4
1.3. Milestones	4
2. Explanation of the work carried out by the beneficiaries and Overview of the progress	6
2.1. Objectives	6
2.1.1. WP 12.1 Objectives of the third year	6
2.1.2. WP 12.2 Objectives of the third year	6
2.1.3. WP 12.3 Objectives of the third year	7
2.1.4. WP 12.4 Objectives of the third year	7
2.1.5. WP 12.5 Objectives of the third year	8
2.1.6. WP 12.6 Objectives of the third year	8
2.2. Explanation of the work carried for NA1.....	9
2.2.1. WP 12.1	9
2.2.2. WP 12.2	10
2.2.3. WP 12.3	14
2.2.4. WP 12.4	16
2.2.5. WP 12.5	18
2.2.6. WP 12.6	27
2.3. Impact.....	28

1. Continuous Reporting

The following sections will be also fed into the portal, under the continuous reporting, so that this document constitutes part of the second periodic report, for the months 25-36 of the project.

1.1. Dissemination

Up-to-date list of NA1 dissemination activities are located on:

<https://docs.google.com/spreadsheets/d/1KYgqt7cwBF49T4pFfJSKH0dgl-1gfvGEo0DzQwjUZA/edit?usp=sharing>

1.2. Deliverables

Deliverable Number	Deliverable Title	WP number	Lead beneficiary	Type	Dissemination level	Due Date (in months)
D12.3	3rd NA1 Annual Report	WP12	10- FMI	Report	Public	36

1.3. Milestones

Milestone number	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification	Status
MS94	3rd Annual meeting of NA1	10 – FMI	35	3rd Annual meeting of NA1	Will be arranged in Budapest on September 10-12, 2018
MS98	Year 3 NA1 Task 3 meetings	18 – Wigner RCP	36	By month 36, at least 3 meetings will have been held in this year for NA1 Task 3 led by ISSI and Wigner RCP	ISSI workshop 1: Role of Sample Return Missions in the Exploration of the Inner Solar System 3rd NA1 Annual meeting in Budapest
MS102	Year 3 NA1 Task 4 Meetings	12 –ABER	36	By month 36, at least 3 meetings will have been held in this year	"Space weather and radiation design", ESWW, Oostende,

				for NA1 Task 4 led by ABER and FMI	Belgium "Towards a Moon Village: Technology foresight workshop", EPSC 2017, Riga, Latvia ASIME 2 (Asteroid Science Intersections with In-Space Mine Engineering), Luxemburg
MS106	Year 3 NA1 Task 5 meetings	9 – OEAW	36	By month 36, at least 3 meetings will have been held in this year for NA1 Task 5 led by OEAW and VU	For example: Europlanet NA1 Workshop on New Views of Jupiter: Pro-Am Collaborations during and beyond the NASA Juno Mission Europlanet Summer School 2018 on Space missions: Ground-based Observations and Science Communication Europlanet NA1 Didymos Observer Workshop
MS109	2nd ISSI Workshop	34 – ISSI	36	2nd ISSI Workshop	ISSI workshop 2: Comparative study of the atmospheres of planets and

					exoplanets Will be arranged in November 2018
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2. Explanation of the work carried out by the beneficiaries and Overview of the progress

2.1. Objectives

2.1.1. WP 12.1 (Coordination) objectives of the third year

The WP Coordination Team is led by FMI, supported by the deputy coordinator from Wigner-RCP, who are members of the Impact and Innovation Sub-Board. They are advised by a broader Core Team, made up of the leaders of NA1 tasks 2-5. The WP 12.1 Lead will be in charge of the overall NA activities, coordinating the task Leaders, be responsible for dissemination, and manage the WP webpage.

Objectives for the third year were:

- Operating the NA1 webpage and internal portal for tasks
- Integrating and linking NA1 activities to the overall EPN2020 activities efficiently
- Supporting the Expert Program
- Overall coordinating and supporting the work done within the NA1 tasks
- Supporting the workshop activities within the NA1 tasks
- Arranging the NA1 meetings
- Preparing the documentation/deliverables

2.1.2. WP 12.2 (Scientific Working Groups) objectives of the third year

Lead by: MPS, CNRS, UCL

This task will bring together the different science teams, especially new teams working on similar science topics and missions, to strengthen links and counter the fragmentation that still exists in the European planetary science community. It will also link to other RI and H2020 activities. Meetings will be made widely accessible by Webex tools. Meeting presentations will be made available on the projects web page; a summary report will be prepared for the broad community. Special efforts will be made to involve scientists from Inclusiveness States. Topical science workshops will be organized, many of which will be based on the currently active ESA/NASA missions and in preparation of future missions. The themes of the meetings for each year will be suggested by the Task Team for approval by the WPB.

The major objective of the task is to bring together the different science teams, especially new teams working on similar science topics and missions, to strengthen links and counter the fragmentation that still exists in the European planetary science community. Meetings will be made widely accessible by teleconference, e.g. Webex, tools. Meeting presentations will be made available on the project's web page; a summary report will be prepared for the

broad community. Special efforts will be made to involve scientists from Under-represented States. Topical science workshops will be organized, many of which will be based on the currently active ESA/NASA missions and in preparation of future missions.

The main objective of the period September 2018 – August 2018 of NA1-Task 2 was the organisation/financing of 5 topical workshops:

- Geosciences for understanding habitability in the solar system
- Sun's influence on planets
- VESPA simulations
- Kuiper belt objects
- Planetary atmospheric erosion

2.1.3. WP 12.3 (Knowledge Consolidation and Strategic Planning) objectives of the third year

Lead by: ISSI, Wigner RCP

While Task 2 brings together scientists to enhance their current work, periodic efforts are required to consolidate knowledge into a state of play. So planetary science workshops will be organised at the International Space Science Institute three times during the project on scientific theme proposed by the WP teams and accepted by ISSI, such that they produce a synergy with Tasks 2, 4 and 5. Each workshop will produce a peer-reviewed scientific book on the selected scientific topic. These activities will be open to scientists from all nationalities. Biennial meetings/brainstorming sessions on strategic planning issues will also be organised at ISSI based on existing best practice. During Europlanet RI FP7 three such workshops at the International Space Science Institute (ISSI) were organised, resulting in three multi-authored books.

For the third year, WP 12.3 had one major objective:

- Carry on with the organisation of the ISSI Europlanet workshops

2.1.4. WP 12.4 (Innovation and Foresight Working Groups) objectives of the third year

Lead by: ABER, FMI

Task 4 will bring together the EPN2020-RI Industry Officer along with science and industrial teams to promote the innovation that is inherent in space activities because of the challenging environments they work in. The very existence of a structured community of European planetary scientists is of considerable added value for the European industry, not only for the large companies of the space sector but even more importantly for SMEs and non-space industry, which must identify relevant interlocutors. Identifying a market is vital in order to invest in technology. For an SME or for a larger non-space company, assessing opportunities for planetary science applications remains a challenge. The technical foresight will help to identify specific topics relevant to SMEs.

Task 4 will deliver two thematic workshops per year with participants from industry and academia. Outcomes from WSs will be rapidly disseminated to build industry involvement in later years.

The overarching objectives of the WP12.4 for the third year were:

- WP12.4 will deliver two thematic workshops with participants from industry and academia
- Bring together the EPN2020-RI Industry Officer along with science and industrial teams to promote the innovation that is inherent in space activities because of the challenging environments they work in.
- Workshops on innovative instrumentation for planetary missions.
- Workshops on cooperation between EUROSPACE and the European planetary science academia.

2.1.5. WP 12.5 (Coordination of Ground Based Observations) objectives of the third year

Lead by: OEAW, VU

Task 5 will organise coordination meetings for ground-based observational campaigns with a strong focus on the inclusion of new communities and amateur astronomers. In particular the astronomical professionals of the new member-states will be addressed and integrated in the observation network. IWF Graz will provide a system through the database of ground-based observatories (<http://europlanet-na1.oeaw.ac.at/matrix/>) which will allow amateurs to setup their own database. The criteria for the observation topics will be elaborated together with Tasks 2 and 3. Results of the campaigns will be presented in separate scientific workshops in cooperation with Task 2. Their outcome will be published on the NA website; summary reports and observation plans will be prepared to inform the broad community.

Observational results will be put into respective databases and access infrastructures available within the project after proper verification, as part of the activity in the VA6-VESPA work package. This will be performed in collaboration with the respective VA and JRA activities, which provide the knowledge for suitable metadata standards and access protocols. Amateur education workshops will be organized on a regular basis.

The main objective of the third year of NA1-Task 5 was the organisation of 3 topical workshops for the ground-based support of space missions and/or amateur training workshops. Other objectives of project year 3 were the support of the Alpach Summer School in July 2018, extending and testing of the ground-based observatories database (the so-called NA1-Matrix), the organization of dedicated amateur sessions at EPSC 2017 (Riga, Latvia) and EPSC 2018 (Berlin, Germany). Finally NA1-Task 5 organized and supported 4 dedicated workshops and 3 Summer Schools that took place in project year 3, as well as 2 sessions during EPSC 2017 and one during EPSC 2018.

Further continuous objectives of project year 3 were dissemination and the regular communication within NA1-Task 5.

2.1.6. WP 12.6 (Exchange Program) objectives of the third year

Lead by: FMI

The objective of Expert exchange program (Task 6) is to support the activities of Europlanet RI with experts and scientific exchange whenever it is needed. One of the objectives is to support exchange and foster cooperation between academia and industry (SMEs), and to provide benefits beyond the individual participants to the broader European community.

During the reporting period the Open Expert exchange call was opened. By the end of August 2018, 9 applications were received and 7 were approved in the Open Call. The approved visits were to UFA CAS (Czech Republic), LESIA, Observatoire de Paris (France), University of Bologna (Italy) and IRAP (France).

2.2.Explanation of the work carried for NA1

2.2.1. WP 12.1

During the third year the management structure of the NA1 activity worked as it was established during the first and second year.

- In the core of the NA1 activity is the WP Coordination Team led by the NA1 Lead Dr Ari-Matti Harri from FMI, together with the deputy Lead Dr Karoly Szego from Wigner-RCP. Maria Genzer has taken a more active role during year 3 as deputy of Ari-Matti Harri, organizing the monthly NA1 telecons and compiling monthly reports. The Coordination team was in charge of the overall NA activities, coordinating the task Leaders, responsible for dissemination, and manage the WP webpage.
- The NA1 Executive team made up of the leaders of NA1 tasks 1-6 supported the Coordination team. Individual Task Leaders defined the annual activities of their Tasks. The **NA1 Exec Team** consists of
 - Dr. Ari-Matti Harri (FMI), Chair
 - Prof. Karoly Szego (Wigner-RCP)
 - Dr. Norbert Krupp (MPG)
 - Prof. Manuel Grande, U. Aberystwyth
 - Dr. Gunter Kargl, OEIF
 - Ms. Maria Genzer, FMI
- The NA1 Advisory Board will provided the reviewing functions for the NA1 activity. The proposals for the Expert Exchange Visits and the annual plans of the Tasks were sent for the advisory Board for review to be approved. The members of the **Advisory Board** are:
 - Dr. Maria Teresa Capria (INAF), Chair
 - Dr. Philippe Louarn (CNRS), Deputy Chair
 - Prof. Karoly Szego (Wigner-RCP)
 - Dr. Ari-Matti Harri (FMI), secretary (no voting power)

The webpage serving as the principal information channel for the NA1 was maintained as the main information channel of the NA1 activity including:

- Overall presentation and information regarding the NA1 activities, objectives and results
- Expert Program electronic application and reporting section
- Intranet webpage for NA1 task leaders (password protected)
- All workshop information (upcoming and past)
- “Propose a workshop” webpage where anyone can propose a new workshop for NA1

Dissemination

Work has started to disseminate the results at various conferences. The first part of this work was presented during the EGU 2017 and the second part during the European Planetary Science Congress, Riga, 17-22 September, 2017.

The third part will be presented during the European Planetary Science Congress, Berlin, 16-21 September, 2018.

2.2.2. WP 12.2

The WP12.2 has worked on the scientific topics presently most relevant to bring together the various sections of the European planetary science communities, amateur associations, commercial and industrial organizations. The following workshops have been organized:

2017	25.9.	30.9.	NA1.T2.009	Geosciences for understanding habitability in the solar system	Azores	Portugal
2017	9.10.	11.10.	NA1.T2.010	Sun's influence on planets	Toulouse	France
2017	27.11.	29.11.	NA1.T2.011	VESPA simulations	Brussels	Belgium
2018	26.3.	30.3.	NA1.T2.012	Kuiper belt objects	Coimbra	Portugal
2018	11.6.	15.6.	NA1.T2.013	Planetary atmospheric erosion	Murighiol	Romania

Three of them were held in under-represented countries and a total 261 participants were counted.

Europlanet Workshop NA1.T2.009: Geosciences for understanding habitability in the solar system

Location: Azores Islands, Portugal (under-represented country)

Date: Sep 25-30, 2017

Website:

SOC: V. Dehant

LOC:

Total number of participants: 68

Young scientists: 18

Participants from under-represented countries: 25

Female participants: 23

Participating amateurs: 0

Participants from non-European countries: 3

Participants funded by Europlanet: 12

Total funding by Europlanet NA1: 10,000€

Workshop report: [FMI website](#)

Short summary: This conference deals with fundamental issues of planetary habitability, i.e. the environmental conditions capable of sustaining life, and how interactions between the interior of a planet or a moon and its atmosphere and surface (including hydrosphere and biosphere) affect the habitability of the celestial body. The evolution of planets (including the Earth) is driven by its internal energy sources (radiogenic sources and energy stored during accretion) and depends on the composition, structure, and thermal state of their core, mantle, lithosphere, crust,

and on interactions with a possible ocean and atmosphere and – in case of the Earth – with a biosphere. Convection of the rocky mantle is the key process that drives the evolution of the interior: it causes plate tectonics, controls heat loss from the metallic core (which generates the magnetic field) and drives long-term volatile cycling between the atmosphere/ocean and interior. Cycling of water and carbon dioxide between the atmosphere/ocean and interior is also a key process that is thought to regulate habitability because the more carbon dioxide we have in the atmosphere, the higher is the temperature, and the more weathering we have. Plate tectonic induces larger outgassing and is therefore a key factor for atmosphere generation. At the same time, the volatile content of the surface environment, particularly the presence or not of liquid water, is thought to have a large feedback on the interior, for example by influencing of the existence or not of plate tectonics. Partial melting and mantle depletion extract water from the interior to the surface. Outgassing and volcanism are also related to that. It is necessary to consider a coupled atmosphere-interior evolution for the understanding of habitability.

Europlanet Workshop NA1.T2.010: Sun's influence on planets

Location: IRAP, Toulouse, France

Date: Oct 9-11, 2017

Website:

SOC: N. Andre

LOC: N. Andre

Total number of participants: 24

Young scientists: 3

Participants from under-represented countries: 3

Female participants: 8

Participating amateurs: 0

Participants from non-European countries: 4

Participants funded by Europlanet:

Total funding by Europlanet NA1: 10,000€

Workshop report:

http://fmispace.fmi.fi/fileadmin/templates/EPN2020_NA1_files/NA1%20Workshop%20Sun%27s%20influence%20on%20planets%20IRAP.pdf

Short summary: Differences in the magnetic field and plasma environment at different planetary bodies, as well as the distance of the planet from the sun drives different space weather effects as we move through the Solar System. The use of solar wind propagation models combined with solar observations allows us to obtain and predict the interplanetary conditions around each planet and comet in the Solar System. We have reviewed observations of planetary space weather and space climate obtained by ongoing or past space missions such as STEREO, MEX, VEX, MESSENGER, Galileo, Cassini, Rosetta, MAVEN, as well as identify ways to improve modeling of space weather and space climate in our Solar System in preparation for future missions such as Exomars, BepiColombo, and JUICE. New tools and methods developed by PSWS have been introduced and discussed. Events of particular interest have been identified and further analysed in details. A topical issue devoted to planetary space weather in the Journal of Space Weather and Space Climate following this workshop has been announced.

Europlanet Workshop NA1.T2.011: VESPA simulations

Location: Royal Belgian Institute for Space Aeronomy (IASB-BIRA) in Brussels, Belgium

Date: Nov 27-29, 2017

Website:

<https://voparis-confluence.obspm.fr/display/VES/VESPA+Simulations+meeting%2C+2017>

SOC: S. Erard, B. Cecconi

LOC:

Total number of participants: 25

Young scientists: 0

Participants from under-represented countries: 0

Female participants: 7

Participating amateurs: 0

Participants from non-European countries: 0

Participants funded by Europlanet:

Total funding by Europlanet NA1: 10,000€

Workshop report:

Short summary: During the workshop the VESPA tool was demonstrated and used to compare different model runs

Europlanet Workshop NA1.T2.012: Kuiper belt objects

Location: Coimbra, Portugal (under-represented Country)

Date: March 26-30, 2018

Website:

SOC: A. Barucci, H. Boehnhardt, M. Brown, J. Fernandez, W. Grundy, O. Hainaut, W. Ip, D. Jewitt, A. Morbidelli, T. Müller, K. Noll, N. Peixinho, D. Pralnik, L. Young, J. Watanabe

LOC: N. Peixinho

Total number of participants: 109

Young scientists: 50

Participants from under-represented countries: 8

Female participants: 27

Participating amateurs: 0

Participants from non-European countries: 59

Participants funded by Europlanet: 20

Total funding by Europlanet NA1: 10,000€

Workshop report:

After a break of 7 years an international scientific workshop, dedicated to the Transneptunian Solar System, was organized to take place on 26-29 March 2018 at the University of Coimbra in Coimbra, Portugal. Researchers presented and discussed the physical properties of the bodies in the Transneptunian region; the

large members of the Kuiper Belt: Pluto and others; the binaries and multiple systems; the relationships with other populations in the planetary system (Centaur, planetary Trojans, comets, inner Oort Cloud objects); Planet 9 and related objects: Dynamical indicators and properties; the formation and evolution processes: Origin, planetesimals, multiples, dynamical and collisional evolution, physical processing; extrasolar KBO populations: structures and properties, and the prospect for KBO research. The scientific sessions were received by an almost plenary audience of the registered workshop participants and were concluded by a lively half hour open discussion at the end of each workshop day. New results presented in contributed and poster papers, are invited to be submitted for a special issue on the Kuiper Belt to be published by the scientific journal *Icarus* in 2018. The invited papers will serve as framework for a textbook issue on the Transneptunian Region to be published in 2019 by Elsevier publishers. The importance of this type of research topic oriented workshop is also reflected in the invitation to a follow-on meeting in about 3 years time in Taiwan, as expressed by M. Lehner as final statement in the discussion session of the last workshop day in Coimbra.

Short summary: During the workshop all aspects the science of Transneptunian objects (TNOs) have been discussed in great detail

Europlanet Workshop NA1.T2.013: Planetary atmospheric erosion

Location: Murighiol, Romania (under-represented country)

Date: June 11-15, 2018

Website: <http://gpsm.space-science.ro/europlanet2018/index.html>

SOC: A. Aikio, I. Dandouras, E. Dubinin, S. Haaland, J. Halekas, A. Keiling, A. Losiak, O. Marghita, M. Yamauchi, N. Zaleska

LOC: A. Blagau, C. Bunescu, H. Comisel, D. Constantinescu, S.G. Dumitru, S. Haaland, I.M. Ivan, O. Marghita, L. Nedelcu, C. Vlase

Total number of participants: 35

Young scientists: 5

Participants from under-represented countries: 8

Female participants: 7

Participating amateurs: 0

Participants from non-European countries: 10

Participants funded by Europlanet: 9

Total funding by Europlanet NA1: 10,000€

Workshop report: Overall, the workshop was very useful in paving the way for future research in the field and future space missions to study some open questions that were identified during the workshop. Among the key science issues discussed were the roles of planetary magnetic fields and atmospheric composition for erosion processes and protection of planetary atmospheres. In a dedicated session, new techniques and new mission proposals from Japan, China, USA and Europe were presented.

Prior to the meeting the conveners were in contact with all agencies and key people from the new Europlanet inclusive states as well as Europlanet contacts from these states. As expected, there was a strong representation from ISS in Romania, since this group is directly involved in one of the ESA mission proposals within this field.

For the other states, the response was somewhat mixed, and there is still some work to be done to involve these new Europlanet states. Despite several attempts and contact points using both email and telephone calls, we failed to get any response at all from 5 of the 21 new inclusiveness states. Hopefully, the upcoming Europlanet Inclusiveness Forum in Budapest in September 2018 will address this.

Short summary: The workshop consisted of a combination of science presentations (35 in all, including 3 remote presentations) and open discussions. Atmospheric erosion is a hot topic, and the presentations and discussions dealt with a variety of planetary bodies (magnetised, unmagnetised, exoplanets, ...) both theoretically and observationally, and stimulated some very active discussions on the topic.

Dissemination

NA1 Task 2 co-financed together with Task 5 the Alpbach Summer School 2018, "Sample return from small solar system bodies", July 17-26, in Alpbach/Tyrol.

The report of workshop NA1.T2.012 was highlighted in the Europlanet Newsletter.

Planning for additional science workshops has been performed, especially such that will be based on the currently active ESA/NASA missions and in preparation of future missions.

The list of all past and future Workshops including reports can be found on the NA1 web site (<http://fmispace.fmi.fi/index.php?id=na1epn2020>).

2.2.3. WP 12.3

During the 2015 Fall SC meeting, the members recommended that an ISSI/Europlanet Forum should trigger three workshops proposals for recommendation. The first ISSI-Europlanet forum was organized in 13-14 September 2016, and six proposals were submitted for selection by NA1 and ISSI. The following workshops were selected:

WS #1 on "Role of Sample Return Missions in the Exploration of the Inner Solar System",
Maresh Anand

Proposed format: one week in Bern as an ISSI-Europlanet (- ISSI-BJ) workshop, followed one year later by one week in Beijing as an ISSI-BJ/ISSI workshop.

WS #2 on "Comparative study of the atmospheres of planets and exoplanets",
O. Korabiev and K. Szego

WS #3 (5) on "Reading terrestrial planet evolution (Venus, Earth, Mars, Titan) in isotopes and noble gases measurements" *H. Lammer*

WS #1 on "Role of Sample Return Missions in the Exploration of the Inner Solar System"

Location: Bern, Switzerland

Date: Feb 5-9, 2018

Website:

SOC: Szego, Anand

Total number of participants: 47

Participants from under-represented countries: 3

Female participants: 18

Participating amateurs: 0

Participants from non-European countries: 17

Major advances in our understanding of the origin and evolution of the inner Solar System have been made through analyses of returned samples from the Moon by Apollo and Luna missions in 1960s and 1970s. More recently, sample return from asteroid Itokawa revealed greater insights into the makeup and properties influencing the regolith evolution on minor bodies in the Solar System as well the first direct link between meteorites and asteroids. Two further asteroidal sample return missions are in progress (Hayabusa-2 and OSIRIS-REX). The Stardust and Genesis missions sampled cometary grains and solar wind particles, respectively, revealing their elemental and isotopic compositions. Although lacking a parent body context, meteorites research has been invaluable in addressing a number of scientific topics related to the Solar System formation and evolution through studies of pre-solar grains to the fluid-rock interactions on parent bodies during the 4.5 Ga geological history of the Solar System. In addition, there now exist global remote sensing dataset for various planetary bodies that weren't available previously, and these would play a vital role in the selection of targets for sample return missions. As a result, we now have a wealth of remote sensing and cosmochemical data on a number of Solar System objects (e.g., Moon, Mars, asteroids, meteorites) but significant gaps exist for other bodies such as Venus and Mercury. The main aim of this workshop is to review our current knowledge and understanding of the Solar System formation and evolution and identify major outstanding science questions that remain to be answered through future sample return missions. Some of the outputs from the workshop will be relevant to planning of mission concepts for future sample return missions that are currently being developed by various space agencies.

The workshop had the following objectives:

- 1) Review major outstanding science questions in Planetary Sciences that can only be answered via Sample Return missions.
- 2) Identify specific target body(ies) for answering specific science question(s).
- 3) Evaluate technological readiness for individual mission concepts against their science return.
- 4) Engage with sample curation communities across Europe to prepare for future sample return missions

The workshop followed the format of a discussion meeting and the presentations were grouped under three main themes:

- (i) Initial conditions and workings of the Solar System
- (ii) Planetary habitats
- (iii) Sample curation

Based on the discussions of the workshop, Springer Editorial will publish a peer-reviewed "ISSI book" (Space Science Series of ISSI). Tentative publication time for the book is May 2019. The papers will be published online in the end of December 2018.

ISSI WS#2 will be arranged in November 2018, and WS#3 in October 2018.

2.2.4. WP 12.4

NA1-Task 4 Workshop organisation

Europlanet 2020 NA1-Task 4 has organised or co-organised 4 workshops as follows:

2017	17.9.	22.9.	NA1.T4.006	Towards a lunar village	Riga	Latvia
2017	28.11.	1.12.	NA1.T4.007	Space weather and radiation design	Oostende	Belgium
2018	16.4.	17.4.	NA1.T4.008	Asteroid mining 2	Luxembourg	Luxembourg
2018	13.8.	18.8.	NA1.T4.009	Microsatellites in planetary and atmospheric research	Tartu	Estonia

Those listed in bold were held in under-represented countries.

Towards a lunar village

Location: Riga, Latvia

Date: 17.-22.9.2017

Website: <https://meetingorganizer.copernicus.org/EPSC2017/session/26081>

SOC: Bernard Foing, Manuel Grande

Total number of participants: 60

Young scientists: 20

Participants from under-represented countries: 20

Participating amateurs: 0

Participants from industry: 5

Participants from non-European countries: 5

Short summary: The interactive MoonVillage Technology Foresight workshop is intended to complement Moon Village science & Innovation session with topics relevant to Technology Foresight:

- Technology for precursor missions, instruments and investigations for landers, rovers, sample return, and human cis-lunar activities and human lunar surface sorties
- Technology Preparation for International Lunar Decade: databases, instruments, missions, terrestrial field campaigns, support studies
- ILEWG and Global Exploration technology roadmaps towards a global robotic/human Moon village
- Strategic Knowledge Gaps, and key Technology Goals relevant to Lunar Global Exploration
- Technology preparation for the Moon Village with the goal of a sustainable human and robotic presence on the lunar surface as an ensemble where multiple users can carry out multiple activities.
- Multiple technology goals for the Moon Village to support planetary science, life sciences, astronomy, fundamental research, resources utilisation, human spaceflight, peaceful cooperation, economical development, inspiration, training and capacity building.

The workshop will include invited and contributed talks as well as a panel discussion and interactive posters with short oral introduction, and strong interactive session.

Space weather and radiation design

Location: Oostende, Belgium
Date: 28.11.-1.12.2017
Website: <http://www.stce.be/esww14>
SOC: Manuel Grande
Total number of participants: 25
Young scientists: 5
Participants from under-represented countries: 5
Participating amateurs: 0
Participants from industry: 5
Participants from non-European countries: 2
Short summary: TBC

Asteroid Mining 2 (ASIME2)

Location: Luxemburg, Luxemburg
Date: 16.-17.4.2018
Website: <https://asime.uni.lu/>
LOC: Amara Graps
Total number of participants: TBC
Young scientists: TBC
Participants from under-represented countries: TBC
Female participants: TBC
Participating amateurs: TBC
Participants from industry: TBC
Participants from non-European countries: TBC
Participants funded by Europlanet: TBC
Total funding by Europlanet NA1: TBC
Workshop report and summary: http://geophy.uni.lu/users/tonie.vandam/asime-2018/Abstract_book.pdf

Microsatellites in planetary and atmospheric research

Location: Tartu, Estonia
Date: 13.-18.8.2018
Website: TBC
SOC: Manuel Grande
Total number of participants: TBC
Young scientists: TBC
Participants from under-represented countries: TBC
Female participants: TBC
Participating amateurs: TBC
Participants from industry: TBC
Participants from non-European countries: TBC
Participants funded by Europlanet: TBC
Total funding by Europlanet NA1: TBC
Workshop report: TBC

Short summary: TBC

Plans for future WP 12.4 workshops:

Meetings in 2018-19 will be arranged on the basis of one per year free standing and one per year attached to EPSC.

The following topics have been proposed:

- Planetary Robotics
- Large Planetary Telescopes
- New detector technologies
- Nuclear generators for power and thermal control
- Low cost systems (cube sat., penetrators,...)
- Geographic Information System
- Space weather and radiation design
- Advanced fabrication techniques
- Propulsion techniques (solar sail, RTG, ...)
- 2017 Planetary Environment models
- 2017 Planetary Exploration 2061
- Future instruments and methods in planetology
- Future mission concepts to Outer planets:
- Preparing sample returns and their analysis (including meteorite analysis).

We will carry out as funding permits. Meetings will be co-sponsored where possible in order to maximise impact and cost effectiveness. Workshops will also be co-located with EPSC. The list of all past and future Workshops can be seen on the NA1 web site.

2.2.5. WP 12.5

Extensions of the ground-based observatories database and list of observatories

The extension of the so-called NA1-Matrix (see <http://iwf.oeaw.ac.at/matrix/>) started in project year 2 and proceeded in project year 3 in cooperation with the Virtual Observatory VESPA. After a test phase they will go online in project year 4. In addition, a merge script was developed in cooperation with VESPA to join different available lists of observatories (e.g. NAIF, AAS, IAU-MPF, NSSDC facility lists, NA1-Matrix), which will be used as an observatory name resolver for the VESPA interface. The main developments in project year 3 have been

- An image upload possibility for amateurs into the NA1-Matrix, which will make their data available via the VESPA interface.
- Changes of and additions to the NA1-Matrix user interface to allow for image upload
- EPN-TAP services for amateur data and the list of observatories (not yet available online). The respective RD uses a newly implemented web service at the latest version of the matrix-server for the export of observatory data.
- The merge script for the list of observatories.

Dissemination

A presentation of NA1-Task 5 with the title “Europlanet 2020: Fostering the collaboration between professional scientists and amateur astronomers” was held at EPSC 2017 in the

Amateur Session “Amateur collaborations in small bodies, terrestrial, giant and exo planets professional studies”. On October 13, 2017, the talk “Europlanet - Potential für die österreichische Amateurastronomie” [Europlanet – its potential for the Austrian amateur astronomy] was held at the general Assembly of the Austrian Society for Astronomy and Astrophysics (OeGAA) in Vienna, Austria. In addition, Europlanet was briefly presented at all NA1-Task 5 related workshops and summer schools in project year 3.

The Juno WS (see below) was trending on Twitter in Great Britain using the #RASJuno hashtag and was subject of a Europlanet press release. BBC covered this workshop with several interviews of participants in its TV program “Sky at Night”. Furthermore “Astronomy & Geophysics” issued a dedicated article on the Juno WS (<https://britastro.org/node/14397>).

The workshop legacy of PREVIII (one of the NA1-Task 5 funded workshops in project year 2) was published in December 2017, i.e. the proceedings book of *PREVIII, Planetary Radio Emissions VIII. Proceedings of the 8th International Workshop on Planetary, Solar and Heliospheric Radio Emissions*, Eds. Fischer, G., G. Mann, M. Panchenko, P. Zarka, Austrian Academy of Sciences Press, Vienna, 2017.

NA1-Task 5 Workshops organization

During the third project year of Europlanet 2020 NA1-Task 5 organised and supported 5 workshops and 3 summer schools, of which one was a dedicated amateur training workshop in cooperation with PSWS.

2017	17.9.	22.9.	NA1.T5.008	2 Amateur Sessions at EPSC 2017: - AM1 Amateur collaborations in small bodies, terrestrial, giant and exoplanetary research - AM2 Juno ground-based support from amateurs	Riga	Latvia
2018	10.5.	11.5.	NA1.T5.009	New Views of Jupiter: Pro-Am Collaborations during and beyond the NASA Juno Mission	London	United Kingdom
2018	19.6.	21.6.	NA1.T5.010	Didymos Observer Workshop	Prague	Czech Republic
2018	24.6.	1.7.	NA1.T5.011	Geology and geophysics of the solar system bodies	Valjevo	Serbia
2018	17.7.	19.7.	NA1.T5.012	Tools and Services for Planetary Observations and Image Analysis by Amateurs	Toulouse	France
2018	19.7.	26.7.	NA1.T5.013	Alpbach Summer School: Sample return from small solar system bodies	Alpbach	Austria
2018	31.7.	10.8.	NA1.T5.014	Europlanet Summer School 2018 "Space Missions: Ground-based Observations and Science Communication"	Moletai	Lithuania
2018	17.8.	18.8.	NA1.T5.015	Basics of Astrobiology Summer school	Vienna	Austria

Those listed in bold were held in under-represented countries.

Europlanet NA1 Workshop on New Views of Jupiter: Pro-Am Collaborations during and beyond the NASA Juno Mission

Location: Royal Astronomical Society, London, UK

Date: May 10-11, 2018

Website: <http://tinyurl.com/junows2018>

SOC: Leigh N. Fletcher, John H. Rogers, Ricardo Hueso, Glenn S. Orton, Marc Delcroix

LOC: John H. Rogers and Leigh N. Fletcher

Total number of participants: 50

Young scientists: 4

Participants from under-represented countries: 5

Female participants: 4

Participating amateurs: 33

Participants from industry: 2

Participants from non-European countries: 8

Participants funded by Europlanet: 26

Total funding by Europlanet NA1: 12,500€

Workshop report: tinyurl.com/JunoWS2018-report

Short summary: The workshop aimed to promote collaboration between citizen scientists, amateur astronomers and professional space scientists in studies of the atmosphere of Jupiter in support of the ongoing NASA Juno mission. Additional goals were the improvement of future ground-based observations of the planets from amateur astronomers. An important part of the workshop was also dedicated to the contribution of citizen scientists in processing JunoCam observations and how their contribution has improved the analysis of JunoCam data. The workshop was accompanied by a press release and very well covered on traditional and social media (see dissemination).

Europlanet NA1 Didymos Observer Workshop

Location: Vila Lanna, Prague, Czech Republic (under-represented country)

Date: May 10-11, 2018

Website: didymos2018-mtg.asu.cas.cz/

SOC: Cristina Thomas, Paul Abell, Line Drube, Shantanu Naidu, Petr Pravec, Andy Rivkin, Petr Scheirich, Colin Snodgrass

LOC: Petr Pravec, Petr Scheirich, Petr Fatka, Colin Snodgrass, Manuel Scherf

Total number of participants: 29

Young scientists: 6

Participants from under-represented countries: 6

Female participants: 4

Participating amateurs: 1

Participants from non-European countries: 9

Participants funded by Europlanet: 9

Total funding by Europlanet NA1: 10,000€

Workshop report: tinyurl.com/didymos-report

Short summary: Key topics of the workshop were the recent progress in observations, modelling and interpretation of the Didymos binary asteroid system and plans for its studies in the future. AIDA (joint ESA-NASA mission) will be the first space experiment to demonstrate asteroid impact hazard mitigation by using a

kinetic impactor to deflect an asteroid. Remote (mostly Earth-based) observations of Didymos are an important part of the mission. Their two main goals are following: 1) A pre-characterization of the target binary asteroid, which is necessary for designing and planning the spacecraft mission. 2) Measurement of a change of the secondary orbital period caused by the impactor. At the workshop, we discussed plans for observations and subsequent analyses and modelling of the binary system in 2019-2021 as well as in 2022-2023. We specified aims and tasks of the observations using various instruments and prepared an internal document with a detailed plan for observations in the upcoming apparition of Didymos in 2019. Further details on this can be found in the workshop report.

Europlanet NA1 Workshop in Geology and Geophysics of the Solar System

Location: Petnica Science Centre, Petnica, Serbia (under-represented country)

Date: June 23 – July 01, 2018

Website: petnica.rs/planetary2017

SOC: Katarina Miljković, Matija Ćuk, Ana Černok

LOC: Dusan Pavlovic, Andrea Rajsic

Total number of participants: 43

Young scientists: 43

Participants from under-represented countries: 17

Female participants: 28

Participating amateurs: 0

Participants from non-European countries: 10

Participants funded by Europlanet: 20

Total funding by Europlanet NA1: 10,000€

Workshop report: tinyurl.com/serbia-report

Short summary: A total of 20 participants received a waived registration fee thanks to the support of Europlanet 2020. The workshop was designed to cover a wide range of topics related to the formation, structure and dynamics of the Solar System. It was aimed to attract students and young researchers of various backgrounds and of different levels of experience in the fields of planetary sciences and space exploration. The target group of the workshop were students (namely PhD students, but also advanced undergraduate and master students). The workshop attended 43 participants, of which 24 PhD, 13 master and 6 undergraduate students. Feedback from the participants is being prepared. We are waiting for the survey results that we circulated immediately following the workshop. Other than that, we have received numerous thank you emails and verbal confirmations that the workshop was extremely useful for the students, both in terms of meeting peers and mentors and broadening their knowledge of planetary science.

Europlanet PSWS/NA1 Workshop on Tools and Services for Planetary Observations and Image Analysis by Amateurs'

Location: Observatoire Midi-Pyrenees, Pic du Midi, France

Date: July 17 – July 19, 2018

Website: tinyurl.com/pswsna1ws2018

SOC: N. André, T. Cook, A. Christou, M. Delcroix, R. Hueso

LOC: N. André, M. Bouchemit, V. Génot, A. Goutenoir, M. Indurain

Total number of participants: 16

Young scientists: 1

Participants from under-represented countries: 1

Female participants: 4

Participating amateurs: 12

Participants from non-European countries: 0

Participants funded by Europlanet: 16

Total funding by Europlanet NA1: funded by Europlanet PSWS

Workshop report: tinyurl.com/psws-report

Short summary: The workshop was organized at Pic du Midi, France, in order to present PSWS tools and services to the amateur community and apply them to images obtained by amateurs. Dedicated observation campaigns have been discussed and prepared. In addition some observations at Pic du Midi have been obtained during the workshop. The planetary images after treatment and analysis will be submitted to the PVOL database. Improvements of current PSWS services as well as contributions of amateurs to Europlanet RI and to future programmes have been discussed.

Europlanet Summer School 2018 on Space missions: Ground-based Observations and Science Communication

Location: Moletai Astronomical Observatory, Moletai, Lithuania (under-represented country)

Date: July 31 – August 10, 2018

Website: tinyurl.com/moletai2018

SOC: G. Tautvaišienė, E.T. Chatzichristou, A.R. Heward, Š. Mikolaitis, T.S. Nava, E. Pakštienė, M. Scherf

LOC: R. Ženovienė, A. Drazdauskas, R. Janulis, A. Kazlauskas, Š. Mikolaitis, E. Stonkutė, G. Tautvaišienė

Total number of participants: 33

Young scientists: 4

Participants from under-represented countries: 15

Female participants: 18

Participating amateurs: 13

Participants from non-European countries: 1

Participants funded by Europlanet: 30

Total funding by Europlanet NA1: 10,000€

Short summary: The aim of the course was to give participants a thorough, multidisciplinary introduction into space missions and the ground-based observations required by space missions before and after launch, as well as an introduction to science communication. More general subjects about specific space missions (TESS, JWST, PLATO...), planetary systems, habitability of planets, photometric and spectroscopic techniques were presented. Part of the summer school were hands-on sessions using the Molėtai Astronomical Observatory telescopes (CCD photometry and high-resolution spectroscopy). In addition, the course gave participants the opportunity to develop comprehensive theoretical and

practical skills in science communication and engaging with a range of lay audiences, including the public, media, policy makers, schools and educators.

Europlanet/IAU Summer School Basics of Astrobiology

Location: Observatory of the University of Vienna, Vienna, Austria

Date: August 17-18, 2018

Website: ninlil.elte.hu/boa

SOC: M. Güdel, T. Lüftinger, M. Gargaud, B.G. Elmegreen, N. Haghighipour

LOC: M. Güdel, T. Lüftinger, R.S. Taubner, S. Pinter, S.B. Saikia, N. Iro, C. Johnstone, K. Kislyakova, L.V. Tóth

Total number of participants: 66 (without lecturers)

Young scientists: 53

Participants from under-represented countries: 14

Female participants: 27

Participating amateurs: 0

Participants from industry: 00

Participants from non-European countries: 15

Participants funded by Europlanet: 66

Total funding by Europlanet NA1: 5,000€

Short summary: The summer school is part of the IAU General Assembly 2018 in Vienna and was organized at the Observatory of the University of Vienna. The school is associated with the IAU Symposium 345 "ORIGINS: From the Protosun to the First Steps of Life" and covered the basics of astrobiology, from the formation of stars and planetary systems to the early conditions of life on planets, including atmospheres and planetary interiors, and the formation and early evolution of life itself.

For the **Alpbach Summer School** see below.

Besides of the workshops and summer schools in project year 3, NA1-Task 5 already agreed on the support of the following workshops and summer schools for project year 4:

- Physics of Comets after the Rosetta Mission: Unresolved Problems, Stará Lesná, Slovakia, September 5-7, 2018, website: www.astro.sk/AFTERROSETTA (**under-represented country**).
- PLATO-2.0 Citizen-planet-tester - time critical photometry of exoplanet transit candidates, October 2018, Kea, Greece (**under-represented country**).
- BepiColombo Young Scientists Meeting, Coimbra, Portugal, March 25-29, 2019 (**under-represented country**).
- Europlanet Summer School 2019, Moletai, Lithuania, July 2019 (**under-represented country**).
- Alpbach Summer School 2019, Alpbach, Austria, July 2019.
- Pic du Midi T1M planets observation regular campaigns and workshops, amateur workshop/observation series, Pic du Midi, France, 2019.

Further workshops can still be proposed via the Europlanet NA1-Workshop Submission Form (tinyurl.com/epr-na1-ws-submission).

Alpbach Summer School 2018

Since 2017 NA1-Task 5 in cooperation with NA1-Task 2 is supporting 8 students of the under-represented countries to participate at the famous and well-known ESA Summer School in Alpbach, Tyrol, Austria. Those students would otherwise not have had the possibility to participate.

In 2016 – one year prior to the start of the Europlanet funding – 7 (out of 60) students from under-represented countries participated on their own costs at the Alpbach Summer School (all others were funded by their respective national funding agencies). Last year, 12 students from these states applied for the newly available Europlanet funding and 8 were finally chosen to participate. In 2018 Europlanet NA1 already received a total of 39 applications from students of the under-represented countries, of which – due to limited budget – 8 were again finally chosen. For additionally 4 of those students external budget could be made available nationally to increase the number of participants from these states to a total of 12 (out of 64).

The high number of applications from under-represented countries in 2018 illustrates not only the high need of funding for the students of such countries, but also that the high potential for planetary sciences in under-represented countries is finally starting to be utilized and integrated into the European community. The knowledge transfer of such summer schools back into the under-represented countries illustrates this funding scheme to be a great example of sustainable support by Europlanet.

Further information on the Alpbach Summer School 2018:

Alpbach Summer School 2018: Sample return from Small Solar System Bodies

Location: School house of Alpbach, Alpbach, Austria

Date: July 17-26, 2018

Website: www.summerschoolalpbach.at

Total number of participants: 62 (without lecturers)

Young scientists: 62

Participants from under-represented countries: 12

Female participants: 21

Participating amateurs: 0

Participants from non-European countries: 0

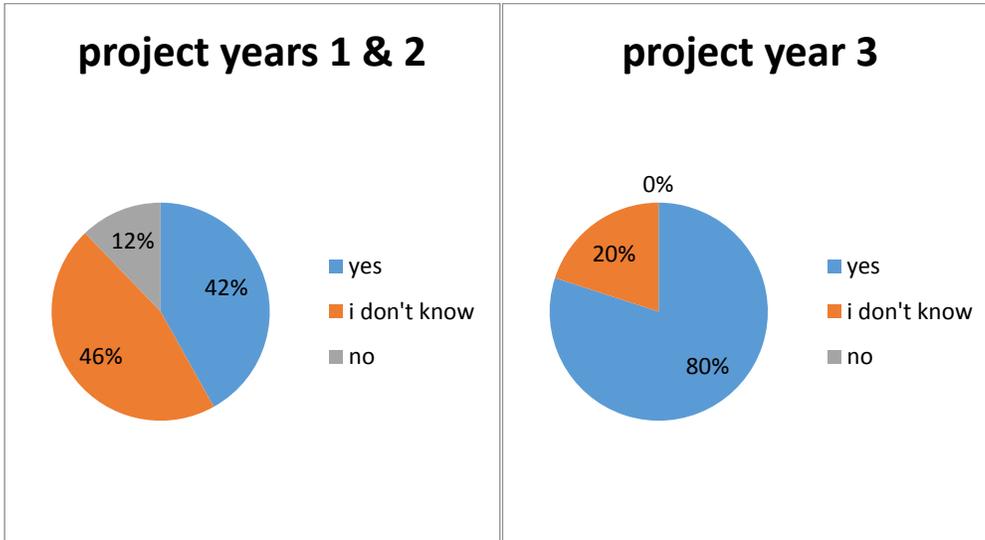
Participants funded by Europlanet: 8

Total funding by Europlanet NA1: 8,000€ (4,000€ by each, Task 2 & 5)

Workshop report: tinyurl.com/alpbach2018

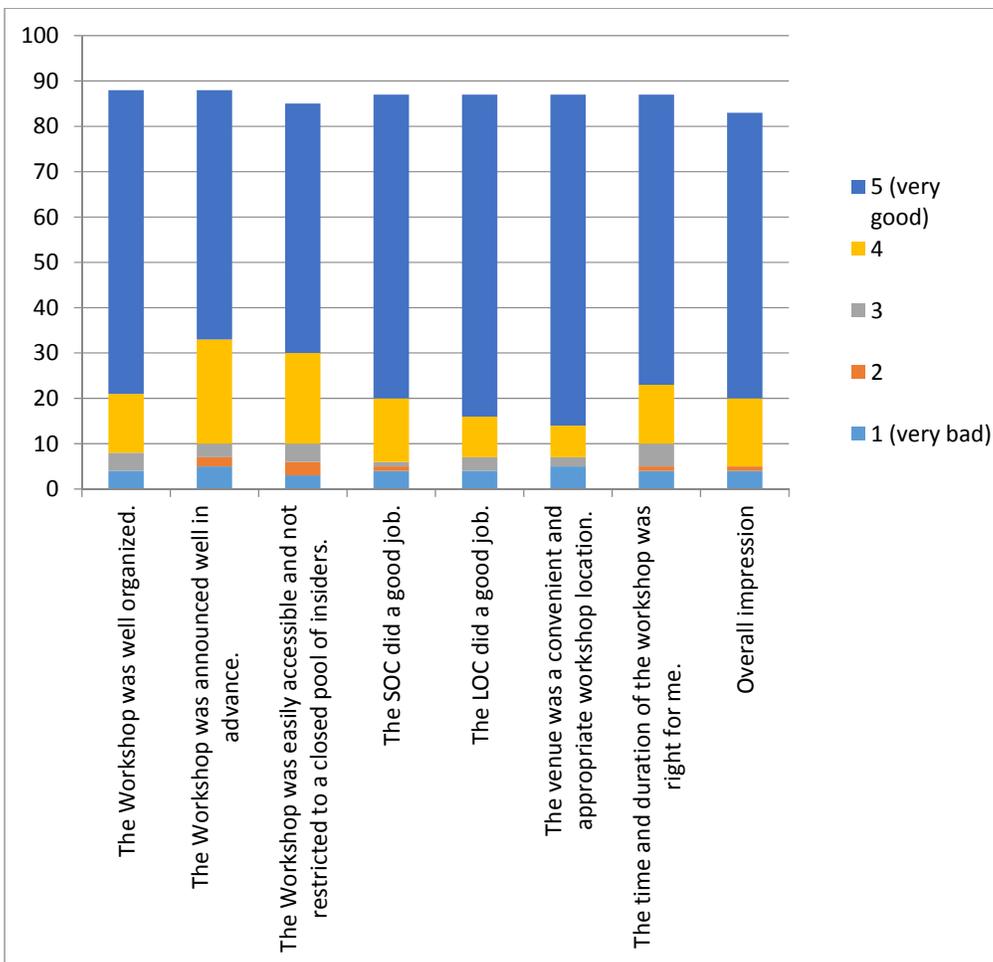
Workshop feedback

Through project year 3 further workshop feedbacks were gathered from the participants based on the feedback form developed during project year 1. The statistics clearly show an increase of awareness and knowledge about Europlanet by the participants as the figure below illustrates.

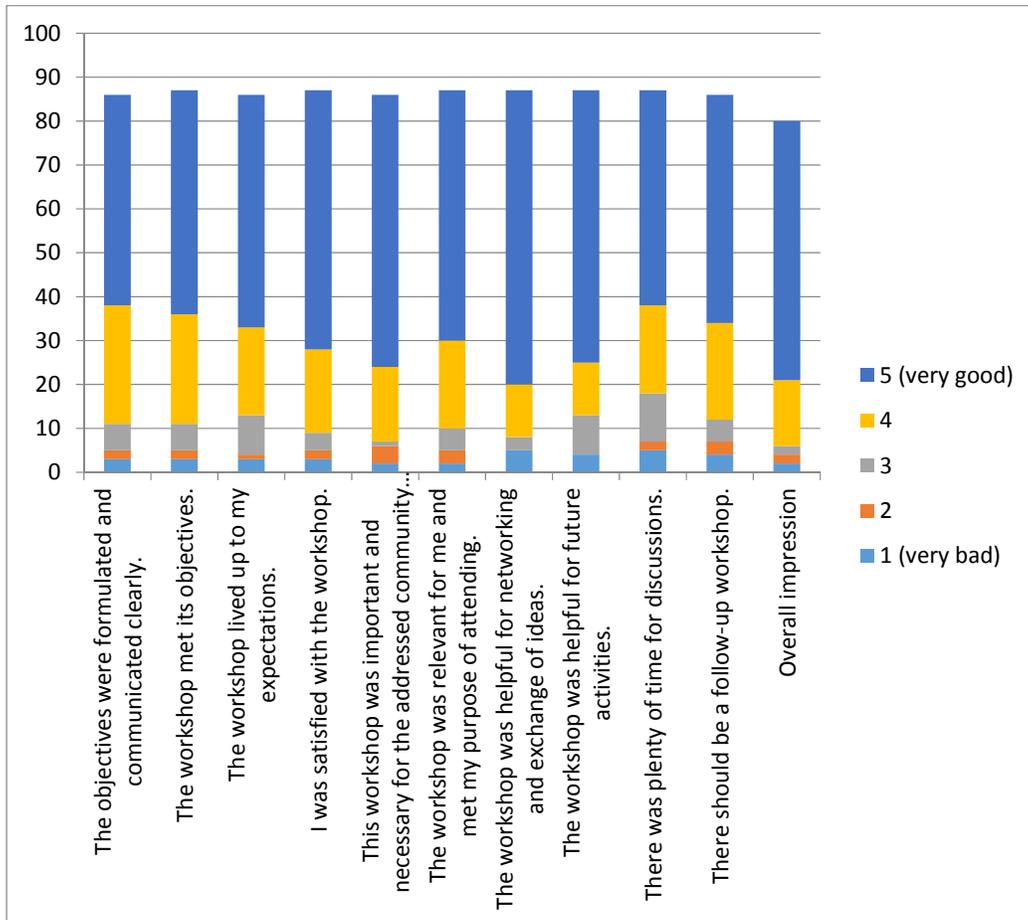


Workshop Feedback 1: I am aware of the aims and goals of the EU-project Europlanet 2020 and what it can offer to me.

Some further statistics for the first 3 project years are presented below.



Workshop Feedback 2: Overall workshop impressions.



Workshop Feedback 3: Workshop content.

Amateur Sessions at EPSC

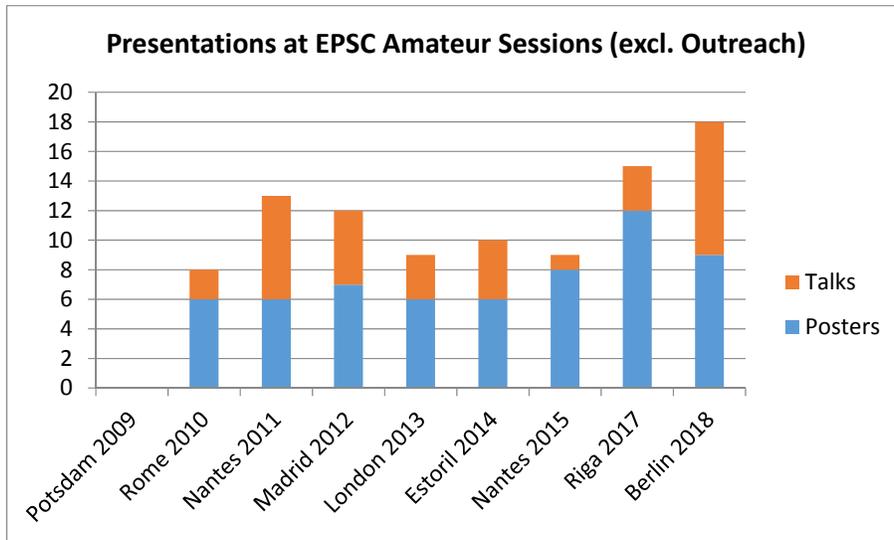
In 2017 Europlanet NA1 for the first time supported the participation of amateurs at EPSC, making EPSC 2017 in Riga, Latvia, the one with the highest amount of amateur presentations, i.e. 16 in total in two different sessions. These sessions were

- Amateur collaborations in small bodies, terrestrial, giant and exoplanets professional studies, EPSC 2017, Riga, Latvia (6 talks, 3 posters).
- Juno Ground-Based Support from Amateurs, EPSC 2017, Riga, Latvia (6 talks)

Europlanet NA1-Task 5 will again support amateurs to participate at EPSC 2018 in Berlin, Germany. There will be one big amateur session in 2018, i.e.:

- Professional-Amateur collaborations in small bodies, terrestrial, giant, exo-planets studies and Juno Ground-Based Support (9 talks, 9 posters).

With a total of 18 presentations EPSC 2018 will therefore even be above EPSC 2017 (see Figure below). The comparatively small Europlanet funding (~7,500€ in 2018) is thus strongly enhancing the participation of amateurs, which in turn leads to new and fruitful pro-am collaborations.



Regular communication within NA1-Task 5

During the third project year regular communications between the beneficiaries of NA1-Task 5 took place. This includes an informal discussion meeting at the Europlanet Council Meeting at EPSC 2017, and regular and frequent telecons between Vilnius University and IWF-Graz to coordinate the work within NA1-Task 5. In addition, continuous communication with some of the leading amateur astronomers in Europe proceeded also during project year 3 of Europlanet 2020.

2.2.6. WP 12.6

During reporting period of 01.09.2017 - 31.08.2018 the following calls were opened in NA1 Exchange Program (Task 6):

Open Call

- Application can be submitted any time until 31.12.2018
- Period of the Exchange Visit: Travel by 30.4.2019

9 applications have been received by the end of July 2018. 5 have been approved, 2 rejected, and 2 are currently under consideration.

Selected Applications

- Berényi Kitti, Geodetic and Geophysical Institute, Hungary. Visit the ionospheric research group of Institute of Atmospheric Physics, participation at the Solar variability and coupling effects in the Earth's atmosphere workshop
- Barta Veronika, Geodetic and Geophysical Institute, Hungary Visit the ionospheric research group of Institute of Atmospheric Physics, participation at the Solar variability and coupling effects in the Earth's atmosphere workshop
- Jackman Caitriona, LESIA, Observatoire de Paris, Collaboration on radio data set collation and novel algorithm development
- Exner Willi, LESIA, Observatoire de Paris, First workshop of the SHOTS group
- Osama Sarah, University of Bologna, "Attending the short course GEOMICROBIOLOGY OF EXTREME ACIDIC ENVIRONMENTS: FUNDAMENTALS AND APPLICATIONS IN ASTROBIOLOGY"

Special call for Journalists/Science Communicators

- Extended application submission deadline: 31st of August, 2017
- Period of the Exchange Visit: 15th of August 2017 - 15th of February 2018

Selected Applications

- Pokrzycka Lidia, Maria Curie-Skłodowska University, Poland. "Media relations and planetary science community. Practical activities."
- Lamza Lukasz, Tygodnik Powszechny magazine, Poland. "A universe of planets"
- Kokori Anastasia, Dublin City University, Ireland. "Astronomy outreach and public engagement with Space missions"

Exchange visits accepted in Call 4 (RP2) but made during RP3:

- Period of the Exchange Visit: 1st of June 2017 - 30th of November 2017
- Maria Hieta, Finnish Meteorological Institute, Finland. "Comparative humidity measurements in low-pressure carbon dioxide"
- Jingnan Guo, University of Kiel, Germany. "Implementation of the Martian part of the Europlanet Planetary Space Weather Service VI"

2.3. Impact

The WP12 has been able ramp-up its activity and continue successfully its operations. Through NA1 meetings and topical workshops we have been able to make a difference by bringing together European planetary scientists, engineers, and amateurs, as well as approached successfully industrial organizations. A specific effort has been made to activate the under-represented states.

The results and impacts will be taken into account in the planning of the fourth year of the NA1 activity.

At the Europlanet Impact and Innovation Board the NA1 activity are represented by the NA1 Coordination team or individual Task leaders or their deputies.

The next **International Workshop on Instrumentation for Planetary Missions IWIPM-4** previously all held in the USA will take place in Sept 2018, collocated with **EPSC**.

The NA1 one has already made a distinctive impact on the planetary science community in bringing together planetary scientists and industrial/commercial companies, people from under-represented states, amateur organizations and early career scientists. Principal statistical data on the NA1 impact can be seen in the Table below.

Table 1. Statistical data on the NA1 impact.

Year	from	to	Workshop Title	City	Country	held in under-represented country	Total number of participants	Number of participants of under-represented countries	Number of early career scientists	Participants from Industry	Amateur Participants	Participants from outside Europe
2015	24.11.	25.11.	NA1 Kickoff	Göttingen	Germany	no	15	2	0	0	0	0
2016	21.4.		NA1 progress meeting 1	Vienna	Austria	no	5					
2016	31.8.	1.9.	NA1 progress meeting 2	Helsinki	Finland	no	11	0	1	0	0	0
2016	7.6.	9.6.	Mars 3D	Dorking	United Kingdom	no	23	5	23	1	0	4
2016	1.12.	3.12.	Ethiopia (Danakil Depression in Planetary Science)	Bologna	Italy	no	20	0	2	2	2	2

2016	12.9.	13.9.	ISSI forum 1: Solar system exploration	Bern	Switzerland	no	45	1	4	5	0	11
2016	21.1.		Eurospace meeting	Paris	France	no	12					
2016	26.4.	28.4.	Eurospace meeting	Lausanne	Switzerland	no	85			80		
2016	21.9.	22.9.	Asteroid mining	Luxembourg	Luxembourg	yes	79	13	19	21	1	16
2016	24.10.	27.10.	IWIPM-3	Pasadena	USA	no	250					
2016	14.11.	18.11.	Space weather and radiation design (in conjunction with PSWS).	Oostende	Belgium	no	12	20	3	3	0	1
2016	11.5.	13.5.	Ground-based observations in support of the JUNO mission to Jupiter	Nice	France	no	33	4	0	0	22	5
2016	20.6.	22.6.	Rosetta ground-based observations	Seggau	Austria	no	40	0	8	0	2	14
2016	2.8.	12.8.	Exoplanets	Moletai	Lithuania	yes	45	31	17	0	13	0
2016	25.10.	27.10.	Planetary Radio Emissions VIII	Seggau	Austria	no	50	5	13	0	0	18

2017	24.4.		NA1 progress meeting 3	Vienna	Austria	no	8	1	0	0	0	0
2017	2.5.		NA1 progress meeting 4	Windsor	United Kingdom	no	6	0	0	0	0	0
2017	28.8.	31.8.	NA1 progress meeting 5	Budapest	Hungary	yes	14	7	1	0	0	0
2017	20.3.	24.3.	Dynamics of planetary systems (Alexander von Humboldt Symposium)	Bad Gastein Salzburg	Austria	no	50	12	10	2	3	6
2017	26.3.	30.3.	Exomars Atmospheric Science and Missions Workshop	Saariselkä	Finland	no	22	1	3	0	0	2
2017	19.4.	21.4.	Planetary Mapping through Virtual Observatory	Roscoff	France	no	30	0	9	2	0	2
2017	19.6.	23.6.	Comets Formation	Sofia	Bulgaria	yes	53	6	5	0	0	4
2017	24.7.	26.7.	5th CHEOPS science workshop	Seggau	Austria	no	89	10	17	1	0	8
2017	8.8.	10.8.	Early history of planetary systems and habitable planets	Tartu	Estonia	yes	54	26	37	2	12	20

2017	25.9.	30.9.	Geosciences for understanding habitability in the solar system	Azores	Portugal	yes	68	25	18	0	0	3
2017	9.10.	11.10.	Sun's influence on planets	Toulouse	France	no	24	3	3	0	0	4
2017	27.11.	29.11.	Vespa simulations	Brussels	Belgium	no	25	0	0	0	0	0
2017	17.9.	22.9.	Towards a lunar village	Riga	Latvia	yes	60	20	20	5	0	5
2017	28.11.	1.12.	Space weather and radiation design	Oostende	Belgium	no	25	5	5	5	0	2
2017	9.6.	12.6.	Pic du Midi T1M Planets Observation Campaigns Workshop	Toulouse	France	no	7	1	0	0	5	0
2017	18.7.	27.7.	Alpbach Summer School: Dust in the Solar system	Alpbach	Austria	no	60	8	60	0	0	0
2017	18.7.	28.7.	Europlanet Summer School 2017 "Space Missions: Ground-based Observations and Science Communication"	Moletai	Lithuania	yes	32	15	10	0	8	2

2017	17.9.	22.9.	2 Amateur Sessions at EPSC 2017: - AM1 Amateur collaborations in small bodies, terrestrial, giant and exoplanetary research - AM2 Juno ground-based support from amateurs	Riga	Latvia	yes	15	1	1	0	11	2
2018	11.4.		NA1 progress meeting 6	Vienna	Austria	no	8	1	0	0	0	0
2018	26.3.	30.3.	Kuiper belt objects	Coimbra	Portugal	yes	109	8	50	0	0	59
2018	11.6.	15.6.	Planetary atmospheric erosion	Murighiol	Romania	yes	35	8	5	2	0	10
2018	5.2.	9.2.	ISSI workshop 1: Role of Sample Return Missions in the Exploration of the Inner Solar System	Bern	Switzerland	no	47	3		0	0	17
2018	16.4.	17.4.	Asteroid mining 2	Luxembourg	Luxembourg	yes						

2018	13.8.	18.8.	Microsatellites in planetary and atmospheric research	Tartu	Estonia	yes							
2018	19.6.	21.6.	Didymos Observer Workshop	Prague	Czech Republic	yes	29	6	6	0	1	9	
2018	24.6.	1.7.	Geology and geophysics of the solar system bodies	Valjevo	Serbia	yes	43	17	43	0	0	20	
2018	17.7.	19.7.	Tools and Services for Planetary Observations and Image Analysis by Amateurs	Toulouse	France	no	16	1	1	0	12	0	
2018	19.7.	26.7.	Alpbach Summer School: Sample return from small solar system bodies	Alpbach	Austria	no	62	12	62	0	0	0	
2018	31.7.	10.8.	Europlanet Summer School 2018 "Space Missions: Ground-based Observations and Science Communication"	Moletai	Lithuania	yes	33	15	4	0	13	1	

2018	17.8.	18.8.	Basics of Astrobiology Summer school	Vienna	Austria	no	66	14	53	0	0	15
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Overall (informed) 1623 participants, 304 of them from the under-represented countries (18.7% of all participants). 517 early career scientist (32% of all participants), 133 from the industry (8.2% of all participants), and 138 amateurs (8.5% of all participants). 270 participants were outside the EU (16.6% of all participants).

Evolution of statistics:

	After RP1	After RP2	After RP3
Participants from under-represented countries	15.61%	16.44%	18.73%
Female participants	20.07%	25.11%	26.06%
Early career scientists	18.2%	26.56%	31.85%
Participants from industry	30.11%	12.89%	8.19%
Amateurs	13.75%	7.56%	8.5% *
Outside Europe	8.55%	12.67%	16.64%

* for task 5 alone amateur participants after RP3: 20.65%

