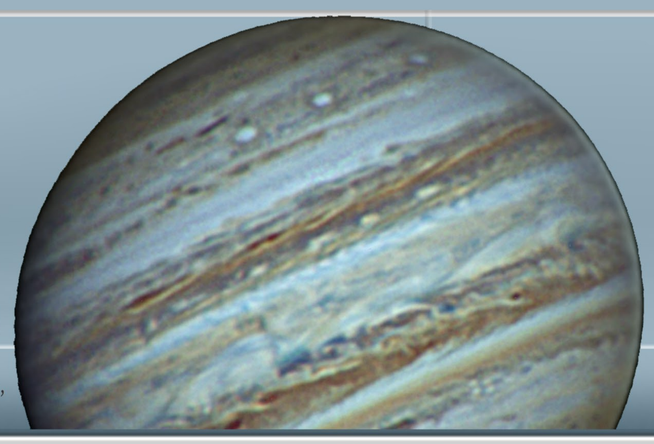
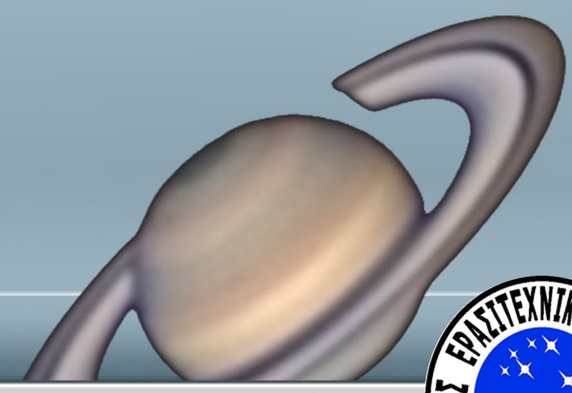
Spreading the passion for scientifically useful planetary observations

Emmanouel (Manos) I. Kardasis (1),
Emmanuel Vourliotis (1), Grigoris Maravelias (1,2), Ioannis Bellias (1,3), Iakovos Stellas (1), Eleftherios Vakalopoulos (1), Pierros Papadeas (1,3), Krinio Marouda (1), Orfefs Voutyras (1)

(1) Hellenic Amateur Astronomy Association, Athens-Greece,
(2) Astronomický ústav, Akademie ved Ceské Republiky, Ondrejov-Czech Republic,
(3) Hackerspace.gr, Athens-Greece





EPSC European Planetary Science Congress

Organized for targeted groups : Amateur Astronomers | Students | Photographers | Schoolchildren

ΕΛΛΗΝΙΚΟΣ ΕΡΑΣΙΤΕΧΝΙΚΗΣ ΑΣΤΡΟΝΟΜΙΑΣ ★ 2003 ★

Introduction

The "March 2015 - Planetary Observation Project (POP)" was a series of talks and hands-on workshops focused on planetary observation organized in March 2015 by the planetary section of the Hellenic Amateur Astronomy Association (HAAA) [1].

The targeted groups mainly are those who have (or willing to have) access on a telescope and wanted to get up to date on the recent planetary news, to enrich their understanding of the planets, and trained in order to take part on this adventure of exploration by making observations.

POP Structure

Overview of the project structure that may work as a prototype for similar outreach programs.

Image 1: *The POP structure and workflow*

Methodology : Focused Courses, Hands-On workshops and practical excersice

Theory

The capabilities of systematic space and ground based observations were discussed taking into account the synergy of both professional and amateur communities. During the project also new trends of planetary science communication were presented that take advantage of social networks, modern tools and international databases. The presentation material the freeware used and some videos of the project can be found in [2].

Course 1 : Terestrial planets

In this course the instructor provided participants with the most useful information about terrestrial planets and the excitement of latest developments in planetary science with the contribution of continuing ground-based amateur observations.

Typical examples of small telescope achievements that were presented are :

- The discovery of 4-day period of the atmosphere of Venus in 1961 by amateur C.Boyer [3]
- The discovery by amateurs of an extremely high-altitude plume in Mars during the apparition of 2012 [4]

Such contributions may act as a strong motivation for observations by POP participants

Image 2:

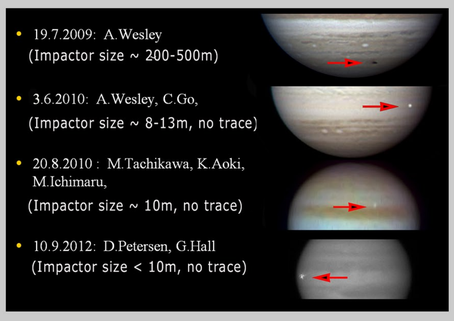
The first course of POP in the Municipal Library of Athens. Instructor of both theory and workshops was E.Kardasis.

Course 2: Giant planets

This workshop was based on [5,6], that shows that small scope observation of gaseous giant planets can be of high scientific interest. Their atmospheres are rapidly changing and the professional observations are not enough to assess temporal changes. Such observations provide a continuous record and sometimes may trigger professional observations as it happened with the amateur discoveries of fireballs in Jupiter's atmosphere.

Image 3:

Jupiter impacts discovered by amateur astronomers with small telescopes. During this course such examples were used to inspire participants.



Workshop 1: Digital Observation

The Hands-On observing Workshop offers lively, hands-on visual and digital observing methodology. A guided fascinating observing trip in planetary words. Every participant got familiar with the equipment and observed visually planets Mars, Venus, Jupiter and the Moon. Then they captured their own videos of Jupiter for further processing in 2nd workshop. The observing night was selected to have good weather conditions for planetary observing.

Image 4:

The instructor of POP (E.Kardasis ; first left-down) showing how-to capture videos of planet Jupiter with a telescope, a planetary camera, capturing software (Firecapture) and a computer ("Dimitra Observatory")

Workshop 2: Processing Data

In this workshop we trained participants on observing techniques and image processing (with the use of freeware) to enable them to produce scientifically useful results.

Image 5:

The workflow of the freeware used for video & image proccesing and image measurements during the 2nd workshop.

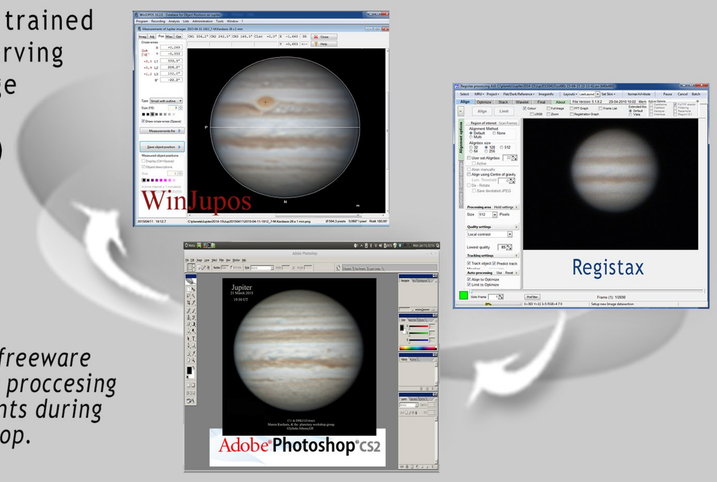


Image 6:

An interactive, hands-on workshop of how-to make a scientifically-useful digital planetary observation, with participants of all ages.

Practical Exercise

Upon completion of the courses and workshops, participants had the option to process the data collected from *Dimitra Observatory* according to the 4th workshop methodology. They created their own documented observations that may be forwarded to international organisations that collect such observations for further analysis. All observations should be processed without introducing any artifacts, have a known orientation and include all useful data for analysis like date, exact time in UT, name of the observer, filters and instruments used

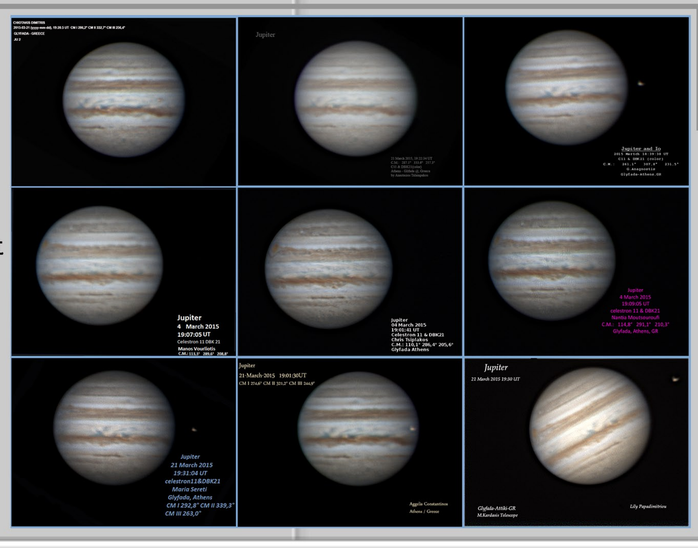


Image 7:

Some of the successful observations of the participants, results of the practical exercise

Summary and Conclusions

POP's structure included two talks and two workshops aiming to inspire and educate astronomy enthusiasts. The talks tried to stimulate the participants about the importance of ground-based observations by presenting the most current scientific news and puzzling problems that we are facing in the observation of planets. During the hands-on workshops the beauty of planetary observation was used to inspire participants.

However, we trained participants on observing techniques and image processing to enable them to produce scientifically useful results. All POP's events were open to the public and free, meaning both out-of-charge and freely available material provided to the participants (through our website [1,2]).

Fifty-two people attended at least one course/workshop. Finally, those who participated in all the meetings, held their exercise and thus entitled to a certificate were 7 people (13.5%) which is important. Reducing participation may be because of: (a) the increased difficulty,(b) the fact that the meetings were held successive Saturdays in a month (c) the difficulty of moving from theory to practice, (d) the likelihood that expectations were for something different perhaps more theoretical.

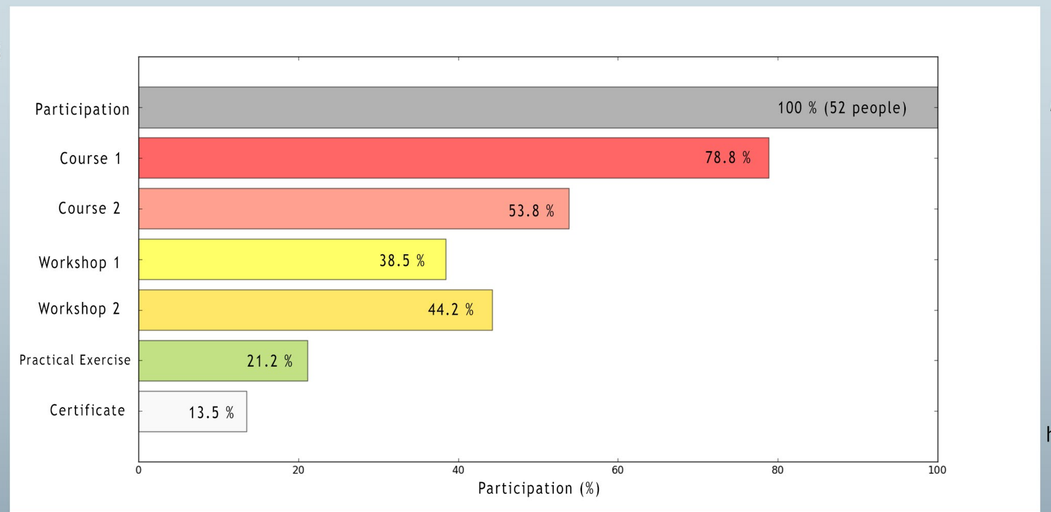


Image 8: *POP Participation per subject as a percentage of total equity*

The impact of the workshop is increased by providing participants a long-term guidance. After the workshop we maintain contact with them to ensure that they are still actively engaged with planetary observing.

The project offered attendants unique experiences that may have a significant impact with potential lifelong benefits. By sharing theoretical and practical knowledge along with the passion for planetary observation with participants we hope that we have provide the base to inspire their science careers.

Thanks to

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References

[1] Hellenic Amateur Astronomy Association(HAAA), available at: http://www.hellas-astro.gr, see also Voutyras O., Maravelias G., Bellias I., Kardasis, E. "10 Years of Developing Outreach Techniques and Best Practice by the HAAA", EPSC 2013-798

[2] The Planetary Observation Project POP - March 2015, available in Greek at: http://www.hellas-astro.gr/articles/astromanos-2015-03-04-2132

[3] Boyer, C., Camichel, H., 1961, "Observations photographiques de la planete Venus", Annales d'Astrophysique 24, 531

[4] Sánchez-Lavega etal, 2015, "An extremely high-altitude plume seen at Mars' morning terminator", Nature 518, 525-528

[5] Kardasis E. etal 2013, "The need of Professional-Amateur (PRO-AM) collaborations to the monitoring of the giant planets", 11th Hellenic Astronomical Conference, 8 - 12 September 2013, Athens,GR.