

ESO ASTRONOMY CAMP 2013 — Final Report

1. Concept and scope

The European Southern Observatory (ESO) and its Science Outreach Network (ESON) collaborated with the science education and communication company Sterrenlab to arrange the first ESO Astronomy Camp for European secondary school students. The camp took place from 26 to 31 December 2013 at the Astronomical Observatory of the Aosta Valley, located in Saint-Barthelemy, Nus, Italy. The location was chosen based on its clear skies, the instruments and the didactical experience that the Observatory could provide.

The camp explored the theme of the visible and the invisible Universe through lectures, hands-on activities, and night-time observations with the telescopes and instruments at the observatory. Social activities, winter sports, and excursions contributed to make the camp a memorable experience for the participants. ESO was responsible for the scientific programme for the ESO Astronomy Camp and, together with the other partners, provided lecturers and material.

2. Partners

Besides ESO and Sterrenlab, the following partners contributed to the success of the camp:

- (ESO, 3 bursaries and travel costs)
- Istituto Nazionale di Astrofisica and University of Milan (IT), 2 bursaries
- Polish Astronomical Society and Urania — Postępy Astronomii and Polish Children's Fund (PL), 2 bursaries and travel costs
- Ciência Viva (PT), 1 bursary
- Sociedad Española de Astronomía (ES), 2 full bursaries, 2 partial bursaries and travel costs
- Université de Genève (CH), 1 bursary

by providing a total of 13 bursaries to winning applicants.

- (ESO)
- Astronomical Observatory of the Aosta Valley (IT)
- University of Valencia (ES)
- University of Milan (IT)

by contributing to the scientific programme with activities and lectures and in case of the observatory instruments and facilities.

- Austrian Planetarium Society
- Planétarium de l'Observatoire Royal de Belgique
- Tähtitieteellinen yhdistys Ursa (Ursa Astronomical Association)
- Haus der Astronomie
- Istituto Nazionale di Astrofisica
- Società Astronomica Italiana
- University of Milan – COSMO group
- Netherlands Research School for Astronomy (NOVA)
- Polish Astronomical Society
- Urania — Postępy Astronomii

- Astronomical Observatory of the University of Coimbra
- Observatorio Astronómico — Universidad de Valencia
- Sociedad Española de Astronomía
- Onsala Space Observatory
- University of Geneva
- University of Cag — Space Observation & Research Centre
- Las Cumbres Observatory Global Telescope Network
- UK National STEM Centre

by endorsing the ESO Astronomy Camp and contributing to the promotion of the announcement.

3. Participants and nationalities

56 secondary school students (29 girls and 27 boys) aged between 16 and 18 and 4 accompanying teachers from 18 countries participated to the ESO Astronomy Camp.

Country	N
Austria	2
Brazil	2
Czech Republic	1
Denmark	1
Egypt	1
France	2
Germany	4
Iran	3
Italy	8
Netherlands	3
Poland	6
Portugal	3
Russia	1
Spain	8
Sweden	1
Switzerland	2
Turkey	3
United Kingdom	5

It was decided to accept a number of participants from non-ESON countries to enrich the multicultural experience.

To register, applicants were asked to upload a photo, video or text on the theme ‘Astronomy and myself’. The entries were considered as a short presentation to show the applicant's motivation, enthusiasm and interest to participate to the astronomy camp. The registrations closed with 170 applications from 23 countries submitted. The selection of best entries was made by the sponsoring institutions; acceptance of the other candidates was based on fair country representation, registration date and entry.

4. Workplan

- Preparation phase: January – May 2013
- First call: 13 May 2013
- Second call: September 2013
- Registration close: 21 October 2013
- Winners announced: 31 October 2013
- Registrations: 31 October – 8 November 2013
- Camp: 26 – 31 December 2013

5. Programme

Day	Time	Activity
Thu 26 Dec	16:00 – 19:30	Arrivals (2 batches) – Visit to the Observatory
	20:00	Dinner
	21:30 – 23:00	Welcome activities
Fri 27 Dec	08:00 – 9:00	Breakfast
	10:00 – 12:30	Lecture and activity: Introduction to light and visible light
	12:45	Lunch
	14:30 – 16:30	Snow park
	17:30 – 18:00	Lecture: the Observatory of Aosta Valley
	18:00 – 19:00	Lecture: the hidden universe, the full picture
	19:30	Dinner
	21:00 – 23:00	Activity: spectroscopic observations
Sat 28 Dec	08:00 – 9:00	Breakfast
	10:00 – 12:30	Lecture and activity: introduction to spectroscopy & photometry
	12:45	Lunch
	14:30 – 16:30	Cross-country skiing
	18:00 – 19:30	Activity: art and science
	19:30	Dinner
	21:00 – 23:00	Lecture: the infrared universe
Sun 29 Dec	08:00 – 9:00	Breakfast
	10:00 – 12:30	Activity: spectroscopic data analysis
	12:45	Lunch
	14:30 – 16:30	Snow shoe walk
	18:00 – 19:00	Activity: sky observations
	19:30	Dinner
	21:00 – 23:00	Lecture: introduction to the microwave universe
Mon 30 Dec	08:00 – 9:00	Breakfast
	09:30 – 12:30	Activity: measurement of a microwave antenna angular response
	12:45	Lunch
	14:30 – 15:30	Activity: measurement of a microwave antenna angular response

	15:30 – 16:30	Planetarium show
	17:00 – 19:00	Lecture: the ultraviolet and x-ray universe
	19:30 – 21:00	Traditional “Valdostano” dinner
	21:30 – 24:00	Farewell party
Tue 31 Dec	06:00 – 10:00	Conclusion and departures

Astronomy lectures and activities were delivered by:

1. Davide Cenadelli (Observatory of the Aosta Valley)
2. Enzo Bertolini (Observatory of the Aosta Valley)
3. Lars Lindberg Christensen (ESO)
4. Andrea Bernagozzi, Paolo Pellissier and Paolo Recaldini (Observatory of the Aosta Valley)
5. Anna Wolter (ESO/INAF)
6. Juan Fabregat (University of Valencia)
7. Aniello Mennella and Paola Battaglia (University of Milan)

6. Promotion

The camp has been promoted through ESO’s communication channels:

- ESO homepage banner, the website receiving 4 million hits per year.
- ESO web announcement (translated in 14 languages)
- ESO Outreach Community Newsletter, distributed to over 2500 subscribers
- Camp sponsoring
- ESON national point of contacts
- ESO social media updates (over 70.000 members of online communities)
- ESO teachers distribution list with over 700 contacts
- Flyers at ESO, ESA, and CERN open days and sent to sponsoring partners
- Science in School magazine and Astronomy banner
- Hands-on-the-Universe

After the conclusion of the camp articles and news appeared in:

- Science in School magazine
- Communicating Astronomy with the Public Journal
- Sterne und Weltraum
- The curious physicist (blog)
- Nebulacast (website)
- Rainews
- Local newspapers

7. Costs

The participants’ registration fee of 480 € covered full board accommodation at the hostel of Saint Barthelemy, supervision by Sterrenlab staff, all astronomical and leisure activities, materials, excursions, internal transport,

transport by private bus between the observatory and the airport of Milan Malpensa and insurance. The fee and travel costs were covered by participants except from the ones (13) entitled to receive a bursary.

Sponsoring institutions covered the full or partial cost of bursaries (480 € x N bursaries), plus in some cases travel costs to and from Milan Malpensa airport.

8. Considerations and recommendation

Major achievements:

- Flawless and on time selection process of the sponsoring partners
- Flawless arrivals (welcome at the airport) and departures
- Appropriate and interesting theme “The hidden universe”
- Programme: a good mix of lectures, observations, experimental activities, data analysis, team working and leisure activities
- Involvement of visiting astronomers and exchange with the participants (formal and informal)
- Multicultural and international group (supervisors, visiting astronomers and participants)
- No issues to keep a smoke, alcohol and sex free environment
- Tea time as an informal multicultural moment
- Winter alpine experience
- Farewell ESO bag with gadgets and books
- No language and communication problems apart a couple of cases

Major issues and recommendations:

- Limit the entries to video and text format (no pictures)
- Stress the fact that all the activities are in English and communication in native languages will be discouraged.
- Fee camp and travel costs to the camp might be substantial and prevent participants from far away countries or with less financial availability to participate -> involve and commit more sponsoring countries to offer a higher percentage — ideally all — of bursaries. Contacts with potential partners shall be taken from March and the camp presented at the ESON meeting.
- Duration and dates -> a 6 days camp would be preferred to increase quality for money and loose the schedule; however staying on New Year’s eve might prevent participation of those students who prefer to spend the eve with families and friends and increase costs for the hostel
- Waiting time at the airport -> envisage preparatory and group activities
- Departures schedule -> double check registration forms to avoid reschedule bus departure
- First night observation (some) activities quite long and sometimes overlapping -> plan in detail the presentation and shorten time
- Cross country skiing equipment preparation too long process -> plan in details the process
- Waiting time lunch -> agree on a stricter schedule
- Use of mobile devices shall be limited and forbidden at lunch and dinner time

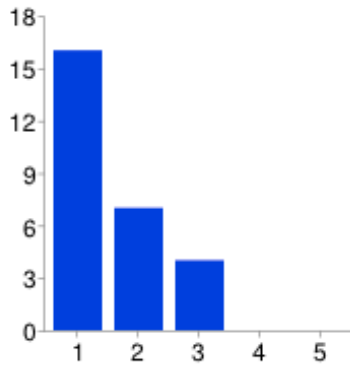
9. Surveys

A short anonymous questionnaire was administered to participants and their families about 2 weeks after the conclusion of the camp. The purpose of the questionnaire was to get feedbacks about period, location and programme and to identify the best communication tools to reach potential camp participants.

N. of answers 27/56

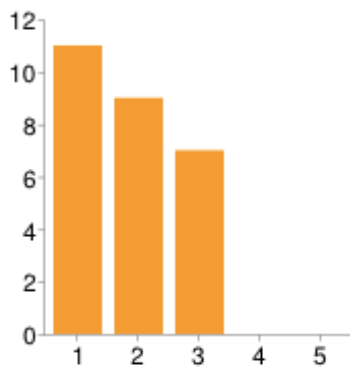
1 = Excellent, 5 = Poor

Location and accommodation



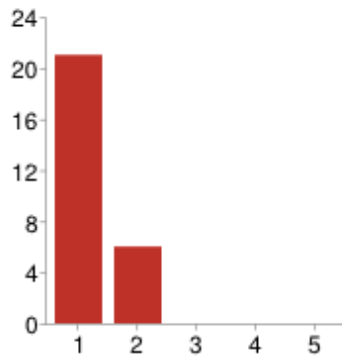
1	16	59%
2	7	26%
3	4	15%
4	0	0%
5	0	0%

Period (26-31 December)



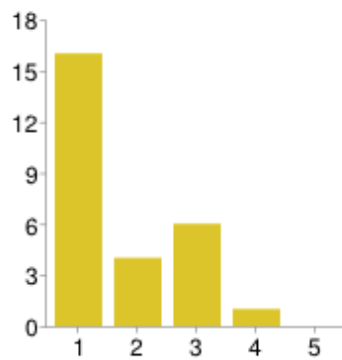
1	11	41%
2	9	33%
3	7	26%
4	0	0%
5	0	0%

Organisation and communication



1	21	78%
2	6	22%
3	0	0%
4	0	0%
5	0	0%

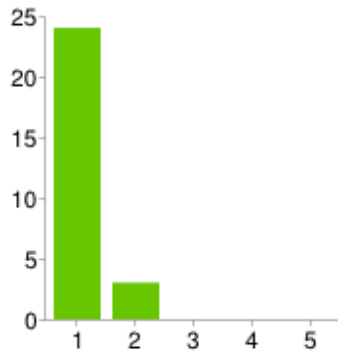
Value for money



1	16	59%
2	4	15%
3	6	22%
4	1	4%
5	0	0%

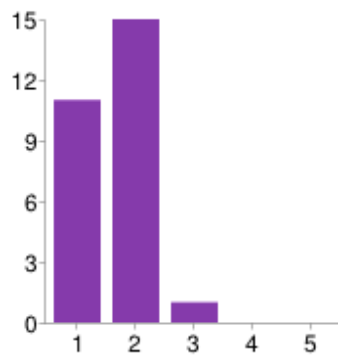
x

Camp staff and visiting astronomers



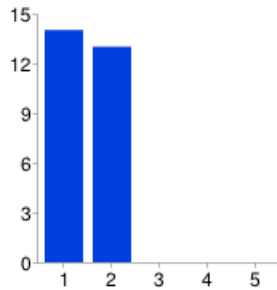
1	24	89%
2	3	11%
3	0	0%
4	0	0%
5	0	0%

Scientific programme



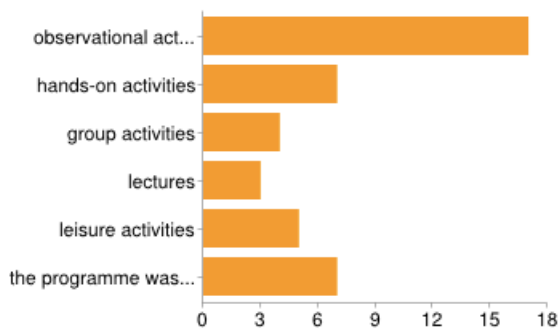
1	11	41%
2	15	56%
3	1	4%
4	0	0%
5	0	0%

Leisure programme



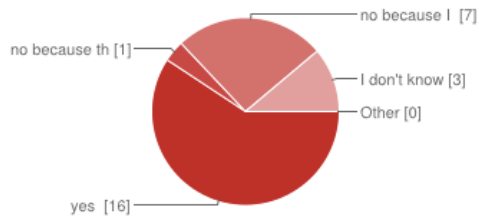
1	14	52%
2	13	48%
3	0	0%
4	0	0%
5	0	0%

Would you have preferred to have more



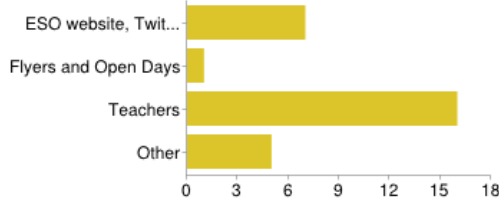
observational activities	17	40%
hands-on activities	7	16%
group activities	4	9%
lectures	3	7%
leisure activities	5	12%
the programme was fine as it was	7	16%

Would you have preferred a 8 days (7 nights) long camp including New Year's Eve?



yes	16	59%
no because the camp fee would be too high	1	4%
no because I prefer to celebrate New Year's Eve with my friends and family	7	26%
I don't know	3	11%
Other	0	0%

How did you hear about the ESO astronomy camp?



ESO website, Twitter or Facebook	7	24%
Flyers and Open Days	1	3%
Teachers	16	55%
Other	5	17%

Comments

I can't wait for the next camp! It was a beautiful experience, but it was too short. Because when you start to know really someone you have to go home because the camp was finished. The lectures were interesting, above all the ones in which we were involved like the about stellar spectroscopy. The mixed rooms are a good idea, because you have the opportunity of know lots of guys. At the end it was really an unforgettable experience and I think that all the guys would like to repeat it if they have the opportunity. It was a little difficult to communicate if you hand't Facebook and it would be easier for the communication if you send the emails both to parents and to participants because teenagers are more keen on looking at their email regularly. It was a great experience and I would love to have the opportunity to do it again. This has been a fantastic experience, I really enjoyed it, and I hope to do it again. Thanks for all. Thank you for the Camp! :) I want to come next year again!!! :) It would have been good to also learn about other fields in astronomy (e.g. cosmic rays, theory of relativity etc. that are not part of the electro magnetic spectrum). I would have liked to stay longer if the it would have taken place before Christmas. It would be nice to have the groups mixed more. So you don't have all the group activities with the same girls (or boys) from your room. That way you can meet new people. The best camp I've ever been :) THANKS A LOT!!!! I'm waiting for next edition :)

10. Blog and Facebook


A Facebook closed group "ESO Astronomy Camp 2013" was created one month before the beginning of the camp. The purpose of the group was to create a place where to get to know each other, start establishing relations between the organizers, visiting astronomers and participants, share information, get feedbacks. After the camp the group has been used to share photo albums and information that could be relevant to the participant in a broader extent (about astronomy and/or education) and get unstructured feedbacks and impressions. The group has 65 members.



A daily account of the ESO camp experience was offered to parents and participants themselves on Tumblr. The ESO Astronomy Camp blog was administered by Sterrenlab supervisors who posted pictures and a diary of the camp activities. The blog was meant as a communication tool for families and for the participants and therefore it is protected by passwords. It can be accessed at this address:

<http://esoastronomycamp2013.tumblr.com>

pw: esoastronomycamp2013



WELCOME to ESO ASTRONOMY CAMP

After a long trip we arrived to destination, Saint Barthelemy covered by a fresh layer of snow, at least 30 cm. 57 participants from 19 different countries gathered around the table to enjoy a lovely warm meal. Everyone was very social, sharing stories, laughing and getting to know each other, time passed in a flash.

After dinner we enjoyed a few games, the human knot got everyone in twist and the human handcuffs put everyone to test. A world map was hung to the wall and everyone attached a sticky note to the country they come from, it looked very colourful.