Report on the COSPAR Capacity Building Workshop
"ADVANCED SCHOOL ON INFRARED AND SUBMILLIMETER ASTROPHYSICS -
- Data analysis of the Herschel, Spitzer, Planck and Akari missions, and ALMA "
in Quito, Ecuador - March 2018

I – Introduction

The workshop took place in the Escuela Politécnica Nacional (EPN) from March 5th to 16th 2018. Primarily organized by COSPAR, it received support from international organisations, like the space agencies ESA and NASA, and the International Astronomical Union IAU, as well as from the local sponsor, the EPN and its National Observatory.

The workshop was proposed and locally organised by Prof. Ericson López, a former participant of the COSPAR CB workshop on X-ray Astronomy in Argentina in 2012.

The main aim of this workshop was to introduce young astrophysicists (PhD students and post-docs) to infrared, sub-mm/radio astrophysics and multi-wavelength opportunities and to train them in the use of data and tools of diverse space missions (Herschel and Planck from ESA, Spitzer from NASA, Akari from JAXA). The possibility of extending this with data from ALMA, a ground facility in the sub-mm domain, which is already crucial and will continue to be that in the next decades, was also foreseen as a fantastic opportunity.
Details about the workshop can be found under the Capacity Building Program pages (http://cosparhq.cnes.fr/Meetings/Workshops.htm) and under the local web pages (http://oaq.epn.edu.ec/infrarrojo/).

II – Participants

A total of 35 applicants were selected out of a total of 70 candidates. The selected students were all from Latin American countries (10 from Brazil, 9 from Argentina, 7 from Ecuador, 5 from Mexico, 2 from Peru, and 1 each from Honduras and Venezuela). One of the originally chosen students had to withdraw his participation at the last moment due to a sad personal circumstance. Another one could not fly due to lack of a vaccination requested for some regions of Brazil. A third participant had to give up participation due to professional reasons. One selected student didn't show up. Finally, one of the local students only participated in the first week of the school. So we were left with 30 students at the end.

The geographical distribution of the students revealed a strong regional distribution. Gender showed a 57/43 % female/male students distribution, pretty typical taking into account formerly organised workshops in this region. The full list of students including affiliation and nationality is given in Appendix I.

III – Lecturers

The list of lecturers including affiliation follows:

- José Cernicharo, ICMM-CSIC, Spain, School Scientific Director
- Marcelino Agúndez, ICMM-CSIC, Spain

- Bruno Altieri, Euclid SOC,ESAC,ESA, Spain
- Sean Carey, California Institute of Technology, NASA, USA
- Ranga-Ram Chary, California Institute of Technology, NASA, USA
- Asunción Fuente, ICMM-CSIC, Spain
- Carlos Gabriel, ESAC, ESA, Spain
- Nuria Marcelino, ICMM-CSIC, Spain
- Juan Ramón Pardo, ICMM-CSIC, Spain
- Jan Tauber, ESTEC, ESA, the Netherlands
- Ivan Valtchanov, Herschel Science Centre, ESAC,ESA, Spain
- Luis Velilla, ICMM-CSIC, Spain

Three of the lecturers had participated in the only previous Infrared/sub-mm X-ray COSPAR workshop so far, which took place in Buenos Aires, Argentina, back in 2012: Cernicharo, Gabriel and Valtchanov. For all the others this was their first experience at all with the COSPAR CB, although all of them without exception had previous experience with astronomy schools.

IV – Emerging problems

Due to professional compromises three of the lecturers (Cernicharo, Agúndez and Fuente) could not stay beyond the first week of the workshop. This situation was well known at the time of organising the event and that was the reason for inviting a larger number of lecturers / supervisors (12) than usually.

What we could not foresee was that three of the other lecturers (Sean Carey, Nuria Marcelino and Luis Velilla) would get sick / injured just few days (one of them even hours) before the meeting took place, making their participation and finding a replacement impossible. This did not present large problem during the first week, since the main contents were lectures, and the team was large and knowledgeable enough of all the contents planned. On top of that we received the presentations from the missing lecturers, which was a big help for the replacing lecturers.

The second week, however, we were left with only 6 supervisors (one of them not from the field) for the 30 students. The planned introduction to ALMA data reduction was therefore impossible, since the two foreseen specialists in the field were not present.

V – Finding solutions

A partial topic replacement was found, which at the end was satisfactory for those students who were more interested in sub-mm / radio analysis: one of the lecturers, Juan Ramón Pardo, had got time for a 4-hours observation at the IRAM 30m telescope on Pico Veleta at the Spanish Sierra Nevada, to be performed in remote mode, coincident with the workshop, starting on Monday 12, at 16:00 afternoon in Quito.

This was seen not only as a replacement, but as a fantastic opportunity for the students to gain experience in performing an observation with one of the largest and most sensitive sub-mm telescope worldwide today. They would also perform immediately after this the data reduction and analysis of the data taken. The experience they got was, however, different, showing the difficulties that can be suffered by the weather with ground telescopes. Just minutes before the observation should start, it started to snow heavily at Pico Veleta, keeping that way for the following hours and impeding fully the observation.

Dr. Pardo luckily had data from a former similar run as planned for that day, and the students worked on that data, finding an acceptable, and at the end very rewarding, replacement, as could be seen by their presentations.

VI – Program

From the program (Fig. 1) it can be read that the school was structured as usual in these workshops with approximately 35% of the time dedicated to science lectures, 15% to lectures on missions' specifics (spacecrafts, instruments and data analysis software) and 50% to the projects the students had to carry out. As in previous occasions, the lecturers acted also as projects' supervisors. Due to the large number of missions handled this time, practically all Computer Class project hours of the first week went into demonstrations of data reductions with one mission or another, or data extraction from the different archives.

Fig. 1 – The program

Lectures - COSPAR WS 2018 - Quito, Ecuador - V6

Time	9:00 - 10:00	10:10 - 11:10	11:30 - 12:30	12:40 - 13:40	14:50 - 15:50	16:00 - 17:00	17:20 - 18:20	18:20 - 20:00
04-Mar	**Arrival & Registration**							
05-Mar	An Intro to IR / sub-mm Astronomy José Cernicharo	The Missions I - Herschel S/C & Instruments Bruno Altieri	Introduction to the Chemistry of the ISM José Cernicharo	The Missions II - Spitzer + Akari S/C & Instruments Ranga ram Chary	Introduction to Star formation Asunción Fuente	Cosmology and the Cosmic Microwave Background Jan Tauber	How to search for data - A tour through Archives Carlos Gabriel	
06-Mar	Data Reduction I - Introduction to HIPE Imaging & Photometry Ivan Valtchanov	Introduction to single dish Radio observations Juan Ramón Pardo	Data Reduction II - Introduction to Spitzer and Akari data analysis Ranga-Ram Chary	Interferometry I Asunción Fuente	The Missions III - COBE, WMAP & Planck Jan Tauber	Data Reduction Ib - HIPE Photometry Ivan Valtchanov	Computer Class Project	
07-Mar	Molecular Spectroscopy José Cernicharo	Introduction to the Physical Conditions of Photodissociation Regions Asunción Fuente	Radiative Transfer and Molecule Excitation Marcelino Agúndez	Data Reduction III - Planck & All-Sky maps Jan Tauber	Data Reduction IV - HIPE & Spectroscopy Ivan Valtchanov	Computer Class Project	Computer Class Project	
08-Mar	Atmospheric transmission and phase Juan Ramón Pardo	Interferometry II: ALMA José Cernicharo	Introduction to the physics and chemistry of Evolved Stars I José Cernicharo	Introduction to the physics and chemistry of Evolved Stars II Marcelino Agúndez	The Far-IR view of PDRs and Star Formation Asunción Fuente	Computer Class Project	Computer Class Project	
09-Mar	Protoplanetary Disks Chemistry Marcelino Agúndez	High Redshift Objects Ranga-ram Chary	Students question time	Observations of Protoplanetary Disks Asunción Fuente	Exoplanet Atmospheres Marcelino Agundez	Computer Class Project	Computer Class Project	
10-Mar	**Excursion - Historic City + Panecillo + Mitad del Mundo**							
11-Mar	**Free day**							
12-Mar	Future Development in IR/sub-mm Astronomy (JWST, ...) Ranga-ram Chary	The GILDAS Package Juan Ramon Pardo	Herschel view of extragalactic surveys Bruno Altieri	Computer Class Project	Computer Class Project	**Observation with IRAM 30m -** start at 15:30		
13-Mar	Writing Proposals Carlos Gabriel	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	
14-Mar	Basics of Scientific Presentation Carlos Gabriel	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	**Visit to Observatorio Nacional de Quito** - ends at 19:00	
15-Mar	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	Computer Class Project	
16-Mar	Computer Class Project	Computer Class Project	**Project Presentations**		**Project Presentations and Closing Meeting**			

Coffee Break | Lunch Break | Coffee Break

VII - The projects

The traditional way for these workshops is to let the students define their projects themselves as far as possible, and then review / refine them in discussions with the supervisors assigned. This was in this workshop not possible due to two reasons: a) a large number of missions involved, with the consequence of too many practical lectures on data reduction; and b) the small number of supervisors during the second week. We

proposed therefore diverse alternative projects to the students based on their initial interest, which were easy to follow in the limited time.
A first natural division was between the students who wanted to analyse sub-mm / radio IRAM data (interested originally in the ALMA domain), and all others. With the latter we proceeded to discuss possible projects individually, taking into account the area of interest, the (also partly limited) data we had in hard disks from the different missions, and the areas of expertise of the supervisors present. The students understood the situation, and compromises were made in this respect. Few of the students had come to Quito with the clear intention to analyse pre-selected data, because they wanted to include the analysis of a given sample part of their thesis. In a few cases this was difficult to achieve, and for some of the students this was a bit frustrating.
A lesson to be learned from this is to put a limit in future occasions on the number of missions to be included in a workshop, especially if their data analysis involves very different techniques, tools, archives, etc.
Another lesson: the lecturers' team should have a clear idea from the very beginning about how the student projects will be organised. In this workshop there was not a clear consensual decision about this point, and hence a level of confusion was present when going into the second phase of the workshop. Also long discussions were needed among the lecturers before a clear line was adopted.

As in all astronomy workshops held in the last 7 years, most students worked on their projects using their own laptops. The exceptions were two students, who had to use desktops provided by the local organisers, one because of a broken laptop, the other one due to the small RAM available in his laptop. Working with different operating systems and flavours can be a significant additional burden for a workshop, not only for the installation of the different mission specific tools but also due to potential problems with specific libraries, etc. We intended to prevent this by asking the students to install and check all the packages needed in the weeks before the workshop, offering active support from our side. To a large extent this was done and most students arrived at the workshop with at least a good portion of the necessary programs installed. The few problems found during the workshop in this sense could mostly be solved. However, the time spent on this by some of the lecturers meant again less time for supervision. Our formerly expressed intention to formalise this part of the preparation, including software tests which the students would have to pass, prior to come to the workshop, has not yet been implemented.

Portions of Herschel and Spitzer archives (raw and processed data) were brought on external disks, to avoid the problems arising when many students try to download data at the same time. This, a lesson learned from past workshops, proved to be an excellent measure. The IRAM data used was also brought on a hard disk and so it was not necessary to be downloaded. For Planck all the data extraction was done directly from the Planck archive.

VIII- Results

At the end of the workshop each student gave a short presentation (7 minutes + 3 minutes discussion time) summarizing the results obtained. Practically all students stayed within the seven minutes. For many of the students this was their first time at all giving a presentation in English. A list of the individual projects is given in App. III. The

results were very good, showing that all the participants understood the methodologies of the work in the field and most of them are in principle able to work with data and tools of at least one of the many missions discussed after returning to their home institutes. Some of the students had previous experience in this field, but not with data from the missions offered.

IX – Venue

The workshop took place in facilities of the Escuela Politécnica Nacional, which are normally devoted to an association of professors of that University (ADEPON). A small theatre for 50 people was just right for the lectures, two large classrooms and an adjacent foyer offered enough place for the students to work on their projects. The LOC gave IT and administrative support. Especially for the hands-on sessions two system managers were always at hand, who helped us to store data in a server, including the different program versions, etc. The technical support for the installation of the two desktops, the possibility to access all the hard disks containing the data was efficient and fully professional.

Severe initial problems with internet bandwidth were rapidly solved. Several students needed some software upgrades and calibration data downloads.

X – Breakfast, Lunch, Dinner and Coffee Breaks

They were held at a dedicated area in the university, managed by a catering service. The food showed a great deal of variety, including a vegetarian option, consisting mainly of local plates. Coffee breaks were served twice per day. The generous offer of diverse local snacks and juices together with the coffee was amazing, in the 20 coffee breaks we had not a single dish twice. The students also took their breakfast at the same place.

XI – The Residence of the Universidad Andina and the Hotel Barnard

The original plan was to accommodate all students and lecturers in the same place, as it is the norm in the COSPAR CB workshops, ideally in a nice residence from a different university (Universidad Andina), but located just 50 meters away from the entrance of the EPN. However, due to a delayed process in the local funding approval, and the lack of available space in the residence at the end, lecturers had to stay in a different place, the Hotel Barnard, some 400 meters from the residence.

The only way to have all students and lecturers in the residence would have been to use four multiple rooms with 10 bunk beds per room for the students, something considered inappropriate for two weeks, and so leaving all the available single and double rooms in the Residencia for lecturers. Instead, students were accommodated in the single and double rooms, and the multiple rooms were occupied by maximally 4 students each. This was acceptable but far from being ideal, especially due to the different level of service the students got, depending on which type of room they were occupying. This, together with a lack of flexibility by the management of the residence, was a source of conflicts. Further recommendation for future workshops continue to

be to lodge students and lecturers together, with equal treatment for all students as far as possible.

The Barnard Hotel was an acceptable hotel, where all lecturers were hosted. It included a good breakfast in the morning.

XII – The excursion

Mid-Saturday we had an excursion for all, starting with a 3 hours visit to the historic centre of the city with the best examples of colonial baroque churches in Latin America, and the "Panecillo", a 200-metre-high hill of volcanic-origin, with loess soil, located between southern and central Quito. It offers a spectacular view of Quito and surroundings from its 3035 m altitude.

After that we visited the Ciudad Mitad del Mundo, a place at which a 1736 expedition called the French Geodesic Mission placed the equatorial line in that region of the world. Years after that, it was brought to light that the "Geodesic Mission" had been wrong about the exact coordinates where the line passed through—the measurements had indeed proved the world was oblate and not elongated at the poles, but their studies to define the placement of the equator were incorrect by 240 meters, as established through precise GPS measurements.

XIII - General evaluation

We prepared and distributed among the students an evaluation sheet (App. IV), for getting feedback concerning the different aspects of the workshop, obtaining 20 answered evaluation sheets (> 55 %). We see a larger dispersion in opinions compared to earlier astronomy workshops, even with respect to local aspects. A closer analysis of the answers given seems necessary, together with the already mentioned critical points in the report.

There is a good level of satisfaction with the workshop in general, and also with the lecturers and supervisors personally, although the problem of few supervisors during the project week was expressed a couple of times. A large majority of the participants think they will be able to use infrared and sub-mm data in their future research. they Unanimously feel they benefitted significantly from attending the workshop.

The financial support is considered sufficient by most students.

Again, we would like to thank all the people (especially the local organisation committee and the lecturers) and the institutions that have substantially contributed to making possible this event: EPN, COSPAR, ESA, NASA, and the missions Herschel, Spitzer and Planck, which have sent people to it.

Carlos Gabriel

Appendix I - List of participants

Surname	Given Name	Country	Gender	Organization
Aldás	Franklin	Ecuador	male	Quito Astronomical Observatory (EPN)
Andrade	Laerte	Brazil	male	Universidade Estadual de Ponta Grossa
Areal	María Belén	Argentina	female	Instituto de Astronomía y Física del Espacio
Barbier	Hugo Jean Marc Paul	Ecuador	male	Escuela Politécnica Nacional
Beaklini	Pedro Paulo	Brazil	male	IAG/USP
Boesso	Raquel	Brazil	female	Observatório do Valongo - Universidade Federal do Rio de Janeiro
Celis	Mariela	Argentina	female	Instituto de Astronomía y Física del Espacio
Cerqueira Campos	Fernando Custodio	Brazil	male	National Institute For Space Research (INPE)
de Souza Magalhães	Victor	Brazil	male	Non-Afiliated (IPAG)
Duvidovich	Laura	Argentina	female	Instituto de Astronomía y Física del Espacio (IAFE CONICET - UBA)
Esparza Arredondo	Donaji	Mexico	female	Instituto de Radioastronomía y Astrofísica
Fernandes Lopes Soares	Beatriz	Brazil	female	IAG - Universidade de São Paulo
Ferraro	María	Argentina	female	Universidad Nacional de Córdoba
Ferrero	Leticia Virginia	Argentina	female	Observatorio Astronómico de Córdoba - UNC
Gaspar	Gaia	Argentina	female	Observatorio Astronómico de Córdoba
Gonzales Quevedo	Lisseth	Peru	female	Universidad Nacional Mayor de San Marcos
Llerena	Mario	Ecuador	male	Escuela Politécnica Nacional
Martínez Acosta	Karen Marina	Ecuador	female	Escuela Politécnica Nacional
Martinez Canelo	Carla	Brazil	female	IAG USP
Motino	Skarleth	Honduras	female	Catholic University of America
Nogueira Cavalcante	João Paulo	Brazil	male	Observatório Nacional
Quinatoa Chuquitarco	Daysi Yessenia	Ecuador	female	Escuela Politécnica Nacional
Quitián Lara	Heidy Mayerly	Brazil	female	Valongo Observatory - Federal University of Rio de Janeiro
Ramírez Ballinas	Isidro	Mexico	male	Instituto de Astronomía, Universidad Nacional Autónoma de México
Rangaswamy	Devaraj	Mexico	male	Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)
Saker	Leila Yamila	Argentina	female	Observatorio Astronómico de Córdoba
Salazar	Patricio	Ecuador	male	Quito Astronomical Observatory
Saldaño	Hugo Pablo	Argentina	male	Observatorio Astronómico de Córdoba
Trejo	Oriana	Mexico	female	Instituto de Astronomia UNAM
Villarreal Carvajal	Luis Eduardo	Venezuela	male	Universidad de Los Andes. PFF y CIDA

Appendix II - Lecturers / Supervisors

The foreseen lecturers for the workshop were:

LECTURERS

José Cernicharo, ICMM-CSIC,Spain, School Scientific Director
Bruno Altieri, Euclid SOC,ESAC,ESA,Spain
Sean Carey, California Institute of Technology, NASA, USA
Ranga-Ram Chary, California Institute of Technology, NASA, USA
Asunción Fuente, ICMM-CSIC,Spain
Carlos Gabriel, ESAC, ESA,Spain
Nuria Marcelino, ICMM-CSIC,Spain
Juan Ramón Pardo, ICMM-CSIC,Spain
Jan Tauber, ESTEC, ESA,the Netherlands
Ivan Valtchanov, Herschel Science Centre, ESAC,ESA, Spain
Luis Velilla, ICMM-CSIC,Spain
Marcelino Agúndez, ICMM-CSIC,Spain

As already noted, three of the lecturers were not able to come to Quito: Sean Carey, Nuria Marcelino and Luis Velilla.

App. III – Projects

Identification of molecular species in post main-sequence stars using the IRAM 30m
Introduction to CMB analysis using Planck data and comparison with CAMBAS model
Spitzer & Herschel study of protoplanetary disks
M82 Starburst Model
Magellanic Clouds in HI
Determination of the gas mass of a YSO with Herschel
Determination of exoplanet HD189733B radius with Spitzer
Some approachings on the utilisation of Spitzer & Herschel data for the exploration of Herbig Ae/Be Stars
Star formation in Cosmic Eyelash: photometry using Herschel data
Analyzing low redshift galaxy Mrk930
Photometry over BCGs
Photometry of Centaurus A
Study of the molecular gas towards the N11 region in the LMC
L1157: Photometry and Spectroscopy with Spitzer and Herschel
A multiwavelength mapping of HII Region: M17 & NGC 6618
Multiwavelength star formation study of the molecular cloud associated to IRAS19236+1456
The properties of the NGC 3516 dust torus and Herschel photometry
A pilot Spitzer study of CLiF AGNs
Study of the relation between dust mass and metallicity in AGB stars

Appendix IV - Results from the evaluation form

COSPAR Capacity-building workshop on IR and submm Astrophysics, Quito, Ecuadorl (2018)

Workshop Evaluation Form

General

	5	4	3	2	1
The website told me all I needed to know about the workshop	10	8	1	1	0
The application form was easy to fill in	12	6	1	0	0
Applications were efficiently handled	9	6	4	1	0
I had time enough to make my travel arrangements	10	5	1	1	0
The financial support I got was sufficient	8	6	2	1	0

5=strongly agree
4=agree
3=no strong feeling
2=disagree
1=strongly disagree

Comments

I) There have been several cases of yellow fever recently in my country and therefore both Ecuador and the country where I made connection were requesting the international yellow fever card. The homepage of the workshop did not describe this request.

Science Lectures

		5	4	3	2	1
These lectures were for me personally the most useful part of the workshop		4	5	8	1	1
The time spent on the lectures was too long	*Answer only one of these three lines*	5	4	2	1	0
Or the time spent on the lectures was too short		0	0	0	1	0
Or the time spent on the lectures was just right		2	4	2	0	0
The lectures were at too high a level	*Answer only one of these three lines*	0	1	2	1	0
Or the lectures were at too low a level		1	0	0	0	1
Or the lectures were just right		10	3	2	0	1
The lectures were well presented		12	8	0	0	0
The lectures were stimulating		12	7	1	0	0
The lecturers responded well to questions		13	7	0	0	0
I found it easy to get on with the lecturers		10	9	1	0	0
The lecture room was comfortable		6	5	7	1	1

5=strongly agree
4=agree
3=no strong feeling
2=disagree
1=strongly disagree

Comments

Were there any other topics you would have found especially useful?

Other comments?

I) The time spent in the lectures was too long, After 4 hours of talks it's hard to keep the atention, I think we should do some more practical work in the computer in the afternoons since the first week, so we can get used to the enviroment of the diferent softwares and tools.

II) The time devoted to lectures on specific topics was a bit long and in some cases such conferences were of high level, however all have been very interesting. It would have been good to dedicate part of that time to more lectures dedicated to teaching how to use the tools and in the tricks to be taken into account in the different cases that may arise.

III) On my opinion it was few time to discussion beyond the lectures on the first week. The professors were well open to discussion, and this was a very positive aspect, but it was hard find some time to discussion without interrupt them at the luch time. I had a very positive discussion with Cernicharo, but I have been absence of a given talk to listen him. I guess that usally this conversation time happened during the projects, but at this edition, 3 professors were not present on the second week, and the first week was too busy.

IV) As there were many conferences, these could have taken place simultaneously with the computer work. So that only people interested in the

Software Lectures

		5	4	3	2	1
These lectures were for me personally the most useful part of the workshop		6	5	4	3	0
The time spent on the lectures was too long	Answer only one of these three line	1	2	0	1	0
Or the time spent on the lectures was too short		5	4	2	0	0
Or the time spent on the lectures was just right		2	1	3	1	0
The lectures were at too high a level	Answer only one of these three line	1	0	2	0	0
Or the lectures were at too low a level		0	0	1	0	1
Or the lectures were just right		6	5	4	1	0
The lectures were intelligible		2	12	6	0	0
The lectures were well presented		2	11	4	2	1
The lectures were stimulating		4	8	4	3	0
The lecturers responded well to questions		6	9	5	0	0
I found it easy to get on with the lecturers		3	10	5	1	1

5=strongly agree
4=agree
3=no strong feeling
2=disagree
1=strongly disagree

Comments

I) I would have liked more software lectures.

II) The software lecture were good, but we should do this part more interactive, we were without our computer while this lectures were presented (because they were presented in the conference room, and there was no space to use it there). I would suggest to present this in the computer lab (or a space were we can use the computers in a comfortable way) so we can open the software or tool, manuals and follow the presentation.

III) In some cases these conferences were improvised without following an order, for that reason it was difficult to follow them.

IV) Sometimes the software demonstration was too fast. In those cases, it would be very useful to officially record the software demonstration to be delivered to the attendees later.

Projects

		5	4	3	2	1
The project was for me personally the most useful part of the workshop		7	10	2	0	0
The time spent on the projects was too long	*Answer only one of these three lines*	0	0	0	1	0
Or the time spent on the projects was too short		6	6	0	1	1
Or the time spent on the projects was just right		5	2	0	0	0

5=strongly agree
4=agree
3=no strong feeling
2=disagree
1=strongly disagree

The instruction I received to install software before the workshop were appropriate	1	6	9	3	1
The lectures did not prepare me adequately for the projects	0	3	7	4	6
I would have preferred to have a PC provided than using my laptop	1	4	1	4	10
I would have preferred to have an own laptop instead of using the provided PC	8	4	2	3	2
I had difficulty using Linux	0	1	2	7	10
The help I got with my project was adequate	6	9	4	1	0
I found the supervisors helpful and easy to get on with	9	7	4	0	0
I realized too late which the ultimate scope of the project is	1	4	4	4	5

Comments

I) I did not have a great support - the supervisor was paying more attention to a group than to the ones working alone or in couples
II) In each school, there is the same problem to install Software. It would be really usefull that someone try the instructions to install, at least on a Windows new version, on a MAC and on a Ubuntu new version...To complete the instruction before send them to the sudent.
III) The Instructors were very helpful, but we were too many students for only 3 instructors, many times we were waiting for hours to have the oportuninty to talk with them, since in the last week they were working with diferent students in all moments, I'm very thankfull with the professors because I know they try to solve all our questions and I understand that the complication was due to the absence of 3 professors. The time to work in the projects was too short, in the other hand we waste time the firts week due to internet problems, and installing some software that we didn't use at the end. I would suggest to do some tutorials sections the firts week in this way once that we start the projects we will work faster because we will be more familiar with the tools. IV) I would have preferred to have a PC provided than using my laptop because in my spetial case, the RAM of my computer was not enough to work with the Herschel's data, maybe that should have been mentioned before with the instructions, in the website or in the informative e-mails . It was positive the previous installation on our own computers because of we had the posibility of questions in tha case of instalation probleas, as was the case of SPICE and MOPEX.
IV) The softwares lesson with all people in during the first week, without the data and time enough it was not useful. It would be better if we had the same data as the professor that was analising in front of us.

Accommodation and Venue

	5	4	3	2	1
The airport transport was efficiently done	5	1	7	1	2
The transport to Quito was efficiently done	5	2	7	1	1
The rooms at the Residencia Andina were good	6	4	2	2	2
The food at the EPN was good	7	9	2	1	0
Generally, the accomodation environment was good	5	7	2	0	2
The Politécnica was a good place to hold this workshop	9	6	4	0	0
The internet connection was acceptable	4	7	2	5	1
The excursion in the week-end was good	14	4	0	0	0

5=strongly agree
4=agree
3=no strong feeling
2=disagree
1=strongly disagree

Comments

I) The idea of having multiple rooms was very good because it offered the possibility of socializing with colleagues and discussing issues related to conferences. The cleaning service seemed appropriate since we did not go on vacation and it was an obligation to maintain order. As a bad aspect of the residence I emphasize the granting of a single card per room, it was uncomfortable and cumbersome.
II) Thanks Carlos for deciding that 10 people were too many for a room. 4 people was enough. The food at the EPN was very good, always traditional kitchen. Congratulations!! I would have like to have more sweet things for the coffe break, but it was very good anyway.
III) I have never seen the kind of segregation in a hosting as we got in this one. And I had the feeling (maybe I am wrong) that the organization have not tried hard to solve the problems that we pointed out. If one is paying for a lot of people to stay in a hotel I guess one has a lot of power with the hosting proprieters to negociate. Finally, I would feel beter if la Escuela Politecnica never more use this hosting again, but I also have the feeling that this will not happen. Anyway, I strongly reccomend to not use it never more.
IV) There was no transportation to and from the airport. The food was varied, within the local customs, but there should be alternatives, and a little more abundant at lunch and dinner. The accommodation was good, but the differences in treatment were not correct depending on the room assigned. And the Internet connection was bad, in the Polytechnic as in the Residence. This complicated the work a lot.

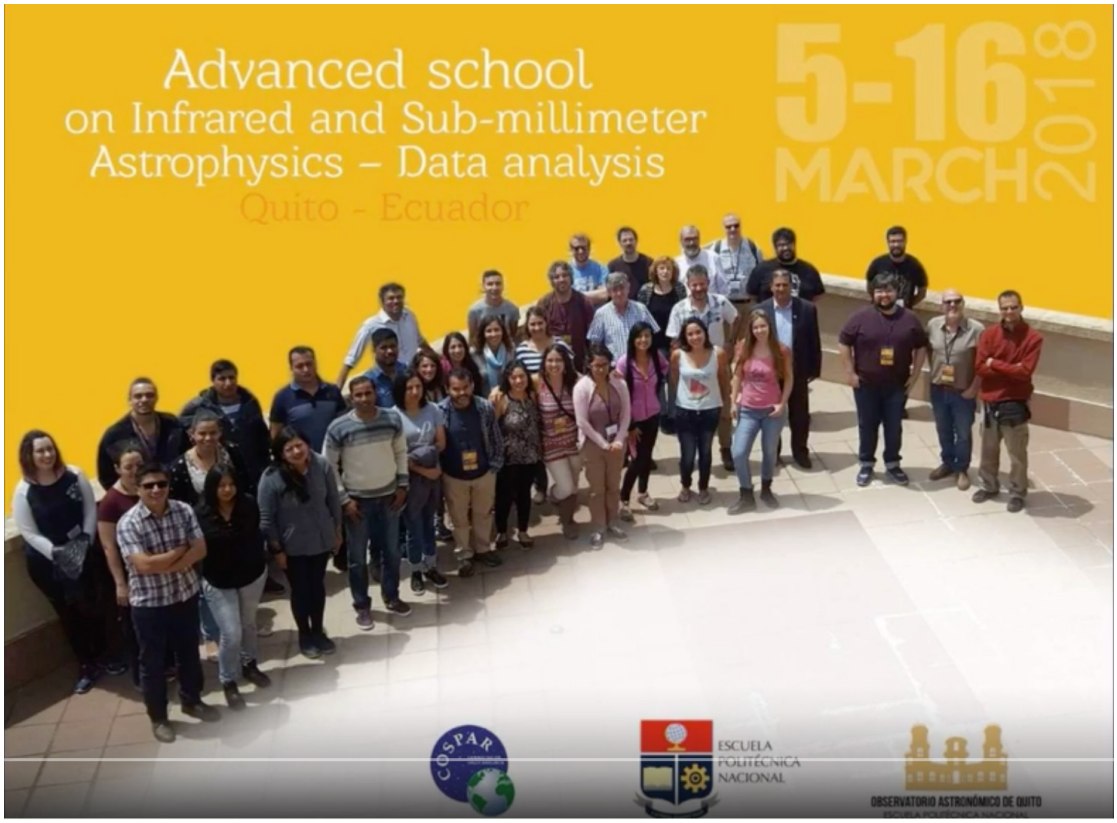
The Future

	5	4	3	2	1
I will be able to use radio/IR/submm science data in my future research	14	6	0	0	0
I have learned enough to do this without much extra help	4	10	6	0	0
If I have problems, I know where to go for help	9	9	1	0	1
I have benefitted significantly from attending the workshop	14	6	0	0	0

5=strongly agree
4=agree
3=no strong feeling
2=disagree
1=strongly disagree

General Comments (on anything whatever to do with the workshop)

Appendix V – Photos



1 – Official school photo


2 - During a lecture

3 – Starting the hands-on – checking installations, looking for data

4 – Hands-on: the “radio” group

5 – Hands-on: a foyer converted into an open space office

6 – Taking a “selfie” during the excursion on mid Saturday

7 – Group Photo in “Mitad del Mundo”