Report on the "COSPAR Capacity Building Workshop on Infrared and Submillimetre Astronomy" - Buenos Aires - Argentina - October 2012

I - Introduction

The workshop took place in Buenos Aires, Argentina, from 15 to 26 October 2012. Primarily organized by COSPAR together with the local organisers Universidad Nacional de San Martín (UNSAM) and the Instituto de Tecnologías en Detección y Astropartículas (ITeDA), it counted with support from several international organisations, like the space agencies ESA and NASA, the International Astronomical Union (IAU), the Centro Latinoamericano de Física (CLAF), the International Centre for Theoretical Physics (ICTP), as well as the local organisations Consejo Nacional de Investigaciones Científicas y Técnicas CONICET, the Comisión Nacional de Actividades Espaciales (CONAE) and two ministries, the Ministry of Science, Technology and Productive Innovation and the Ministry of Education.

The main aim of the workshop was to introduce young astrophysicists (PhD students and post-docs) to infrared and submillimetre astronomy and multi-wavelength opportunities and to train them in the use of data and tools mainly from the space missions Herschel (ESA), and Spitzer (NASA). Details about the workshop can be found under the COSPAR Capacity Building Program pages: cosparhq.cnes.fr/Meetings/Workshops.htm

II - Participants

A total of 34 applicants from 8 different Latin-American countries were selected out of a total of 50 candidates. One of the selected students (from Argentina) could not make it at the last minute, leaving us with 33 students participating in the school.

The participants were from Argentina (16), Brazil (4), Mexico (4), Venezuela (4), Colombia (2), Chile (1), Peru (1) and Uruguay (1). The geographical distribution showed a strong local component, however diversified regionally within the country. The gender distribution was even, with 14 females and 19 males. It has to be noticed that neither geography nor gender was a criterion for selection in this workshop, but just scientific qualification. The full list of students including affiliation and nationality is given in Appendix I.

III - Lecturers

This was the first COSPAR Capacity Building workshop in the field; therefore the core of the lecturers participating had no previous experience of this kind (although all of them are experienced scientists and have lectured in other types of workshops in several occasions). The long (two weeks) duration and the highly practical aspects of the workshop, with direct supervision of the students in projects, were new, and turned out to be the most challenging aspects for the lecturers. The scientific leader of the team was Prof. José Cernicharo from the Astrobiology Centre in Madrid. The full list including affiliations is given in Appendix II.

IV - Venue

The venue of the workshop was the public University of San Martin (UNSAM), located in the city of San Martín, in the so-called Gran Buenos Aires urban area, limiting directly with the city of Buenos Aires. The campus main building has been constructed using as basis an old multiple garage building for locomotives of circular form. Several garages could be accessed thanks to a rotating platform in the center of that complex. A classroom with capacity for 50 persons used for lectures was just right in size. It could be also used partially used for practical work, in addition to two other computer labs that were available for us. These two computer labs were equipped with desktops, eighteen in total, with eight out of them equipped with large internal memory (8GB RAM). Only few students (five in total) did not have an own laptop they could

work with, and had to work in one of the computer labs. The better-equipped desktops were however also necessary for students with projects needing high memory (ie. mapping with Herschel data, but only for small maps possible). The practical work was arranged in groups so to make optimal use of the facilities. The internet connectivity (especially the wireless one) was largely below expectations and represented one of the main problems for downloading data, even needed literature.
Accommodation and half-board for all students and lecturers during the 2 weeks was arranged in a hotel in Villa Urquiza, a city district of Buenos Aires, around 6 km from the UNSAM. Dedicated transport was provided by the UNSAM in the morning from the hotel to the university and vice versa in the afternoon. Lunch was offered in a restaurant at the city of San Martín, fully booked at noon for that purpose during the whole workshop. Accommodation in the hotel was in single rooms for lecturers and double rooms shared by the students. While all these aspects were satisfactory, again the internet connectivity at the hotel was somewhat below standards, representing an added difficulty when students tried to download data over night to cope with the low connectivity at UNSAM.

V - Program

From the program (Fig. 1) it can be read that the school was structured with approximately 35% of the time dedicated to science lectures, 10% to lectures on missions' specifics (spacecrafts, instruments and data analysis software) and 55% to the projects the students had to carry on. As in previous occasions, the lecturers have acted also as projects' supervisors.

Lectures - COSPAR WS 2012 - UNSAM

Time	8:30 - 9:30	9:30 - 10:30		10:45 - 11:45	11:45 - 12:45		13:45 - 14:45	14:45 - 15:45		16:00 - 17:00	17:00 - 17:30
14-Oct	**Arrival & Registration**										
15-Oct	**Opening Ceremony (starting at 9:00)**	An Intro to Infrared & sub-mm Astronomy **J. CERNICHARO**	Coffee Break	The Missions I - Herschel S/C & Instruments **D. TEYSSIER**	The Missions II - Spitzer S/C & Instruments **R. CHARY**	Lunch Break	Introduction to the Chemistry of the ISM **J. CERNICHARO**	Data Reduction I - Introduction to HIPE - PACS-P + SPIRE-P **I. VALTCHANOV**	Coffee Break	Computer Class Setting up S/W	Computer Class Continued
16-Oct	Data Reduction II - Introduction to Spitzer data analysis **R. CHARY**	Basic Physical Process in Molecular Clouds **B. LEFLOCH**		Introduction to the Physical Conditions of Photodissociation Regions **C. JOBLIN**	Basic Process in Dust Chemistry **J. CERNICHARO**		Follow-up Observations from ground-based 8m class Telescopes **G. BOSCH**	Data Reduction III - A more detailed look at HIPE (HIFI) **D. TEYSSIER**		Computer Class Project	Computer Class Project
17-Oct	Low mass star formation **D. ARDILA**	Interpretation of molecular lines in the far-infrared **J. CERNICHARO**		PAHs and Infrared emission **C. JOBLIN**	Star Formation and Bipolar Outflows **B. LEFLOCH**		Data Reduction IV - And more on HIPE - SPIRE-S **I. VALTCHANOV**	Data Reduction IV,5 - And yet more on HIPE (PACS-S) **D. TEYSSIER**		**DEFINITION OF PROJECTS - STUDENT TEAMS AND TEACHERS**	Computer Class Project
18-Oct	Evolution of Proto-Planetary to Planetary and Debris Disks **D. ARDILA**	More Topics on Star Formation (High Mass & ...) **A. NORIEGA**		More Topics on Star Formation (... nearby Systems) **A. NORIEGA**	Introduction to the physics and chemistry of Evolved Stars. **J. CERNICHARO**		The Herschel View of PDRs **C. JOBLIN**	Computer Class Project		Computer Class Project	Computer Class Project
19-Oct	Protoplanetary Disks Chemistry **B. LEFLOCH**	Statistics I **M. MENDEZ**		Debris Disks **D. ARDILA**	High Redshift Objects **R. CHARY**		Data Reduction V - more Spitzer data analysis **A. NORIEGA**	Computer Class Project		Computer Class Project	Computer Class Project
20-Oct	Herschel view of extragalactic surveys **I. VALTCHANOV**	Understanding Spectroscopy **J. CERNICHARO**		Computer Class Project	Computer Class Project		Free				
21-Oct	Excursion										
22-Oct	Future Development in IR Astronomy **R. CHARY / J. CERNICHARO**	Dust and Neutral Gas Environments around Massive Emission-line Stars **L. CIDALE**	Coffee Break	Star-forming Sites around HII regions and Supernova Remnants **S. PARON**	Computer Class Project	Lunch Break	Computer Class Project	Computer Class Project	Coffee Break	Computer Class Project	Computer Class Project
23-Oct	Statistics II **M. MENDEZ**	Scientific Exploitation of ESA's DSA3 in Argentina **P. BENAGLIA**		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project
24-Oct	Writing Proposals **M. MENDEZ**	Basics of Scientific Presentations **C. GABRIEL**		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project
25-Oct	Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project
26-Oct	Round Table Discussion / Prospects for working in the field	Computer Class Project		Computer Class Project	Computer Class Project		Project Presentations and Closing Meeting				

Fig. 1: Program of the Workshop

VI - The projects

The students had to propose own projects at the time of registration. It turned out that the majority of the proposals were too ambitious for being realized within the two weeks of the workshop, for several of them there was even no (evident) public data, also in several cases the data volumes involved were too large, and their analysis would have been impossible with the hardware limitations we had at the workshop. This has been recognized already before the workshop started and consequently data samples for all different kind of sources have been collected by the Herschel specialists and brought in a couple of 1TB external hard disks to Argentina. Spitzer data did not pose such a large problem, since the volumes involved are orders of magnitude smaller and therefore it should be possible to download them over the network during the workshop. In order to make it feasible for the students to get results during the workshop, maximising the learning process, the students were organized in seven basic projects (more or less related to their original proposals), for which data were available or could be easily obtained. Supervision was accordingly organized. The list of topics for the projects is given in Appendix III.

The fact that most students used own laptops represented again a challenge due to the different operating systems and flavours. The additional burden, not only for the installation of the different mission specific tools but also due to eventual problems with specific libraries, etc., could be mitigated by asking the students to try to install and check all the packages needed in the weeks previous to the workshop (a list was sent to them). Both Spitzer and Herschel missions were prepared to support through their helpdesks, answering in the shortest time any request in this period. On top of the mission specific packages (a single package in the case of Herschel, a long list of tools in the case of Spitzer), tools for modelling photodissociation regions, dust emission and extinction, etc., should be installed as well as templates for interpretation of spectra containing PAHs. Some of the code used is based on IDL, pretty expensive licensing software. Instead of asking the students to purchase it, we contacted the company distributing IDL (Exelis) a month ahead and obtained free licenses for all students (and UNSAM computers) for the time of duration of the workshop. Many thanks to Exelis!

VII - Results

At the end of the workshop each student group gave a shared presentation (7-20 minutes depending on the size of the group + 5-10 minutes discussion time) summarizing the results obtained. Two different rooms were used in parallel (for galactic and extra-galactic topics) for accommodating all the presentations in the final afternoon. The results have been satisfactory, showing that all the participants understand in principle the methodologies of the work in the field and are to a good level able to work with data and tools of at least one of the missions, in several cases with both, after returning to their home institutes.

VIII - General evaluation

We have prepared and distributed among the students an evaluation sheet (App. IV), for getting a feedback concerning the different aspects of the workshop, obtaining back fifteen answered, a somewhat poor feedback, explained by the fact that more than in earlier workshops, the final days of the workshop were overloaded. Careful analysis of the results should be done in the near future since the general impression is that several elements, (especially projects' definitions and network coverage) could have been better organized. Nevertheless, the immediate general impression from the answers shows a good level of satisfaction, with the workshop in general, but especially with the lecturers and supervisors.

As already pointed out, this was the first CBP workshop in this field. One of the main difficulties was posed by the definition of the projects. A critical review should be performed on how we

should help in an eventual future IR and sub-mm workshop to make clear the limitations imposed by data volumes, analysis capability and time constraints, for the students to propose realistic projects, according to their interests and needs. The lecturers' team, which has just crystallized during the workshop, should have also a better picture from the very beginning about the projects, and about which tools are going to be used in which circumstances. Some of the comments from the students are rightfully critical in this respect.

The part of the workshop most valued by the students is nevertheless the project, with a high ranking for the given support, however the general impression is that the time was too short, ie. not appropriate for reaching very satisfactory results. We think that this is mainly due to some level of lack of clarity in the scope of the projects. The diverse lectures, both on science and software, are well considered, although there are discrepancies about level and duration. The local aspects are well appreciated, especially lodging and food. The partial dissatisfaction with the venue can be fully attributed to the poor connectivity. Another point to be looked at very carefully by future events, even requesting test results from the local organizers prior to the event.

Despite the difficulties and shortcomings, this workshop can be considered another success; that was also the general impression by participants and lecturers at the end. The feeling shared by the students supports this, that they are going to be able (and willing) to include IR and sub-mm data in their future research. Also the clear answer concerning the benefits from the workshop attendance is a good hint.

Finally, we would like to remark (and thank for) the excellent level of the local support for a challenging workshop in several organisational aspects, also taking into account that venue and hotel were not that close from each other, within a large and crowded city. A lot of work was necessary to keep the workshop financially feasible, obtaining support from many local and international resources.

Carlos Gabriel - Mariano Méndez

Appendix I - List of participants

#	Surname	Name	Institute	Country
1	Bignone	Lucas	IAFE	Argentina
2	Castelleti	Gabriela	IAFE	Argentina
3	Cuneo	Virginia	UNC	Argentina
4	Firpo	Veronica	UNLP	Argentina
5	Moyano	Manuel	UNC	Argentina
6	Muratore	Maria Florencia	UNLP	Argentina
7	Oio	Gabriel	UNC	Argentina
8	Ortega	Martin	IAFE	Argentina
9	Peri	Cintia	IAR	Argentina
10	Petriella	Alberto	IAFE	Argentina
11	Pichel	Ana Carolina	IAFE	Argentina
12	Romero	Gisela	UBA	Argentina
13	Saldaño	Hugo	UNC	Argentina
14	Suad	Laura	IAR	Argentina
15	Supan	Leonardo	IAFE	Argentina
16	Vega	Luis	UNC	Argentina
17	Amarinho	Natalia	UFRGS	Brazil
18	Lima	Eliade	UFRGS	Brazil
19	Mendoza	Edgar	Uni Rio de Janeiro	Brazil
20	Monfredini	Thiago	Obs.Valongo	Brazil
21	Torres	Simon	Univ. La Serena	Chile
22	Abril	Valentina	Univ. Los Andes	Colombia
23	Nuñez Quiroga	Luis	UNC	Colombia
24	Castro	Angel	UNAM	Mexico
25	Garcia Diaz Gonzalez	Maria Teresa	UNAM	Mexico
26	Buitrago	Diego	UNAM	Mexico
27	Heiner	Jonathan	CRA	Mexico
28	Escate	Riano	CONIDA	Peru
29	Lemos	Jorge	IFFC	Uruguay
30	Cabrera	Ivan	CIDA	Venezuela
31	Ocando	Maria	CIDA	Venezuela
32	Perez	Alice	CIDA	Venezuela
33	Villareal	Luis	CIDA	Venezuela

Appendix II - Lecturers and Supervisors

- David R. Ardila, NASA Herschel Science Center, IPAC, Caltech, USA
- José Cernicharo, CAB, Spain, *Chair*
- Ranga-Ram Chary, US Planck Data Center, Caltech, USA
- Carlos Gabriel, ESA - ESAC, Spain (COSPAR), *Co-chair*
- Christine Joblin, CNRS, France
- Bertrand Lefloch, LAOG, France
- Mariano Méndez, Univ. of Groningen, Netherlands (COSPAR)
- Alberto Noriega-Crespo, Spitzer Data Center, Caltech, USA
- David Teyssier, Herschel Scientific Operations Centre, ESA - ESAC, Spain
- Iván Valtchanov, Herschel Science Centre, ESA - ESAC, Spain

Local speakers:

- Paula Benaglia, IAR
- Guillermo Bosch, FCAG/IALP
- Lydia Cidale, FCAG/IALP
- Sergio Parón, IAFE

LOC:

- Paula Benaglia, IAR
- Guillermo Bosch, FCAG/IALP
- Silvina Cichowolski, IAFE
- Analía Cillis, IAFE
- Beatriz García, ITeDAM
- Diego Ravignani, ITeDA, *Chair*
- Jorge Sinderman, UNSAM

Appendix III - Projects' subjects

- Extragalactic (+SNR and Cosmology)
  - Dusty Star formation
  - Stellar mass
  - SNR
- Star formation
  - Low Mass Star Formation
  - High Mass Star Formation
  - Protoplanetary Disks
  - Chemical Complexity
  - Debris Disks
- Evolved stars
  - Water in evolved stars
  - Chemical Complexity
  - PDRs

Appendix IV - Results from the evaluation form

<u>17th COSPAR Capacity-building workshop, Buenos Aires, Argentina (2012)</u>
Workshop Evaluation Form

Please fill in the form and return it to Carlos Gabriel by Friday October 26 at the latest.
It is very important that you should do this. You can be sure that the results will
be considered and will be influential in the desgn of future workshops.

Name:. . . . .
It is not essential that you give your name, but we may understand your comments better
if we know who made them.
Please make full use of the "Comments" sections--these are often the most informative.
Put "x" in the answer box to indicate your opinion.

<u>General</u>

	5	4	3	2	1	
						5=strongly agree
The website told me all I needed to know about the workshop	2	9	2	2		4=agree
The application form was easy to fill in	9	6				3=no strong feeling
Applications were efficiently handled	8	4	2			2=disagree
I had time enough to make my travel arrangements	6	4	1	2		1=strongly disagree

Comments
The website didn't have much information although finally the schedule appeared. I never received the google groups invitation perhaps because of my institute's strict mail server – but I had no idea until I arrived. I never received the google groups invitation perhaps because of my institute's strict mail server – but I had no idea until I arrived. The time between acceptance and travel date was a bit short which can be important when trying to get cheap tickets.

I just want to thank the Organizaers, because the attention I received from before to come here was to well disposed

I was the one who almost didn't get in because a by-word misunderstanding. But the quick response in order to fix it, was excellent.
In this case I'd suggest that any change must be supported(??) by an e-mail from the person directly affected.

<u>Science Lectures</u>

	5	4	3	2	1	
						5=strongly agree
						4=agree
						3=no strong feeling
These lectures were for me personally the most useful part of the workshop	2	3	8	2		2=disagree
						1=strongly disagree
The time spent on the lectures was too long		7	3			*Answer only one of these*
Or the time spent on the lectures was too short						
Or the time spent on the lectures was just right		5	1			
The lectures were at too high a level			4	1	1	*Answer only one of these*
Or the lectures were at too low a level						
Or the lectures were just right	3	3				
The lectures were well presented	8	5	2			
The lectures were stimulating	6	8				
The lecturers responded well to questions	6	5	4			
I found it easy to get on with the lecturers	5	9				
The lecture room was comfortable	3	2	6	3	1	

Comments
Were there any other topics you would have found especially useful?
yes, the topics about protoplanetary disks

MORE ABOUT HOW TO WORK WITH EXTRAGALACTIC DATABASES

I cant generalize the answers for all lectures, but all of them were at least understandable

Other comments?
But, all the topics are very interesting and useful for know other things
The quality of the lectures varied a lot (I found Mariano's talks very good, for example, but some other talks had extremely densely packed slides)
Perhaps it would have been useful to have the talk about giving presentations at the beginning

I cant generalize the answers for all lectures, but all of them were at least understandable

I think the lectures were quite at high level but I believe that's right for most of the cases.

<u>Software Lectures</u>

	5	4	3	2	1	
						5=strongly agree
						4=agree
						3=no strong feeling
These lectures were for me personally the most useful part of the workshop	5	3	4	1		2=disagree
						1=strongly disagree
The time spent on the lectures was too long		4	4	1		Answer only one of these
Or the time spent on the lectures was too short		2				
Or the time spent on the lectures was just right		2	1			
The lectures were at too high a level			3		1	Answer only one of these
Or the lectures were at too low a level						
Or the lectures were just right	3	6	2			
The lectures were intelligible	6	3	2	2	2	
The lectures were well presented	6	9				
The lectures were stimulating	6	6	3			
The lecturers responded well to questions	7	6	2			

I found it easy to get on with the lecturers			7	8		

Comments

I prefer more tutorial-style presentations about the software so I was expecting to be able to see more demonstrations and follow along on the laptop
But the lecture room had very few power sockets. Instead the tutorials were given more per project, but then you don't experience all the software

It would have been better to have the software lectures "hands on" the computers. Also (in my personal opinion), after the Science lectures in order to have a better understanding of what we where looking for.

I would have preferred that the reduction presentations were made together with the the hours of the project

In this case I think would much more fruitful to do within the practical session

I found specially usefull the lectures that were made using the different softwares, and that explained how they work.

May be it would be useful to use the laptop during the software lectures, so the students could directly "feel" the soft they will actually need.

I think all the students found the topic of their interest

	5	4	3	2	1	
Projects						5=strongly agree 4=agree 3=no strong feeling
The project was for me personally the most useful part of the workshop	9	6	1			2=disagree 1=strongly disagree
The time spent on the projects was too long				1		*Answer only one of these*
Or the time spent on the projects was too short	6	3	1			
Or the time spent on the projects was just right		1	3			
The instruction I received to install software before the workshop were appropriate	1	6	2	3		
The lectures did not prepare me adequately for the projects		4	7	3	1	
I would have preferred to have a PC provided than using my laptop			3	8	2	
I would have preferred to have an own laptop instead of using the provided PC	5	3	3			
I had difficulty using Linux			2	5	8	
The help I got with my project was adequate	3	10		1		
I found the supervisors helpful and easy to get on with	6	6		1		
I realized too late which the ultimate scope of the project is	1	2	7	3	1	

Comments

I think that all of us have to know about all the programs independently if we work in different areas
If we have a proposal and the data, we can work with that and no with other data.

It was not very clear from the beginning what the goals were. Clearly defined educational goals and scientific goals would have been helpful
For example: 'we will learn how to reduce spectra with GILDAS, then we will analyze the spectra in HIPE and then compute line ratios in order to determine ...'

I suggest the possibility that participants can obtain, before the beginning of the workshop, some comments about the possibility of carrying out our projects taking into account the time assigned to do the computational work.

I think we should have to work in our projects intead of working in something similar. If the data were too large, you should tell us and we can make the download prior to the school and have it ready to work on that.

I would have liked to know early what my project was about.

I lost a lot of time in this part. There wasn't a clear leadership of the group (this might be one of my suggestions, to establish a group leader). At the beginning the supervisors were separating the people in subgroups and trying to balance the quantity for each object/instrument but then they just "let it evolve" and ....
I wanted to work with some modern software and then I finished working with some old and not so well documented software (although it does the job very well its learning curve is pretty steep. After loosing most of my time trying to figure out how to make the software work and some "not so good asking experience"
I finally got to do something useful and inspiring.

	5	4	3	2	1	
Accommodation and Venue						5=strongly agree 4=agree 3=no strong feeling
The airport transport was efficiently done	1	4	3		1	2=disagree
The rooms at the Ker Hotel were good	6	5	1			1=strongly disagree
The food at the Ker Hotel was good	1	9	2			
Generally, the accomodation environment was good	5	7				
The UNSAM was a good place to hold this workshop	1	5	1	8		
San Martin was an appropriate venue	3	4	3	5		
The food at the restaurant (lunch) was good		12	3			

Comments

The hotel and the UNSAM was a good place for this workshop
the food was repeated, but had good flavor and good proportion

I enjoyed the food. The slow internet was a problem, particularly since it meant that our proposed projects
(with potentially interesting science results) could not be carried out and instead we had to choose from a limited set of data.

The internet connection was low and most of the time were able to open any webpage and even less to download data or at least some paper.

TOO MUCH PASTA AND MEAT EVERYWHERE
INTERNET CONNECTION AT UNSAM IS VERY BAD

Very bad internet conection and the train passing by every 20 minutes was very distracting (at least it was punctual).

I was kind of disapointed by the food but there were some good cases, like the asado in Tigre and the last night bife.
The parts directly related to the organization issues was excellent.

Internet connection at UNSAM was not good. The data for the projects were provided too late.

The Future	5	4	3	2	1
I will be able to use infrared/sub-mm data in my future research	10	5			
I have learned enough to do this without much extra help	3	11	1		
If I have problems, I know where to go for help	7	8			
I have benefitted significantly from attending the workshop	11	4			

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

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

The organization (local and international) did a great job to put all this. You were good lectures and instructors.
in general, a good workshop

The level of the participants was quite diverse so it is challenging to plan lectures around that. In general I was quite content with these lectures.
In summary, I would have liked to see more tutorial-style lectures with the possibility to follow along on the laptop (I have been to an ALMA workshop like this),
but otherwise I feel like I had the opportunity to acquire a lot of skills and at least be familiar with the software that needs to be used.

I think that it was a very interesting meeting, with a lot of different things to learn, as how to reduce data, how to obtain the photometry for extended sources, to make the spectro
Also I considering important, at least for the people that are not too much involved with this band (like myself), to have your own data and to work in your own project, because to
Although, I think also that the main goal of this workshop, is to make contact with the lectures and organize how to continue in touch with them, maybe working with something in

THE WAY THAT PEOPLE WAS SEPARATED IN ROOMS SEEMS COMPLICATED. EVERYONE SHOULD HAVE BROUGHT
THEIR OWN PERSONAL LAPTOP (OR A BORROWED ONE) TO DO THE THINGS MORE FLEXIBLE FOR EVERYBODY.

Even though my results weren't (I'd say... something) the workshop was very helpful and also inspiring
My background in astrochemistry is very low and now I'm making my personal efforts to fix that
and also I've got some ideas to work on if my postgraduate program allows it.
Thanks a lot for letting me participate.

Carlos Gabriel, October 2012

Appendix V - Some pictures

1 - a lecture - José Cernicharo in action

2 - Ranga-ram Chary giving a lecture ("vintage" style)

3 - Bertrand Le Floch surrounded by students - starting with the projects

4 - excursion on Sunday to Tigre - sunny for a couple of hours ... and then the Flood!!

5 - Supper time time in the evening before the presentations...

6 - Workshop photo I - directly behind us the turntable / rotating platform, used in old days for rotating the locomotives to get them into one of the garages. (The political flag in the back is not intentional and has been first noticed after the photo had been taken!)

7 - Workshop photo II

8 - The University of San Martín in Buenos Aires. The round building in the back was the old garage for locomotives, turned into the main university building. Two old water tanks (seen on the right) have been converted into conference rooms.