

Report on the International School for Young Astronomer (ISYA)

Brazil - Belo Horizonte (9 - 29 July 1995)

Michele Gerbaldi, Assistant Secretary for the ISYA

This 22nd ISYA took place in Brazil at Belo Horizonte.

The first two weeks, we met at the University Federal of Minas Gerais (UFMG), Belo Horizonte, the third week was at the Observatory Serra Piedade, runs by the Astronomical Group of the ICEX (Department of Physics). The Observatory is located at some 50 km from Belo Horizonte, at an altitude of about 1800m.

The Brazilian sponsors were the UFMG, the Consello Nacional de Desenvolvimento Cientifico e Tecnoloigio CNPq (ex Consello Nacional de Pesquisas) and the Fapemig (Fundaca de Amparo a Pesquisa do Estado de Minas Gerais).

The local organizing Committee was chaired by Prof. Renato Las Casas; Prof. Tulio Jorge dos Santos, co-chairman, was extremely active during all the ISYA.

An important help was given by the Department Secretary in many domains : visa extension, re-confirmation of airplane tickets, purchase of bus ticket for the return trips, photocopies...

Faxes and e-mails were intensively used between France and Brazil during the two months before the ISYA to coordinate the planning.

The foreign faculty invited were :

- Dr. Craig Gullixson (National Solar Observatory - USA) CCD Detectors
- Dr. Jens Knude (Copenhagen University Observatory - Denmark) Interstellar Medium
- Dr. Reynier Peletier (Kaptein Astronomical Institute - Netherlands) Galaxies
- Dr. John Percy (Toronto University - Canada) Teaching of Astronomy - Variables stars. Dr. J. Percy is the President of Commission 46 "Teaching of Astronomy
- Dr. Bo Reipurth (ESO - Chile) Star Formation
- Dr. Silvia Torres Peimbert (Observatorio Astronomico Nacional - Mexico) Practical Astronomy
- Dr. Michele Gerbaldi (Institut d'Astrophysique de Paris, Universite de Paris Sud - France) Teaching of Astronomy, Practical Observations.

The Brazilian faculty were :

- Dr. Silvia Livi (Porto Alegre University) Teaching of Astronomy
- Dr. Rute Trevisan (Londrina University) Teaching of Astronomy
- Dr. Luis Paulo Vaz (UFMG, Belo Horizonte) Stellar Evolution

Two seminars were given by the Brazilian faculty of Belo Horizonte University : Dr. Quiroga on Recent Climatic Evolution and Dr. Soares on Binary Galaxies. Three more seminars were foreseen but they have been canceled at the last moment

The foreign faculty members : C. Gullixson, J. Knude, R. Peletier, B. Reipurth and S. Torres Peimbert were able to stay two weeks each, J. Percy 10 days.

Dr. Silvia Livi and Dr. Rute Trevisan were present during the first week only, when several lectures as well as a Panel discussion were devoted to the Teaching of Astronomy at any level.

All the applications for this ISYA were received by e-mail or faxes. These communications were essential to coordinate the acceptance of the applicants as well as to set up the travel budget. 75 applications were received; 17 of them came from East Europe countries, India Vietnam and Nigeria, showing the impact of previous ISYA.

Due to the fact that Prof. Renato Las Casas has been able to find an important support from the Brazilian authorities, 20 foreign participants were invited (12 men and 8 women).

One, from Mexico, cancelled at the last moment his participation. The participants came from Argentina : 3, Bolivia : 1, Chile : 2, Colombia : 1, Cuba : 1, Mexico : 1, Paraguay : 2, Peru : 3, Spain : 2, Uruguay : 4.

One participant from Peru is doing his PhD at Sao Paulo (Brazil) and another student from Uruguay is doing her PhD in Argentina.

27 Brazilian students were invited including 9 from Belo Horizonte. But 2 of them canceled just one week before and 6 did not show up at the beginning of the ISYA. Finally the Brazilian participants were 19 (7 women, 12 men), one of them staying only during the first week, mainly interested by the sessions on Teaching of Astronomy.

I communicated with Don Wentzel (Secretary for the ISYA) on some topics considering the selection of the participants.

#### Academic Activities

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The background of the 38 participants ranged from still under-graduated (4 of them) to a PhD started from about one year or half ( 9 of them ). Some had previous experiences in teaching at high school level or have been involved in Training the School Teachers at the University.

All the lectures were given in English. (each lecture was of 90mn)

The notes of all the lectures were photocopied and distributed to the participants.

Personal interactions started right at the beginning of this ISYA among the participants, because the language was not an obstacle : all the foreign participants were Spanish speaking people and part of the Brazilian students were understanding also Spanish, but not all of them. The level of interaction between the participants and the faculty members were strongly depending on their ability to speak Spanish.

It is the first time that lectures on Teaching Astronomy are given at an ISYA; they lasted 10.5 hours.

It is an interesting experience, but it could have been shorter.

The lectures on Teaching Astronomy were during the first week; talks by the

participants were organized on this topic : 11 participants presented their experiences in this domain. All these presentations were followed by very active discussions, specially from Brazilian participants when these activities of astronomy education were taking place in some area considered as been "hot" in term of security. (nearby the slums)

The lectures on astrophysics represented 56.5 hours.

Sessions were organized for talks by the participants about their Institutions and their works. 13 talks were given always followed by ample discussion.

15 of the talks, given by the participants were in English, 8 in Spanish and one in Portuguese. All the transparencies were written in English when the talk was not given in that language.

Very often the questions by the audience were in Spanish but were translated into English by someone.

A variety of practical activities took place during this ISYA :

3 sessions on data reduction were organized, using 3 Workstations of the Physics Department. The data has been brought by one faculty member and illustrated nicely the lectures on CCD as well as those on stellar evolution. The data used were stellar echelle spectra.

This give rise to vigorous discussions by the participants in connection with their personal experience in this domain. These discussions took place among the participants themselves as well as with the faculty. The students having already some experience with the package used to reduce the data became tutors for the others.

One of the faculty member gave short articles to be read by the participants and presented in 5 mn to the audience in order to illustrated some points of the course on galaxies. About 10 participants did it.

6 nights were devoted to practical observations at the Observatory. Two nights were cloudy and the other were very humid and few hours could be used.

Two telescopes were available :

a refractor of 15cm ( f/15) and a reflector of 60cm (f/12.5). The polariphotometer could not be used due to a breakdown of the PC at the last moment; instead a small CCD was used.

About half of the participants had experience to observe with large telescopes. Some 40% of the students had never been observing previously.

Prof. Bernardo Reidel bring to the observatory several of the small telescopes he constructed, giving the opportunity to the students to have a close look to some other optical combination.

Visual estimation of the variability of a star has been estimated during all the ISYA by some participants.

Accounts on PC have been open for the students. They used it for e-mail purpose but also to generate transparencies for their talks.

Connections with outside through INTERNET was extremely slow.

This situation is common in South America.

This is a strong brake to the use of any electronic services (data base, bibliography ...)

One center (Peru) still has no connection, except for e-mail. (It is expected for the end of the year).

Textbooks and reprints brought by the foreign faculty on various topics including Astronomy Teaching were largely used by all the participants.

Several public talks were given by the faculty members : they were given either in Spanish, English or French and they were translated simultaneously into Portuguese. 3 talks were given at Ouro Preto, organized by the Amateur Astronomical Society, 4 talks were given at Belo Horizonte (Cultural Center of the University).

The French language was also understood by several persons among the audience. Several students were fluent in French as well as two Brazilian astronomers of the UFMG.

#### Budget and Non Academic Activities

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In many cases faculty members and participants were able to obtain special fares, some students cancelled their participation at the very last moment so the initial budget has been kept below our initial estimate.

All the participants received travel support, except one Brazilian student who came only for the first week for the sessions on Astronomy Teaching. His travel was paid by the Brazilian sponsors. The travel of one Brazilian faculty member was also reimbursed by the Brazilian sponsors.

The reimbursement was on 100% basis except for the 2 participants coming from Spain (50%). In some cases the reimbursement has been done on the bus fare basis and the participants came effectively by bus (the bus was used to come from Montevideo but a very special air fare was found to go back).

The stay during the all ISYA was entirely paid by the Brazilian sponsors for the students as well as the faculty members.

Housing at Belo Horizonte as well as at the Observatory was at the hotel. At first it was foreseen to stay at the Dormitories of the Campus, but finally the LOC judged it too basic.

The stay at the hotel was on the basis of double room for the students (three at the Observatory), single for faculty member. The meals were taken at the University excepted the breakfast and meals during the weekend.

As far as possible, students from different countries shared the same room.

Several parties were organized during the ISYA : a musical group from the University played during the first evening, we attended a musical show at the University Concert Hall dedicated to the IAU and the last day a party was organized with live music at the Observatory.

Academic activities were stopped during the Saturday afternoon and the Sunday. A one-day tour was arranged at Ouro Preto : a beautiful historical city (Sunday 16th). Belo Horizonte sightseeing was organized on Saturday 22nd afternoon. The trip to the Observatory took place on the Sunday 23rd.

It appears at the end that this hotel was not very reliable because one of the deposit in their safety box has been stolen (passport, national identity card, traveler checks, dollars and air plane ticket).

The necessary actions had been undertaken. The reaction of the University was

extremely positive and the help of Renato Las Casas and Tulio do Santos very vigorous.

The stolen dollars have been reimbursed after one week of discussions. Not too much difficulties with the airplane ticket and documents : for all of them photocopies have been secured.

The University of Minas Gerais where the ISYA took place was located at about 30mn bus ride from the city center.

For all the transportation needed vehicles from the university were used during this ISYA.

The ISYA has been largely advertised among the medias of the Minas Gerais state. Reportage was done during the Opening Ceremony by the TV as well as reportage on the lectures next day.

The newspaper "Estado Da Minas" published a short paper on the ISYA as well as a long text concerning one of the lecture as well as an interview of the foreign faculty member concerning the ISYA and the IAU.

During the Opening Session a rubber stamp was issued by the Empresa Brasileira de Correos y Telegrafos.

#### Financial Summary

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Travel costs supported by IAU :

8 540 USDollars	foreign faculty members
485 USDollars	Brazilian faculty member
11 213 USDollars	foreign participants
1 782 USDollars	Brazilian participants

(Attached the accounting for expenses as well as the certifications of travel expenses).

The financial support obtained by Renato Las Casas was such as no IAU contribution was needed for any local transportation.

The Cuban participant arrived with a lack of convertible money. I avoid any embarrassment by giving some cash (25 Us dollars) for "miscellaneous expenses".

The IAU made the budgeted funds available before the ISYA, which allowed the refunding of all travel expenses during the ISYA.

Support by the UFMG and the sponsoring organizations.

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40 000 Reales	: CNPq
8 000 Reales	: Fapemig
7 200 Reales	: UFMG

Total = 55 200 Reales (# 60 000 US dollars)

Expenses supported by the UFMG (Reales)

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Rooms and meals	: 26 000	
Excursion	: 700	
Telemig	: 2 000	(telephone line to the Observatory for the computer connection)

The other expenses are not yet known ( Tee-shirt, mallet, transparencies, photocopies, musical show, meeting of the LOC in May, cost of the telephone link to the Observatory...)

Concluding remarks  
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The lecture programmes broaden the field of the students. The large variety of subjects covered was not felt as dispersion by the participants but instead as an efficient way to broaden their field of view.

In several small institutions the main field was cosmology and very few astrophysics.

This conclusion was clearly emphasized by all the participants during the last day discussion.

For some students, their participation to this ISYA had definitely oriented their fore coming studies.

The very broad range in participants' backgrounds makes it difficult to have lectures appropriate for everybody. Anyway the lectures covered a broad range of levels, from an introductory level to have a "flavor" of research.

Some participants had individual discussions with faculty members on their research work currently undertaken.

Students of the two countries where VLP programs were hold, participated in this ISYA : 3 from Paraguay : one of them being actually in Argentina to do her PhD, and 3 from Peru, one of them being now in Sao Paulo (Brazil) to do his PhD. Actually five Peruvian students are in Brazil at Sao Paulo : one to do his PhD, and four to do their MsC.

To conclude, this ISYA fulfilled its role, and was as the participants said in their message sent to the International Astronomical Union :  
"a great opportunity of expanding their knowledge in astronomy and especially for spreading the friendship between young Ibero-America scientists".

Thanks must be given to Prof. Renato Las Casas and Prof Tulio dos Santos for their numerous efforts which contributed to the success of this School.

THE PARTICIPANTS OF THE 22nd INTERNATIONAL SCHOOL FOR YOUNG  
ASTRONOMERS

**WOULD LIKE TO THANK**

**THE INTERNATIONAL ASTRONOMICAL UNION**

FOR THE GREAT OPPORTUNITY OF

EXPANDING OUR KNOWLEDGE IN ASTRONOMY AND ESPECIALLY FOR

SPREADING THE

FRIENDSHIP BETWEEN YOUNG IBERO-AMERICAN SCIENTISTS

OBSERVATÓRIO ASTRONÔMICO da SERRA PEDADA, JULY 29th, 1995

Thanks, Alexis *[Signature]*

*[Signature]*  
J. Ahumada.

*[Signature]*  
Rafael *[Signature]*

*[Signature]*  
MARCELO

*[Signature]*  
MARCIA

*[Signature]*  
Eduardo *[Signature]*

Silvia Alencar  
Michael Brinquem.

*[Signature]*  
2010

*[Signature]*  
Simone Dalton

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Carla Mendonça *[Signature]*

*[Signature]*  
MARIA ELIZABETH LEE

*[Signature]*  
Luiz Mendes

*[Signature]*

*[Signature]*  
Marta M.

Accounting for expenses of ISYA (Brazil July 9 - 29 1995)

M. Gerbaldi ( Assistant Secretary - ISYA)

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Travel expenses

<u>Foreign faculty</u>	<u>US dollars</u>
Gerbaldi M.	(see below)
Gullixson C.	78 + \$ 1666 by money tranfer
Knude J.	1686
Peletier R.	1625
Percy J.	290
Reipurt B.	548
Torres Peimbert S.	1158

Brazilian faculty

Livi S.	485
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Foreign participants

Ahumada J.	498
Amparo M.	618
Baume L.	420
Brugmann I. M.	439
Caballero N.	423
Candia P.	591
Cepero T. (see note)	979 + 4605.5 french francs pre-paid ticket
De Greiff A.	953
Espindola M.	498
Guzman C.	979
Melgarejo Y. R.	979
Motta V.	220
Munoz R.	608
Rios C.	591
Rodes J.	618
Ruetalo M.	160
Saenz F.	439
Sanchez A.	220

Total in USDollar : 16 103 (cash) + 1666 by money transfer  
 Total in French Francs : 4605.5 french francs pre-paid ticket

Brazilian participants

Reales

Carlos Reyes R.	54.94	reimbursed 55
Cypriano E.	33.33	34
Daflon S.	25.78	26
Dutra C.	461.71	462



Makler M.	30	30
Margoniner V.	37.66	38
Micheletti S.	340.94	341
Sankarankutty S.	597.78	598
Whately L.	25.78	26

Total in Reales : 1610

Note : The ticket for Teresita Cepero Chao from Cuba had to be bought from France, in April (pre-paid ticket). At that time all the flights to come back at the end of July were already fully booked with no waiting list opened. The first possibility for a return date was on July 26th which imply to leave the ISYA on the 25. So a bit more than 4 days of ISYA would have been missing with nearly all the observational activities and the use of a CCD. According to the aim expressed in the application of T. Cepero (CCD implemetation in her research group at La Havana) I feel that it woulf be worthwile to delay her return till the first flight available : on August 9th. Her longer stay at Belo Horizonte was paid by the UFMG. Her visa had to be extended and a supplement for the air ticket had to be paid.

Received from the IAU :

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80 000 french francs = 15625 US dollars

Change rate on March 10th 1 \$ = 5.12 FF (to buy US dollars)  
(Change done at the agency Thomas Cook 95 Bd du Montparnasse  
Paris - France)

On July 2nd I gave back to the IAU 3 500 US dollars

15 600 Usdollars put at disposal at Belo Horizonte  
(Banco do Brasil)

a taxe of 30 US dollar was taken by the bank :

Received from the bank : 15 570 USDollars.

Total in cash : 27 695 US dollars  
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Change done at Belo Horizonte to refund the brazilian participants :  
1 US dollar = 0.90 reales (mean value to buy Reales)  
certificates included.

1 800 US dollars = 1626 Reales.

Expenses in Reales : 1610 ; the difference : 16 Reales was converted back to  
US dollars = 18 US dollars

Total of the refund at Belo Horizonte : 16 103 + 1800 - 18 = 17 885 US dollar

Total of the refund at Paris (M. Gerbaldi ticket) : 35 US dollars

6 836 French Francs

Change rate on August 10th 1995 1 \$ = 4,70 FF (To sell US dollars)  
(Change done at the agency Thomas Cook 95 Bd du Montparnasse  
Paris - France to reimburse this air-plane ticket) 6 836 FF = 1454 US dollars.

Total of the expenses in cash US dollars : 17 885 + 35 + 1 454 = 19 374 US dolla

Refund to the IAU 27 695 - 19 374 = 8 321 USDollars  
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Total cost of 22nd ISYA to IAU  
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Travel expenses

foreign faculty : 5 385 + 1 666 + 35 + 1 454 = 8 540 US dollars  
Brazilian faculty : 485 US dollars  
foreign participants : 10 233 + 980 = 11 213 US dollars (4605.5 FF = 980 \$)  
Brazilian participants : 1 782 US dollars

TOTAL = 22 020 US dollars

*Certifié Sincère et Véritable*  
*Paris le 10 août 1995*

*M. Gerbold.*

REVIEW OF  
INTERNATIONAL SCHOOL FOR YOUNG ASTRONOMERS (ISYA)  
BRAZIL, JULY 1995

By Donat G. Wentzel, April 2000

Of 39 participants, probably 36 were reached, by direct e-mail or indirectly via various astronomers. Thirteen responses were received.

Professional success: All thirteen respondents are active in astronomy! Two received the Ph.D. degree in 1999 (one now teaching, one looking for a post-doc position), four expect to receive the Ph.D. degree by the end of year 2000, five more are studying for the Ph.D. degree, and two without additional studies are involved in astronomy education. (One participant is reported to have left astronomy.)

Four of the ten Latin American Ph.D. candidates/recipients (from Uruguay, Paraguay, two from Brazil) study in Europe or North America (Berkeley, Canary Islands, Jena, Bell Labs). Five Ph. D. students from Brazil, one from Argentina study in their own countries. One from Alicante, Spain both studies and is assistant professor of physics at her university. (She received academic credit for ISYA.)

Best remembered faculty:

Pelletier (on galaxies, and for asking students to give short talks)

Percy (on both teaching and variable stars, also individual guidance and "appreciation of the sky")

Some participants have maintained contacts with Reipurth, Pelletier. For one participant, ISYA led directly to participation in the Regional Latin-American Meeting, for another it permitted participation at the 1997 Vatican Summer School. Several have joined the Brazilian Astronomical Society and see each other annually. Two participants married one year after the ISYA.

Teaching sessions: Six of the thirteen respondents include the teaching sessions among their best remembered parts of ISYA. To the future teacher in Paraguay they were essential: "We use all the CLEA activity files in workshops for teachers", "I try to fix the common misunderstandings in elementary astronomy, which Prof. John Percy mentioned".

Many remember that there were too many lectures! "Stressful". Knude, scheduled last in the day, had an exhausted audience. (Comment: the lectures were crowded into the two weeks spent at Belo Horizonte.) Lectures seem to have been at the appropriate level (except for one undergraduate). All except one of the participants had adequate English to understand the lectures.

Four participants lauded the opportunity for participants to give talks, in English, either talks asked for by Pelletier or those describing countries/observatories. (The letter did not explicitly ask about these talks. No participant explicitly mentioned the participants' talks on

ISYA BRAZIL, page two

education.) One view of the talks: "English is basic if you want to start to make contributions in astronomy today." (Outside of lectures, most discussion was not in English.)

Several participants emphasized the importance of interchange of experiences among students and teachers. Two received useful advice, from both foreign and local faculty, on obtaining fellowships.

Observatory Serra Piedade: Opinions ranged from "opportunity to work with "real" observatory", "first chance to work with a large telescope" and "unforgettable transit of Jupiter's moon" to grumbling (mostly by participants experienced in observing) about the limited time for visual observing between periods of fog, the lack of a working photometer, and the absence of any alternate source of data at the observatory.

The two theoreticians (relativity, cosmology) found the breadth and observational emphasis of ISYA essential as background for their relatively restricted physics-oriented thesis topics.

Some laudatory comments:

Astronomers' enthusiasm "encouraged me to proceed in my career in astrophysics".

"The course was to motivate me still more" for doing research in astronomy.

"ISYA was valuable for my career because I was in contact with several people and astronomical materials until now untouchable for us (CCD, greater telescope, didactical materials)."

"The ISYA was one of the most fantastic experiences I've ever had."

"Thanks to ISYA, I see the sky with new eyes".

"The introduction to research methods is important for participants from countries without "real" research."

Many participants explicitly thank Michele Gerbaldi for organizing the ISYA.

