ALMA Newsletter

February 2009

Introduction

Dear all, I'm glad to present the first issue of the ALMA newsletter.

The Atacama Large Millimeter/submillimeter Array (ALMA) will be a (sub)millimeter wave interferometer consisting of at least 66 antennas located on the Chajnantor plateau in the Atacama Desert of northern Chile at 5000m altitude. ALMA will be a leading astronomical instrument for observing the cool universe – the molecular gas and dust that constitute the building blocks of stars, planetary systems, galaxies, and of life itself. We thus aim to provide new, much needed insights into the formation of stars and planets, and will reveal distant galaxies in the early Universe, which we see as they were over ten billion years ago.

As ALMA makes progress in construction and transitions into operations, we will seek to keep the scientific community abreast of the latest information with a high-level account of events, including summaries of ALMA meetings and the achievement of major milestones. In so doing, this newsletter is a reflection that the project is becoming a real observatory which will serve the global community. The regional ALMA newsletters will continue publishing news about ALMA in order to highlight developments which directly affect their communities.

I sincerely hope you will enjoy this first issue of our ALMA newsletter.

Thijs de Graauw, ALMA Director

The Atacama Large Millimeter/submillimeter Array (ALMA), an international astronomy facility, is a partnership of East Asia, Europe and North America in cooperation with the Republic of Chile. ALMA is funded in East Asia by the National Institutes of Natural Sciences (NINS) of Japan in cooperation with the Academia Sinica (AS) in Taiwan, in Europe by the European Southern Observatory (ESO) and in North America by the U.S. National Science Foundation (NSF) in cooperation with the National Research Council of Canada (NRC) and the National Science Council of Taiwan (NSC). ALMA construction and operations are led on behalf of East Asia by the National Astronomical Observatory of Japan (NAOJ), on behalf of Europe by ESO and on behalf of North America by the National Radio Astronomy Observatory (NRAO), which is managed by Associated Universities, Inc. (AUI). The Joint ALMA Observatory (JAO) has been formed to provide the unified leadership and management of the construction, commissioning and operation of ALMA.

ALMA Newsletter

Focus on...

ALMA accepts its first two antennas

On **December 19, 2008,** the ALMA Director and the ALMA-J (ALMA Japan) Project Manager signed the acceptance agreement for the first ALMA 12-meter-diameter antenna, produced by Mitsubishi Electric Corporation (MELCO) for ALMA-J/NAOJ, at the JAO office in Santiago, Chile. Thijs de Graauw, ALMA Director, commented: “Our Japanese colleagues have produced this state-of-the-art antenna to exacting specifications. We are very excited about the handover because now we can fully equip this antenna for scientific observations.” Satoru Iguchi, the ALMA-J Project Manager, commented that “ALMA is an ultimate radio telescope at millimeter and submillimeter wavelengths and will provide high-quality maps of the universe that have never been achievable before. ALMA is not only a very powerful telescope for astronomers but also will bring all humanity a new cosmic view.” This antenna is the first of sixteen provided by the East Asian partners of the observatory.

On **February 6, 2009,** the second 12-meter-diameter antenna was delivered by ALMA’s North American partners, whose efforts are led by NRAO and supported by the U.S. National Science Foundation in cooperation with the National Research Council of Canada and the National Science Council of Taiwan. The antenna was manufactured by Vertex, a part of General Dynamics SATCOM Technologies. This is the first of twenty-five being provided by the North American partners of ALMA. “We have nine (North American) antennas on

ALMA Newsletter

Focus on...

site already," said Adrian Russell, NRAO's ALMA Project Manager, "and following handover of Number Three we plan to get one through the test procedure each month. Additional North American antennas will be arriving in Chile at a rate of one every two months, and General Dynamics is on track to complete delivery of these systems within days of the original schedule. " As Philip Puxley, the NSF's ALMA Program Manager, explained: "This is a major milestone for the ALMA project. With two antennas now on site, we begin the real work of combining signals from them. We are advancing toward ALMA's ultimate goal of surpassing by tenfold existing technology in this area."

"The ALMA antennas are technological marvels," said Thijs de Graauw. "They are more precise and more capable than any ever made. Their performance in the harsh winds and temperatures of our high-altitude site bodes well for the observatory's future."

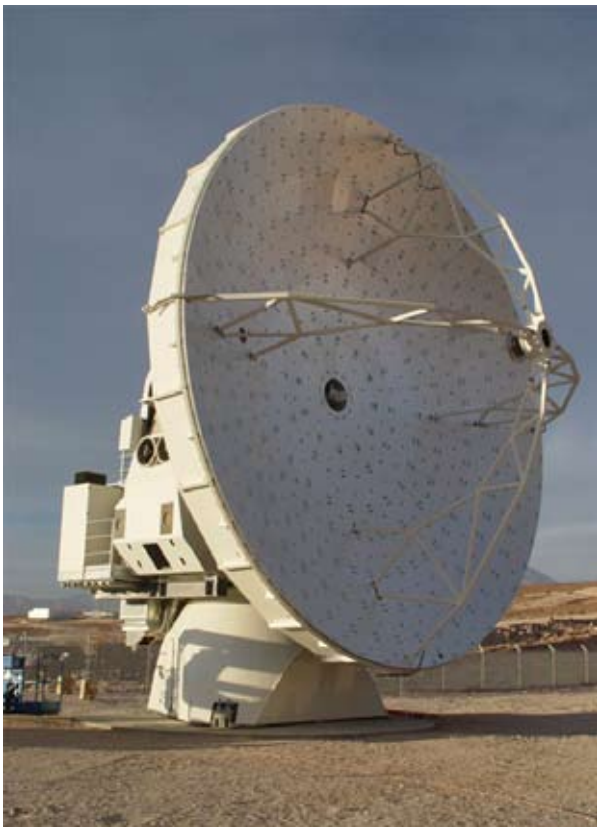
A single 12-meter antenna's dish is bigger than the largest optical telescope's reflective mirror, but to match the sharpness achieved by an optical telescope, a millimeter-wavelength antenna would have to be kilometers across. ALMA will achieve this sharpness by combining signals from dozens of antennas spread across kilometers of desert. This allows astronomers to obtain the sharpness of a single, gigantic antenna by combining the outputs from each antenna. When completed early next decade, ALMA will have a total of

Signature of the acceptance of the first antenna by ALMA
Front left, ALMA Director, Thijs de Graauw; Right, ALMA-J Project Manager, Satoru Iguchi. Back, left to right: Koh-ichiro Morita, Masao Saito, Junji Inatani, Richard Hills.

ALMA Newsletter

Focus on...

sixty-six antennas provided by partners in North America, Europe, and East Asia, with the option of further expansion. The first european antennas, produced under the auspices of ESO are scheduled to begin arriving within the next weeks.



Antennas arriving at the ALMA site undergo a series of tests to ensure that they meet ALMA's strict requirements. The antennas have surfaces that are more accurate than the thickness of a human hair, and can be pointed precisely enough to pick out a golf ball at a distance of 15 km. After acceptance, the antennas are moved close to the Operations Support Facility (OSF) Technical Facility where more detailed testing of the entire system, that is, the antenna, the ALMA prototype receiver, together with the ALMA control system, are carried out.

As with all aspects of ALMA, the receiver system has redefined the state-of-the art. The receivers consist of a front end that processes the input from the sky at the sky frequency, converting it to a lower frequency. At the lower frequency, the signal is efficiently amplified to provide an output that can be used for antenna tests (in this case). Later, in the phase of interferometry, the outputs from antennas will be multiplied (pair wise) to provide the data used to produce high resolution astronomical images. The first three front ends are engineering models. These are complete, but not all tests have been carried out since some of the necessary equipment is just now being delivered. The first of these, integrated at NRAO, was installed on the MELCO antenna on October 13-14, 2008 before it was officially accepted by ALMA. The second front end, integrated in East Asia, is now in the second ALMA antenna, recently accepted from Vertex. The third front end is just finishing its integration in the UK. It will be shipped to Chile very soon.

Laboratory tests show that the receivers meet the sensitivity and many other requirements. These first front ends contain ALMA Receiver Bands 3 (for 3 mm wavelength), Band 6 (for 1.3 mm), Band 7 (for 0.85 mm) and Band 9 (for 0.45 mm); the first two from North America and the last two from Europe. In time, three further receiver bands from East Asia, Band 4 (for 2mm), Band 8 (for 0.6mm) and Band 10 (for 0.35mm) will be installed.

Press Releases and videos corresponding to these milestones are available on the ALMA website: www.almaobservatory.org.

ALMA Newsletter

Progress at the ALMA site

Here is a short synopsis regarding the recent progress of the site construction work:

Array Operations Site (AOS)

The Technical Building (TB) at the AOS, at 5 km elevation, houses the two correlators, and has been delivered to the project.

The structural concrete for 57 antenna foundations has been completed as of February 6, 2009.

An additional 28 foundations are in an earlier stage of completion, while another 30 foundations are excavated and ready to begin with the pouring of concrete. The preparation of the area containing the central cluster of antenna foundations is under way. Twenty two antenna foundations are already under construction at the Atacama Compact Array (ACA) site. Requests for bids from commercial firms for construction of the infrastructure connecting the antenna stations with the AOS-TB have just been released. This includes the road system, the electrical power distribution, and the fiber optic signal distribution.

Operations Support Facility (OSF)

The OSF Technical Facility (TF) was completed in February 2008. Modifications to accommodate updated user and infrastructure requirements are under way. A second tower for antenna holography has been completed.

The ALMA access road connecting the Chilean highway 23 (between San Pedro de Atacama and the village of Toconao) to the OSF and AOS is essentially complete and under maintenance. At present, this road has an unpaved surface, but will be upgraded. Documents for bids for the paving of this road are under final review. The bidding process started mid February.

The AOS-TB and OSF-TF are being equipped and furnished. The tender documentation for the design of the residence near the OSF is being prepared.

Temporary Power

For some years, power at the OSF and AOS has been produced by an ad hoc collection of generators. Since the permanent power system will arrive only in two years time, this temporary power supply is being expanded and better organized. These improvements will be completed by the end of 2009.

Progress at the ALMA site

Antenna Transporters

At the request of the Antenna IPT (Integrated Product Team)/Vertex, on November 20, 2008 the JAO Department of Technical Services transported a Vertex antenna from inside the Vertex Site Erection Facility (SEF) to a parking pad at the OSF. This antenna is being used to validate maintenance procedures. Similarly, to check the interface between the antenna transporters and an ACA 12-meter antenna, the JAO and NAOJ organized a joint test. After checking the ground leveling and mechanical coupling on December 8, 2008, the antenna was successfully lifted from its home foundation on December 9. After testing, the transporter drove up to the OSF Technical Facility area, and then returned to the original home foundation. On January 8, 2009, the first ALMA antenna was transported from the MELCO SEF to the OSF-TF for the start of AIV (Assembly, Integration and Verification). On February 6, 2009, the second ALMA antenna was also transported from one of the parking pad to the AIV area; tests on both antennas are now underway.

Shutdown of testing at the ALMA Test Facility (ATF) in Socorro, New Mexico

The first use of the ATF was for the investigation of the performance of the prototype ALMA antennas, starting in March 2003. After this phase, work at the ATF was shifted to the development of ALMA software with actual hardware. The ATF was an invaluable resource for all these activities. Effective December 20, 2008, the use of the ATF has come to an end. All tests are now performed at the OSF and involve the use of the ALMA pre-production receivers, which were not available at the ATF. This requires modifications to the control software and thus the software will be much closer to the final version. In addition, tests of the final version of the complete single dish system, consisting of antenna, electronics and computing are needed before tests of two-element interferometry can begin at the OSF.

ALMA Newsletter

ALMA Events

2008
- nov -
12/14

ALMA Board meeting

The ALMA Board, the observatory's highest governance body, meets two or three times a year. Their most recent meeting took place in San Pedro, Chile in November 2008. At the meeting, reports on the status of the project were given by the Joint ALMA Observatory (JAO) staff. Among the topics discussed were the Permanent Power Supply, an update of the Integrated Project Schedule, the ALMA milestones and the ALMA development plan. In January 2009, the chair of the ALMA Board shifted to North America. The new chair person is Prof. Anneila Sargent (Caltech). The next ALMA Board meetings will take place in March 2009 in Santiago, Chile and in November at the ALMA Operations Support Facility (OSF).

Image courtesy of A. Russell

A group photo of the ALMA Board and some attendees during their visit in November 2008 to the Operations Support Facility (OSF). In the background are the two antenna transporters parked in their shelter. From left to right: Fred Lo (NRAO), Masato Ishiguro (NAOJ), Paul Ho (ASIAA Taiwan), Pat Donahoe (AUI), Xavier Barcons (ESO Council and CSIC Spain), Richard Wade (Board chair until end 2008, President of ESO Council until end 2008, vice-chair of STFC), Laurent Vigroux (CNRS/IAP, Board vice-chair starting 2009 and President of ESO Council starting 2009), Monica Rubio (University of Chile), Heideki Kobeyashi (Japan), Wolfgang Wild (Project Manager ALMA / ESO), Ethan Schreier (AUI), Shoken Miyama (NAOJ Director General), Anneila Sargent (Board chair starting 2009, Caltech), Tim de Zeeuw (ESO Director General), Ewine van Dishoeck (Leiden University), Jim Hesser (NRC Canada), Tony Chan (NSF).

ALMA Events

2008
- nov -
17/21

ALMA Computing Review

The ALMA Computing Review was held in November 2008, at the Plaza El Bosque hotel, Santiago, Chile, and ESO headquarters in Vitacura. The ALMA Director called for the review.

This panel was asked to carry out a comprehensive review of ALMA computing and its schedule for completion. The panel gave a set of informal conclusions on November 21. The amount of information was very large, and the panel found the presentations and background material very complete. They thanked the Computing Integrated Product Team (CIPT) for their time and effort in making this review comprehensible and complete. There were many topics covered, including: 1) observing tools for proposers and reviewers; 2) dynamic scheduler; 3) on-line control of the antennas and data taking; 4) off-line processing of the data to produce images; and, 5) archive. The panel was impressed with the work accomplished and felt that there were no major technical feasibility concerns.

This photo shows the ALMA Computing Review panel at the start of the review on Monday 17 November, busily studying the material provided by the ALMA Computing Team. The panel are in the foreground. From left to right: Anita Loots (Meerkat Project, South Africa), Dick Crutcher (University of Illinois), Tony Willis (DRAO, Canada), Ray Norris (ANTF, Australia) and Wim Brouw (Chair, Groningen University). An additional member of the review panel is Bob Hanisch (Space Telescope Science Institute) who participated via telephone. Behind the panel are a number of ALMA staff.

ALMA Newsletter

ASIAA's participation with North America in ALMA

Source: NRAO Newsletter available at http://www.nrao.edu/news/newsletters/

NRAO has announced a formal agreement enabling Taiwanese astronomers to participate in the North American component of the international ALMA partnership, alongside American and Canadian astronomers. Taiwan's efforts will be led by the Academia Sinica Institute of Astronomy and Astrophysics (ASIAA).

The agreement, signed by the Taipei Economic and Cultural Representative Office and the American Institute in Taiwan, provides for approximately $20 million in ALMA construction funding through the National Science Council (NSC), Taiwan's equivalent to the U.S. National Science Foundation (NSF) and Canada's National Research Council (NRC), which have jointly funded North America's existing contribution to the international ALMA project.

Activities under the agreement will include joint research projects, development projects, collaboration on construction, support of observatory operations and other forms of cooperation. Access to ALMA observing time will be shared, as will membership on advisory committees.

"Taiwan is a world-class center for submillimeter-wavelength astronomical research, and we're delighted that the ALMA project and all its future users will benefit from the resources and expertise that Taiwan's deepening participation brings to this great, global endeavor," said Dr. Fred Lo, NRAO's director.

This new agreement increases and diversifies Taiwan's Academia Sinica investment in ALMA beyond the levels achieved through its participation in the East Asian component of the ALMA partnership, which is led by the National Astronomical Observatory of Japan. The agreement mirrors previous ones affording Taiwan astronomers enhanced access to NRAO's U.S.-based research facilities.

"ALMA will be one of the greatest ground-based observatories of the coming decade, and we look forward eagerly to working alongside our colleagues at the NRAO, and with the other ALMA partners, to make ALMA even more successful," said Dr. Paul Ho, ASIAA's director.

ALMA Newsletter

Joint ALMA Observatory (JAO) Management Team

As we had many changes over the past 18 months, we would like to introduce the JAO Management Team.

Click on the photo for this person's career details

ALMA Newsletter

Job opportunities

The Joint ALMA Observatory invites applications for positions of:

Commissioning Scientists

Duties: The role of ALMA Commissioning Scientists is to assist the Project Scientist and Deputy Project Scientist in planning and executing the scientific commissioning of ALMA. In order to bring ALMA into full scientific operation, the commissioning team of scientists and engineers will devise testing procedures for new equipment and observing modes, carry out measurements, and interpret results.

Professional requirements / Qualifications: Applicants for this position must have a PhD in astronomy or related field. Demonstrated skills in the following areas would be an advantage, but are not required:

- Knowledge of computing languages (python, xml, etc);
- Development of data reduction and analysis software;
- Experience trouble-shooting hardware in a Linux environment.

In addition to the above criteria, the successful candidates will meet the following requirements:

- Experience in working in a multidisciplinary team environment;
- Working knowledge of or the willingness to learn Spanish;
- High level of communication and negotiation in English.

Successful applicants will be expected to participate in the full range of commissioning activities, but may take the lead on some aspect of testing based on their background and interests. The Commissioning Scientists are encouraged to continue an active program of independent research, and time and resources will be made available for this.

Duty station: Santiago, these positions require a significant amount of time working at the ALMA sites at the Operations Support Facility (2900m elevation) and occasionally at the Array Operations Site (5000m elevation) near San Pedro de Atacama, Chile.

A successful high altitude medical check is a necessary condition for this position.

Starting date: As soon as possible.

ALMA Newsletter

Job opportunities

Contract: Appointments will be for a period of three years. These positions are funded from the construction project, which will be largely completed by the end of 2012, and members of the commissioning team will be in a very strong position to apply for long-term posts in Joint ALMA Observatory Science Operations which will be become available during and after the construction phase.

Remuneration: ALMA international staff will be recruited as employees of either ESO or AUI/NRAO. ESO and AUI/NRAO offer attractive remuneration packages including a competitive salary, comprehensive social benefits, and provide financial support in relocating families. Furthermore, an expatriation allowance as well as some other allowances may be added.

Closing date for applications is **15th May 2009.**

For additional information, please contact Dr. Alison Peck at apeck@alma.cl.

The NRAO/ESO are equal opportunity employers. The post is equally open to suitably qualified male and female applicants.

For more information about the way to apply to this position, please see the web pages at (through NRAO), (through ESO)

ALMA Newsletter

Job opportunities

System Astronomers

Duties and responsibilities: ALMA System Astronomers will be the experts on the performance of ALMA, and will provide advice and assistance to ALMA operations. They will work closely with the system engineers in the Department of Technical Services. When ALMA is in full operations their duties will consist of:

- Management of the calibration plan (continued development and maintenance of the plan)
- Monitoring and determination of the long-term performance of the array (quality control and trend analysis)
- Support of array re-configuration activities (base-line calibration, delay calibration, pointing re-calibration, etc.)
- Management of the Long-Term Queue (LTQ) of projects.

Before ALMA early science operations (2010), the System Astronomers will support the Commissioning and Science Verification team, assisting the Project Scientist in planning and executing the scientific commissioning of ALMA. They will also participate in tests and evaluation of the ALMA software.

The successful candidates will be expected and encouraged to conduct astronomical research. Research in areas directed towards use of ALMA will be strongly encouraged.

Professional requirements/qualifications: We are seeking astronomers with substantial experience in millimeter observations as well as a proven track record of scientific research. The ideal candidate will have previous experience in commissioning and/or operating radio interferometers and/or single-dish telescopes and instruments. A good command of the English language, proven communication skills and ability to work in a multidisciplinary team, including operators, astronomers and system/software engineers, are essential. A successful high altitude medical check is a necessary condition for this position.

Duty station: Santiago and the Operations Support Facility (OSF) near San Pedro de Atacama, Chile. The successful applicant will be required to spend a significant amount of time working at the ALMA sites at OSF (2.900m elevation) and occasionally at the Array Operations Site (5.000m elevation).

Closing date for applications is **30th April 2009**.

For more information about the way to apply to this position, please see the web pages at (through NRAO), (through ESO)

ALMA Newsletter

Job opportunities

ALMA Science Operations Astronomers

Duties and responsibilities: ALMA Science Operations Astronomers will work as Astronomer on Duty (AoD) at the ALMA Operations Support Facility (OSF), and spend part of their time at the ALMA Regional Centers (ARCs) as well as in the ALMA offices in Santiago for research and data quality control. The AoD work will consist of:

- Scheduling and execution of observations.
- Execution and development of the ALMA Calibration plan.
- Data quality assurance
- Track the progress of observing programs.
- Support of array reconfigurations.
- Development of operations documentation and web pages.
- Technical reviews of ALMA proposals.

Before ALMA early science operations (2011), the Science Operations astronomers will support the Commissioning and Science Verification team, assisting the Project Scientist in planning and executing the scientific commissioning of ALMA. They will participate in tests and evaluations of the ALMA control software and software tools for science operations.

The successful candidates will be expected and encouraged to conduct astronomical research. Research in areas directed towards use of ALMA will be strongly encouraged.

Professional requirements/qualifications: We are seeking astronomers with substantial experience in millimeter observations as well as a proven track record of scientific research. The ideal candidate will have previous experience in operating radio interferometers and/or single-dish telescopes and instruments. A good command of the English language, proven communication skills and ability to work in a multidisciplinary team, including operators, astronomers and system/software engineers, are essential. A successful high altitude medical check is a necessary condition for this position.

Duty station: Santiago and the Operations Support Facility (OSF) near San Pedro de Atacama, Chile. The successful applicant will be required to spend a significant amount of time working at the ALMA sites at OSF (2.900m elevation) and occasionally at the Array Operations Site (5.000m elevation).

Closin date for applications is **30th April 2009.**

For more information about the way to apply to this position, please see the web pages at (through NRAO), (through ESO)

ALMA Newsletter

Job opportunities

Head of the Joint ALMA Observatory archive operations group

Duties and responsibilities: The Data Manager of the Joint ALMA Observatory (JAO) leads the Archive Group and is responsible for the set-up and maintenance of the services of the JAO archives as well as for pipeline operations and data quality assurance. The JAO archives are located at the ALMA Operations Support Facility near San Pedro de Atacama and at the ALMA offices in Santiago. In full operations they will store up to 1 TB of data per day.

The JAO archive group is part of the Department of Science Operations and will consist of the Manager, deputy and 12 operators. The Data Manager will supervise the activities of the archive operations, database contents management and pipeline operations. Data quality assurance and trend analysis will be done by the ALMA Operations and System Astronomers. The Data Manager will work closely with the ALMA Regional Centers located in Europe, North America and Japan, each of which operate a mirror archive, which is a copy of the Santiago archive. The Data Manager will also work closely with the JAO Software Group, which is in charge of supplying the software infrastructure needed for the operation of the archive and the implementation of its interfaces.

Before ALMA early science operations (in 2011), the Data Manager will participate in the setup of the archives, plan archive operations and participate in tests and assessment of the pipeline and quality assurance tools.

Professional requirements/qualifications: Candidates should have a university degree in Astronomy, Computer Sciences, Physics or equivalent. They should have several years of working experience with large scientific data repositories, archive interfaces, and data mining tools, preferably in an astronomical environment. Technical knowledge on database design and content management, database query languages and web-based applications are essential requirements together with proven project management abilities. Experience in ORACLE, XML document processing, programming languages like Java or C++, software engineering practices, and project management will be considered as assets.

A good command of the English language, proven communication skills and ability to work in a multidisciplinary team, including operators, astronomers and system/software engineers, are essential. A successful high altitude medical check is a necessary condition for this position.

ALMA Newsletter

Job opportunities

A research record in astronomy, especially if based on the use of data archives, will be considered as an asset.

Duty station: Santiago and the Operations Support Facility (OSF) near San Pedro de Atacama, Chile. The successful applicant will be required to spend a significant amount of time working at the ALMA sites at the OSF (2.900m elevation), particularly in the initial period, when the archive will solely exist at the OSF.

Closin date for applications is **30th April 2009**.

For more information about the way to apply to this position, please see the web pages at (through NRAO), (through ESO)

Please, refer to the regional newsletters for further positions at the different Executives.

If you wish to receive email announcements when new editions become available, please send an email to almanewsletter@alma.cl, with "subscribe ALMA newsletter" in the body.

To find out if you are already on the email list, send an email to almanewsletter@alma.cl, with "which" in the body.

This newsletter is also available here

Please send comments on the newsletter or suggestions for articles and announcements to the editors at twilson@alma.cl wgarnier@alma.cl

More information on ALMA and contact details can be found on the ALMA homepage www.almaobservatory.org

Regional newsletters:
http://www.eso.org/sci/facilities/alma/newsletter/2008/

http://www.nrao.edu/news/newsletters/

http://www.nro.nao.ac.jp/alma/E

Upcoming events

ALMA and ELTs: A Deeper, Finer View of the Universe

This conference aims at exploring the scientific synergies between ALMA and the upcoming giant optical/infrared telescopes.

Dates: 24 to 27 March 2009. Location: Garching.

More information: http://www.eso.org/sci/meetings/almaelt2009

mm and submm Astronomy at High Angular Resolution

An international conference in 2009 to review the latest findings, obtained through millimeter and submillimeter observations at high angular resolution, and to outline the road map guiding us towards the ALMA era.

Dates: 8 to 12 June 2009. Location: Taipei.

More information: http://www.asiaa.sinica.edu.tw/taipei09

XXVIIth International Astronomical Union (IAU) General Assembly

Date: 3 to 14 August. Location: Rio de Janeiro.

More information: http://www.astronomy2009.com.br/

*** Visiting ALMA before or after the IAU General Assembly**

We have realised that quite a few colleagues may be thinking of adding a visit to ALMA into their travel itineraries when they come to South America for the IAU in Rio. We are naturally keen to show off the Project but we are concerned that we will not be able to cope with visitors showing up at random times. We would therefore ask that people plan their trips so that they make the visit to the ALMA site on either Friday the 31st July and the Monday 17th of August.

Note: ALMA is located near San Pedro de Atacama and the nearest airport is Calama, which is about 2 hours flight north of Santiago.

More information: Any enquiries and questions, please contact Claudia Reyes: creyes@alma.cl