

ATACAMA LARGE MILLIMETER/SUBMILLIMETER ARRAY

Milestones and Reviews

1983 April	Report of the NSF Astronomy Advisory Committee, Subcommittee on Millimeter Wavelength Astronomy, recommends design of an aperture synthesis array. Design work commences at the National Radio Astronomy Observatory on the Millimeter Array (MMA)
1985 October	First MMA Science Workshop involving 90 scientists and engineers from U.S. universities and observatories. Report: <i>Science with the Millimeter Array</i> .
1987 May	Second MMA Science Workshop involving 75 scientists and engineers from U.S. universities and observatories.
1987 June	Site testing for the Millimeter Array begins in the Magdalena mountains in New Mexico. Atmospheric transparency and stability is measured by remote instrumentation.
1989 August	Third MMA Science Workshop involving 100 scientists and engineers from U.S. universities and observatories. Report: <i>Design of the Millimeter Array</i> .
1990 June	Site testing for the Millimeter Array begins in the White Mountains of Arizona near the town of Springerville, AZ. Atmospheric transparency and stability is measured by remote instrumentation for comparison with the data from the NM site.
1990 July	Proposal for the Millimeter Array submitted to the National Science Foundation (NSF) by Associated Universities, Inc.
1991 February	NSF Site Review of the Millimeter Array Proposal. Twelve reviewers from U.S. institutions; committee Chair: Prof. Charles Townes (U.C. Berkeley).
1991 May	Millimeter Array ranked as the highest priority project for radio astronomy in the Decade of the 1990s by the National Research Council Board on Physics and Astronomy.
1991 October	Millimeter Array endorsed by the NSF Advisory Committee for the Astronomical Sciences in two phases: A Design and Development phase to be followed by a Construction phase.

1992 March	National Science Foundation Division for Astronomical Sciences requests AUI to submit a 3-year plan for Design and Development of the Millimeter Array.
1992 September	A Program Plan for <i>Design and Development of the Millimeter Array</i> is submitted to the National Science Foundation by Associated Universities, Inc./National Radio Astronomy Observatory.
1993 November	Site testing begins on Mauna Kea on the island of Hawaii. Atmospheric transparency and stability are measured for comparison with the data from sites in the continental U.S.
1994 January	Millimeter Array Development Consortium is formed. This is a collaboration between the National Radio Astronomy Observatory and the U.S. university groups engaged in the operation of the Owens Valley Radio Observatory Millimeter Array (Caltech), and the Berkeley-Illinois-Maryland Association Array (University of California, Berkeley; the University of Illinois at Champaign-Urbana; and the University of Maryland, College Park).
1994 November	National Science Board approves a Project Development Plan for the Millimeter Array, and endorses further planning.
1995 January	National Science Foundation Division of Astronomical Sciences begins financial support of project planning for the Millimeter Array at the National Radio Astronomy Observatory
1995 April	Site testing begins on a site in the altiplano of northern Chile near the village of San Pedro de Atacama. Atmospheric transparency and stability are measured for comparison with the data from sites in the U.S.
1997 May	Associated Universities, Inc. submits to the National Science Foundation the report <i>Recommended Site for the Millimeter Array</i> . This report recommends that the Millimeter Array be built on the Chilean site because (1) the site is large enough to accommodate the Millimeter Array with adequate room for future expansion; (2) the atmospheric transparency is sufficiently better than on any competitive site that twice as much science is possible per year on the Chile site than would be possible on the best site in the U.S.; and (3) the center of the Milky Way passes directly overhead in Chile and the nearest galaxies to the Milky Way, the Magellanic Clouds, are visible from the site in Chile.

1997 October	The National Science Foundation endorses planning for the Millimeter Array based on locating the array in Chile.
1997 October	Program Plan for the Design and Development phase of the Millimeter Array is submitted by Associated Universities, Inc. to the National Science Foundation.
1997 November	Associated Universities, Inc., and the University of Chile sign an Agreement for the Installation and Operation of the Millimeter Array in Chile.
1998 May	The National Science Board authorizes the expenditure of \$26M for a three-year Design and Development phase of the Millimeter Array. Work commences at the National Radio Astronomy Observatory.
1998 June	Publication in Chile of Supreme Decree #354 signed by President Frei. The decree grants Associated Universities, Inc., the same rights and privileges in Chile as are enjoyed by the European Southern Observatory, the Association of Universities for Research in Astronomy and the Carnegie Institution of Washington, DC. Indemnification Papers are issued by the Republic of Chile; the rights of duty free import of materials for the Millimeter Array are exercised successfully by Associated Universities, Inc.
1998 July	The Republic of Chile makes a formal concession of the land for the Millimeter Array from the Ministry of National Assets to the science agency, CONICYT.
1998 September	The Republic of Chile publishes a Decree declaring the site for the Millimeter Array to be an area of Scientific Interest regarding protection from mining.
1999 February	The Foreign Ministry of the Republic of Chile formally recognizes immunities for Associated Universities, Inc. in a communication to CONICYT.
1999 June	The National Science Foundation signs a Memorandum of Understanding with seven European Institutions for a joint Design and Development phase of the Atacama Large Millimeter/Submillimeter Array (ALMA), a project that joins the U.S. Millimeter Array with the European Large Southern Array Project.

1999 July	The National Science Foundation conducts a formal review of the cost of the <i>Millimeter Array U.S. Reference Project</i> . The review panel consists of 14 reviewers from U.S. science and industry. The Review Panel Chairman is Dr. John Peoples, former Director of Fermi Laboratory. The Report of the Panel notes that the Millimeter Array Project is technically mature and conservatively costed.
1999 July	CONICYT grants formal permission to Associated Universities, Inc. to install and operate testing equipment for ALMA on the Chilean site. Previous permissions for site testing had been secured through the Chilean Ministry of National Assets.
1999 July	The Chilean Foreign Ministry provides a formal statement to AUI that the Ministry is the Chilean representative for Associated Universities, Inc. in all matters involving the Chilean State.
2000 January	The Chilean Ministry of Finance (the <i>Hacienda</i>) approves an exemption for Associated Universities, Inc. from the Chilean value added tax (the IVA), from local taxes, and from property taxes for the Millimeter Array/ALMA project and personnel in Chile.
2000 February	A contract for an ALMA Prototype Antenna is signed with Vertex Antenna Systems, LLC of Santa Clara, CA. Delivery is specified in October 2001.
2000 May	The U.S. National Research Council Board on Physics and Astronomy reaffirms the priority importance of ALMA to U.S. science and urges expeditious completion of ALMA.
2000 November	Critical Design Review for the Prototype Antenna being provided by Vertex Antenna Systems, LLC under contract from Associated Universities, Inc was successfully completed.