ASSOCIATION OF UNIVERSITIES FOR RESEARCH IN ASTRONOMY, INC.

AURA

Suite 450
1212 New York Avenue NW
Washington, DC 20005
TEL: 202-483-2101
FAX: 202-483-2106

Dr. F. Fleming Crim
Assistant Director for Mathematical and Physical Sciences
National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230

October 18, 2013

Dear Dr. Crim,

The Association of Universities for Research in Astronomy (AURA) charge to the Observatory Council (OC) is to oversee and advocate for the National Optical Astronomy Observatory (NOAO). We believe that ensuring a strong National Observatory is central to the health of the US astronomical community and to the broader areas of physics, computational science, technological development, and science education stimulated by astronomical science and facilities. We also see strong connections between the health of NOAO and the broader community that depends on individual investigator grants, an influx of new investments, and continued open access to U.S. telescopes, regardless of their operating entity. For these reasons, we write to the National Science Foundation to highlight these issues and offer several recommendations to improve the current situation.

MAJOR ISSUES:

(1) The recent turbulence in Congress has created an unstable budgetary atmosphere, in which the funding agencies are unable to make long-term plans for grants, telescope facilities, operating costs, or new instruments. What was initially a 5% reduction, through sequestration, has been amplified into 30-40% cutbacks in some programs. The adverse impacts on NOAO are a matter of concern to us. In addition, the success rate in research grants has fallen, in some cases to 10% or less. The net result of this situation will be long-term setbacks in national competitiveness in scientific research in many areas of astronomy and astrophysics (as well as other areas of science and technology). These are areas that historically have driven the U.S. economy and our competitiveness in human capital.

(2) The current lack of sufficient U.S. research grant funding, large reductions in open-access observing at telescopes, and inadequate funds for new instruments are crippling U.S. astronomy. The strength of U.S. astronomy in the past has been in its broad and diverse base, enabling healthy scientific competition and facilitating

public access to the field. In a scenario that seems all too probable, only a small number of astronomers at a few U.S. institutions, together with European astronomers, will have the facility access and research support needed to follow up exciting discoveries from LSST, ALMA, and other future telescopes.

(3) There is now an accompanying cost in human capital for U.S. scientific and technological competitiveness. Many of our best graduating students and researchers are leaving science, or taking jobs abroad, often in Europe.

RECOMMENDATIONS:

We believe that the long-term integrity and leading U.S. position in O/IR astronomy is at stake, as well as that in many other wavelength bands.

Recommendation #1: Increase federal investment in astronomy.

While we recognize that the NSF Astronomy Division has attempted to maintain some balance in its portfolio, we believe the only plausible path forward requires an additional level of investment from the current state to a level over $300M/yr. This additional investment should allow a balanced program of research, education and infrastructure that ensures the continued leadership of the national organizations such as NOAO and Gemini. This must be a commitment shared by other management levels within the NSF and by the National Science Board. This new level is needed to carry out a successful national program in Astronomy with its powerful new facilities.

We are particularly concerned at the drastic reductions in open access, both to federally-funded national telescopes and private telescopes within the U.S. "system", and in individual research grants. Both types of cut-backs will decrease the ability of U.S. astronomers to participate in the discoveries and follow-up from new observing facilities that our country has built (ALMA) and is in the process of building (JWST, LSST). NSF funding reductions will also impact the training of the next generation of astronomers and astrophysicists.

Recommendation #2: Undertake a review of NSF's strategy for O/IR astronomy.

We cannot afford to lose a generation of talent. Therefore, we support the idea of a new, high-level review of NSF's strategy for funding O/IR astronomy in the coming years, one that particularly addresses the problem of the steep decline in support for open access. It is critical that this review include participation that reflects the needs of the community with limited access to telescopes.

Sincerely,

Members of the AURA Observatory Council

OFFICE OF THE ASSISTANT DIRECTOR
MATHEMATICAL AND PHYSICAL SCIENCES

4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

NATIONAL SCIENCE FOUNDATION

November 4, 2013

Dr. Michael Shull, Chair
Observatory Council
Association of Universities for Research in Astronomy
1212 New York Avenue NW, Suite 450
Washington, DC 20005

Dear Dr. Shull,

Thank you for the letter of October 18 from the AURA Council about funding for astronomy in the United States. I am replying to you as Chair of the Council and hope that you will share my comments with the rest of the Council. I know the Council recognizes the broad scope of science supported by the National Science Foundation (NSF) and the Directorate for Mathematical and Physical Sciences (MPS). All of these scientific communities are frustrated by the difficulty of realizing their aspirations in the current funding environment, and I share that frustration.

The Division of Astronomical Sciences (AST) at NSF fared relatively well in the difficult period of Fiscal Year 2013 that just ended. The research budget for AST decreased by less than 1% relative to FY 2012, a sharp contrast with the research budgets of the Foundation (down 3.7%) and the Directorate (down 4.5%). The Divisions in MPS did not share the decrease uniformly, and the Divisions of Physics and Mathematical Sciences absorbed large and disruptive decreases of 8 and 10%. This differential arose from a Foundation-wide policy of maintaining support for facilities infrastructure and early-career programs. The strong support of facilities infrastructure was central to maintaining relatively robust funding for AST. However, MPS cannot continue to protect those areas in the face of further budget pressures. Maintaining the level of funding for AST at the expense of other research in the Directorate, as we did last year, is untenable.

The Foundation strongly supports astronomy in its major construction budget lines, including the recent baseline increase for the Advanced Technology Solar Telescope (ATST) and the FY 2014 request for construction of the Large Synoptic Survey Telescope (LSST). Both of these projects came as proposals from AURA in response to the decadal survey. Although this funding does not appear in the AST budget line, it is critical to the future of astronomy. Even if it were possible to redirect construction funds to the operations budget to reach the level of "over $300M/yr" that you advocate, the loss of the ability to construct these forefront facilities would be devastating.

Today's circumstances are forcing us to make difficult choices that are best made through clear communication in developing priorities and identifying the inevitable trade-offs. For example, AST is working with the National Research Council on a study to recommend a new strategy for Optical/Infrared astronomy under realistically constrained budget scenarios. I hope you will join with the AST Division Director, Dr. James Ulvestad, and the AST staff as they work to identify and enable the most important scientific aspirations and capabilities for astronomical sciences.

Sincerely,

F. Fleming Crim
Assistant Director for Mathematical and Physical Sciences