



## *Arecibo Science Advocacy Partnership*

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**PRESS RELEASE — SHORT VERSION — FOR IMMEDIATE RELEASE**

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**The Arecibo Science Advocacy Partnership Board**

### **Scientists Say the NSF Will Stop the Heart of STEM in Puerto Rico**

*Arecibo, Puerto Rico* — The Arecibo Science Advocacy Partnership (ASAP) lauds NSF's proposal to continue the Arecibo Observatory's outstanding science, technology, engineering, and mathematics (STEM) education programs, but protest that those will fade away with neither a telescope nor scientists doing actual research. They call on NSF to strengthen the U.S. position as a world leader in the areas of planetary radar, radio astronomy, and atmospheric studies by creating a new, state-of-the-art Arecibo Observatory which will complement and surpass other existing and planned facilities.

At a time of strong Congressional support for science and for Arecibo, manifested for example in the CHIPS (Creating Helpful Incentives to Produce Semiconductors) and Science Act, which specifically mentions Arecibo Observatory, and of strong public support for space research, the U.S. should not abandon cutting-edge research at the site of the former iconic telescope. NSF's current plan would relinquish millions of dollars worth of scientific infrastructure and staff. It will fund only a STEM center for \$1 million/year for five years, with unclear plans for maintenance, as compared to the \$12 million a year operating budget before the collapse, while NSF itself is requesting for a \$1.7 billion (18%) budget increase in the federal budget. Any science done at Arecibo would be supported only if it fits into the education programs.

The recent CHIPS and Science Act is intended to fortify the U.S. position in science and technology, as both are intimately related. The cutting-edge science done at Arecibo Observatory demonstrates and fortifies that interrelationship. Only when science is the primary mission can the U.S. lead with groundbreaking accomplishments, such as the tracking and characterization of near-Earth asteroids needed to complement planetary defense programs, for example NASA's highly successful Double-Asteroid Redirection Test (DART) mission, which tested technology developed to alter trajectories of threatening asteroids. Arecibo radar

observations provided key data for the shape models of the two asteroids, crucial to the success of the mission.

In addition, Arecibo participated in technology development and fundamental science in the search for new pulsars and in their use as tools for the study of gravitational waves and general relativity, and Arecibo radar observations have been important for understanding space weather, in particular the effects of geomagnetic storms on spacecraft, communication, navigation, and electric power grids on Earth.

Several high-level studies by the National Academy of Science have prioritized rebuilding the capabilities of the Arecibo radar for planetary studies, making use of the unique situation and facilities of the Observatory. NSF's proposal would abandon these irretrievably, before consideration of any plan to restore or replace Arecibo's radar and radio capabilities in any way. Other observatories may address some of these goals, but no existing or proposed facility matches the sensitivity and flexibility of the former, or of a potential new, Arecibo system.

"The currently most sensitive radar system is fifteen times less sensitive and can observe only one half of the number of near-Earth asteroids that Arecibo could," states Anne Virkki, the Chair of the Arecibo Science Advocacy Partnership and the first author of the [largest study](#) [1] of radar observations of near-Earth asteroids, recently published in the *Planetary Science Journal*.

The whole world has marveled at the Webb Telescope and its achievements, for which NASA spent [more than \\$10 billion](#) [2]. The Arecibo Observatory can be rebuilt for far less and provide another 50 years or more of groundbreaking scientific discovery. As it was for more than half a century, the new Arecibo telescope being conceived by scientists and engineers would be a world leader in atmospheric and space radar, as well as in radio research and development, with its unmatched capabilities overseen by Arecibo's highly-skilled staff. The foundation for these capabilities is already there: the bowl-shaped valley, the most southerly U.S. location, and a location that has been protected from radio interference for decades.

In addition to these considerations, Héctor Arce of the Arecibo Science Advisory Partnership asks, "If the U.S. were serious about expanding the numbers of scientists from under-represented groups, would it cut out all the actual science being done at a world-renowned research institution in Puerto Rico? What has inspired generations of students there at all levels is the ability to work alongside Observatory scientists on-site, get hands-on experience operating the instruments at the facility, and directly analyze new scientific data. That's what makes scientists, not sitting in a classroom or hearing reports."

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## References

[1] Arecibo Observatory Scientists Publish Major Study on Near-Earth Asteroids

<https://www.ucf.edu/news/arecibo-observatory-scientists-publish-major-study-on-near-earth-asteroids/>

[2] How much did NASA's James Webb Space Telescope cost?

<https://usafacts.org/articles/how-much-did-nasas-james-webb-space-telescope-cost/>