

AAAS Caribbean Division position statement on the decommissioning of the Arecibo Observatory ^[1]

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The Caribbean Division of the American Association for the Advancement of Science (AAAS-CD) expresses its deep concern over the dismantling of the Arecibo Observatory, as announced on November 19 by the National Science Foundation (NSF), the entity that directs the scientific efforts of the Arecibo Observatory (AO).

The Observatory's radio telescope is the most sensitive instrument in the world for planetary protection from meteoric impacts, fulfilling a key role in national and planetary security. The large 305-meter radio dish was instrumental in the discovery of the first binary pulsar by Joseph Taylor

and Russell Hulse, that opened up new possibilities for the study of gravitation, a finding that led the duo to receive the Nobel Prize in Physics in 1993.

Furthermore, the facilities in Arecibo are used by scientists and educators as a platform for various activities. The Angel Ramos Foundation Science & Visitor Center offers educational experiences to more than 100,000 visitors a year. A significant number of K-12 students from schools in Puerto Rico, as well as visitors from around the world make use of the facilities. **The dismantling of the AO will adversely impact astronomical and atmospheric research, education and outreach in Puerto Rico.**

In 2006, NSF proposed to reduce the financing of the AO and contemplated its closure if external funds were not found for its operations by 2011. Dr. Daniel Altschuler, Professor of the Department of Physics of the Faculty of Natural Sciences of the University of Puerto Rico (UPR) in Río Piedras, and ex-director of the AO, indicates that: "despite the resistance of the international scientific community, and the continuous scientific production of the AO, NSF reduced the available funds, which resulted in a decrease in the scientific staff of the AO and the funds available to support an aggressive maintenance program for the telescope, and it's no wonder we've reached this point. "

On December 12, 2016, the AAAS-CD, upon the announcement that NSF could discontinue the operation of the AO, brought to the attention of the scientific community and the society, with a statement addressed to NSF, and supported a petition on Change.org "*Let's save the Arecibo Observatory*"; urging the authorities to "**...seek sustainable solutions for the future of the Observatory that would allow its service and continuous support to science and education**". This call, together with that of other organizations, resulted in NSF's decision to keep the telescope operations under the administration of the University of Central Florida, due to its importance to astronomy and for being at the forefront of planetary science.

Over the past few years, the AO has been hit by the elements, especially after the devastating passage of Hurricanes Irma and María in 2017, and the recent telluric events of December 2019 and January 2020.

As announced by NSF (https://www.nsf.gov/news/news_summ.jsp?cntn_id=301674); [2] The decision to dismantle the telescope in a controlled manner to avoid its collapse is the most appropriate from a safety point of view, due to the recent damage to the cables that support the platform.

The dismantling process also involves the destruction of the towers, in one of which the visitor center is located (https://www.nsf.gov/mps/ast/env_impact_reviews/arecibo/eis/FEIS.pdf). [3]

Experts, such as Dr. Mayra Lebrón, Professor of the Department of Physical Sciences of the Faculty of General Studies of the UPR, Río Piedras, alert the Government of Puerto Rico, the Telecommunications Regulatory Board and the Administration of Regulations and Permits of Puerto Rico. **"It is vital that the areas surrounding the observatory are protected and free from telecommunication towers, and any other facilities that generate radio frequency and microwave interference, so that studies in radio astronomy, planetary and atmospheric sciences may continue."**

In addition, Dr. Altschuler and Dr. Carmen Pantoja, Professor of the Department of Physics of the Faculty of Natural Sciences UPR Río Piedras expressed: **“Puerto Rico is integrated into the Next Generation Very Large Array (ngVLA) project (<https://ngvla.nrao.edu/> [4]) precisely to be located on the grounds of the AO, and consists of an array of telescopes distributed around the world. It is urgent that Puerto Rico's participation in such an important international project is preserved, and the antenna of the ngVLA is located on the observatory's premises”.**

The ngVLA project will continue the mission of education in astronomical and physical sciences in Puerto Rico. Students may continue to be trained in radio astronomy, engineering, and aspects of computer science. This is one of the other possible projects that we want to continue in the AO to achieve the linkage of science and economy, and allow the continuous development of that region of Puerto Rico.

Leveraging these scientific achievements requires the coordinated support of the state and municipal governments as well as allies at the federal level. According to Dr. Altschuler "not all is lost, I dream that somehow a new and much better instrument can be built, that will allow a rebirth of the Observatory."

The AAAS Caribbean Division will actively work together with the local and international scientific community for the continuous development and modernization of the Arecibo Observatory facilities.

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