TEN REASONS FOR SUPPORTING THE ARECIBO OBSERVATORY

1. **Arecibo Observatory (AO) is the most powerful multi-purpose radio observatory in the world, equipped with the world's most sensitive planetary and atmospheric radars and a radio telescope only recently matched by China**. These facilities enable the U.S. to do leading research in astronomy, solar system, and atmospheric studies.

2. **The Observatory is a key and cost-effective component of maintaining the U.S. as a world-class player in these sciences.** AO remains unrivaled in most of its capabilities. The new Chinese FAST telescope lacks AO's radars, its high-frequency capabilities, and its abilities to carry out key current science programs that require long observation periods.

3. **Arecibo Observatory is our first line of defense against near earth objects such as asteroids.** Its uniquely powerful planetary radar can image these objects, which no other telescope can do, and define their orbits with unrivaled precision.

4. **The Observatory remains crucial to important and leading U.S. research activities in fundamental physics.** For example, the detection of low frequency gravitational waves by Arecibo provides a capability complementary to LIGO at a tiny fraction of the cost.

5. **Arecibo has opened a new era in active atmospheric and space physics experimentation,** thanks to its new and powerful high-frequency research transmitter. Combined with its radars and many optical instruments, its facilities are unsurpassed.

6. **U.S. astronomical research depends critically on both the Arecibo Observatory and the Green Bank Telescope (GBT) for future science and discoveries. These large singe-dish telescopes are crucial for the study of faint objects such as pulsars.** The capabilities of AO and the GBT are highly complementary, and the loss of either one would cripple established and leading areas of astronomical and solar system investigation.

7. **The Observatory is able to adapt flexibly and inexpensively to new science and new technology.** This is important both for new science and for the hands-on education of future generations of scientists and engineers. In contrast, more recent and costly instruments typically have more rigid designs and more specialized goals.

8. **The Observatory is the best in the world for the study of metal layers deposited by meteoroids in the upper atmosphere.** This is essential to understand the environmental consequences of atmospheric chemistry.

9. **The Observatory is one of the primary research facilities in Latin America and the Caribbean.** Puerto Ricans on the island and Hispanic people in the US generally, are justly proud of it and support investment in here.

10. **Arecibo has long played a key role in inspiring young scientists from everywhere, but particularly Hispanic students from Puerto Rico.** Every year, one hundred thousand Puerto Rican school children have the thrill of touring the Observatory and relating directly to scientists, engineers, programmers, and staff mentors as role models.

The National Science Foundation (NSF), together with NASA, currently supports the Arecibo Observatory. We understand that funding has been tight. However, AO's multifaceted value far outweighs its relatively small budget, and this budget constitutes only a very small portion of the NSF's funding difficulties.