



Arecibo Science Advocacy Partnership (ASAP)

<http://areciboscience.org>

Arecibo Has Key Roles to Play in National Security

Planetary Defense against Near-Earth Asteroids

The legacy Arecibo planetary radar was by far the most powerful on the planet. It charted the orbits of hundreds of asteroids with the potential for planetary impact.

Lunar and Asteroid Mining

Resource prospecting with deep subsurface radar.
Lunar resources for colonization; landing sites and hazards.

Cislunar Spacecraft

Radar monitoring is essential as optical techniques fail close to the bright lunar disc.

Space Debris

Detection of ionized wakes allow monitoring, tracking, and risk mitigation.

Solar Power Satellites

Perfecting high-power transmissions through the atmosphere is essential.
The legacy Arecibo did high-power studies of the ionosphere since the early 1970s.

Hypersonic Vehicles

Meteors provide a proxy to allow development of identification and tracking techniques.
In addition to radar, Arecibo can detect radio emissions from the hypersonic plasma sheath.

Nuclear Proliferation

The Arecibo radar can measure world-circling atmospheric waves produced by nuclear detonations.
Arecibo famously detected the Vela incident — a detonation at sea by Israel and South Africa.

Over-the-Horizon Radar Monitoring

Arecibo can play a key role in improving over-the-horizon (OTH) radar observations of the Caribbean. This strategic region has some of the world's highest traffic in vessels and marine cargo. OTH radar depends critically on ionospheric radio propagation, an area in which Arecibo excels.

Enhanced Strategic Communications

Arecibo transmissions can create a controllable ionospheric radio mirror for HF communications. This can aid in improving the U.S. Air Force High-Frequency (HF) Global Communications System.

Hurricane Monitoring and Prediction

Puerto Rico is on the hurricane path from the Atlantic to the East and Gulf coasts. Radar reflection from ionosphere to ocean waves allows the study and monitoring of hurricanes.

Competition with China

Arecibo can play a key role in matching China's advances in space situational awareness.