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ATTRIBUTION AS THE BASIS FOR ANTI-SATELLITE WEAPONS BAN

Abstract

For decades, the space community has debated whether to ban anti-satellite weapons (ASATs). While efforts such as the United Nations' Prevention of an Arms Race in Outer Space (PAROS) resolution have a tortured negotiating history, two factors complicating progress are clear: 1) the technical capabilities inherent in certain types of anti-satellite weapons are fundamentally similar to non-ASAT competences such as missile defense, and 2) even if such capabilities could be distinguished, the counterintelligence and commercial risks of allowing pre-launch verification are insurmountable.

With the global spacefaring community increasing its focus on space sustainability, there is a new opportunity to change the terms of the ASAT debate. Where nations have hit roadblocks attempting to proscribe possession of ASAT weapons, the international community should instead seek to ban their use. We cannot verify whether someone possesses an anti-satellite weapon, but we can begin to assess, if an ASAT were to be used, where it came from.

There is precedent for an arms control treaty banning use rather than possession. The 1959 Partial Nuclear Test Ban Treaty (PTBT), a reaction to an increased understanding of the environmental effects of nuclear detonations, banned the testing of nuclear weapons only aboveground. The ensuing decades of nuclear arms control illustrate that one can reduce environmental externalities without expecting competitors to fundamentally rethink their security goals. Similarly, a ban on the use of at least some ASATs do not require militaries to stop competing in space.

Kinetic antisatellite weapons represent the gravest threat, since they pollute the space environment far beyond damage to the target satellite. Nations could begin by banning the use of a kinetic ASATs and verify the treaty with a constellation of small satellites. While warning systems such as the U.S. DoD's Space-Based Infrared Surveillance (SBIRS) have available to nation-states for years, improvements to sensors, buses, and launch now enable similar results with a smaller and cheaper architecture.

This paper will briefly describe the failures of the prior ASAT ban efforts, describe the principles underpinning a kinetic ASATs use ban, and define requirements for a smallsat constellation that would verify such a treaty, including sensor phenomenology, constellation design, and system costs. Wholesale invention is not required; the capabilities already exist and implementation requires only stitching together flight-proven concepts. The resulting, verifiable treaty would meaningfully strengthen the norms developed through "soft law" best practices such as CONFERS consortium and the UN Space Debris Mitigation Guidelines.