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# **Disarmament Commission**

**Combating the rise of Anti-Satellite Weapons**



**MODEL UNITED NATIONS**  
THE INTERNATIONAL SCHOOL OF THE HAGUE

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## Introduction

Since the development of technology, humanity has reached the depths of space and beyond in order to combat their enemies. Thus reaching the new theatre of war, space, which alarms nations globally. Following the first space ventures in the 1960's, technology has since advanced into the limitless extent of space weapon capabilities. In particular mankind has progressed into the creation of spacecrafts, satellites, space stations, anti-ballistic missiles, etc.

Today, satellites play a large role in modern day warfare and are highly relied on for a variety of uses. Their powerful alarming force frightens many nations impelling others to create counter-weapons against them. In fact, only a few years after the first satellite was created, anti-satellite weaponisation was in the works. These devices are called ASAT weapons (Anti Satellite Weapons), and are currently under the ownership of very few countries globally.

Ultimately these new space weapons may cause the spread of war into the 'unclaimed territory' of space. As of right now, a space war will threaten humanity's safety and security, therefore space weaponry developments have continued to hold controversy. Presently, space has been regarded as free territory and ownerless, therefore generating space weaponry or ASAT devices may threaten other countries. Consequently, initiating stronger regulations and fortification for space weaponisation now is imperative for future inventions.

## Definition of Key Terms



## Satellite

An apparatus placed in revolutionary orbit around the Earth in order to collect or transmit information through digital means. In a scientific sense, may refer to the moon as well as any other object revolving around an object.

## Anti Ballistic Missiles (ABM)

Placed in the space weapon category, this artillery is programmed to counter-defense ballistic missiles and eventually destroy them. After its invention in the 1960's through the Cold War's 'space race', they have been used widely and globally.

## Anti Satellite Weapons (ASAT)

Weapons that are discharged into space to destroy enemy satellites or targets. In doing so, the weapon may interrupt important communication or data between their opponents.

## Global Positioning System (GPS)

The global positioning system is a satellite operated task used for navigation globally. It may be used in order to discover locations/positions of targets on ground. Although its first use derives from military origins, nowadays, the GPS is widely used for civilian use in many technological devices.

## Reconnaissance Satellites

Reconnaissance satellites hold the main purpose of observing targets on Earth's surface. Because of their ability to travel around Earth's orbit, reconnaissance satellites may desire targets anywhere on Earth. Once in place, they are able to take images of their on-ground targets and record radio signals simultaneously for the ground systems to receive.

## Space

Space is an area outside of Earth's atmosphere (1000 km away) where normal Earth-like aspects such as gravity, oxygen, light, sound, etc. are not present. The area is classified as free territory and no singular nation or entity owns its entirety.

## Space Weapons

These devices are concerned with the weaponisation of space. On principle, these are considered equipment placed outside of Earth's atmosphere for military purposes. Such practices compose of hindering, destroying or distorting other functioning devices on Earth or outside of Earth. However, less stern definitions will simply call any outer space weapon designed to harm or kill people and objects will be categorised as such.



## Surface-to-air Missiles (SAM)

Surface-to-air missiles use radar or infrared technology to instruct and direct missiles from on ground. In particular, common targets include air-based marks such as enemy aircrafts or other missiles. The SAM's main objective is to protect on ground forces/bases from ongoing air threats.

## General Overview

### History of satellites

Before man-made satellites, naturally occurring satellites were apparent in our universe; whether that be the moon to our Earth or Earth to the sun. However, the first recorded artificial satellite was invented in 1957, when the Soviet Union launched the Sputnik 1. This invention was responsible for transmitting radio signals back and forth to operators back on Earth soil. However Soviet triumph did not last as in January 1958, the satellite burned into the atmosphere. At the time, Sputnik 1 created controversy over its uses, as many feared military purposes. It's initiation started an international 'space race' with the United States (US), where the following year the US released their first satellite "Explorer 1". This 'space race' was mainly caused by the tensions in the Cold War. Alongside the United States, France followed in 1965 and later, China joined the race in 1970 with their installment of DongFangHong 1.

As previously mentioned, with the early creations of satellites the risk of military usage was high. In fact, pre-NASA (National Aeronautics and Space Administration), the Explorer 1 was launched by the US Army Ballistic Missile Agency. But with the satellite Explorer 1, the United States only used the device to measure radiation in Earth's orbit through cosmic ray detectors. At the time, mainly communication based satellites were of use.

### Satellite significance in warfare

As of mid-2020, a number of nations have devised a space program as part of their military. In this subdivision, satellites play a large role in warfare (over 2500 satellites are in orbit). In general, militant satellite usage can be classified into five different categories: reconnaissance, navigation, communications, meteorology and to signal intelligence. With this broad spectrum of applicability, it proves highly advantageous during times of war. Although, only the nations the United States and Russia have the ability to utilize all five practices. The most common and early uses of satellites in warfare are in reconnaissance. Like the name suggests, reconnaissance satellites specialize in surveillance and



investigation of enemy targets on Earth. Their data comprises still images of specific marks on Earth to signal back to stations simultaneously. Notably, satellites used for global surveillance include the ECHELON which derives as a covert government-lead operation program. Conceived in the 1960s, the main founder was the United States alongside four other nations: Australia, Canada, New Zealand and the United Kingdom. This digital surveillance threat has allowed governments to collect data and track targets within their nations for over decades. Other menial uses of such satellites, also work in photographing space in its most natural state or Earth itself. Accordingly, these discoveries of images have allowed scientific discoveries to further develop.

After reconnaissance, militant satellites are used for navigation where they play a large role in leading troops on Earth. Closely aligned to early uses of navigation with stars, satellites are able to function similarly but with wider range and with more technological advancements. Through these endeavours, the Global Positioning System (GPS) was invented and is now extensively used universally. By the early 1960's, the US Navy heavily relied on their satellite systems for their boat voyages. Further, satellite communication capabilities have proven very useful for the battlefield. The ability to globally distribute information privately has allowed military agendas to stay covert. Conclusively, in the digital age, satellites are imperative to connect global/international wars or endeavours for military operations.

### Beginnings of anti satellite technology

Shortly after the first few satellites were launched, the ongoing threat of their power concerned nations. Therefore, two years later in 1959, the United States attempted to construct their first anti satellite weapon (ASAT) named 'Bold Orion'. They had planned for an 'air-launched ballistic missile' to shoot down opponent targets in space. In the end, their target was around 6.5 km off from their original structure. Their failed operation induced both the United States and the Soviet Union to invest more in their construction during the Cold War.

Then, in 1963, the United States Secretary of Defense Robert McNamara developed the Nike-Zeus ASAT device. Largely improved from their first attempt, Nike-Zeus was able to take down targets over 240 km in altitude. A year later, the success inspired further US funding and research, resulting in the creation of the Thor missile which reached an altitude of 650 km.

Amidst American successes the Soviet Union was developing and designing their own anti-satellite weapons. Similar to the United States, by the early 1960s the Soviet Union was able to operate their first trial ASAT device. The leader at the time, Yuri Andropov, invested heavily in their manufacture and later placed a unilateral moratorium late in the 80's.



Unlike the US, the Soviet Union approached their ASAT creation differently. While the US used a ballistic missile approach, the Soviet Union had tried to use a 'co-orbital' method where a satellite would approach the target directly in orbit. By 1973, this design reached varying results where the Soviet Union encountered many successes and failures over their first 20 trials.

### Anti satellite weapon technology (ASAT)

The main objective of Anti Satellite Weapons (ASAT) is to take down targets/satellites while in orbit in space. These weapons are a great tactic to delay or harm enemies without bloodshed. As previously explained, there are two main techniques in their construction. Construction may include the ballistic missile approach or a 'co-orbital' approach. Oftentimes, nations may resort to the former, but the latter is quite popular with Russian attempts. The ballistic missile approach is straightforward and more nations are capable of adjusting already-existing missiles to reach ASAT abilities. With this method, no new inventions are stressed nor do nations have to start from the beginning. Whereas, hesitation with the use of the 'co-orbital' concept occurs because it hits targets at a low orbit and two simultaneous orbits are needed to sync together which causes many simple accidents.

Presently, only the nations: United States, Russia, China and India, have showcased the capabilities of using ASAT devices. Other nations, such as Israel, have shown interest in the matter, but have not successfully completed a trial yet. So far, the four nations have shot down their own targets as an intimidation tactic to showcase their abilities. Their successful trials have threatened many nations, where some countries are awaiting their own satellite destruction. For example, the United States have voiced their worries against China and Russia repeatedly, where they believe their own satellites are being 'stalked'. But as of mid-2020, ASAT weaponry has not been used in a war yet.

## Major Parties Involved

### United States of America (USA)

After the United States' first creation of ASAT technology in the Cold War (Space Race), they have been profoundly involved in their establishment and rise thus far. In 1987, the president of the United States, Ronald Reagan, fully established the US Anti-Satellite Program as 'a key element in the national strategy of deterrence'. This policy accompanied their previous national space policy created only five years earlier. At the time, Soviet Russia was the leading nation in ASAT development, and the United States grew wary of their advantages. Eventually, in recent years, the United States conducted their most popularized ASAT test called Operation Burnt Frost. In this operation, the United States successfully took



down the USA-193, a non-functioning reconnaissance satellite. The United States had claimed that it was potentially dangerous to leave the USA-193 in orbit, however nations such as China and Russia were left in disbelief of their true intentions.

## Russia

Besides being directly involved in the inception of satellites and anti satellite weapons in the 60's, Russia has still played a large role in their development today. By 2015, their creation, the PL-19 Nudol, underwent multiple successful attempts until 2018. Most recently in April 2020, Russia has shown greater advancements in their ASAT technology as well. Their development of the direct-descent anti-satellite (DA-ASAT) was able to take down satellites and spacecraft in low orbit. During the same timeframe, they had launched perceived space weapons/satellites named COSMOS 242 and COSMOS 243 as well. A combination of these new invented space technology launches distressed the United States. The United States Space Force commander General John Jay Raymond describes Russia's tactics as "unusual and disturbing". In fact, the United States had publicly stated their concerned claims against Russia. In early February 2020, the United States had insisted that two Russian satellites were hunting down a US Spysat, and they had taken it as a form of aggression. The United States believes that Russian uses of Space tech is "irresponsible" and that the US should "expect them (Russia) to behave within international standards set to ensure safety and to prevent incidents."

## China

Akin to Russia, the United States has grown cautious over Chinese rise in space weapons, especially ASAT devices. Considering China's large ownership of satellites, DIA's (Defence Intelligence Agency) report states it "is second only to the United States in the number of operational satellites" making them a substantial target. China is growing at a rapid pace and is eager to be at the forefront of the 'weaponisation of space', yet advocates "for the peaceful use of space" all the while. In terms of ASAT devices, China has trialed a ground laser based ASAT weapon, rather than the usual missile ASAT devices. Although being successful in trials in 2006, China has claimed a more refined version may be ready within the year. Intending to reach Russian and US heights, China has quickly made up for lost time with their new developing ideas.

## India

More recently, India has been associated with the development of ASAT technology. Only in 2012 did DRDO (Defence Research and Development Organisation) chairman, V. K. Saraswat claim their ASAT technology powers. However their first few years encountered delays and penalties until 2017. Auspiciously, by March 2019 their first ASAT device trial Mission Shakti was a success. The Indian prime minister Narendra Modi described their



triumphant trial of using a ballistic missile interceptor approach. Modi believes that their accomplishment places India as an “an established space power” and was a “historic feat” for India. Now following the steps of Russia, United States and China, nations have voiced their unease. Corresponding to their March 2019 launch, the United States have stated Indian misuse of these devices, alleging the danger of space debris. The United States declared the Indian ‘trials’ could have harmed the ISS (International Space Station), astronauts and other targets. Despite these claims, Modi has stated that Mission Shakti was only a trial and not meant to act as a form of aggression to any country.

### Israel

Although only a few countries possess the capability of working anti-satellite technology, the ISA (Israel Space Agency) have invested in such space weaponisation. In 2017, The Arrow 3 has been in service as a high altitude ballistic missile defense system. However, the chairman of the ISA has shared his plan of adapting the aforementioned Arrow 3 into an ASAT capable device. In fact, since 2004 Israeli officials have been aware of the impending use of ASAT technology and have wanted to contribute greatly in this sector.

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### International Astronautical Federation (IAF)

The International Astronautical Federation (IAF) is soon approaching their 70<sup>th</sup> anniversary in 2021, after their foundation in 1951. Their main aim was to create a gathered platform for peaceful communication between nations globally. Eventually their aims will comprise of six missions: Promoting Cooperation, Advancing International Development, Sharing Knowledge, Recognising Achievements, Preparing the Workforce of Tomorrow and Raising Awareness. The founding members of the IAF include Argentina, Austria, France, Germany, Italy, Spain, Sweden, Switzerland, United Kingdom, and the United States. Up to mid-2020, the IAF have increased their organization to consist of 397 members from 68 nations around the world. These associated members would then participate in the IAF Global Conference held annually in varying participating nations such as St. Petersburg, Beijing, Marrakech or Geneva.



## International Association for the Advancement of Space Safety (IAASS)

After the International Association for the Advancement of Space Safety's (IAASS) establishment in April 2004 in the Netherlands, the organizations has grown into greater affairs. Created as a non-profit organization their main aims are for "furthering international cooperation and scientific advancement in the field of space systems safely." Within their organization they have been granted Observer status in the United Nations Committee on the Peaceful Uses of Outer Space and a member of the International Astronautical Federation (IAF). With over 200 members from 25 countries, the IAASS aims to reach global efforts to achieve their goals. As stated in their five main goals: "1. Advance the science and application of space safety, 2. Improve the communication, dissemination of knowledge and cooperation between interested groups and individuals in this and related fields, 3. Improve understanding and awareness of the Space Safety discipline, 4. Promote and improve the development of Space Safety professionals and standards, 5. Advocate the establishment of safety laws, rules, and regulatory bodies at national and international levels for the civil use of space."

## Timeline of Key Events

Date	Event
1957	First recorded Artificial Satellite by the Soviet Union launch
1959	First United States trials of ASAT devices
Late 1950s to 1960s	The Cold War 'Space Race' between the Soviet Union and the United States
October 1967	Outer Space Treaty forming the basis of international space law
1971	Accident Measures Agreement and Hotline Modernization Agreement for further protection for satellite usage
1972	US-Soviet Treaty on the Limitation of Anti-Ballistic Missile Systems (ABM Treaty)
1973	Russian Co-Orbital ASAT device has been declared as operational



January 2007	The Chinese anti-satellite missile test was conducted in which a weather satellite, the Fengyun-1C (FY-1C), was demolished by an ASAT device, SC-19, led through a kinetic kill vehicle (KKV). The operation ended with over 3000 pieces of space debris, and at the time, was recorded to be the most tracked space debris.
January 2008	Operation: Burnt Frost was conducted in which the USA-193, a non-functioning reconnaissance satellite, was successfully taken down by an ASAT device, SM-3. The operation left China and Russia wary of the US's true intentions behind their test.
March 2019	Mission Shakti was an Indian led ASAT device test. The operation targeted a satellite in low orbit using a kinetic kill vehicle (KKV). They had originally further developed an already-existing anti-ballistic missile named the Prithvi Defense Vehicle Mark-II under the project XSV-1.
April 2020	Russian ASAT Testing was conducted in which the United States had claimed 'stalking' and 'threats' from their ongoing satellite/ASAT device launches

## UN involvement, Relevant Resolutions, Treaties and Events

Listed below are relevant UN resolutions and reports for the topic:

- Prevention of an arms race in outer space, 15 October 1993 (A/48/305)
- Transparency and confidence-building measures in outer space activities, 13 January 2011 (A/RES/65/68)
- Further practical measures for the prevention of an arms race in outer space, 12 January 2018 (A/RES/72/250)
- Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space, 9 April 2019 (A/74/77)

In 1967, after outer space weaponization loomed the world for the first time, **The Outer Space Treaty** was created to combat threats and fears. At the time, 105 nations became state-parties and only 26 did not completely ratify the treaty. Overall, the treaty focuses on safety measures against militant endeavors in space or celestial bodies. Specifically, **Article IV** forbids placing WMD (weapons of mass destruction) or nuclear



weapons in Earth's orbit. Furthermore, the article prohibits the testing and deployment of weapons on the moon or any other celestial bodies.

## Previous Attempts to solve the Issue

Considering the overwhelming possibilities space warfare holds, many nations and organizations do not fully comprehend the extent the future may hold. Besides the Outer Space Treaty, the United Nations and others have not fully addressed the issues following anti-satellite weaponization. As for the Outer Space Treaty, sufficient terms have been recognized, but following through such articles have been a feat. As well as, updated articles are needed in the Outer Space Treaty to keep up with ASAT/space weaponry development, as it was written well over 50 years ago. As time passes, technology has been getting stronger and more developed in the space sector. That being said, the United Nations Office for Outer Space Affairs has been the guiding organization for the Outer Space Treaty. Besides the official treaty, nations simply make public statements about one another when in disagreement. Nations would claim threats after simple trials/discoveries have been made in the ASAT Department. Otherwise, no official actions have taken place on behalf of these nations, only public proclamations.

## Possible Solutions

Delegates may refer to creating specific restrictions for the use of anti-satellite weapons. Regulations and discussions have been made in the past for the threat of space weaponization as a whole, but because of the growing threat of ASAT devices, further singular adjustments need to be made. A singular agreement on ASAT device usage has yet to be formed, and doing so may be a simple solution. This agreement may include participation from all space programs/countries globally, and may be reassessed over time with development of technology. The UNOOSA (United Nations Office for Outer Space Affairs) as a subdivision of the United Nations may be able to conduct the regulation and assess the improvement made.

Delegates may consider placing permission for the use of ASAT technology to the United Nations. Hence, if a nation would like to conduct a test or use their ASAT they would have to seek approval from the United Nations. This may be specifically conducted by the sub division UNOOSA (United Nations Office for Outer Space Affairs). Therefore, ASAT use will only be needed for global emergencies and no trivial uses. Potentially, this may prevent an intergalactic war in space from occurring and will provide security to those without the technological capabilities.



Considering only a small number of nations dominate the anti-satellite weapon industry, momentarily banning ASAT devices altogether would not affect many nations. Having ASAT weapons exist creates great threats and increases the inevitability of space war from occurring. As of right now, space is a 'free territory' and no singular nation owns it. However, once more weapons are used in space, nations may claim territories as their own with their warfare. Delegates should keep in mind that in doing so, the ban will limit and only delay space technology from developing. Eventually humanity will evolve into space, however placing temporary bans for now may let other nations to progress and catch up as well.

## Bibliography

29, SpaceNews Editor — June, and SpaceNews Editor. "Israeli Experts Urge Development of ASAT Weapons." *SpaceNews*, 29 June 2004, [spacenews.com/israeli-experts-urge-development-asat-weapons/#:~:text=HERZLIYA%2C%20Israel%20%E2%80%94%20At%20least%20one.enemy%20space%2Dbased%20imaging%20systems](https://spacenews.com/israeli-experts-urge-development-asat-weapons/#:~:text=HERZLIYA%2C%20Israel%20%E2%80%94%20At%20least%20one.enemy%20space%2Dbased%20imaging%20systems).

9, Barbara Opall-Rome — November, and Barbara Opall-Rome. "Israeli Experts: Arrow-3 Could Be Adapted for Anti-Satellite Role." *SpaceNews*, 9 Nov. 2009, [spacenews.com/israeli-experts-arrow-3-could-be-adapted-anti-satellite%E2%80%82role/](https://spacenews.com/israeli-experts-arrow-3-could-be-adapted-anti-satellite%E2%80%82role/).

**Al Jazeera. "What Are Anti-Satellite Weapons?" *News | Al Jazeera, Al Jazeera*, 27 Mar. 2019, [www.aljazeera.com/news/2019/03/anti-satellite-weapons-190327092138702.html](https://www.aljazeera.com/news/2019/03/anti-satellite-weapons-190327092138702.html).**

Cohen, Rachel S. "Russia Flexes Space Muscle with Anti-Satellite Weapon Test." *Air Force Magazine*, 16 Apr. 2020, [www.airforcemag.com/russia-flexes-space-muscle-with-anti-satellite-weapon-test/](https://www.airforcemag.com/russia-flexes-space-muscle-with-anti-satellite-weapon-test/).

Davenport, Kelsey. "Arms Control Today." *Indian ASAT Test Raises Space Risks | Arms Control Association*, May 2019, [www.armscontrol.org/act/2019-05/news/indian-asat-test-raises-space-risks#:~:text=dian%20Prime%20Minister%20Narendra%20Modi,%20satellite%20\(ASAT\)%20weapons](https://www.armscontrol.org/act/2019-05/news/indian-asat-test-raises-space-risks#:~:text=dian%20Prime%20Minister%20Narendra%20Modi,%20satellite%20(ASAT)%20weapons).

Dunbar, Brian. "The Early Satellites." *NASA, NASA*, 18 Mar. 2015, [www.nasa.gov/missions/science/f-satellites.html](https://www.nasa.gov/missions/science/f-satellites.html).



The Editors of Encyclopaedia Britannica. "Antiballistic Missile (ABM)." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 28 Feb. 2018, [www.britannica.com/technology/antiballistic-missile](http://www.britannica.com/technology/antiballistic-missile).

Firth, Niall. "How to Fight a War in Space (and Get Away with It)." *MIT Technology Review*, MIT Technology Review, 2 Apr. 2020, [www.technologyreview.com/2019/06/26/725/satellite-space-wars/](http://www.technologyreview.com/2019/06/26/725/satellite-space-wars/).

Galdorisi, George. "U.S. Navy Missile Defense: Operation Burnt Frost." *Defense Media Network*, 18 May 2013, [www.defensemedianetwork.com/stories/u-s-navy-missile-defense-operation-burnt-frost](http://www.defensemedianetwork.com/stories/u-s-navy-missile-defense-operation-burnt-frost).

George, Justin Paul. "History of Anti-Satellite Weapons: US Tested 1st ASAT Missile 60 Years Ago." *The Week*, The Week, 26 Mar. 2019, [www.theweek.in/news/sci-tech/2019/03/27/history-anti-satellite-weapon-us-asat-missile.html#:~:text=The%20first%20US%20anti%20satellite,at%20an%20Explorer%20VI%20satellite](http://www.theweek.in/news/sci-tech/2019/03/27/history-anti-satellite-weapon-us-asat-missile.html#:~:text=The%20first%20US%20anti%20satellite,at%20an%20Explorer%20VI%20satellite).

Gohd, Chelsea. "Russia Tests Anti-Satellite Missile and the US Space Force Is Not Happy." *Space.com*, Space, 16 Apr. 2020, [www.space.com/russia-anti-satellite-missile-test-2020.html#:~:text=Russia%20just%20fired%20an%20anti,satellites%20in%20low%20Earth%20orbit](http://www.space.com/russia-anti-satellite-missile-test-2020.html#:~:text=Russia%20just%20fired%20an%20anti,satellites%20in%20low%20Earth%20orbit).

"A History of Anti-Satellite Programs." *Union of Concerned Scientists*, 1 Mar. 2012, [www.ucsusa.org/resources/history-anti-satellite-programs](http://www.ucsusa.org/resources/history-anti-satellite-programs).

"History of Satellites – Timeline." *Science Learning Hub*, 12 Nov. 2018, [www.sciencelearn.org.nz/resources/1905-history-of-satellites-timeline#:~:text=1957%20%E2%80%93%20First%20artificial%20satellite%20launch,96.2%20minutes%20for%20each%20orbit](http://www.sciencelearn.org.nz/resources/1905-history-of-satellites-timeline#:~:text=1957%20%E2%80%93%20First%20artificial%20satellite%20launch,96.2%20minutes%20for%20each%20orbit).

History.com Editors. "Sputnik Launched." *History.com*, A&E Television Networks, 24 Nov. 2009, [www.history.com/this-day-in-history/sputnik-launched](http://www.history.com/this-day-in-history/sputnik-launched).

Howell, Elizabeth. "What Is Space?" *Space.com*, Space, 8 June 2017, [www.space.com/24870-what-is-space.html](http://www.space.com/24870-what-is-space.html).

IAASS, [iaass.space-safety.org/](http://iaass.space-safety.org/).

Keller, John. "China May Deploy Anti-Satellite Laser Weapons next Year to Destroy U.S. Military Satellites." *StackPath*, 18 Feb. 2019, [www.militaryaerospace.com/trusted-computing/article/16711585/china-may-deploy-antisatellite-laser-weapons-next-year](http://www.militaryaerospace.com/trusted-computing/article/16711585/china-may-deploy-antisatellite-laser-weapons-next-year).



[able-to-destroy-us-military-satellites#:~:text=China's%20ASAT%20laser%20weapons%20have,viewed%20as%20a%20test%20attack.](#)

Kimball, Daryl. "Fact Sheets & Briefs." *The Outer Space Treaty at a Glance* | Arms Control Association, Aug. 2017, [www.armscontrol.org/factsheets/outerspace](http://www.armscontrol.org/factsheets/outerspace).

Krepon, Michael. "What Is a Space Weapon?" *Arms Control Wonk*, 2010, [www.armscontrolwonk.com/archive/402665/what-is-a-space-weapon/](http://www.armscontrolwonk.com/archive/402665/what-is-a-space-weapon/).

Reagan, Ronald. "The U.S. Anti Satellite (ASAT) Program A Key Element in the National Strategy of Deterrence." *The U.S. Anti-Satellite Program: A Key Element in the National Strategy of Deterrence*, May 1987, [fas.org/spp/military/program/asat/reag87.html](http://fas.org/spp/military/program/asat/reag87.html).

"SATELLITE: Meaning in the Cambridge English Dictionary." *Cambridge Dictionary*, [dictionary.cambridge.org/dictionary/english/satellite](http://dictionary.cambridge.org/dictionary/english/satellite).

Thesheetztweetz. "China and Russia Are Militarizing Space with 'Energy Weapons' and Anti-Satellite Missiles: Pentagon." *CNBC*, CNBC, 13 Feb. 2019, [www.cnn.com/2019/02/13/pentagon-warns-of-weaponization-of-space-by-china-russia-report.html](http://www.cnn.com/2019/02/13/pentagon-warns-of-weaponization-of-space-by-china-russia-report.html).

