



Promoting Cooperative Solutions for Space Sustainability

2020 Global Counterspace Capabilities Highlights

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What is counterspace?

Counterspace are capabilities or techniques that are used to gain space superiority





















- **Direct Ascent:** suborbital objects that destroy satellites via collision
- **Co-Orbital:** orbital objects that maneuver to collide with or interfere with satellites
- **Directed Energy:** lasers and other types of focused energy
- **Electronic Warfare:** use of radiofrequency signals to jam or interfere with communications or radar
- **Cyber:** attacks against software or networks supporting satellites
- **Space Situational Awareness:** knowledge about the space domain useful for detecting attacks or targeting satellites

China Overall 2020 Assessment

	R&D	Testing	Operational	Use in Conflict
LEO Direct Ascent	●	●	●	●
MEO/GEO Direct Ascent	●	●	-	●
LEO Co-Orbital	●	?	-	●
MEO/GEO Co-Orbital	●	-	-	●
Directed Energy	●	●	-	●
Electronic Warfare	●	●	●	?
Space Situational Awareness	●	●	●	?

Legend: none ● some ● significant ● uncertain "?" no data "-"

Russia Overall 2020 Assessment

	R&D	Testing	Operational	Use in Conflict
LEO Direct Ascent			-	
MEO/GEO Direct Ascent		-	-	
LEO Co-Orbital			-	
MEO/GEO Co-Orbital		-	-	
Directed Energy			?	
Electronic Warfare				
Space Situational Awareness				?

Legend: none  some  significant  uncertain "?" no data "-"

U.S. Overall 2020 Assessment

	R&D	Testing	Operational	Use in Conflict
LEO Direct Ascent	●	●	-	●
MEO/GEO Direct Ascent	-	-	-	●
LEO Co-Orbital	●	?	-	●
MEO/GEO Co-Orbital	●	?	-	●
Directed Energy	●	●	?	●
Electronic Warfare	●	●	●	●
Space Situational Awareness	●	●	●	●

Legend: none ● some ● significant ● uncertain “?” no data “-”

- Widespread jamming/spoofing of civil PNT signals
 - China: Port of Shanghai
 - Russia: Russia, Crimea, Syria (both in conflicts and for strategic/VIP protection), Norway
 - United States: Southeastern U.S. for military exercises
- Russia appears to be doing more than China
 - Co-orbital: Nivelir, Numizmat, Burevestnik
 - DA-ASAT: Nudol
 - DEW: Beriev A-60
 - EW: Zhitel, Borisoglebsk-2, Tirada-2S, Krasukha-4, Ekipazh
- China, Russia, and United States all engaged in RPO activities with little to no discussion of norms

France Overall Assessment

- July 2019 release of Space Defense Strategy
 - Seeks to improve SSA around French space assets, provide the assets with some sort of active defense
 - Would do so via ground-based lasers (to dazzle) and space-based inspection satellites
- Macron announced July 2019 that the Joint Space Command within the French Air Force will become a full Space Command
- French Ministry of Defence allowed to conduct activities in space
- Parly discussed lasers on nanosatellites, which would be technologically challenging
- No plans for a DA/ASAT capability at this time
- GRAVES radar, some other assets that have SSA as their secondary mission; looking to build on joint French/German assets



Japan Overall Assessment

- August 2019 announced would be investigating whether it wanted to explore developing a satellite that could intercept foreign threat satellites
 - If decided it did, wanted the ability to field it by mid-2020's
 - Could include cyber, RFI, and robotic arms
- No DA-ASAT capability officially, but does have the SM-3 system that the US has tested in an ASAT capacity
- Is considering jamming capabilities that could interfere with both airborne warning and control system (AWACS) planes (possibly by the mid-2020's) and then foreign satellites
- JAXA has SSA capabilities to monitor LEO and GEO; Japanese MoD working to develop its own SSA capabilities
- Will establish its Space Domain Mission Unit (SDMU) in April 2020



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2019 Updates to India's Capabilities

- As of February 2020, still 10 pieces of trackable debris from March 2019 ASAT test
- Started its Defence Space Agency in April 2019
 - Intended to coordinate efforts of three branches of its armed forces and work on space protection policies for its space assets
- Established its Defence Space Resource Organisation in June 2019
 - Will conduct research and provide technical support to the DSA
- Held a tabletop exercise – IndSpaceEx – in July 2019 to game out space warfare possibilities and identify gaps/weaknesses in its space security
- ISRO began Project NETRA (Network for space object Tracking and Analysis) in September 2019, which is intended to give India its own SSA network by bringing together radars, telescopes, data processing, and a control center

Questions?

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<https://swfound.org/counterspace/>