



Promoting Cooperative Solutions for Space Sustainability

Counterspace Risks and Threats

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Note: This briefing is compiled entirely from public, unclassified sources



Promoting Cooperative Solutions for Space Sustainability

SWF – A Quick Primer

- Secure World Foundation (SWF) *is a private operating foundation* that promotes cooperative solutions for space sustainability
- **Our vision:** The secure, sustainable, and peaceful uses of outer space that contribute to global stability on Earth
- **Our mission:** Secure World Foundation works with governments, industry, international organizations, and civil society to develop and promote ideas and actions to achieve the secure, sustainable, and peaceful uses of outer space benefiting Earth and all its people

SWF's Counterspace Threat Assessment

- Space domain undergoing significant changes
- Existence of counterspace capabilities is not new, but the circumstances surrounding them are
- Discussions of space capabilities often veer quickly into classified territory
- *Global Counterspace Capabilities: An Open Source Assessment*
 - Significant research and development of a broad range of kinetic (i.e. destructive) and non-kinetic counterspace capabilities in multiple countries: direct ascent, co-orbital, electronic warfare, directed energy, cyber
 - US, Russia, China, Iran, North Korea, India, France, and Japan
 - ***Only non-kinetic capabilities are actively being used in current military operations***
- <https://swfound.org/counterspace>; French- and Spanish-language versions of the executive summary available

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 "-"

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 “-”

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 “-”



New Entrant to the ASAT Club: India

- Historically, Indian space program focused on civil applications
- Changes in recent years have given its military a larger role
- March 2019 held a DA-ASAT test – Mission Shakti
- Started its Defence Space Agency in April 2019
- Established its Defence Space Resource Organisation in June 2019
- 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



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Very Limited Iranian Space Program

- Space program in early stages
- Unlikely to have the capacity to build on-orbit or direct-ascent ASAT weapons
- Minimal SSA capabilities
- Demonstrated ability to interfere with commercial satellite signals



Extremely Limited DPRK Counterspace Capabilities

- May have some limited direct-ascent ASAT capability, but not threatening yet
- Minimal space launch vehicle and satellite capabilities
- Counterspace not mentioned by DPRK officials
- C2, SSA capabilities minimal
- Multiple public reports of GPS interference and jamming
- EMP unlikely

France's Counterspace Beginnings

- 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

Japan's Counterspace Considerations

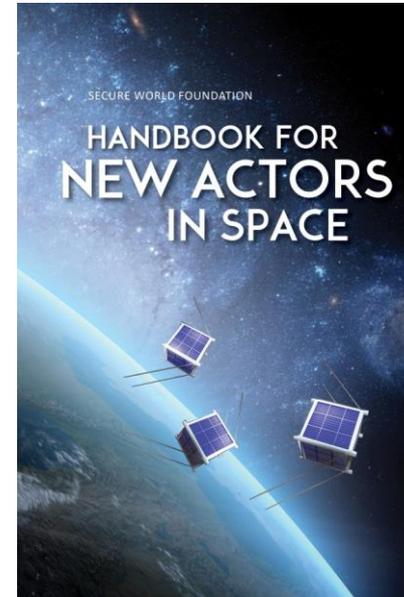
- August 2019 announced would be investigating whether to develop a satellite that could intercept foreign threat satellites
 - If decided it did, wanted the ability to field it by mid-2020's
 - Could include cyber, RFI, and robotic arms
- No DA-ASAT capability officially, but does have the SM-3 system 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
- Established its Space Domain Mission Unit (SDMU) in April 2020

Cyber as a Counterspace Option

- Space capabilities become an attractive target for counterspace efforts
 - Kinetic attacks less likely option
 - Electronic warfare/cyber attack seen as more usable
- Destabilizing because laws of armed conflict for space are unclear
 - International law and military rules of engagement still being worked out

SWF Handbook for New Actors in Space

- **Goal:** Create a publication that provides an overview fundamental principles, laws, norms, and best practices for safe, predictable, and responsible activities in space
- **Two specific audiences:**
 - Countries developing space programs and/or having to oversee and regulate their first satellites
 - Universities and start-up companies that are developing/operating satellites
- **Available in English and Spanish**



www.swfound.org/handbook



Questions?

Thanks.

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