



*Promoting Cooperative Solutions for Space Sustainability*

# **Beyond the Space Force**

## **Security Challenges and Trends in Outer Space**

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Charlottesville Committee on Foreign Relations  
April 8, 2021

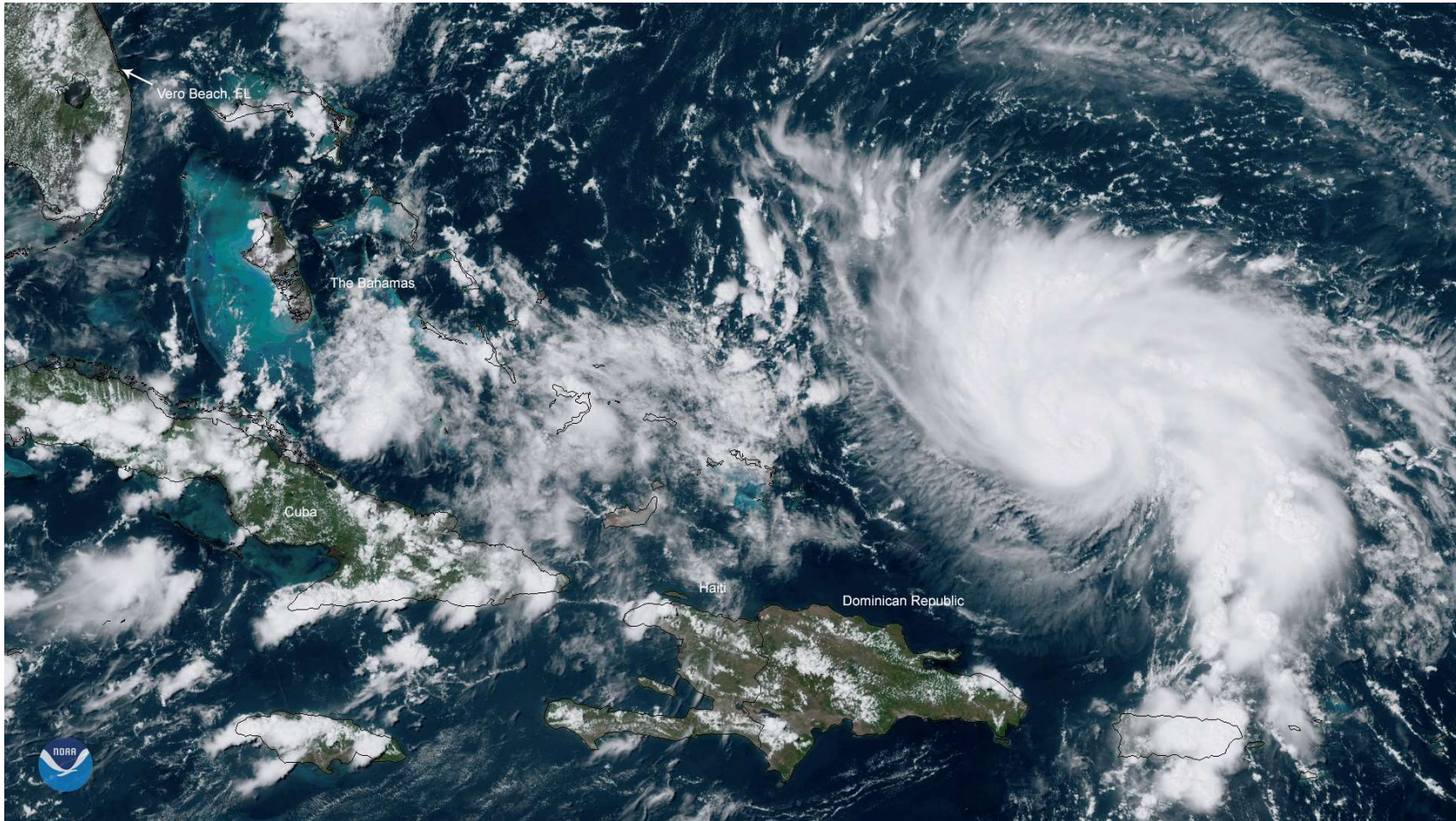
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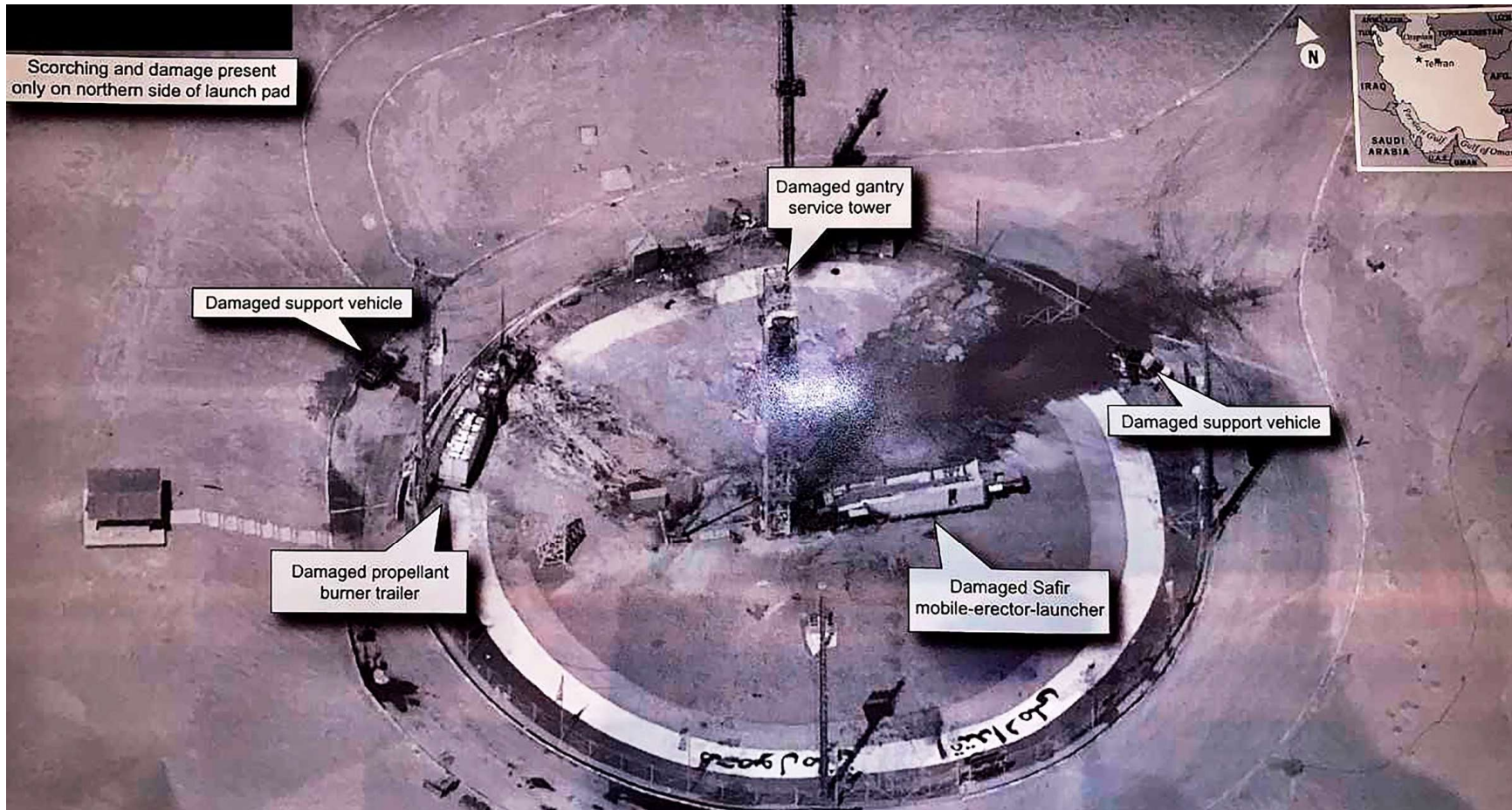
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## Topics for tonight

- Why is outer space important for national security?
- What was our historical approach to military space?
- What changed?
- What is the role for U.S. Space Command and the Space Force?
- What are the big unanswered questions?



Hurricane Dorian as seen from a NOAA weather satellite  
(Credit: [NOAA NESDIS](#))



(Credit: @realDonaldTrump)

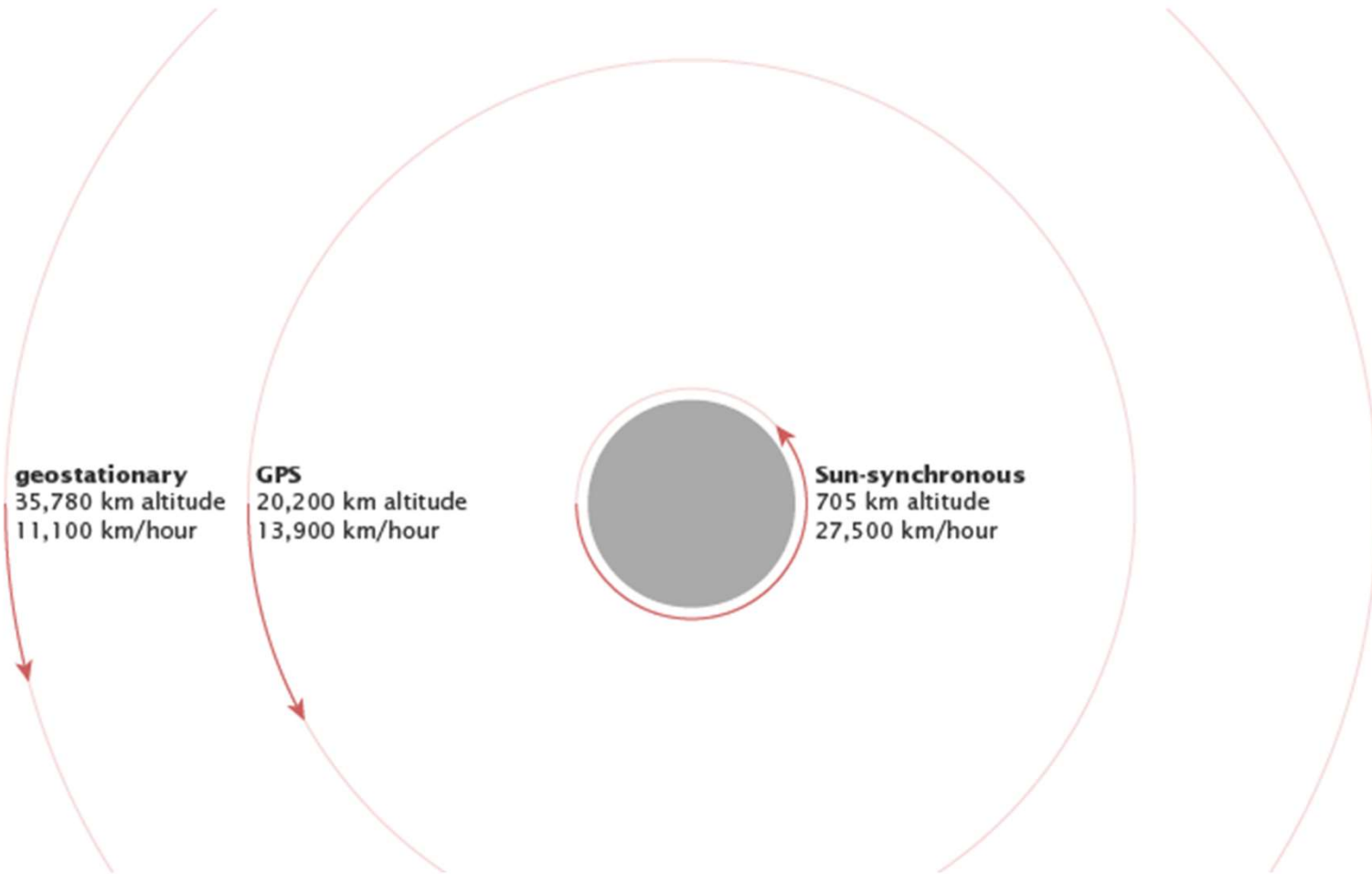


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# Precision munitions



# Satellite orbits



(Credit: [NASA](#))



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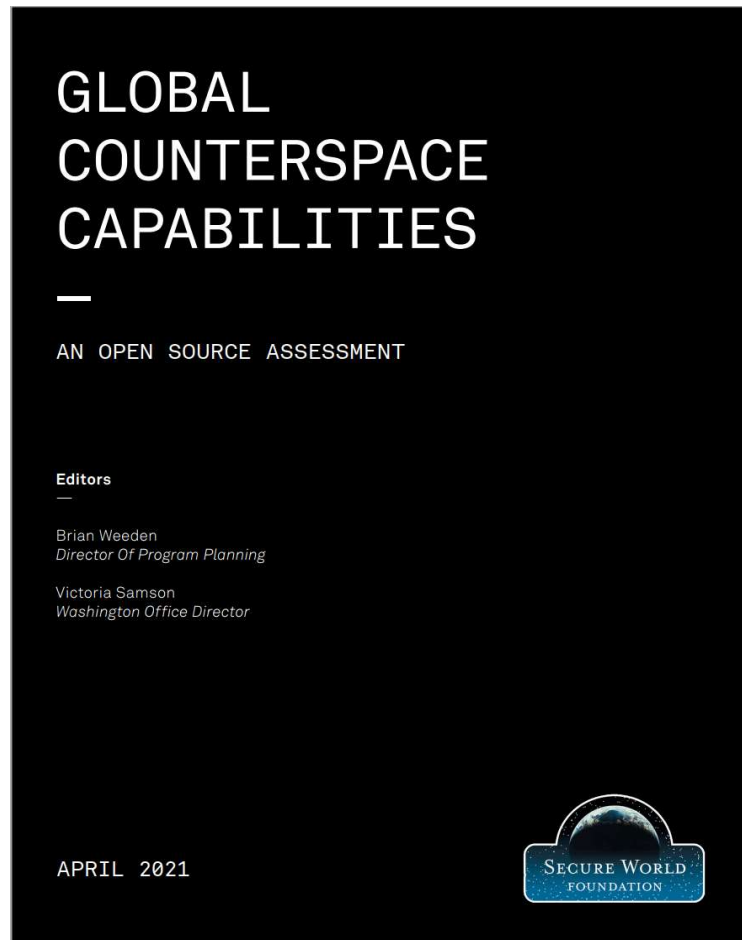
# Brief history of space security policy

- 1950s-1960s
  - Hey, this space stuff would be useful for collecting intelligence on the Soviets
  - Also need to have a public face to show the world we're "peaceful"
- 1970s-1990s
  - Wow, this space stuff is really useful for making our military better and able to go anywhere in the world and do anything
- 2000s
  - We should think about future threats and challenges
  - 9/11
- 2010s
  - Those future threats are here, what do we do about them?

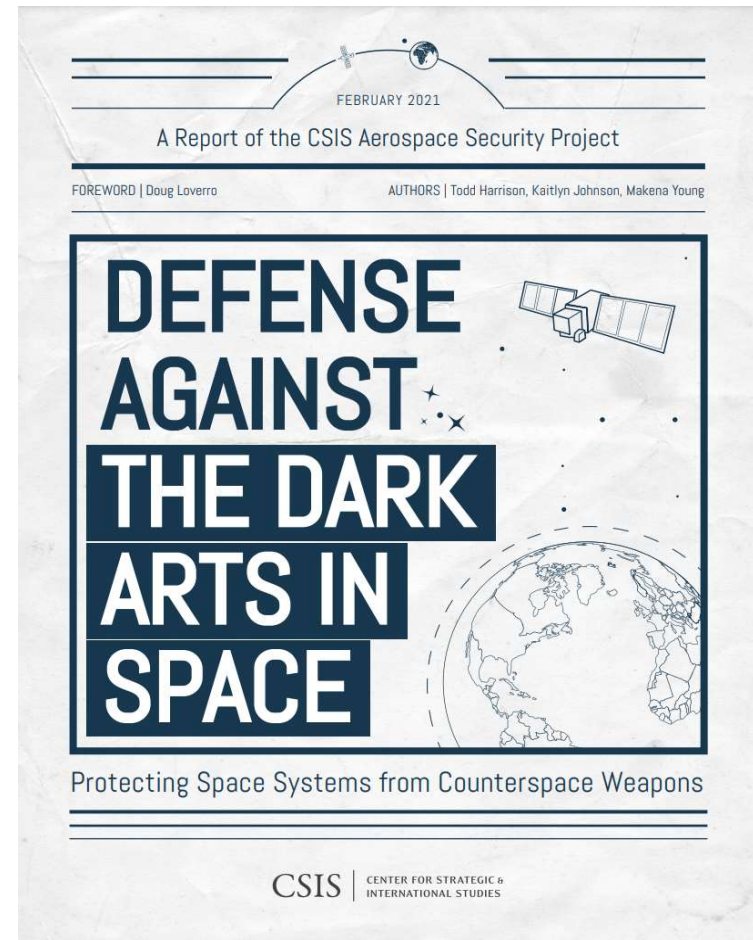


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# Proliferation of counterspace threats



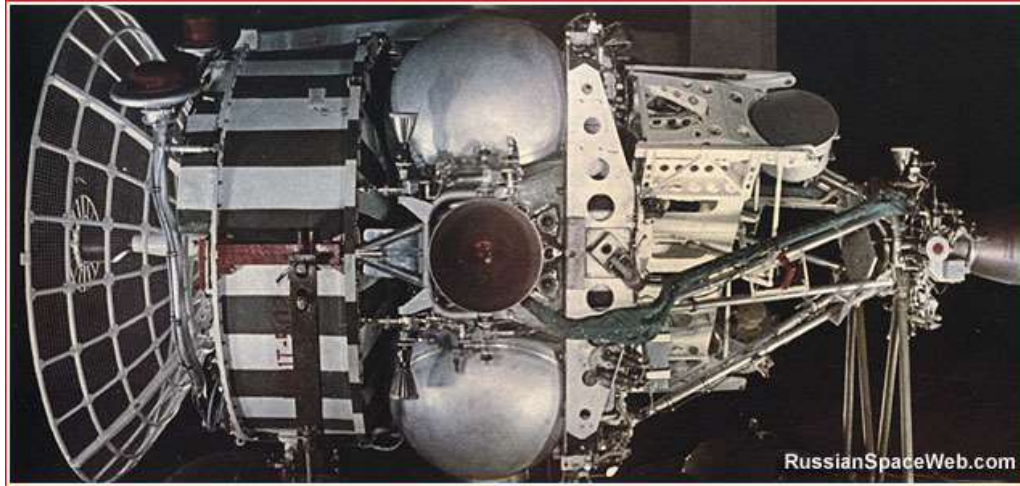
[Secure World Foundation \(2021\)](#)



[Center for Strategic and International Studies \(2021\)](#)



# Many Ways to Attack Satellites



*Soviet IS killer satellite (1960-1987)*

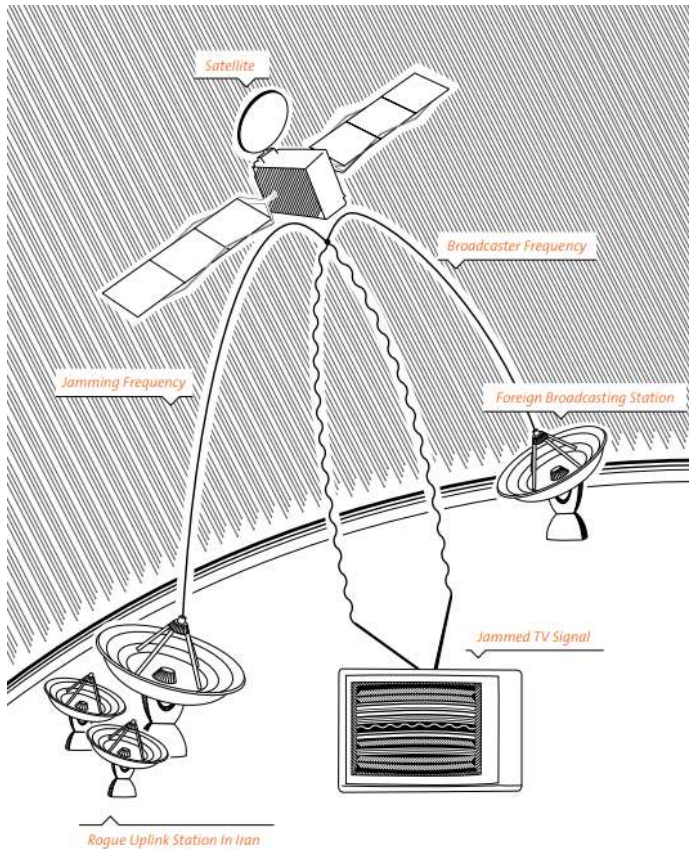


*U.S. Air Force F-15  
launching an ASM-135  
ASAT missile (1978-1988)*



*Commercially-  
available GPS  
jammer (2014)*

# Recent counterspace activities



[Iranian satellite jamming](#)



*Russian Peresvet mobile laser dazzler*

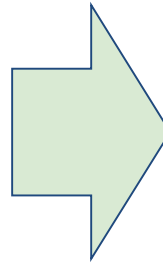


*Chinese DF-21 direct ascent ASAT*

# Major trends in the space domain

## Old Space Paradigm

- National
- Secret
- Military-led
- Independent
- Strategic



## New Space Paradigm

- International
- Transparent
- Commercial-led
- Interdependent
- All levels of war

Space is becoming “normalized”



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## Policy questions

- What can be done to ***protect current space capabilities and deter attacks?***
- How should the ***US military be organized*** to meet the changing space domain and threat environment?
- How can the U.S. ***accelerate the development of new capabilities and architectures*** to meet future threats?
- How does the ***globalizing/commercializing space domain*** impact U.S. response to space threats?



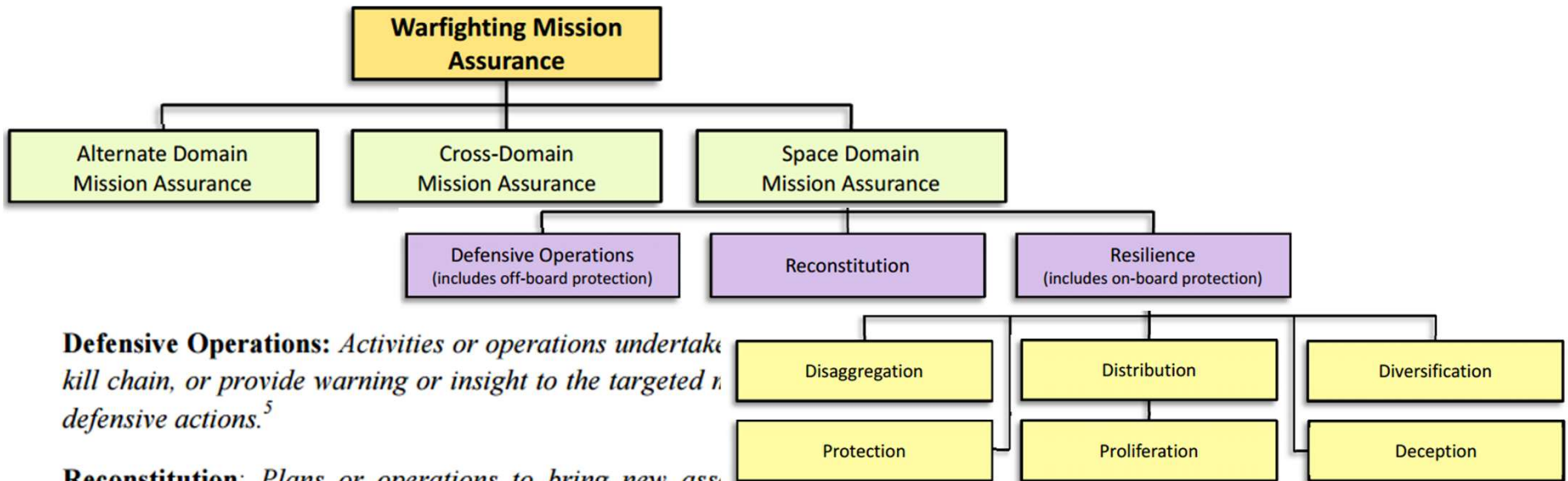
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# Space war comes to 60 Minutes



<https://www.cbsnews.com/news/rare-look-at-space-command-satellite-defense-60-minutes/>

# Focus on space mission assurance



**Defensive Operations:** *Activities or operations undertaken to disrupt the enemy's kill chain, or provide warning or insight to the targeted nodes to enable defensive actions.*<sup>5</sup>

**Reconstitution:** *Plans or operations to bring new assets (e.g., replacement satellites or activating new ground stations) in order to replenish lost or diminished functions to an acceptable level for a particular mission, operation, or contingency after an attack or catastrophic event.*<sup>5</sup>

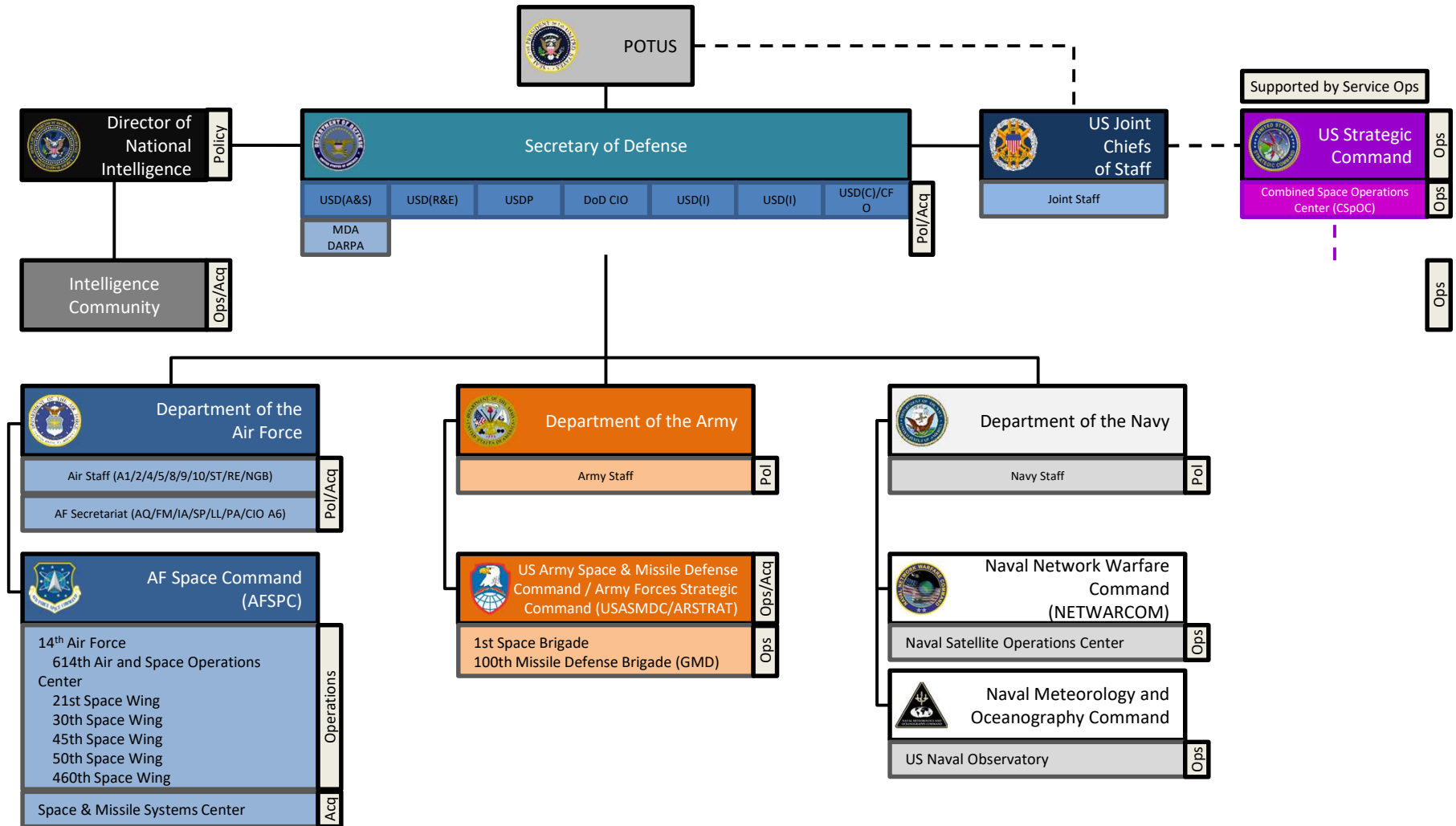
**Resilience:** *The ability of an architecture to support the functions necessary for mission success with higher probability, shorter periods of reduced capability, and across a wider range of scenarios, conditions, and threats, in spite of hostile action or adverse conditions [...].*<sup>6</sup>

Source: [Office of the Secretary of Defense \(2015\)](#)



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# Military space org chart (pre-2019)





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# Push for Organizational Reform

## Rogers vows to continue Space Corps fight

by Mike

By: Valerie Insinna    December 2, 2017



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# U.S. Space Force and Space Command

- **Aug. 2019:** Re-established U.S. Space Command (USSPACECOM)
  - Previously existed from 1985-2002, but then transferred its responsibilities to U.S. Strategic Command
  - Now the 11<sup>th</sup> combatant command
  - Two main missions
    - Protect and defend U.S. and allied space assets
    - Provide space capabilities/effects to other combatant commands (INDOPACOM, EUCOM, CENTCOM, etc)
- **Dec. 2019:** Created the U.S. Space Force
  - Previously, the U.S. Air Force was the lead for military space activities (although Army, Navy, and Marines all had their own programs)
  - Now the 6<sup>th</sup> military service branch (but still within the Dept of the Air Force)
  - Mission is to operate, train, and equip military space forces and provide them to COCOMs



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# Size of the Space Force

**Current size: 2,500  
active military**

|  | Army      | Navy     | Marine Corps | Air Force <sup>16</sup> | Coast Guard | Space Corps | Space Force-Lite | Space Force-Heavy |
|--|-----------|----------|--------------|-------------------------|-------------|-------------|------------------|-------------------|
| Discretionary Budget Authority (FY 2019) | \$182.1B  | \$164.9B | \$29.2B      | \$156.3B                | \$11.7B     | \$11.3B     | \$13.4B          | \$21.5B           |
| Active Military                          | 487,500   | 335,400  | 186,100      | 329,100                 | 41,382      | 12,100      | 16,700           | 18,300            |
| Guard / Reserve                          | 543,000   | 59,100   | 38,500       | 177,100                 | -           | 1,600       | 1,900            | 2,800             |
| Civilian <sup>17</sup>                   | 194,803   | 190,642  | 21,553       | 175,771                 | 8,759       | 13,600*     | 17,200*          | 27,400*           |
| Total Workforce (FY 2019)                | 1,225,303 | 585,142  | 246,153      | 681,971                 | 50,141      | 27,300      | 35,800           | 48,500            |

\* Includes headquarters/secretariat staff and civilian personnel

Todd Harrison "How much will the Space Force cost"? CSIS Press Briefing  
<https://www.csis.org/analysis/how-much-will-space-force-cost>



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## Unanswered questions

- What will the primary mission of the Space Force be?
  - **Space control** (delivering space capabilities that support U.S. terrestrial warfighting) OR
  - **High ground** (dominance of space and conducting in-space activities)
- Will Space Force be able to “fix” space acquisitions?
- Will the U.S. develop a new slate of offensive counterspace capabilities?
- How does the globalizing/commercializing space domain impact U.S. response to space threats?



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# Thank you! Questions?

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