



*Promoting Cooperative Solutions for Space Sustainability*

# **Missile Defense, Space Security, and Changing Priorities for the Indian Military in Space**

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# Why Does Space Security Matter?

- Changing nature of the space domain
  - 3 “C’s”: Space is increasingly *congested, contested, and competitive*
- Goal: *stable, predictable space environment*
  - Will allow us to enjoy continued benefits from use of and access to space

# Why Does India's Space Program Matter?

- **Changing nature** of its program from inherently **civil in nature** to one that has more emphasis on and interest in **military aspects**
  - Using its missile defense program as a technology demonstrator for an anti-satellite (ASAT) capability
  - Satellite are increasingly including national security missions
- Can see this change through **funding decisions and guidance documents** by the Defence Research and Development Organization (DRDO)
- India's decisions on its space program can have ripple effects throughout Asia
  - Part of a **competition in Asia for space capabilities**

# India's Space Program

- Started off with civil aspirations to *help national development*
- Dr. Vikram Sarabhai: “We do not have the fantasy of competing with the economically advanced nations in the exploration of the Moon or planets or manned flights. But...we *must be second to none in the application of advanced technologies* to the real problems of man and society which we find in our country.”
- Randy Correll: “The international space market is a bazaar of opportunities for emerging space powers to buy, sell, and barter important space goods and services *to advance their national interest.*”

# India's Missile Defense Work

- **India's multi-layered ballistic missile defense (BMD) system**
  - Advanced Air Defense (**AAD**) system
  - Prithvi Air Defense (**PAD**) system
  - Theater missile defense capability
  - Sword Fish Long Range Tracking Radar and Green Pine Radar
  - Interest in space-based surveillance but nothing formalized
- BMD work as a **technology demonstrator program for an ASAT capability**
  - Numerous quotes from DRDO Director V.K. Saraswat, all talking about India having the **building blocks for an ASAT capability**, the **disinterest in attacking** other countries in space, but also the **need to be able** to do so
  - Missile defense capability does not automatically translate to a proven ASAT capacity - testing would be needed, but is hard to do

# China's 2007 ASAT Test

- In January 2007, used an SC-19 missile to ***deliberately destroy*** one of its aging weather satellites, Feng Yun-1C
  - Done at an altitude where debris does not decay quickly
  - International response simultaneously ***critical and muted***
- In January 2010, held a “missile defense” test, using the same interceptor but a different target and at a much lower altitude
  - International norm coalescing now of how to do a ***“responsible” ASAT test?***
- ***Close proximity operations*** undertaken in summer 2010

# Indian Military's Use of Satellites

- Satellites are inherently *dual-use in nature*
- Per Union of Concerned Scientists' satellite database, India has **26 operational satellites** on orbit
- New military satellites in the works: CCI-Sat, Rohini for the Navy, equivalent of the latter for Army/Air Force
- Evolution of India's space capabilities being delayed by problems with its *Geosynchronous Satellite Launch Vehicle (GLSV)*
  - Affecting ability to have heavy launch capabilities to GEO
  - Pushing back plans for Indian astronauts (*vyomanauts*)



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# Military Potential of Current Satellites

- Indian Remote Sensing (**IRS**) *constellation is world-class*
  - Indian government changed Remote Sensing Data Policy in July 2011
- **Earth Observation satellites** could provide information that would have military applications
- GPS-aided geo-augmented navigation system (**GAGAN**) and Indian Regional Navigation Satellite System (**IRNSS**) programs being developed





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# Indian Military's Organizational Efforts

- Creation of *Integrated Space Cell*
- Defence Space Vision-2020
- Technology Perspective and Capability Roadmap
- Defense Technology Vision 2050

# U.S. and India's Space Program

- USG documents on space focus on ***international cooperation and norms of behavior for space sustainability and stability***
  - National Space Policy (June 2010)
  - National Security Space Strategy (January 2011)
  - Defense Strategic Guidance (January 2012)
  - All ***provide openings for India*** and the United States to cooperate in space
- ***Changes in U.S. export control laws*** may help this cooperation
- ***Antrix*** could be a venue for cooperation
- ***ISRO political turmoil*** could affect cooperative efforts

- ***Some in the United States are exaggerating*** the extent of this for domestic political reasons
  - But ***there is a competition*** going on that will affect the region
- Japan is changing who is legally allowed to work on military space
- Competitive: ***GPS-like programs, Moon efforts, manned space missions***
- Per James Clay Moltz: “[W]e don't see the major powers in Asia cooperating with one another. They cooperated instead, with the major powers to acquire technology; and with lesser powers, to promote their own interests in exporting technologies.”

# China's Space Program

- India's space budget: \$1.3 billion, versus China's of \$2.2. billion
- China released in *December 2011 a white paper* on its space program and plans
  - Similar to earlier white papers
  - Promotes peaceful uses of outer space
  - Spells out space priorities, including improved Earth Observation capabilities, researching human lunar landing
  - “Emphasizing regional space cooperation in the Asia-Pacific area, and supporting other regional space cooperation around the world”

# International Approaches

- Four main treaties
- 2008 Proposed Treaty on the Prevention of Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects (**PPWT**)
- Deadlocked UN Conference on Disarmament (**CD**)
- UN Committee on Peaceful Uses of Outer Space (**COPUOS**)
- UN **Group of Government Experts** on Space TCBMs
- Proposed **Code of Conduct** for Outer Space Activities

# Possible Cooperative Efforts

- Asia-Pacific Space Cooperation Organization (**APSCO**) versus Asia-Pacific Regional Space Agency (**APRSAF**)
- **Fill in the gap** created by U.S. laws limiting cooperation with the Chinese on space
- Cooperate on an **Asian space station**?
- Important to remember that **while space is a vacuum, the politics of space do not occur in one**



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# Contact Information

**Questions?**

**Thanks!**

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