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# SITREP: The NPS Maritime Defense and Security Research Program Newsletter ; v. 44 (March 2010)

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"To dissuade and defeat threats as early and as far from U.S. borders as possible."

# SITREP

THE NPS MARITIME DEFENSE AND SECURITY RESEARCH  
PROGRAM NEWSLETTER

<http://www.nps.edu/Research/mdsr/index.html>



Volume 44  
Mar 2010

Dear Readers,

**PLEASE submit a short 200-300-word article introducing your organization's Maritime Security and Defense-related mission and activities or add an event to our calendar.**

**Contact Ms. Rita Painter at [rpainte@nps.edu](mailto:rpainte@nps.edu).**

## Collaboration in Space for International Global Maritime Awareness (C-SIGMA)

National Security Presidential Directive-41/Homeland Security Presidential Directive-13 establishes U.S. policy for enhancing our national security and protecting our interests in the maritime domain. Specifically, it directs that maritime domain awareness (MDA) efforts be undertaken:

"... to develop an enhanced capability to identify threats to the maritime domain as early and as distant from our shores as possible by integrating intelligence, surveillance, observation, and navigation systems into a common operating picture accessible throughout the United States government."

One of the main ways to accomplish this may well be to build, in collaboration with our international partners, a common operational picture on a global scale by combining terrestrial maritime surveillance systems with commercial and civilian space systems having significant earth and ocean observation capabilities. This capability would be in addition to any classified undertaking either now underway or planned and would have the huge benefit of being able to be shared with all seafaring nations of the world.

Many people believe this undertaking is impossible from both technical and fiscal view points. However, the real possibility of using civilian satellites for persistent oceanic surveillance has recently come much more sharply into focus, and was strengthened significantly by the successful completion of a wide-ranging test from the Mediterranean to the East Coast of the United States in the fall of 2006 that used synthetic aperture radar (SAR) satellites coupled with new high resolution electro-optic and infrared (EO/IR) imaging satellites. The experiment used terrestrial AIS to positively identify the detected vessels. Since that test the successful launch and initiation of operations of several satellites that contained (AIS) receivers have greatly increased the capability to identify vessels on the open seas from space and further made the point that the unclassified detection and tracking of vessels from space is a reality.

Civilian earth observations satellites have been operating since the mid-1980s but it is only in the past few years that the earth observation from space industry has expanded very rapidly both in

number and capability of the individual spacecraft. Even more capable systems are now being planned, however with only a very few exceptions, no one is planning to take advantage of these systems for the Global Maritime Awareness they could provide if operated collaboratively. Many of these systems have significant ocean surveillance capabilities, which—if bundled together and used intelligently—could provide the maritime nations of the world with a much better picture of who is sailing the seas and provide indications of what their intentions are.

**Earth Surveillance Satellites** The numbers and capabilities of both EO/IR and SAR satellites with oceanic surveillance capabilities are projected to grow substantially in the all will be built and launched, but the interest is clearly there on a global scale.

One study reports that as of late 2006 there were 31 EO/IR imaging systems in orbit with an additional 27 planned. There were also four synthetic aperture radar (SAR) satellites in orbit with another nine planned. Indeed, it was reported at the Earth Observation Business Network 2008 (held in May 2008) that, with the launch of Canada's RadarSat 2 in December 2007, there are now seven SAR satellites in orbit. That number is set to increase dramatically as well.

In addition, in the last 2 years almost a dozen different satellites have been launched with automatic identification system (AIS) receivers and an AIS receiver has been installed on the International Space Station. Some of these are now in direct support of at least two different SAR satellites. Indeed, it is the coupling of AIS via space with radar satellites, which can “see” in darkness and in light, as well as look through most cloud cover, and the new, higher resolution imaging satellites that makes the concept of “Collaboration in Space for International Global Maritime Awareness” (C-SIGMA) feasible. These new civilian space systems are not seen as replacing any existing terrestrial systems, such as the over-the-horizon radar or acoustic systems, but rather as a means to make those sorts of broad ocean surveillance systems significantly more effective. And, as noted above, they have the added advantage of being basically unclassified systems.

### **Impediments and Answers**

Across the centuries, mariners have come to take concealment from people on shore and their prying eyes for granted. Breaking that paradigm, which is an international mindset, may not be easy. However, the advent of terrestrial ship tracking systems such as the Maritime Safety and Security Information System (MSSIS) and the Virtual Regional Maritime Tracking Center(s) (VRMTC) as well as space-based AIS is dramatically increasing transparency at sea and owners and operators of vessels of any significant size will need to adjust to this new paradigm.

Additionally, the widespread belief that using satellite-based systems for persistent oceanic surveillance would take a significant, dedicated constellation of satellites, with each satellite costing many hundreds of millions (if not billions) of dollars, was also a major detractor. The multiple new space systems launched or planned to be launched in the next few years have put that belief in serious question. Many serious observers now believe that a collaboration of the space-faring nations of the world, in consortium with the sea-faring nations of the world, could build a highly useful unclassified Global Maritime Awareness System, with a totally shareable common operational picture.

## The LIBRARIAN'S CORNER— Greta Marlatt, [gmarlatt@nps.edu](mailto:gmarlatt@nps.edu)

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### ARTICLES

Babiela, Santiago Iglesias. "Piracy at Sea: Somalia an Area of Great Concern." *Journal of Navigation*, April 2010, v. 63, no. 2, p. 191-206.

Guilfoyle, Douglas. "Counter-Piracy Law Enforcement and Human Rights." *International and Comparative Law Quarterly*, January 2010, v. 59, no. 1, p. 141-169.

Hong, Nong and Adolf K.Y. Ng. "The International Legal Instruments in Addressing Piracy and Maritime Terrorism: A Critical Review." *Research in Transportation Economics*, 2010, v. 27, no. 1, p. 51-60.

Mugridge, David. "Canadian Maritime Hubris: The Absence of a Future Maritime Security Strategy (FMSS)." *Defense & Security Analysis*, March 2010, v. 26, no. 1, p. 107 - 115.

Nyakawa, D. "The Challenges of Piracy in Africa's Maritime Zones." *Africa Insights*, 2009, v. 39, no. 3.

Warner, Lesley Anne. "[Pieces of Eight: An Appraisal of U.S. Counterpiracy Options in the Horn of Africa.](#)" *Naval War College Review*, Spring 2010, v.63, no. 2, p. 61-87.

### REPORTS

Decker, Jeffrey. [Primacy of the State in Global Integration: Successful Strategies for Gaining State Support for Global Maritime Security Integration](#). Centre for East-West Cultural and Economic Studies, Research paper no. 24, January 2010

[Countering the Asymmetric Threat from Sea Mines](#). Lexington Institute. 2010.

Davis, William M. [Analysis of the Strategy to Combat Maritime Piracy](#). Ft. Leavenworth, KS: Army Command and General Staff College, 2009.

Jamiola, Jr, Donald R. [The Strait of Malacca Formula: Success in Counter-Piracy and Its Applicability to the Gulf of Aden](#). Newport, RI: Naval War College, 2009.

### Future Events:

**Apr 20-22** MDA Interagency Solutions Analysis Workshop , St. Petersburg, FL

**April 25-May 2-** Western Pacific Naval Symposium- Maritime Security Challenges Seminar, Victoria, Canada  
[http://www.navy.forces.gc.ca/marpac/12/12-w\\_eng.asp](http://www.navy.forces.gc.ca/marpac/12/12-w_eng.asp)

**April 26-29** - 8th NPS-Singapore Security Workshop, Embassy Suites, Monterey (POC: [Tom Huynh](#))

**May 4-6** - CJOS COE Annual Maritime Security Conference, Lisbon, Portugal  
[www.cjoscoemaritimeconference.org](http://www.cjoscoemaritimeconference.org)

**June 29-30** 2010 Global Commons Conference , Virginia Beach, Va

**July 26-30** Classified Advanced Technology Update at NPS [www.nps.edu/catu](http://www.nps.edu/catu)