



Maritime Domain Awareness

An Enabler for Environmental Security

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Maritime Domain Awareness

Maritime Domain Awareness

- The effective understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment.
- Maritime Environmental Security and MDA are inextricably linked.

MDA allows for better research and shared understanding of impacts to the maritime environment within sovereign maritime territory and the shared maritime commons.



Maritime Domain Awareness

Impacts to the Maritime Environment



Ocean Pollution, Osama Hajjaji, 19 Jan 2017



Energy Trends

- Global economic and demographic changes will result in energy demand & consumption in areas only accessible by maritime transportation (ie Southeast Asia).
- Global oil declines between 2025-2040.
- LNG dominant form of traded energy by 2035.



Exploitation of off-shore gas deposits and growing regional energy transport infrastructure will require greater cooperation and sharing of MDA information.



Environmental Trends

- Overfishing
 - Fishing Fleets
 - Blast Fishing “bong bong.”
 - Cyanide Fishing: Supplies live fish to restaurants.
 - Trafficking of Endangered Species
 - Drug Smuggling
 - Slave Labor and Human Trafficking

“What we’re looking at is potentially one of the world’s worst fisheries collapses ever...We’re talking hundreds and hundreds of species that will collapse, and they could collapse relatively quickly, one after another.”

- John McManus, Marine Ecologist, University of Miami, National Geographic Interview
29 August 2016



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Environmental Trends

- Blue Economy
 - Fish are a form of capital critical for development.
 - Billions lost annually from fisheries mismanagement
 - Millions of fisherfolk involved in harvesting and related industry



Shared Awareness is critical because it leads to improved maritime governance. This involves assessing stocks and traceability schemes.



Maritime Domain Awareness

Assumptions for the Current-State of Play

- Building maritime domain awareness architecture is an immediate need.
- States should maximize the effectiveness of the existing MDA architectures.
- National level single points of contact are needed to facilitate information sharing with regional and global counterparts.
- Analytic capacity-building is the first step to shared awareness.
- Nations *can* work together on functional issues (IUU, Environmental Resource Protection, Human Trafficking, Smuggling) in the maritime domain without compromising their sovereign maritime claims.



MULTINATIONAL - MULTIAGENCY - INFORMATION DRIVEN

Data	+	Fusion/Analysis	+	Structured Connectivity	=	Governance/Response
<u>Unclassified</u>		<u>Existing ASEAN Centers</u>		<u>Data Contributors/Beneficiaries</u>		<u>Policy</u>
Commercial		Singapore IFC		Fisheries		ASEAN Declarations
NGO's		Thai MECC		Environmental		- ARF
Academia		Philippines NCWC		Counterterrorism		- ADSOM/ADMM
Public		Brunei NCC		Trafficking/Smuggling		- EAS
				Port Security		- Code of Conduct
<u>Controlled</u>		<u>Developing Centers</u>		Search and Rescue		
LE Databases		Malaysia MMEA		Defense		<u>Response</u>
Regulatory		Cambodia		Economic Development		ADI
Proprietary		Vietnam				Operational
		Indonesia				Tactical
<u>Classified</u>		<u>No Centers</u>				
National Capabilities		Myanmar				
Investigations		Laos				

Bilateral & minilateral mechanisms guide and influence MDA which results in an information sharing architecture that contribute to maritime safety and security.



Maritime Domain Awareness

An Immediate Regional Need

- Since 2015, US and ASEAN Defense Ministers express intent to establish greater maritime security awareness & coordination in Southeast Asia.
 - Shared interest in building a common understanding of the regional security environment.
 - More information-sharing and greater maritime cooperation.





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Existing MDA Resources

- National and Regional Information Sharing Centers: Singapore IFC, ReCAAP, Thai-MECC, Philippines Coastwatch, Vietnam Maritime Regional Coordination Center, and others can serve as the Single Points of Contacts for an information sharing architecture.
- Information Sharing Systems: Advances in technology provide for better awareness vessel locations, crews and passengers, cargo, and activities.





Maritime Domain Awareness

- Science and Technology: Collaboration by Government and Non-Government Organizations with the Scientific Community to merge technology and environmental research.
 - The National Oceanic and Atmospheric Administration is an example of how weather tracking technology is made available for free and can be used to help detect IUU night fishing In Southeast Asia.



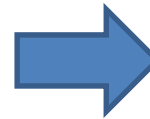


Visible Infrared Imaging Radiometer Suite (VIIRS)

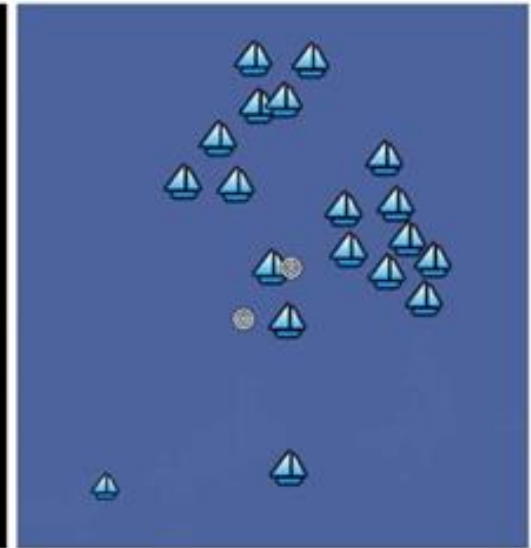
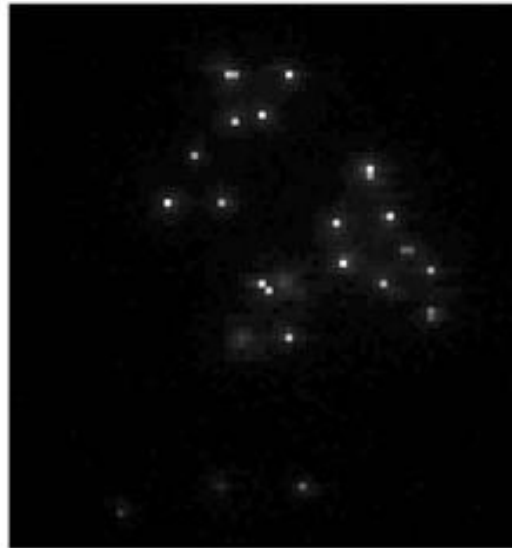
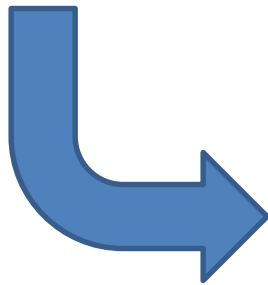
Algorithms run on images, output points, vast data volume reduction



VIIRS day/night
band (DNB)
nighttime
image data



Boat detection
data (points)





Maritime Domain Awareness

Observations

- MDA is occurring globally, but the **efforts are often disparate, uncoupled, or loosely coupled.**
- Nations tend to perform MDA in an ad hoc manner, with no **overarching nor strategic policy guidance on how to manage and share information** internally or with global partners.
- The creation and development of national information sharing centers is a move in the right direction; these **centers will likely serve as the national “focal point”** for an overarching MDA architecture within their region and globally.



Maritime Domain Awareness

Proposed MDA Goals:

- Enhance Transparency: Identify, promote, and **develop existing MDA collaboration efforts.**
- Promote Information Sharing and Safeguarding: Advance mutually shared MDA interests and strategic goals, including **promoting confidence building measures, strengthening institutional capacity, and enhancing coordination/cooperation** across the maritime security sector.
- Further Maritime Partnerships: Promote and facilitate MDA **information sharing, safeguarding, capacity building, and integration.**