



NPS Littoral Operations Center

Littoral Operations Center Overview

**OpTech East
1 December 2015**





NPS Littoral Operations Center



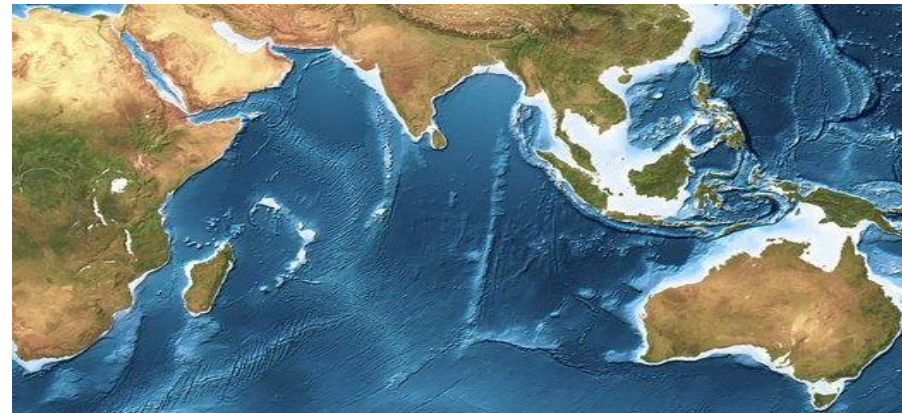
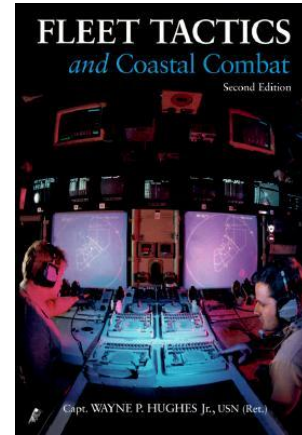
PURPOSE

The **Littoral Operations Center** at the U.S. Naval Postgraduate School in Monterey, California, is established to enhance the U.S. Navy's integration of land, air, sea and undersea operations along the world's coastlines, through *interdisciplinary* research and development involving *all* the departments and schools at NPS.

The LOC conducts and promotes the study of **U.S. Navy and allied and partner nation** policy, strategy and technology necessary to deal with conventional, irregular and criminal threats in these crowded and cluttered coastal waters and their adjacent lands.

While staying grounded in tactics and operations, **the LOC:**

Seeks to apply science and technology to better enable littoral operations in the 21st Century through international, interagency, and public-private partnerships; advanced education; anticipatory innovation; and, a multi-disciplinary, inclusive, and systems-oriented approach. The littorals are a complex and increasingly important OPAREA



The **LITTORAL**, or “near shore,” is where hydrography, geography, commerce, fishing, mining, boundaries, maneuver and sustainment issues converge and complicate both the Offense and the Defense, to place exceptional demands on naval, aerial, and land forces that must operate, fight, and influence events there.



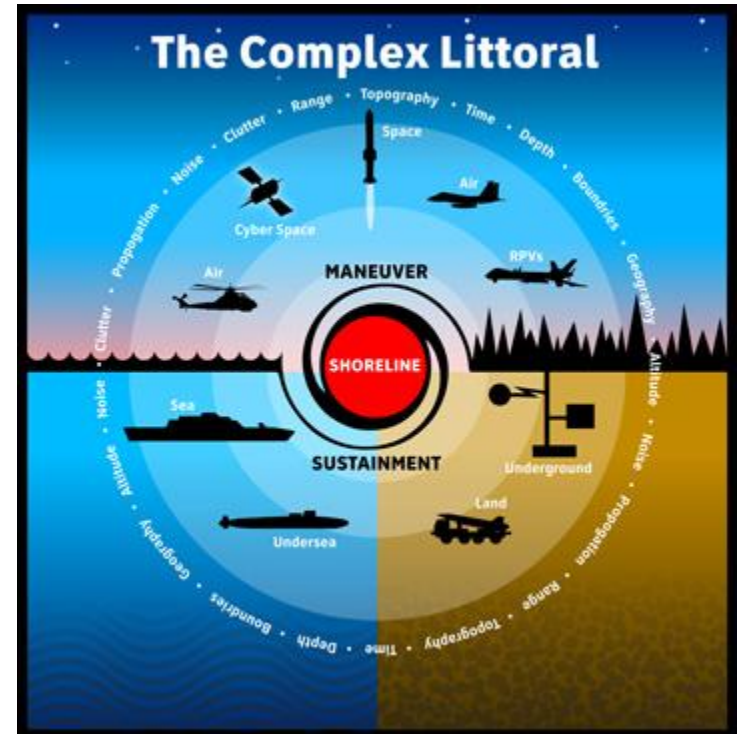
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We live in a complex, dynamic world where everything is connected to everything else



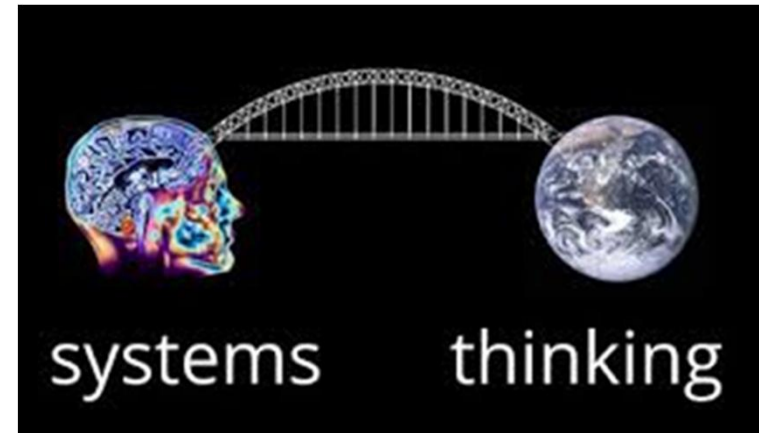
We need better approaches to study, understand and manage complexity





Naval Postgraduate School Littoral Operations Center

- Seeks to apply **education, science and technology** to better enable complex littoral operations in the 21st Century
- Building a stronger **Navy and Marine Corps team**
- **International, Interagency, and Public-Private Partnerships**
- **Anticipatory** rather than reactive thinking
- **Multi-disciplinary**, inclusive, and **systems-oriented**

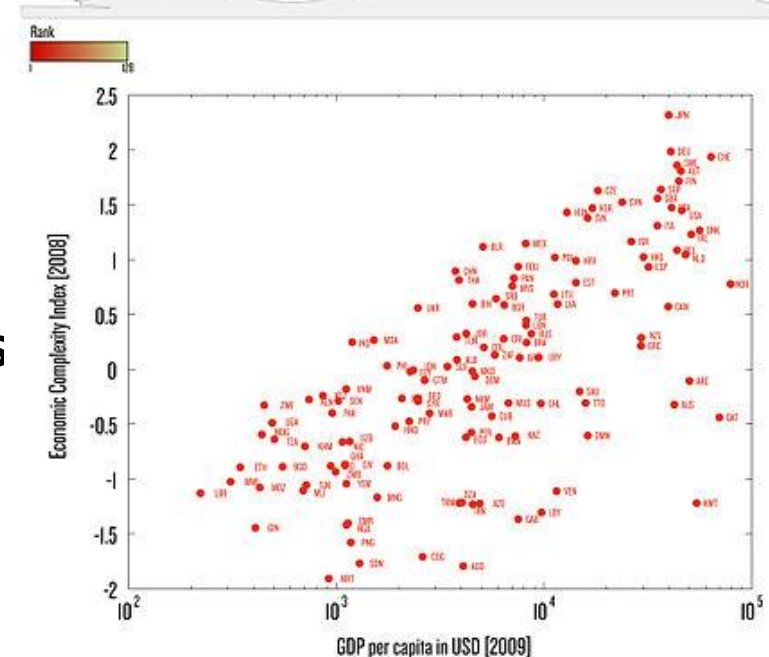
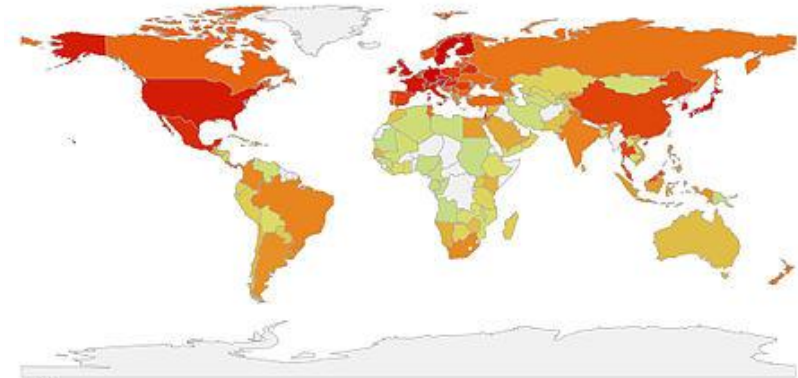




Maritime Security and Maritime Domain Awareness

Today's Strategic Environment

- **Complex** and Uncertain
- Interconnected and **Interdependent**
- Exponential Advances in **Enabling and Disruptive Technologies**
- A new era of **anthropogenic effects** and **resource consumption**





Maritime Security and Maritime Domain Awareness

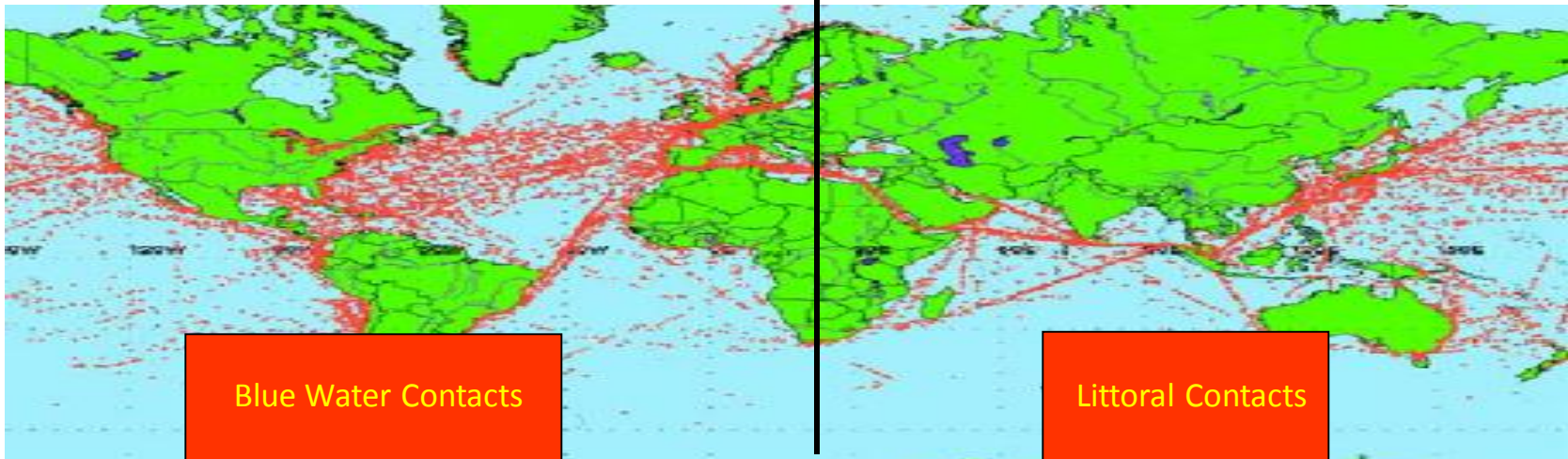
The World Has Changed ...

Old World Order

- **Blue Water Operations**
- **Large Navies**
- **Manageable Contact Load = 1,000s**
- **Symmetric, Nation-State Threat**
- **Regional Stability**

New World Order

- **Littoral Operations and Beyond**
- **Smaller Navies (Budget Constraints)**
- **Exponentially increased contact load**
- **Asymmetric, Non-State Actor Threat**
- **Proliferation**
- **Regional Instability**



Economic Stability and Security in the Global Commons Requires New Solutions



Maritime Security and Maritime Domain Awareness

Maritime Domain Awareness

- **Networked** Air, Sea and Land - Inclusive
- **Fusion of multi-sensor**, multi-purpose platforms
- Must support **strategic, operational, and tactical** objectives
- Must be dynamic, **flexible**, robust, and **timely**

The **oceans are a nexus** for this strategic convergence of system dynamics





Maritime Security and Maritime Domain Awareness

Opportunities for Convergence

- Countering threats to **sovereignty and freedom of navigation**
- **Countering Terrorism** and External Threats to Critical Infrastructure (e.g. oil platforms)
- **Countering Piracy** and transnational criminal **trafficking**
- **Fisheries** protection and **sustainability**
- Natural **disaster** warning and response

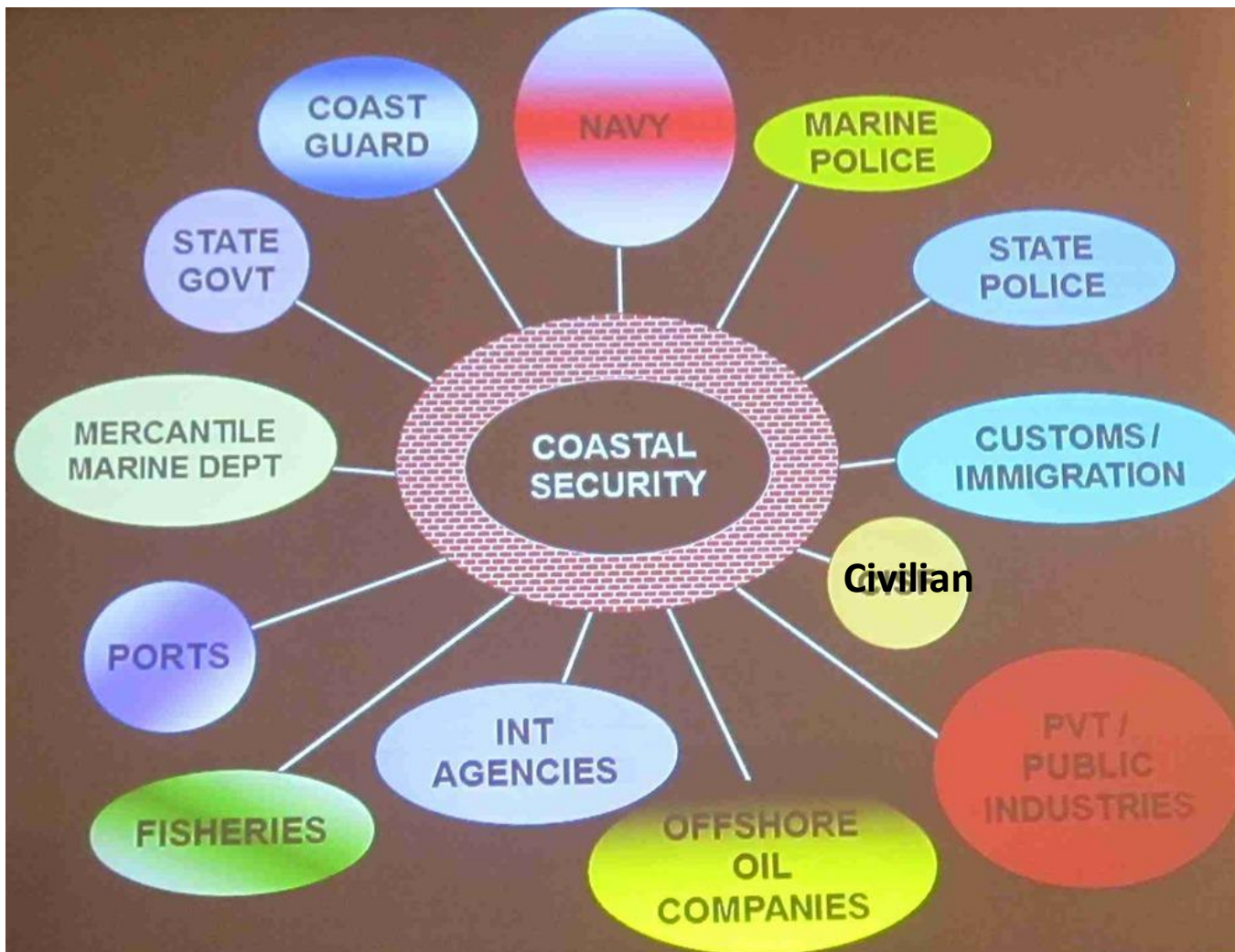


All of these have a role in Global, National and Regional **Security and Prosperity**



Maritime Security and Maritime Domain Awareness

Opportunities for Convergence





Maritime Security and Maritime Domain Awareness

Strategic Considerations

- **Global phenomena** apparent in **regional manifestations**
- Complex and adaptive system of **systems in competition**
- Must be addressed through **interagency and international partnerships**
- Requires **integrated** C2, ISR, Comms, and Assets



None of the threats we face are solely maritime



Maritime Security and Maritime Domain Awareness

Threats to Sovereignty and Freedom of Navigation

- Confrontations **driven by economics** and **nationalist adventurism**
- Increasing in proportion due to **diminishing resources**
- “Traditional” conflicts **exacerbated by hybrid warfare**
- **Requires international cooperation** (NATO, UN, coalitions of common interest) and strategic thinking
- **Intelligence sharing and interoperability** are critical





Maritime Security and Maritime Domain Awareness

Counter Terrorism

- **Global challenge without borders**, beyond sovereignty
- Complicated by **cyber anonymity**, complex motivations and alliances
- Requires **international / intercultural collaboration**
- Requires **inter-agency / commercial** coordination
- **Trust** and information sharing are **critical**





Maritime Security and Maritime Domain Awareness

Counter Piracy and Trafficking

- Occurs at sea, but **originates ashore**
- Much **more difficult to stop at sea** than ashore
- **ISR must include land-based facilities**, air, and maritime resources
- **Follow the money** and **incentivize** commercial shipping, **community opposition**





Maritime Security and Maritime Domain Awareness

Fisheries Protection

- Involves **definition and enforcement** of regulations
- Includes illegal **encroachment** and **overfishing**
- Fishing Industry **could Lose \$41B** due to Changing Climate
- Should **leverage social networks, technology,** and education
- Requires involvement of **local communities** with inter-agency coordination





Maritime Security and Maritime Domain Awareness

Natural Disaster Warning and Response

- Must include meteorological **indications and warning**
- Hinges on **anticipation** and **speed of response**
- Communications and **C2** must be **robust and redundant**
- Requires **distributed** and emergent **self-organization**





Maritime Security and Maritime Domain Awareness

Where Does This Start???

- **Collaborative operational planning** is essential
- **Wargaming, modeling and simulation**, and red cells are valuable tools
- **Networking** is the key in both planning and execution
- **C2 and resource sharing** mechanisms must be clearly understood and established in **advance**



- **Fusion Centers are the Way Ahead!**



We Seek Ideas: YOURS

- What **challenges** concern you the most?
- **What role can we play** at NPS?
- **What technologies and tactics** will be of most value in future littoral operations?
- **What partnerships**, mechanisms, and policies are most critical?



We seek networked efforts among partners with converging interests