

# Assured Access to the Maritime Battlespace

## Warfighting Requirements



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# Report Documentation Page

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# CNO's Direction



## CNO's Tenets

- ◆ Warfighting First
- ◆ Operate Forward
- ◆ Be Ready

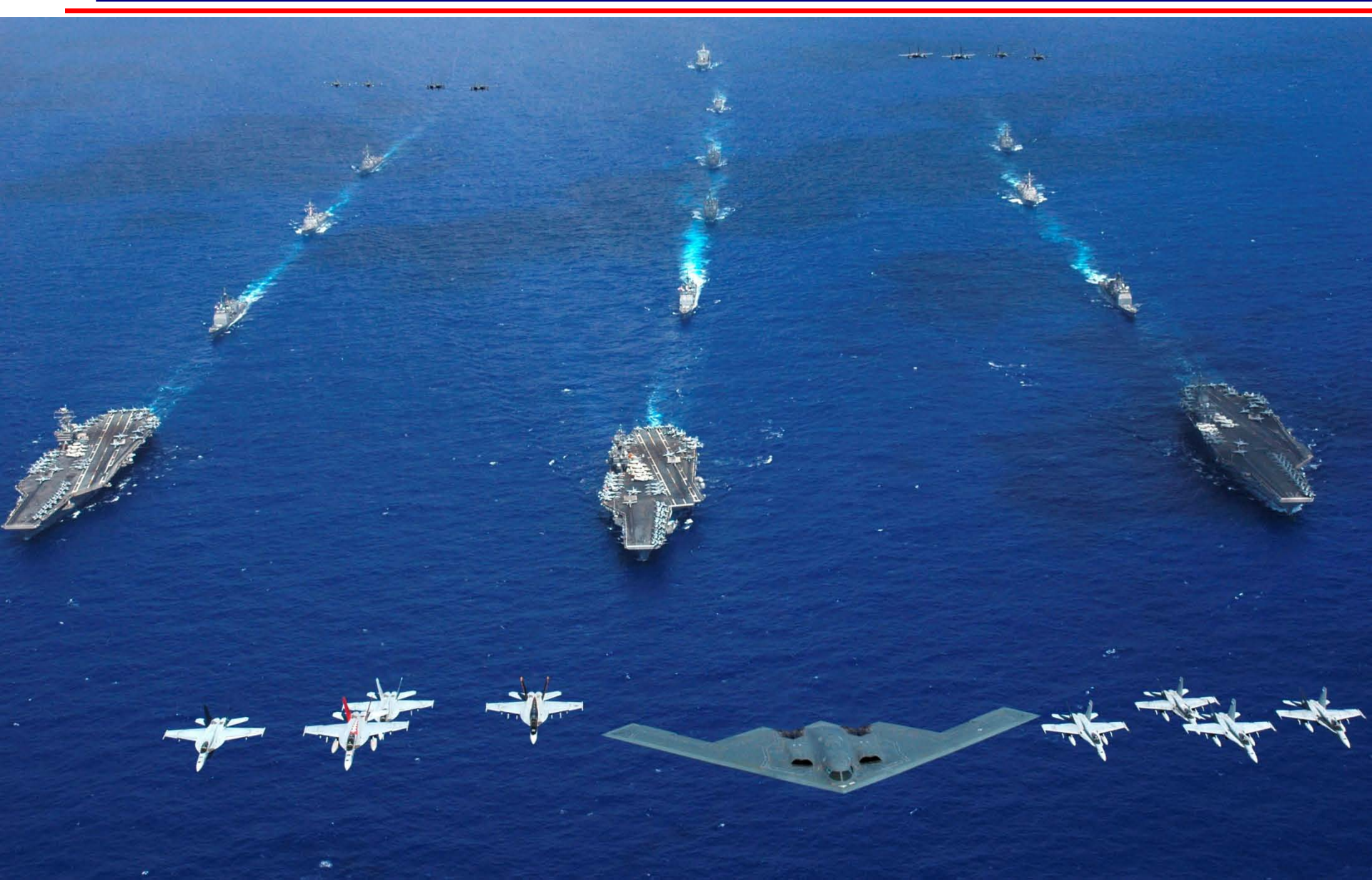


**CNO → SSG XXXII:**

- Develop concepts for Navy to maintain its undersea superiority through 2030.
- To keep our undersea advantage, we need a combination of new operating concepts, innovative technology, and the continued proficiency and confidence of our Sailors.



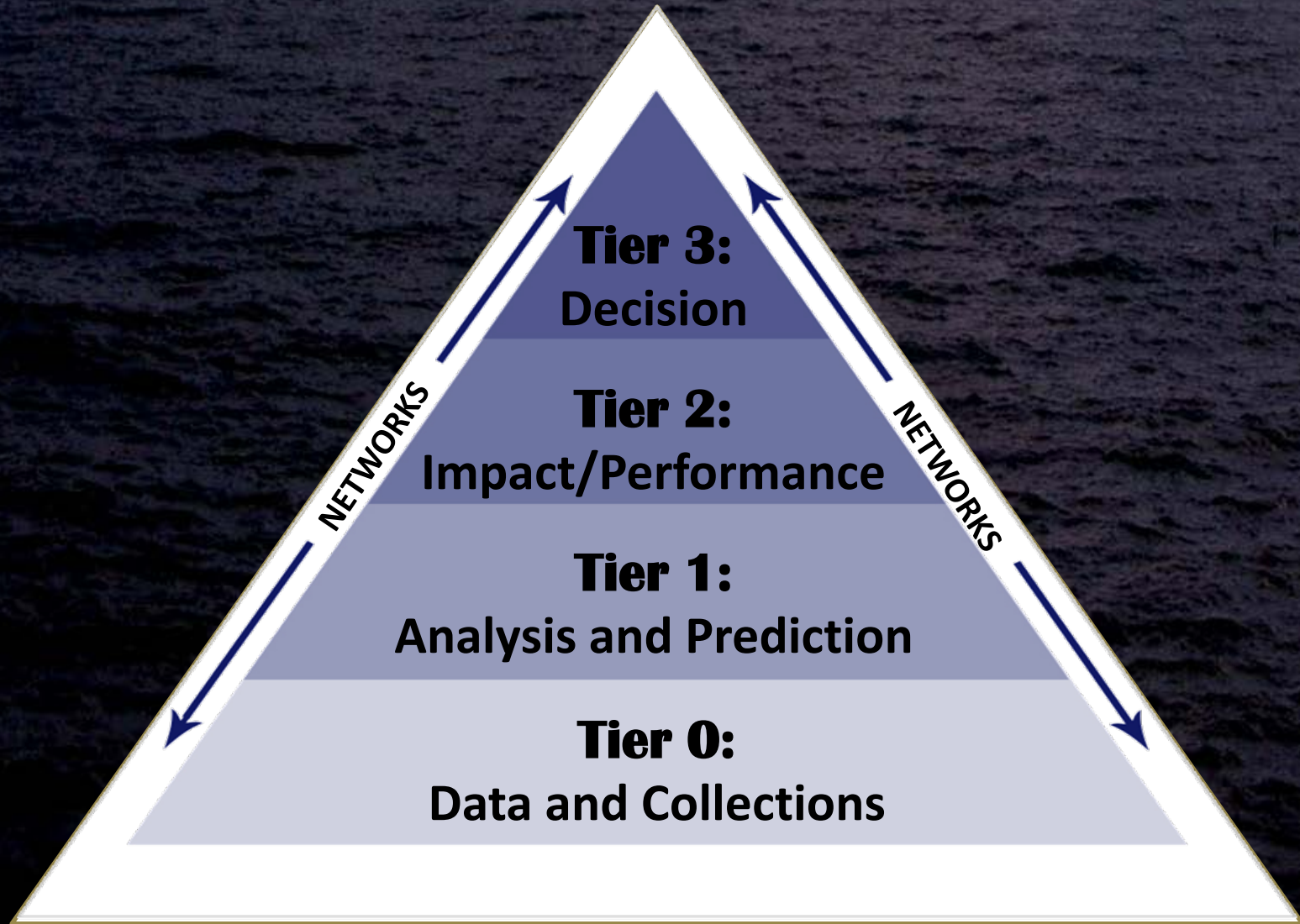
# *Air – Sea Battle*



# *Information Dominance Warfare*

## *Achieving Decision Superiority*

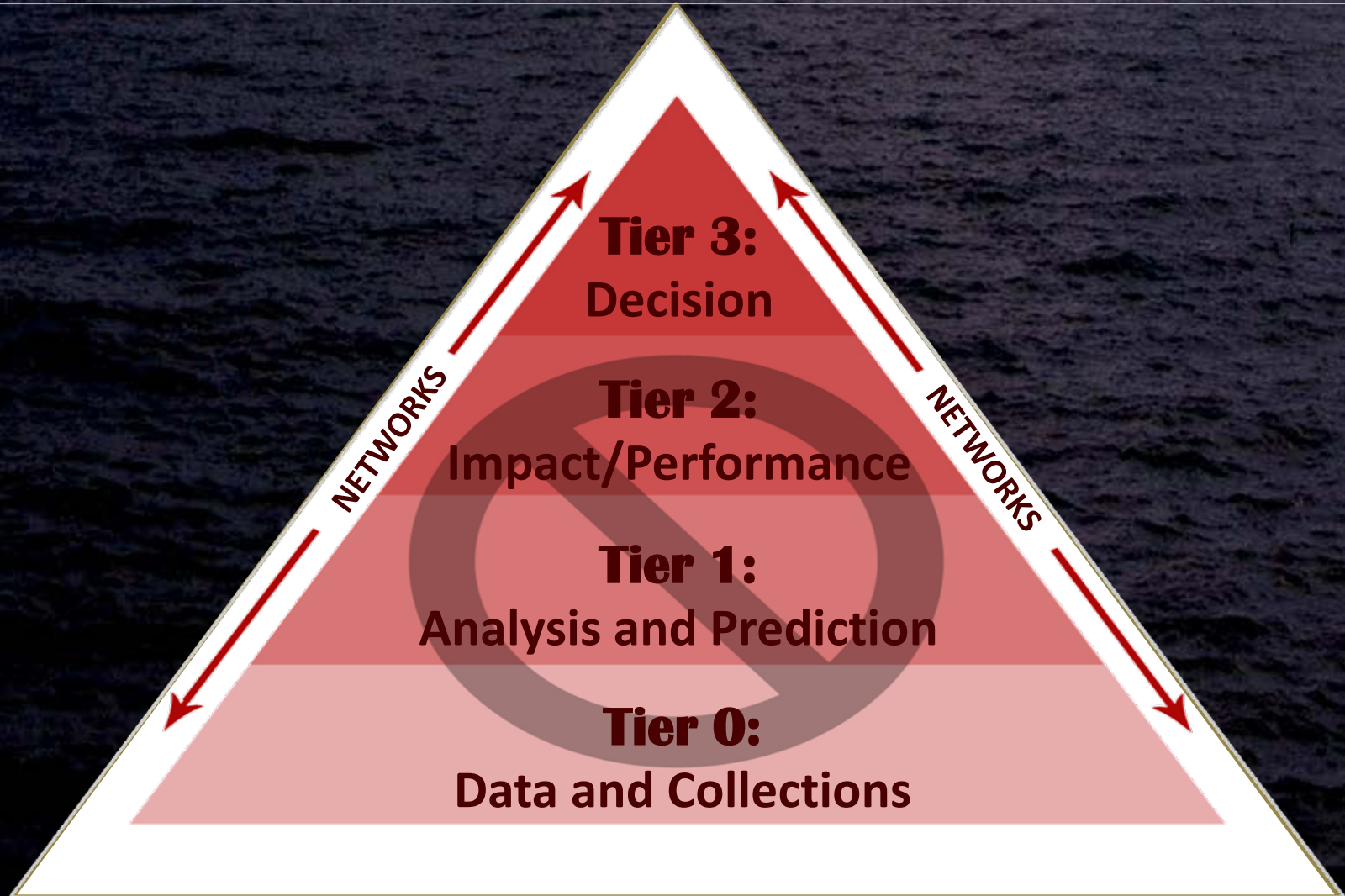
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**Decision Superiority: Making better decisions faster than the adversary**

# *Information Dominance Warfare*

## *Achieving Decision Superiority*



**Decision Superiority: Making better decisions faster than the adversary**

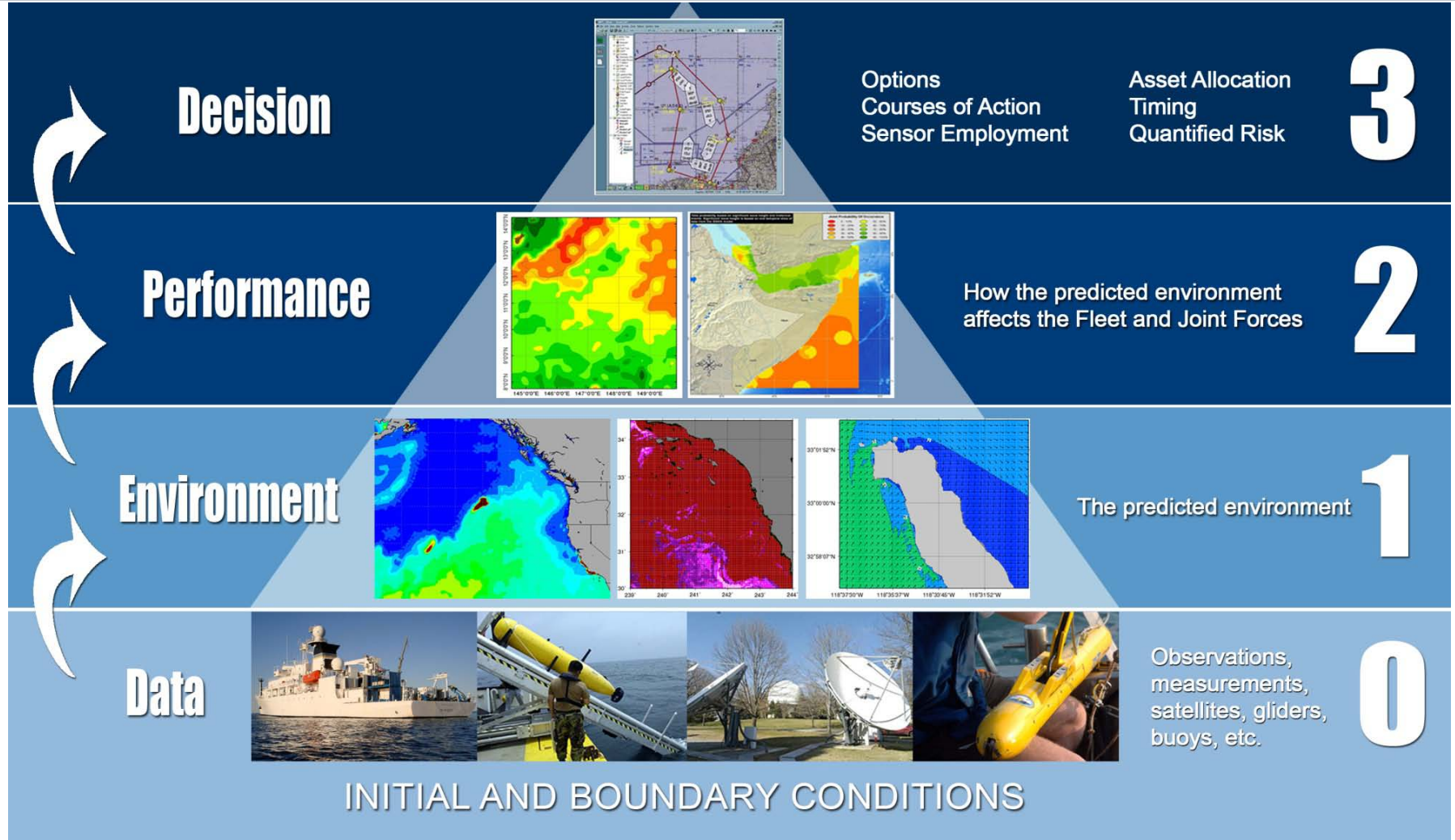


# Battlespace On Demand

## Linking Data to Decisions



Decision Superiority: Making better decisions faster than the adversary





# Battlespace On Demand

## Linking Data to Decisions

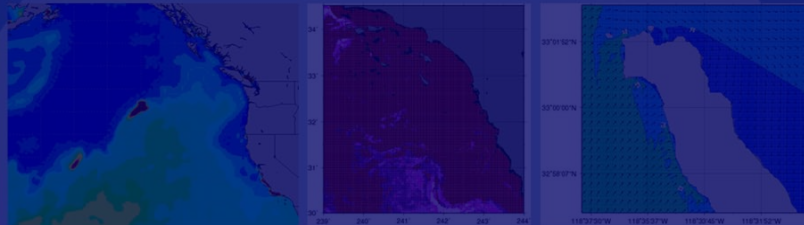


Decision Superiority: Making better decisions faster than the adversary

# Home Field Advantage ... at the Away Games

Decision  
Performance  
Environment  
Data

Options  
Courses of Action  
Asset Allocation  
Timing



The predicted environment



Observations,  
measurements,  
satellites, gliders,  
buoys, etc.

INITIAL AND BOUNDARY CONDITIONS

3

2

1

0



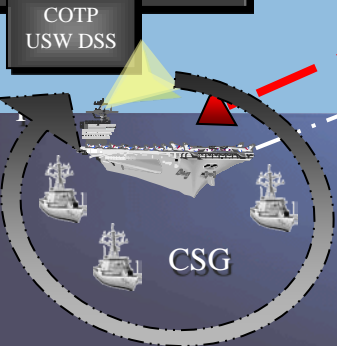
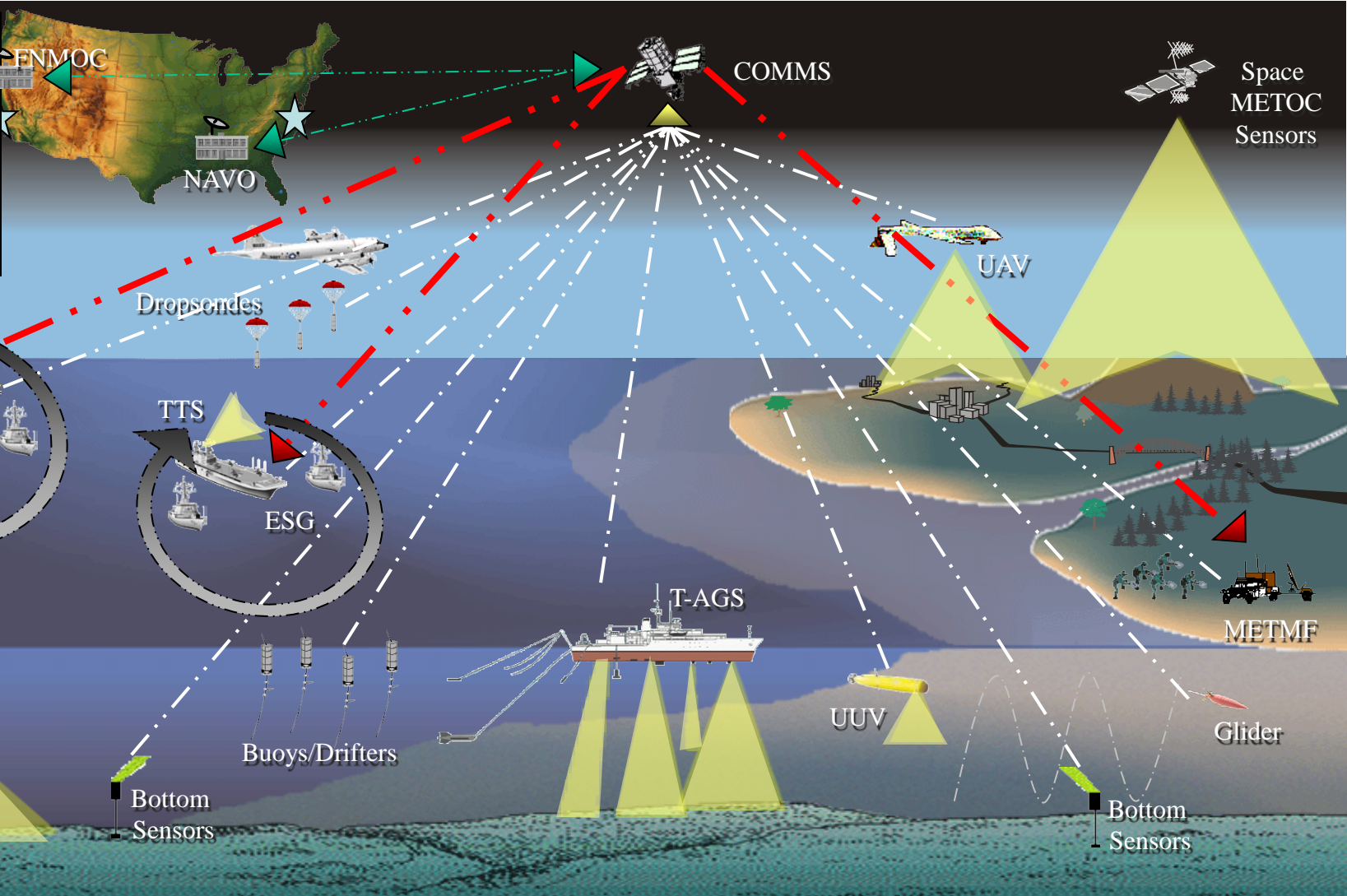
# Future Operational View

## Battlespace Sensing Fusion & Integration



**FUSION:**  
 Reach Back Center  
 & Domain Authority

Data Ingest  
 Quality Control  
 Processing  
 Assimilation  
 Nowcast Forecast  
 Dissemination  
 Expert Advice

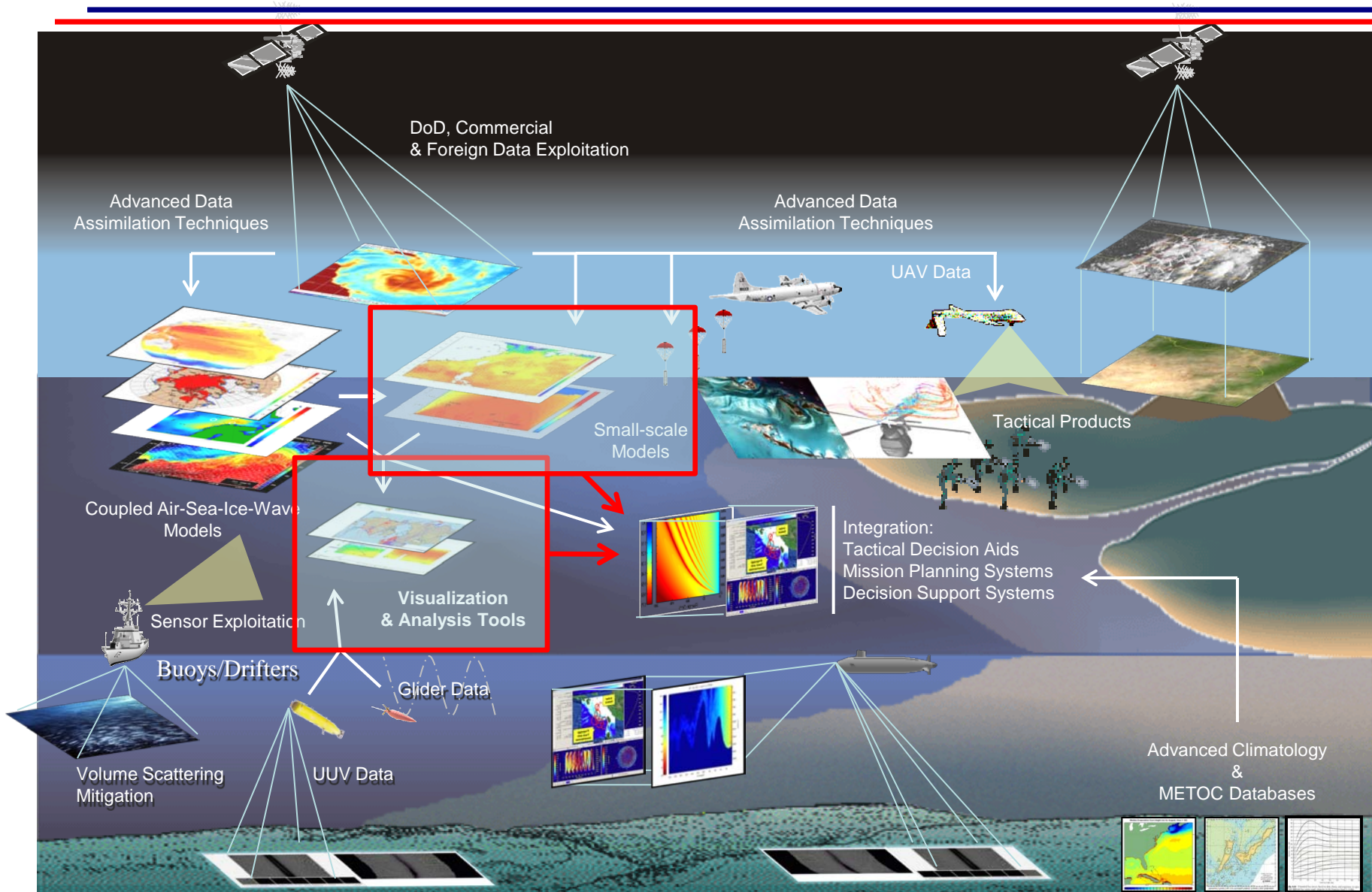


REA = Rapid Environmental Assessment  
 M2M = Machine to Machine  
 TDA = Tactical Decision Aid

SPP = Sensor Performance Prediction  
 COTP = Common Operational Tactical Picture  
 USWDSS – Undersea Warfare Decision Support System



# All Source Data Fusion & Visualization ... In a "competitive" environment



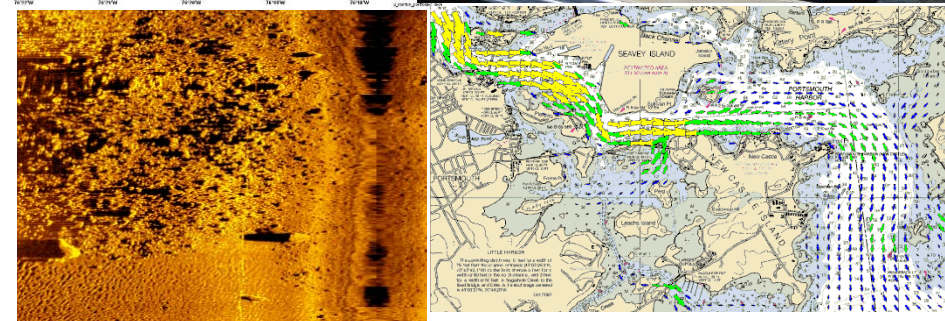
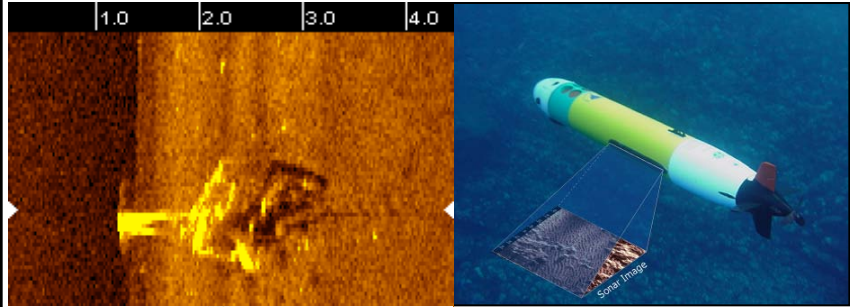


# Mine Warfare: An IDW Example



## Port & Harbor Surveys

- **Continuous Intelligence Preparation of the Environment**
  - **Baseline high resolution side scan sonar surveys**
  - **Near shore current modeling**
  - **Optical properties**
- **Port Folders: key infrastructure, survey and oceanographic data, MCM plans**



## Operational Response Capability

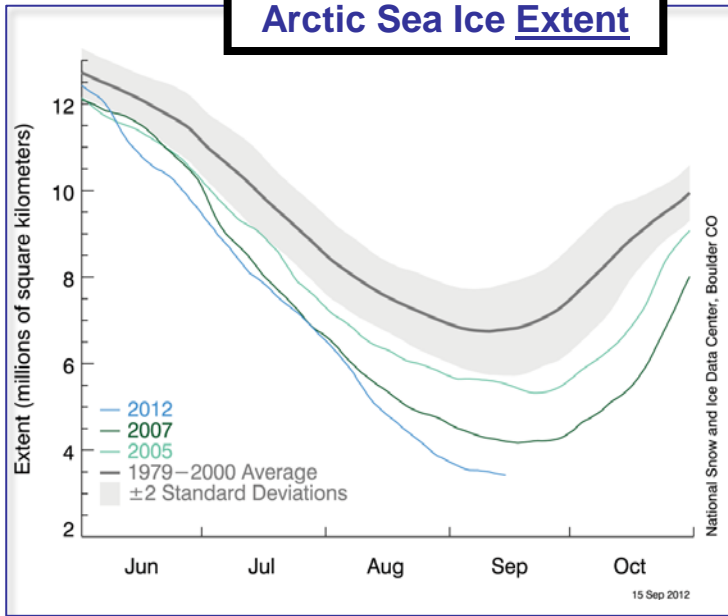
- **UUV Platoon**
  - Rapid responder/force multiplier
  - Developing tactics and procedures in complex confined areas
- **Data Fusion Cell**
  - Provides on-scene tactical support



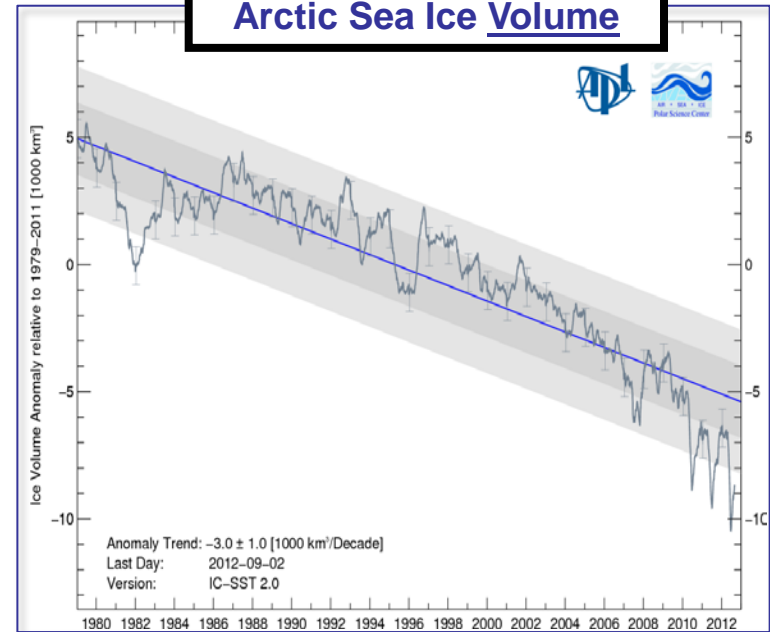
# Changing Climate and Arctic



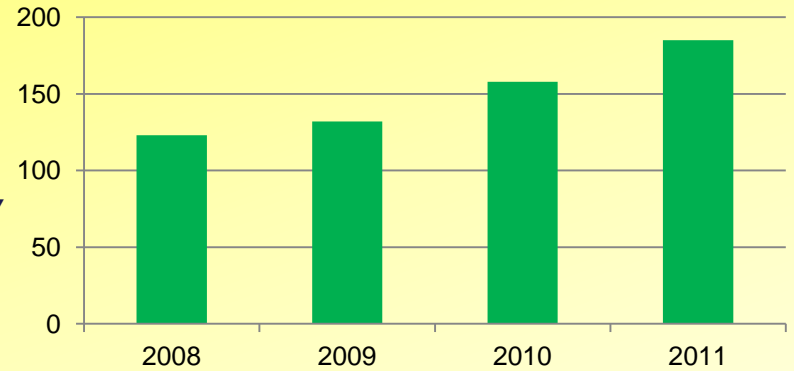
### Arctic Sea Ice Extent



### Arctic Sea Ice Volume



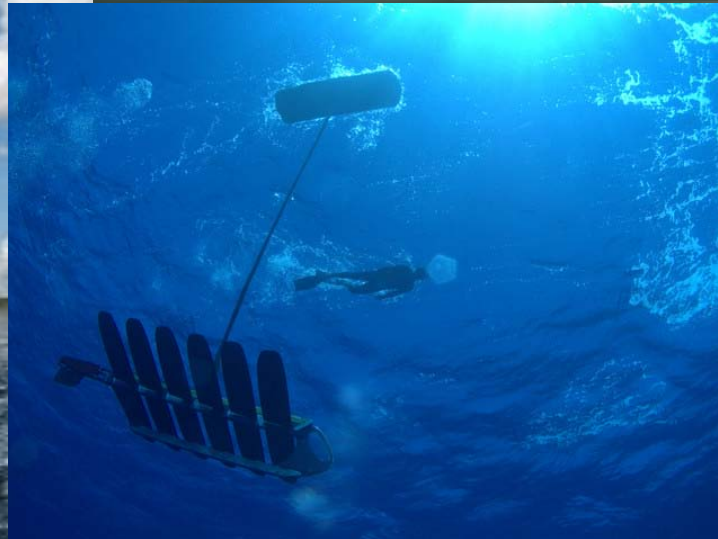
### North Bering Strait Activity





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# Assured Access to the Maritime Battlespace



## The Warfighting Requirements?

- **Information Dominance**
- **Sensor superiority**
- **Assimilation, Modeling, and Exploitation superiority**
- **Assured cross-domain PNT**
- **Cross-domain C4I**
- **Allied cooperation**
- **Automation → end-to-end**

