

*The Navy's corporate research laboratory.*

*Research ○ Development ○ Technology*

  
NAVAL  
RESEARCH LABORATORY

# **STEM Outreach at Naval Research Laboratory at Stennis Space Center**

presented by

**Shannon Breland**

*Public Affairs/STEM Outreach*

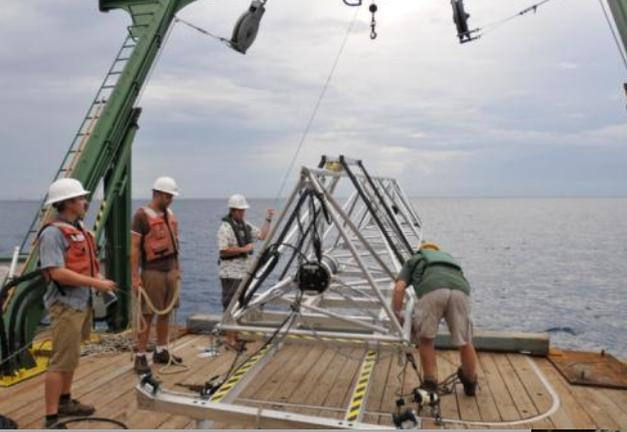
This brief is  
**UNCLASSIFIED**

**“You’re a girl.  
You don’t want  
to do that.”**

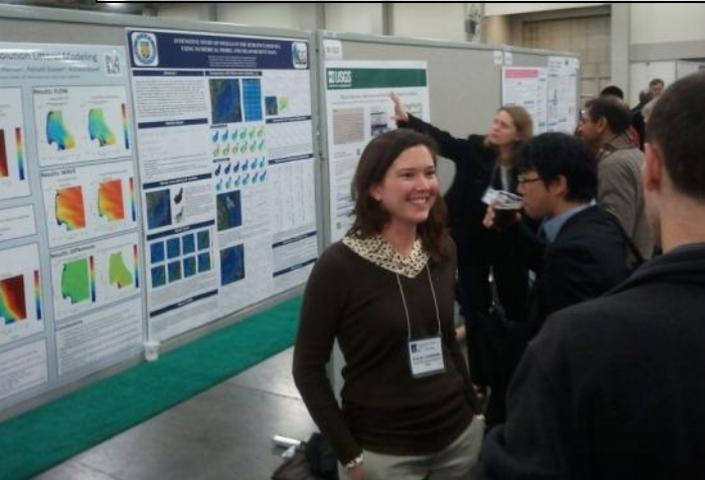


**“You can  
teach.”**





**“You can do a lot of things—  
especially with the U.S. Navy.”**





# Collocated Research and Operational Centers

*Operations*

Secretary of the Navy  
(SECNAV)

*Research*

Chief of Naval Operations  
(CNO)

Assistant Secretary of the Navy  
(Research, Development and Acquisition)

U.S. Fleet Forces  
(USFF)

Oceanographer of the Navy

Chief of Naval Research

Office of Naval  
Research

Naval Meteorology  
and Oceanography Command  
(CNMOC)

Naval Research Laboratory

Universities

Naval  
Oceanographic  
Office (NAVO)

Naval  
Oceanography  
Operations  
Command (COO)

NRL-SSC

NRL-MRY

Fleet Survey Team

Naval Ice Center

Anti-Submarine  
Warfare Center (NOAC)

ISR Component

Special Warfare Comp.

Mine Warfare Center  
(NOMWC)

Fleet Numerical  
Meteorology and  
Oceanography  
Center (FNMOC)

*Key*

Washington, DC

Monterey, CA

Norfolk, VA

Stennis Space Center



# NRL Mission

To conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipments, systems and ocean atmospheric and space sciences and related technologies.

- Primary in-house research for the physical, engineering, space, and environmental sciences.
- Broadly based exploratory and advanced development program in response to identified and anticipated Navy needs.
- Broad multidisciplinary support to the Naval warfare centers.
- Space and space systems technology development & support.
- Assumes responsibility as the Navy's corporate laboratory.



# NRL Stennis Space Center

## Acoustic Simulation, Measurements and Tactics Branch

*Conducting basic and applied research in undersea physics.*

- Acoustic signal processing
- Physical acoustics
- Acoustic systems
- Acoustic simulation
- Measurements and Tactics

## Oceanography Division

*Executing a research program to understand, define and predict dynamical, physical, bio-physical and optical processes of the open, coastal and littoral ocean.*

- Numerical models and satellite data
- Field experiments using measurements from ships, buoys, moorings and autonomous underwater vehicles
- Advanced data assimilation techniques



# NRL Stennis Space Center

## Marine Geosciences Division

*Conducting a multidisciplinary program of applied scientific research and technology development in marine geosciences, geospatial information and related technologies.*

- Digital mapping and charting design
- Seafloor characterization
- Sedimentary processes, behavior and microstructure
- Data compression techniques and exploitation
- Bathymetry extraction from remote and acoustic imagery

## Support Services

*Provides necessary administrative support for division personnel.*

- Legal counsel and contracts
- Public Affairs
- Safety, Facilities and Security
- High Performance Computing management



# Personnel (full-time personnel only)

Education	7030
Less than high school diploma	8
High school diploma	14
Some college, no degree	15
Associate's degree	19
Bachelor's	41
Master's	35
Doctorate	65
<b>Total</b>	<b>197</b>

Classification	Personnel
Scientific/Engineering	133
Business/Professional	20
Technical/Crafts/Production	24
Clerical	18
Other	2
<b>Total</b>	<b>197</b>



# Who do we hire?

## The best civilian scientists.

- Computer scientists
- Physical scientists
- Geophysicists
- Research physicists
- Electronics engineers
- Geologists
- Oceanographers
- Microbiologists
- Research biologists
- Mathematicians
- Civil engineers

## And the best support personnel.

- Financial analysts
- Facilities specialists
- Administrative technicians





# Recruitment, Hiring and Training Programs

- Pathways (student temporary employment)
- NRC/ASEE Postdoctoral Fellowships
- Karle Fellowships
- Edison Program and Long Term Training Program
- Summer Faculty
- Intermittent Hires from Academia
- Science and Engineering Apprenticeship Program (high school)
- **National Defense Education Program**
- **STEM2Stern**



# Why do we care?

## **National Security.**

Without a steady stream of scientists and engineers, the Navy's ability to maintain its S&T superiority will falter over time.

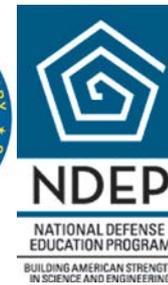
Consequently, **increasing the STEM pipeline has become a critical priority** for the Navy so that we are capable of tackling the challenges of the future.

The Navy must recruit and retain the best and brightest young scientists and engineers--the next generation of scientists and engineers who will bring their talents to our country's Naval laboratories and warfighting centers.

# STEM Outreach at NRL-SSC

## in the MS / LA Gulf Coast Region

Programs funded by National Defense Education Program  
and Office of Naval Research



### Program Description

- Four main activities
  - SeaPerch
  - FIRST
  - Mathcounts
  - Teacher Training
- Goal: **InSuRe** the future
  - **Inspire** students to pursue STEM careers.
  - **Share** the Navy mission with our community.
  - **Retain** local talent for NRL's future workforce.

### Calendar 2011 – 2012 School Year

- **FIRST Lego League** season (Oct-Nov)
- **MATHCOUNTS** 10 Clubs & Comp. teams (Oct –March)
- **SeaPerch** season (Dec-Mar)
  - **1<sup>st</sup> Gulf Coast Regional Challenge** – March 10
  - **6 Summer Camps** planned (June-July)
- **Science fair and career fair** “season” (Jan-Feb)
- **FRC Season** (Jan-March)
  - *Bayou Regional Competition* – March 15-17
- **Girls Excited about Math and Science** (March 8)
- **Teacher Training** (June-July) – *ASM International, Sally Ride Science, Science Literacy, GNO STEM Initiative*
- **Mission Ocean** (TBD)

### Key Participants

- **90 partner schools** (active in > 30)
- Greater New Orleans STEM Initiative
- NASA – Stennis Space Center
- The University of Southern Mississippi
- Lake Pontchartrain Basin Maritime Museum
- Northshore Community Foundation
- Hancock County Library System
- SPAWAR Atlantic (New Orleans)
- Naval Oceanographic Office
- Special Boat Team-22 (SEALs)/NAVSCIATTS

### Funding

- NDEP:** FY09 (**\$240K**) → 2009 – 2010 school year  
FY10 (**\$200K**) → 2010 – 2011 school year  
FY11 (**\$190K**) → 2011 – 2012 school year  
FY12 (**\$220K**) → 2012 – 2013 school year
- ONR:** FY12 (**\$50K**) → act ONR rep for STEM in MS  
*Funds roughly split between coordinator/S&E salaries and schools.*

# FIRST

- FLL
  - Boyet Jr. High (Slidell)
  - Bonne Ecole Elementary (Slidell)
- FRC
  - Mandeville High School (NAVO)
  - Haynes Academy (Metairie)
  - Northshore High School (Slidell)
- 5 Army and Air Force teams



# Mathcounts



- Extra-curricular math club and/or competition team
- Materials and teacher stipends provided
- S&E mentors visit classrooms weekly
- Pilot program with St. Tammany Schools
  - Little Oak Middle
  - Clearwood Jr. High
  - Boyet Jr. High
  - Monteleone Jr. High
  - Tchefuncte Middle
  - Fontainebleau Jr. High

# SeaPerch

- Underwater ROV built and operated by students
- Tools and SeaPerch kits provided at no cost
- Navy S&E visits



# Inspire...



When asked how to improve science education in the U.S., middle and high school students and their parents overwhelmingly #1 response was to ***get teachers who are excited about science.***

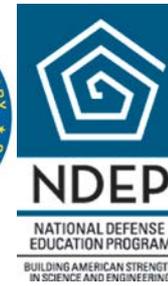
*(PASCO Scientific, 2008)*

# Teacher Training

- SeaPerch Workshop
- CASE
- GNO STEM
- University of Southern Mississippi
- ASM/Materials Science Foundation



# Further Information



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**Program Websites**

[www.ndep.us](http://www.ndep.us)

[www.stem2stern.org](http://www.stem2stern.org)