The BEAMS Program
College of Charleston & University of Washington

Development of the
Marine Survey Workforce

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**BEnthic Acoustic Mapping and Survey Program**

**Since 2007**
- Founded at the College of Charleston
  Dept. of Geology and Environmental Geosciences
- Expanded to Univ. of Washington (2011)
  School of Oceanography
BEAMS Program Elements

1. Coursework
2. Research
3. At-Sea Field Experience
4. Internship or Volunteer Opportunity
The Stats...

College of Charleston alone...

... since 2007:

• 98 students have completed the CofC BEAMS Program as of Spring 2014.
  • 29 at UW

• 46 of the 84 students who have graduated (55%) are currently in the marine geospatial workforce
  • in private, government or academic positions
  • 17 of these students (37%) are women
The Stats...
College of Charleston alone...

- 64 posters have been presented by 71 students at regional, national and international professional meetings
  - Top 3 research poster awards at the U.S. Hydro 2013

- 53 temp. survey tech positions have been filled by volunteer BEAMS students
  - Primarily aboard NOAA vessels.
Program Elements
Coursework

BEAMS Foundation Coursework (required)
- Marine Geology or Oceanography
- Intro to Seafloor Mapping (“SeaMap”)
- BEAMS Research

Other Coursework
- GIS
- Calculus
- Physics and Biology
- Geophysics
- Special Topics (field-oriented courses)
- Independent Research

Training Workshops
- Software
- Technology
- Hands-On
Program Elements

Research

BEAMS Research Course
- Existing or collected data
- Design scientific question(s)
- Document results
  - Poster
  - Paper
  - Presentation
  - Professional Meeting

US Hydro 2013 (New Orleans)
Ocean Sciences 2012 (Salt Lake City)
CARIS Conference 2014 (Brest, France)
Program Elements
At-Sea Field Experience

BEAMS Research Cruise
- Dedicated Ship Time
- 3-6 days at sea
- Data acquisition
  - Multibeam
  - Backscatter
  - Sound Velocity
  - Sidescan
  - Sub-bottom profiling
  - ROV Video
  - Sediments
- Training
- Research
Program Elements
At-Sea Field Experience

BEAMS Cruises – Ships
• NOAA Ship Nancy Foster
  • EM1002; Reson 7125
• R/V Savannah
  • EM2040c*
• R/V Thomas G. Thompson (UW)
  • EM302
• R/V Barnes (UW)
  • EM2040c*
• “R/V Beamer” (CofC)
  • R2Sonic *
  • Teledyne Odom MB1*

* Loaned to BEAMS
Internships
• NOAA
• With BEAMS Partners
• BEAMS Program Intern
• Paid or unpaid
• Volunteer survey tech
Program Elements
Visiting Speakers

Visiting Speakers
• NOAA personnel
• Recruiters
  • Private contractors
  • Government
• BEAMS Alums
• Prospective Advisors
• Researchers
• From ships!
BEAMS Contributing Partners

caris
EIVA
Highland Geo solutions
NOAA
Kongsberg
geodynamics
Sea Grant
GLOBAL COAST SURVEY
QPS
U. PORTO
TELEDYNE ODOM HYDROGRAPHIC
Where are they?

Since 2007 (CofC)

- 11 full-time **NOAA employees** (13% of BEAMS graduates)
- 30 paid **internships** (**11 with NOAA**)
- >25 **contractor** jobs with private firms
- 9 full-time positions with oil & gas or other **private firms**
- 4 full-time positions with **software companies** (CARIS and EIVA)
- 3 have started **their own business**
- 12 have entered **graduate programs** -- marine geospatial oriented
Where are they?

BEAMS Program Students and Alums
Where are they?

Federal Government

- NOAA
  - Hydro
  - NOS
  - NOAA Corps
  - OER
  - Other
- USGS
- US Army Corps
Where are they?

Private Consulting
- TetraTech
- C&C
- TerraSond
- Williamson
- RPM
- NCS Subsea
- Fugro Chance
- eTrac

(Subcontractors)
- Highland Geo
- OARS
- Global Coastal Survey

5 BEAMers from 4 different classes – all contracted separately!
Where are they?

Software Companies

- CARIS
- EIVA
- OneOcean/ClipCard

Academia

- CofC
- UNH
- OSU
- UCSB
- USC-east
- U Illinois
- UW
Research

- Southeast Fisheries
  - NOAA and SC-DNR
  - Sanctuaries, MPAs and Essential Fish Habitats
  - Deep Coral – Predictive Models
Research

- Continental Margin Geomorphology
  - Submarine canyons, east and west coasts
  - Salt diapirs (domes), Gulf of Mexico

Mississippi Margin
- Gilbert Canyon
  - (S. Norvell)
- New England Margin
  - (S. Tyson & K. Rollings)

Mississippi Margin
- (N. Damm & W. Rivers)
- (M. Hughes & H. Pantlik)
Research

- Ocean Observatories Initiative (NSF-OOI)
  - Regional Scale Nodes Program (UW)

Axial Seamount (W. Edwards)

Axial Seamount (B. Philip)

Hydrate Ridge (T. McClinton)
Research

- **Paleo-Shorelines**
  - PaleoAmerican Habitats (Harris et al., 2013)
  - Mid-Shelf ~10,000 year coast’s meandering channels (Harris et al., 2013)
Program Growth

- Courses every semester
  - 25+ students/year (CofC)
  - 10 students/year (UW)
- Development of BEAMS Program Certificate
  - Course development
  - Additional Faculty & Staff
- MBES acquisition!
- Established budgets
  - Annual Ship-time
- Expansion of Partners
- AUVs
- Telepresence
  - Training & Outreach
BEAMS Program

- **Facebook Group** *(please join!)*
  - “BEAMS: Academic Excellence in Ocean Surveying”

- **Web**
  - [http://oceanica.cofc.edu/beams](http://oceanica.cofc.edu/beams)
    *(Upgrade is under construction)*

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