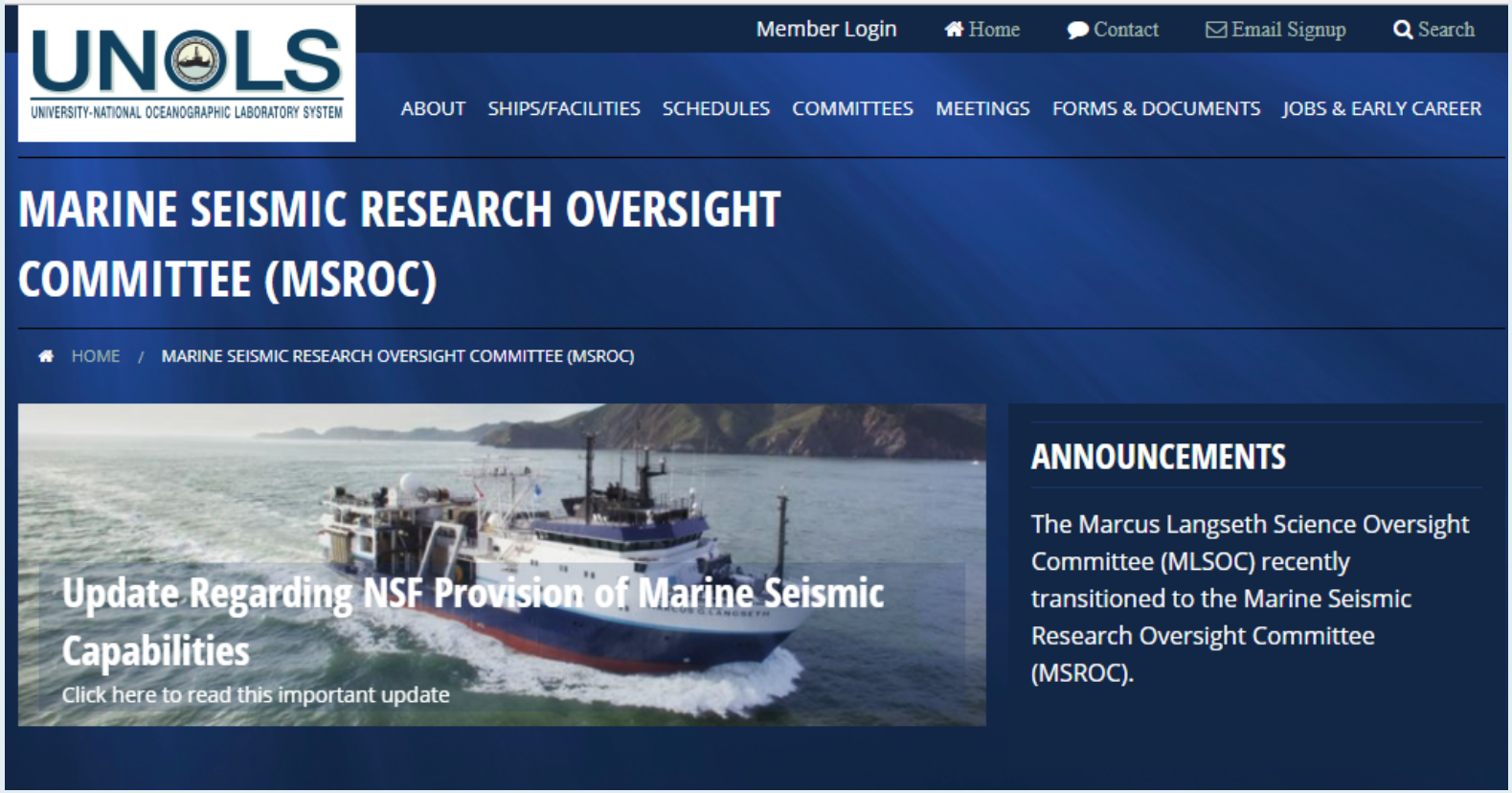
Marine Seismic Research Oversight Committee

UNOLS 2019 Spring Council Meeting
March 27, 2019
Narragansett, RI



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MSROC Membership Changes

Out:

- Patrick Hart (USGS) Chair
- Anne Trehu (OSU)
- Joann Stock (Caltech)
- Warren Wood (NRL)

In:

- John Orcutt (SIO) Chair
- Nathan Miller (USGS)
- Lindsay Lowe Worthington (UNM)
- Robert Steinhaus (Steinhaus & Associates)

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Goals for membership changes:

- Important to have some turnover this year as opposed to having entire committee change after three-year terms
- Increased early-career participation(Miller and Worthington)
- Continue USGS participation (Miller)
- Add Industry representative (Steinhaus)

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MSROC Membership Changes

2019 MSROC Membership:

- John Orcutt (SIO) Chair
- Nathan Bangs (UTIG)
- Del Bohnenstiehl (NCSU)
- Emily Roland (UW)
- John Hopper (GEUS) International member
- Maria Beatrice Magnani (SMU)
- Nathan Miller (USGS)
- Lindsay Lowe Worthington (UNM)
- Robert Steinhaus (Steinhaus & Associates)

Ex-officios:

- Lee Ellett (SIO) RVTEC Chair
- Sean Gulick (UTIG) IODP
- Sean Higgins (L-DEO)
- Dan Lizarralde (WHOI)
- Donna Shillington (L-DEO)

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MSROC Subcommittees

Seismic Working Group (SWG):

- Patrick Hart (USGS) MSROC
- John Hopper (GEUS) MSROC
- Sean Higgins (L-DEO) MSROC ex-officio
- **Sean Gulick** (UTIG) MSROC ex-officio
- **Dan Lizarralde** (WHOI) MSROC ex-officio
- **Bobby Reece** (TAMU)
- Suzanne Carbotte (L-DEO)
- Anthony Koppers (OSU)

Broad Characteristics of an Academic Active-Source Seismic Capability to Replace that Previously Provided by R/V *Marcus G. Langseth*

• A seismic source that meets or exceeds the standard of *Langseth's* 36-element, tuned array in terms of energy level, wavelet compactness, bandwidth, and reproducibility;
• An ability to acquire 2D MCS data comparable (in terms of shot and group spacing and maximum source/receiver offset) to what can be acquired with a towed MCS streamer of 12-15 km length;
• A state-of-the-art data logging and navigation system, including GPS and acoustic based positioning of source and receiving elements, and data sampling rates capable of capturing the full bandwidth of the seismic pulse, hull-mounted multibeam; and
• Continued access to a 3D seismic capability at a rate consistent with historical averages.

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MSROC Subcommittees

Workshop Planning Committee (WPC):

- **Anne Trehu** (OSU) MSROC WPC Chair
- **Emily Roland** (UW) MSROC
- Patrick Hart (USGS) MSROC
- Sean Higgins (L-DEO) MSROC ex-officio
- Sean Gulick (UTIG) MSROC ex-officio
- Masako Tominaga (WHOI)
- Donna Shillington (L-DEO) MSROC ex-officio
- Bob Detrick (Rutgers)
- **Kasey Aderhold** (IRIS)
- **Bob Woodward** (IRIS)

International Marine Seismology Symposium

• Two-day science-focused symposium to showcase innovative research in marine seismology and allow for discussion of topics of common interest to academic-based and industry seismologists

• The scope of the meeting would include the full spectrum of marine seismic activities, from natural source broadband seismology to imaging using controlled sources of various types recorded on towed streamers, fixed seafloor seismometers, and hydrophone arrays.

• Develop and submit symposium proposal to NSF and identify science steering committee – Spring 2019.

• Tentatively planning on a Spring 2020 meeting with ~150 participants; 100 U.S.-based, 50 international

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ANNEX IX to the UNOLS Charter: Marine Seismic Research Oversight Committee (MSROC)

Terms of Reference

- (c) Regularly review the technical capabilities of existing marine seismic assets to ensure they meet the needs of the scientific community, and advocate for upgrades when compelling needs for new capabilities are identified.

- (d) Promote the engagement and training of the next generation of marine seismic researchers.

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- 2017: Growing experience with high-resolution 3D marine seismic in research and industry (Tip Meckel/Bureau of Economic Geology- Univ. of TX-Austin)

- 2017: USGS Coastal and Marine Geology high-resolution marine seismic capabilities (Maureen Walton/USGS)

- 2018: Mid-Atlantic Resource Imaging Experiment (MATRIX) (Nathan Miller/USGS)

Slide from Tip Meckel

Preliminary Proposal (submitted March 11)

- **TITLE:** Mid-scale RI-2: High Resolution 3D Marine Seismic Imaging Center – MaSIC
- **PIs:** Meckel (UT-A), Gulick (UT-A), Han (UT-A), Higgins (LDEO)
- **Senior Personnel:** Ellett (SIO)
- **Advisory Council:** David Goldberg, LDEO; Jeff Rupert, LDEO; Donna Shillington, LDEO; Anne Bécel, LDEO; Bobby Reece, TAMU; Gail Christeson, UTIG; Doug Foster, UTIG; Patrick Hart, USGS; Daniel Brothers, USGS; Jared Kluesner, USGS; Nathan Miller, USGS; Warren Wood, US-NRL; Sergey Fomel, BEG;

MaSIC is very responsive to OCE's needs as stated in 'Dear Colleague Letters', and will emphasize:

- **use of diverse vessels**, including **third-party models**,
- **deploy developing MCS technologies** to supplement existing capabilities, **including 3D HR-MCS** capabilities.
- **consortium approach** for addressing those future programmatic needs.

Slide from Tip Meckel

Since 2017, NSF has been building a foundation for the Big Ideas through pioneering research and pilot activities. In 2019, NSF will invest $30 million in each Big Idea and continue to identify and support emerging opportunities for U.S. leadership in Big Ideas that serve the Nation's future.

1. Future of Work
2. Growing Convergence Research
3. Harnessing the Data Revolution
4. **Mid-scale Research Infrastructure**
5. Navigating the New Arctic
6. NSF 2026
7. NSF INCLUDES
8. Quantum Leap
9. Understanding the Rules of Life
10. Windows on the Universe

Developing an agile process for funding experimental research capabilities in the mid-scale range, a **"sweet spot" for science and engineering that has been challenging to fund through traditional NSF programs**.

Slide from Tip Meckel

WHAT IS THE VISION?

State-of-the-art High-resolution (2D & 3D) National multi-user center to pursue diverse geoscience research priorities.

Departure point: Leverage existing resources and lead community.
5-year goal: support multiple diverse competitively funded acquisitions & processing.

Focus on:

1. Providing state-of-the-art HR-MCS seismic infrastructure;
2. Advancing the technical capabilities of HR-MCS and reducing the costs;
3. Providing high-quality HR-MCS acquisition capability and data to the scientific and education community.
4. Training the next generation of HR-MCS experts;

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Sincere thanks from MSROC to the UNOLS Office!

Jon Alberts

Annette DeSilva

Karen Besson

Caitlin Mandel