DESCEND 2 ACTION :AGU 2017

- **Goal:** To build on the DESCEND2 report with timely actionable and new directions for future interdisciplinary programs in deep-sea research.

- **Anticipated Outcomes:** Stimulate and enable interdisciplinary collaborations and networks, gain insights into challenging problems in deep-sea research that we can rally around, identify steps (e.g., a series of workshops, a Research Coordination Network) for our community.

- **The Grand Challenge:** You have unlimited resources; build an interdisciplinary team to address and implement an ambitious outstanding question (or problem) in deep-sea science, i.e. no constraint re. current capabilities!

Breakout Sessions- DESCEND-2-Action:

- **Polar ocean environments in a changing world**
  - Moderator -Chris German
  - Cochair: Catherine Walker

- **Our new and evolving understanding of seamounts and seamount processes**
  - Moderator – Amy Baco-Taylor
  - Co-chair Kirsten Meyer

- **Interdisciplinary understanding of fracture zone environments**
  - Moderator – Nick Hayman
  - Co-chair –Justin Estep

- **Advancing understanding of global fluxes of gases from the seafloor**
  - Moderator – George Luther
  - Co-chair Adam Skarke

- **The temporal and spatial scales of the processes that link the seafloor, water column and atmosphere**
  - Trish Gregg
  - Co-chair Oliver Ashford

  - https://www.unols.org/sites/default/files/201712desap_14.pdf
  - https://www.unols.org/sites/default/files/201712desmi.pdf

Synthesis of shared thoughts across the groups

- **What are the significance and societal impacts of these goals?**
- **What is needed to accomplish goals?**
  - Global-scale cataloging, " Cold, dark, far away, not one environment"
  - Multiple-vehicle ops to cover more ground in the same amount of time (e.g., fleets of AUVs)
  - optical nodes, acoustic nodes, AUV docking stations, "smart" AUVs
  - Adaptive arrays. Sensors
  - Deep-learning computing for data analysis and prediction, machine-learning imaging software
  - eDNA

- **What new (interdisciplinary) opportunities could emerge?**
  - Ocean worlds, transformative technological advances, other agencies

- **What potential challenges could be encountered?**
  - Global distribution
  - Sampling limitations

AGU2018 : ASCEND-to Implementation

Charge: We are going to write a RCN (research coordinated network)-type proposal

Address these questions:

- What are the overarching themes of the proposal?

- What would you like to see as the main outcomes from such a network?

 e.g. new technology, a large community experiment, a new interdisciplinary program (like NASA Astrobiology community)? Think NSF 'Big Ideas'

- Provide a rough proposal outline with some actionable nuggets (implementation)

Also think...What do you want to see happen in our community? What excites you about interdisciplinary deep-sea research?

Who wants to volunteer to help write?

What is an RCN

- to advance a field or create new directions in research or education by supporting groups of investigators to communicate and coordinate their research, training and educational activities across disciplinary, organizational, geographic and international boundaries.

- to foster new collaborations, including international partnerships, and address interdisciplinary topics

- Innovative ideas for implementing novel networking strategies, collaborative technologies, training, broadening participation, and development of community standards for data and meta-data

- to foster communication and promote **new** collaboration among scientists, engineers and educators with diverse expertise and who share a common interest in a new or developing area of science or engineering.

Example…

- "Incubator for Deep-Sea Research"
- Motivate community to mine data and use the archives and repositories, train users and develop expertise for sea-going submergence science, help new and existing users think beyond their disciplines
- Hack-a-thon type of workshop. Winner gets to choose the location of a sea-going training cruise
- Regional meetings with a summer school
- Idea to coalesce the community around interfaces
  - physical interfaces like seafloor/water column, hydrothermal-biological interface, water-ice interface, so forth
  - Interfaces between disciplines biological-physical, geological-biological, and other combinations of the 5 pillars of Oceanography (bio, chem, geo, phys, and engineering)
- Take advantage of telepresence and be cognizant of people's travel schedules - maybe gather people at regional nodes to have a large scale exercise focused on
  - at sea science activities
  - training (operations, data management, analysis techniques etc)

TODAY: Strategy to develop an RCN?

- Theme? (broad enough but focused enough relevance to Big Ideas)
  - "Human/Robotic interaction in Deep Submergence science"
  - "Incubator for Deep-Sea Research"
  - Ecosystem impacts of fluid and gas inputs from the geosphere.
- Try to link to NSF 10 Big Ideas (https://www.nsf.gov/news/special_reports/big_ideas/)
- **How does our community leverage these Big Ideas….?**

Tomorrow

- What do we want to present to the community?

- What consensus do we want to achieve?

- If we present at DeSSC and an ASLO Townhall
  - What do we need to do… present… outcomes