

# 2018 NOAA OER ASPIRE WHITE PAPER SUBMISSION

## Contact Information

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## Willing to Attend Workshop?

Yes, as well as assist where needed.

## Target Name

Seamounts, Abyssal Plains, The Deep Pelagic, Ridges and Hydrothermal Vent Fields

## Geographic Area(s) of Interest within the North Atlantic Ocean

Southwest, South Central

## Relevant Subject Areas

Biology, Geology, Chemistry

## Description of Region Recommended for Exploration

### *Brief Overview of Area*

The deep southwest and south central Atlantic Ocean, located approximately from 10° to 20°N and 40° to 56° E (Fig. 1), contains a variety of bathymetric features (seamounts, abyssal plains, ridges and hydrothermal vent fields). Few of these features have been well characterized despite many currently providing (or due to provide in the near future) living and non-living resources, e.g., fisheries, oil and gas, and minerals. Given the increased relevance of this region to the Blue Economy, both in international waters and in the national jurisdictions of many adjacent Small Island Developing States, as well as the interconnectedness of the our ocean, increasing our efforts to collect critical baseline data in order to understand, conserve, and manage effectively, is a priority.

### *Brief Summary of Current State of Knowledge and Rationale for Future Exploration*

There is little existing knowledge of the seabed bathymetry, geology, and biological communities (including their connectivity) in the southwest and south central Atlantic Ocean. Given the increased use of this region, the need for exploration is great. Below, the current state of knowledge and rationale for exploration for the four main habitat types is given.

#### 1) Seamounts

Hundreds of seamounts exist in this region with only a handful previously explored e.g. during the TROPICS expedition in 2013. Further exploration will likely reveal numerous deep-sea coral and sponge communities, including many that have the criteria of Vulnerable Marine Ecosystems (VMEs) or Ecologically and Biologically Significant Areas (EBSAs), similar to those discovered on the New England Seamounts. This is pertinent as the region has a productive longline fishery, which could have already impacted these sensitive habitats. Additionally, there are cobalt-rich crusts on several of the seamounts, a sought-after source of deep-ocean minerals, pointing to further potential impact.

#### 2) Hydrothermal Vent Fields

The hydrothermal vent fields located on the Mid-Atlantic Ridge in this region (Ashadze 1-4, Krasnov, Logatchev 1 and 2, Irinovskoe, Semyonov 2, etc.) have been explored but are still not yet fully understood. These vent fields are amongst the deepest and hottest in the world and host chemosynthetic communities of anemones, shrimp, polychaetes, etc. Gaining a better understanding of these habitats is especially important given that they fall within the exploration contract area for polymetallic sulphides of the Government of the Russian Federation, and so are extremely vulnerable to human impact.

### 3) Abyssal Seafloor

Very little of the abyssal seafloor in this region has been explored. The limited surface productivity, depths and recent discovery of polymetallic nodules draw parallels to the Clarion Clipperton Zone, one of the most diverse areas of deep seafloor in the world, and also one of the most stable. The potential for new discoveries, both geological and biological, is very high, including of those relevant to the Blue Economy.

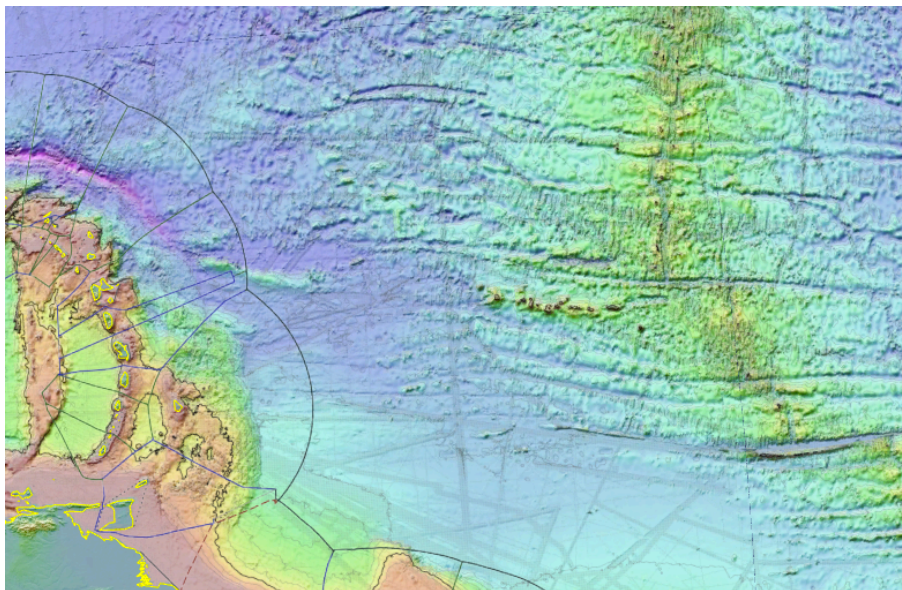
### 4) The Deep Pelagic

The deep pelagic realm is very poorly explored and any information gained will aid in its management.

NOAA OER's interest in pushing the boundaries of deep-ocean exploration and science is well suited to studying this poorly-known region of the ocean. This exploration also aligns itself with several of the specific goals of the ASPIRE Initiative. Additionally, the ROVs *Deep Discoverer* and *Seirios* are able to reach many of the deeper sites (4000-6500m) to document new finds and place them in ecological and oceanographic context. Finally, exploration of this region will ensure visually stunning and varied dives that will not only provide crucial baseline data that will enable further research effort, but also excellent outreach opportunities.

### Relevant Partnerships

- 1) Natural History Museum, London, UK
- 2) National Oceanography Centre, Southampton, UK
- 3) University of the West Indies, Trinidad and Tobago



**Figure 1.** Map denoting the southwest and south central region of the North Atlantic.