

## **Greenland Climate Project:**



### **2015 Research Cruise Debrief & 2016 Survey Opportunities**

The Ocean Research Project (ORP) team plans to operate during field season 2016 in Arctic and Greenland coastal waters from tentative dates, June 15- September 15<sup>th</sup> to fulfill their mission to sail for science, education and exploration in order to encourage the sustainability of the oceans. Their vessel, a 42-foot schooner, R/V Ault will be on site in Sisimut and ready to deploy after the haul out preparation period and oceanographic equipment systems check. The team's purpose is to provide data collection opportunities for scientific and academic entities in often remote locations focusing on oceanic threats including; climate change, ocean acidification, biodiversity loss and marine debris pollution. The R/V Ault will employ 3 full time crew during the season. There is an onboard Field Operations Scientist that holds an Offshore 100 ton 6 pack USCG Captain's License, the Captain, Matt Rutherford will renew his USCG license by the 2016 season.

The ORP team aims to support OMG in their ship-based survey needs for Western Greenland in 2016. After a successful reconnaissance survey in 2015, the ORP augmented OMG's ship-based needs. The guidance of OMG CO-Investigators Joshua Willis and Ian Fenty ensured ORP's following contributions to OMG:

- Starting August 8<sup>th</sup>, ORP conducted 1450 nm of hydrographic survey including 70 casts over a 31 day period in Arctic coastal waters of Western Greenland.
- Surveyed unassigned areas of OMG interest including: reconnaissance survey of Northern Baffin Bay (77° N 31° W) into Smith Sound (78° N 17°W), detailing 5 glaciers of OMG interest, and acquiring 8 deep trough casts.
- Conducted reconnaissance data acquisition across the perimeter of the Melville Bay Nature Reserve.
- Acquiring data to supplement regions surveyed by OMG contracted ship-based survey south of Melville Bay Nature Reserve to Upernavik.
- Source for data at Kakivfaat Sermiat during 2015 season.

### **Vessel, Equipment, and Procedures**

Data collection activities are planned to continue to take place on R/V Ault in 2016. The R/V Ault is a steel schooner sailing craft, with a Perkins 4108 50hp single screw diesel engine, autopilot and self steering windvane. The Ault is suited for long dwell time projects. The vessel's fuel capacity is 150 gallons, allowing for a range of 900 nautical. Ault's 4.5 ft draft permits surveying in the remote near-shore regions. The vessel crew capacity is 4. The Ault holds a 4 man offshore liferaft and immersion suits. The 2015 season allowed for the ORP to adjust to variable Arctic ice conditions and determine modifications necessary to better serve as a survey vessel. Ault is equipped with radar and a forward looking sonar for ice navigation. A removable ice deflector and propeller guard will be on hand for the 2016 season.

Bathymetry is collected with a 1 Kw singlebeam sonar with an integrated GPS that has a maximum 2100 feet depth range. In 2016, the ORP will upgrade to the 3000 Kw singlebeam that has a maximum 6000 ft depth detection range. These systems are both Simrad products with a .slg data extension output. The CTD in use is a RBR Concerto which has a depth range of 740 m and is used with a potpuller to support raising a maximum of 1650 feet of line during a cast. RBR is providing an upgrade CTD in 2016, either the Concerto or Maestro, with a titanium body that can reach 2000m and ORP will extend their cast length to reach 3000 feet for the 2016 season. ORP's technology has produced satisfactory data in the 2015 field season and has been vouched for by RBR & OMG staff prior to data acquisition.

During survey periods the ORP field operation scientist maintains data acquisition logs and submits them to the identified PI periodically. Project updates can be made from or to the vessel via a satellite connection, in 2016 a KVH communications dome will be installed and operated for improved communications. The ORP will be able to access OMG's Project site throughout the project and send data as requested. Data is backed up on external harddrives throughout the project and all raw data will be submitted at the end of the survey period. A research cruise debrief report will also be submitted along with final acquisition logs.

In 2015, post-processed data and a report will be prepared and submitted by 2016 by RBR ltd & ORP.

### **Project Planning:**

ORP is available to operate in Arctic and coastal Greenland waters in all of Western Greenland and Southern Greenland. If OMG is interested in a Melville Bay Reserve survey in 2016, the ORP team must know by December 1<sup>st</sup>, 2015 in order to ensure acquisition of the required permit and to accommodate preparing for any vessel modifications necessary to comply with guidelines for operating in the reserve. The ORP team must know OMG's level of commitment in total number of days of survey operation with a general statement of work provided to ORP by December 1<sup>st</sup>, 2015. After this time ORP must approach alternative research partners to schedule research activities for remaining legs. In order to ensure successful survey operations in 2016 to meet OMG needs, project plans should be reviewed between ORP & OMG prior to the field season.

### **Budget Request:**

The Ocean Research Project requires a daily operation cost of \$2200 which supports operating the resources necessary and provides a stipend for the team. The ORP team seeks a minimum of a 30 day contract whereas a 60 day contract period is sought after. Foul weather days are included as daily operation days when appropriate. 50% of the awarded contract must be received by ORP by no later than April 2016 while the remaining can be awarded once ORP project deliverables are received by OMG no later than November 2016. These requirements will allow a timely beginning to the survey season.

### **ORP's Ongoing Education Output:**

Like 2015, during the 2016 survey season ORP will further highlight the importance of the OMG project by engaging 225+ Maryland STEM public school students. These students are engaged throughout the field season tuning into written education blogs, participating in Q & A sessions and attending post-field season ORP presentations.

2015: 225 students will attend Ocean Research Project's Science on a Sphere Presentation at Goddard Space Center in November to further learn about ORP's collaborative research activities during the Greenland Climate Project in the 2015 season. It is a geographic presentation that incorporates data graphics, charts and video clips portrayed on a sphere medium.

2016: 225+ students will follow an enriched education blog, complete with short video updates from the field, whereas a post season presentation will also be scheduled. ORP invites OMG PI's to contribute a guest scientist blog or excerpt during the education blog series.

We look forward to your consideration of ORP continuance in serving the OMG project in the year 2016.

Kind Regards,

Matt Rutherford

Nicole Trenholm

