

5th IRCC meeting, Wollongong, AU, 3-4 June 2013

Crowd Source Bathymetry

A new source of data?

Submitted by:	UK as a major participant in CSB trials in Antarctica
Executive Summary:	Crowd Source Bathymetry – passage sounding modernised?
Related Documents:	None
Related Projects:	

Introduction

1. The use of data collected by ships on passage - passage soundings – have been a useful source of information to the nautical cartographer and ocean mapper e.g. GEBCO, for decades.

The Crowd Source Bathymetry trials described in this paper merely updates and modernises the process.

Project Overview

2. In early 2012 SURVICE Engineering, CARIS USA, the United Kingdom Hydrographic Office (UKHO) and Lindblad Expeditions entered into an agreement to test the ARGUS Crowdsourced Bathymetry (ARGUS-CSB) system for application in Antarctica.

The Lindblad vessel *National Geographic Explorer* began testing in January 2012. Two additional IAATO (International Association of Antarctic Tour Operators) vessels started testing this Antarctic season, and two more installations are in progress. To date, more than 20 million IAATO vessel soundings have been processed using ARGUS-CSB.

ARGUS-CSB Overview

3. The onboard ARGUS unit plugs into the vessels navigation system and echo sounder and autonomously records GPS position, water depth and potentially water temperature. Once underway there is continuous recording of routine vessel activity and on completion of the voyage there is an automatic offloading of data using extended range marine WiFi, cellular or satellite technology. Collective processing provides bathymetry profiles with minimal crew interaction. In essence, completely autonomous recording and reporting of data.

Results/Output on the vessel

4. Results and output are contained in a Web-delivered home page which will provide Real-time vessel position and depth histories, vessel trackline history, Antarctica cooperative solution set and latest position overlay on chart and data solution layers.

Results/Output onshore

5. CARIS systems provide powerful post-processing and visualization platform together with Web-served CSB solutions sets. Robust and scalable storage and analysis for ever expanding volumes of data and the incorporation of additional data layers from historical fieldsheets to the latest high density multibeam surveys provide a complete data solution.

Ongoing developments

6. Several initiatives are in progress to develop enhancements to the processing methodologies – with the aim for better solutions, data throughput - to provide faster updates, analytical techniques – to provide greater utility and feedback mechanisms – aimed at optimizing data presentation.

Participation is key

7. Participation is key to improved data fidelity and better solutions. The more data users there are the lower per-unit cost.

More facts

8. ARGUS-CSB provides cooperative hydrographic surveying of coastal and inland waterways at a time when resources for data gathering are generally reducing whilst the need is expanding. It is an undeniable fact that more innovation is required to support data gathering.

Conclusions

9. CSB is low cost with equally low impact on host vessel operations. It contributes to safety of navigation with new situational awareness products and services. It can be utilised to validate existing products; the ground truthing for other survey methods e.g. Satellite Derived Bathymetry and inform chart scheming. But perhaps most importantly it contributes to our greater understanding of the marine environment.

Action required of IRCC

10. The IRCC is invited:

- i. to consider the contents of this paper;
- ii. to determine which elements (if any) might feature in future IRCC work.