



## ARHC Science Forum 2020 Meeting Summary

The U.S. hosted the Arctic Regional Hydrographic Commission ([ARHC](#)) Science Forum, which met virtually on Tuesday, August 11 from 7:30am to 11:30am EDT, chaired by RDML Shepard Smith, Director, NOAA Office of Coast Survey. While the meeting was originally scheduled to be in person in Alaska, the virtual nature of the 2020 ARHC Science Forum dramatically expanded the normal reach to those in the community who are interested in Arctic issues from a hydrographic perspective.

The Forum gathered approximately 120 participants out of 170 registrants, spanning across the Arctic region. The Forum had an exciting and robust agenda, including 13 speakers. Topics included reports from two working groups of the Arctic Council (PAME and EPPRWG), experts involved in advancing the IHO S-100 hydrographic model in the Arctic, University of New Hampshire on a recent Greenland Bathymetry project, Developing International Cooperation (UKHO sponsored), Seabed2030/IBCAO, NOAA Sailer Project, International Arctic Research Center, Marine Exchange of Alaska, and local community engagement in Alaska.

[HjalTI Hreinsson](#), Program Officer, Protection of the Arctic Marine Environment (PAME), opened the Forum by raising awareness of the increase in Arctic shipping, at the same time demonstrating how the PAME Arctic shipping data can be used.

[CDR Wes James](#), U.S. Coast Guard Headquarters, Office of Marine Environmental Response Policy, International and Domestic Preparedness, introduced participants to the Arctic Council's Emergency Preparedness Planning and Response Working Group (EPPRWG). It is clear that the work EPPR is doing is essential to reduce risk and support response organizations in the Arctic at a time when shipping is significantly increasing.

A panel of three speakers discussed [S-100 in the Arctic](#). Julia Powell, Chief, Navigation Services Division, NOAA, introduced NOAA's Precision Marine Navigation program that is leveraging the IHO's S-100 framework to build navigation products. As part of the presentation she outlined the product roll-out for the different types of S-100 based hydrographic data, an exciting and ambitious program which should see several operational services by 2024. Jürgen Holfort, German Federal Maritime Agency (BSH) Head of ice service Germany, delved into the world of S-411--Sea Ice for navigation, and showed that although products are available, they are not yet not operational. He also discussed moving this data into ECDIS navigation systems. Joseph Sienkiewicz, Branch Chief, Ocean Applications Branch, Ocean Prediction Center, National Weather Service, NOAA, presented on S-41X weather overlays--Navigation areas, and made the case for moving from text to visual representation as a way to meet user needs (going beyond user requirements).

[Larry Mayer](#), Director Center for Coastal and Ocean Mapping, University of New Hampshire and Seabed 2030 Arctic and North Pacific Ocean Regional Center co-Head, took us on a journey to an area totally unmapped and unexplored--Petermann Glacier and Ryder Glacier. The presentation utilized breathtaking imagery, diagrams and charts to give a glimpse of the results of science expeditions looking at glacier dynamics in the Arctic, reminding participants that the Arctic remains one of the great frontiers on Earth and that bathymetry is key to many critical scientific questions. A case was also made for collaboration and data sharing.

[Henry Burgess](#), Head, Natural Environment Research Council Arctic Office, British Antarctic Survey, highlighted the importance of international collaboration to address big science questions in the Arctic, and introduced participants to the UK's new Sir David Attenborough, an impressive new research vessel which will support international polar science. In the Q and A session, Mr. Burgess discussed the need to use different methods to collect data in the longer term.

[Martin Jakobsson](#), Department of Geological Sciences, Stockholm University, Sweden and Seabed 2030 Arctic and North Pacific Ocean Regional Center co-Head, spoke about what Seabed 2030 means for the Arctic. He provided an analysis of the hydrographic data gaps, not surprisingly in areas that are very difficult to map, and encouraged continuation of mapping in the Arctic.

Corey Allen, Chief, Operations Branch, OCS, NOAA and [Sebastien de Halleux](#), Chief Operating Officer, Saildrone Inc., provided an overview of Saildrone, a very impressive, robust autonomous surface vehicle, which in 2019 spent a total of 700 days collecting data in the Arctic. Saildrone offers an attractive alternative to our traditional way of collecting data. Mr. de Halleux proposed that Saildrones could help fill the gaps in the Arctic to contribute to Seabed 2030.

[Hajo Eicken](#), Director, International Arctic Research Center, University of Alaska Fairbanks, discussed the links between the bathymetry and landfast ice and permafrost implicated in coastal retreat, using these examples to show how one can help prioritize bathy surveying. The presentation reminded participants of the importance of near shore bathymetry, which is always a challenge to collect, especially in the Arctic.

[Matthew York](#), Deputy Director and Operations Center Supervisor, Marine Exchange of Alaska, brought a practical perspective, discussing maritime domain awareness. The Marine Exchange of Alaska brokers marine information to support maritime safety and environmental protection. This includes 24/7 vessel tracking, covering 1.5 square miles in Western Alaska, monitoring for early intervention when there are accidents, and the importance of pushing information out to mariners.

[Robert Foy](#), Science and Research Director, Alaska Fisheries Science Center, NMFS, NOAA, brought a fisheries and ecosystem perspective to the Science Forum, touching on both risk to communities and food security, and opportunities under the blue economy. He highlighted change in the Arctic and how this is driving an increase in our ecological footprint. He indicated the importance of moving data gathering efforts north, and finding ways to invest in collaborative research efforts especially with Indigenous communities.

There was a vast amount of information covered over the course of the Science Forum, and there were some common threads. Participants heard about the importance of data and information, about collaborations across domains and communities, and about innovative ways of doing things. Although participants heard about significant change and risk, there was also a sense of optimism and progress.

To wrap up the ARHC Science Forum, Geneviève Béchard (Canada), ARHC vice chair, kindly gave a summary,<sup>1</sup> and also thanked speakers on behalf of all participants, but in particular on behalf of the members of the ARHC, for sharing what they are doing and for providing participants with food for thought. RDML Shepard Smith and the team at NOAA OCS was thanked for convening the first ever virtual ARHC Science Forum, and it was noted that it takes a lot of effort to pull together the program and to have working technology to make all participants feel engaged.

The ARHC comes together to ensure that collectively, safe navigation in the Arctic region can be supported, and to ensure that the hydrographic data and information collected is available to support decisions. The ARHC Science Forum provided many avenues of input for the ARHC to consider, including helpful input and valuable ideas that inspired and informed the discussions at the ARHC-10 meeting, a formal meeting of the ARHC hydrographic offices, which took place following the Science Forum on Thursday, August 13 and Friday, August 14, 2020.

Please find a recording of the ARHC Science Forum and relevant ARHC meeting materials at the following International Hydrographic Organization webpage: <https://iho.int/en/arhc10-2020>

POC: For more information on the ARHC Science Forum, please contact Jonathan Justi ([jonathan.justi@noaa.gov](mailto:jonathan.justi@noaa.gov)) and Alexis Maxwell ([alexis.maxwell@noaa.gov](mailto:alexis.maxwell@noaa.gov))

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<sup>1</sup> This summary document is based largely on the wrap up summary given by Geneviève Béchard (CA) during the Forum--the U.S. thanks Canada for this.