Hydrography in the Arctic- A Brief to the ASBPIF-2020

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ARHC
ARCTIC REGIONAL HYDROGRAPHIC COMMISSION

IHO

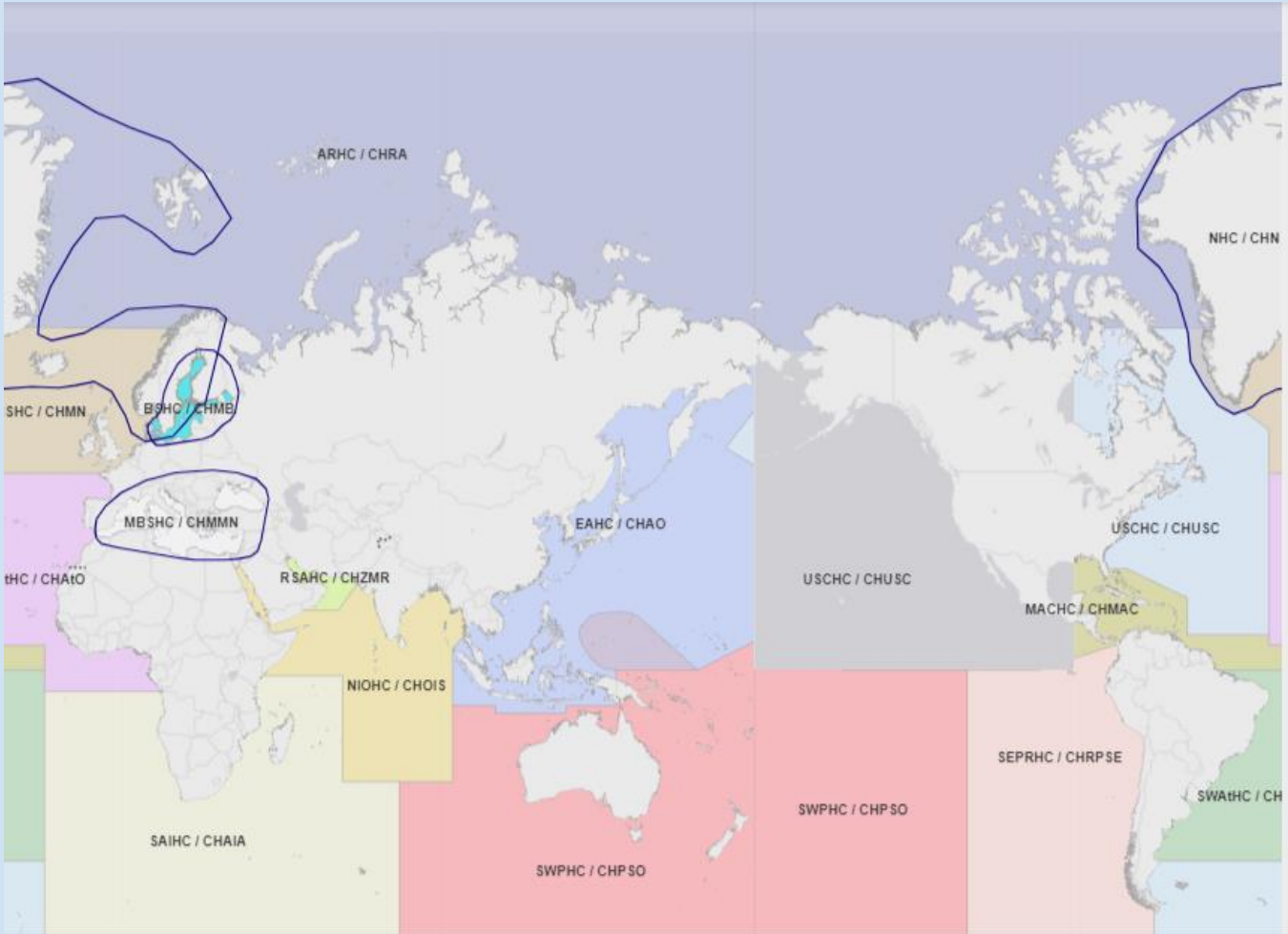
Who am I? Why am I here?

- NOAA Coast Survey
    - National Hydrographic Office for the USA-we do surveys and make the charts for all US, fulfilling key parts of the SOLAS convention
    - Represent the US to the IHO – global standards and coordination body,
- Arctic Regional Hydrographic Commission
    - One of 16 regions that coordinate hydrographic services
    - ARHC Focus in on improving hydrographic services in the Arctic through risk management and innovative new technology

navigation in the Arctic- exploration, discovery, & promise,

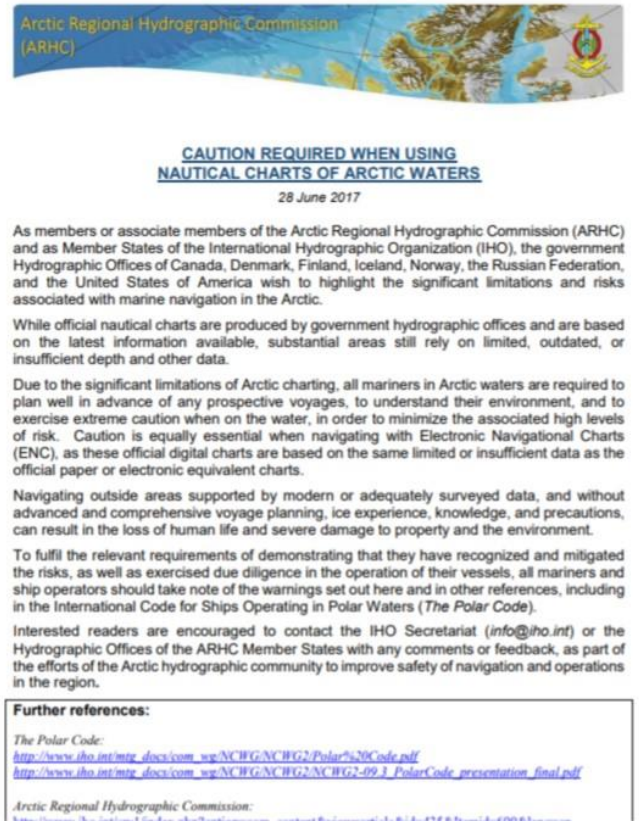
Building a new situational awareness of the environment for navigating safely and utilizing the oceans…

Reference


ARHC / CHRA
NHC / CHN
SHC / CHMN
BSHC / CHMB
MBSHC / CHMMN
EAHC / CHAO
USCHC / CHUSC
USCHC / CHUSC
RSAHC / CHZMR
MACHC / CHMAC
NIOHC / CHOIS
SEPRHC / CHRPSE
SWPHC / CHPSO
SAIHC / CHAIA
SWPHC / CHPSO

Safety and risk – may not be what you think

- Communicating risk – the charts aren't as complete as you may think
  - "…substantial areas still rely on limited, outdated, or insufficient depth and other data…"
  - "Navigating outside areas supported by modern or adequately surveyed data…can result in the loss of human life and severe damage to property and the environment."
  - Electronic charts are still based on the same limited information.



Arctic Regional Hydrographic Commission (ARHC)

CAUTION REQUIRED WHEN USING NAUTICAL CHARTS OF ARCTIC WATERS

28 June 2017

As members or associate members of the Arctic Regional Hydrographic Commission (ARHC) and as Member States of the International Hydrographic Organization (IHO), the government Hydrographic Offices of Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, and the United States of America wish to highlight the significant limitations and risks associated with marine navigation in the Arctic.

While official nautical charts are produced by government hydrographic offices and are based on the latest information available, substantial areas still rely on limited, outdated, or insufficient depth and other data.

Due to the significant limitations of Arctic charting, all mariners in Arctic waters are required to plan well in advance of any prospective voyages, to understand their environment, and to exercise extreme caution when on the water, in order to minimize the associated high levels of risk. Caution is equally essential when navigating with Electronic Navigational Charts (ENC), as these official digital charts are based on the same limited or insufficient data as the official paper or electronic equivalent charts.

Navigating outside areas supported by modern or adequately surveyed data, and without advanced and comprehensive voyage planning, ice experience, knowledge, and precautions, can result in the loss of human life and severe damage to property and the environment.

To fulfil the relevant requirements of demonstrating that they have recognized and mitigated the risks, as well as exercised due diligence in the operation of their vessels, all mariners and ship operators should take note of the warnings set out here and in other references, including in the International Code for Ships Operating in Polar Waters (*The Polar Code*).

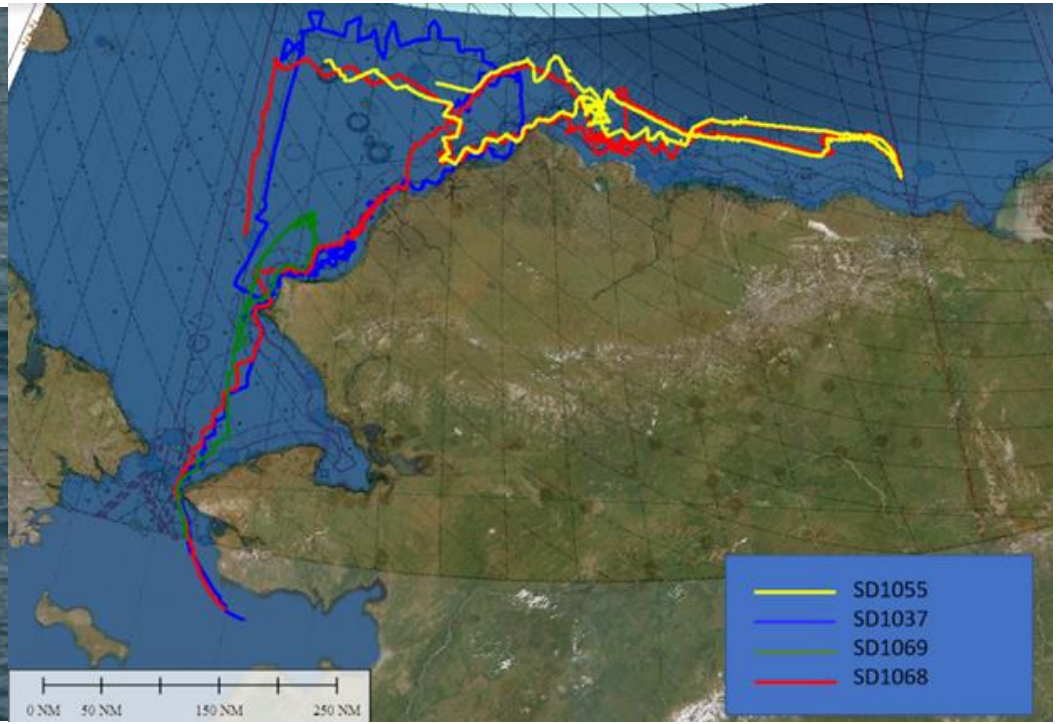
Interested readers are encouraged to contact the IHO Secretariat (*info@iho.int*) or the Hydrographic Offices of the ARHC Member States with any comments or feedback, as part of the efforts of the Arctic hydrographic community to improve safety of navigation and operations in the region.

Further references:

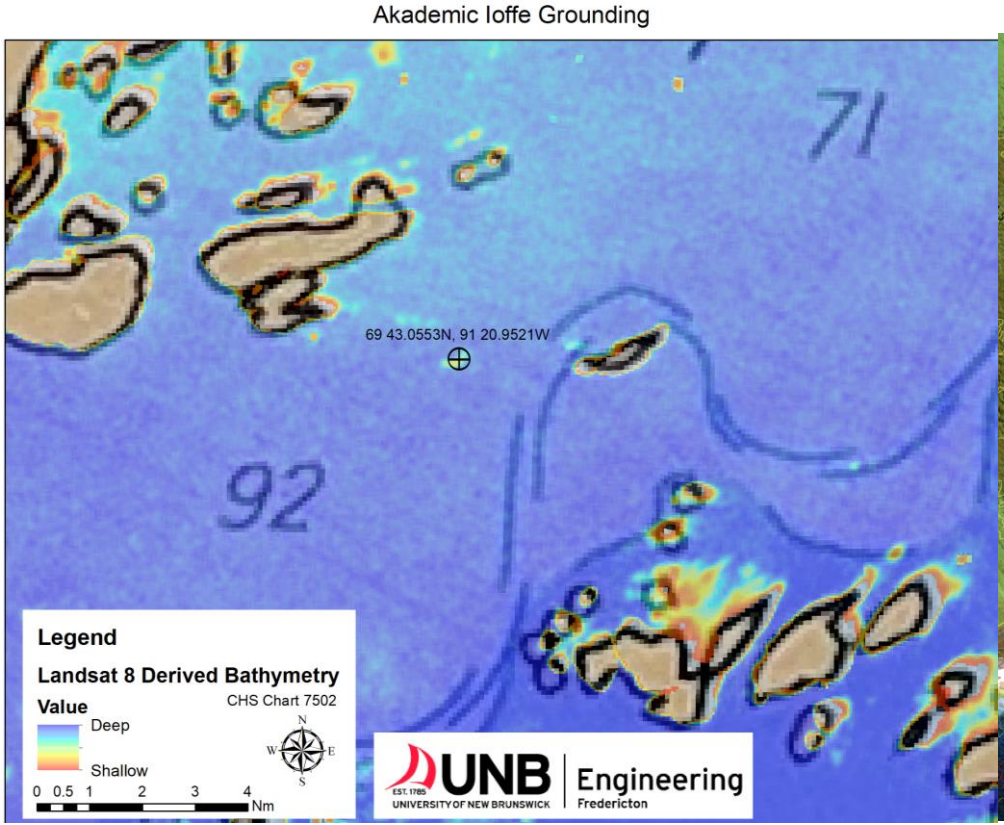
The Polar Code:
http://www.iho.int/mtg_docs/com_wg/NCWG/NCWG2/Polar%20Code.pdf
http://www.iho.int/mtg_docs/com_wg/NCWG/NCWG2/NCWG2-09.3_PolarCode_presentation_final.pdf

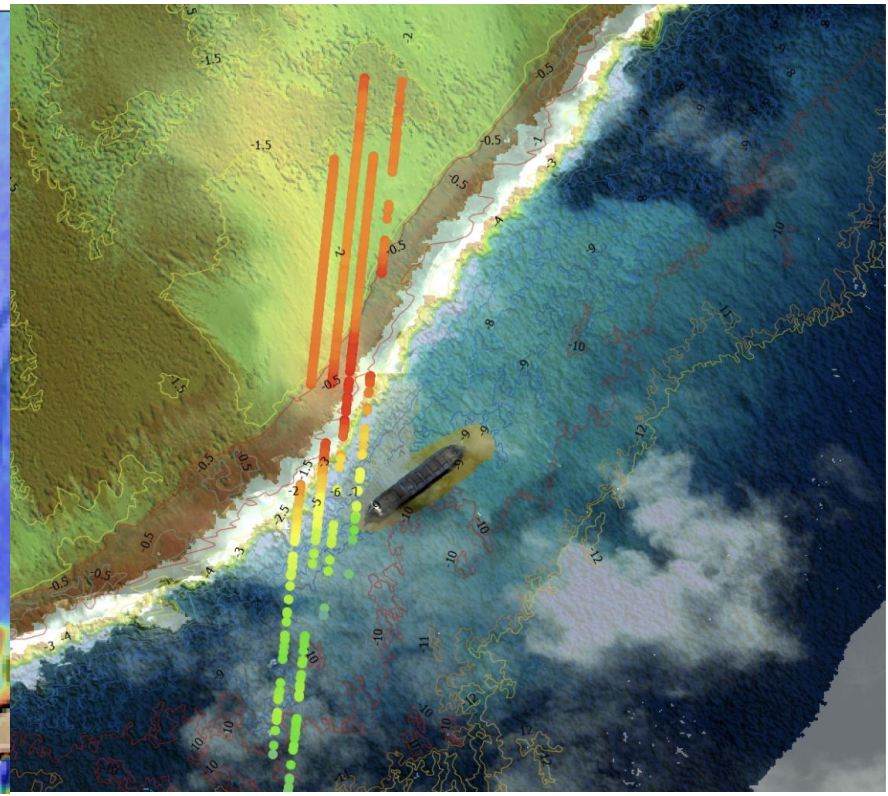
Arctic Regional Hydrographic Commission:

What are we doing about it?



New Generation Remote Sensing





Data discovery and expanding data availability

- A promise of unmanned hydrographic survey systems
- Crowd Source Bathymetry – collecting data from “the crowd”
- Shoeboxes- Polar Data Discovery stakeholders workshop- Dec 13, 2020
    - Bringing together Arctic, Antarctic academic, private sector and government, communities to locate data and make available to the global community

https://www.ngdc.noaa.gov/iho/

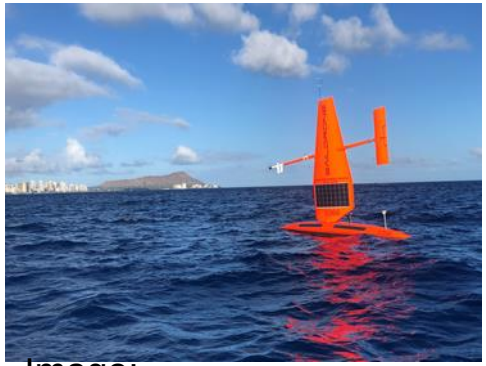
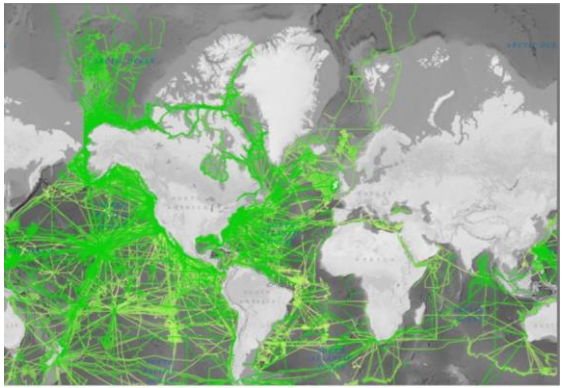
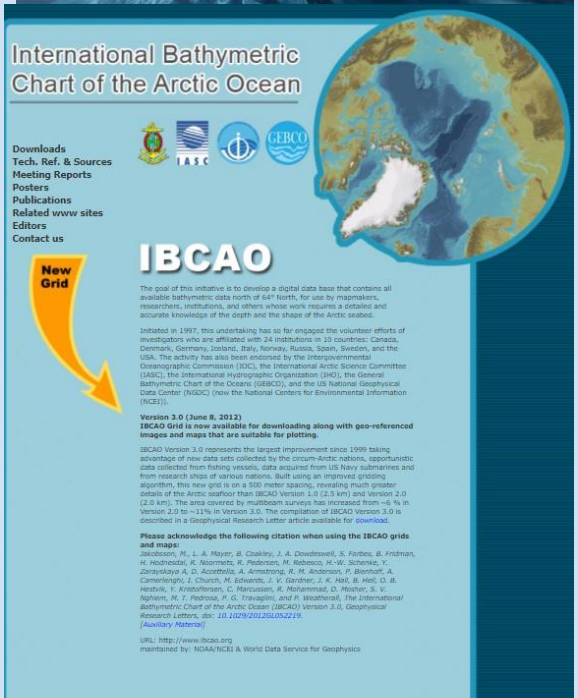


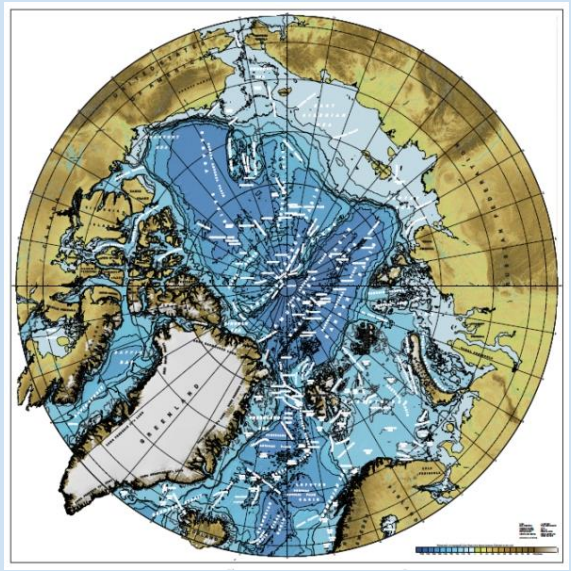
Image: https://www.pmel.noaa.gov/ocs/saildrone

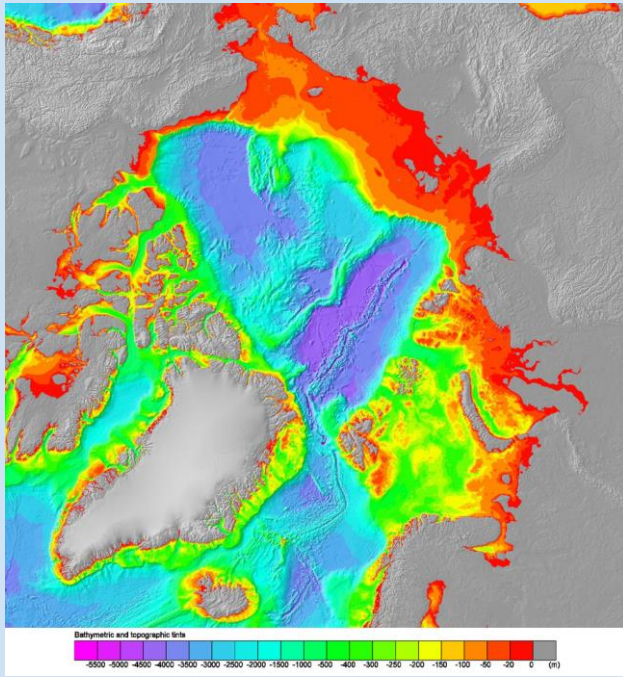


https://maps.ngdc.noaa.gov/viewers/iho_dcdb/

GEBCO, IBCAO, and Seabed 2030







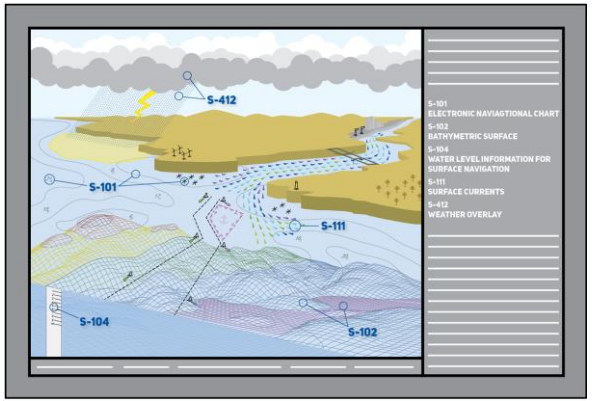
1903: GEBCO established

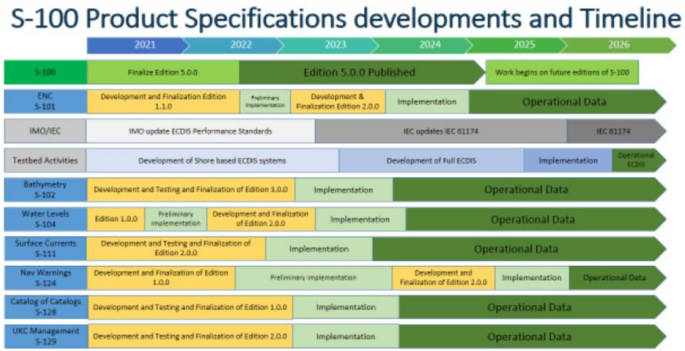
1997: IBCAO established

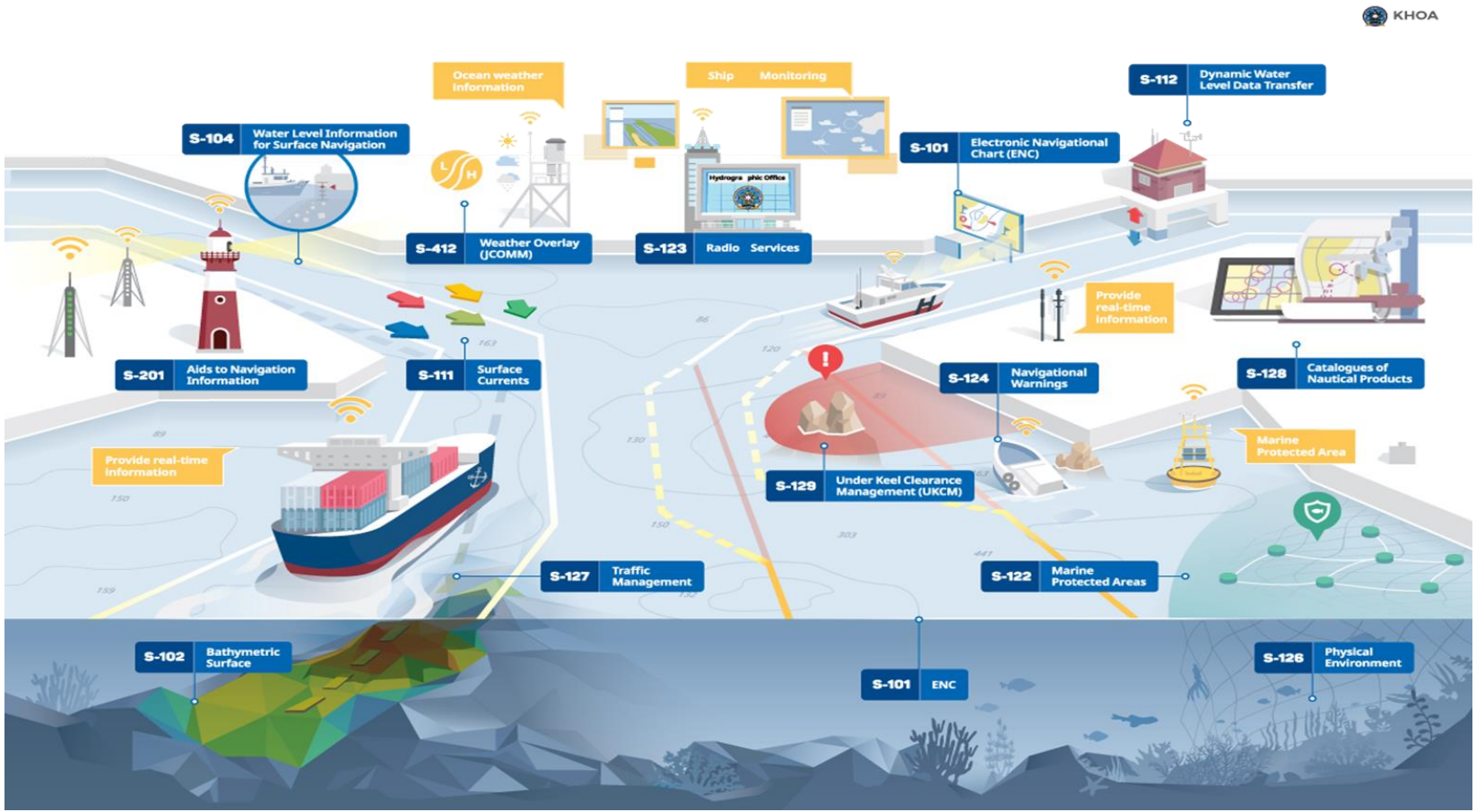
2012: IBCAO (edition 3.0)

An exciting decade is here- promise of the S-100 Navigation Services

- New IMO-endorsed global standard for navigation services
- Enabling new services-the emerging WEND-100 concept
- An opportunity in the Arctic to build the future navigation environment
- Decisions last week of the IHO Assembly (Nov 2020)
    - adoption of a S-100 Roadmap for the decade
    - New Strategic Plan that is goal & outcome based with a larger contributing role of hydrography in global governance






KHOA
Ocean weather information
Ship Monitoring
S-112 Dynamic Water Level Data Transfer
S-104 Water Level Information for Surface Navigation
S-101 Electronic Navigational Chart (ENC)
Hydrographic Office
S-412 Weather Overlay (JCOMM)
S-123 Radio Services
Provide real-time information
S-201 Aids to Navigation Information
S-111 Surface Currents
S-124 Navigational Warnings
S-128 Catalogues of Nautical Products
Marine Protected Area
Provide real-time information
S-129 Under Keel Clearance Management (UKCM)
S-127 Traffic Management
S-122 Marine Protected Areas
S-102 Bathymetric Surface
S-101 ENC
S-126 Physical Environment

Points of Contact for further interest

- Seabed 2030 RDACC for Arctic and North Pacific: arctic-pacific@seabed2030.org
- IHO Data Center for Digital Bathymetry (DCDB) and crowd sourced data working group Chair: Director Jennifer Jencks, Jennifer.Jencks@Noaa.gov
- ARHC: Chair 2019-2021 Hydrographer@noaa.gov