



International Bathymetric Chart of the Arctic Ocean (IBCAO)

Current grid: Version 3.0, released Spring 2012

Current map: Based on version 3.0, completed 2015

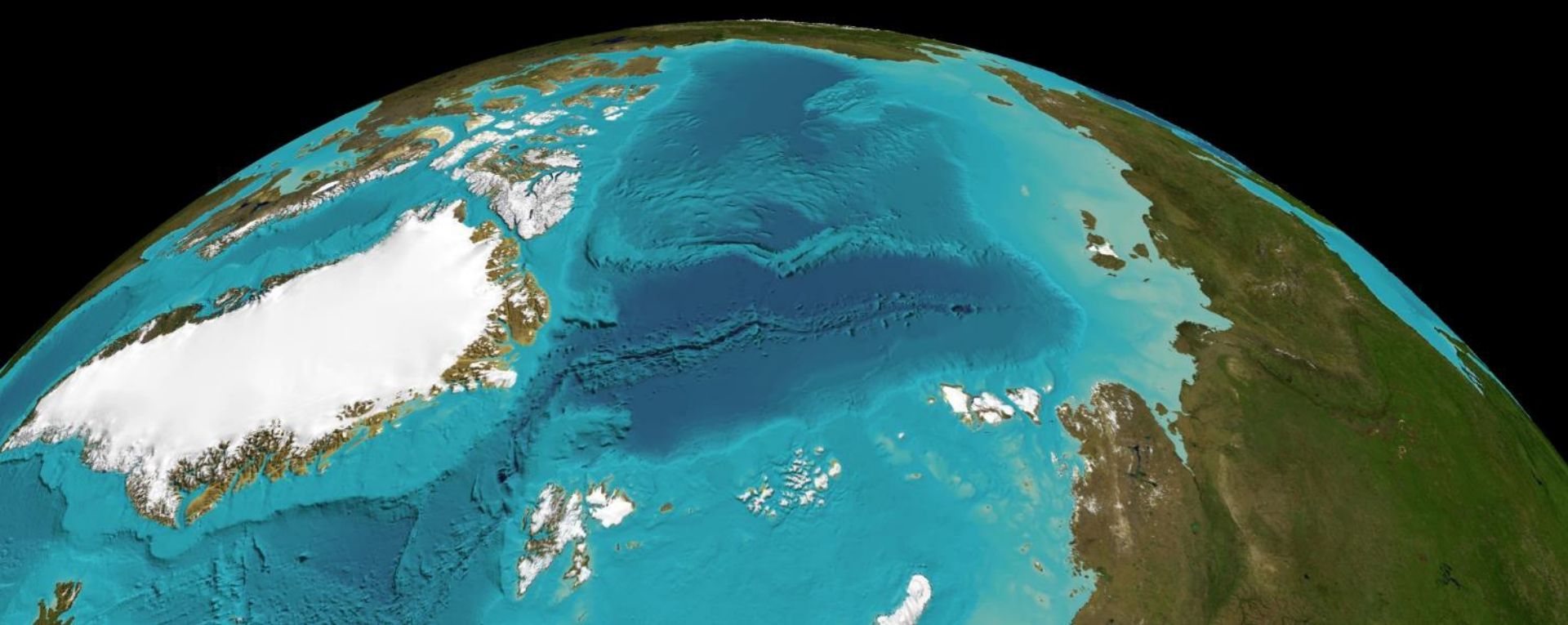
IBCAO Compilation Team



IBCAO Version 3.0

What was accomplished?

- Higher resolution: 500x500m, where possible
- Better and more accessible source data information
- First snapshots were presented during the American Geophysical Union (AGU) Fall Meeting in San Francisco, December 2011
- Journal article to accompany release published GRL
- Web page updated
- New printed map based on IBCAO 3.0: Finished 2016

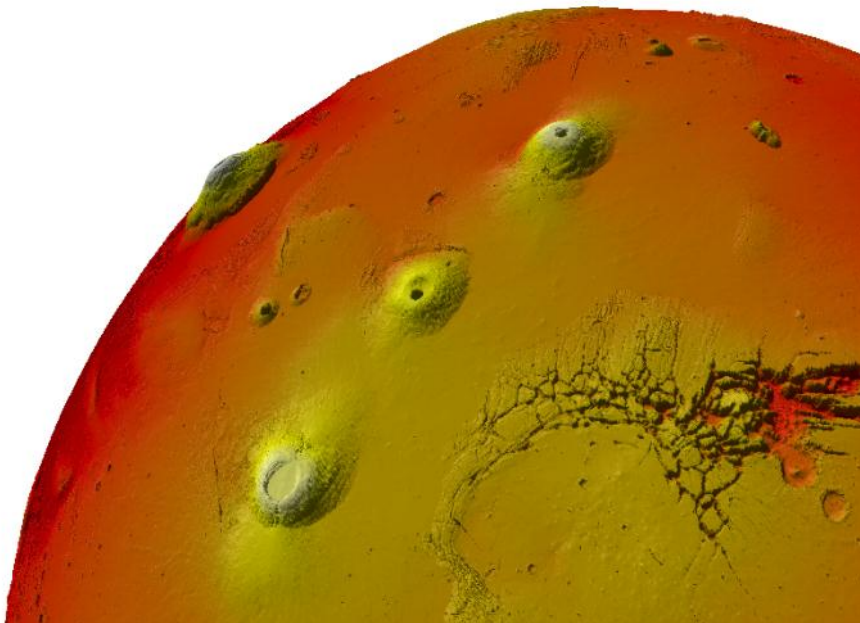


Status 2012:

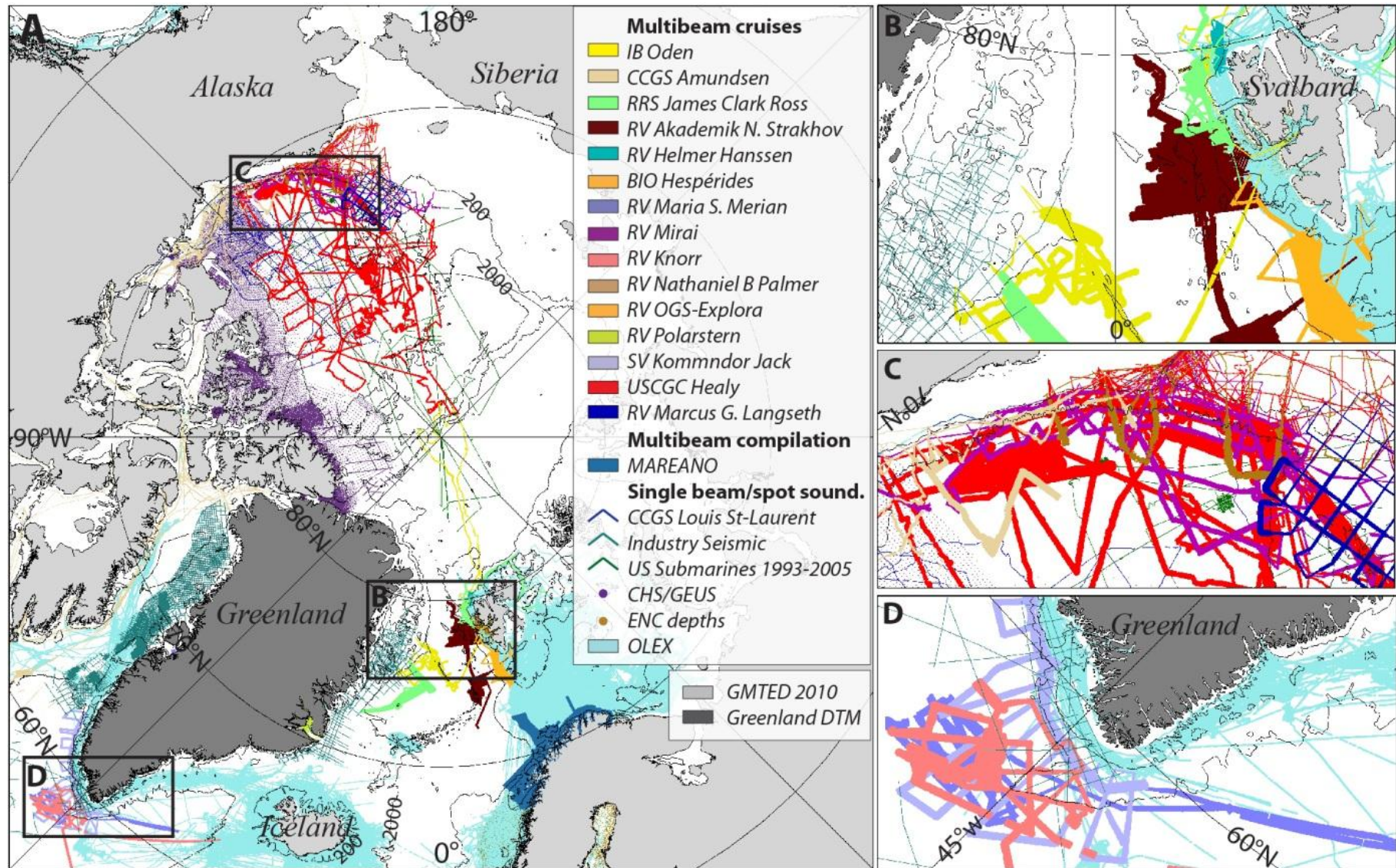
< 11 % of the central Arctic Ocean is mapped with multibeam

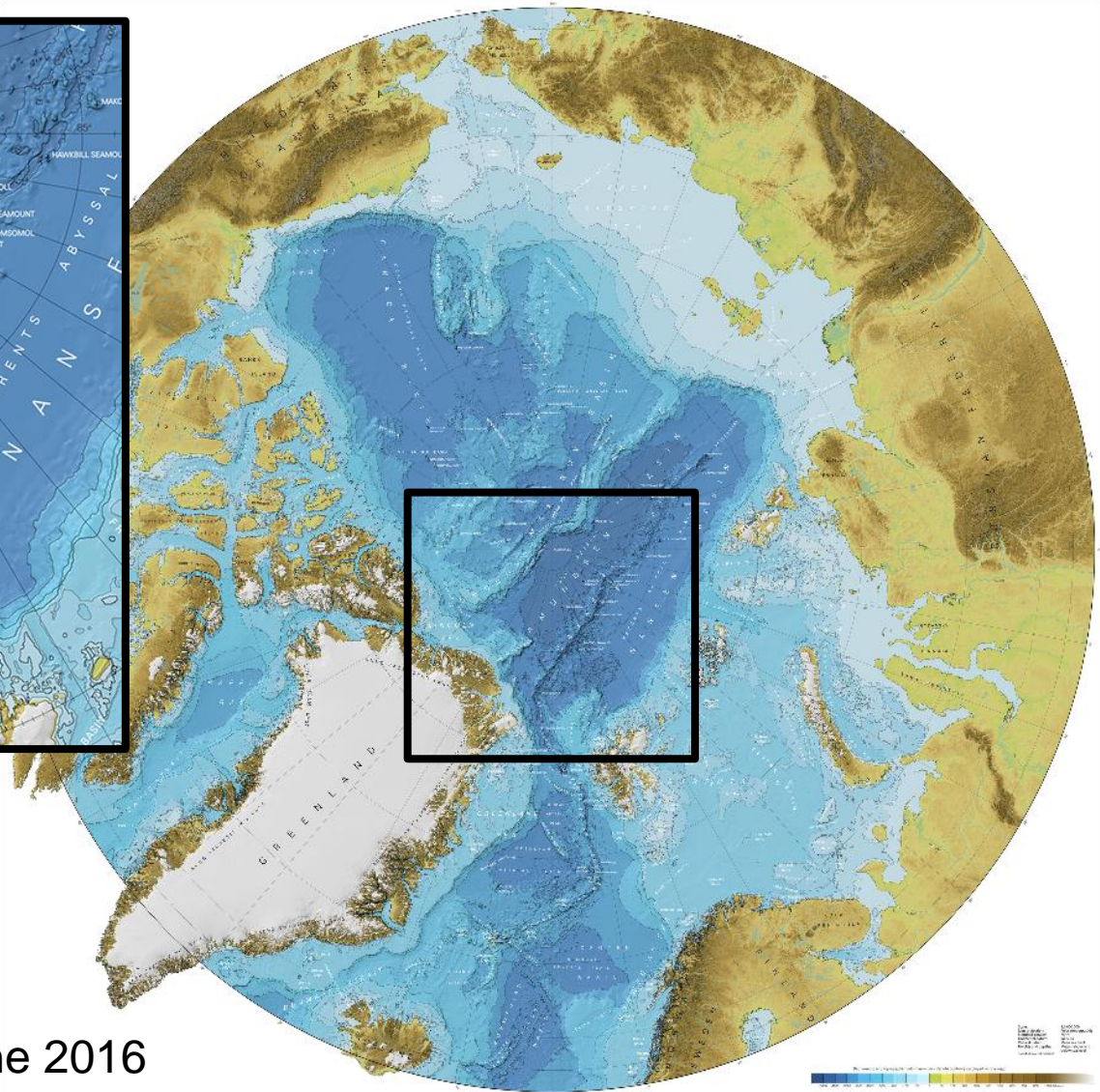
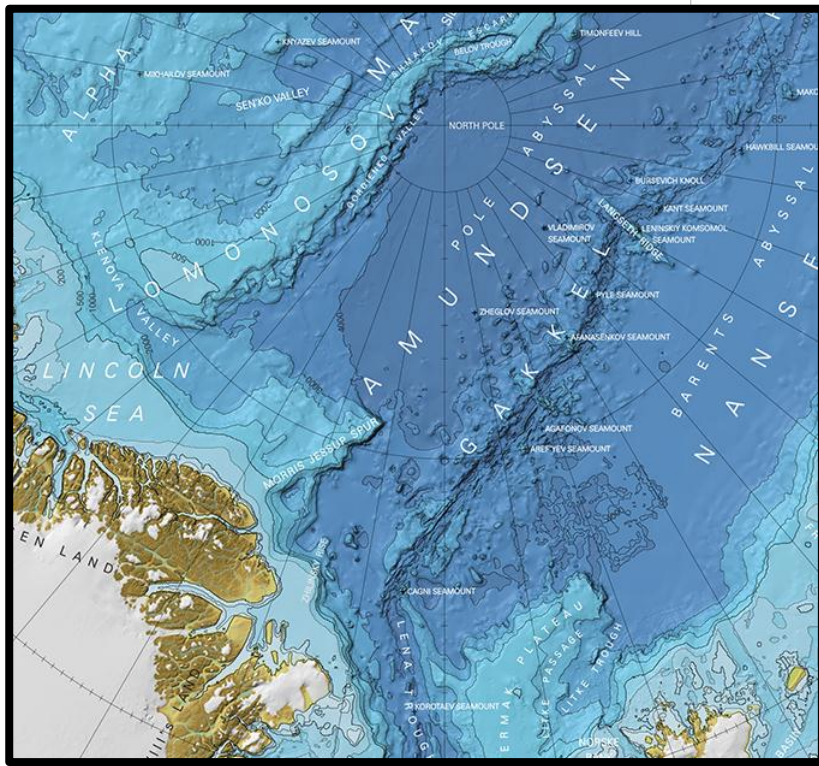
Mars was mapped already in 1998 and 1999 by NASA's Mars Orbiter Laser Altimeter (MOLA).

From Mars Express High-Resolution Stereo Camera (HRSC) images, DTMs of 50x50 m resolution are produced and ortho-images with 12.5 m resolution (*Gwinner, et al., EPSL, 2010*)

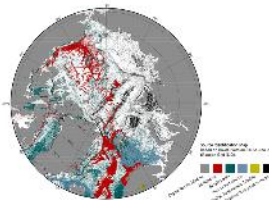


New source data added to Version 3.0





New printed map published June 2016



THE INTERNATIONAL BATHYMETRIC CHART OF THE ARCTIC OCEAN (IBCAO)

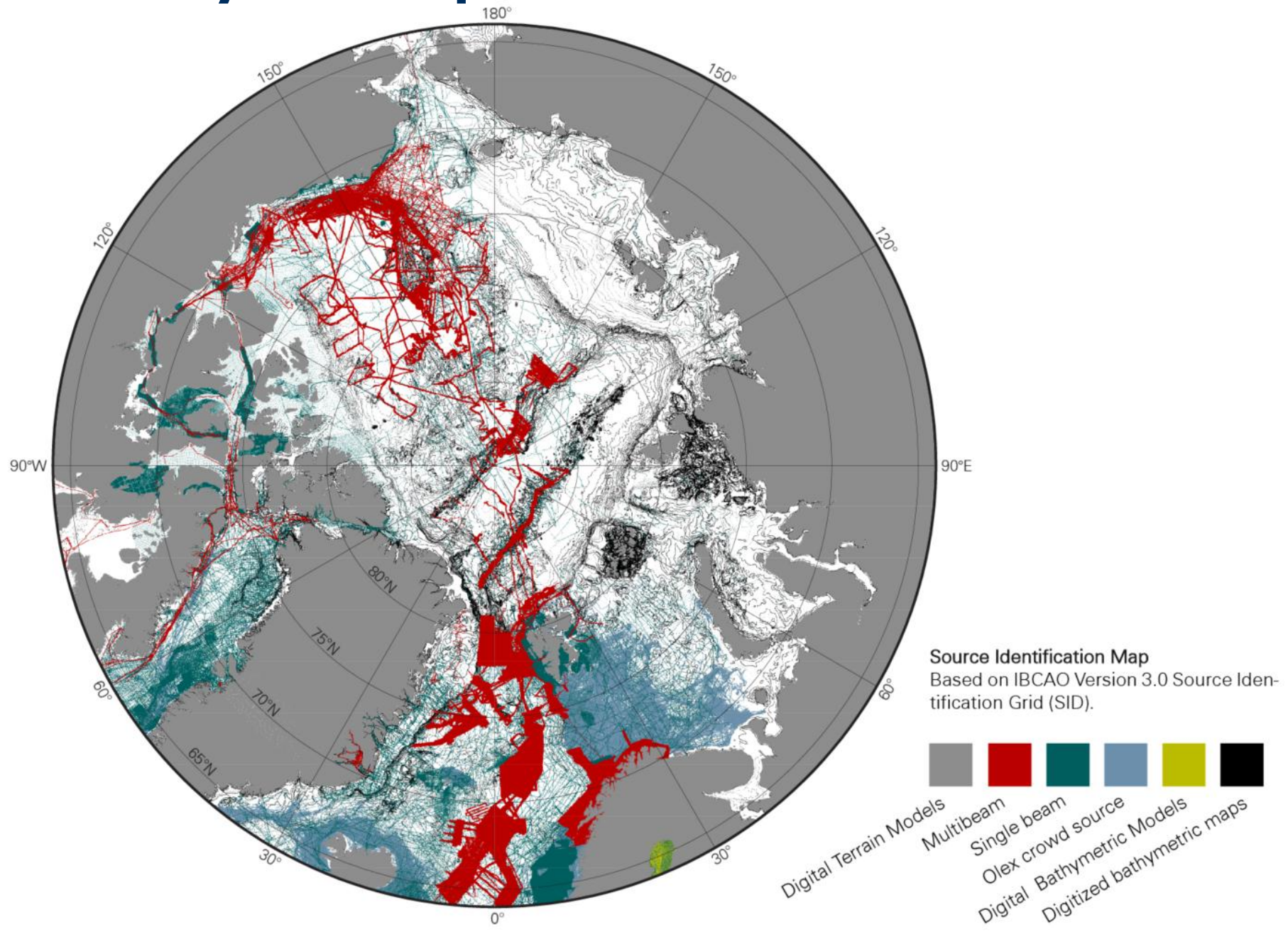
IBCAO is the acronym for the International Bathymetric Chart of the Arctic Ocean. It is a project of the International Hydrographic Organization (IHO) and the International Geophysical Commission (IGC). The IBCAO is a collaborative effort between the IHO and the IGC, and it is the only bathymetric chart of the Arctic Ocean that is based on a comprehensive and up-to-date survey of the region. The IBCAO is a project of the International Hydrographic Organization (IHO) and the International Geophysical Commission (IGC). The IBCAO is a collaborative effort between the IHO and the IGC, and it is the only bathymetric chart of the Arctic Ocean that is based on a comprehensive and up-to-date survey of the region.



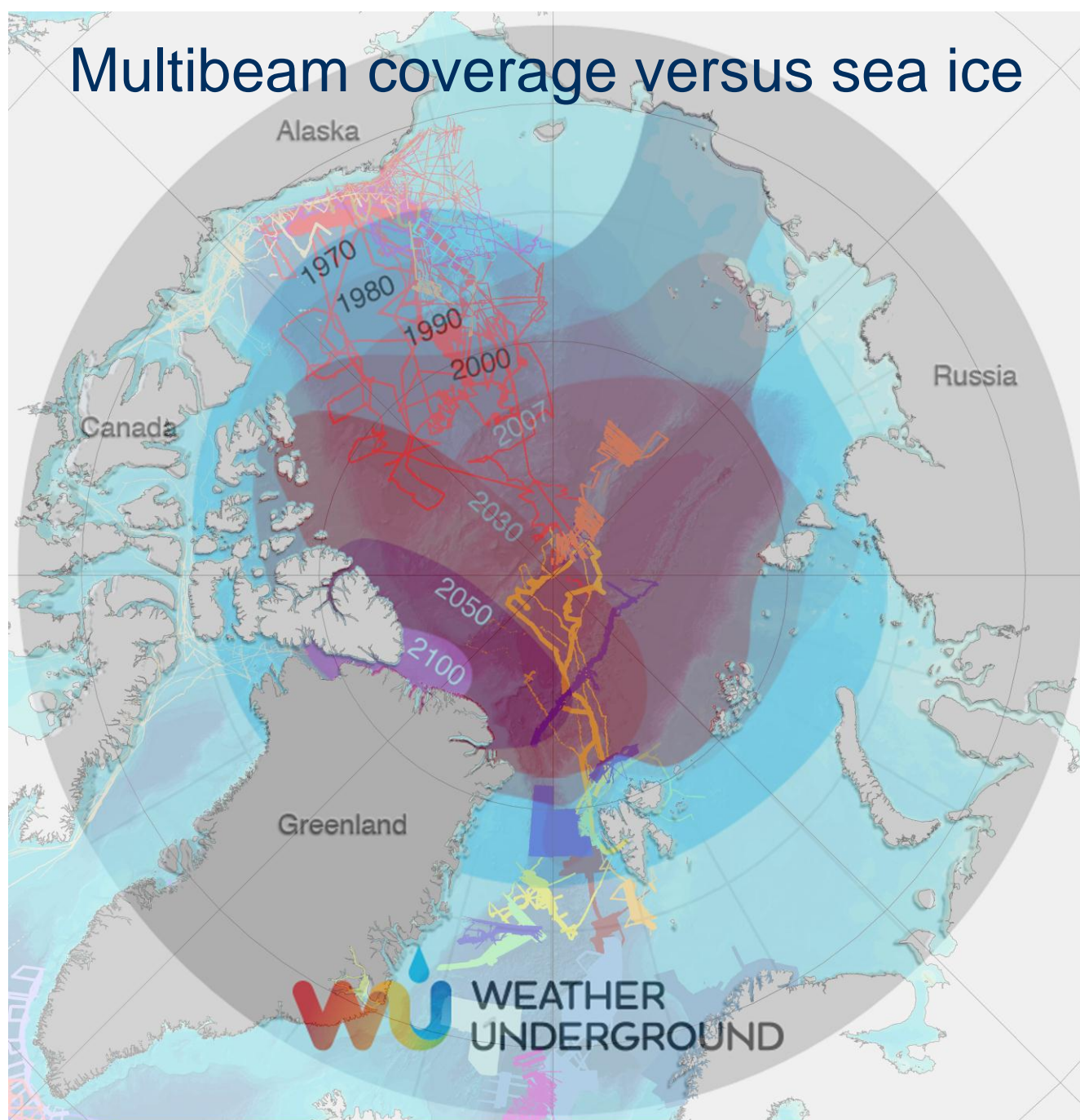
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The really weak spots!



Multibeam coverage versus sea ice



Multibeam data used in IBCAO Version 3.0 and sea-ice extent observations from 1970-2007) and forecasted 2030-2100. The data source is from the NOAA GFDL sea-ice model. The yearly extent represents an average 80% sea ice concentration. The sea-ice map is based on an illustration by Weather Underground.



Arctic – Antarctic Mapping Meeting

IHB, Monaco, June 12-13

Martin Jakobsson, Stockholm University
Boris Dorschel, AWI
Jan Erik Arndt, AWI

AA Meeting Goals:

Bring together key actors conducting bathymetric mapping in Arctic and Antarctic waters for the purpose of:

- Update and improve IBCAO and IBCSO
 - ***Identify new bathymetric data***
 - *Set new resolution goals*
- Discuss the uses and technical requirements of regional bathymetric compilations
- Discuss data sharing and acknowledgments
- Discuss publications plans

Dataset	Organization	Contact	Coverage	Data type	Acquisition system	Ship	Date ready
<i>Petermann 2015 Expedition</i>	Stockholm Univ./CCOM/OSU	Martin Jakobsson	Northwest Greenland: Petermann Fjord and adjacent area of Nares Strait	15x15 m multibeam grid	Kongsberg EM122, 12 kHz, 1x1 deg	IBOden	Ready
Arctic HE1202 Bathymetry	CCOM/JHC	Larry Mayer	Chukchi-Amerasian Arctic Ocean	100x100 m	Kongsberg EM122, 12 kHz, 1x1 deg	USCGC Healy	Read, available for download
Healy 2016, cruises coming	CCOM/JHC	Larry Mayer	Chukchi-Canada Basin	100 x 100 m	Kongsberg EM122, 12 kHz, 1x1 deg	USCGC Healy	Cruise planned
Digitized smooth sheets	NOAA	Mark Zimmerman	Gulf of Alaska- Bergin Sea	100 x 100 m	Based on digitized smooth sheets/multi	Mixed	Ready
Coastal Greenland	NASA	Ian Fenty	Coastal Greenland	25 x 25 m	Reson+Teledyne Seabat 8160 50 KHz	MV Cape Race,	Ready
Coastal Greenland	NASA	Ian Fenty	Coastal Greenland	25 x 25 m	Reson+Teledyne Seabat 8160 50 KHz	r/v neptune	Ready
Coastal Greenland	NASA	Ian Fenty	Coastal Greenland	singlebeam line	odom cv-200 single beam	r/v ault	Ready
Coastal Greenland	NASA	Ian Fenty	Coastal Greenland	1500 m	sander airgrav airborne gravimeter		Ready
MAREANO	MAREANO	Hanne Hodnesdal	Barents Sea, Norwegian Sea	50 x 50 m, compiled grids from multibeam	Mixed (mainly EM710/EM2400/EM300)	Several different	Read, available for download
Norwegian hydrographic surv	NHS	Hanne Hodnesdal	Norwegian coastal water	50 x 50 m, compiled from different sources			Read, available for download
UIT-Helmer Hanssen mapping	UIT	Mattias Forwick	Barents Sea, Svalbard	100 x 100 m	Kongsberg EM300	RV Helmer Hanssen	Different modes of readiness
University Bergen? G.O.Sars	Bergen University	Hafliði Hafliðarson	Barents Sea	??	Kongsberg EM300/EM1000	RV G.O.Sars	Not known
IBCAO Svalbard	UNIS/NHS	Riko Noormets	Svalbard waters	100 x 100 m (source 10 x 10 m)	Multibeam (EM2040/EM3002/EM300)	Several different	Compilation in process
Araon mapping 2011,2012,20	KOPRI	Young Keun Jin	Beufort Sea/Chuckhi Sea/ East Si	100 x 100 m	Kongsberg EM122, 12 kHz, 1x1 deg	IBRV Araon	Ready
Araon mapping 2016	KOPRI	Young Keun Jin	East Siberian Sea	100 x 100 m	Kongsberg EM122, 12 kHz, 1x1 deg	IBRV Araon	To come
GLACIBAR	UIT	Miquel Rebesco/Karin Andreassen	Kveithola, Barents Sea	100 x 100 m?	Kongsberg EM300	RV Helmer Hanssen	Ready
CORIBAR	MARUM	Miquel Rebesco/Hanibuth	Kveithola, Barents Sea	100 x 100 m?	EM 122/1002	RV Maria S. Merian	Ready
EDIPO	OGS	Miguel Rebesco/Andrea Caborlotto	Off Isfjorden, Svalbard	100 x 100 m?	Reson Seabat 7150, 24 kHz	OGS Explora	Ready
DEGLABAR	Univ of Barcelona	Miguel Rebesco/Jose Luis Casamor	South of Kveithola	100 x 100 m?	Reson Seabat 7150, 24 kHz	OGS Explora	Ready
Cruise no 25,26,27,28	Geological Institute/Norw	Yulia Zaraskaya	Barents Sea	200 x 200 m	Reson Seabat 7150, 12 kHz/8111, 100 k	Akademik Nikolaj Strakhov	Ready
Russian EEZ no 25, 26,27,28	Geological Institute/Norw	Yulia Zaraskaya	Barents Sea	200x 200 m	Reson Seabat 7150, 12 kHz/8111, 100 k	Akademik Nikolaj Strakhov	Ready
DNO	VNIOO	Evgeny Gusev	Laptev Sea/East Siberian Sea	High resolution contours/based on single be	N/A		Ready
DTM in White Sea	Oceanology of Shirshov	Yulia Zaraskaya/Sergej Nikiforov	White Sea	?	Mixed sources (single beam, smooth sheet etc)		Ready
Russian UNCLOS	Russian government	Leopold Lobkovsky	Arctic Ocean	100 x 100 m grid?	Kongsberg EM122, 12 kHz, 1x1 deg	Akademic Fedorov	Discussion, perhaps in a year?
Galway 2015	CHS	Chris Hemmingway/Paolo Travaglini	Halifax-Tromsø	100 x 100 m	Kongsberg EM122, 12 kHz, 1x1 deg	Louis St Laurent	Ready
St Johns to Arctic	CHS	Chris Hemmingway/Paolo Travaglini	St Jones to Arctic	100 x 100 m	Kongsberg EM122, 12 kHz, 1x1 deg	Louis St Laurent	Ready
ArcticNet, post 2011??	Univ. of Laval	Patric Lajuenesse	Arctic	100 x 100 m	EM 302/EM3002	Amundsen	??
CHS UNCLOS, 2014, 2015	CHS	Chris Hemmingway/Paolo Travaglini	Central Arctic Ocean	100 x 100 m	Kongsberg EM122, 12 kHz, 1x1 deg		
CHS UNCLOS 2016	CHS	Chris Hemmingway/Paolo Travaglini	Central Arctic Ocean	100 x 100 m			
Erebus Search	CHS	Laura Colombe	Canadian Arctic Arhipelago	100 x 100 m	EM 3000	Different ships	Ready
Ardnt compilation	AWI	Jan Erik Ardnt	Northeast Greenland	DTM			
Greenland, MaxSea	GNIR	Karl Zinglersen	Greenland	Crowd source	Various single beam	Fishing vessels and others	Have to be processed
Shell	Alaska Fairbanks	Bernie Coakley	Chukchi Sea	?	?		
Beaufort 3D seismic	PGC	David Mosher/Phil	Beufort Sea				
3D Seismic in Barents Sea	?	Hanne Hodnesdal	Barents Sea				
Greenland Connect	TelePost Greenland A/S	Karl Zinglersen	South Greenland archipelago, Iceland-Greenland, Greenland-Halifax		multibeam	OGS Explora	Ready
Greenland Connect North	TelePost Greenland A/S	Karl Zinglersen	West Greenland archipelago		Reson T20	Arctic Hunter	Ready
MSM05-03 2007	GEOMAR	Wilhelm Weinrebe/Karl Zinglersen	West Greenland		multibeam	Maria S. Merian	Ready
Viking survey S. Greenland	GEUS/GEOMAR	Karl Zinglersen/ Antoon Kuijpers	South Greenland fjords		multibeam	RV Poseidon	Ready
Hydrocarbon surveys Greenla	NUNAOIL	Thomas Varming/Karl Zinglersen	Greenland offshore		multibeam and seismic	various	??