U.S. Advanced Arctic Data and Information System (ACADIS)

Considerations for Archival of Distributed Biological Observatory Field Data

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Distributed Biological Observatory Workshop

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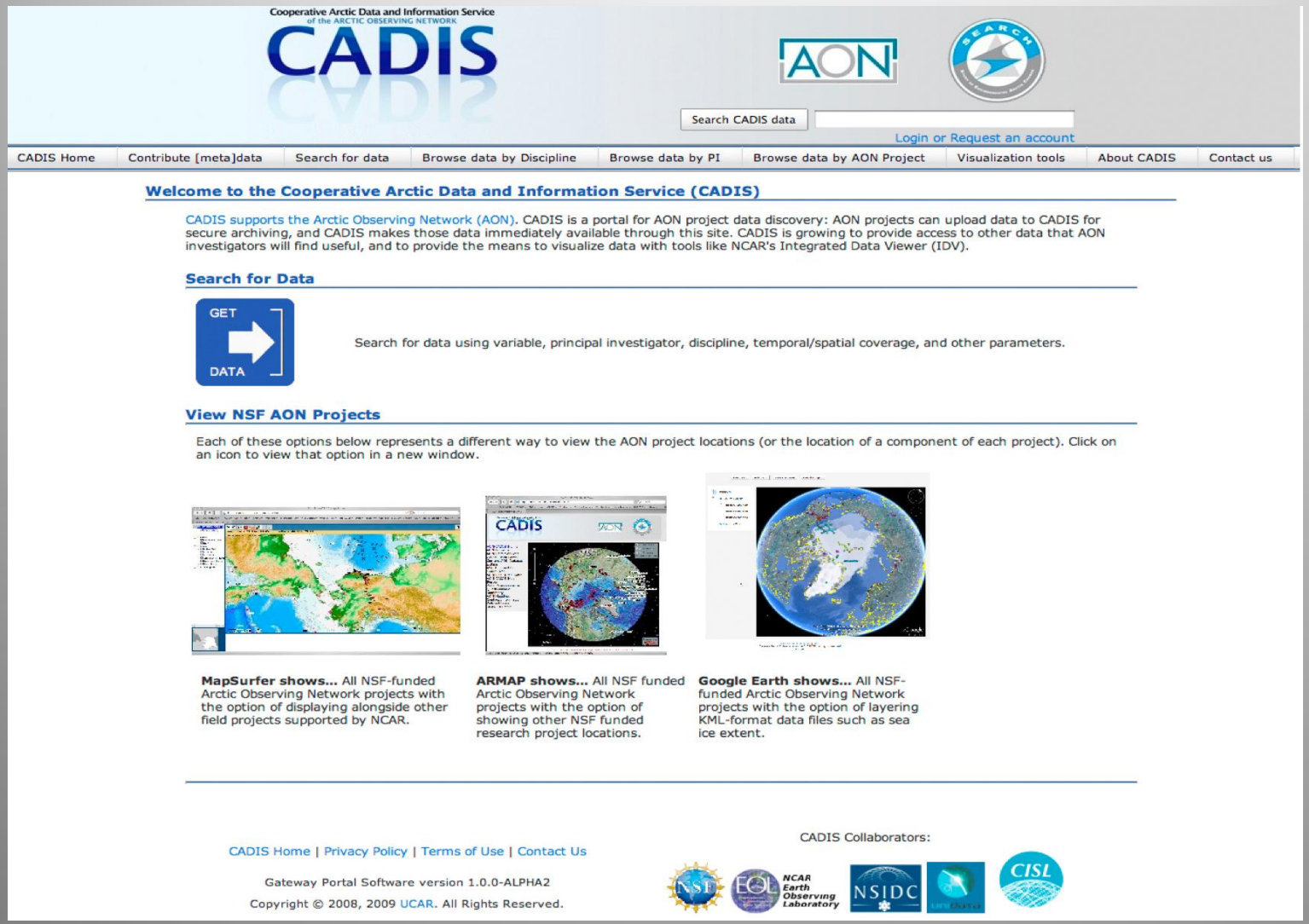
ACADIS Goals

- To build from CADIS a service for *all* NSF Arctic data that:
  - easily accepts *complete* data submissions (ingest),
  - makes the data available to NSF investigators *and many more* (access),
  - *preserves* the data (preservation),
  - makes the data *more useful* to more people (value-added products, integration).

http://www.aoncadis.org/

Cooperative Arctic Data and Information Service
of the ARCTIC OBSERVING NETWORK
CADIS

The New ACADIS Gateway
http://www.aoncadis.org/



Metadata and Data Publishing

Data Discovery

Data Search

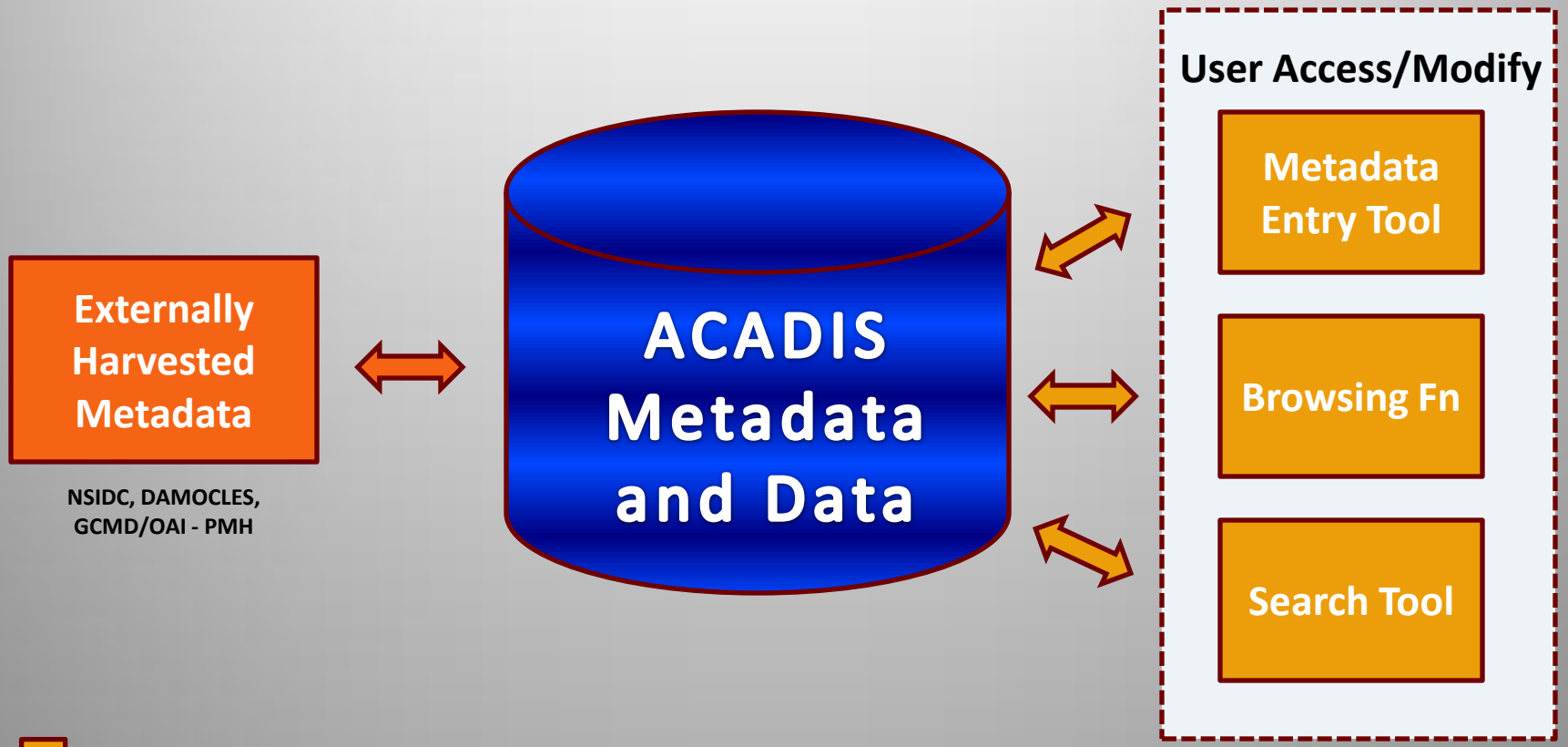
Data Download

Visualization

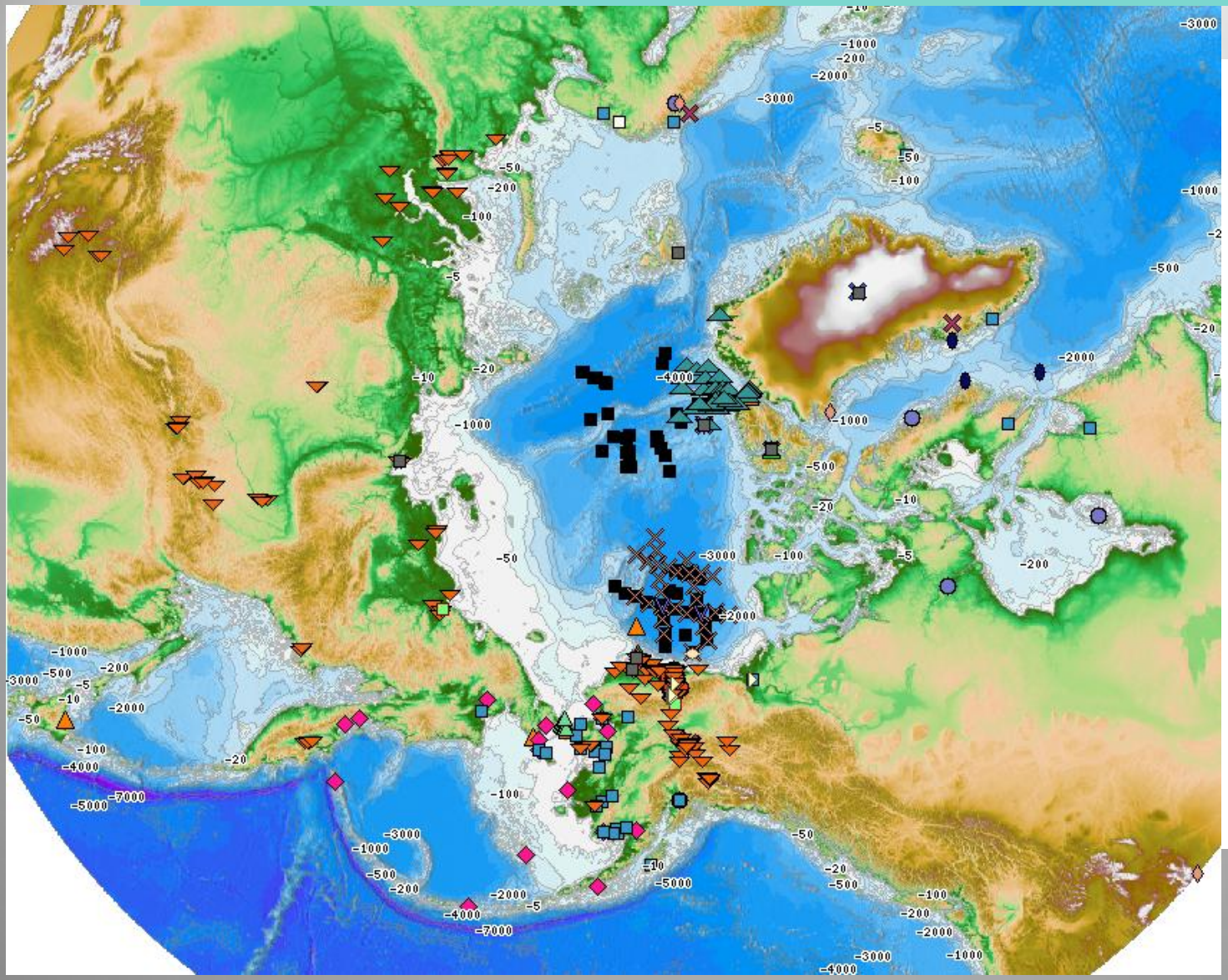
Interoperability with other archives

ACADIS Gateway Access and Flow

http://aoncadis.ucar.edu



AON Network Distribution across the pan-Arctic



Schematic of AON site distributions across 12 nations in the pan-Arctic. NSF funded AON Investigators are listed with unique icons identifying measurement site(s). Drifting buoys are not accurately represented. *Map prepared by Scot Loehrer (NCAR) in fall 2009.*

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CADIS

Primary ACADIS Goals (Year 1)

- Continue data ingest and user services
- Develop PI Data management plan template
- Organize ACADIS Advisory Committee
- Generate inventory of arctic data brought through NSF grants
- Implement ingest for new project datasets
- Develop Level of Service (LoS)
- Virtual PI Workshop
- New web site for multi-agency and international data exchange

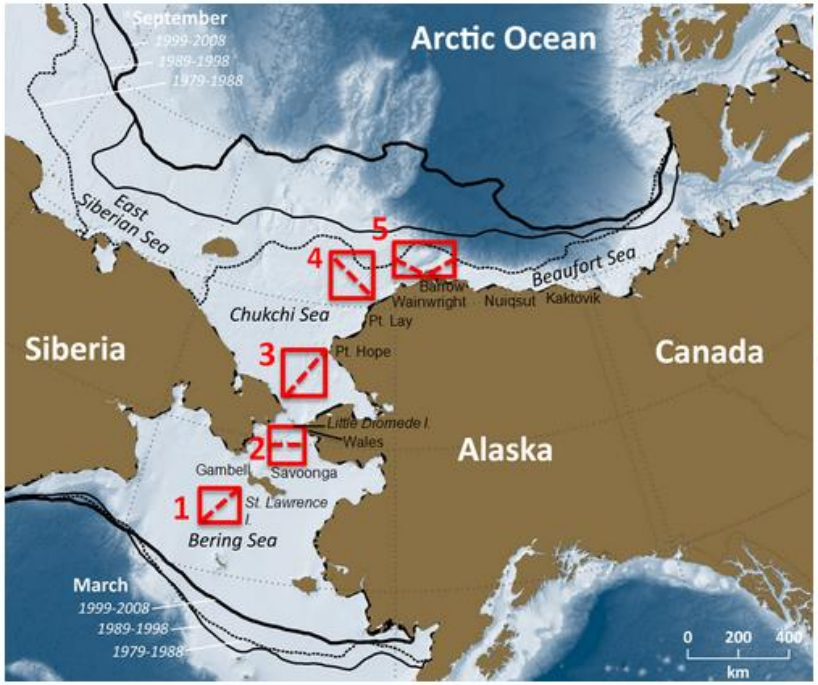
How can ACADIS Help Support DBO Data Management Needs?

DBO Web Site hosted by NOAA/ARP

Distributed Biological Observatory (DBO)

Linking Physics & Biology

Home | About | Workshop Products | Cruise Data | Publications | Contacts



DBO sites (red boxes) are

- regional "hotspot" transect lines and stations located along a latitudinal gradient
- considered to exhibit high productivity, biodiversity, and overall rates of change

DBO sites will

- serve as a change detection array for the identification and consistent monitoring of biophysical responses
- be occupied by national and international entities with shared data plan

DOC | NOAA | NOAA Arctic Research Program
Privacy Policy | Disclaimer | Contacts

SBI Data Archive at NCAR EOL

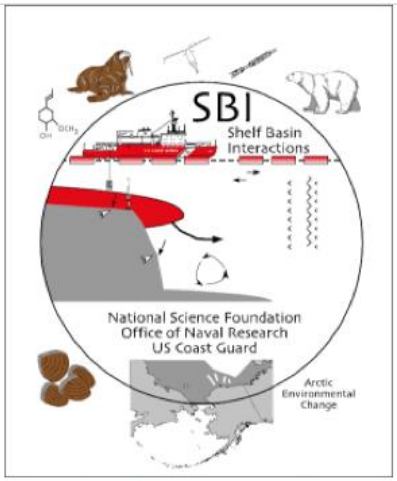
SBI Data Archive Home /

SBI Data Archive

- Home
- SBI Home Page (UMd)
- Meeting Presentations
- Cruise Summary Info
- Cruise Field Catalogs
- Participants
- Mapservers
- Archive Summary
- Links

Data Access

All Data
Underway
Satellite
Service-Bottle
Service-CTD
Mooring



Shelf Basin Interactions Project (SBI)

The Western Arctic Shelf-Basin Interactions (SBI) project is a contribution of the National Science Foundations (NSF) Arctic System Science (ARCSS) global cha SBI project is that global change will especially influence physical and biological basins. As such, SBI field efforts will converge on the zone comprised of the out water mass exchange and biogeochemical cycles, and where the greatest respo Western Arctic SBI study area covers the Chukchi and Beaufort seas. It is antici to a Pan-Arctic perspective.

Project Objectives

The fundamental goal of the Shelf-Basin Interactions (SBI) program is to u link the arctic shelves, slopes, and deep basins within the context of globa chemistry, and physics of the Arctic Ocean and its associated ecosystems and atmosphere by both physical and biogeochemical mechanisms, such have on North Atlantic convection and thermohaline circulation of the wor biogeochemical processes occurring over the arctic shelves and a synoptic understanding of these processes is essen impacts of climate change. For example, carbon dioxide fluxes from sources or sinks on Arctic shelves may have direct negative ramifications for local marine resources and human populations that are dependent upon them for subsistenc processes that are sentinel indicators of global change, including alteration of current biogeochemical cycles. These in

Data by Cruise

HLY-04-04: Mooring
HX-290: Bering Strait
HLY-04-03: Process
HLY-04-02: Process
HLY-03-03: Mooring
NBP03-04a: Survey
HX-274: Bering Strait
2003-14: Helo Survey
HLY-02-03: Process
AWS02: Chk/Bft Mooring
HX-260: Bering Strait
HLY-02-01: Process

Data by Discipline

Benthic
Hydrography
Ice
Meteorology
Microbiology
Optics
Plankton
Primary Productivity
Water Chemistry

Follow the process used for successful support to SBI Project

- A DBO Project web site
- Upload of DBO datasets using ACADIS
- A focused DBO Data management web site within ACADIS
- Information includes metadata, documentation and the data itself
- Data can be secured as providers and project require (password protection)
- Eventually it would be open to broad community access
- Focus on long term preservation/access

SBI Data Categories, Authors and Cruise information

SBI Archive Summary

Total Number of Datasets: 360

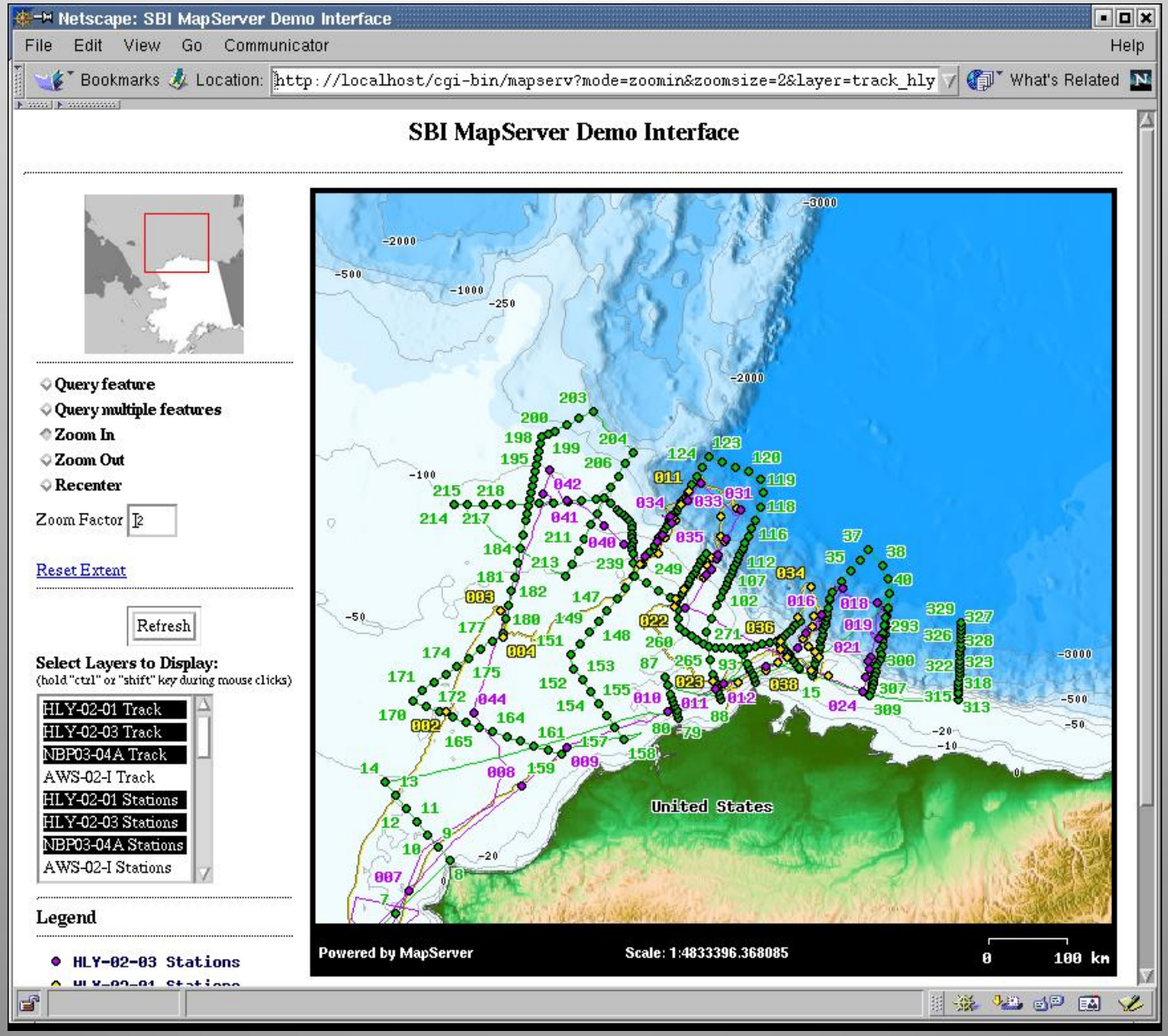
Author/PI: Total defined: 360	
Aagaard, K., R. Woodgate, and T. Wein ...	5
Aagaard, K., and R. Woodgate	1
Ashjian, C.	4
Ashjian, C., and R. Campbell	4
Ashjian, Carin, Cabell Davis, Robert ...	1
Bates, N. R.	8
Bates, N., D. Hansell	4
Benner, R.	6
Campbell, R. and C. Ashjian	8
Christensen, J.	1
Christensen, J. P.	1
Christensen, J. and H. Melling	3
Cooper, L., and J. Grebmeier	4
Cota G., L. Pomeroy	1
Cutter, G.	8
Darby, D.	10
Devol, A. H. and J. P. Christensen	2
Dunton K., J. Grebmeier, D. Maidment	2
Dunton, K.	8
Eicken, H.	3
Eicken, H., K. Tateyama	1
Eicken, H., R. Gradinger	1
Flagg, C.	14
Gradinger, R.	5
Gradinger, R. and H. Eicken	1
Grebmeier, J.	4
Grebmeier, J. and L. Cooper	16
Hansell, D. and N. Bates	2
Hansell, D. and N.R. Bates	6

Category: Total defined: 1098	
Abundance	6
Bathymetry	1
Benthos	79
Biogeochemical	38
Biology	2
Biomass	50
Buoy	3
CTD	30
Hydrography	124
Meteorology	55
Microbiology	11
Model	3
Mooring	10
Navigation	22
Nutrient	22
Oceanography	58
Optics	15
Paleoceanography	8
Plankton	43
Production	10
R/V Alpha Helix	14
R/V Nathaniel B. Palmer	12
Radioisotope	16
Satellite	23
Sea Ice	18
Sediment	15
Ship Based	1
Stable Isotope	11
USCGC Healy	238

Event: Total defined: 333	
2003-14	3
AOS-94	4
AWS-02	7
HLY-02-01	83
HLY-02-03	92
HLY-03-01	4
HLY-03-03	8
HLY-04-02	52
HLY-04-03	46
HLY-04-04	8
HX-235	3
HX-250	3
HX-260	3
HX-274	3
HX-290	2
NBP03-04a	12

Site: Total defined: 358	
Arctic Ocean	346
Barrow	1
Bering Strait	11

Special Products such as EOL GIS Mapserver



DBO Data Management Considerations

>Develop an International DBO data policy and exchange protocol (including priority measurements) to facilitate:

- Dataset exchange and access
- Preparation of datasets for data integration, intercomparison and modeling studies

>Encourage broad access to data and metadata beyond national restrictions through scientific collaboration/cooperation

>Coordinate with other National and International Projects

>Consider data format and documentation guidelines to enhance international data exchange and analysis

>Document and standardize (if possible) data collection protocols (time, sensors, processing, parameters, units)

DBO Data Matrices for 2010-11

DBO 2010 Data Parameter Matrix (SE Chukchi Sea-SECS) and Barrow Canyon (BC)

Cruise (DBO PI Lead)	Period (DBO lines)	CTD*	Chl-extracts	Nutrients	Algae-Ice/Phyto-plankton: size, biomass, composition	Zooplankton: size, biomass, composition	Benthos: size, biomass, composition	Seabird surveys	Marine Mammal surveys
Healy 1001 (Pickart)	June-July (both)	x	x	x	x			x	
Sir Wilfrid Laurier (Vagle)	July (both)	x	x-SECS only	x		x**	x**	x	
Moana Wave** (Grebmeier)	July-Aug (both**)	x	x	x	x	x	x	x	x
Xuelong (He)	July								
Annika Marie (Ashjian)	Aug (BC								
Alaskan Enterprise (Napp/CHAOZ)	Aug (BC								
Khromov (Woodgate) (RUSALCA CS line)	Aug (SE								
Healy 1003 (Pickart)	Sep								
Mirai (Itoh)	Oct one SEC								
Sum data sets									

*=T, S, plus some cruises
**=all water column, plan
***=3 stations per transe

DBO 2011 Data Parameter Matrix (SChukchi Sea-SCS) and Barrow Canyon (BC)

Cruise (DBO PI Lead)	Period (DBO lines)	CTD*	Chlorophyll-extractions	Nutrients	Algae-Ice/Phyto-plankton: size, biomass, composition	Zooplankton: size, biomass, composition	Benthos: size, biomass, composition	Seabird surveys	Marine Mammal surveys
Healy 1101 (Pickart and Arrigo)	June 15-July 25 (both)	x	x	x	x				
Sir Wilfrid Laurier (Vagle and Grebmeier)	July 6-21 (both)	x	x	x	x	x	x	x	x
Araon (Chung)	July 29-? Aug	x	x						
Khromov (Woodgate)	July 9-25 (SECS)=RUS ALCA CS line	x	x	x		x			x
Shell cruise (Weingartner)	August	x				x	x	x	x
Annika Marie (Ashjian)	August (BC)	x	x	x		x			x
Mystery Bay (Napp\CHAOZ)	Aug-Sept (BC)	x				x			x
Westward Wind (Day)	Aug-Oct (BC, uncertain)								
Healy 1003 (Pickart)	Sept (BC)	x		x				x	

*=T, S, plus some cruises transmissivity, fluorescence (chlorophyll), CDOM, dissolved oxygen, pH

ACADIS Lessons Learned and Next Steps for DBO Data Management

Effective project data management support includes:

* A systematic approach to meet project needs
* Support to the data providers – be responsive
* Effective and easy to use tools for data and metadata upload to the archive
* A uniform metadata standard to enhance international data exchange
* Single access point to search/download data
* Improve data search capabilities
* Remain flexible regarding data formats
* Consider uniform time and units

DBO Diversity of Data Sources and Disciplines

- Satellite data from multiple sources
- International ship participation (~14 vessels)
- Ship based data (e.g. CTDs, ADCPS, bio sampling, animal surveys, backscatter etc.
- Moored arrays (e.g. ADCP, temp, salinity, whale recorders, pH, etc.)
- Modeling efforts
- Multiple archive sites

Some challenges and opportunities for DBO Data Management

DBO Data Management web page

International Collaboration/Cooperation

•Timing of observations to address short and long term variability

Representativeness of observations

Changes in satellites, sensors and algorithms

Data intercomparison

Single repository/access point

Utilize distributed archive structure where possible

Project –and-- data integration

Data collection, sharing and access protocols

•Data questionnaire to DBO team

Comments and Questions?

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http://www.aoncadis.org/