The Conservation of Arctic Flora and Fauna

Arctic Biodiversity Congress

December 4th, Trondheim

Arctic Biodiversity Data Management and Delivery

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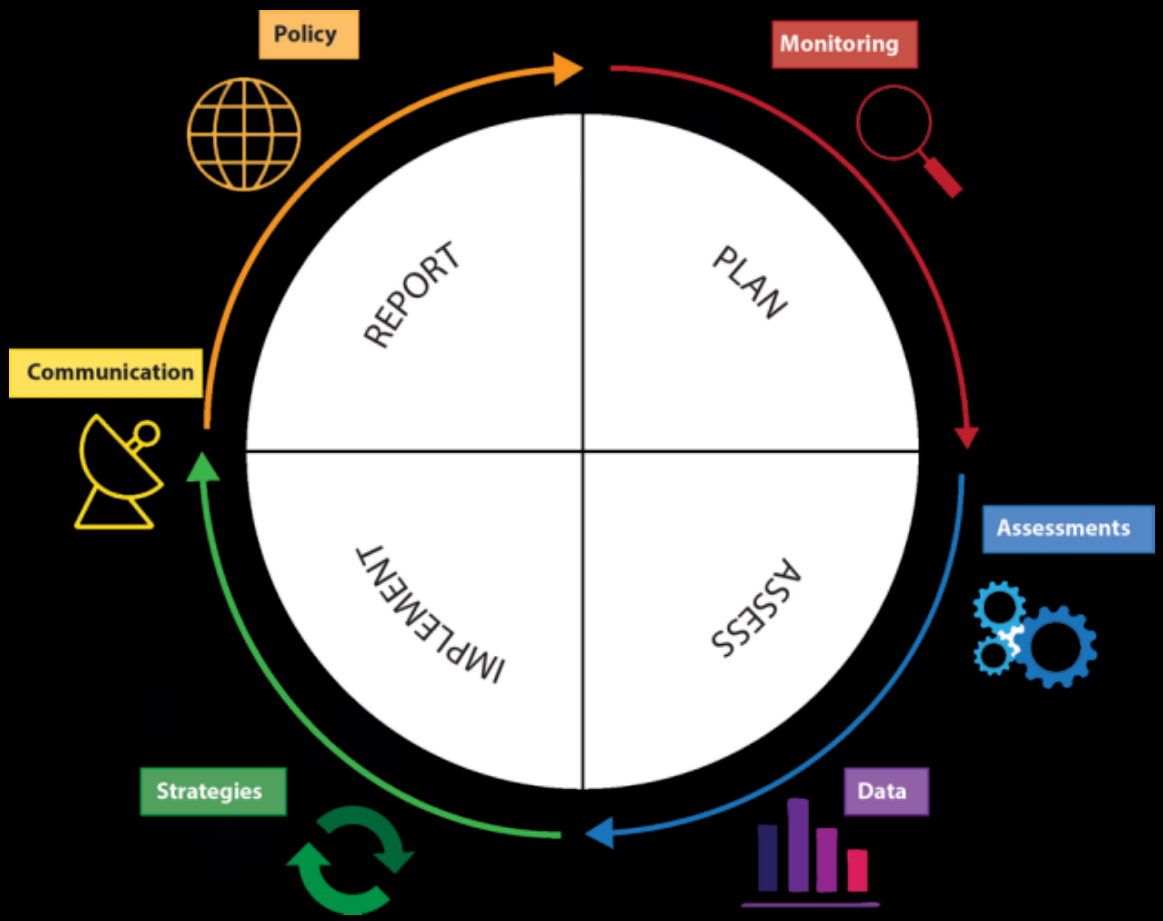
CAFF Conservation of Arctic Flora and Fauna

ARCTIC COUNCIL

Arctic Biodiversity Data Management and Delivery



- Dynamic forward-looking analysis
- Coordinated monitoring
- Efficient data sharing
- Informed policy making

Why data management is integral To CAFF goals

- Data management is critical in capturing and safeguarding the knowledge presented in the work of the various networks and projects of CAFF.

- One of 3 key theme of the ABA Recommendations for Policy Makers is Ecosystem based management. EBM inherently relies on a flow of information between Scientists, Managers and Policy Makers.

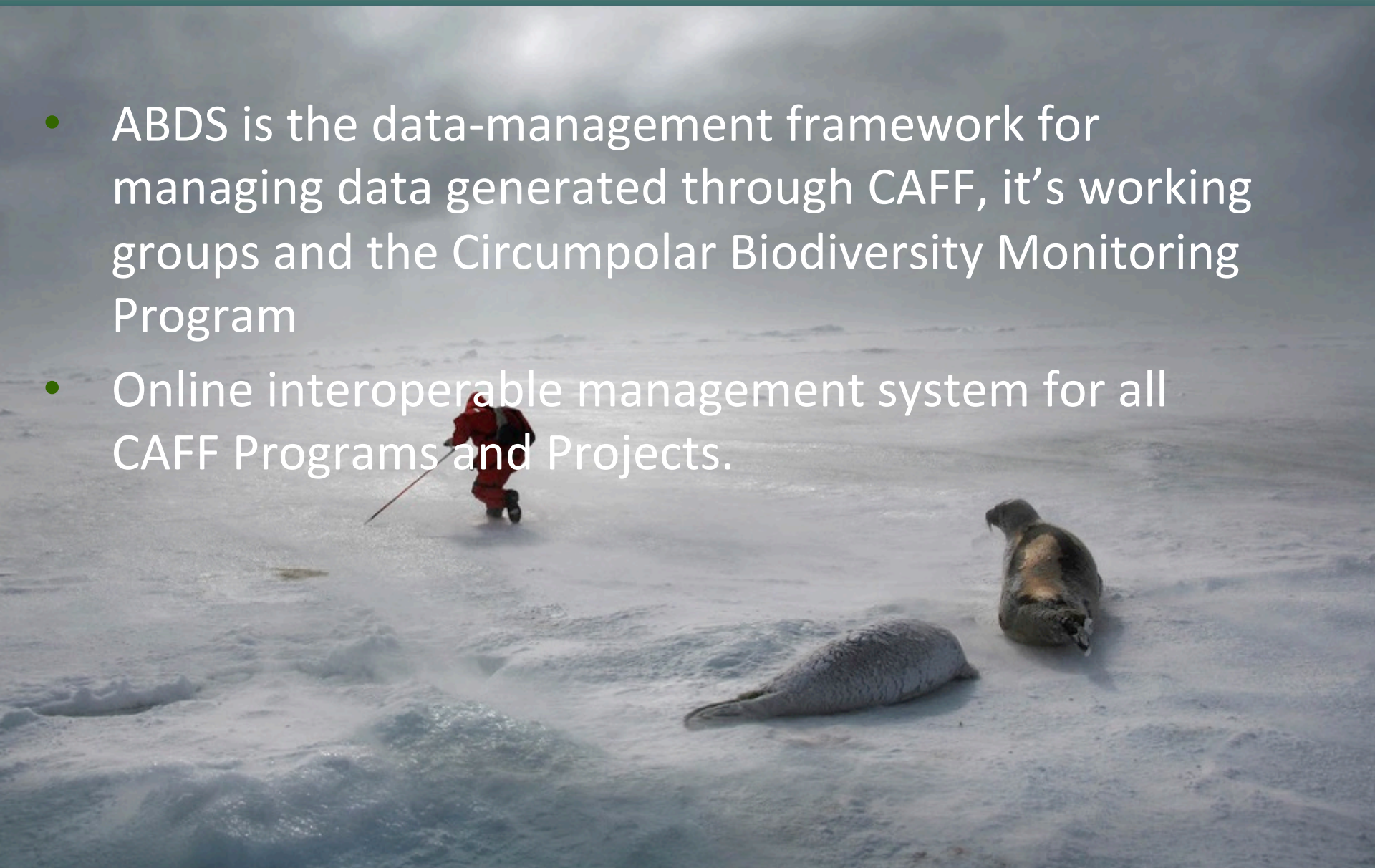
CAFF Data Policy

- In accordance with Conservation Commons and the International Polar Year (IPY) Data Policy
- Free and Open access to data
- In accordance with recognized international standards
- Mutual benefit.

- **CAFF DATA POLICY CAN BE FOUND ON ABDS.IS**

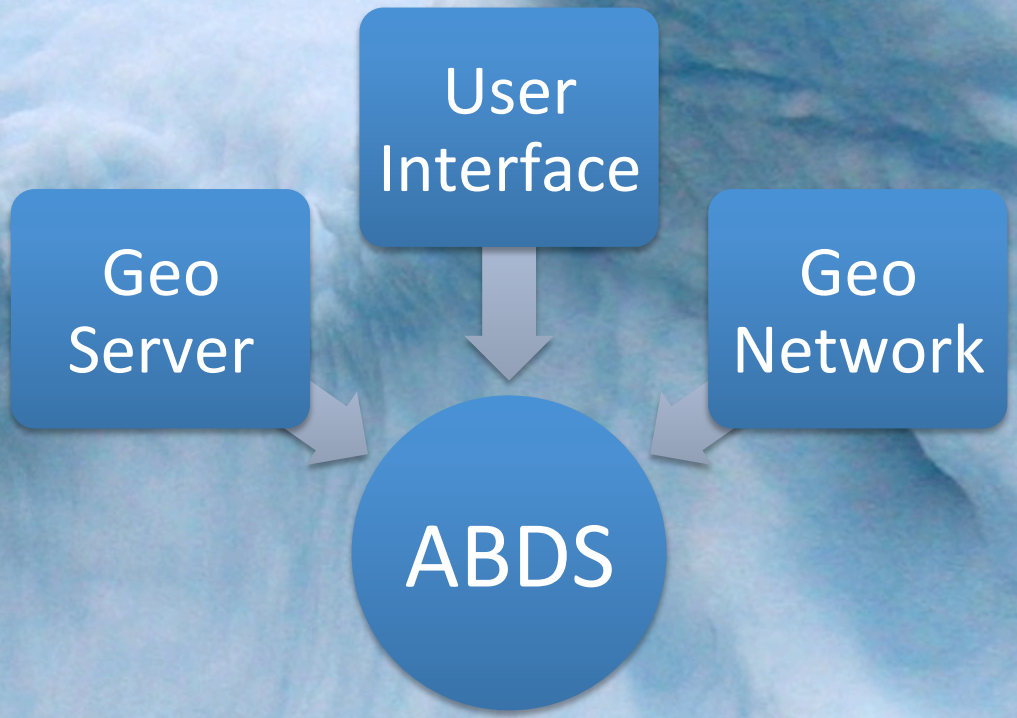
Arctic biodiversity data service

- ABDS is the data-management framework for managing data generated through CAFF, it's working groups and the Circumpolar Biodiversity Monitoring Program
- Online interoperable management system for all CAFF Programs and Projects.



ABDS
update

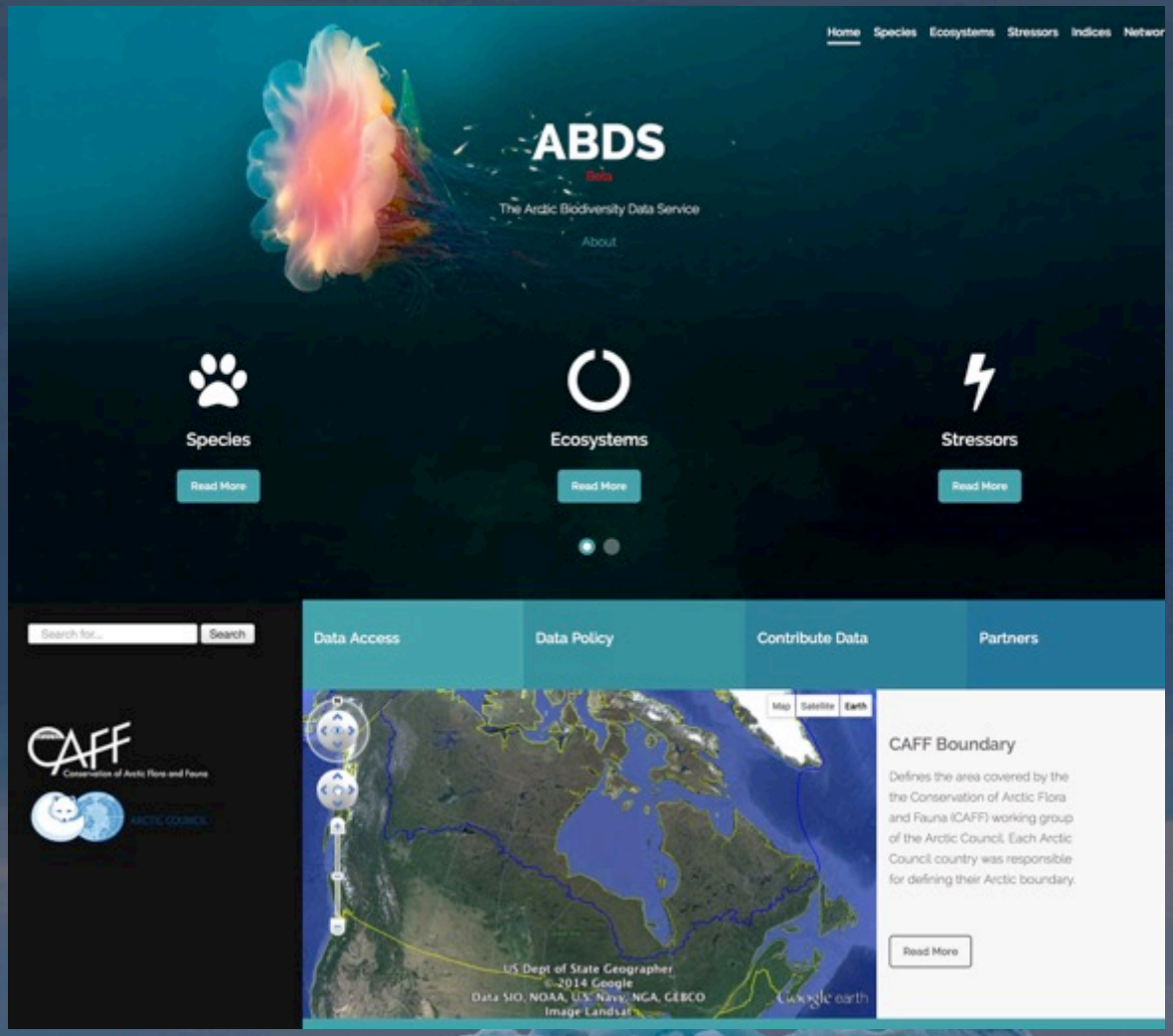
- Web Interface
- Geo Server
- Geo network



ABDS
update

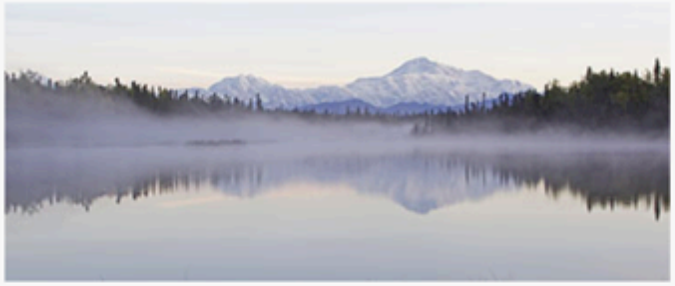
Data organized under 5 main categories:

- Species
- Ecosystems
- Stressors
- Networks
- Indices



ABDS
update

Explore Ecosystems

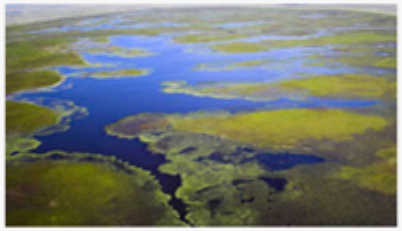


Similarly, ecosystems are defined as

a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Terrestrial

Freshwater



Marine

Recently released Ecosystems data

Terrestrial monitoring sites as identified in CBMPs terrestrial monitoring plan

The Arctic Terrestrial Biodiversity Monitoring Plan is developed to improve the collective ability of Arctic traditional knowledge holders, northern communities and scientists to detect, understand and report on long-term change in Arctic terrestrial ecosystems and biodiversity.

Read more...

ABDS
update

ABDS
The Arctic Biodiversity Data Service

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Stressors
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Networks

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Arctic Land Cover Change Index

CAFF is working to produce a set of satellite-based remote sensing products with a geographic focus on the pan-Arctic.

MODIS satellite standard products of relevance to arctic processes are being converted to a more arctic-friendly projection facilitating a top-of-the-world analysis perspective. Satellite products are being developed for use by different stakeholder groups and products will be organized by terrestrial, marine, coastal, and freshwater disciplines. Landsat images will be used to generate additional remote sensing products at fine scale (30 meter).

Michigan Tech Research Institute (MTRI) is assisting CAFF on selecting and providing MODIS satellite products for this system. This is an on-going effort that will continue to evolve and improve over time.
Cursory analyses have been conducted to display the potential of the MODIS suite of products in studying the pan-Arctic ecosystem. These include early warning indictaors such as [Land Cover; Land Surface Temperature; Snow Covered Area; Net Primary Production; Chlorophyll-a; Sea Surface Temperature; Colored Dissolved Organic Matter (CDOM)].

To help guide provide guidance on next steps to better incorporate remotely sensed observations into CAFFs Circumpolar Biodiversity Monitoring Programme (CBMP), a workshop was held December 1 in Trondheim, Norway as part of the Arctic Biodiversity Congress.

In cooperation with the Arctic SDI CAFF is working to make this data available through the ABDS.

- Summary of data products developed (Draft 18-11-2014)

Categories

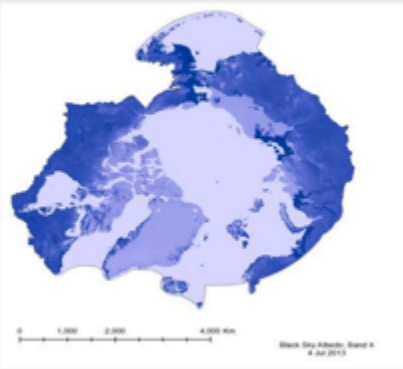
Albedo (MCD43C3)

Albedo is a reflection coefficient that describes the reflecting power of a surface. It is a ratio of the reflected to incident radiation of a surface. Albedo values are dimensionless with values from zero (no reflection) to one (perfect reflection). Fresh snow, for example, will have values near 0.9 and charcoal will have values near 0.04. Albedo depends on the frequency of radiation; therefore the standard MODIS product for Albedo includes data layers for MODIS Bands 1 through 7.

Accurately measuring albedo at high latitudes is challenging. Reflectance measurements made at high solar zenith angles pose difficulties in calibration and atmospheric correction. About half of available satellite observations during the sunlit season Summary of Products in the Arctic are obtained under conditions where the solar zenith angle exceeds 70° resulting in lower-quality results.

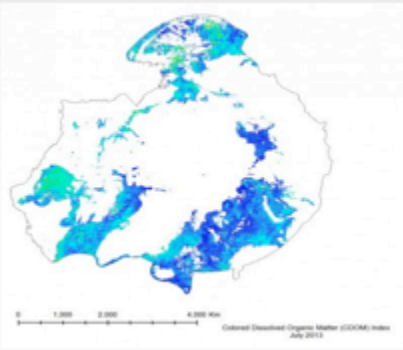
The standard MODIS product includes data for black sky albedo (BSA) and white sky albedo (WSA). Actual albedo is a combination of the BSA and WSA albedo, and will depend on the particular atmospheric conditions when observations are made. An accuracy assessment of the MODIS standard albedo product to in-situ measurements on the Greenland ice sheet (Stroeve et al. 2005) found that at most solar zenith angles, the BSA and WSA bracket the actual albedo, and at 50° local solar noon zenith angles, BSA and WSA were identical and therefore close to actual albedo. Additionally it was found that during spring and autumn when the solar zenith angle often exceeds 50°, the quality of the MODIS albedos was often flagged as poor (e.g., a backup algorithm was used and the statistical differences between the BSA and WSA had more to do with backup versus main algorithm retrievals than with BSA versus WSA).

This MODIS product is available on a 16-day acquisition cycle, but produced every 8 days. For the CAFF System, the first production of every month has been provided. Note: The Albedo layers of this product require a scale factor that can be found in the Appendix.

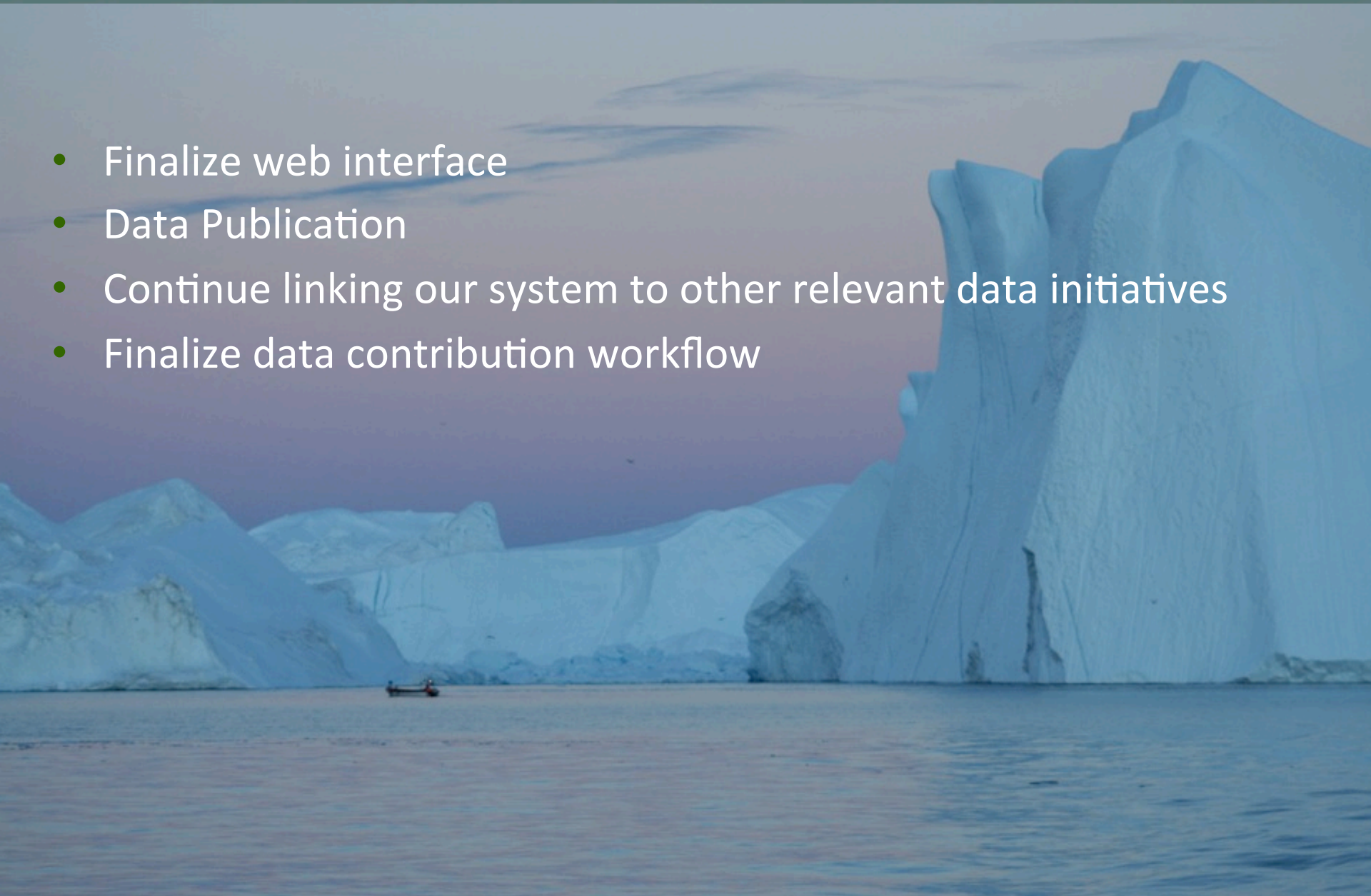


Colored Dissolved Organic Matter (CDOM) (MYD24)

Colored, or Chloromorphic, Dissolved Organic Matter (CDOM) is a measurement of the absorption of light in the UV and visible spectrum by the colored component of the dissolved organic carbon (DOC).A monthly, 4 km spatial resolution product has been provided to CAFF for the months of March-October. In the winter months, sea ice limits the detection of ocean primary production, so little CDOM can be seen until the sea ice thaws. CDOM is measured by a CDOM Index, which has no units.



ABDS
Next Steps



- Finalize web interface
- Data Publication
- Continue linking our system to other relevant data initiatives
- Finalize data contribution workflow


THANK YOU
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