

Metadata

Dataset Name	Sea-ice edge phytoplankton bloom
Dataset General Type	Phytoplankton bloom
Dataset Type	Dataset
Program Website	https://umanitoba.ca/earth-observation-science/research/hudson-bay-system-study-baysys
Keywords	Hudson Bay,Marginal ice zone,Phytoplankton,Sea ice
Keyword Vocabulary	Polar Data Catalogue
Keyword Vocabulary URL	https://www.polardata.ca/pdcinput/public/keywordlibrary
Theme	
Dataset Status	Complete
Maintenance and Update Frequency	As needed
Dataset Last Revision Date	2021-02-04
Dataset DOI	10.34992/1e0k-4m16
Metadata Creation Date	2022
Publisher	CanWIN
Preferred citation	Barbedo, L. 2020. "Sea-Ice Edge Phytoplankton Bloom", Baysys Team 3 - Marine Ecosystems, 10.34992/1e0k-4m16, Canadian Watershed Information Network, V1.
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Dataset Collection Start Date 1998-01-01

Dataset Collection End Date 2021-11-11

Sample Collection

Method Link

Method Summary	
Preferred citation	
Activity Collection Type	
Analytical Instrument	
Analytical Instrument 1	
Analytical Instrument Name	
Standardized Analytical Instrument Name	
Analytical Instrument Identifier Id	
Analytical Instrument Title Type	Alternative Title
Analytical Instrument Identifier Type	
Analytical Method Name	
Method Link	
Method Summary	
Laboratory	
Comments	
Variables Measured	Annual_MIZbloom, mg/m ³ , Annual_Sealce_Retreat, Day of the year
License Name	Creative Commons Attribution 4.0 International
Licence Type	Open
Embargo Date	
https://spdx.org/licenses	

Licence URL

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Awards

Awards 1

Award Title

Website

Funder Name

Funder Identifier Code

Funder Identifier Type

Funder Identifier Scheme

Grant Number

Related Resources

Related Resources 1

Related Resource Name

Resource Code

Identifier Type

Relationship

To This Dataset

Resource Type Online Resource

Type

Series Name

Publications

Publications 1

Publication Name

Identifier Code

Identifier Type

Relationship to this dataset

Resource Type Online Resource

Publication Type

Spatial regions

hudson-bay

Spatial extent West Bound Longitude

Spatial extent East Bound Longitude

Spatial extent South Bound Latitude

Spatial extent North Bound Latitude

Data and Resources

URL	https://canwin-datahub.ad.umanitoba.ca/data/dataset/49695e4c-2b6d-4144-8939-fe680eebf4c7/resource/203338b2-dbc3-4a8c-b04e-ea94d0131ebc/download/elementa_barbedo_et al2020_chlaiez_tr_hudsonbay.mat
Name	Sea-ice edge phytoplankton bloom
Description	<p>Satellite-derived sea-ice retreat timing (tR) and maximum chlorophyll-a concentration in the ice edge zone between 1998 and 2018. Sea ice concentration (SIC) was obtained from the National Snow and Ice Data Center. It is based on daily passive microwave radiometry processed using the Bootstrap algorithm (Comiso, 2000) at 25 km resolution. The Bootstrap technique clusters the multichannel passive microwave sensors: Scanning Multi-channel Microwave Radiometer on the Nimbus-7 satellite, Special Sensor Microwave/Imager and Special Sensor Microwave Imager/Sounder from the Defense Meteorological Satellite Program's satellites, and the Advanced Microwave Scanning Radiometer (Comiso et al., 1997). SIC was interpolated onto the same Chla grid using the nearest neighborhood scheme implemented in Matlab. Multi-sensor merged chlorophyll-a concentration (Chla) Level-3 (i.e., binned and mapped) 8-day composites from the Globcolour Project (http://www.globcolour.info/) were used as a proxy for phytoplankton biomass. Globcolour products have a spatial resolution of 4.63 km and cover the 1998–2018 period. The merged product was selected to improve the spatial-temporal coverage diminishing gaps due to cloud cover and sea-ice coverage (Maritorena et al., 2010). The binning methodology combines the normalized water-leaving radiances from different ocean color sensors whenever they are available, which includes SeaWiFS (1998–2010), MODIS-Aqua (2002–2018), Medium-Resolution Imaging Spectrometer (MERIS: 2002–2011), and Visible Infrared Imaging Radiometer Suite (VIIRS: 2012–2018). [Chla] was estimated from normalized water-leaving radiances merged using the Garver-Siegel-Maritorena (GSM) semi-analytical model (Garver and Siegel, 1997; Maritorena et al., 2002). To assess the impacts of sea-ice retreat timing on marginal ice zone phytoplankton blooms (also refers to phytoplankton spring blooms or ice-edge blooms), we analyzed both Chla and SIC variability in parallel. The method is similar to that of Perrette et al. (2011), which was also adopted by Lowry et al. (2014) and Renaut et al. (2018). The sea-ice retreat, tR, is defined as the day at which SIC is below 10% for at least 24 days. This time interval is longer than the 20 days applied by Perrette et al. (2011) and Renaut et al. (2018) and the 14 days by Lowry et al. (2014) because we used 8-day composites instead of daily maps. However, to avoid sub-pixel contamination in ice-infested regions near the ice edge (Bélanger et al., 2013), we opted to be more conservative by applying a 10% threshold on SIC, as did Perrette et al. (2011) and Renaut et al. (2018) instead of 50% as applied by Lowry et al. (2014). The maximum Chla observed in the ice edge zone was extracted for each pixel for each year, yielding one map of MIZ Chla per year.</p> <p>__Citation:__ Barbedo L, Bélanger S, Tremblay J-É. 2020. Climate control of sea-ice edge phytoplankton blooms in the Hudson Bay system. <i>Elem Sci Anthr</i> 8(1). doi: 10.1525/elementa.039</p>
Format	mat
Resource Category	data
URL	https://canwin-datahub.ad.umanitoba.ca/data/dataset/49695e4c-2b6d-4144-8939-fe680eebf4c7/resource/423691a6-cf14-448e-8373-c409151b66ed/download/supplementary_info_barbedos.pdf
Name	Supplementary metadata
Description	Supplementary information related to the Sea-Ice Edge Phytoplankton Bloom Dataset
Format	PDF
Resource Category	documents