

Marine Biodiversity & Conservation in the Arctic Spring: The Case for Polynyas

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Circumpolar map of known polynyas

From: The Arctic Biodiversity Assessment (ABA) 2013.

“Note that some polynyas no longer exist in the form known from their recent history.”

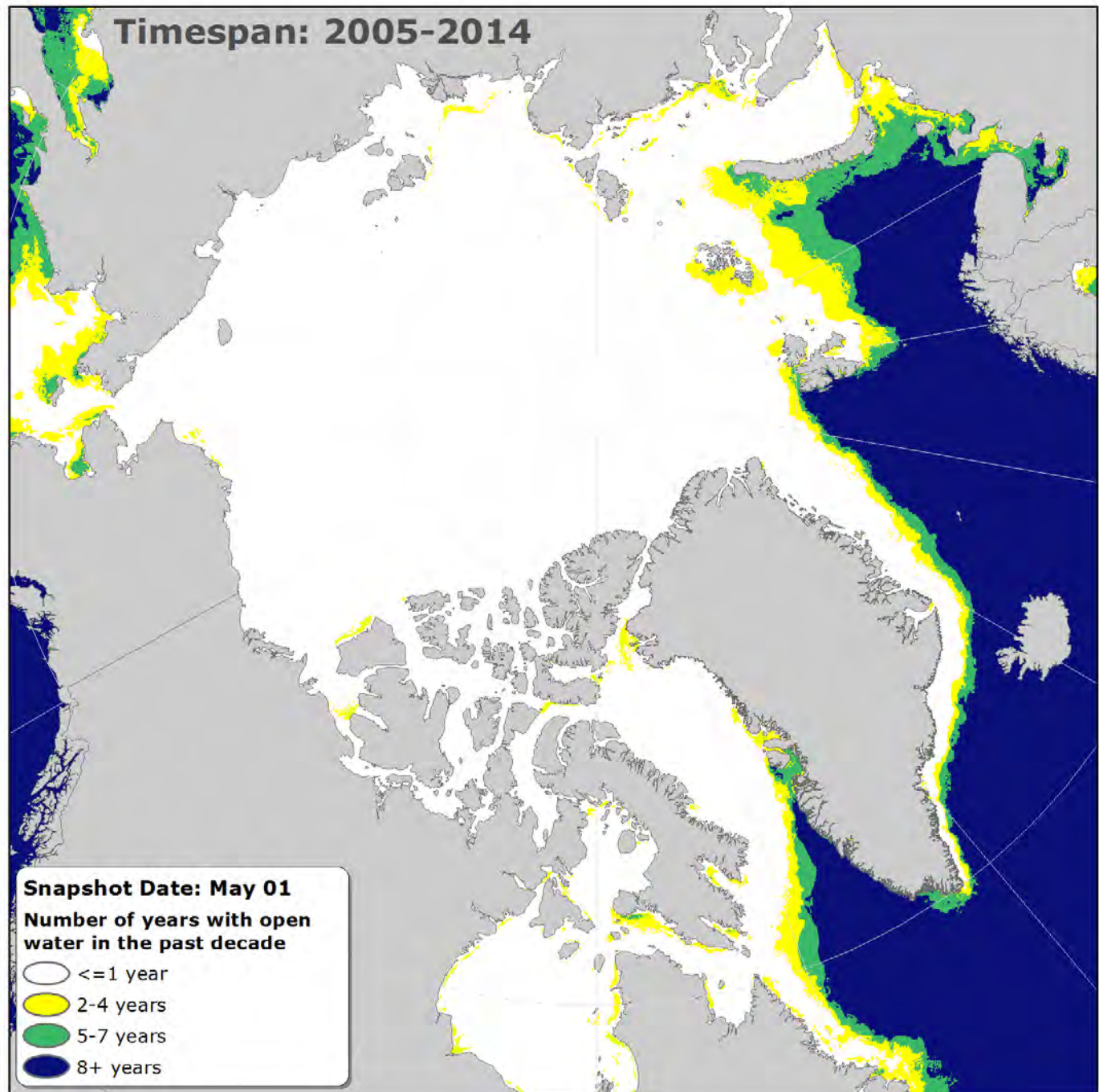
Polynyas Data Source: Barber & Masson 2007



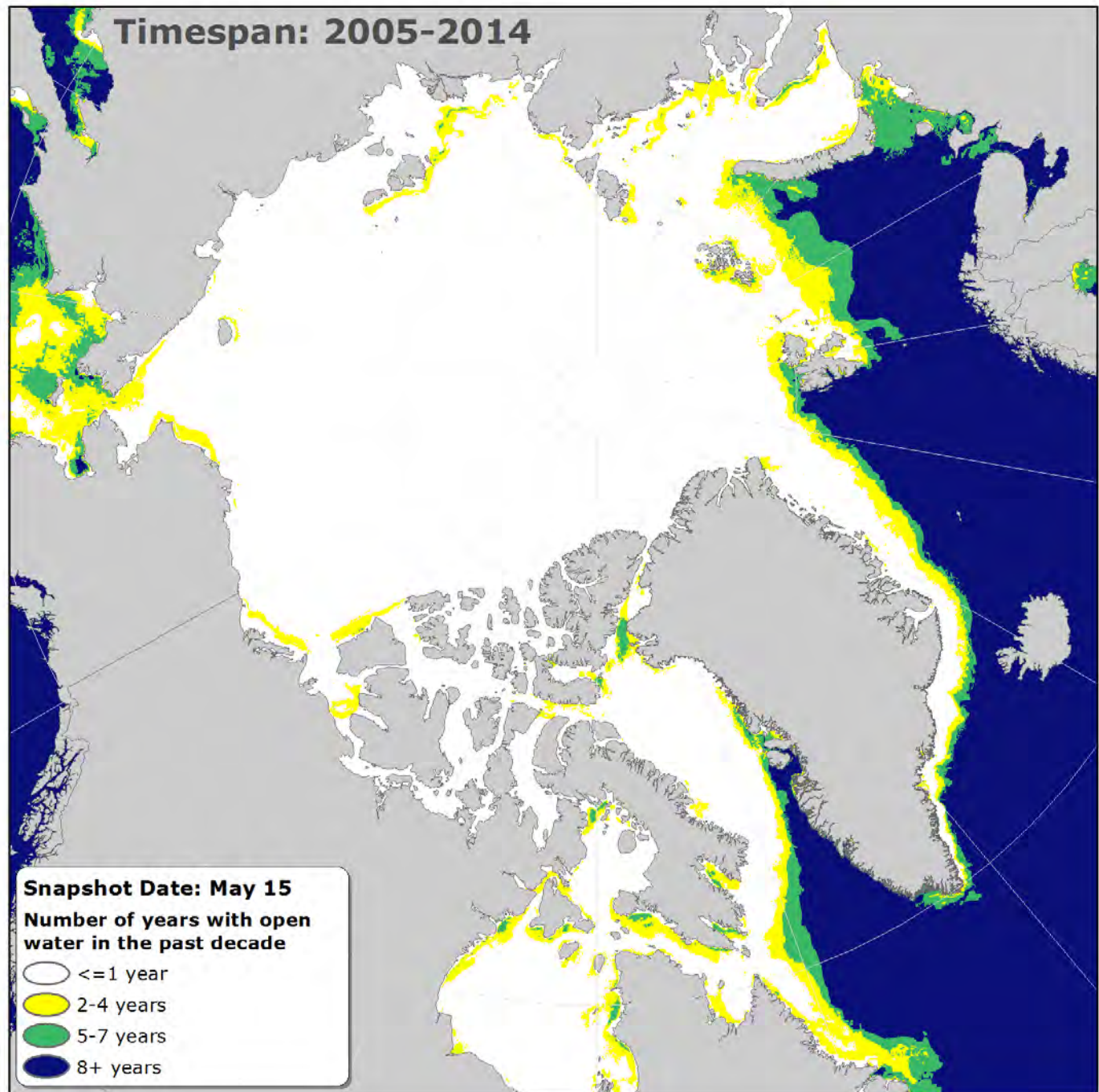
Quantitative Analysis

- Ice extent/open water time-series analysis
 - Data source: NSIDC's Interactive Multisensor Snow and Ice Mapping System (NSIDC)
 - Metric: number of open water days
- Intra-year time series animation of productivity
 - Data source: MyOcean TOPAZ 4 Model

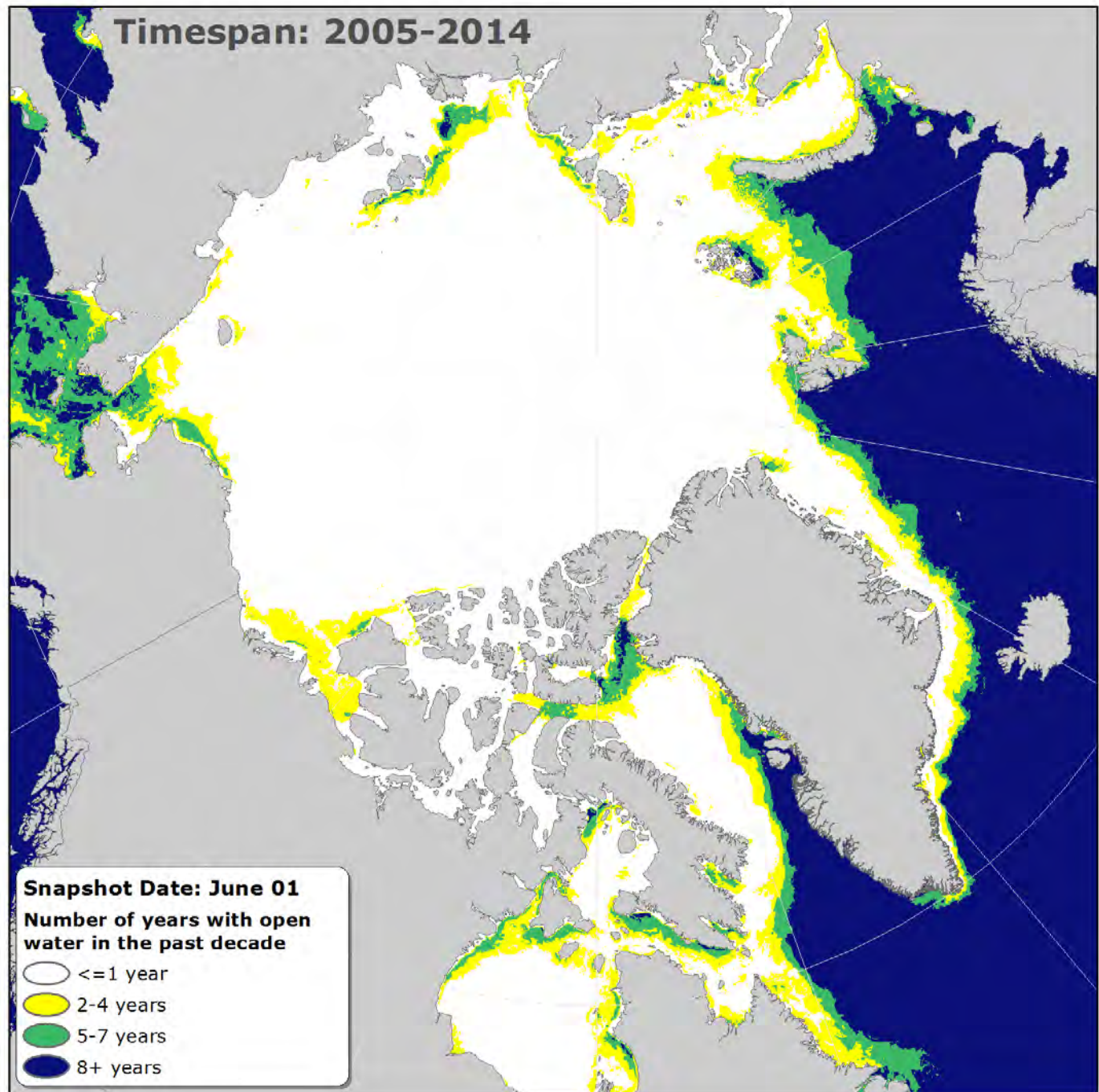
Open water Analysis



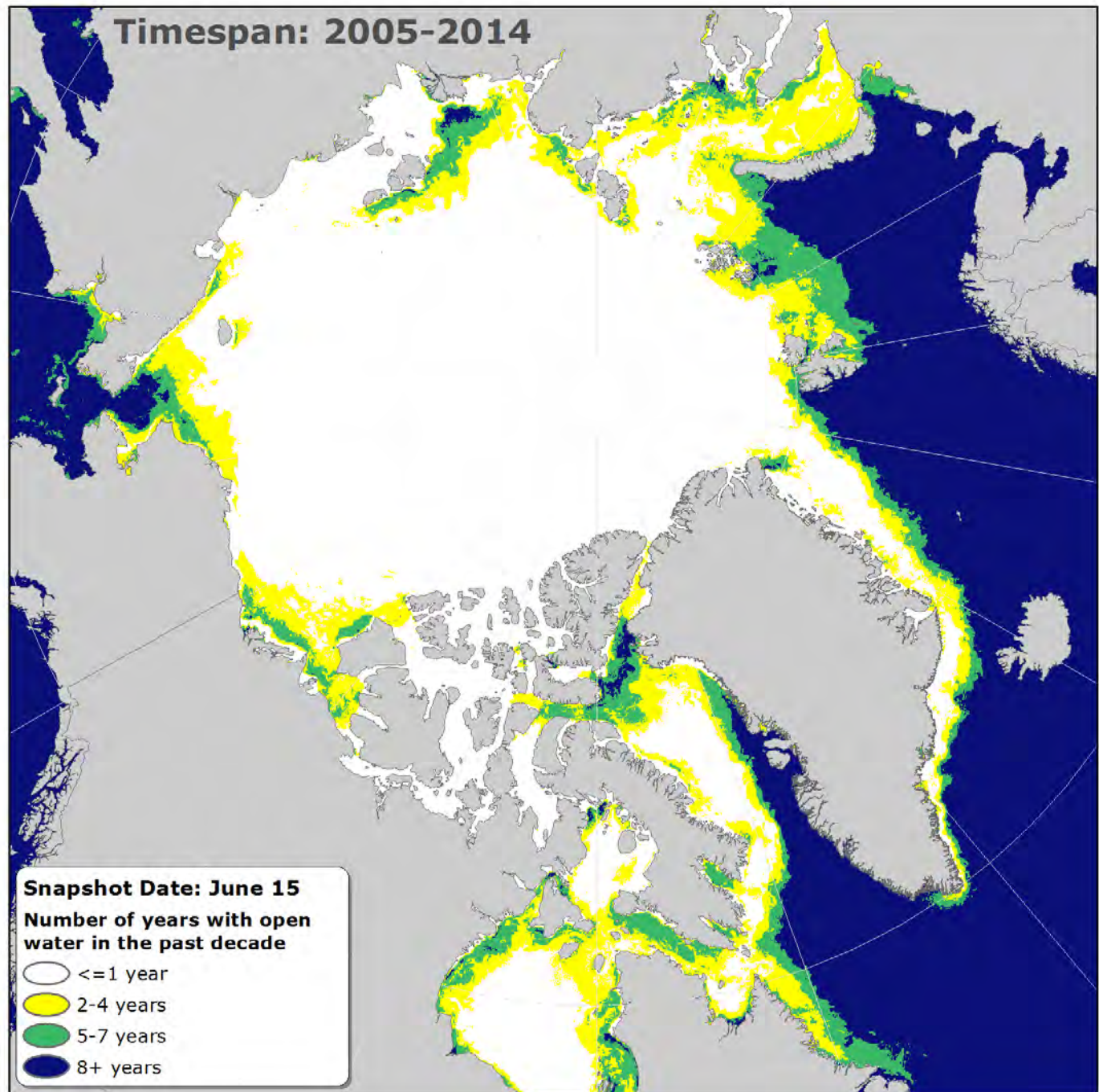
Open water Analysis



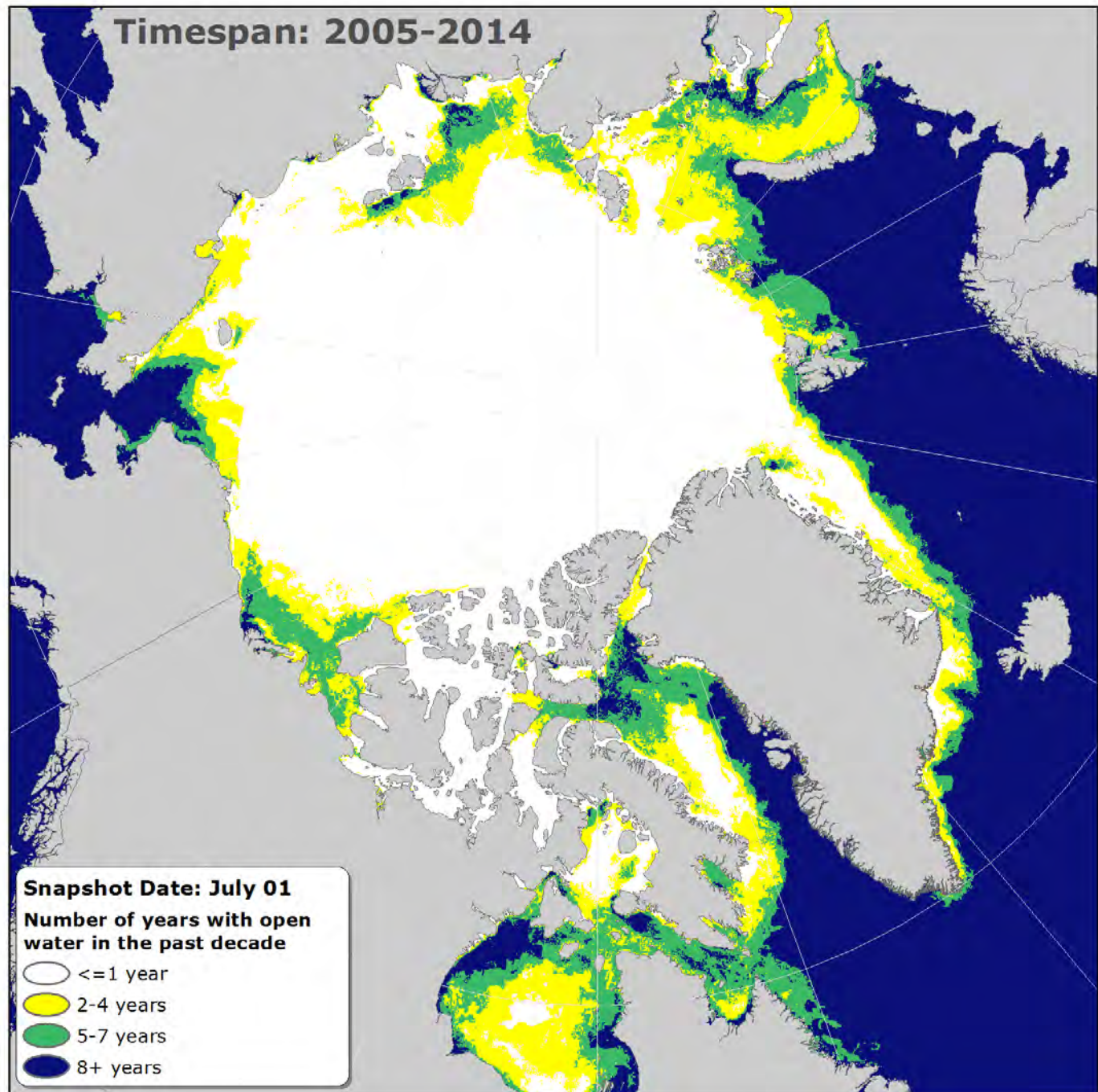
Open water Analysis



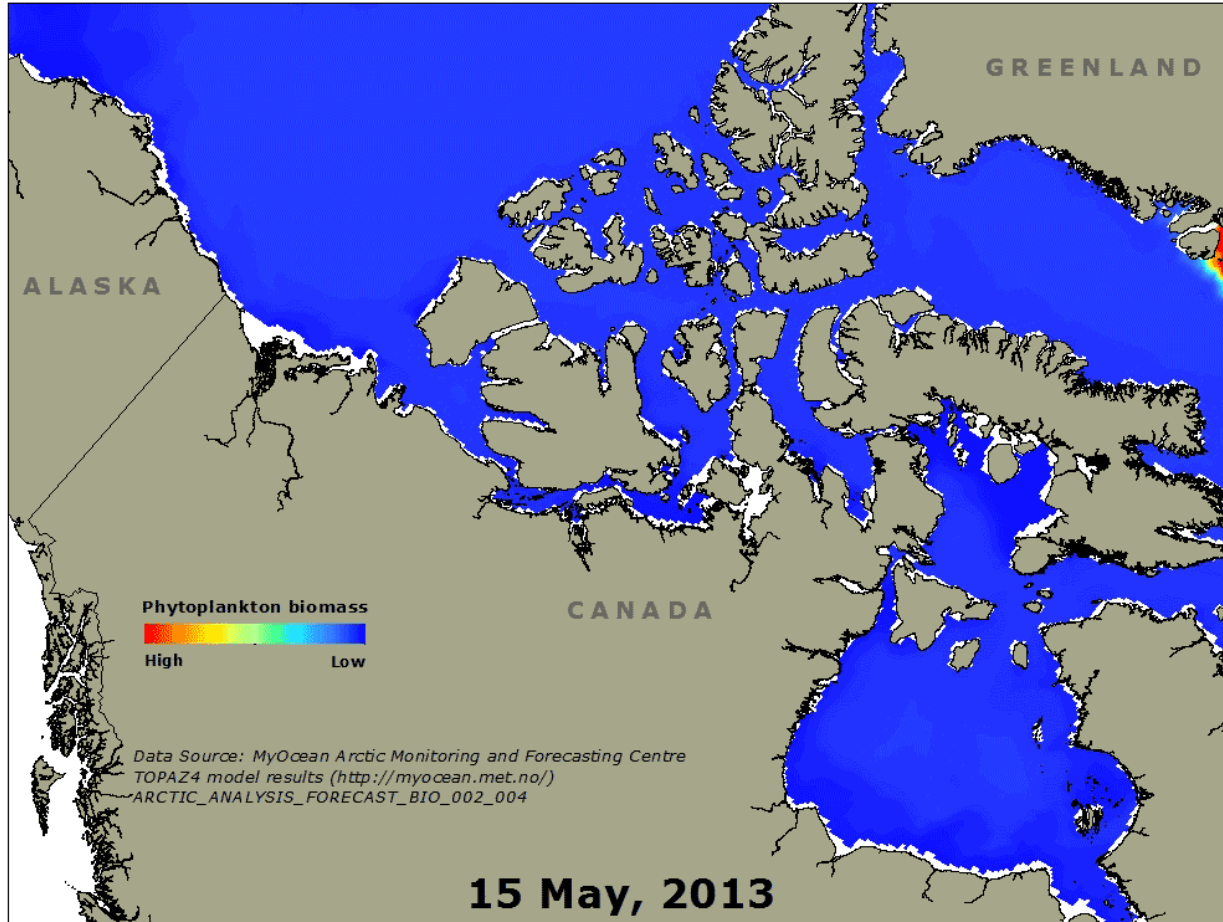
Open water Analysis



Open water Analysis



Productivity animation



Catalog of key spring polynyas

Name	Size	Date of Emergence	Recurrence Interval (recent)	Duration	Isolation Index	Biological Features
Chukchi Shore Lead		Late May	9 out of 10 years			
North Water			Annual	Late May-June		
East Siberian Sea shore lead			5 out of 10 years	June-July		
...						

Summary

- Polynyas continue to be key physical and biological features of the Arctic Ocean - winter still matters!
- More detailed analyses of polynyas can help identify the most pressing challenges in time and space
- Next step: develop an interactive, collaborative Arctic polynyas atlas to expand what we've shown here, to gather, display, and update key data on polynyas and biodiversity as a basis for conservation