

EBSA - Additional figures

Multi-year Ice of the Central Arctic Ocean

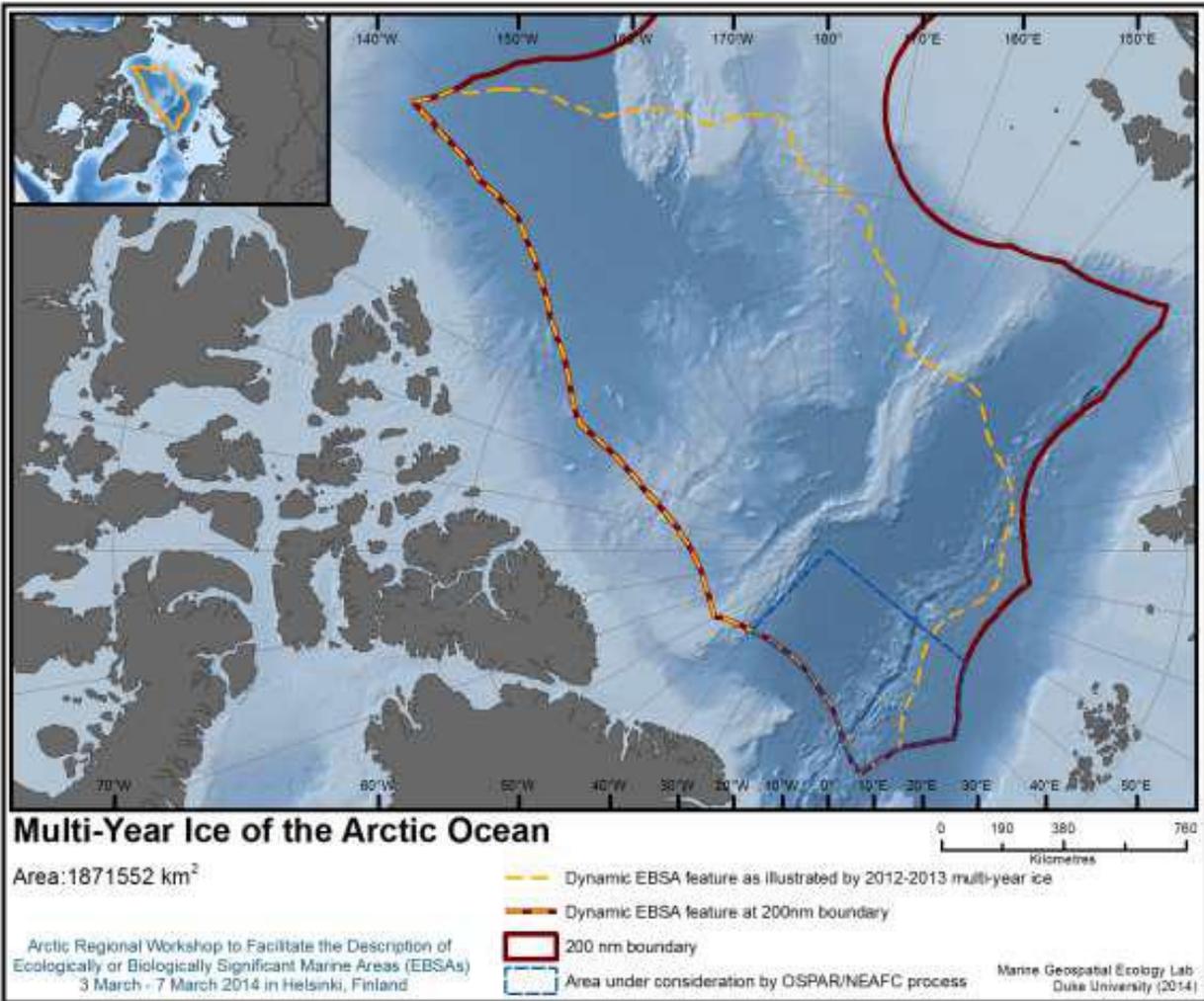
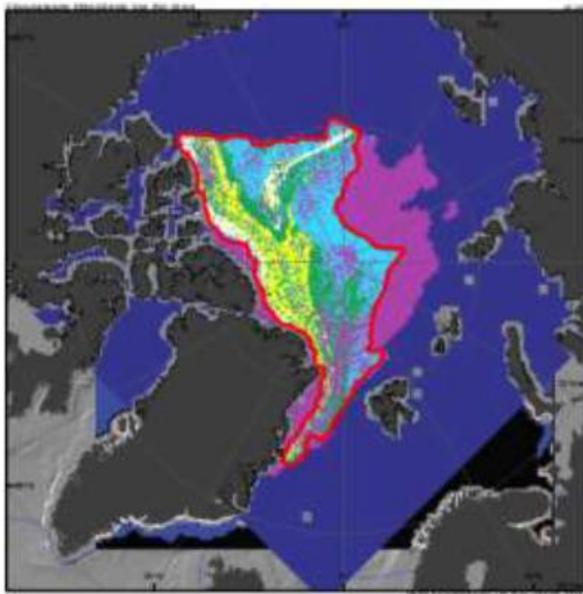
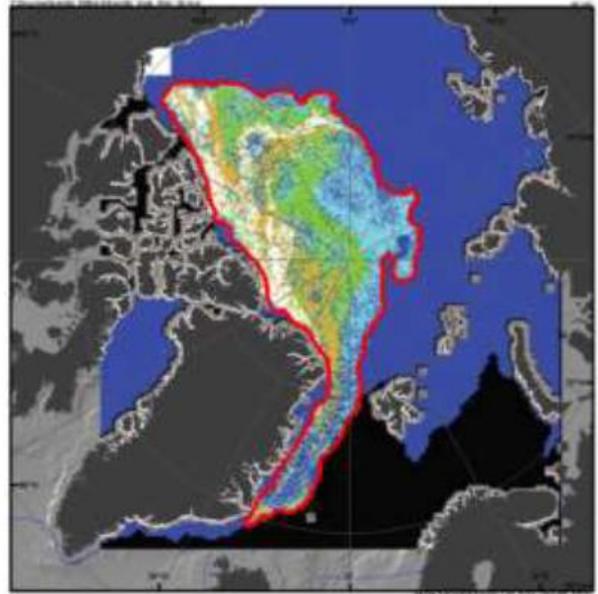


Figure 1. Area meeting EBSA criteria. Map of combined September 2012 and March 2013 multi-year ice areas within the central Arctic area beyond national jurisdiction.



September 2012 multi-year ice (2-5 year)



March 2013 multi-year ice (2-5 year)

Figure 2. September 2012 and March 2013 boundaries containing ice at least two years old.

Special note for Area No. 2: Multi-year Ice of the Central Arctic Ocean

This special note contains information on the use of sea ice climatologies to identify the location of the features described in areas no. 1 and 2 in the appendix to annex VIII. The primary data sources for these areal definitions are sea ice climatologies from the US National Snow and Ice Data Center.

Definition of multi-year ice of the Arctic Ocean

The multi-year ice area in the Arctic is highly variable and has been exhibiting significant declines in area in recent years. Recent assessments have been published tracking trends in multi-year sea ice (Maslanik et al. 2011).

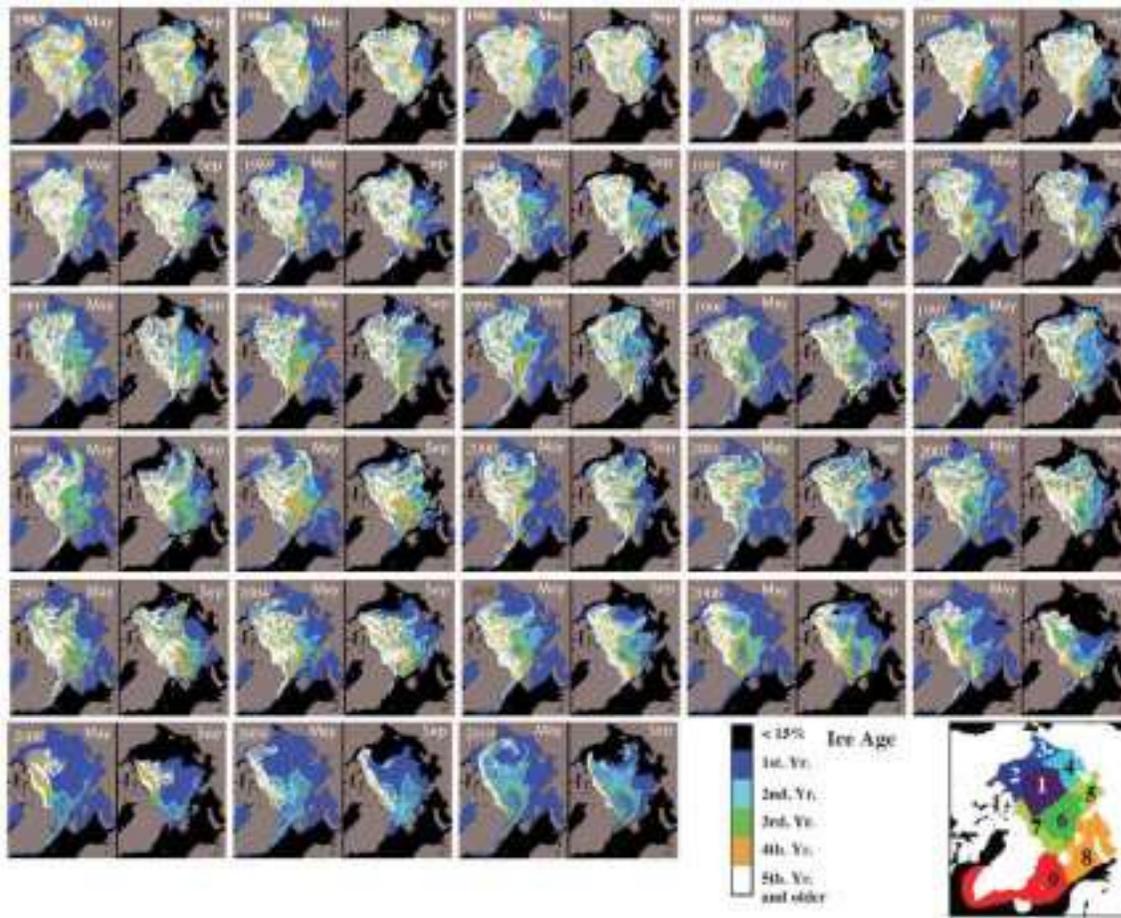
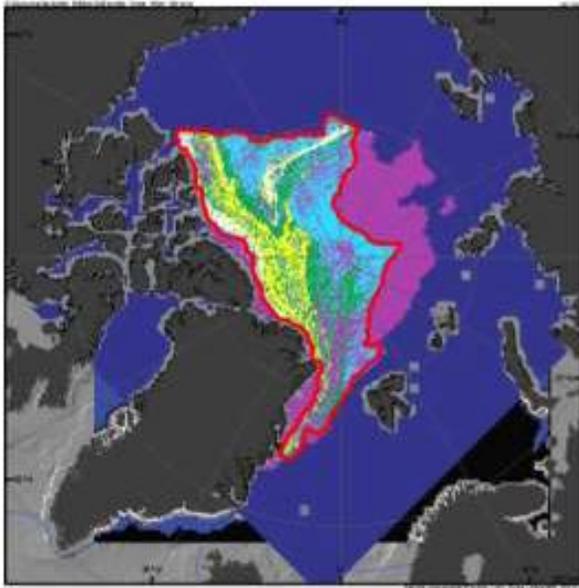


Figure 1. Multi-year Arctic sea-ice 1983 – 2010 (Maslanik et al. 2011).

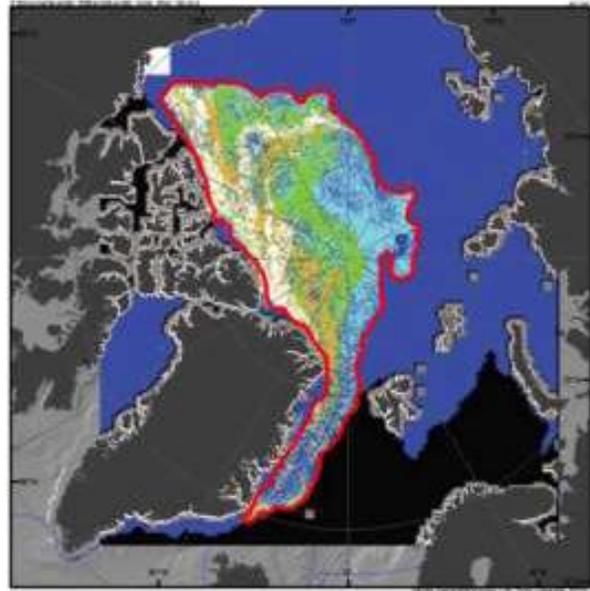
For the purpose of this mapping exercise, the most recent September 2012 (i.e., seasonal minimum area) and March 2013 (i.e., seasonal maximum area) assessments of multi-year ice were used, updated from Maslanik et al. 2011.

The most recent seasonal sea ice age assessment date-pair (September 2012 and March 2013) was used to identify a contemporary example of the range of multi-year ice. (*Note: the selection of the most recent annual date-pair captures a single temporal example of a dynamic feature, whose boundary may vary considerably between years.*)

Area boundaries containing two-year-old or greater sea ice ages were digitized for the September 2012 and March 2013 ice assessments.



September 2012 multi-year ice (2-5 year)



March 2013 multi-year ice (2-5 year)

The September 2012 and March 2013 boundaries were combined (geographic union overlay) to identify an example of an annual geographic range of multi-year ice extent.



**September 2012 & March 2013 Ice Age
(1 - 5 year)**

Figure 3. Combined September 2012 and March 2013 multi-year ice areas.

The area of (2012-2013) multi-year ice was then limited to areas beyond national jurisdiction. This area is the basis for the multi-year ice area described to meet the EBSA criteria (area no. 2).

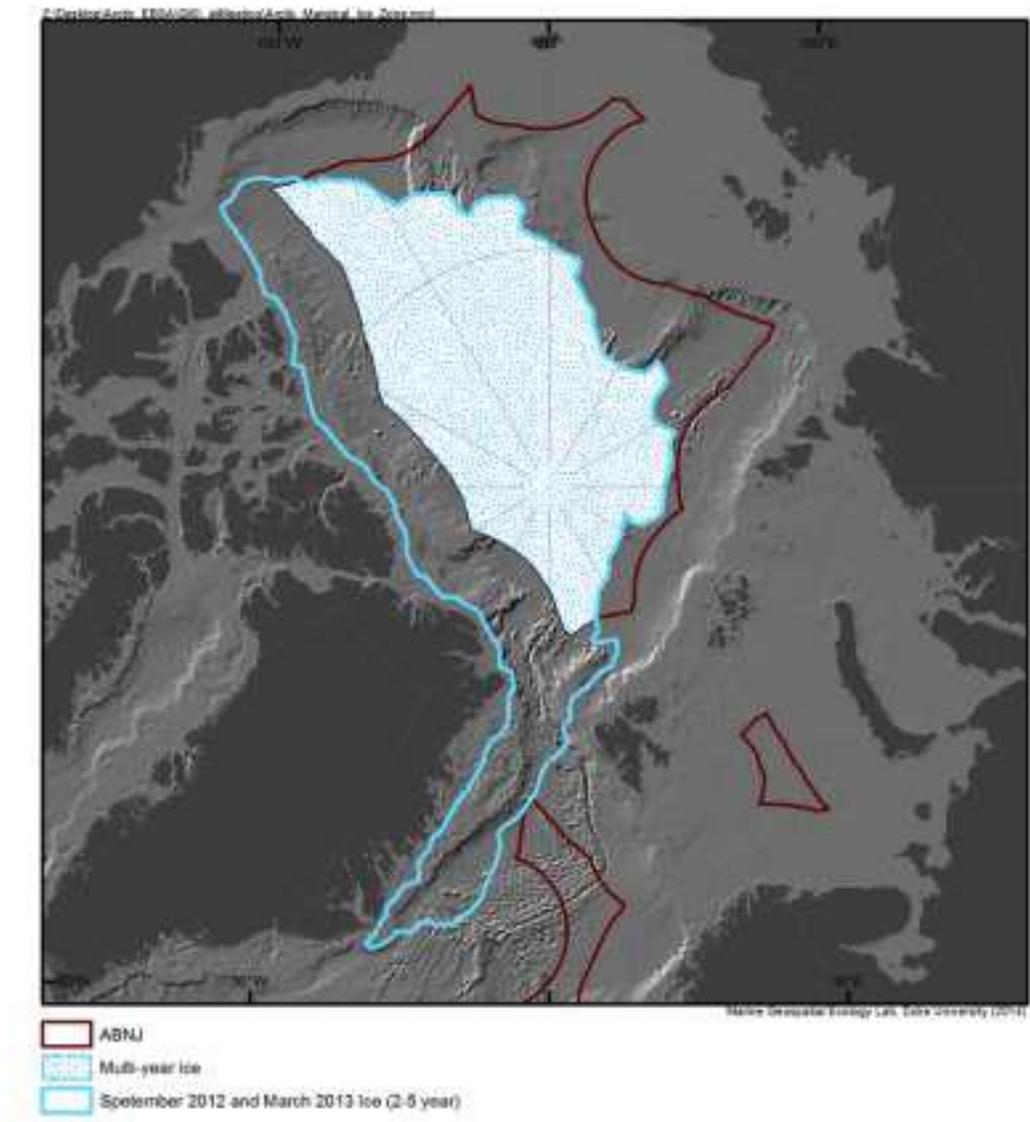


Figure 4. Multi-year ice area within areas beyond national jurisdiction.

Location

This area meeting EBSA criteria comprises the surface ice and related water column features associated with the multi-year sea ice area (area no. 2). This area is described as a geographically and temporally dynamic feature that is expected to change in area, shape and geographic location from year to year. The example multi-year ice range provided (September 2012- March 2013) refers to the area beyond national jurisdiction only.

Literature cited

Maslanik, J., J. Stroeve, C. Fowler, and W. Emery. 2011. Distribution and trends in Arctic sea ice age through spring 2011. *Geophys. Res. Lett.*, 38, L13502, doi:[10.1029/2011GL047735](https://doi.org/10.1029/2011GL047735).
National Ice Center. 2006, updated 2009. *National Ice Center Arctic sea ice charts and climatologies in gridded format*. Edited and compiled by F. Fetterer and C. Fowler. Boulder, Colorado USA: National Snow and Ice Data Center. <http://dx.doi.org/10.7265/N5X34VDB>.