

Two suggested solutions for SIPN amid a diminishing ice cover in the Arctic Ocean.

Short bio/intro: My only close proximity with polar research is a student summer job at the Norwegian Polar Institute in Oslo in the mid–1990s. Other than that I've only seen Arctic sea ice for myself when flying over Greenland from Stockholm to San Fransisco, visiting my employer Yahoo! in the Silicon Valley (also in the past century). And yet I formally remain MLIS – Master of Library and Information Science — from Oslo University College HiOA, for all intents and purposes I am a Concerned Citizen or what you may call a Citizen Scientist.

Future of sea ice prediction: During the next $\frac{1}{4}$ to 10 years, we will very predictably and with a high degree of probability, run into late–summer virtually ice–free conditions in the Arctic Ocean. At minimum we will have less than 1 million km² Arctic sea ice, and leaving the real–life crises this implies aside for a moment, this development will also present a smaller organisational or inner crisis for the Sea Ice Prediction Network.

In short, the SIPN crisis may be that we increasingly will have a virtually ice–free Arctic Ocean at some point during summer every year. A suggestion for its solution may be to open a parallel competition for predicting the day or week when this happens. Contributors can then submit estimates like 'First week of August' or 'Second week of September' (or of course an exact date).

Permanent ice–free: While the limited time summer ice–free may be estimated by looking at plots for ice cover or volume for one particular date during the year, the prediction of all–year ice–free needs a different tool: The rolling 365–day average or Annual Average. Logically, as the Annual Average volume of Arctic sea ice hits zero, you have just ended a full year of absolutely no ice.

During online conversation with so–called climate change 'skeptics' last autumn, I suddenly realised we had such huge losses now in the Annual Average for volume, that we were virtually down to a single–digit number of years lag–time before those same current losses would take us to the Big Zero:

2006–2016: 37 years
2007–2016: 65 years
2008–2016: 36 years
2009–2016: 38 years
2010–2016: 91 years
2011–2016: 819 years
2012–2016: [never]
2013–2016: 52 years
2014–2016: 16 years
2015–2016: 8 years

Explanation: With the recorded losses of Annual Average volume from day 365 of 2006 to the same day of 2016, a linear projection of the same loss rate takes us to zero in 37 years from the last day of 2016. Note the latest line: With the loss since 2015, we could hit zero in just 8 years from now. [Source for these calculations is 'PIOMAS' dataset from the University of Washington, Seattle]

My 2nd solution for SIPN is therefore to open a slightly more long–term competition for predicting the first year of (virtually) ice–free all–year in the Arctic Ocean. Final answers of course can't be served up every autumn, but methods and algorithms for prediction may be developed, and humanity can be better prepared.