

Summary of Eisenman, Meier, & Norris (2014, www.the-cryosphere.net/8/1289/2014/)

- The observed trend in **Antarctic sea ice extent** is often estimated using the “**Bootstrap**” dataset from SMMR & SSM/I-SSMIS satellite sensors, which has approximately daily data since Nov. 1978 (derived from a series of several consecutive sensors).
 - This dataset forms the basis of discussions of observed sea ice changes in the **IPCC AR4 & AR5**.
 - This dataset was **updated** in 2007 from “**Version 1**” to “**Version 2**” primarily for consistency with AMSR-E satellite measurements during 2002-2006. Other ostensibly minor changes were also made. **The update was expected to have virtually no effect on the trend.**
- We find that **the update caused the 1979-2007 trend to unexpectedly increase from 3 to 11** thousand km² per year.
- We find that the trend shifted due to a change in the inter-calibration across a 1991 sensor transition. Our analysis does not determine whether the update inadvertently corrected or introduced an inter-calibration error.

Antarctic sea ice extent annual-average trends from Fig. 1B of Eisenman et al. (2014)

| Reference | Time period | Published trend | Bootstrap V2 trend | Bootstrap V1 trend |
|-----------------|-------------|-----------------|--------------------|--------------------|
| CS-2001 | 1979–1999 | 2 | 12 | 2 |
| C-2003 | 1979–2000 | 4 | 14 | 4 |
| IPCC AR4 | 1979–2005 | 6 | 14 | 5 |
| CN-2008 | 1979–2006 | 11 | 11 | 3 |
| C-2010 | 1979–2008 | 13 | 14 | 6 |
| IPCC AR5 | 1979–2012 | 17 | 17 | 10 |

All trends are in units of $10^3 \text{ km}^2\text{yr}^{-1}$. End dates are rounded to nearest end of year. For time periods that end after 2004 (when Version 1 dataset ends), Version 1B is used in place of Version 1.