

Supplements

Table S1. The naming convention of the MWRI-ASI SIC dataset

Naming convention	FY_MWRI_SIC_DAILY_YYYYMMDD_Region.tif
YYYY	Four-digit year
MM	Two-digit month
DD	Two-digit day
Region	Arctic / Antarctic

Table S2. The spatial coverage information of the MWRI-ASI SIC dataset

Variable		Description		
Projection		NSIDC Sea Ice Polar Stereographic North/South		
Spatial resolution		12.5 km		
Coverage				
Arctic	Latitude (°)	Longitude (°)	X (km)	Y (km)
Upper left	30.98	168.35	-3850	5850
Upper right	31.37	102.34	3750	5850
Lower left	33.92	279.26	-3850	-5350
Lower right	34.35	350.03	3750	-5350
Antarctic	Latitude (°)	Longitude (°)	X (km)	Y (km)
Upper left	-39.23	317.76	-3950	4350
Upper right	-39.23	42.24	3950	4350
Lower left	-41.45	225.00	-3950	-3950
Lower right	-41.45	135.00	3950	-3950

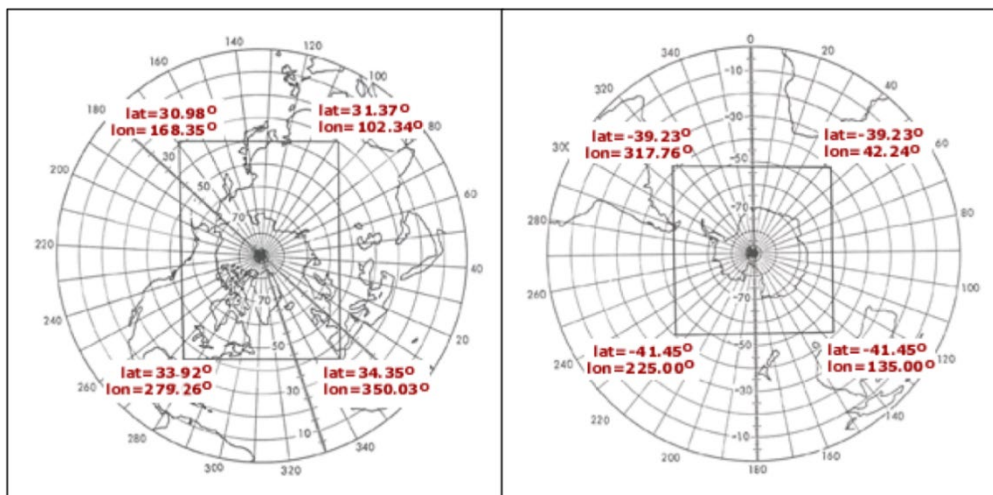


Figure S1. NSIDC Polar Stereographic Projection coverage maps in the Arctic (left) and Antarctic (right) (from NSIDC, <https://nsidc.org/data/polar-stereo>).

Table S3. The temporal coverage information of the MWRI-ASI SIC dataset

Variable	Description
Start date	2010-11-12
End date	2019-12-31
Temporal resolution	Daily
Missing days	
Arctic (23 days)	2010-11-12, 2010-11-20, 2011-03-03, 2011-03-22, 2011-03-24, 2011-04-03, 2012-01-03, 2012-05-24, 2012-07-05, 2012-07-06, 2012-07-07, 2012-09-06, 2015-06-30, 2015-07-01, 2015-07-02, 2015-11-12, 2015-11-13, 2015-11-14, 2015-11-15, 2017-11-09, 2018-03-07, 2018-03-13, 2018-03-31
Antarctic (82 days)	2010-11-13, 2010-11-14, 2010-11-18, 2010-11-20, 2010-11-21, 2010-11-26, 2011-08-28, 2011-09-22, 2011-09-30, 2011-10-01, 2011-10-14, 2011-10-27, 2011-10-30, 2011-11-16, 2011-12-03, 2012-05-24, 2012-05-26, 2012-07-02, 2012-07-03, 2012-07-05, 2012-07-06, 2012-07-07, 2012-07-11, 2012-08-28, 2012-09-04, 2012-09-15, 2012-09-27, 2012-10-06, 2012-10-13, 2012-11-16, 2013-07-21, 2013-07-31, 2013-08-12, 2013-08-13, 2013-08-15, 2013-09-12, 2013-09-28, 2013-09-29, 2013-10-01, 2013-10-04, 2013-10-05, 2013-10-07, 2013-10-09, 2013-10-11, 2013-10-12, 2013-10-16, 2013-10-21, 2013-10-22, 2013-10-23, 2013-10-24, 2013-10-28, 2013-10-29, 2013-11-16, 2013-11-17, 2013-11-25, 2014-08-15, 2014-10-01, 2014-10-31, 2015-06-30, 2015-07-01, 2015-07-02, 2015-07-17, 2015-07-31, 2015-08-18, 2015-08-23, 2015-08-24, 2015-08-26, 2015-09-11, 2015-09-12, 2015-09-13, 2015-09-23, 2015-09-24, 2015-11-12, 2015-11-13, 2015-11-14, 2015-11-15, 2016-09-21, 2017-11-09, 2018-08-30, 2018-11-17, 2019-08-10, 2019-11-27

Table S4. The data values information of the MWRI-ASI SIC dataset

Data value	Name (units)
0-100	Sea ice concentration (%)
-1	Land
-2	Pole Hole
NoData	Missing data

Table S5. The naming convention of the error products

Naming convention	SIC_Bias_MWRI-ASI_XXXX-ASI_YYYYMMDD_Region.tif
XXXX	SSMI / AMSR
YYYY	Four-digit year
MM	Two-digit month
DD	Two-digit day
Region	Arctic / Antarctic

Table S6. The data values information of the error products

Data value	Name (units)
-100 - 100	Bias of sea ice concentration (%)
-1111	Land
-2222	Pole Hole
NoData	Missing data / open water