

Ocean and Sea Ice SAF

Product Verification and Validation Report

The Southern Hemisphere Sea Ice Product



Version 1.1

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Prepared by met.no and DMI

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1. INTRODUCTION

1.1. Purpose of the document

This document presents the verification and validation of the Southern Hemisphere Sea Ice product developed as part of the development activities within the Ocean and Sea Ice Satellite Application Facility Initial Operational Phase (OSISAF IOP). The Southern Hemisphere Sea Ice product was developed according to work package 22330 'Global Sea Ice Products' as defined in the IOP Project Plan [R.D-1]. The Southern Hemisphere Sea Ice Product is produced operationally according to the agreement between met.no and DMI [R.D-2].

This document will verify and validate the Southern Hemisphere product in order to confirm that the requested quality and stability is present prior to operational release.

1.2. Applicable and reference documents

1.2.1. Applicable Documents:

[A.D-1] Dop for O&SI SAF IOP, v1.2

[A.D-2] User Requirements Document, URD, v2.1

1.2.2. Reference Documents

[R.D-1] IOP Project Plan, v2.0

[R.D-2] Agreement met.no/DMI, v1.0

[R.D-3] Sea Ice Product Manual, v3.0

[R.D-4] L. Toudal: Adaptation of SAFOSI sea ice processing system to southern hemisphere. Visiting Scientist deliverable report (SG06_VS02)

1.3. List of definitions, acronyms and abbreviations

AR	Ambiguity Removal
ASCAT	Advanced SCATterometer
AVHRR	Advanced Very High Resolution Radiometer
BUFR	Binary Universal Format Representation
Cal/Val	Calibration and Validation
CIR	Committed Information Rate
CIS	Canadian Ice Service
CM	Configuration Management
CMOD	C-band model, or geophysical transfer function of backscatter versus wind
CMS	Centre de Météorologie Spatiale
DCI	Documentation Configuration Item
DLI	Downward Long wave Irradiance
DMI	Danish Meteorological Institute

DMSP	Defence Meteorological Satellite Program
MET.NO	Norske Meteorologiske Institutt
DOP	Detailed Operational Proposal
ECMWF	European Centre for Medium range Weather Forecast
EPS	European Polar System
ERS	European Remote sensing Satellite
ESA	European Space Agency
FAQ	Frequently Asked Question
FTP	File Transfer Protocol
FY/MY	First Year/Multi Year
GLB	Global oceans
GOES	Geostationary Operational Environmental Satellite
GRIB	GRIdded Binary format
GTS	Global Transmission System
HIRLAM	High Resolution Limited Area Model
HL	High Latitude
HRIT	High Rate Information Transmission
IFREMER	Institut Français de Recherche pour l'Exploitation de la MER
IOP	Initial Operational Phase
IRR	Integration Readiness Review
IVRR	Integration Verification Validation Results Review
KNMI	Koninklijk Nederlands Meteorologisch Instituut
LML	Low and Mid Latitude
LOG	Développement et Maintenance Logiciels
LUT	Look-Up Table
MAP	Merged Atlantic Product
Met.no	Meteorological Institute of Norway
METOP	METEorological OPERational Satellite
M-F	Météo-France
MSG	Meteosat Second Generation
NESDIS	National Environmental Satellite, Data and Information Service
NAR	Northern Atlantic and Regional seas
NCEP	National Centre for Environmental Prediction
NMS	National Meteorological Service
NOAA	National Oceanic and Atmospheric Administration
NRT	Near Real-time Terminal
NWP	Numerical Weather Prediction
OR	Operations Review
ORR	Operational Readiness Review
O&SI SAF	Ocean and Sea Ice SAF
PAR	Products quality and applicability Assessment Review
QC	Quality Control
RMDCN	Regional Meteorological Data Communication Network
RMS	Root-Mean-Squared
R&D	Research and Development
SADT	Structured Analysis and Design Technique
SAF	Satellite Application Facility
SAFNWC	NoWCasting and very short range forecasting SAF
SAFNWP	SAF for Numerical Weather Prediction

SCAT	(ERS) SCATterometer
SEVIRI	Spinning Enhanced Visible and Infra-Red Imager
SIRR	Software Integration Readiness Review
SIVVRR	Software Integration Verification Validation Results Review
SMHI	Swedish Meteorological and Hydrological Institute
SRD	Software Requirement Document
SSI	Surface Short wave Irradiance
SSMI	Special Sensor Microwave Imager
SSMIS	Special Sensor Microwave Imager and Sounder
SST	Sea Surface Temperature
TBC	To Be Confirmed
TBD	To Be Defined
TSR	Télécommunications Systèmes et Réseaux
UMARF	Unified Meteorological Archive & Retrieval Facility
WMO	World Meteorological Organization
WWW	World Wide Web

2 BACKGROUND

In response to numerous requests from the user community the Global ice product has been developed during IOP. The Global product is divided in a Northern Hemisphere (NH) product and a Southern Hemisphere (SH) product. Both the NH product and the SH product has been available pre-operationally in a test-mode since March 2005. The NH product is basically an extension of the former 'primary' ice product, the 'HL ice product' covering the North Atlantic Ocean. The NH product was declared fully operational by the OSI SAF steering group in December 2005.

This report provides the results from the basic verification and validation of the Southern Hemisphere product, with the aim being operational release.

The development of the Global Sea Ice product has been carried out as shared activities between met.no and DMI as defined in the work package 22330 in IOP Project Plan [R.D-1]. For the Southern Hemisphere following tasks have been completed:

TASKS:

- Define a Southern Hemisphere (SH) O&SI SAF sea ice product area and grid
- Update the SSM/I tie points for the SH product area
- Implement the atmospheric correction with use of global ECMWF data
- Implement and validate the SH sea ice algorithms and products
- Implement and integrate the new products in the O&SI SAF HL production chain

3 PRODUCT DESCRIPTION

The operational setup of the SH product is the same as the setup for the NH product. The basic input satellite data is the same for both products. The same goes for the NWP data used in the atmospheric correction. The differences lie in tie points and the operational monitoring of the quality of products. Whereas independent validation data exists (from CIS, DMI, met.no) for the NH products in terms of sea ice charts based on high and medium resolution satellite data, from Radarsat/Envisat SAR, Modis, AVHRR, this is not the case for the Southern Hemisphere product. At the time of writing the most appropriate set of reference data are those provided by the National Ice Center (NIC) at the NOAA Satellite Operations Facility. NIC provides 2-weekly products for the Southern Hemisphere and based on a set of sensors, i.e. SSM/I, AVHRR, ENVISAT, QUICKSCAT, MODIS, OLS. The NIC products may not be independent from the SSM/I derived sea ice products due to the common use of SSM/I data. However, the stringent quality control procedures, which are not believed to be in place for any other routine product in the Antarctic, warrant their use as reference.

3.1 Grid characteristics

The product grid is adapted from the 25 km resolution Goddard Space Flight Center projections used to disseminate various SSM/I based products available at the National Snow and Ice Data Center (<http://nsidc.org>).

Below in Table 1 is given the details of the grid definitions. The grid extent is shown in Figure 1. Corner coordinates are referenced to pixel center. Projection definitions in the form of PROJ-4 initialization strings (<http://www.remotesensing.org/proj>) are also given.

Geographical definition for Southern Hemisphere Grid, SH	
Projection:	Polar stereographic projection true at 70°S
Resolution:	10 km
Size:	790 columns, 830 lines
Central Meridian:	0°
Lower left corner:	41.5015°S, 135.0000°W
Radius of Earth:	6378273 x 6356889.44891 m
PROJ-4 string:	+proj=stere +a=6378273 +b=6356889.44891 +lat_0=-90 +lat_ts=-70 +lon_0=0

Table 1 : Geographical definition for Southern Hemisphere Grid, SH

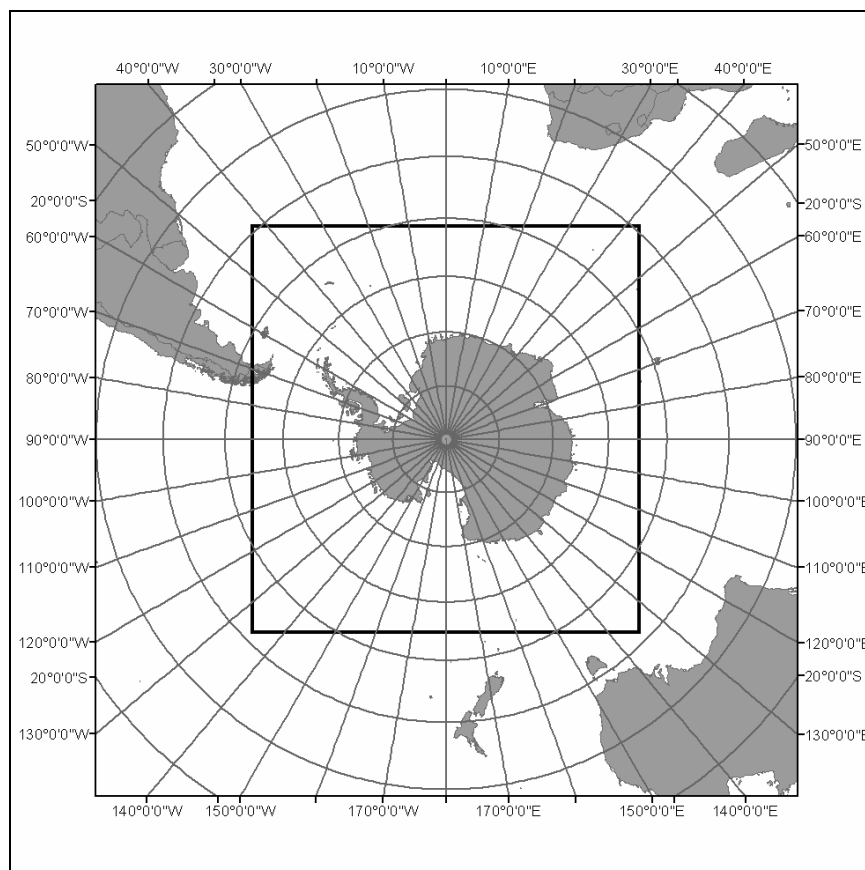


Figure 1: Extent of the SH product

3.2 NWP data

The atmospheric correction for the new Global Sea Ice product demands global NWP data. For the SH product NWP data originates from ECMWF in following setup:

Parameters: TCWV (Total Column Water Vapour)
T2m (Temperature at 2 m)
Analyses: 00 and 12
Prognoses: +12, +15, +18, +21, +24

Parameters are interpolated temporally and spatially to match satellite input data in time and space.

4. VERIFICATION AND VALIDATION

4.1 Requirements

Following section will describe the requirements that should be met in order for the SH product to be considered operational.

4.1.1 Verification

The production environment, methods and schedule resembles that of the NH sea ice product. The following demands should be verified prior to release:

- the algorithms used are the same for the NH and the SH product
- three products are generated (concentration, edge and type) on a daily basis
- products are generated in HDF5, GRIB and NetCDF
- specifications of products are in accordance with PUM
- products are made available at the local FTP server and distributed for access via EumetCast
- products are distributed according to timeliness specifications

4.1.2 Timeliness

The products are valid for one day (24 hours) with central time 12 UTC (note that central time is used in the file name). The cut-off time is 4 hours, which means that the production is pending until 0400 UTC in order to get full temporal data coverage. The timeliness is therefore 4 hours cut-off time plus 2 hours for production and distribution, i.e. 6 hours. As the SH products are produced together with the NH products, these two products usually have the same timeliness. Validation of the timeliness requirements is therefore not addressed in this report, but will be part of the quarterly reports.

4.1.2 Operational readiness validation

The adaptation of the sea ice products to the Southern Hemisphere consisted in 1) tuning tie points for the ice concentration and atmospheric correction modules, 2) deriving statistics for the ice edge and ice type products, 3) adapting the processing chain to use auxiliary and NWP model data from the Antarctic region, and 4) setting up regular inter-comparison with ice charts. The adaptation is validated in two steps: By validation of the tie points addressing (1) and by comparison of the final output from the SH sea ice module with independent ice charts addressing the remaining points. Due to the more complicated surface and atmospheric setting in the Southern Hemisphere, the performance of the SH products must be expected to be slightly lower than that for the NH products. It is therefore possible that the objectives defined in **[A.D-2]** for the NH ice concentration product must be amended with a separate objective for the Southern Hemisphere. In the following the validation steps outlined above are described in more details along with results.

4.2 Methods

Tie point verification

The tie points were verified in the frame of the associated scientist project undertaken by Leif Toudal of the Technical University of Denmark [R.D-4]. Please see [R.D-4] for a description of the methodology Applied.

Verification of ice concentration and ice edge against reference data

The integration of the SH product is verified against operational ice charts from the US National Ice Center (NIC). As mentioned, NIC is presently the only institution that conducts regular mapping of the sea ice in the entire Antarctic region. The ice charts are based on all available observations, including SAR data, passive microwave, scatterometry and VIS/IR satellite data. The data is synthesized into ice charts by manual interpretation following the standard NIC methodology and conforming to WMO standards. There is presently no way to distinguish ice chart polygons based on passive microwave radiometry from polygons that are based on high resolution data. This may lead to smaller differences against the OSISAF products; however the ice chart data is undergoing a meticulous quality control, which ensures a reasonable degree of independence. Hence it is considered justified to base the operational readiness validation as well as the regular quality control and performance estimation of the products on these data.

The NIC SH ice charts are compiled every 2 weeks. In the present analysis a total number of 31 charts have been used in the collocation with OSISAF products. The 31 ice charts from NIC span the time from 5th September 2005 to 30th October 2006. For each ice chart a collocation is made on a cell-by-cell basis between the OSISAF concentration/edge product and the NIC ice chart. The collocation covers all cells within the OSISAF SH grid which are not land. The OSISAF products used in the collocation are chosen for the day matching the valid time of the NIC SH ice chart. For each collocation a set of statistics are derived (see Appendix A):

Statistics on sea ice concentration:

- For each SIGRID concentration interval in the ice chart, the number of cells with a given deviation in the OSISAF sea ice concentration are derived.
- For the total number of cells covering water or ice in the NIC SH ice chart, the relative deviations between OSISAF sea ice concentration and NIC SH ice chart are derived.
- For the total number of cells covering ice in the NIC SH ice chart, the relative deviations between OSISAF sea ice concentration and NIC SH ice chart are derived.
- The bias and standard deviation for the differences between NIC SH ice chart and OSISAF sea ice concentration are given according to each SIGRID concentration interval in the NIC SH ice chart.

- The bias and standard deviation for the differences between NIC SH ice chart and OSISAF sea ice concentration are given for the total number of cells covering water or ice in the NIC SH ice chart.
- The bias and standard deviation for the differences between NIC SH ice chart and OSISAF sea ice concentration are given for the total number of cells covering ice in the NIC SH ice chart.

Statistics on sea ice edge:

- The number of cells with ice in both NIC SH ice chart and OSISAF edge product.
- The number of cells with water in both NIC SH ice chart and OSISAF edge product.
- The number of cells with water in NIC SH ice chart and ice in OSISAF edge product.
- The number of cells with ice in NIC SH ice chart and water in OSISAF edge product.

4.3 Results and discussion

Tie point verification

Pages 18 and 16 of [R.D-4] list the resulting uncertainties of ice concentration retrievals at low (termed “Ti-w”) and high concentration (termed “Ti-i”). For the Bristol and Bootstrap frequency mode algorithms, respectively. Recall that these are the algorithms used in the current version of the OSISAF NH ice concentration product. Figure 2 reveals that the uncertainties in the Antarctic are higher by 4.4% on average, compared to the Arctic. Consequently, it is not likely that the Antarctic product will be able to fulfill the accuracy objectives defined in [A.D-2].

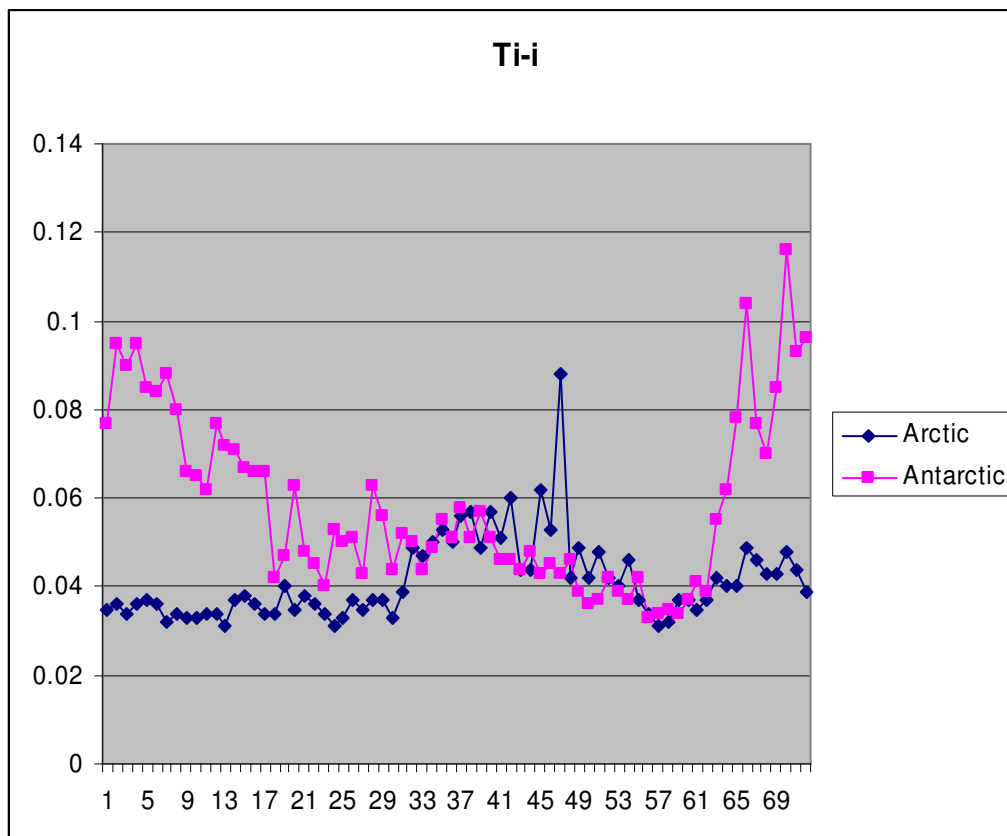


Figure 2 : Tiepoint uncertainty expressed in unit of ice concentration fraction (0 to 1) for the Arctic and Antarctic Bristol algorithm tie points. Units on X-axis are 5 days intervals from January through December as in [R.D-4]

Collocation results from OSISAF output against NIC reference data

In the following is shown the results from collocation between the NIC ice charts and the OSISAF products.

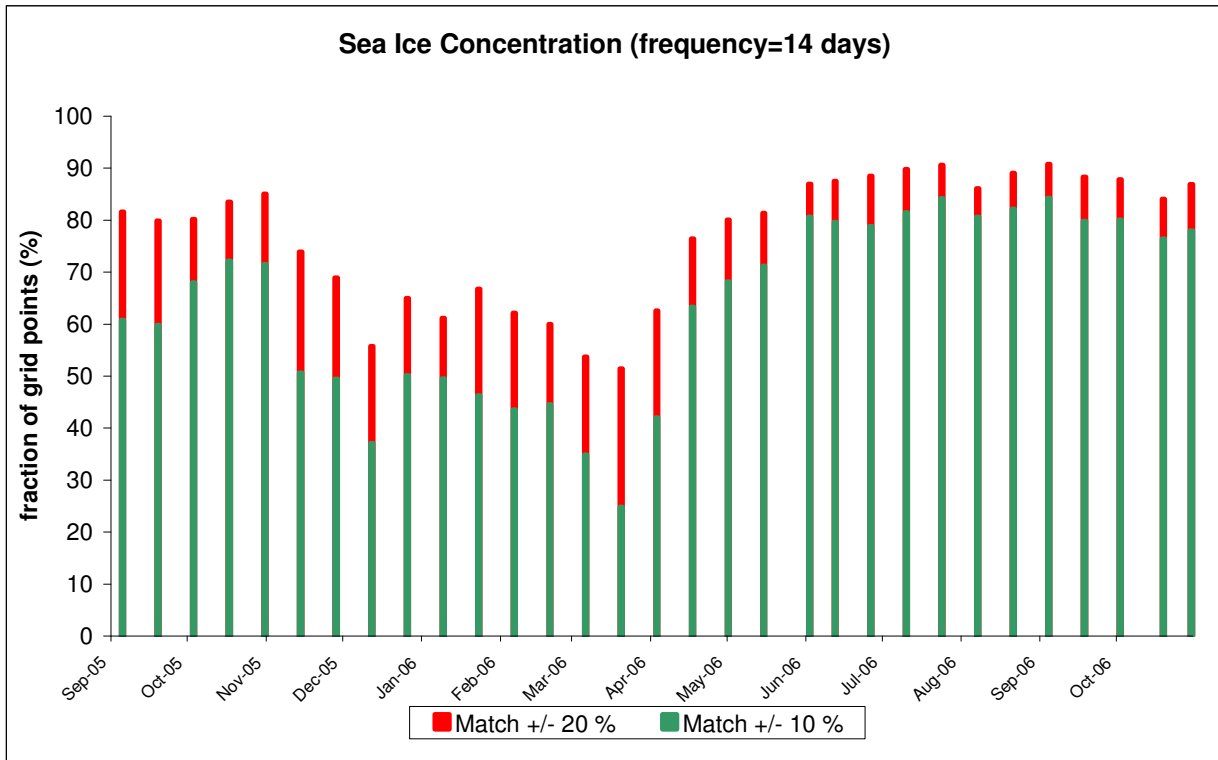


Figure 3 : Comparison between ice concentration from the 2-weekly NIC ice analysis and the SAF concentration product. 'Match +/- 10 %' corresponds to those grid points where concentration deviates within the range of +/-10 % and likewise for +/-20 %.

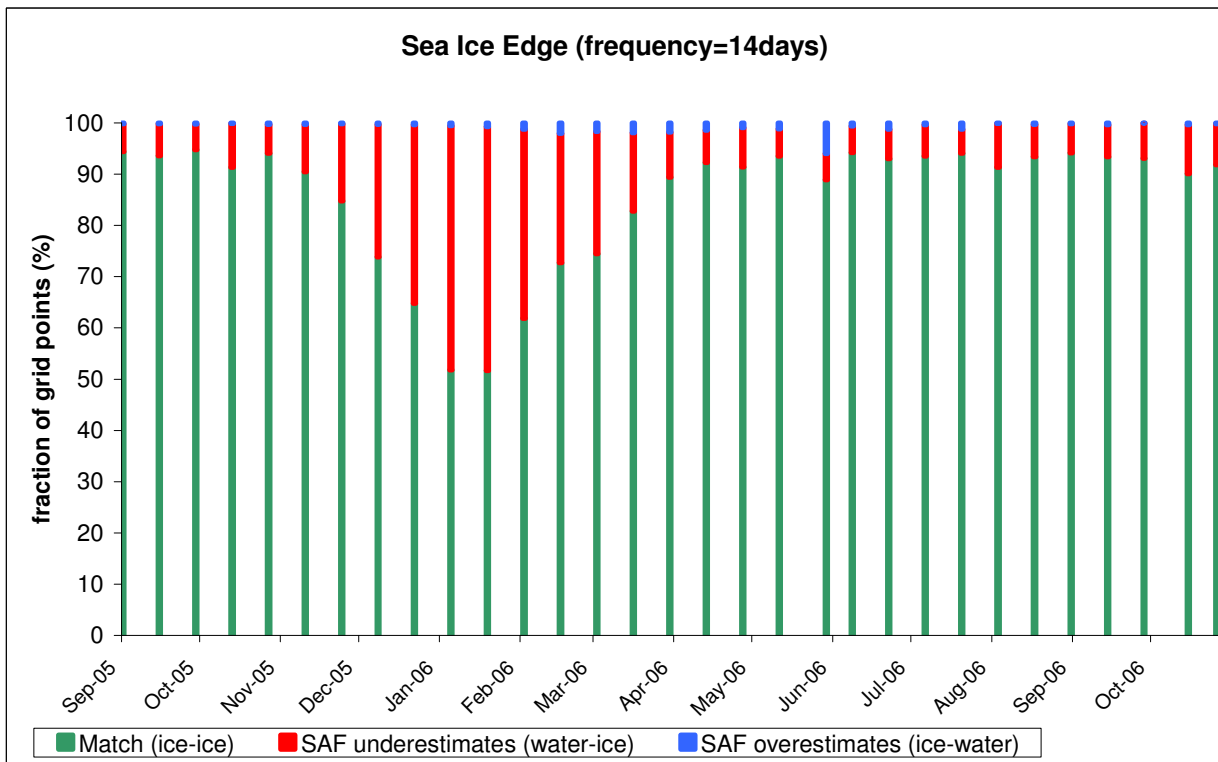


Figure 4 : Comparison between the 2-weekly NIC ice analysis and the SAF edge product. 'SAF underestimates' means grid points where the SAF product indicated water and the NIC ice analysis indicated ice and vice versa for 'SAF overestimates'.

NB: match+underestimate+overestimate=100%

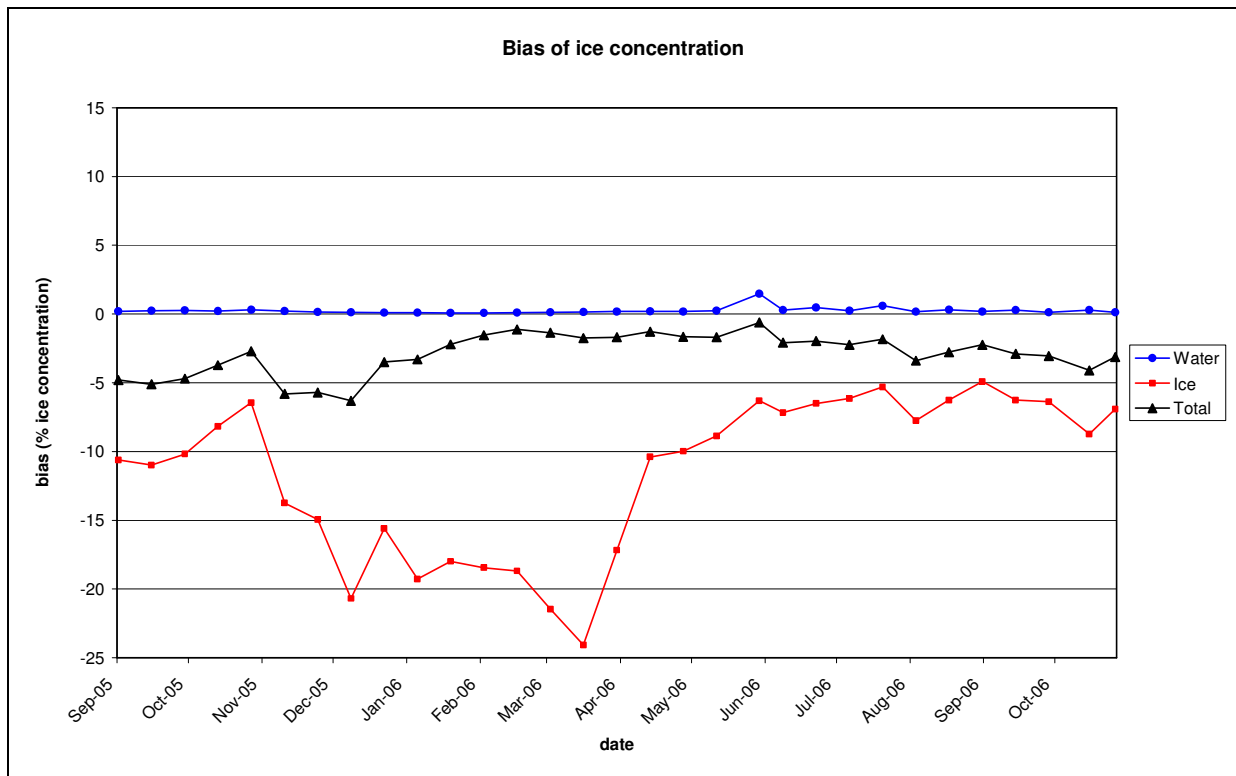


Figure 5 : The bias of ice concentration for three categories: water, ice and total. When bias is below zero the SAF ice concentration tends to underestimate.

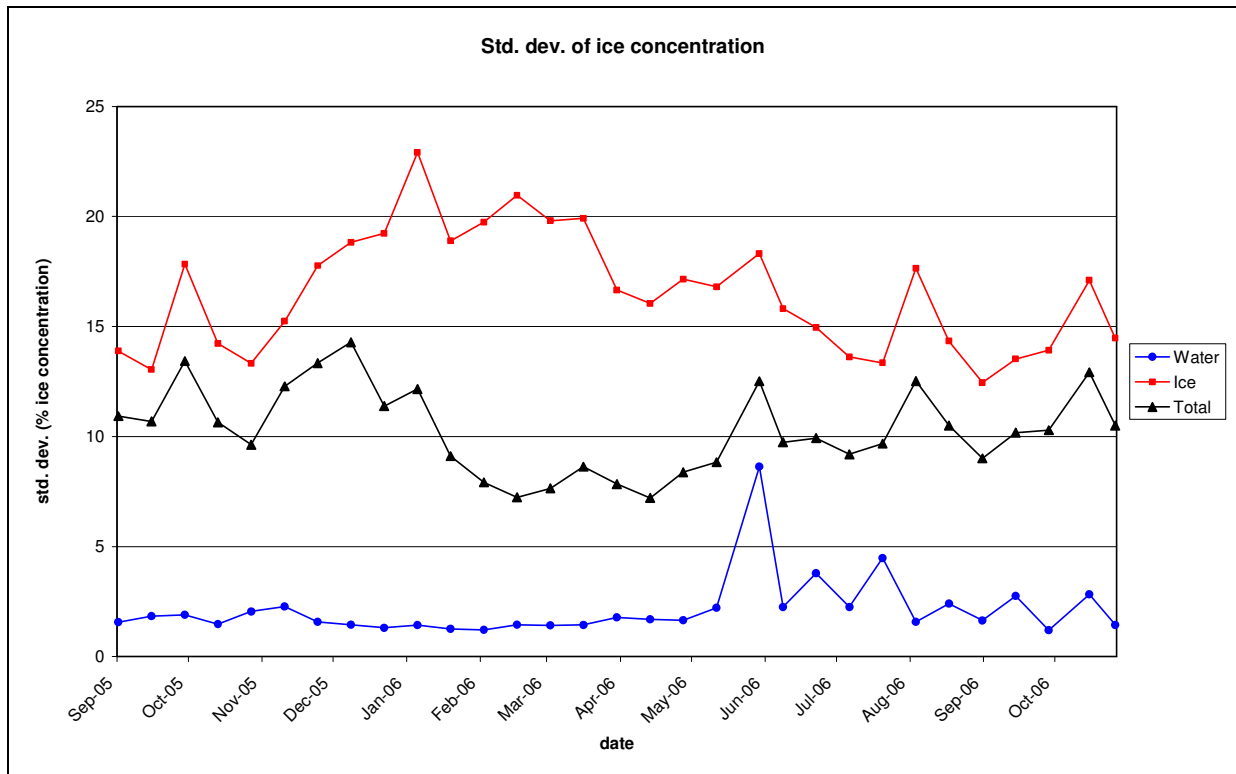


Figure 6 : The standard deviation of ice concentration for three categories: water, ice and total.

As can be seen from the figures above there is a seasonal variation revealing lower accuracy during austral summer (melting season). The pattern resembles that of the NH product, however being slightly more pronounced in the SH case. The lower accuracy, especially for the ice concentration during austral summer is in sync with the pattern observed for the tie point accuracy, also showing lower accuracy during austral summer, see Figure 2.

5. CONCLUSION

A verification task of the OSISAF Southern Hemisphere sea ice products has been carried out, consisting of 1) validation of tie points used in the sea ice algorithms and 2) validation of the sea ice concentration and sea ice edge through comparison with Southern Hemisphere ice charts from National Ice Center (NIC).

In general the uncertainties in the SH tie points are higher than those for the NH product. This is justified by the additional uncertainty in the tie point emissivity of 4.4 % ice concentration on average. Consequently it is recommended to amend **[A.D-2]** with a separate accuracy objective for the SH ice concentration product that is correspondingly higher (user requirement UR-ICE-31).

As shown in the comparison study with NIC ice charts, there is a seasonal variation in quality of the sea ice concentration and sea ice edge product. The seasonal variation pattern resembles that of the Northern Hemisphere product, however being slightly more pronounced in the SH case. The differences are more pronounced for the ice concentration product.

In overall the SH sea ice products has shown deviations within acceptable limits when compared to the reference data set, the uncertainty falls within the revised accuracy objective, argued for above (user requirement UR-ICE-31). The SH products meets all the other user requirements for sea ice.

APPENDIX A: STATISTICS FROM COLLOCATIONS

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc050905.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200509051200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200509051200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	222530	0	0	0	95	4	0	0	0.20	1.57
0 - 10	750	0	0	0	100	0	0	0	0.00	0.09
10 - 30	2306	0	0	50	44	4	1	1	-2.13	4.99
20 - 40	3837	0	39	28	28	2	1	1	-7.52	8.63
30 - 50	4188	42	21	18	18	1	0	0	-15.51	11.53
40 - 60	1315	48	29	15	8	1	0	0	-19.00	11.92
50 - 70	1044	49	14	20	17	0	0	0	-20.43	16.37
60 - 80	2494	56	15	15	14	0	0	0	-22.55	16.09
70 - 90	7808	60	16	17	7	0	0	0	-29.13	21.81
80 - 100	9988	52	17	18	13	0	0	0	-24.10	20.69
90 - 100	155084	13	21	35	31	0	0	0	-8.49	11.44
100-100	2347	37	36	25	2	0	0	0	-17.97	12.37
Total:	413691	8	10	15	64	2	0	0	-4.80	10.93
Ice only:	191161	18	21	32	28	0	0	0	-10.61	13.89

Ice edge stats

IA\SAF	Ice	Water
Ice	181367	10319
Water	412	222118

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc050919.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200509191200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200509191200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	216667	0	0	0	96	3	1	0	0.24	1.84
10 - 30	1597	0	0	66	32	1	0	0	-4.66	4.86
20 - 40	2922	0	56	26	17	1	0	0	-10.46	7.31
30 - 50	4666	46	13	19	15	4	3	1	-14.81	13.89
40 - 60	271	31	48	19	2	0	0	0	-16.17	7.44
50 - 70	8798	58	19	11	11	1	1	0	-23.70	16.25
60 - 80	3986	47	17	14	18	4	0	0	-20.50	18.09
70 - 90	12705	38	22	20	21	0	0	0	-18.11	17.33
80 - 100	11867	26	26	27	21	0	0	0	-15.82	19.04
90 - 100	148084	15	19	37	29	1	0	0	-8.84	10.64
100-100	2146	33	42	25	0	0	0	0	-17.52	11.23
Total:	413709	10	10	16	63	2	0	0	-5.11	10.69
Ice only:	197042	20	20	33	26	1	0	0	-10.99	13.04

Ice edge stats

IA\SAF	Ice	Water
Ice	185302	12289
Water	405	216263

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc051003.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200510031200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200510031200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	216840	0	0	0	92	7	1	0	0.27	1.90
0 - 10	603	0	0	0	62	20	12	6	4.21	7.48
10 - 30	174	0	0	44	48	5	2	1	-1.31	5.24
20 - 40	2822	0	54	28	16	1	0	0	-10.28	7.61
30 - 50	4439	44	18	13	14	6	4	1	-14.31	14.24
40 - 60	4109	36	16	16	25	6	2	0	-14.26	15.37
50 - 70	5736	36	11	7	19	13	12	2	-13.19	22.05
60 - 80	2965	76	8	6	8	1	1	0	-32.03	18.28
70 - 90	4951	57	18	10	13	1	0	0	-28.38	21.24
80 - 100	12021	36	18	17	29	0	0	0	-18.16	20.06
90 - 100	156974	15	10	15	55	5	0	0	-8.33	16.88
100-100	2044	17	17	41	21	4	0	0	-8.90	11.22
Total:	413678	9	6	7	71	6	1	0	-4.70	13.43
Ice only:	196838	20	12	15	48	5	1	0	-10.18	17.83

Ice edge stats

IA\SAF	Ice	Water
Ice	187455	9893
Water	447	216439

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc051017.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200510171200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200510171200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	220023	0	0	0	90	10	0	0	0.22	1.47
10 - 30	4347	0	0	52	43	3	1	0	-2.95	4.76
20 - 40	3617	0	57	19	13	3	3	4	-8.89	12.17
30 - 50	1740	65	15	10	9	1	0	0	-20.54	10.24
40 - 60	4832	21	27	31	20	0	0	0	-11.71	11.27
50 - 70	7789	35	8	13	29	6	4	4	-12.98	19.78
60 - 80	2915	87	5	3	3	1	2	0	-38.81	17.46
70 - 90	14252	62	13	13	11	1	0	0	-29.43	20.72
80 - 100	23665	19	14	17	47	3	0	0	-9.64	14.66
90 - 100	128713	8	9	16	60	7	0	0	-4.38	9.04
100-100	1757	26	12	22	33	7	0	0	-10.70	14.51
Total:	413650	8	5	8	71	8	0	0	-3.71	10.65
Ice only:	193627	16	11	17	50	5	0	0	-8.17	14.23

Ice edge stats

IA\SAF	Ice	Water
Ice	177537	16645
Water	259	219799

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc051031.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200510311200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200510311200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	229339	0	0	0	92	7	1	0	0.30	2.05
0 - 10	38	0	0	0	0	8	45	47	22.50	13.62
10 - 30	4304	0	0	30	45	11	8	6	1.70	9.47
20 - 40	705	0	34	24	26	5	4	6	-3.55	11.74
30 - 50	5997	41	26	13	12	5	2	1	-14.51	12.65
40 - 60	14713	10	8	9	27	16	16	14	2.35	15.42
50 - 70	3523	20	14	17	40	7	1	1	-8.32	13.28
60 - 80	3575	22	16	22	30	7	3	0	-10.58	15.32
70 - 90	11498	30	9	15	36	10	0	0	-13.47	19.18
80 - 100	5516	23	14	15	47	0	0	0	-12.49	18.53
90 - 100	132815	11	12	21	53	4	0	0	-6.22	11.34
100-100	1681	32	24	29	13	3	0	0	-14.81	13.87
Total:	413704	6	5	9	72	7	1	1	-2.71	9.63
Ice only:	184365	13	12	19	47	6	2	1	-6.45	13.33

Ice edge stats

IA\SAF	Ice	Water
Ice	174506	10368
Water	623	228759

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc051114.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200511141200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200511141200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	235065	0	0	0	96	3	0	0	0.21	2.27
0 - 10	328	0	0	0	54	7	5	34	18.38	26.50
10 - 30	2324	0	0	69	21	1	1	8	-2.08	14.96
20 - 40	1564	0	57	16	13	2	2	10	-5.84	21.05
30 - 50	1975	61	22	10	4	1	1	2	-19.66	12.13
40 - 60	5606	48	12	15	22	1	1	0	-18.18	15.32
50 - 70	14230	56	19	14	10	1	0	0	-23.28	15.69
60 - 80	7096	59	12	12	15	2	0	0	-26.77	20.06
70 - 90	18896	28	15	23	33	0	0	0	-14.38	17.66
80 - 100	3049	29	28	31	12	0	0	0	-15.00	13.11
90 - 100	122032	19	26	31	24	0	0	0	-11.77	13.21
100-100	1497	44	28	24	3	1	0	0	-20.41	15.64
Total:	413662	11	10	12	64	2	0	0	-5.81	12.28
Ice only:	178597	26	23	28	23	0	0	0	-13.74	15.24

Ice edge stats

IA\SAF	Ice	Water
Ice	162474	16647
Water	579	234509

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc051128.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200511281200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200511281200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	253465	0	0	0	95	5	0	0	0.15	1.58
0 - 10	1488	0	0	0	63	19	9	9	5.73	12.62
10 - 30	4459	0	0	56	29	7	4	4	-1.85	9.49
20 - 40	1755	0	50	23	16	2	2	6	-6.97	11.96
30 - 50	1690	31	27	25	11	1	3	2	-11.77	12.50
40 - 60	7166	68	14	9	8	1	1	0	-24.08	13.29
50 - 70	16708	33	12	12	23	11	8	1	-12.00	18.12
60 - 80	9767	65	12	11	10	1	1	0	-31.38	21.71
70 - 90	25428	47	18	14	21	0	0	0	-22.53	20.21
80 - 100	12472	35	19	25	21	0	0	0	-17.70	18.48
90 - 100	77969	19	21	28	31	0	0	0	-11.06	14.01
100-100	1356	41	28	25	5	1	0	0	-20.80	18.10
Total:	413723	12	7	9	68	4	1	0	-5.70	13.34
Ice only:	160258	31	18	23	25	2	1	0	-14.95	17.77

Ice edge stats

IA/SAF	Ice	Water
Ice	136627	24144
Water	351	253135

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc051212.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200512121200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200512121200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	285619	0	0	0	97	3	0	0	0.13	1.45
0 - 10	595	0	0	0	69	15	8	8	5.17	12.76
10 - 30	6640	0	0	80	14	2	1	2	-5.12	7.72
20 - 40	5785	0	61	14	15	6	2	2	-10.29	11.16
30 - 50	5237	45	18	16	14	3	2	1	-14.21	12.46
40 - 60	3010	56	14	15	13	2	0	0	-21.17	14.63
50 - 70	8797	79	7	5	9	1	0	0	-31.94	15.75
60 - 80	12156	83	6	5	5	1	0	0	-36.66	16.90
70 - 90	14117	67	14	12	6	0	0	0	-30.17	19.19
80 - 100	17553	61	19	12	7	0	0	0	-26.44	17.20
90 - 100	52916	27	22	27	23	1	0	0	-14.67	17.15
100-100	1273	51	26	23	0	0	0	0	-22.71	15.23
Total:	413698	14	6	7	71	2	0	0	-6.31	14.28
Ice only:	128079	44	18	21	15	1	0	0	-20.69	18.83

Ice edge stats

IA/SAF	Ice	Water
Ice	95230	33374
Water	423	285215

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc051226.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200512261200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200512261200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	318881	0	0	0	98	2	0	0	0.10	1.31
0 - 10	9326	0	0	0	82	7	4	7	3.63	11.31
10 - 30	8730	0	0	84	11	2	1	2	-6.52	7.31
20 - 40	6361	0	54	19	17	4	2	3	-8.68	11.31
30 - 50	4240	64	20	8	8	1	0	0	-20.68	10.51
40 - 60	3926	53	22	10	10	2	1	1	-19.94	14.19
50 - 70	4401	50	21	18	11	0	0	0	-20.47	14.44
60 - 80	3027	75	9	5	7	3	0	0	-28.89	15.84
70 - 90	9080	71	9	6	7	7	0	0	-33.29	21.90
80 - 100	9416	65	19	8	9	0	0	0	-27.46	17.06
90 - 100	35140	28	12	13	43	3	0	0	-13.52	18.82
100-100	1192	33	17	33	14	4	0	0	-17.23	20.26
Total:	413720	8	3	4	82	2	0	0	-3.50	11.38
Ice only:	94839	34	14	17	29	3	1	1	-15.59	19.23

Ice edge stats

IA\SAF	Ice	Water
Ice	61977	33371
Water	358	318550

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060109.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200601091200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200601091200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	341300	0	0	0	99	1	0	0	0.09	1.43
0 - 10	5895	0	0	0	81	7	5	7	3.51	10.24
10 - 30	7642	0	0	83	11	2	2	2	-6.44	7.71
20 - 40	5363	0	62	17	13	4	1	2	-10.40	12.25
30 - 50	3566	67	13	7	7	2	1	2	-20.08	13.65
40 - 60	4379	85	7	3	4	1	1	0	-32.46	12.32
50 - 70	3250	75	6	5	9	4	2	0	-29.37	18.01
60 - 80	2101	74	5	5	12	3	0	0	-34.16	20.92
70 - 90	12200	84	5	4	6	1	0	0	-44.95	21.71
80 - 100	11998	42	10	10	37	2	0	0	-22.22	25.01
90 - 100	15036	11	9	26	50	3	0	0	-6.57	12.42
100-100	969	33	21	30	15	2	0	0	-17.59	19.77
Total:	413699	7	2	3	86	1	0	0	-3.30	12.16
Ice only:	72399	38	11	19	28	3	1	1	-19.28	22.91

Ice edge stats

IA\SAF	Ice	Water
Ice	37984	34941
Water	400	340928

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060123.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200601231200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200601231200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	353679	0	0	0	99	1	0	0	0.08	1.26
0 - 10	4393	0	0	0	87	6	3	4	2.25	8.49
10 - 30	7237	0	0	92	5	1	1	2	-7.82	7.42
20 - 40	5749	0	85	8	6	1	0	1	-16.40	7.28
30 - 50	1307	53	21	16	7	2	1	1	-18.37	11.70
40 - 60	2822	88	4	2	3	1	1	2	-31.31	13.27
50 - 70	2409	74	14	7	4	1	0	0	-29.15	14.03
60 - 80	1135	87	6	5	2	0	0	0	-42.63	16.53
70 - 90	5437	87	6	5	2	0	0	0	-43.03	18.07
80 - 100	4536	50	14	12	23	1	0	0	-24.80	22.88
90 - 100	15793	22	23	25	30	1	0	0	-12.08	14.16
100-100	686	52	18	29	1	0	0	0	-25.62	21.90
Total:	405183	4	3	3	89	1	0	0	-2.21	9.11
Ice only:	51504	33	20	24	21	1	0	1	-17.99	18.89

Ice edge stats

IA\SAF	Ice	Water
Ice	27044	24974
Water	372	353350

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060206.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200602061200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200602061200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	369812	0	0	0	98	1	0	0	0.08	1.21
0 - 10	5128	0	0	0	89	5	3	3	1.76	7.09
10 - 30	2372	0	0	80	12	4	2	2	-5.78	7.69
20 - 40	1220	0	82	7	5	2	3	1	-14.57	9.03
30 - 50	1798	77	11	6	5	1	1	0	-23.28	9.95
40 - 60	846	50	16	15	14	4	0	0	-18.54	13.91
50 - 70	1307	77	7	7	9	1	0	0	-33.50	17.30
60 - 80	1771	83	8	6	3	0	0	0	-43.55	18.58
70 - 90	2572	85	6	3	3	3	0	0	-38.72	17.98
80 - 100	3888	61	12	13	13	0	0	0	-28.47	21.28
90 - 100	13815	28	29	26	16	1	0	0	-15.71	15.45
100-100	647	74	18	8	0	0	0	0	-36.70	22.80
Total:	405176	3	2	2	92	1	0	0	-1.53	7.92
Ice only:	35364	37	18	19	23	2	1	1	-18.44	19.74

Ice edge stats

IA\SAF	Ice	Water
Ice	22427	13389
Water	458	369465

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060220.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200602201200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200602201200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	378605	0	0	0	98	1	0	0	0.11	1.45
0 - 10	2232	0	0	0	74	13	6	8	3.89	9.67
10 - 30	1301	0	0	60	30	5	2	3	-3.39	7.92
20 - 40	593	0	41	25	16	5	5	7	-4.92	13.20
30 - 50	744	38	14	17	20	5	3	3	-11.50	14.97
40 - 60	1139	74	12	7	6	1	0	0	-26.01	12.37
50 - 70	896	82	16	1	1	0	0	0	-31.47	11.18
60 - 80	1099	95	3	1	1	0	0	0	-45.12	11.59
70 - 90	1561	66	16	10	8	0	0	0	-25.75	15.11
80 - 100	3489	56	17	15	13	0	0	0	-26.81	21.18
90 - 100	12993	31	18	33	18	0	0	0	-17.35	20.21
100-100	548	84	14	2	0	0	0	0	-41.99	22.78
Total:	405200	3	1	2	93	1	0	0	-1.12	7.24
Ice only:	26595	39	15	23	20	2	1	1	-18.68	20.97

Ice edge stats

IA\SAF	Ice	Water
Ice	20033	6953
Water	561	378192

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060306.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200603061200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200603061200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	377424	0	0	0	98	1	0	0	0.12	1.42
0 - 10	1276	0	0	0	59	23	10	8	5.12	10.14
10 - 30	1581	0	0	58	30	8	3	2	-3.66	7.44
20 - 40	1773	0	58	21	18	2	1	0	-10.37	8.19
30 - 50	780	60	19	13	6	1	1	0	-19.90	11.16
40 - 60	914	37	33	15	11	2	1	1	-15.86	12.88
50 - 70	310	72	6	8	13	1	0	0	-28.02	16.46
60 - 80	733	86	8	5	2	0	0	0	-37.91	15.46
70 - 90	3546	86	9	4	2	0	0	0	-36.95	15.17
80 - 100	5161	49	11	25	15	0	0	0	-22.96	21.25
90 - 100	11044	45	23	22	11	0	0	0	-20.86	17.53
100-100	669	90	10	1	0	0	0	0	-48.08	21.91
Total:	405211	3	1	1	92	1	0	0	-1.36	7.65
Ice only:	27787	46	18	19	13	2	1	1	-21.46	19.81

Ice edge stats

IA\SAF	Ice	Water
Ice	21362	6837
Water	484	377056

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060320.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200603201200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200603201200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	373831	0	0	0	98	2	0	0	0.14	1.44
0 - 10	442	0	0	0	40	29	18	13	7.45	9.74
10 - 30	947	0	0	29	46	11	8	6	1.90	8.99
20 - 40	1296	0	44	14	29	8	4	1	-7.06	10.52
30 - 50	187	20	22	19	28	8	4	0	-8.51	11.54
40 - 60	700	63	16	6	10	2	3	0	-22.73	15.14
50 - 70	1239	50	21	13	16	1	0	0	-22.67	17.31
60 - 80	914	76	11	9	4	0	0	0	-40.12	20.95
70 - 90	2972	73	12	10	6	0	0	0	-34.88	20.21
80 - 100	4458	62	13	22	3	0	0	0	-26.81	18.04
90 - 100	17524	45	34	19	2	0	0	0	-24.07	18.67
100-100	667	77	21	3	0	0	0	0	-34.50	19.76
Total:	405177	4	2	1	91	2	0	0	-1.74	8.63
Ice only:	31346	48	26	17	6	1	1	0	-24.07	19.92

Ice edge stats

IA\SAF	Ice	Water
Ice	26887	4970
Water	630	373253

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060403.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200604031200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200604031200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	361667	0	0	0	96	4	0	0	0.19	1.78
10 - 30	707	0	0	40	51	6	1	3	-1.79	7.03
20 - 40	1379	0	36	26	28	4	3	4	-5.26	10.78
30 - 50	939	29	26	24	15	4	2	0	-12.14	10.90
40 - 60	1105	63	19	13	4	0	0	0	-23.98	12.47
50 - 70	1420	68	13	10	8	1	0	0	-28.34	16.58
60 - 80	445	63	22	9	7	0	0	0	-24.42	13.55
70 - 90	3453	57	19	8	15	1	0	0	-25.00	18.05
80 - 100	4696	46	18	16	20	0	0	0	-20.05	17.86
90 - 100	28976	33	21	27	19	0	0	0	-15.67	15.73
100-100	407	80	19	1	0	0	0	0	-38.00	22.35
Total:	405194	4	2	2	87	3	0	0	-1.68	7.84
Ice only:	43527	37	20	23	18	1	0	0	-17.17	16.66

Ice edge stats

IA\SAF	Ice	Water
Ice	40079	3946
Water	822	360891

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060417.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200604171200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200604171200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BAS	STD
0 - 0	348602	0	0	0	95	4	0	0	0.20	1.69
0 - 10	203	0	0	0	49	29	15	6	5.20	7.81
10 - 30	256	0	0	13	70	14	2	0	0.20	3.58
20 - 40	734	0	47	10	19	8	8	8	-4.73	13.90
30 - 50	1394	16	12	14	26	10	9	12	-1.59	16.45
40 - 60	1350	68	15	9	6	1	0	0	-25.74	13.98
50 - 70	1506	75	11	8	5	1	0	0	-30.14	15.73
60 - 80	1030	67	15	8	10	1	0	0	-27.37	16.66
70 - 90	4833	32	13	14	28	13	0	0	-13.76	18.33
80 - 100	6184	11	7	21	60	1	0	0	-6.14	12.41
90 - 100	38692	20	13	13	52	3	0	0	-9.24	14.82
100-100	416	67	24	9	0	0	0	0	-32.54	22.86
Total:	405200	3	2	2	88	4	0	0	-1.28	7.21
Ice only:	56598	23	13	14	46	4	0	0	-10.39	16.05

Ice edge stats

IA\SAF	Ice	Water
Ice	53472	3638
Water	834	347796

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060501.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200605011200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200605011200.hdf

Error from IA range

IA	NP	<-20%	>-20%	-10%	exact	10%	<+20%	>+20%	BIAS	STD
0 - 0	332490	0	0	0	94	6	0	0	0.18	1.65
0 - 10	18	0	0	0	44	56	0	0	2.49	3.03
10 - 30	811	0	0	57	29	6	3	6	-1.35	10.61
20 - 40	1165	0	64	22	11	2	0	0	-12.37	7.85
30 - 50	3011	23	33	21	17	3	1	1	-11.22	10.34
40 - 60	1339	62	12	6	9	4	4	3	-20.50	17.49
50 - 70	600	45	16	9	12	1	6	12	-13.10	21.03
60 - 80	236	43	31	14	10	2	0	0	-18.68	12.75
70 - 90	1000	76	8	7	7	3	0	0	-35.91	21.18
80 - 100	1168	80	2	2	15	1	0	0	-47.60	26.39
90 - 100	62844	17	10	11	57	6	0	0	-8.51	15.88
100-100	497	33	26	22	15	4	0	0	-20.77	24.58
Total:	405179	4	2	2	86	6	0	0	-1.65	8.38
Ice only:	72689	20	11	12	51	6	0	0	-9.98	17.15

Ice edge stats

IA\SAF	Ice	Water
Ice	67557	5656
Water	687	331838

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060515.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200605151200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200605151200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	318207	0	0	0	94	5	0	0	0.25	2.22
10 - 30	698	0	0	36	55	6	2	1	-1.06	5.73
20 - 40	389	0	16	28	36	11	5	4	-1.33	9.27
30 - 50	951	50	23	12	10	2	1	1	-17.25	12.28
40 - 60	3715	38	18	14	18	5	3	5	-12.48	17.29
50 - 70	804	59	11	8	12	4	4	1	-23.92	20.29
60 - 80	552	60	10	9	14	6	1	0	-23.93	18.15
70 - 90	2538	41	9	7	18	21	3	0	-18.11	25.51
80 - 100	2249	36	21	20	23	0	0	0	-17.62	18.47
90 - 100	73483	15	9	10	59	7	0	0	-7.74	15.93
100-100	609	42	11	19	23	5	0	0	-20.39	24.16
Total:	404195	4	2	2	85	6	0	0	-1.69	8.83
Ice only:	85988	18	10	11	53	7	0	0	-8.87	16.81

Ice edge stats

IA\SAF	Ice	Water
Ice	82794	4697
Water	1054	317190

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060602.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200606021200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200606021200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	295106	0	0	0	92	5	1	3	1.47	8.63
0 - 10	16	0	0	0	0	13	19	69	27.80	12.53
10 - 30	695	0	0	28	8	8	9	48	18.21	22.87
20 - 40	303	0	40	3	9	3	14	31	4.90	22.77
30 - 50	2819	14	3	2	7	8	15	51	15.76	22.81
40 - 60	1122	38	10	10	20	10	8	5	-12.33	19.49
50 - 70	1052	50	5	9	17	6	9	3	-21.22	25.09
60 - 80	778	7	5	14	63	11	0	0	-4.38	13.49
70 - 90	13769	20	3	6	43	28	0	0	-10.48	23.90
80 - 100	1663	3	3	9	85	0	0	0	-1.82	6.84
90 - 100	85684	9	6	22	62	1	0	0	-6.33	16.16
100-100	489	54	34	13	0	0	0	0	-28.84	21.27
Total:	403496	3	2	5	82	5	1	2	-0.62	12.51
Ice only:	108390	12	6	19	57	5	1	2	-6.31	18.32

Ice edge stats

IA\SAF	Ice	Water
Ice	102835	5927
Water	6948	288198

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060612.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200606121200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200606121200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	275439	0	0	0	91	8	1	0	0.28	2.25
10 - 30	1975	0	0	46	41	9	3	1	-1.52	5.40
20 - 40	978	0	45	25	23	4	2	1	-7.97	9.07
30 - 50	299	41	10	8	14	5	9	11	-9.06	19.08
40 - 60	1012	40	17	15	19	4	3	2	-14.94	15.94
50 - 70	517	50	21	16	9	2	2	0	-20.37	15.31
60 - 80	789	38	12	14	29	7	0	0	-16.57	18.44
70 - 90	4840	50	10	11	27	2	0	0	-26.72	25.98
80 - 100	415	64	25	7	4	0	0	0	-31.30	19.50
90 - 100	116548	10	7	17	64	1	0	0	-6.07	14.55
100-100	728	53	28	19	0	0	0	0	-24.60	19.35
Total:	403540	4	3	6	81	6	0	0	-2.09	9.74
Ice only:	128101	12	8	18	61	2	0	0	-7.18	15.81

Ice edge stats

IA\SAF	Ice	Water
Ice	121723	6717
Water	808	274660

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060626.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200606261200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200606261200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	262322	0	0	0	94	5	1	1	0.46	3.78
0 - 10	51	0	0	0	75	22	4	0	1.65	3.73
10 - 30	1623	0	0	58	21	7	5	9	-0.60	13.75
20 - 40	2860	0	27	6	15	18	19	14	2.37	15.57
30 - 50	1226	28	30	21	17	2	1	1	-12.44	10.73
40 - 60	2725	29	8	7	19	15	14	8	-6.07	20.18
50 - 70	644	32	6	7	16	7	17	15	-7.86	25.60
60 - 80	1026	43	9	14	20	5	8	0	-20.86	25.14
70 - 90	6307	56	8	9	21	6	0	0	-30.52	27.16
80 - 100	2574	48	13	19	19	0	0	0	-26.88	26.62
90 - 100	121158	7	8	26	58	1	0	0	-4.83	11.47
100-100	1024	34	41	25	0	0	0	0	-18.04	12.97
Total:	403540	4	3	9	79	4	1	1	-1.97	9.93
Ice only:	141218	11	9	25	52	2	1	1	-6.50	14.96

Ice edge stats

IA\SAF	Ice	Water
Ice	133366	8200
Water	1852	260489

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060710.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200607101200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200607101200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	247133	0	0	0	92	7	0	0	0.25	2.25
10 - 30	1774	0	0	58	25	7	5	5	-1.69	9.18
20 - 40	3371	0	66	15	12	3	2	1	-11.23	9.65
30 - 50	484	42	23	19	15	1	0	0	-15.45	10.97
40 - 60	2408	50	14	11	19	5	2	0	-19.00	16.45
50 - 70	570	77	17	5	1	0	0	0	-30.87	12.79
60 - 80	1727	32	10	21	36	1	0	0	-15.38	19.17
70 - 90	8725	34	9	12	36	9	0	0	-15.88	21.01
80 - 100	5827	43	14	13	30	0	0	0	-22.24	23.74
90 - 100	130084	6	6	23	65	1	0	0	-4.09	10.95
100-100	1440	25	36	38	1	0	0	0	-16.17	14.14
Total:	403543	4	3	8	79	5	0	0	-2.23	9.20
Ice only:	156410	10	8	22	58	1	0	0	-6.15	13.62

Ice edge stats

IA/SAF	Ice	Water
Ice	147189	9566
Water	654	246494

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060724.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200607241200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200607241200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	237119	0	0	0	91	8	1	1	0.60	4.48
10 - 30	2502	0	0	69	18	5	4	5	-3.18	9.84
20 - 40	477	0	20	13	13	9	12	33	8.49	18.36
30 - 50	906	40	16	14	19	5	4	2	-12.55	14.22
40 - 60	555	44	11	6	12	9	8	10	-12.36	22.08
50 - 70	2929	71	9	7	8	4	1	0	-28.97	17.68
60 - 80	369	83	5	4	5	1	1	0	-39.52	19.54
70 - 90	5306	44	12	15	25	5	0	0	-21.52	22.58
80 - 100	10843	26	15	18	42	0	0	0	-13.88	19.66
90 - 100	141110	5	5	21	69	1	0	0	-3.37	10.43
100-100	1431	22	34	42	2	0	0	0	-15.25	15.90
Total:	403547	4	2	9	79	5	0	1	-1.84	9.68
Ice only:	166428	9	6	21	62	1	0	0	-5.31	13.35

Ice edge stats

IA/SAF	Ice	Water
Ice	158927	7845
Water	2153	234976

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060807.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200608071200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200608071200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	222313	0	0	0	94	5	0	0	0.17	1.58
10 - 30	2009	0	0	39	37	9	6	9	1.57	11.13
20 - 40	1850	0	54	9	26	6	2	3	-8.45	12.49
30 - 50	2442	82	6	4	6	1	0	0	-24.86	9.77
40 - 60	1265	81	8	6	5	0	0	0	-31.64	12.71
50 - 70	1903	76	8	6	8	2	1	0	-32.75	17.96
60 - 80	1984	64	9	10	12	3	2	0	-31.72	23.32
70 - 90	7070	66	10	10	14	1	0	0	-34.18	24.59
80 - 100	6497	48	12	15	25	0	0	0	-26.30	26.33
90 - 100	154708	7	4	15	71	2	0	0	-4.70	14.34
100-100	1514	28	26	44	2	0	0	0	-17.33	18.69
Total:	403555	6	3	7	80	4	0	0	-3.39	12.52
Ice only:	181242	14	6	15	63	2	0	0	-7.75	17.65

Ice edge stats

IA\SAF	Ice	Water
Ice	165962	15622
Water	225	222097

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060821.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200608211200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200608211200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	214405	0	0	0	94	5	1	0	0.32	2.40
10 - 30	3267	0	0	60	31	5	3	1	-3.25	6.51
20 - 40	2321	0	46	19	23	7	3	2	-7.25	10.79
30 - 50	2127	36	18	10	19	8	7	2	-10.79	14.26
40 - 60	676	46	17	14	18	4	0	0	-17.74	14.32
50 - 70	289	81	5	1	12	1	0	0	-31.85	15.63
60 - 80	1565	55	10	10	20	5	0	0	-25.70	21.83
70 - 90	13874	41	13	15	28	3	0	0	-19.79	21.12
80 - 100	14602	34	10	18	39	0	0	0	-17.51	22.40
90 - 100	149042	5	5	16	71	3	0	0	-3.51	10.58
100-100	1358	24	25	45	5	1	0	0	-14.19	15.80
Total:	403526	5	3	8	79	4	0	0	-2.77	10.50
Ice only:	189121	11	7	17	62	3	0	0	-6.27	14.34

Ice edge stats

IA\SAF	Ice	Water
Ice	177573	11915
Water	626	213787

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060904.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200609041200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200609041200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	212797	0	0	0	95	5	0	0	0.18	1.64
0 - 10	12	0	0	0	0	0	25	75	26.08	10.30
10 - 30	1615	0	0	66	28	4	1	1	-4.28	5.27
20 - 40	2296	0	62	13	18	4	2	1	-10.84	9.77
30 - 50	3505	22	14	11	15	9	13	16	-0.99	19.74
40 - 60	1561	45	8	6	14	14	8	4	-14.07	20.47
50 - 70	5349	50	12	10	19	6	3	0	-20.15	19.08
60 - 80	1102	50	9	9	22	9	0	0	-21.71	20.33
70 - 90	7662	49	9	13	26	4	0	0	-23.03	22.66
80 - 100	20823	19	10	19	51	0	0	0	-9.94	16.46
90 - 100	145204	3	4	18	73	3	0	0	-2.36	7.90
100-100	1633	22	22	47	8	1	0	0	-13.22	14.37
Total:	403559	4	3	8	80	4	0	0	-2.23	9.01
Ice only:	190762	9	6	18	64	3	0	0	-4.91	12.46

Ice edge stats

IA\SAF	Ice	Water
Ice	180164	10944
Water	288	212509

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc060918.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200609181200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200609181200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	207018	0	0	0	96	4	0	0	0.28	2.75
0 - 10	60	0	0	0	80	20	0	0	0.84	2.26
10 - 30	2521	0	0	55	23	7	5	11	0.17	13.56
20 - 40	3628	0	32	21	27	7	5	8	-2.46	14.36
30 - 50	1142	49	16	12	12	5	4	2	-15.03	14.64
40 - 60	3499	51	12	10	15	5	5	1	-18.57	17.61
50 - 70	3005	50	23	12	11	3	0	0	-21.66	15.85
60 - 80	2912	55	13	16	16	0	0	0	-27.53	22.08
70 - 90	8747	41	12	12	30	5	0	0	-20.01	22.27
80 - 100	12904	14	7	18	60	1	0	0	-7.28	14.50
90 - 100	156661	7	7	20	64	2	0	0	-4.45	10.94
100-100	1452	38	30	30	2	0	0	0	-18.23	12.88
Total:	403549	6	4	10	77	3	0	0	-2.90	10.18
Ice only:	196531	11	8	20	58	2	0	0	-6.25	13.52

Ice edge stats

IA\SAF	Ice	Water
Ice	184460	12426
Water	679	206339

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc061002.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200610021200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200610021200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	206356	0	0	0	96	4	0	0	0.12	1.20
0 - 10	818	0	0	0	68	14	8	10	4.99	10.76
10 - 30	1634	0	0	60	27	6	3	4	-2.85	8.60
20 - 40	3803	0	52	19	17	4	4	3	-8.04	11.46
30 - 50	1131	42	25	14	16	3	0	0	-15.56	10.92
40 - 60	2934	58	12	10	13	6	1	0	-20.92	15.95
50 - 70	3195	33	11	13	25	10	7	1	-12.16	18.29
60 - 80	1838	53	14	11	15	7	0	0	-24.46	21.14
70 - 90	12432	49	15	19	16	0	0	0	-23.68	20.83
80 - 100	11975	43	12	14	30	1	0	0	-23.81	26.03
90 - 100	155969	5	5	16	71	3	0	0	-2.94	8.04
100-100	1412	33	34	30	2	1	0	0	-16.76	11.91
Total:	403497	6	4	8	79	3	0	0	-3.05	10.29
Ice only:	197141	12	8	17	60	3	0	0	-6.37	13.92

Ice edge stats

IA\SAF	Ice	Water
Ice	183824	13678
Water	100	206293

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc061019.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200610191200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200610191200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	206874	0	0	0	97	2	0	1	0.28	2.83
0 - 10	132	0	0	0	95	5	0	0	0.18	0.97
10 - 30	3633	0	0	82	13	4	1	0	-6.82	5.56
20 - 40	1596	0	71	10	11	4	3	2	-12.45	10.54
30 - 50	1271	76	8	6	7	1	1	0	-23.63	10.70
40 - 60	2205	74	8	6	12	1	0	0	-28.99	15.35
50 - 70	5107	77	10	6	6	1	1	0	-33.59	17.02
60 - 80	1907	66	9	9	12	1	2	0	-31.30	22.19
70 - 90	10651	61	12	11	15	1	0	0	-31.47	24.55
80 - 100	18297	33	11	14	41	0	0	0	-17.77	23.35
90 - 100	150539	7	6	15	69	3	0	0	-4.40	12.11
100-100	1280	36	31	30	3	0	0	0	-18.33	15.81
Total:	403492	8	4	8	78	2	0	0	-4.11	12.92
Ice only:	196618	16	8	16	58	2	0	0	-8.73	17.10

Ice edge stats

IA\SAF	Ice	Water
Ice	178145	18855
Water	807	206090

IA file: /data2/validation/output/automatic/sikuout/nic/reform_antarc061030.txt
 CT file: /data2/dnmi_mirror/saf.met.no/prod/ice/conc/ice_conc_sh_200610301200.hdf
 IE file: /data2/dnmi_mirror/saf.met.no/prod/ice/edge/ice_edge_sh_200610301200.hdf

Error from IA range

IA	NP	<-20%	>-20%	>-10%	exact	<+10%	<+20%	>+20%	BIAS	STD
0 - 0	216902	0	0	0	96	3	0	0	0.12	1.44
0 - 10	114	0	0	0	65	22	5	8	3.88	8.15
10 - 30	439	0	0	61	15	4	4	16	2.60	19.24
20 - 40	4543	0	46	16	20	7	5	6	-5.77	13.76
30 - 50	2637	65	17	11	5	0	0	3	-20.44	12.64
40 - 60	2616	43	10	6	17	13	6	5	-13.36	19.47
50 - 70	7287	42	13	10	23	8	4	0	-15.76	18.11
60 - 80	13010	31	13	14	31	9	1	0	-13.32	17.42
70 - 90	10459	44	8	10	34	4	0	0	-24.06	26.59
80 - 100	14616	25	9	15	49	1	0	0	-12.94	20.11
90 - 100	129513	4	6	23	65	2	0	0	-3.24	8.50
100-100	1320	39	32	26	3	0	0	0	-19.28	15.13
Total:	403456	6	4	9	77	3	0	0	-3.13	10.50
Ice only:	186554	13	8	20	55	3	0	0	-6.90	14.47

Ice edge stats

IA\SAF	Ice	Water
Ice	171907	15032
Water	279	216674