The EUMETSAT
Network of
Satellite Application
Facilities

OSI SAF

Ocean and Sea Ice

OSI SAF CDOP2

—

HALF-YEARLY OPERATIONS REPORT

—

1st half 2014

—

December 2014

—

version 1_1

Prepared by DMI, IFREMER, KNMI, Meteo-France and MET Norway.

Table of contents

1   Introduction

1.1 Scope of the document

The present report covers from the 1st of January to the 30th of June 2014.

The objective of this document is to provide EUMETSAT and users, in complement with the web site www.osi-saf.org, an overview on OSI SAF products availability and quality, main anomalies and events, product usage, users' feedback, and updated available documentation.

- Low and Mid latitude (LML) Centre (Sub-System 1, SS1), under M-F responsibility, processes and distributes the SST and Radiative Fluxes products covering LML, North Atlantic Regional (NAR) and Global areas. IFREMER contributes to the products distribution and archiving,

- High Latitude (HL) Centre (Sub-System 2, SS2), under MET Norway responsibility with the co-operation of DMI, processes and distributes the Global Sea Ice products, the High Latitude SST and the High Latitude Radiative Fluxes,

- Wind Centre (Sub-System 3, SS3), under KNMI responsibility, processes and distributes the Wind products.

1.2 Products characteristics

The characteristics of the current products are specified in the Service Specification Document [AD-1] available on the OSI SAF web site at:
http://www.osi-saf.org/biblio/bibliotheque.php (authentication needed)

1.3 Reference and applicable documents

1.3.1 Applicable documents

[AD-1] : Service Specification Document, SESP.

1.3.2 Reference documents

[RD-1] : Low Earth Orbiter Sea Surface Temperature Product User Manual.
[RD-2] : Atlantic High Latitude L3 Sea Surface Temperature Product User Manual.
[RD-3] : Geostationary Sea Surface Temperature Product User Manual.
[RD-4] : Atlantic High Latitude Radiative Fluxes Product User Manual.
[RD-5] : Geostationary Radiative Flux Product User Manual.
[RD-6] : OSI SAF Sea Ice Product User Manual.
[RD-7] : 50 Ghz Sea Ice Emissivity Product User Manual.
[RD-8] : Low Resolution Sea Ice Drift Product User Manual.
[RD-9] : Medium Resolution Sea Ice Drift Product User Manual.
[RD-10] : ASCAT Wind Product User Manual.

1.4 Definitions, acronyms and abbreviations

AHL	Atlantic High Latitude
AMS	American Meteorological Society
ASCAT	Advanced SCATterometer
ATL	Atlantic low and mid latitude
AVHRR	Advanced Very High Resolution Radiometer
BUFR	Binary Universal Format Representation
CDOP	Continuous Development and Operations Phase
CMS	Centre de Météorologie Spatiale
DLI	Downward Long wave Irradiance
DMI	Danish Meteorological Institute
DMSP	Defense Meteorological Satellite Program
ECMWF	European Centre for Medium range Weather Forecasts
EPS	European Polar System
FAQ	Frequently Asked Question
FTP	File Transfer Protocol
GLB	Global oceans
GOES	Geostationary Operational Environmental Satellite
GOES-E	GOES-East, nominal GOES at 75°W
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
KNMI	Koninklijk Nederlands Meteorologisch Instituut

LEO	Low Earth Orbiter
LML	Low and Mid Latitude
MAP	Merged Atlantic Product
MET	Nominal Meteosat at 0°longitude
MET Norway	Norwegian Meteorological Institute
Metop	METeorological OPerational Satellite
M-F	Météo-France
MGR	Meta-GRanule
MSG	Meteosat Second Generation
NAR	Northern Atlantic and Regional
NCEP	National Centre for Environmental Prediction
NESDIS	National Environmental Satellite, Data and Information Service
NetCDF	Network Common Data Form
NMS	National Meteorological Service
NOAA	National Oceanic and Atmospheric Administration
NPP	NPOESS Preparatory Project
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NRT	Near Real-Time
NWP	Numerical Weather Prediction
OSI SAF	Ocean and Sea Ice SAF
QC	Quality Control
R&D	Research and Development
RMDCN	Regional Meteorological Data Communication Network
RMS	Root-Mean-Squared
SAF	Satellite Application Facility
Std Dev	Standard deviation
SEVIRI	Spinning Enhanced Visible and Infra-Red Imager
SMHI	Swedish Meteorological and Hydrological Institute
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
UMARF	Unified Meteorological Archive & Retrieval Facility
WMO	World Meteorological Organisation
WWW	World Wide Web

table 1 : **Definitions, acronyms and abbreviations.**

2   OSI SAF products availability and timeliness

As indicated in the Service Specification Document [AD-1], operational OSI SAF products are expected to be available for distribution within the specified time in more than **95%** of the cases where input satellite data are available with the nominal level of quality, on monthly basis.

Section 2.1 shows the measured availability on the local FTP servers.
Section 2.2 shows the measured availability via EUMETCast.

The dissemination of the OSI SAF products via EUMETCast implies an additional step, not under the strict OSI SAF responsibility, but general EUMETSAT's one.

The measured availability of the Global **Sea Ice** concentration (resp. edge, type) products corresponds to the situation when a product file is provided within 5 hours, whatever if there are input data or not. The sea ice type is the last product being produced, therefore the most likely to be outside this 5 hour spec.

2.1 Availability on FTP servers

The following table indicates the percentage of the products that have been made available within the specified time on the local FTP servers.

Month	ASCAT-A 25 km Wind	ASCAT-A 12.5 km Wind	ASCAT-A Coastal Wind	ASCAT-B 25 km Wind	ASCAT-B Coastal Wind	OSCAT 50 km Wind	GLB SST	NAR SST	AHL SST	MGR SST	METEOSAT SST	GOES-E SST	AHL DLI	AHL SSI	METEOSAT DLI	GOES-E DLI	METEOSAT SSI	GOES-E SSI	GBL Sea Ice Concentration	GBL Sea Ice Edge	GBL Sea Ice Type	GBL Low Res. Sea Ice Drift
Jan. 2014	100	100	99,8	100	99,9	95,9	100	100	100	98,8	100	100	100	96,8	100	99,9	100	99,9	100	100	100	100
Feb. 2014	100	100	99,7	100	99,9	93,7	100	95,5	100 (1)	99,8	100	99,9	100 (1)	96,8 (1)	100	100	100	100	100	100	100	100
Mar. 2014	100	100	99,8	100	99,9		100	100	100	99,3	99,6	99,9	100	93,5	99,9	99,9	99,9	99,9	100	100	100	100
Apr. 2014	100	100	99,8	99,9	99,9		100	100	100	99,9	100	100	100	100	100	100	100	100	100	100	100	100
May 2014	100	100	99,3	100	99,7		100	100	100	99,0	100	99,9	100	100	100	100	100	100	100	100	100	100
Jun. 2014	100	100	99	100	99,5		100	100	100	99,1	100	99,2	100	100	100	99,7	100	99,7	93,3	93,3	93,3	86,7
(*) indicates uncertain numbers, see explanation in section 3																						
(1): The availability logging failed parts of February for AHL SST, SSI and DLI. The given numbers are therefor for parts of the month only.																						

table 2 : **Percentage of OSI SAF products available on the FTP servers within the specified time over 1st half 2014.**

Note : The timeliness of the wind products on the KNMI FTP server is not measured separately and therefore the figures in table 2 are copied from table 3 for the wind products. Since the EUMETCast transmission is known to add only a very small delay to the timeliness, the availabilities on the KNMI FTP server are very close to or slightly better than the figures measured via EUMETCast.

Comment :
The availability of the OSCAT 50 km winds is systematically lower than the availability of the ASCAT wind products. This is due to delays in the level 0 and level 1 processing which occur from time to time and which are outside the scope of the OSI SAF.

All OSCAT near-real time services were discontinued following an irrecoverable instrument failure on 20 February 2014.

See anomaly details in section 3.

2.2 Availability via EUMETCast

The following table indicates the percentage of the products that have been delivered within the specified time.

Month	ASCAT-A 25 km Wind	ASCAT-A 12.5 km Wind	ASCAT-A Coastal Wind	ASCAT-B 25 km Wind	ASCAT-B Coastal Wind	OSCAT 50 km Wind	GLB SST	NAR SST	AHL SST	MGR SST	METEOSAT SST	GOES-E SST	AHL DLI	AHL SSI	METEOSAT DLI	GOES-E DLI	METEOSAT SSI	GOES-E SSI	GBL Sea Ice Concentration	GBL Sea Ice Edge	GBL Sea Ice Type	GBL Low Res. Sea Ice Drift
Jan. 2014	100	100	99,8	100	99,9	95,9	100	100	100	98,8	100	100	100	100	100	100	100	100	100	100	100	100
Feb. 2014	100	100	99,7	100	99,9	93,7	100	95,5	100	99,9	100	99,9	100	100	100	100	100	100	100	100	100	100
Mar. 2014	100	100	99,8	100	99,9	-	100	100	100	99,4	99,6	100	100	100	99,9	100	99,9	100	100	100	100	100
Apr. 2014	100	100	99,8	99,9	99,9	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
May 2014	100	100	99,3	100	99,7	-	100	100	100	99,7	100	100	100	100	100	100	100	100	100	100	100	100
Jun. 2014	100	100	99	100	99,5	-	100	100	100	99,0	100	99,2	100	100	99,9	99,2	99,9	99,3	93,3	93,3	93,3	86,7
(*) indicates uncertain numbers, see explanation in section 3																						

table 3 : **Percentage of OSI SAF products delivered via EUMETCast within the specified time over 1st half 2014.**

Comments:
See details in section 3.

3 Main anomalies, corrective and preventive measures

In case of anomaly (outage, degraded products…), correspondent service messages are made available in near-real time to the registered users through the Web site www.osi-saf.org.

3.1 At SS1

None.

3.2 At SS2

21.02.2014 - Degraded OSI SAF sea ice products

The sea ice products distributed today (with time stamp 20140220) have a large area/sector with missing data over Labrador Sea and Gulf of St Lawrence.
The coverage is expected nominal in tomorrows product.

26.03.2014 - Delayed OSI SAF AHL SSI product on FTP

Today's (dated 20140325) Atlantic High Latitude SSI product from OSI SAF was delayed due to an internal error. The missing product has now been uploaded to the FTP server.
The product was not delayed on the EUMETCast distribution.

02.04.2014 - Atlantic High Latitude SST and Flux missing METOP02 input

Due to problems with the local processing of METOP02 data at MET Norway yesterday 2.April, the Atlantic High Latitude SST and Flux products from 2.April are based on NOAA satellites only. This has resulted in a bit less coverage in the products.
The METOP02 processing at MET Norway is now back to nominal.

12.05.2014 - Degraded OSI SAF sea ice products

The OSI SAF sea ice products from the last three days are degraded due to an internal disk problem at MET Norway. Some sectors in the ice products are missing data. The problem has now been resolved and the production is back to nominal.

13.05.2014 - Degraded OSI SAF AHL SST, SSI and DLI products

Due to problems with missing updates of TLE elements for geolocation of NOAA AVHRR data, the OSI SAF AHL SST, SSI and DLI products might be degraded or have reduced coverage. The METOP AVHRR data is not affected by this. We are working on getting updated TLE information, and will inform users when the situation is back to nominal.

02.06.2014 - Missing OSI SAF Sea Ice products

The OSI SAF sea ice concentration, edge, type, LR and MR Drift products from 20140601 were not produced and distributed as expected, due to an outage of the production server. The problem have been fixed, and production is back to nominal. The missing products were uploaded to the FTP server in delayed mode.
The Sea Ice Emissivity product was not affected by this outage.

30.06.2014 - Missing OSI SAF Sea Ice products

The OSI SAF sea ice concentration, edge, type and LR drift products were not produced and distributed as nominal on 28.06.2014, due to a software problem. The products have now been reprocessed (except LR ice drift) and are available on our FTP server ftp://osisaf.met.no/prod/ice

3.3 At SS3

OSCAT data have been unavailable from 31 January, 2:00 until 4 February, 0:00 UTC sensing time due to a switch-off of the OSCAT instrument on board Oceansat-2.

All OSCAT near-real time services are discontinued following an irrecoverable instrument failure on 20 February 2014.

The ASCAT-A winds have been unavailable on 26 March between 12:00 and 15:12 UTC sensing time due to a Metop-A out of plane manoeuvre and an EPS ground segment anomaly. The ASCAT-B winds have been unavailable on 26 March between 12:54 and 13:42 UTC sensing time due to the EPS ground segment anomaly.

The ASCAT-A winds have been unavailable on 9 April between 11:24 and 16:00 UTC sensing time due to a Metop-A out of plane manoeuvre.

The ASCAT-A winds have been unavailable on 12 May between 11:00 and 12:42 UTC sensing time due to a ground segment anomaly.

The ASCAT-A winds have been unavailable on 2 June between 11:50 and 15:38 UTC sensing time due to a ground segment anomaly. The ASCAT-B winds have been unavailable on 2 June between 12:08 and 16:17 UTC sensing time.

4   Main events and modifications, maintenance activities

In case of event or modification, corresponding service messages are made available in near-real time to the registered users through the Web site www.osi-saf.org.

4.1 At SS1

None.

4.2 At SS2

19.01.2014 - Changed status back to operational for sea ice products

The sea ice products previously labelled "pre-operational" have changed status back to "operational". The status of the sea ice products was degraded to "preoperational" in January 2013 due to the switch from SSM/I to SSMIS. The use of SSMIS has now been fully validated and reviewed, and the main conclusion is that the quality of the OSI SAF sea ice products with SSMIS is similar or better than with SSM/I.

The products affected by this change are the sea ice concentration product (new identifier OSI-401-a), the sea ice edge product (new identifier OSI-402-a), the sea ice type product (new identifier OSI-403-a) and the LR sea ice drift product (new identifier OSI-405-a). The introduction of the "-a" in the product identifier is to indicated that there is a major change in the products. In this case, this change is the change from SSM/I to SSMIS.

23.05.2014 - Announcing two new sea ice products

The OSI SAF Sea Ice Team is happy to announce that the OSI SAF global sea ice emissivity and northern hemisphere medium resolution ice drift products (OSI-404 and OSI-407) are now available through EUMETCast and FTP, since 01.04.2014. On FTP, data is available both as NRT files and in the online archive. The sea ice emissivity product is in a pre-operational state, as it is still being validated.

More detailed information about the new releases is available here: http://osisaf.met.no/p/ice/new_ice_emis-mrdrift.html

4.3 At SS3

AWDP version 2_3_00 was implemented in the operational chain for ASCAT-A on 12 February: preparation for change of Metop-A level 1 calibration (activated at 12 March).

5   OSI SAF products quality

5.1 SST quality

The comparison between SST products and Match up data bases (MDB) gathering in situ (buoy) measurements is performed on a routine basis for each satellite.

Hourly SST values are required to have the following accuracy when compared to night time buoy measurements (see PRD) :

- monthly bias (Bias Req in following tables) less than 0.5° C,
- monthly difference standard deviation (Std Dev Req. in following tables) less than 1° C for the geostationary products (METEOSAT SST and GOES-E SST), and 0.8°C for the polar ones (MGR SST, GLB SST, NAR SST and AHL SST).

According to GHRSST-PP project, for IR derived products, the normalized Proximity Confidence Value scale shows 6 values : 0: unprocessed, 1: cloudy, 2: bad, 3: suspect, 4: acceptable, 5: excellent. A quality level is provided at pixel level. Those values are good predictors of the errors. It is recommended not to use the confidence value 2 for quantitative use. **Usable data are those with confidence values 3, 4 and 5**.

The list of blacklisted buoys over the concerned period is available here :
ftp://ftp.ifremer.fr/ifremer/cersat/projects/myocean/sst-tac/insitu/blacklist

5.1.1   METEOSAT SST quality

The following maps indicate the locations of buoys for each month.
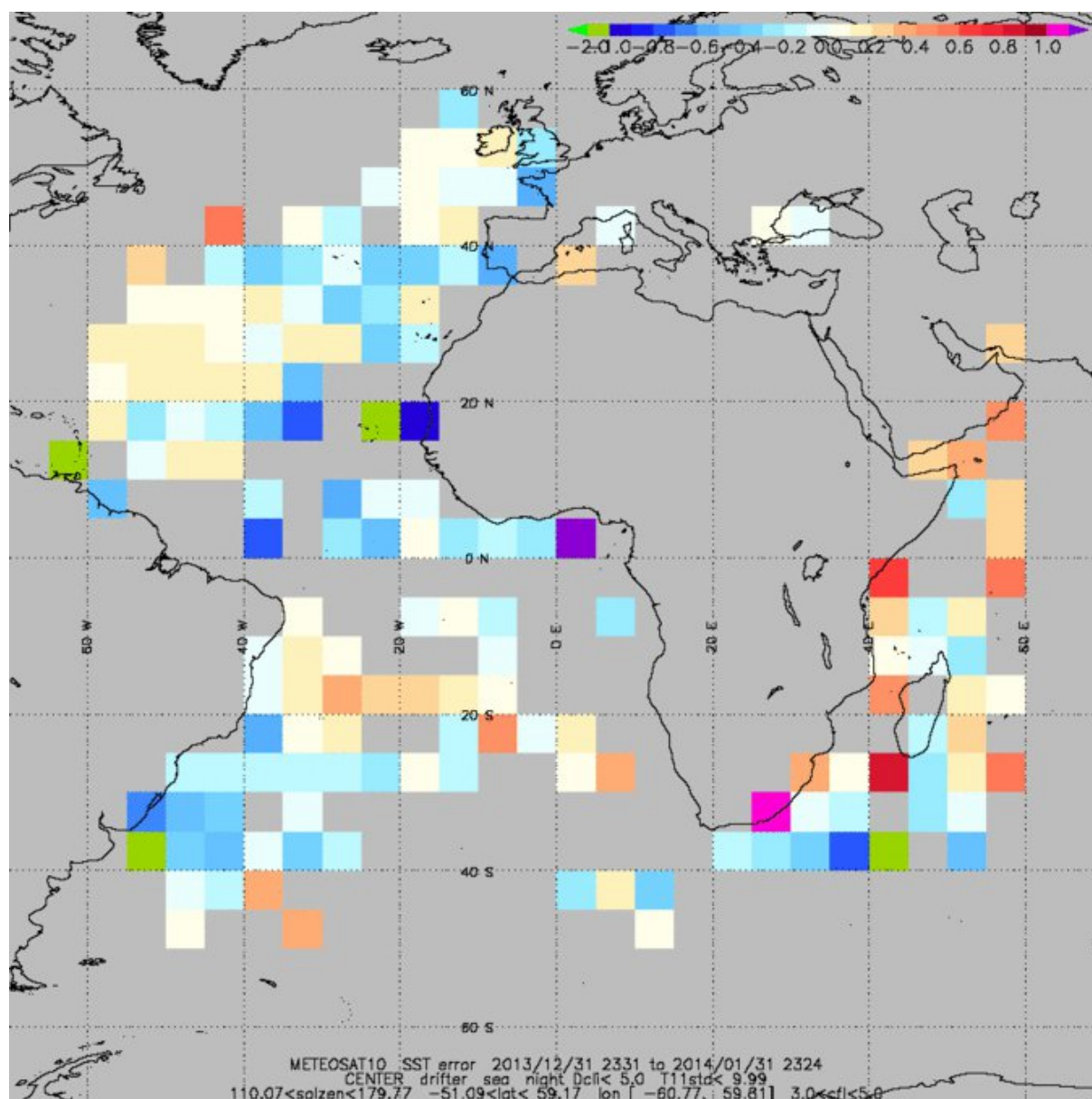
Figure 1 : **Location of buoys for METEOSAT SST validation in JANUARY 2014, for 3,4,5 quality indexes and by night.**

Figure 2 : **Location of buoys for METEOSAT SST validation in FEBRUARY 2014, for 3,4,5 quality indexes and by night.**

Figure 3 : Location of buoys for METEOSAT SST validation in MARCH 2014, for 3,4,5 quality indexes and by night.

Figure 4 : Location of buoys for METEOSAT SST validation in APRIL 2014, for 3,4,5 quality indexes and by night.

Figure 5 : Location of buoys for METEOSAT SST validation in MAY 2014, for 3,4,5 quality indexes and by night.

Figure 6 : Location of buoys for METEOSAT SST validation in JUNE 2014, for 3,4,5 quality indexes and by night.

The following table provides the METEOSAT-derived SST quality results over the reporting period.

METEOSAT SST quality results over 1st half 2014							
Month	Number of cases	Bias °C	Bias Req °C	Bias Margin (*)	Std Dev °C	Std Dev Req °C	Std Dev margin (**)
Jan. 2014	10176	-0.02	0.5	96	0.59	1	41
Feb. 2014	14284	-0.14	0.5	72	0.58	1	42
Mar. 2014	19438	-0.14	0.5	72	0.57	1	43
Apr. 2014	12974	-0.08	0.5	84	0.57	1	43
May 2014	14644	-0.1	0.5	80	0.56	1	44
Jun. 2014	16016	-0.1	0.5	80	0.58	1	42

table 4 : **METEOSAT SST quality results over 1st half 2014, for 3, 4, 5 quality indexes and by night.**

(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
100 refers then to a perfect product. 0 to a quality just as required. without margin.
A negative result indicates that the product quality does not fulfill the requirement.

Comments:
Quality results are good and quite stable.

The following graphs illustrate the evolution of METEOSAT-derived SST quality results over the past 12 months.
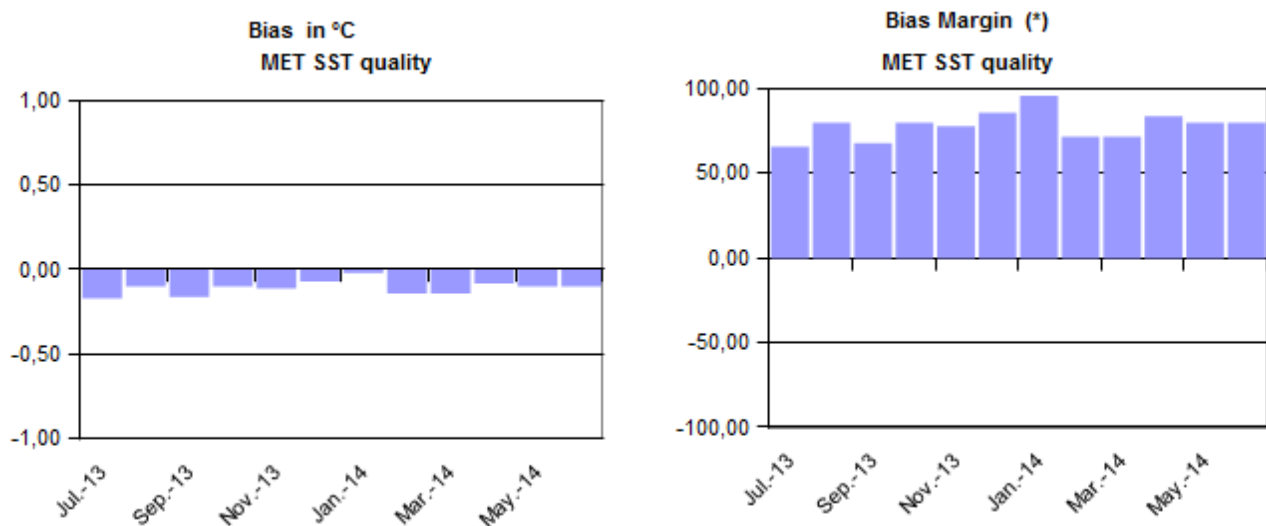
Figure 7 : **Left: METEOSAT SST Bias. Right METEOSAT SST Bias Margin**
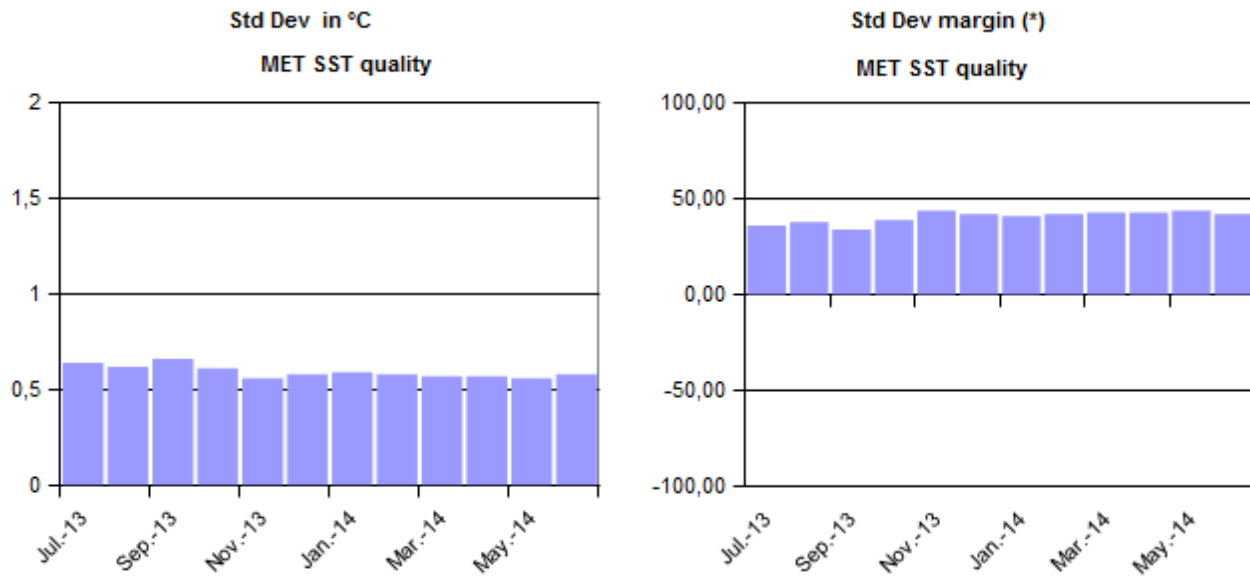
Figure 8 : **Left: METEOSAT SST Standard deviation. Right METEOSAT SST Standard deviation Margin.**

Complementary validation statistics on METEOSAT SST

METEOSAT10 SST error 2014/01/01 0003 to 2014/06/30 2324
CENTER drifter sea night Dcli< 5.0 T11std< 9.99
110.05<solzen<179.77 −58.24<lat< 60.84 lon [−60.77, 62.10] 3.0<cfl<5.0
bias −0.11 std 0.57 min −7.12 max 6.57 sst 23.38   88631 cases

bias   standard deviation   number of cases
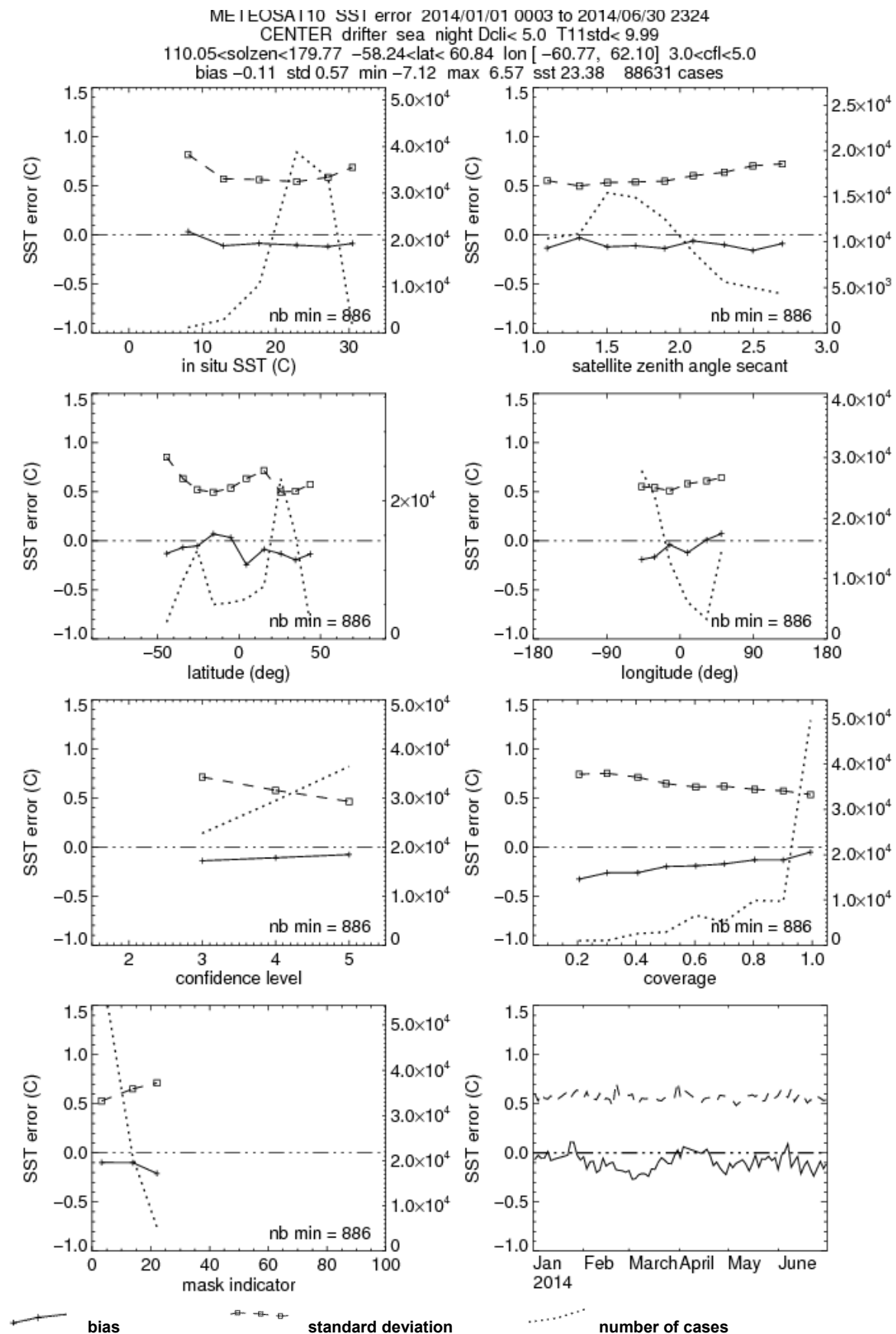
last figure (bottom left) : bias and std.

Figure 9 : Complementary validation statistics on METEOSAT SST.

5.1.2 GOES-E SST quality

The following maps indicate the location of buoys for each month.
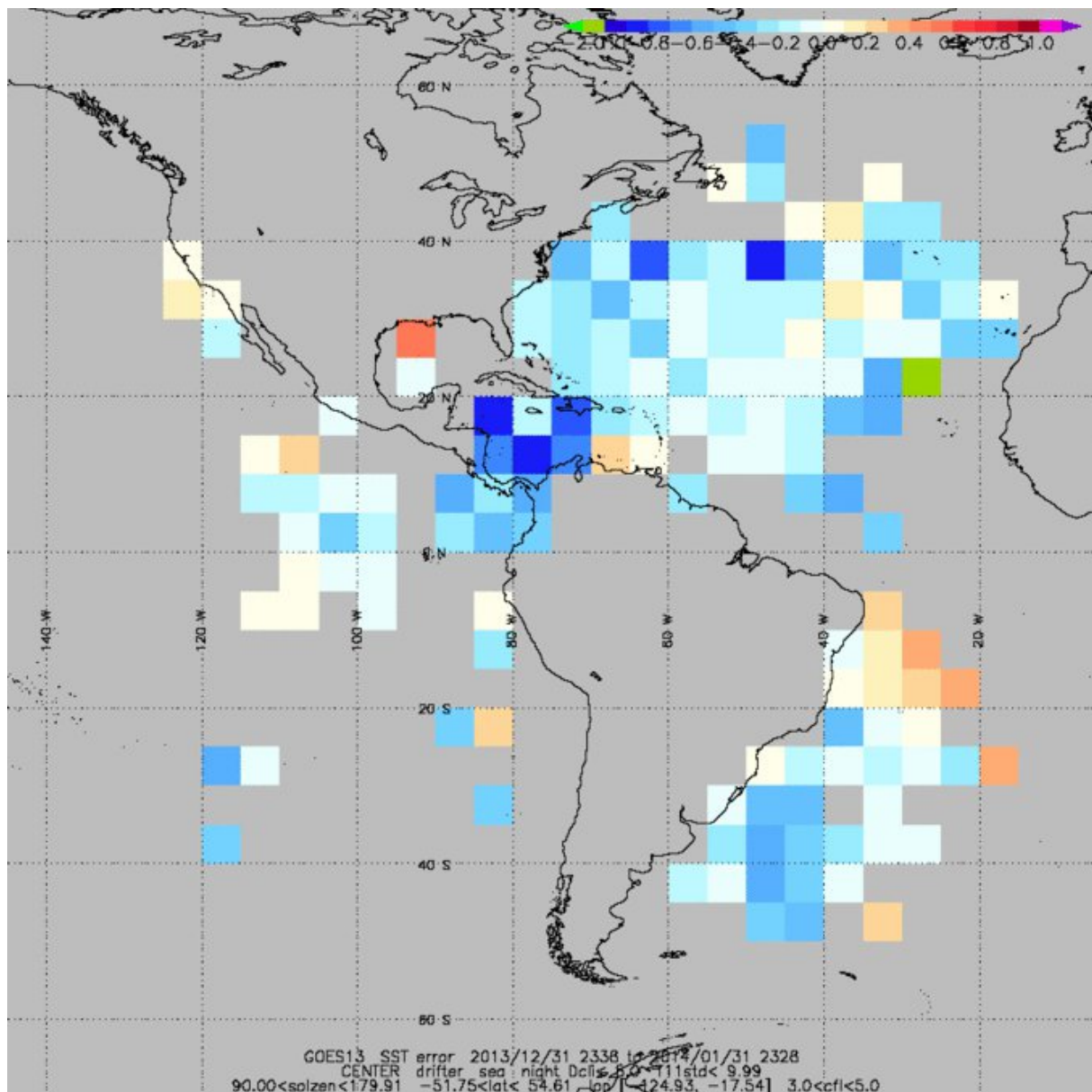
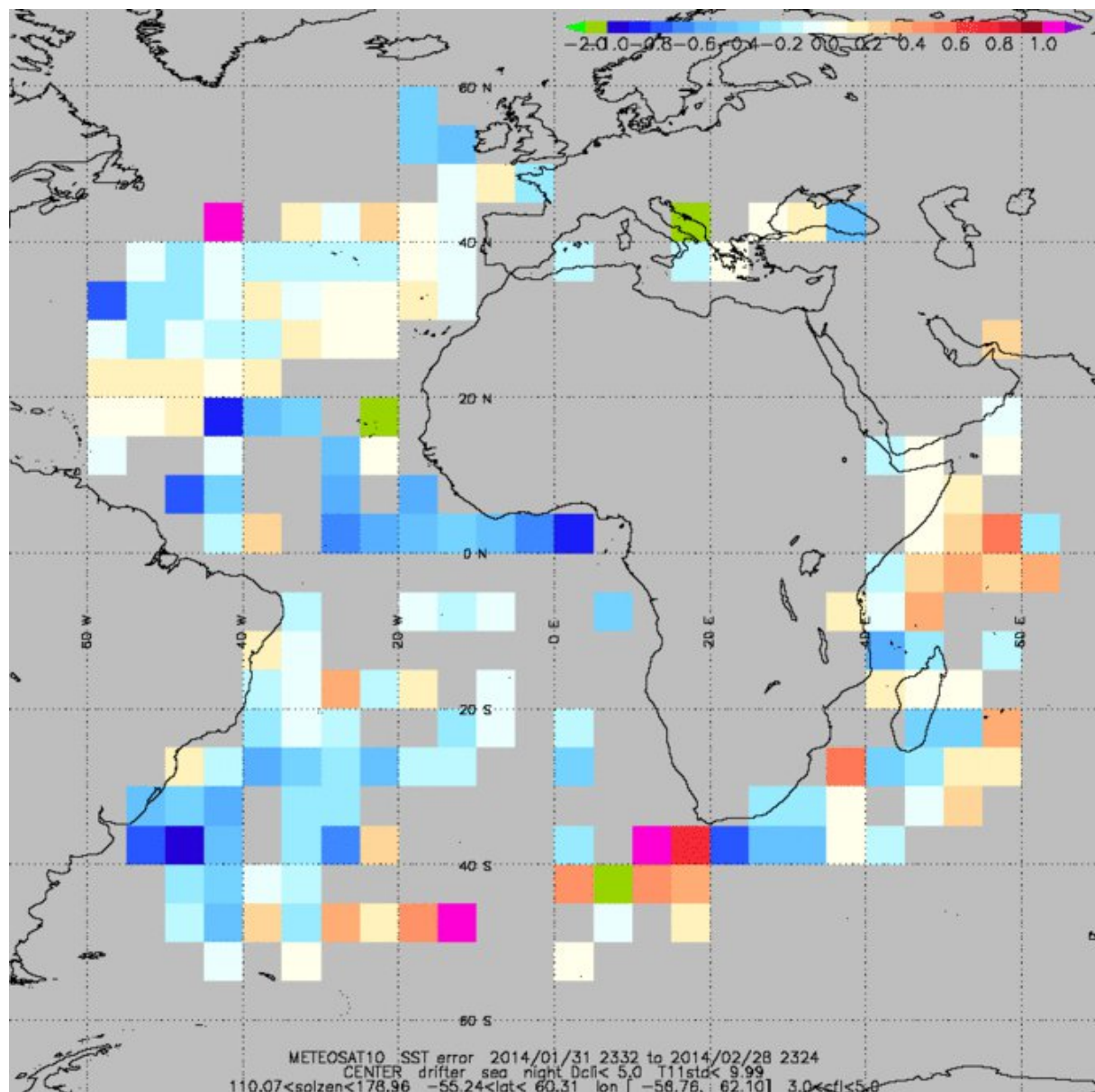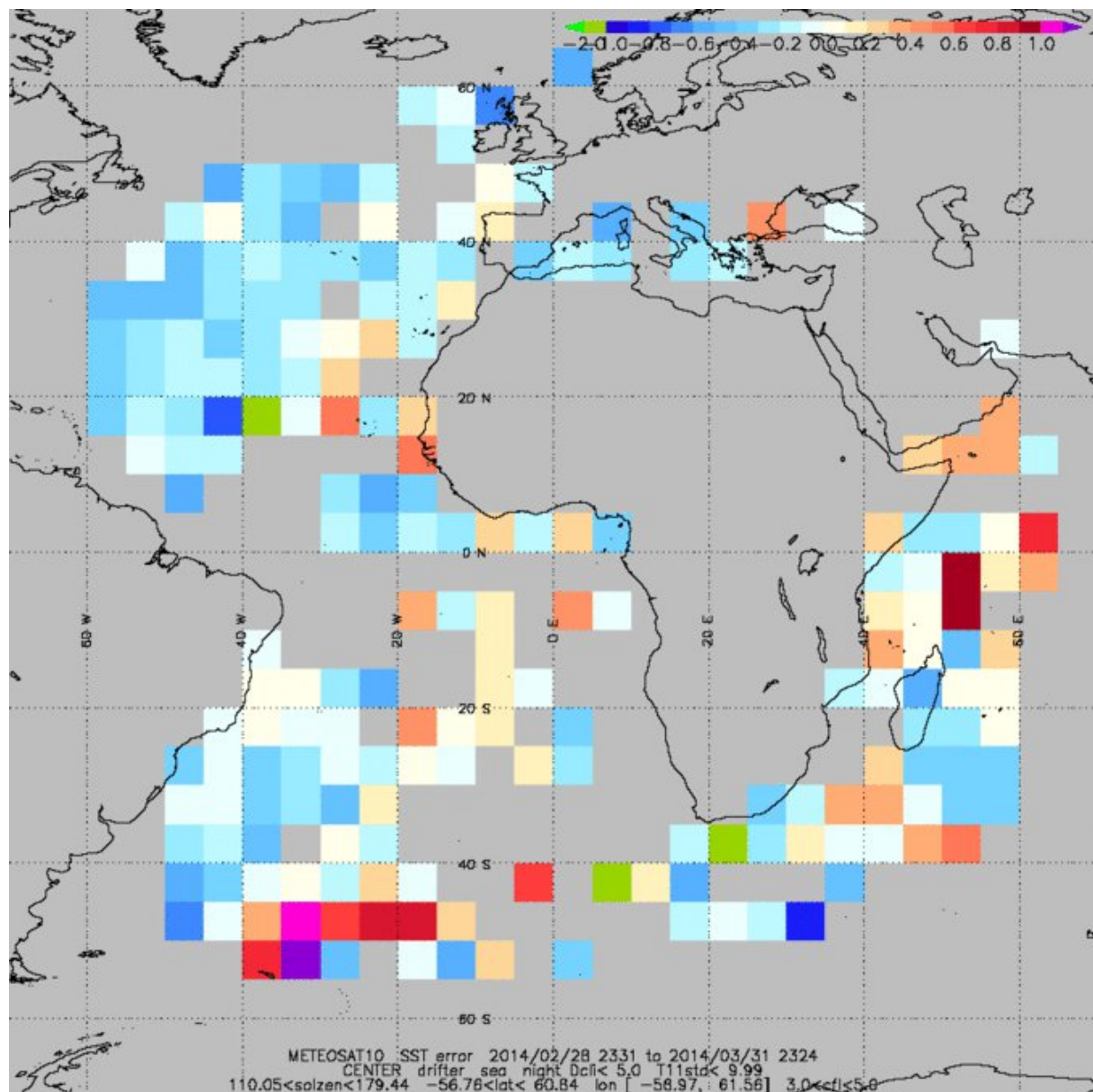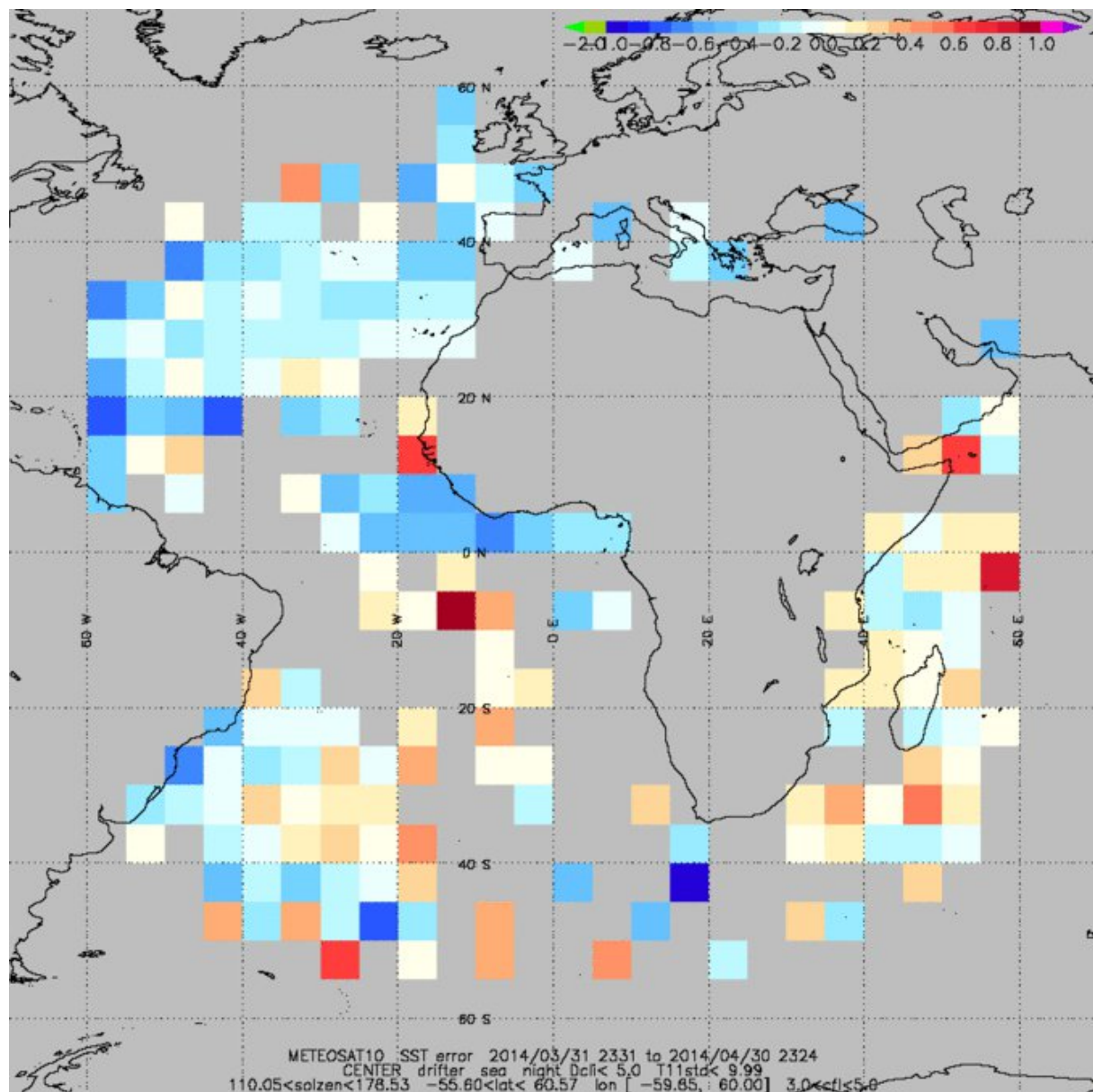**Figure 10 : Location of buoys for GOES-E SST validation in JANUARY 2014, for 3,4,5 quality indexes and by night.**

Figure 11 : Location of buoys for GOES-E SST validation in FEBRUARY 2014, for 3,4,5 quality indexes and by night.

Figure 12 : **Location of buoys for GOES-E ST validation in MARCH 2014, for 3,4,5 quality indexes and by night.**

Figure 13 : **Location of buoys for GOES-E ST validation in APRIL 2014, for 3,4,5 quality indexes and by night.**

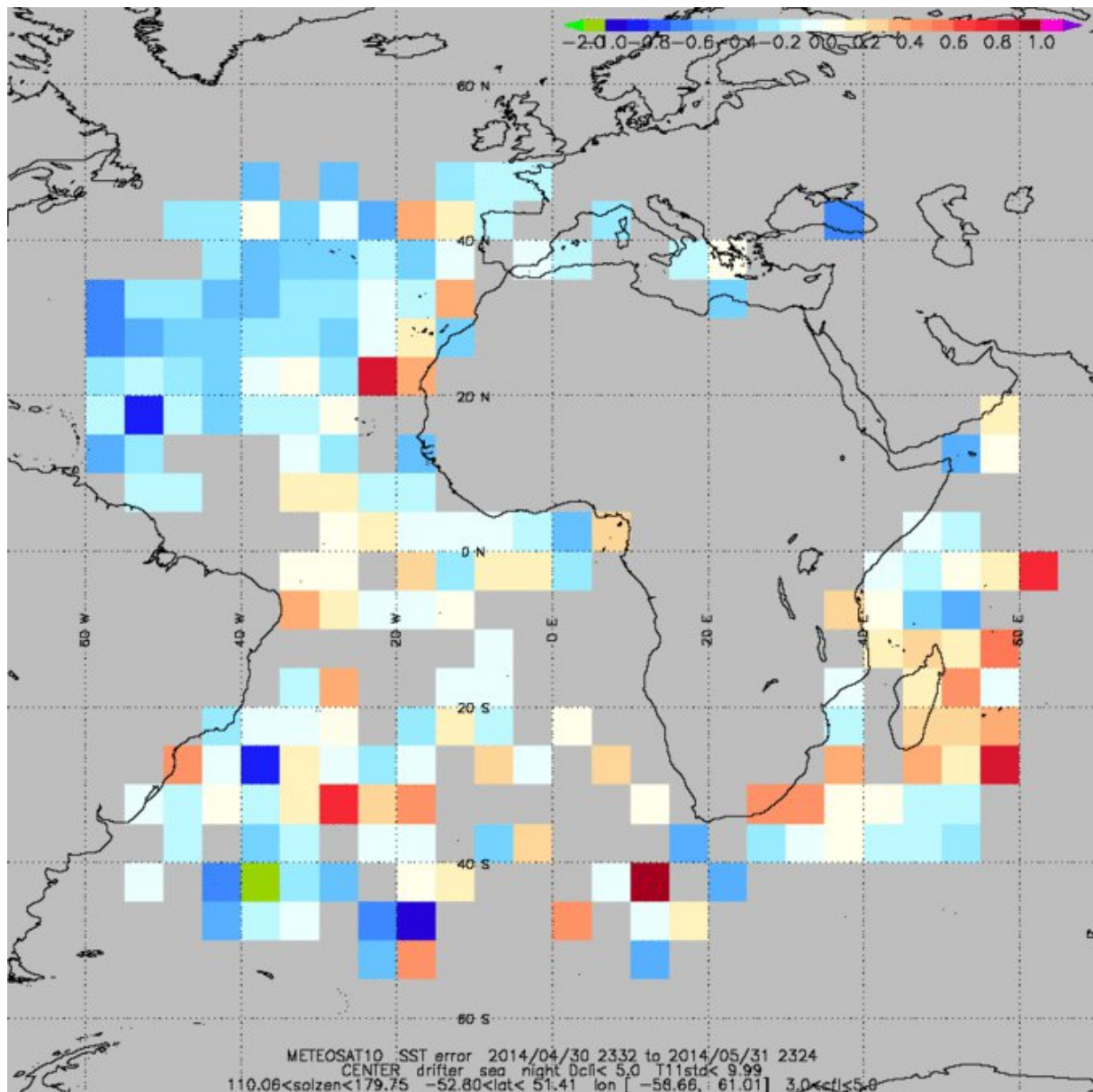**Figure 14 : Location of buoys for GOES-E ST validation in MAY 2014, for 3,4,5 quality indexes and by night.**

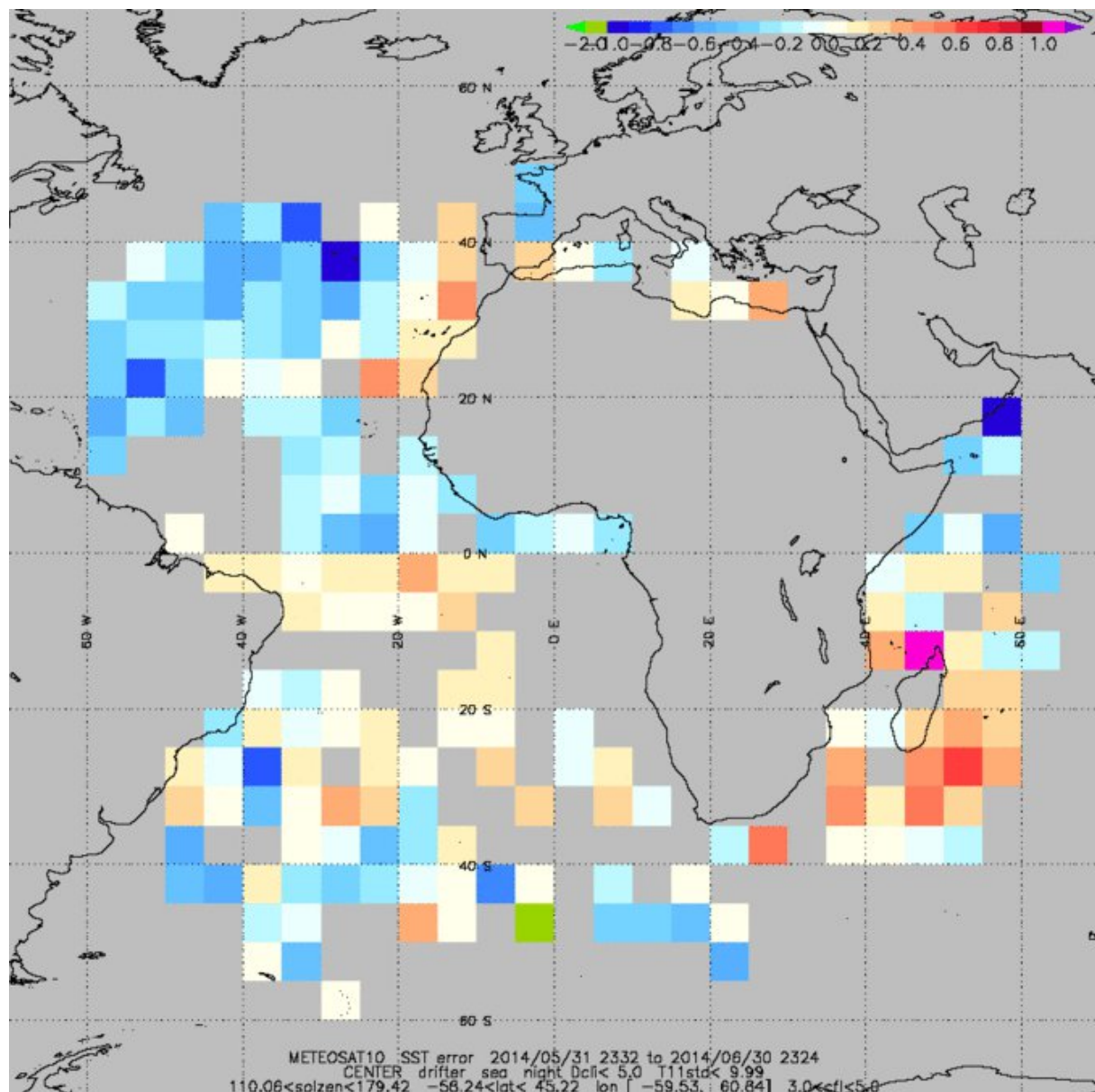**Figure 15 : Location of buoys for GOES-E ST validation in JUNE 2014, for 3,4,5 quality indexes and by night.**

The following table provides the GOES-E-derived SST quality results over the reporting period.

GOES-E SST quality results 1st half 2014							
Month	Number of cases	Bias °C	Bias Req °C	Bias Margin (*)	Std Dev °C	Std Dev Req °C	Std Dev margin (**)
Jan. 2014	20056	-0.12	0.5	76	0.46	1	54
Feb. 2014	18985	-0.10	0.5	80	0.49	1	51
Mar. 2014	24236	-0.14	0.5	72	0.54	1	46
Apr. 2014	21112	-0.20	0.5	60	0.52	1	48
May 2014	17527	-0.22	0.5	56	0.47	1	53
Jun. 2014	23465	-0.23	0.5	54	0.47	1	53

table 5 : **GOES-E SST quality results over 1st half 2014, for 3, 4, 5 quality indexes and by night.**

(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
    100 refers then to a perfect product. 0 to a quality just as required. without margin.
    A negative result indicates that the product quality does not fulfill the requirement.

Comments:
Quality results are good and quite stable.

The following graphs illustrate the evolution of GOES-E-derived SST quality results over the past 12 months.
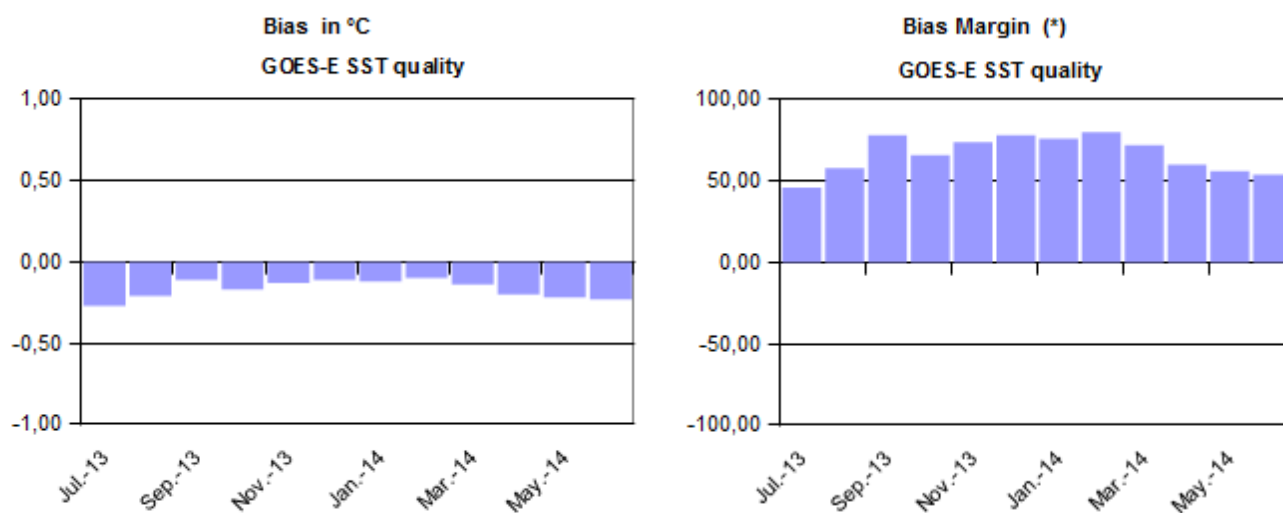
Figure 16 : **Left: Goes-E SST Bias. Right: Goes-E SST Bias Margin.**
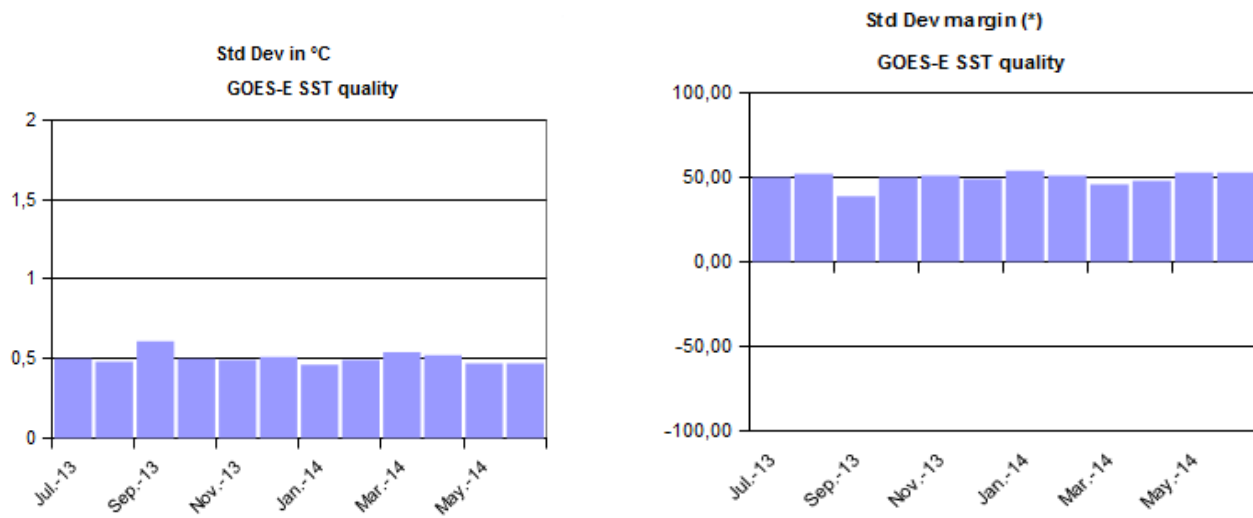
Figure 17 : **Left: Goes-E SST Standard deviation. Right Goes-E SST Standard deviation Margin.**

Complementary validation statistics on GOES-E SST
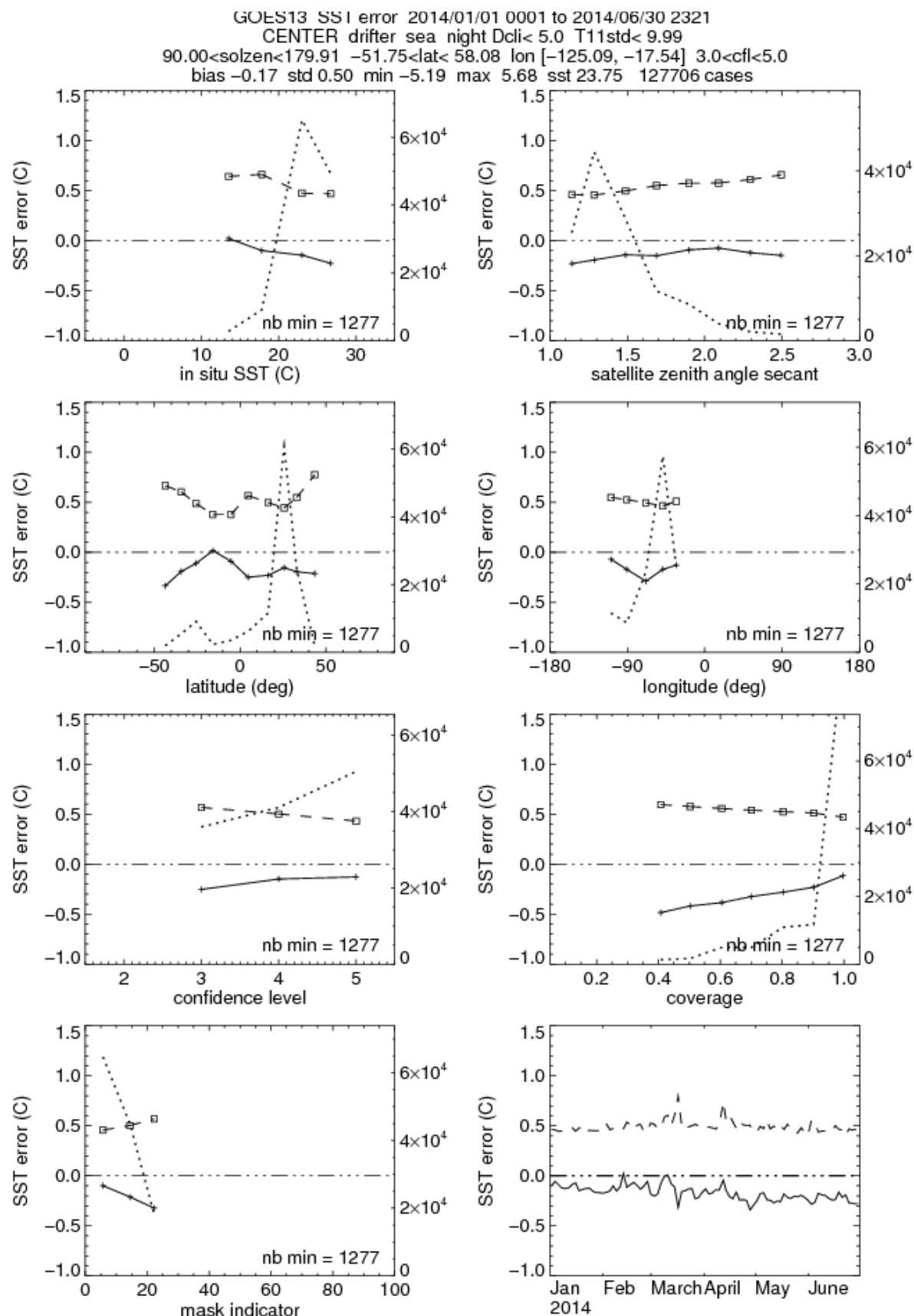
Figure 18 : Complementary validation statistics on GOES-E SST.

5.1.3 NAR SST quality

The operational NAR SST processing relies on two satellite data sources, Metop/AVHRR for the morning orbit and NPP/VIIRS for afternoon orbit.
Currently Metop-A and NPP are used.

The comparison between NAR SST products and Match up data bases (MDB) gathering in situ (buoy) measurements is performed on a routine basis for each operational NPP and Metop satellite.

5.1.3.1 NOAA-19/NPP NAR SST quality

Note : NPP replaced NOAA19 on the 20 November 2013.

The following maps indicate the locations of buoys for each month.
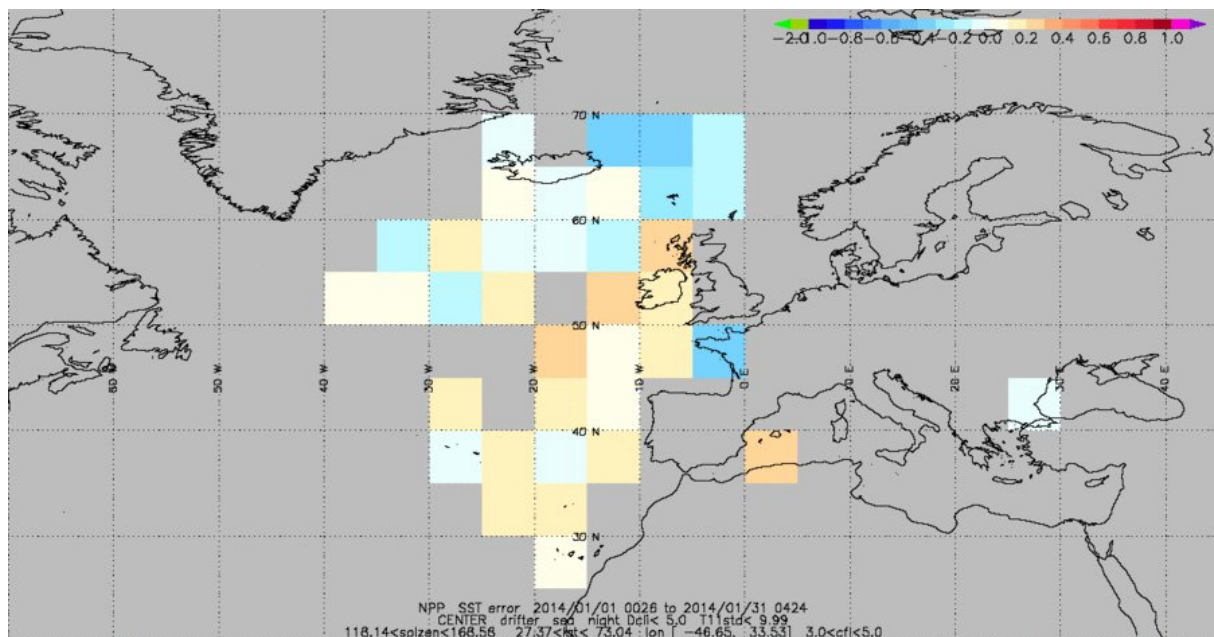
Figure 19 : Location of buoys for NPP NAR SST validation in JANUARY 2014, for 3, 4, 5 quality indexes and by night.

Figure 20 : **Location of buoys for NPP NAR SST validation in FEBRUARY 2014, for 3, 4, 5 quality indexes and by night.**
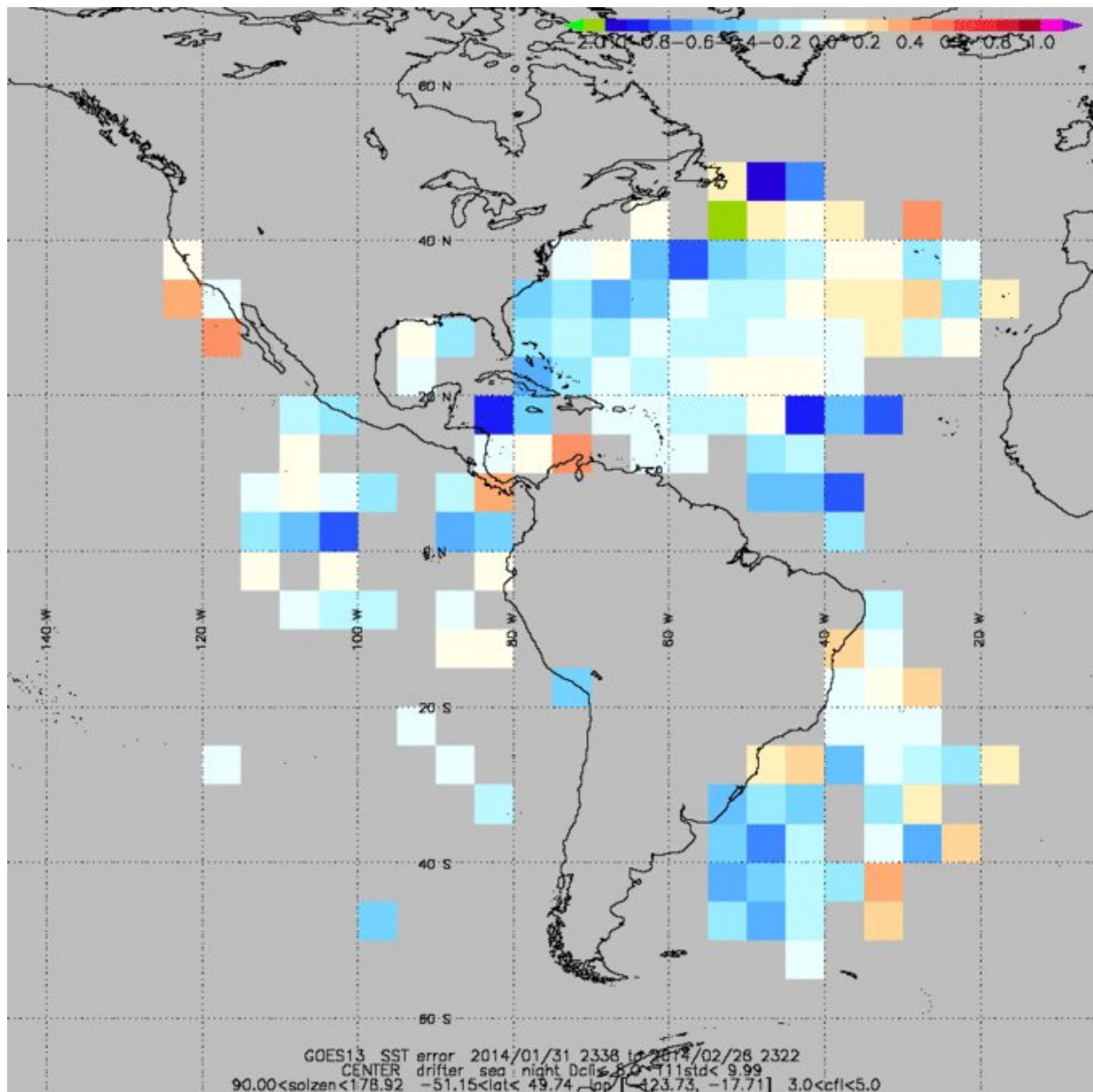

Figure 21 : **Location of buoys for NPP NAR SST validation in MARCH 2014, for 3, 4, 5 quality indexes and by night.**

Figure 22 : **Location of buoys for NPP NAR SST validation in APRIL 2014, for 3, 4, 5 quality indexes and by night.**
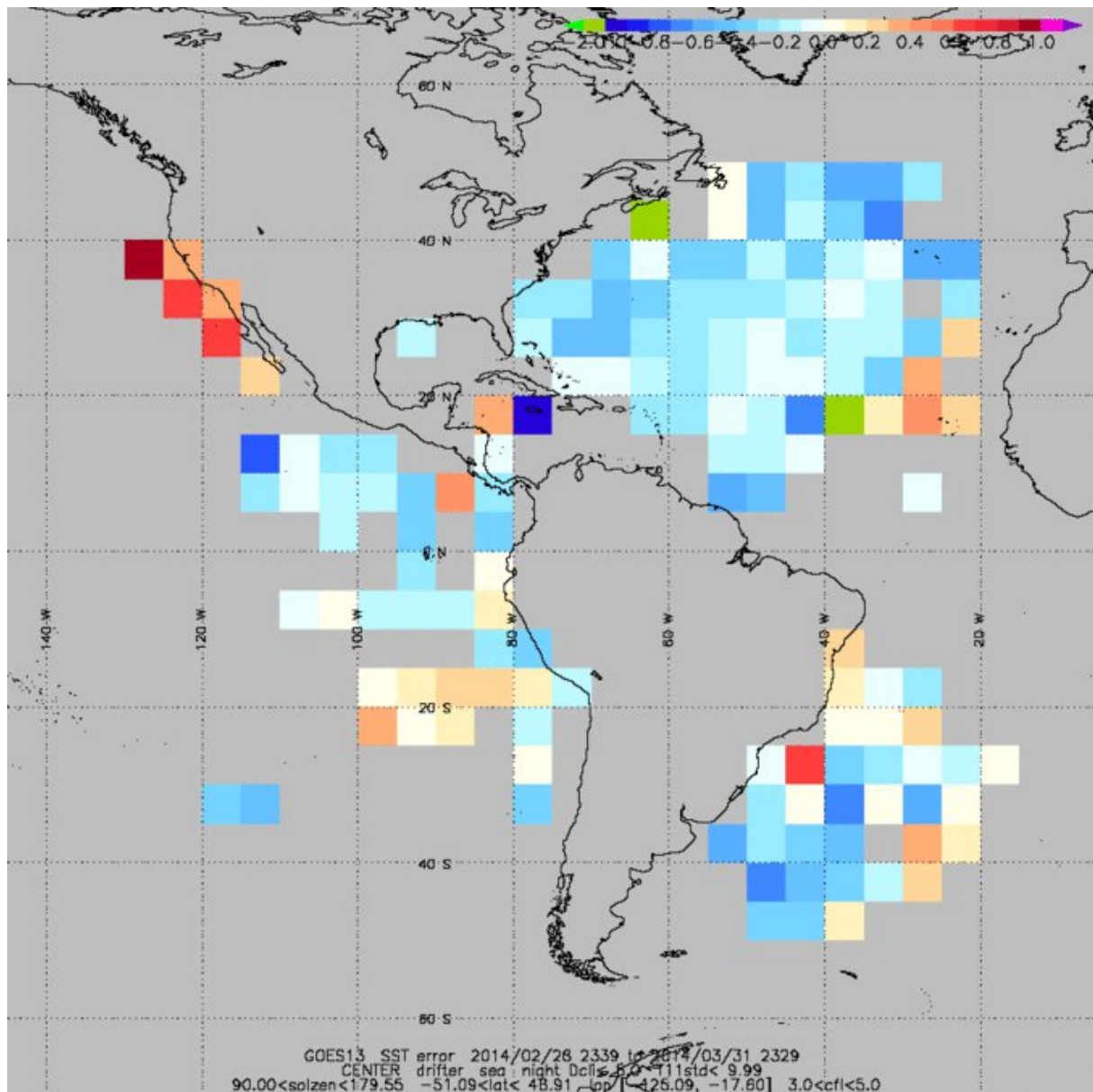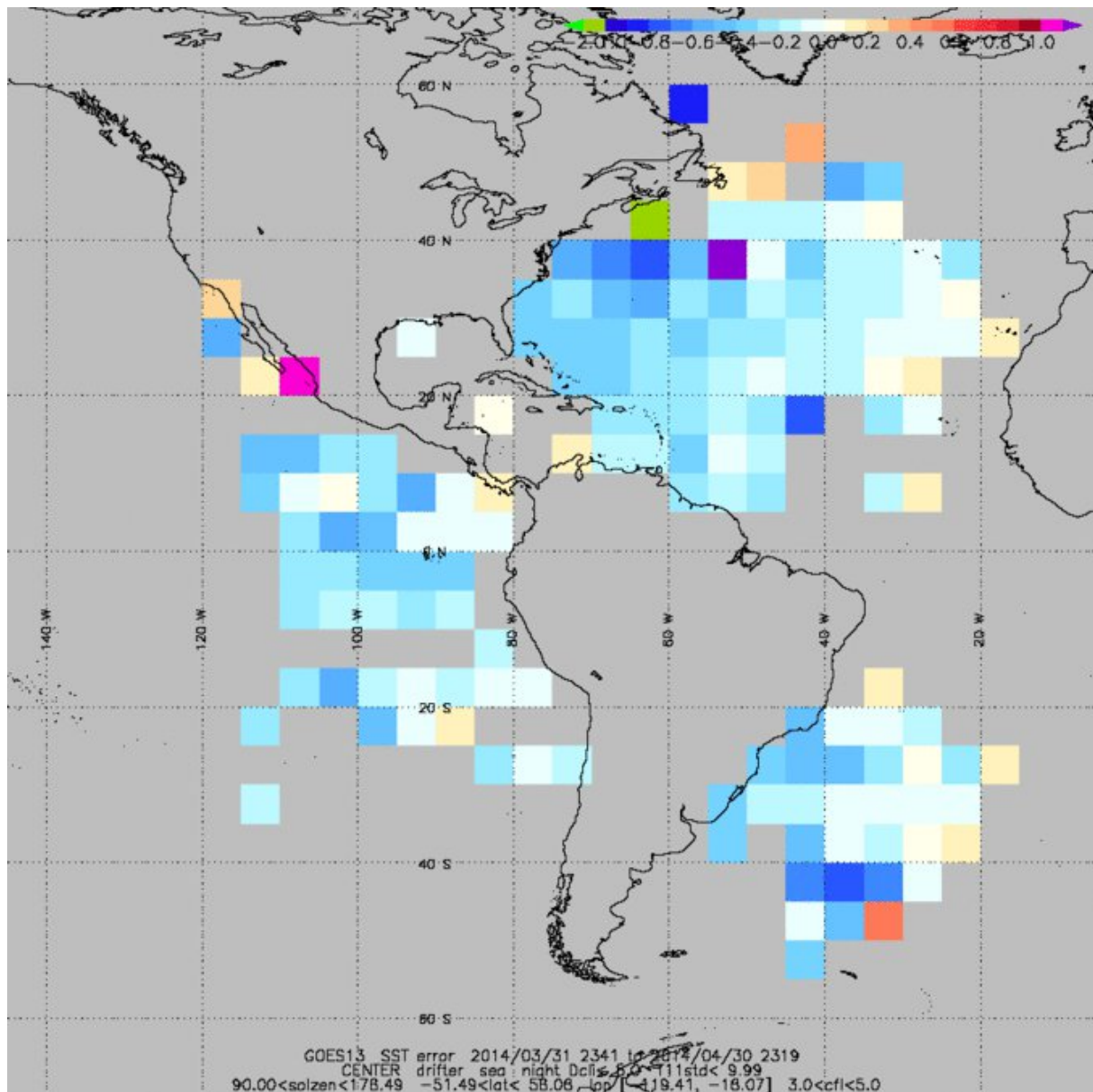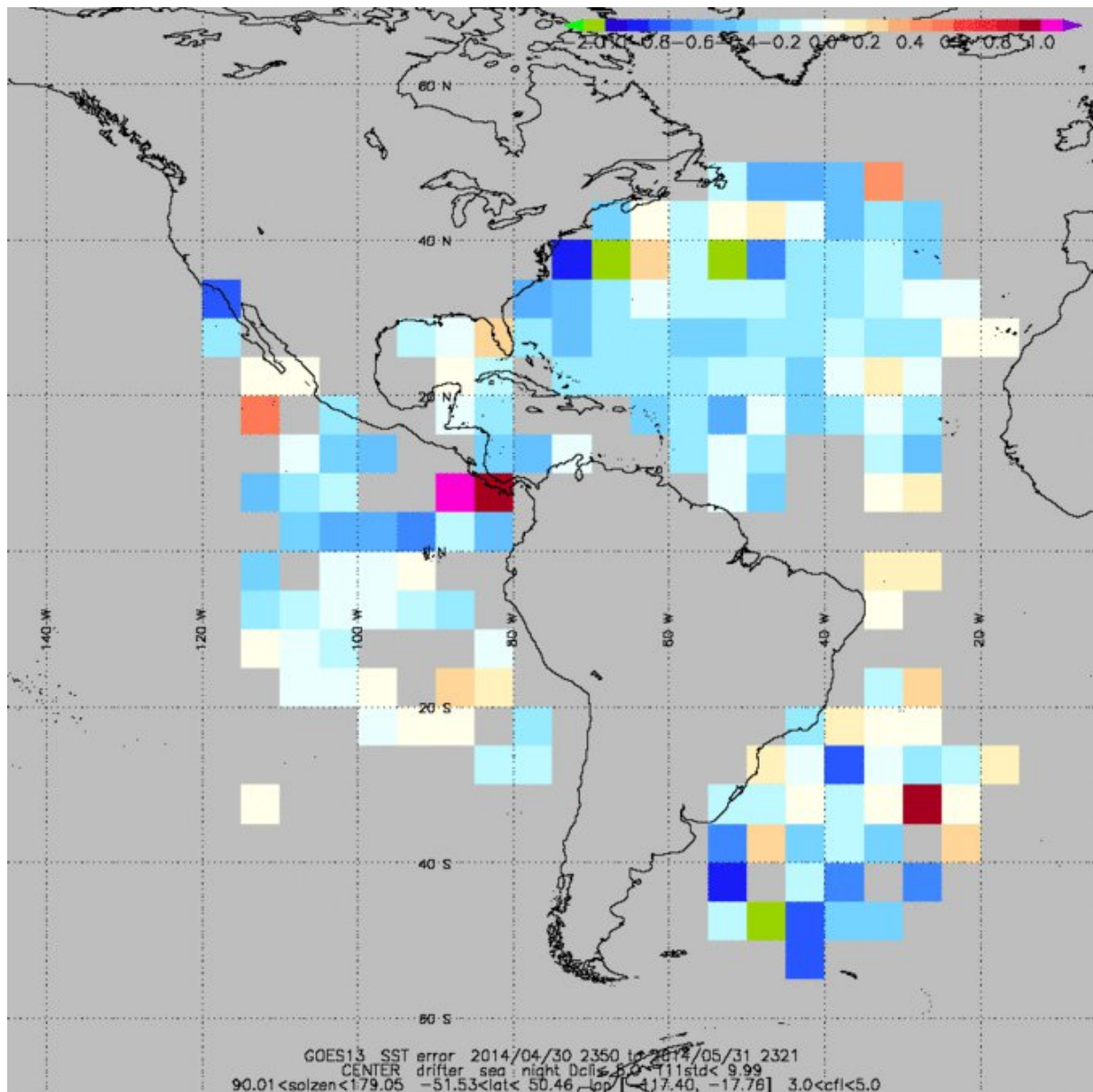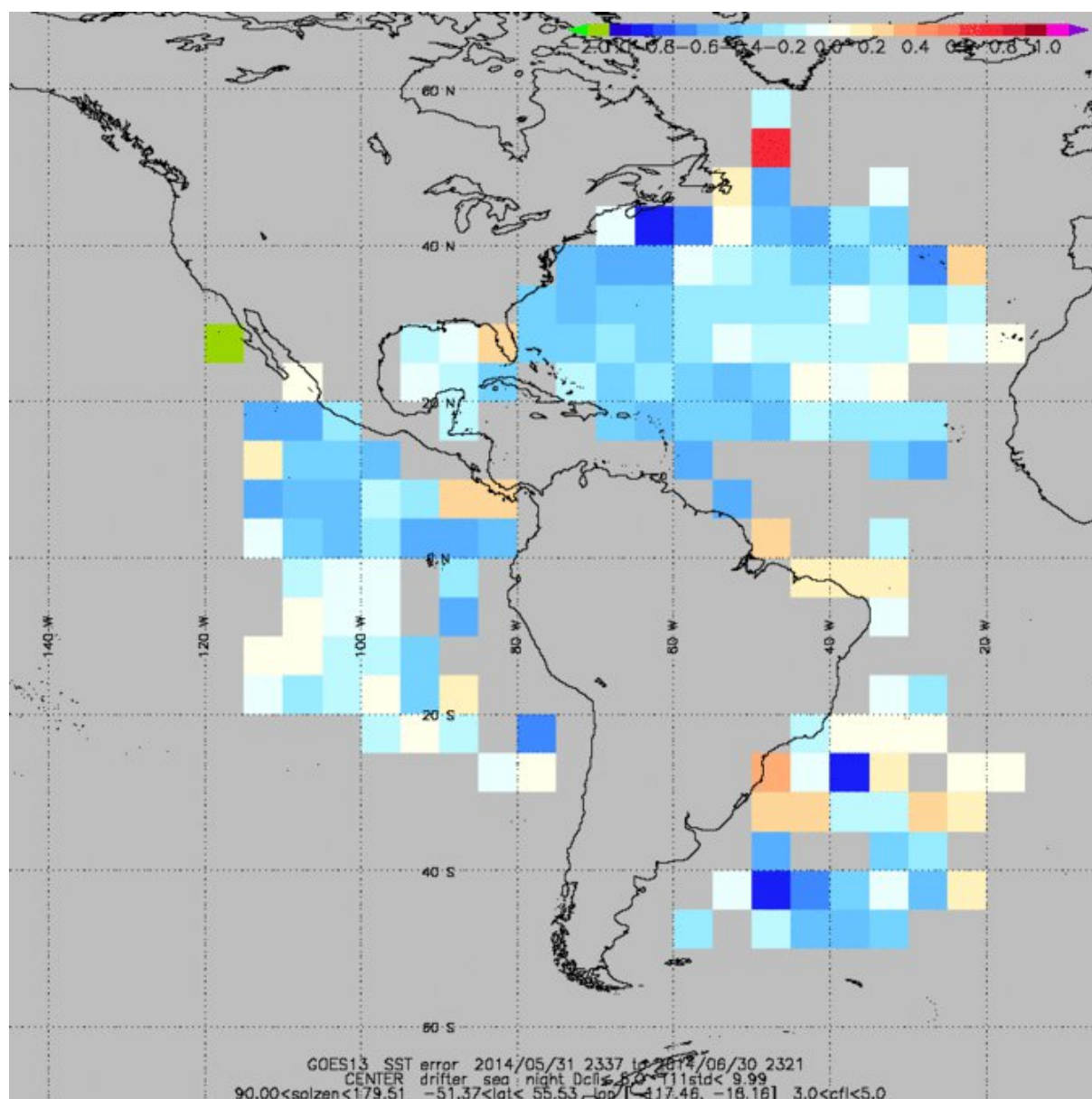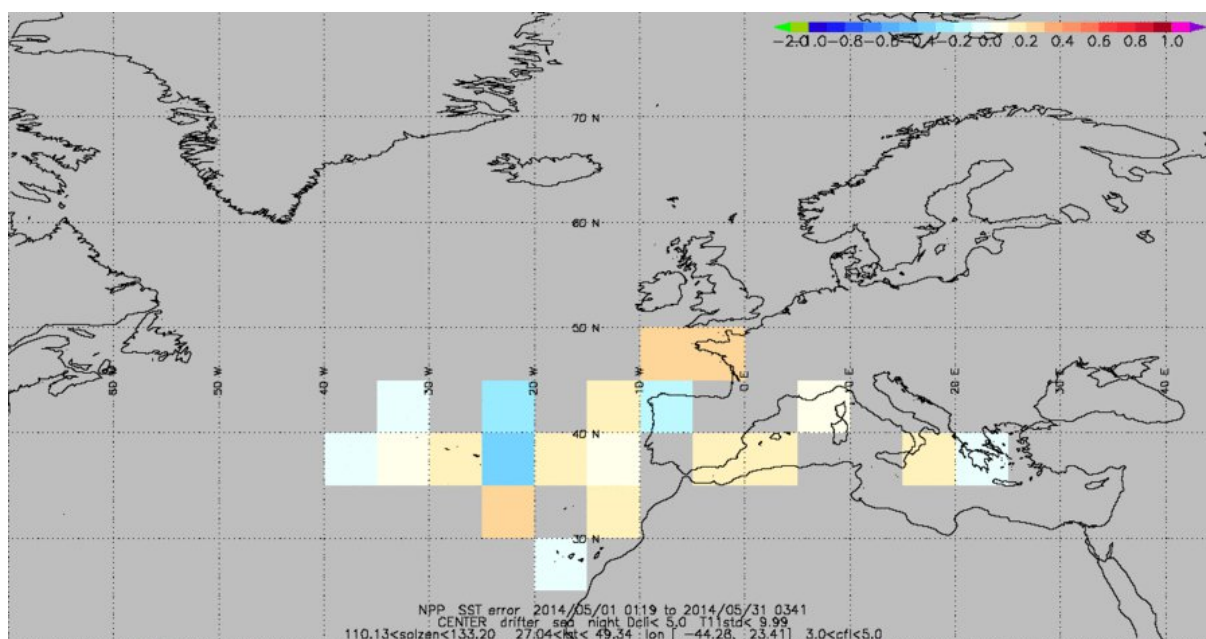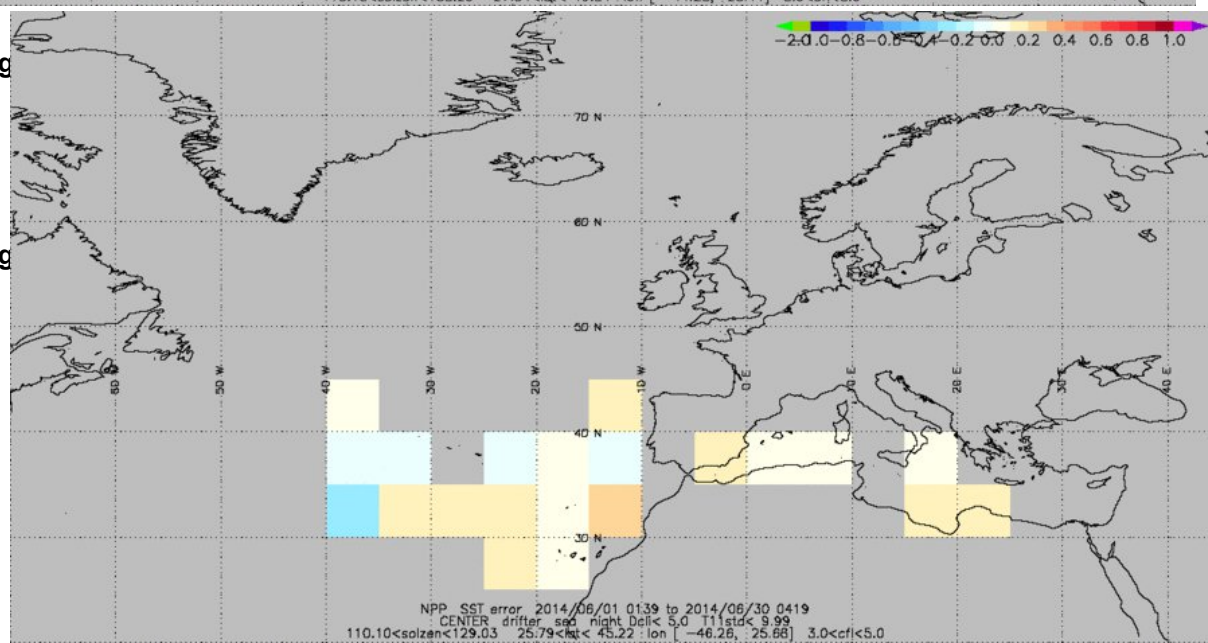
The following table provides the NOAA-19-derived SST quality results over the reporting period.

NOAA-19 NAR SST quality results over 1st half 2014							
Month	Number of cases	Bias °C	Bias Req °C	Bias Margin (*)	Std Dev °C	Std Dev Req °C	Std Dev margin (**)
Jan. 2014	541	-0.01	0.5	98	0.320	0.8	60.00
Feb. 2014	429	0.05	0.5	90	0.390	0.8	51.25
Mar. 2014	548	0.06	0.5	88	0.420	0.8	47.50
Apr. 2014	295	0.15	0.5	70	0.330	0.8	58.75
May 2014	327	0.09	0.5	82	0.390	0.8	51.25
Jun. 2014	547	0.09	0.5	82	0.400	0.8	50.00

table 6 : **Quality results for NPP NAR SST over 1st half 2014, for 3, 4, 5 quality indexes and by night.**

(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
100 refers then to a perfect product. 0 to a quality just as required. without margin.
A negative result indicates that the product quality does not fulfill the requirement.

Comments:
Quality results are good and quite stable.

The following graphs illustrate the evolution of NOAA-19/NPP NAR SST quality results the past 12 months.
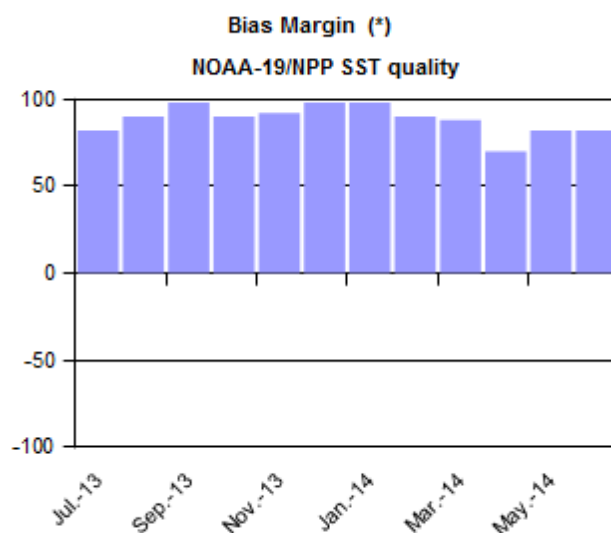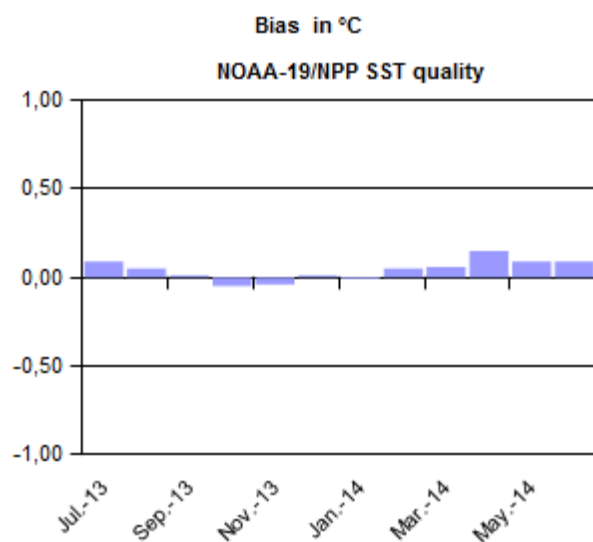
Figure 25 : **Left: NOAA-19/NPP NAR SST Bias. Right NOAA-19/NPP NAR SST Bias Margin.**
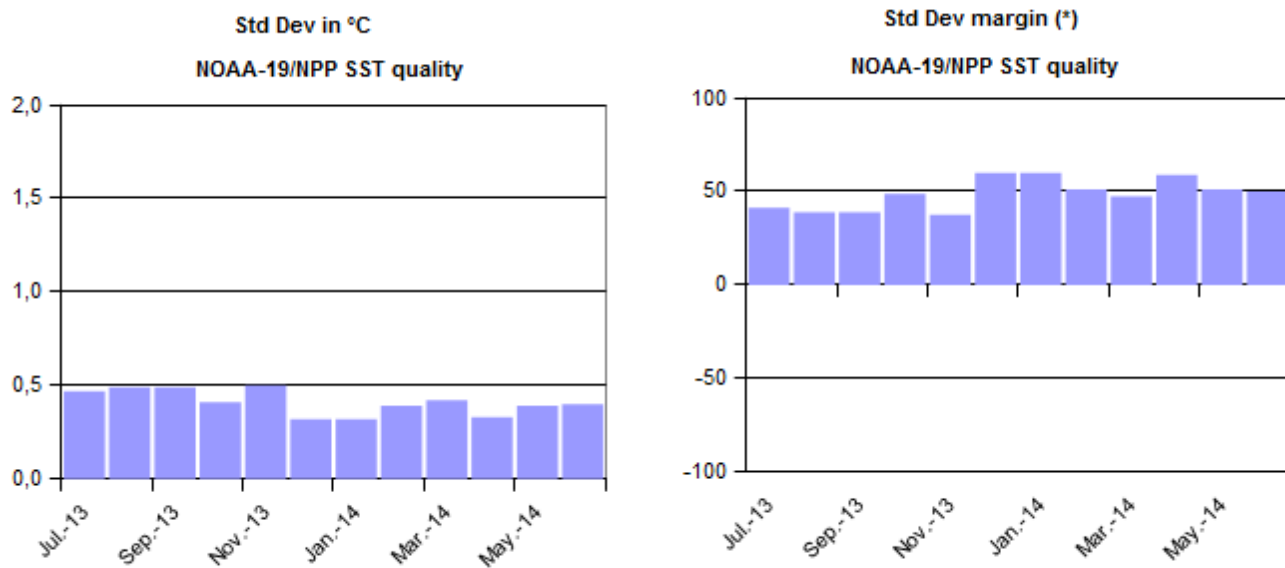
Figure 26 : **Left: NOAA-19/NPP NAR SST Standard deviation. Right NOAA-19/NPP NAR SST Standard deviation Margin.**

Complementary validation statistics on NPP NAR SST

NPP SST error 2014/01/01 0026 to 2014/06/30 0419
CENTER drifter sea night Dcli< 5.0 T11std< 9.99
110.10<solzen<168.58 25.79<lat< 73.04 lon [−51.07, 38.24] 3.0<cfl<5.0
bias 0.05 std 0.39 min −3.43 max 3.28 sst 14.57 3028 cases
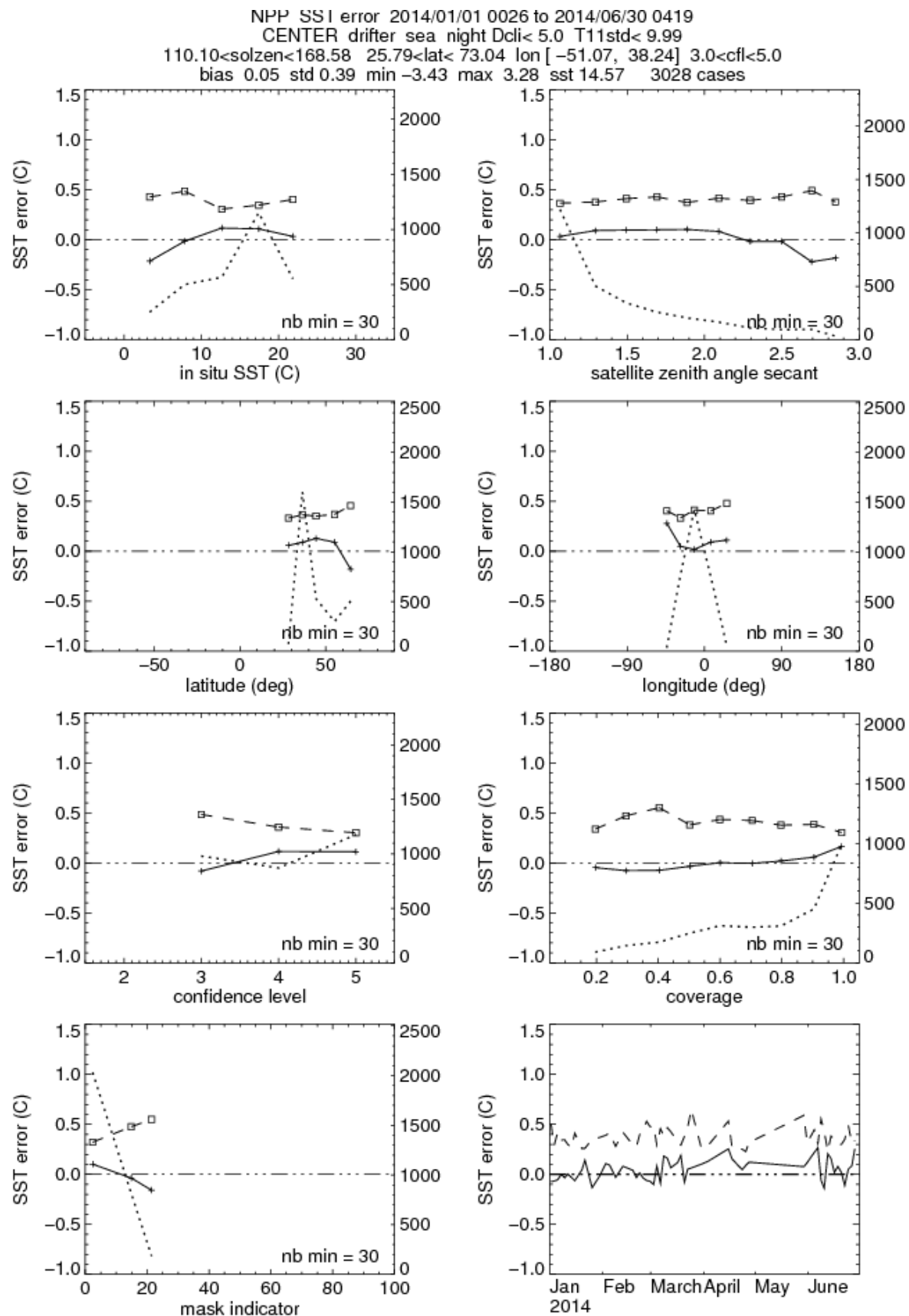
Figure 27 : **Complementary validation statistics on NPP NAR SST.**

5.1.3.2 Metop NAR SST quality

The following maps indicate the locations of buoys for each month.
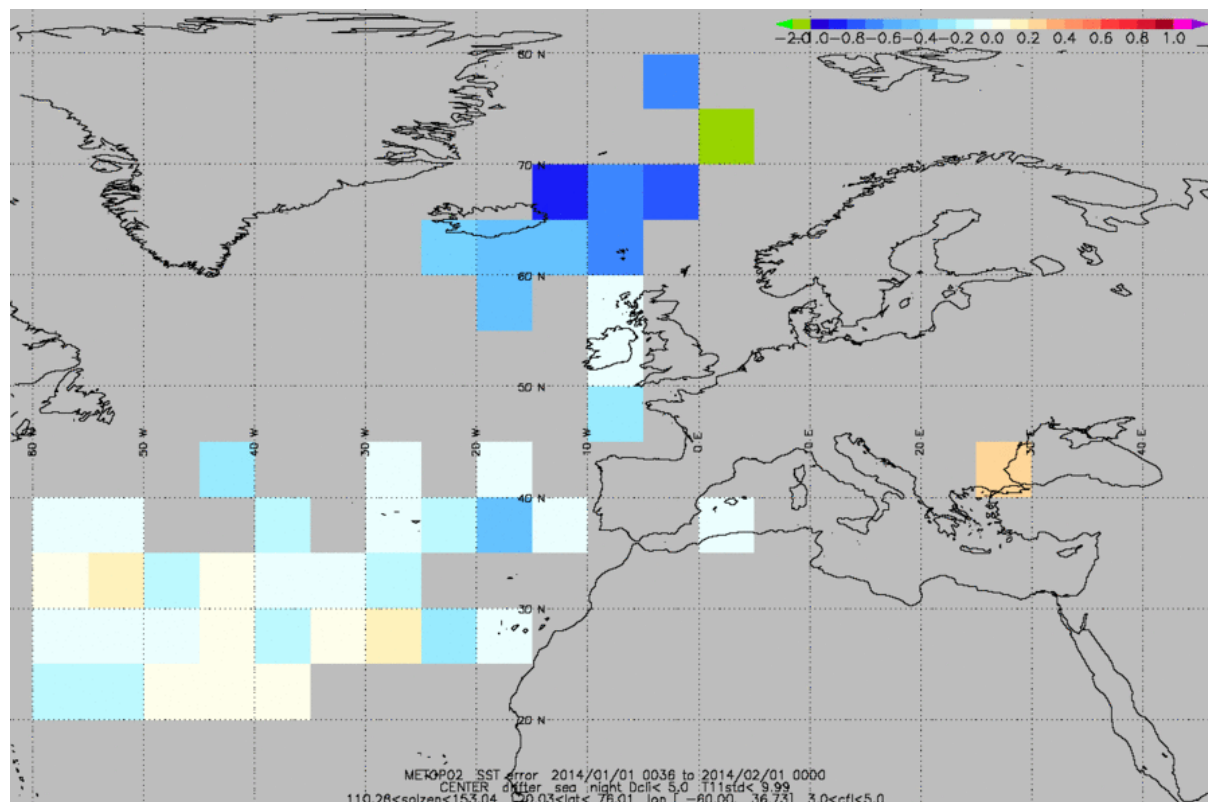
Figure 28 : **Location of buoys for Metop-A NAR SST validation in JANUARY 2014, for 3, 4, 5 quality indexes and by night.**
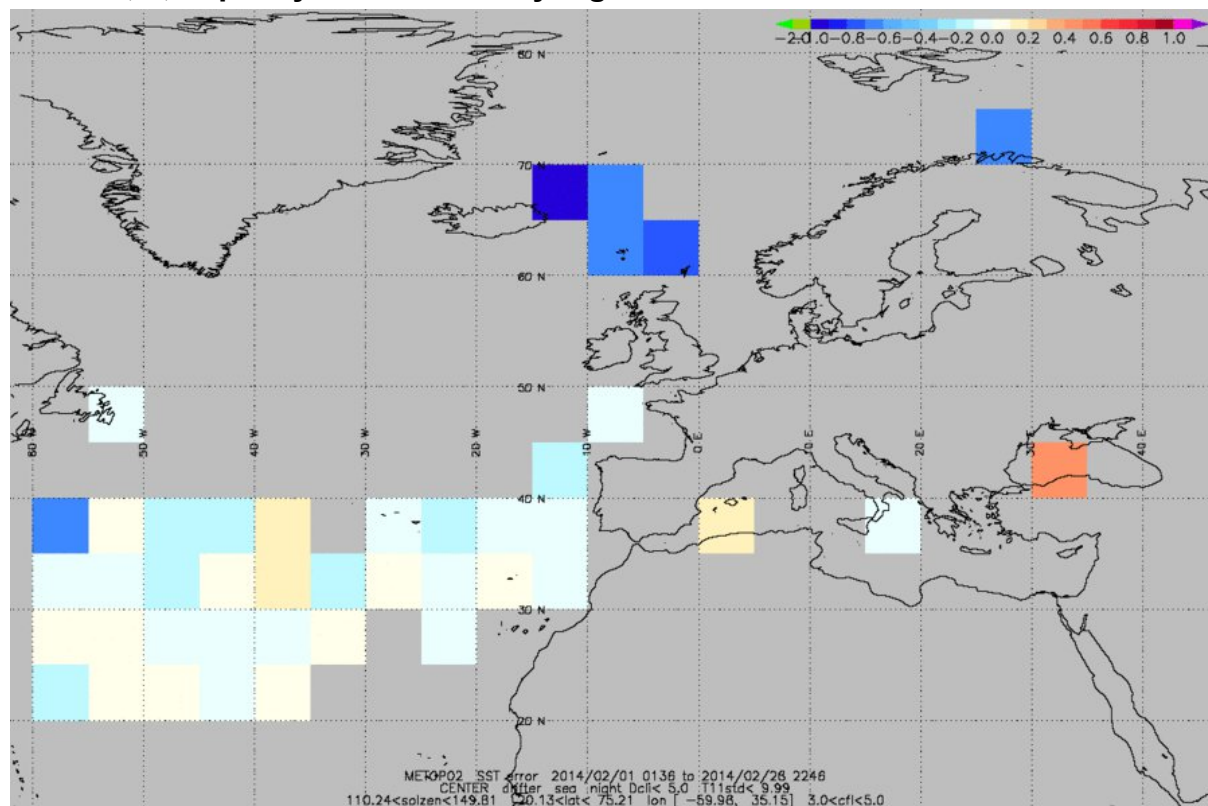
Figure 29 : **Location of buoys for Metop-A NAR SST validation in FEBRUARY 2014, for 3, 4, 5 quality indexes and by night**
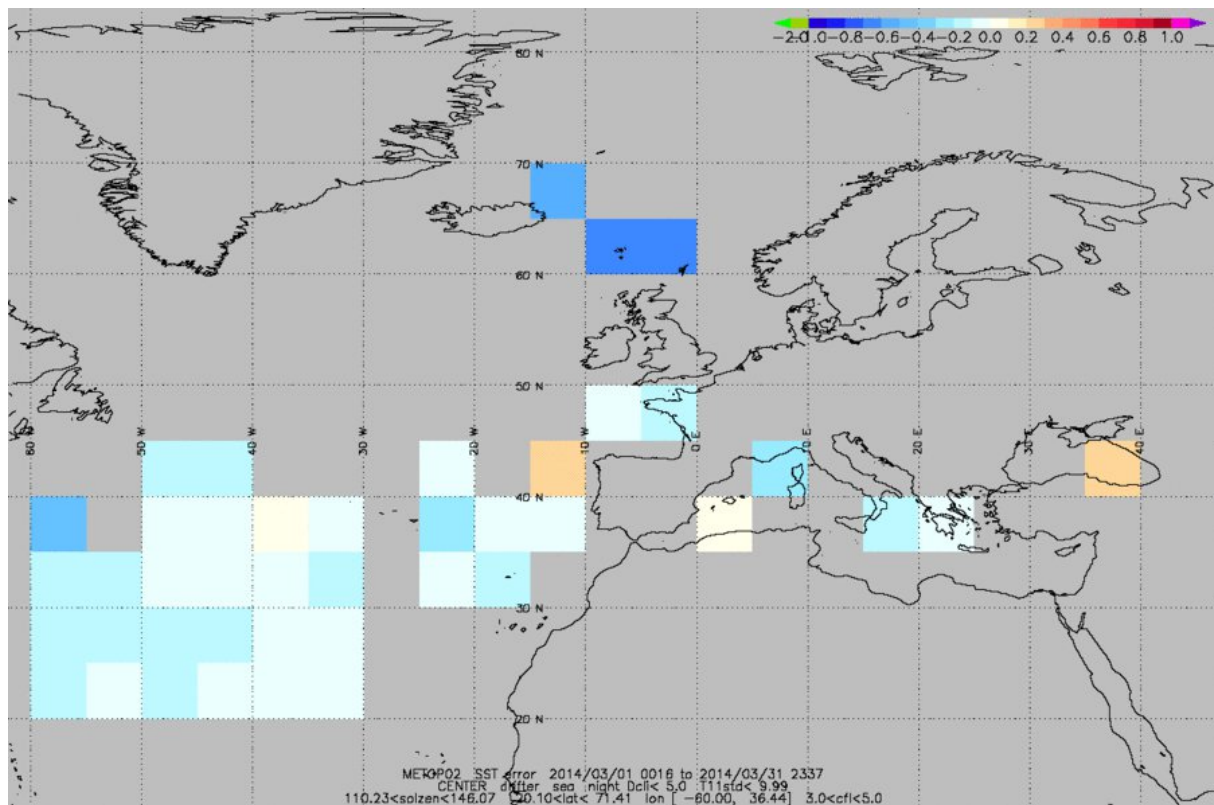
Figure 30 : **Location of buoys for Metop-A NAR SST validation in MARCH 2014, for 3, 4, 5 quality indexes and by night.**
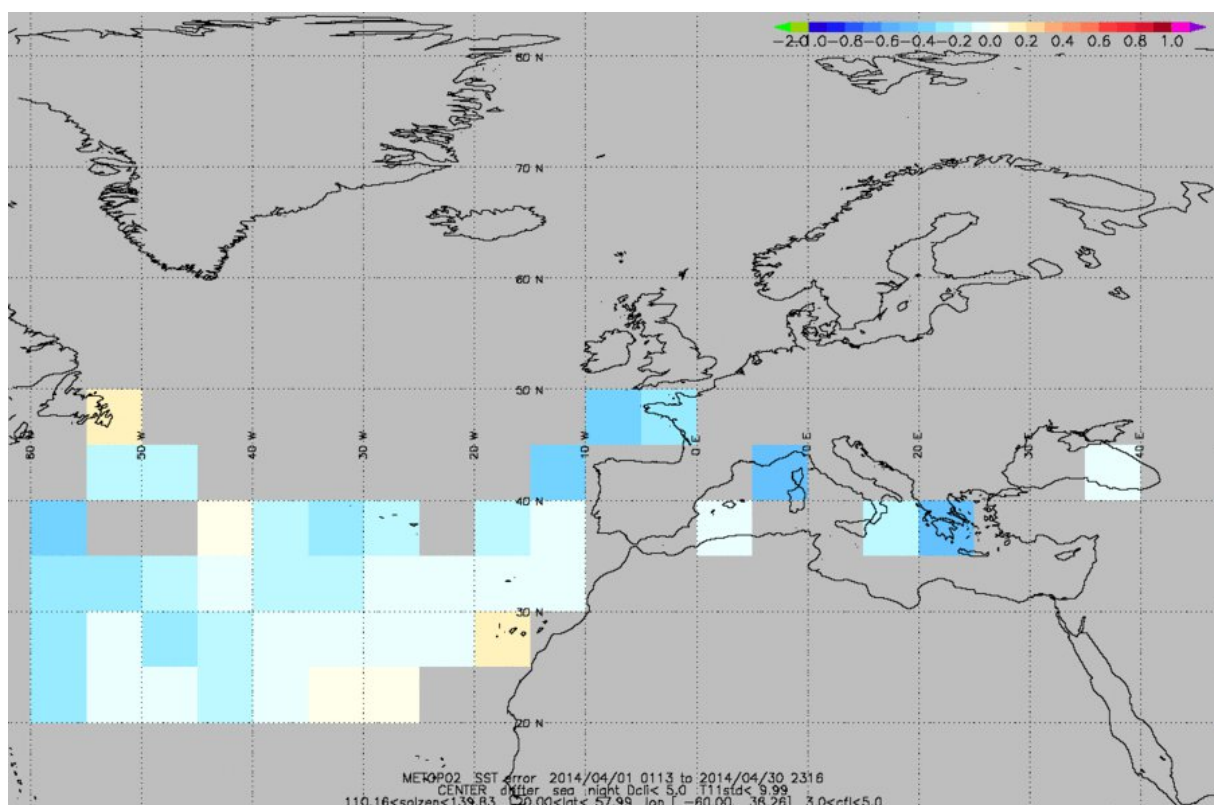
Figure 31 : **Location of buoys for Metop-A NAR SST validation in APRIL 2014, for 3, 4, 5 quality indexes and by night.**
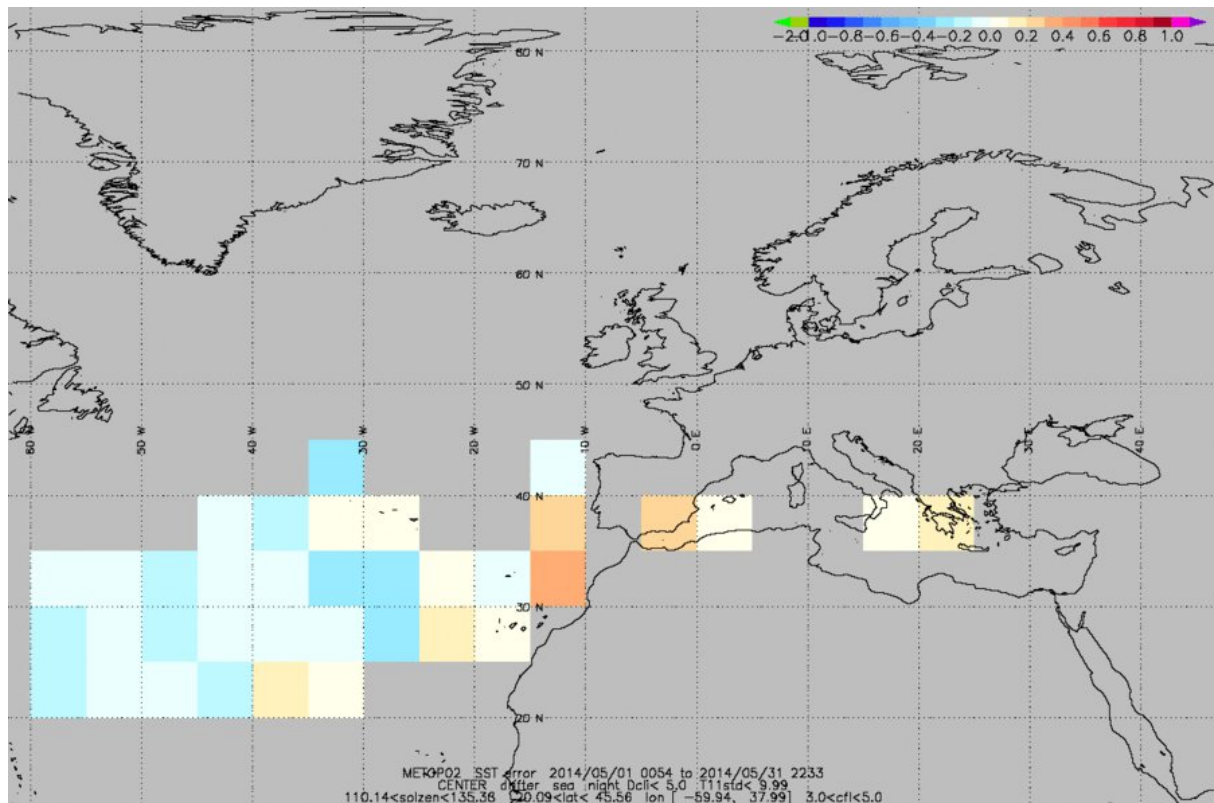
Figure 32 : **Location of buoys for Metop-A NAR SST validation in MAY 2014, for 3, 4, 5 quality indexes and by night.**
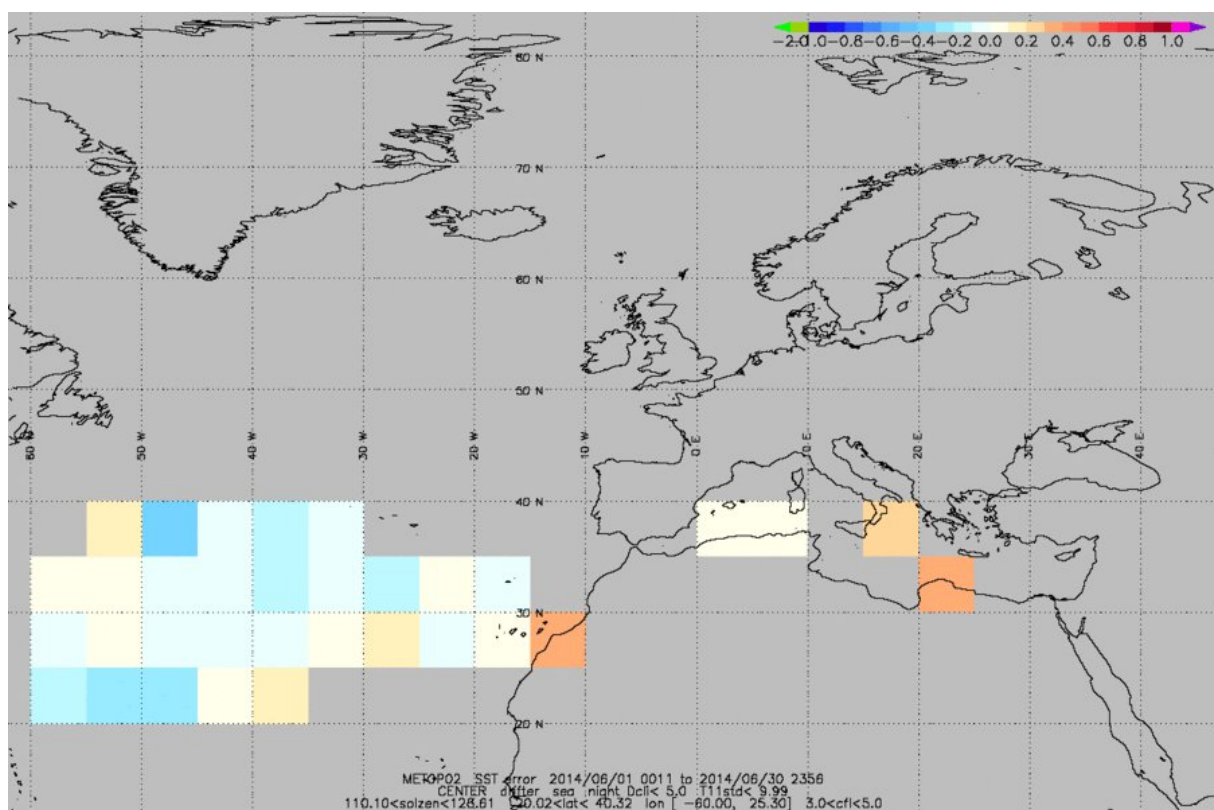
Figure 33 : **Location of buoys for Metop-A NAR SST validation in JUNE 2014, for 3, 4, 5 quality indexes and by night.**

The following table provides Metop-A -derived SST quality results over the reporting period.

Metop-A NAR SST quality results over 1st half 2014							
Month	Number of cases	Bias °C	Bias Req °C	Bias Margin (*)	Std Dev °C	Std Dev Req °C	Std Dev margin (**)
Jan. 2014	983	-0.13	0.5	74	0.38	0.8	52.5
Feb. 2014	1010	-0.07	0.5	86	0.37	0.8	53.75
Mar. 2014	1525	-0.12	0.5	76	0.35	0.8	56.25
Apr. 2014	1326	-0.12	0.5	76	0.35	0.8	56.25
May 2014	997	-0.03	0.5	94	0.31	0.8	61.25
Jun. 2014	1198	-0.02	0.5	96	0.33	0.8	58.75

table 7 : Quality results for Metop-A NAR SST over 1st half 2014, for 3, 4, 5 quality indexes and by night.

(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
100 refers then to a perfect product. 0 to a quality just as required. without margin.
A negative result indicates that the product quality does not fulfill the requirement.

Comments:
Quality results are good and quite stable.

The following graphs illustrate the evolution of Metop-A NAR SST quality results over the past 12 months.
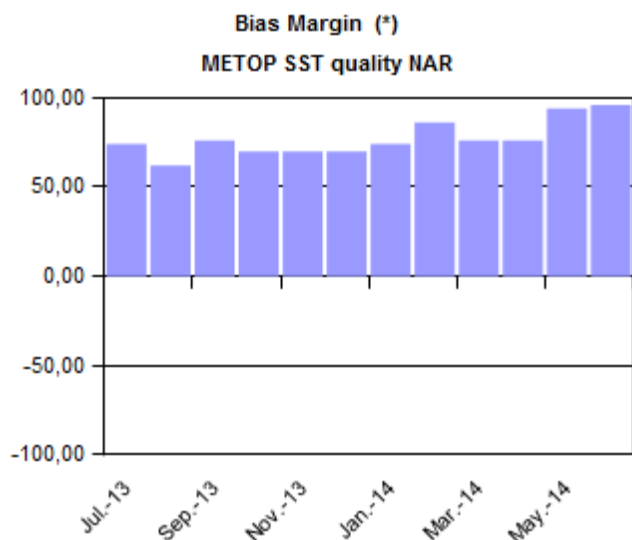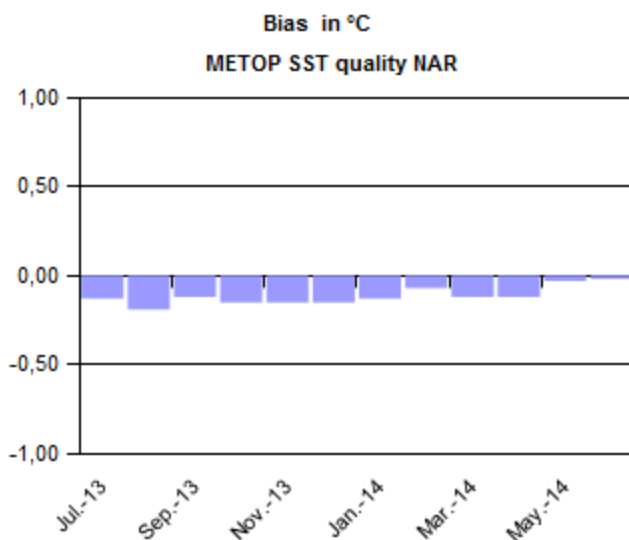
A NAR SST Bias Margin.
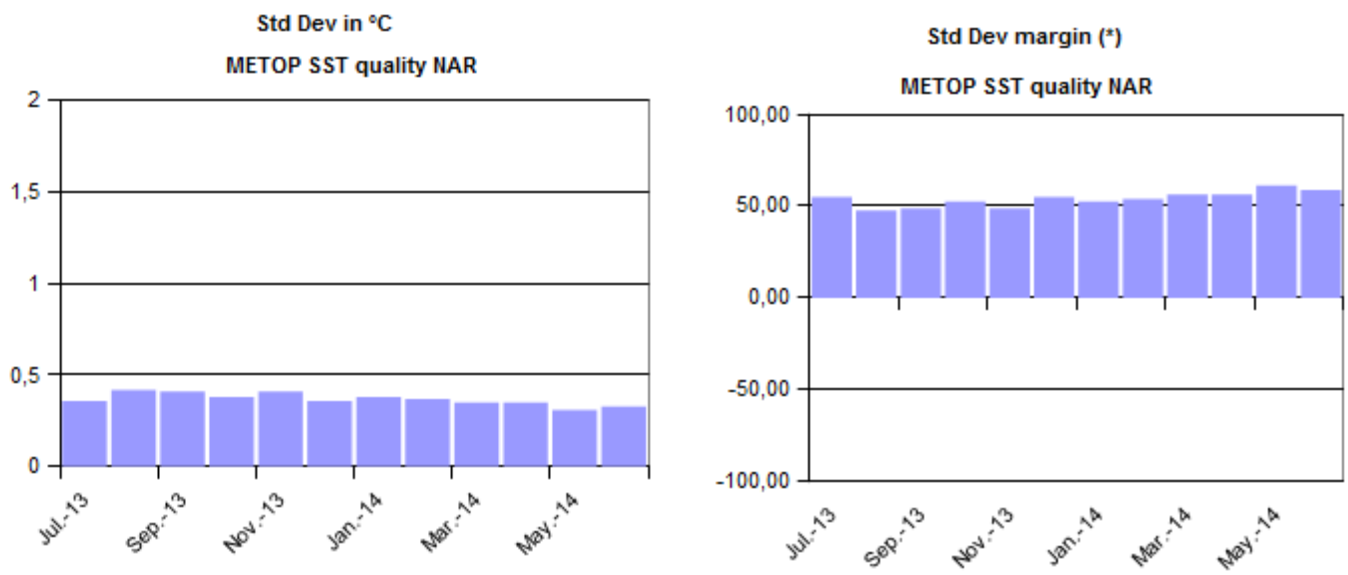
Figure 35 : **Left: Metop-A NAR SST Standard deviation. Right: Metop-A NAR SST Standard deviation Margin.**

Complementary validation statistics on Metop NAR SST

METOP02 SST error 2014/01/01 0036 to 2014/06/30 2356
CENTER drifter sea night Dcli< 5.0 T11std< 9.99
110.10<solzen<153.04   20.00<lat< 76.01 lon [−60.00, 38.26] 3.0<cfl<5.0
bias −0.09 std 0.35 min −2.94 max 1.54 sst 21.28   7119 cases
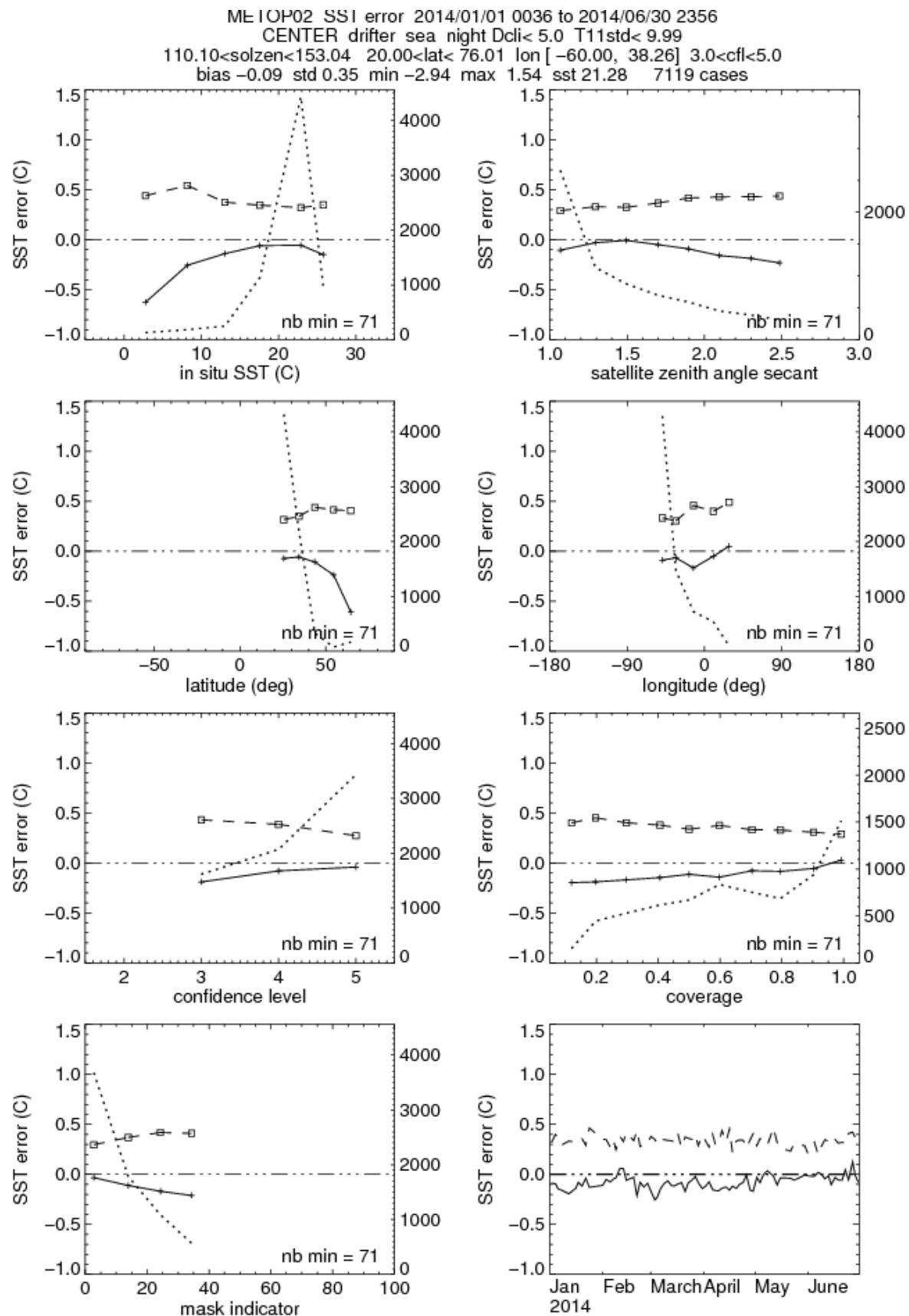
Figure 36 : Complementary validation statistics on Metop NAR SST.

5.1.4 GLB and MGR SST quality

The OSI SAF SST products on global coverage (GLB SST and MGR SST) are based on Metop/AVHRR data, currently Metop-A.
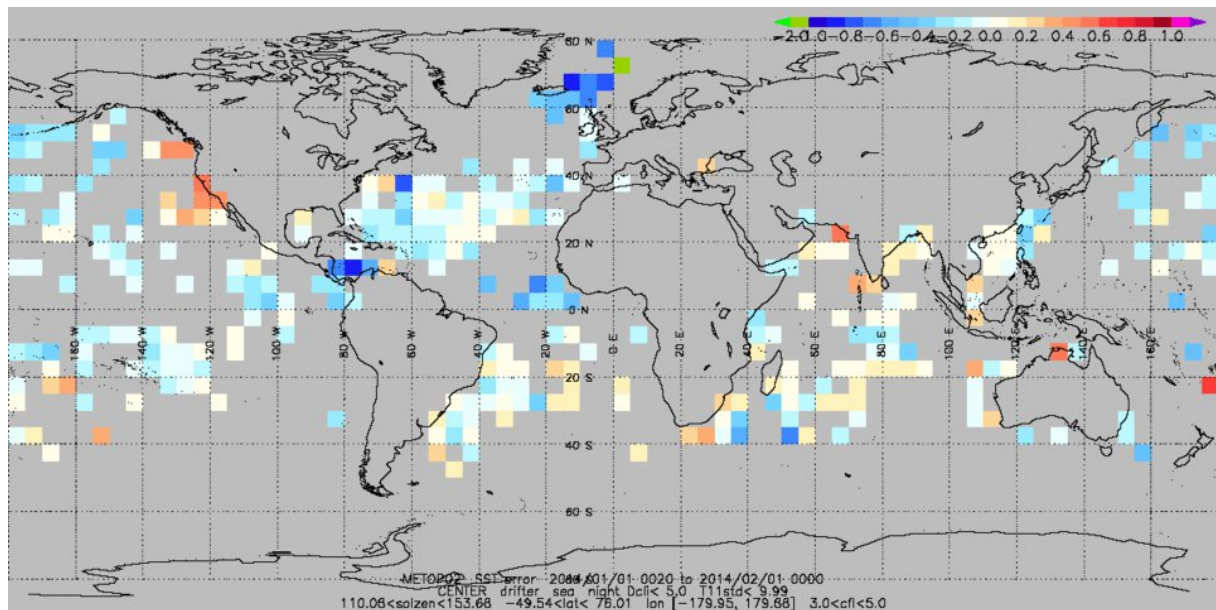
Figure 37 : **Location of buoys for global Metop-A SST validation in JANUARY 2014, for 3, 4, 5 quality indexes and by night.**
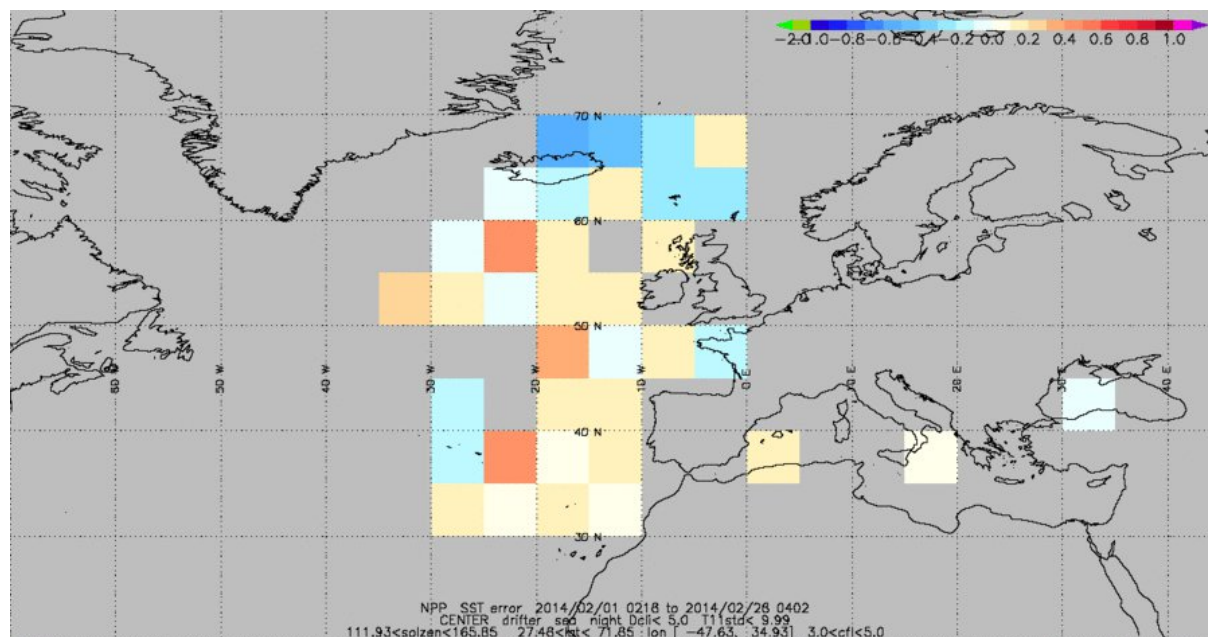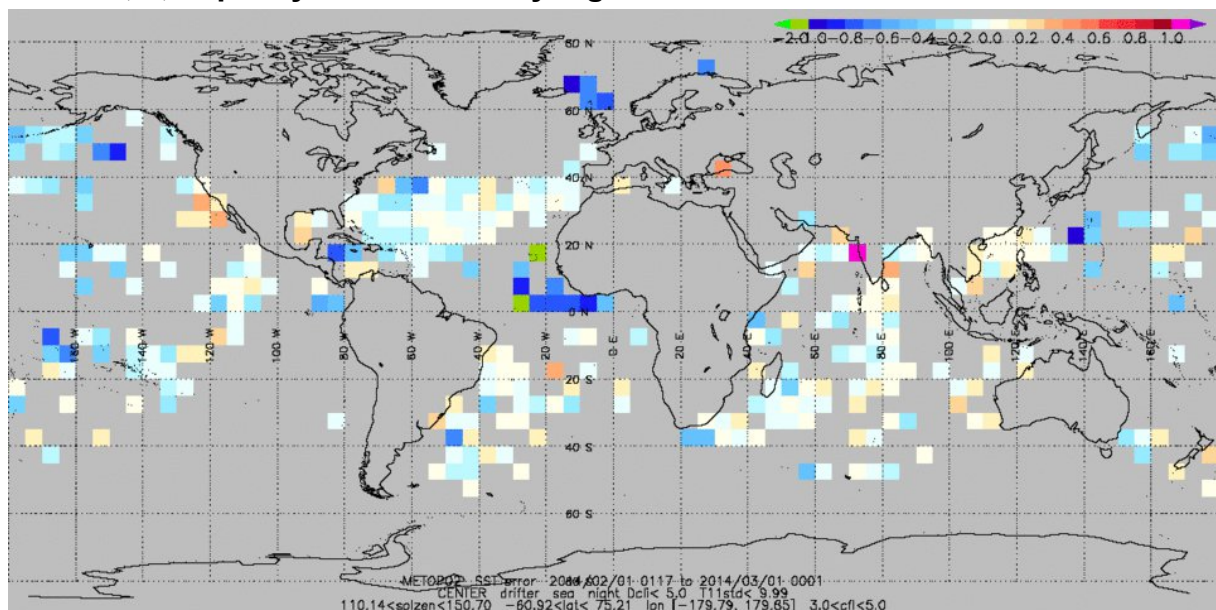

Figure 38 : **Location of buoys for global Metop-A SST validation in FEBRUARY 2014, for 3, 4, 5 quality indexes and by night.**
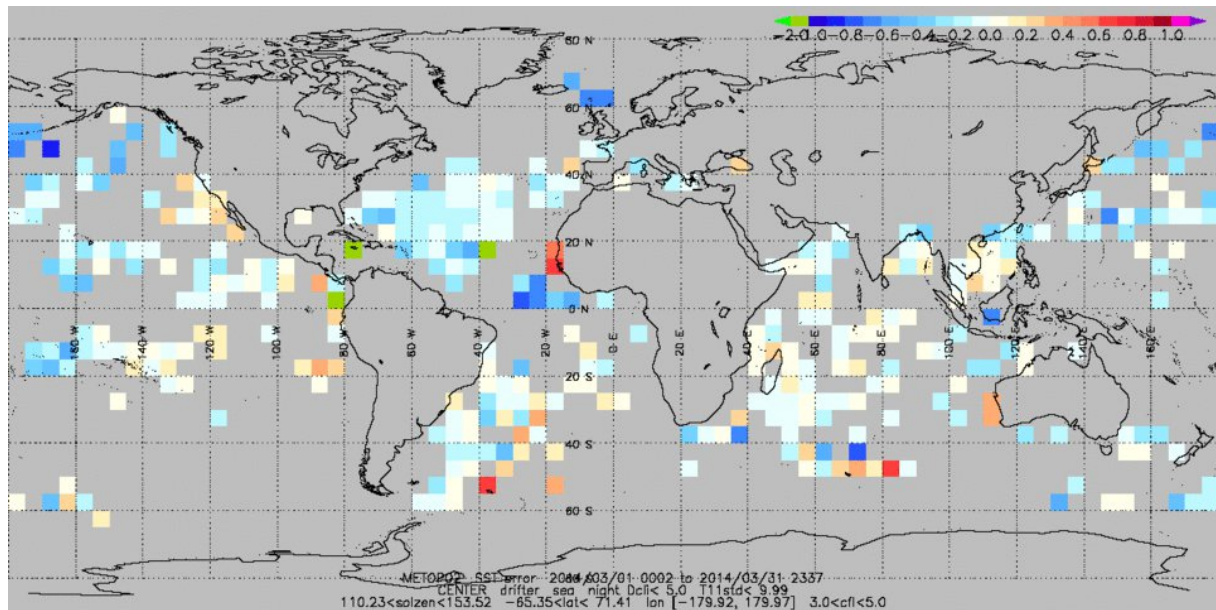
Figure 39 : Location of buoys for global Metop-A SST validation in MARCH 2014, for 3, 4, 5 quality indexes and by night.
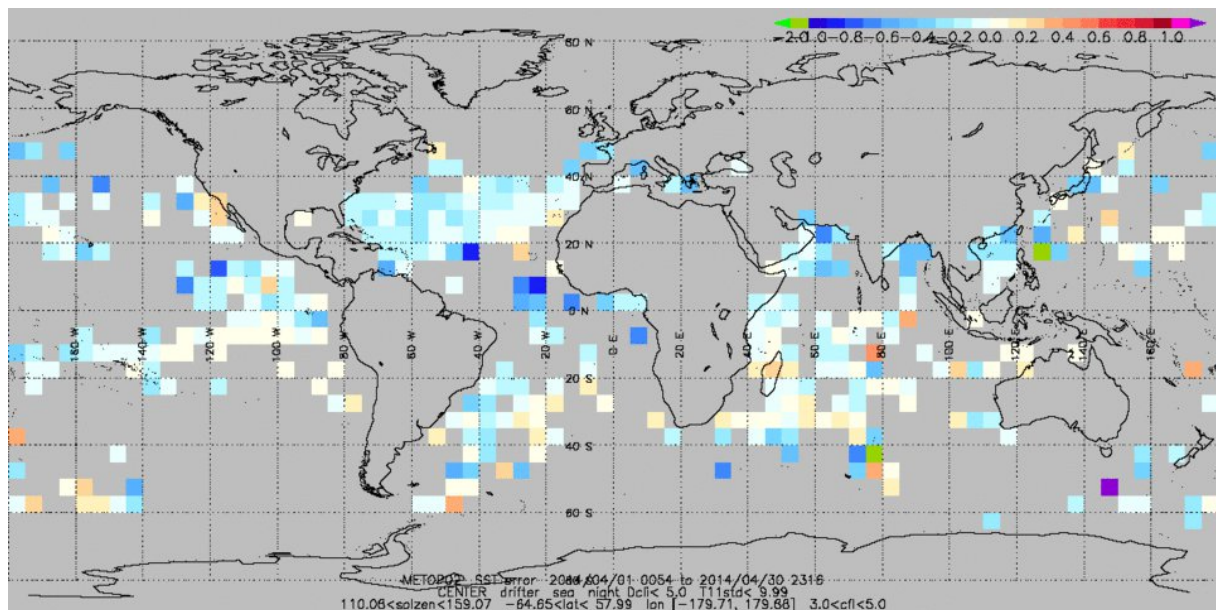
Figure 40 : Location of buoys for global Metop-A SST validation in APRIL 2014, for 3, 4, 5 quality indexes and by night.
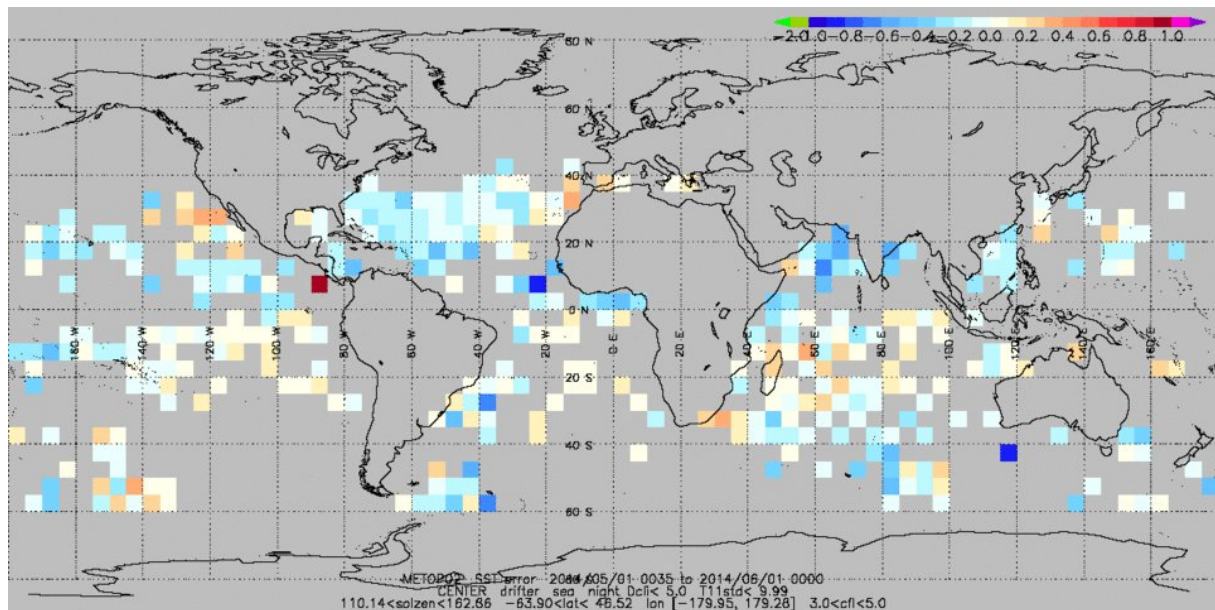
Figure 41 : Location of buoys for global Metop-A SST validation in MAY 2014, for 3, 4, 5 quality indexes and by night.
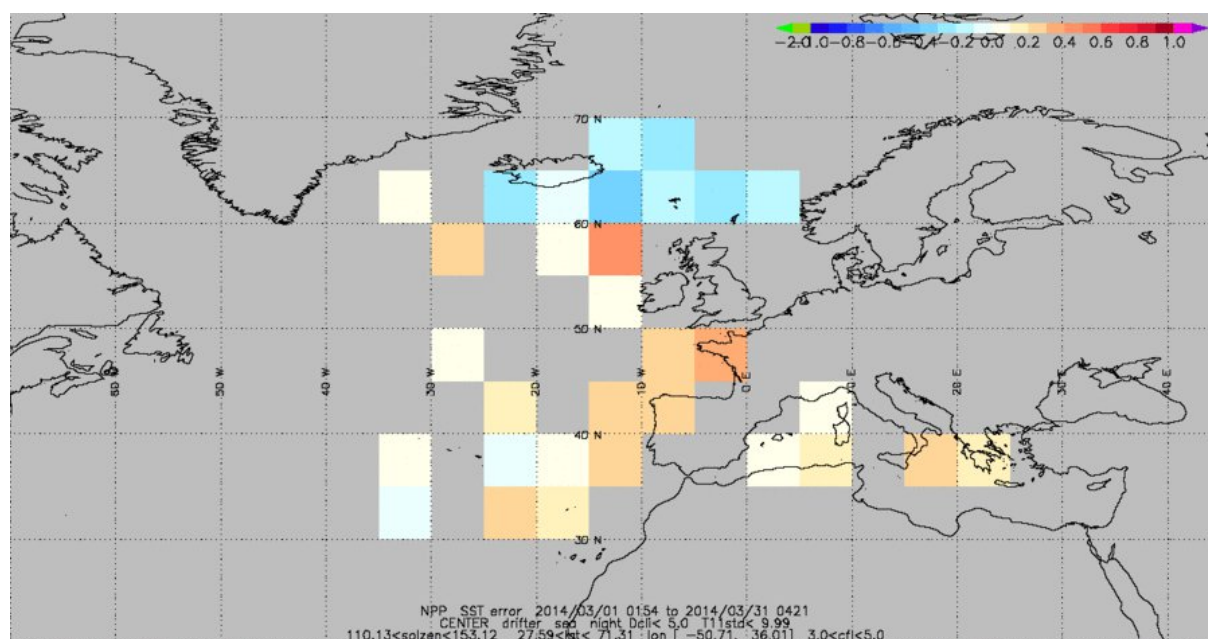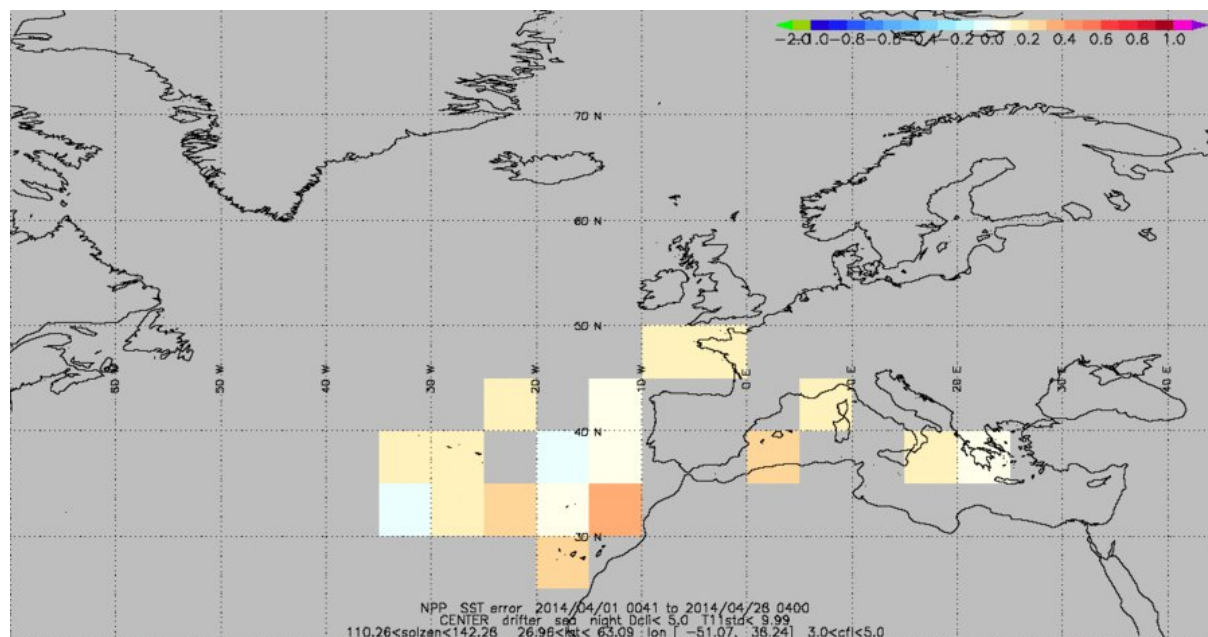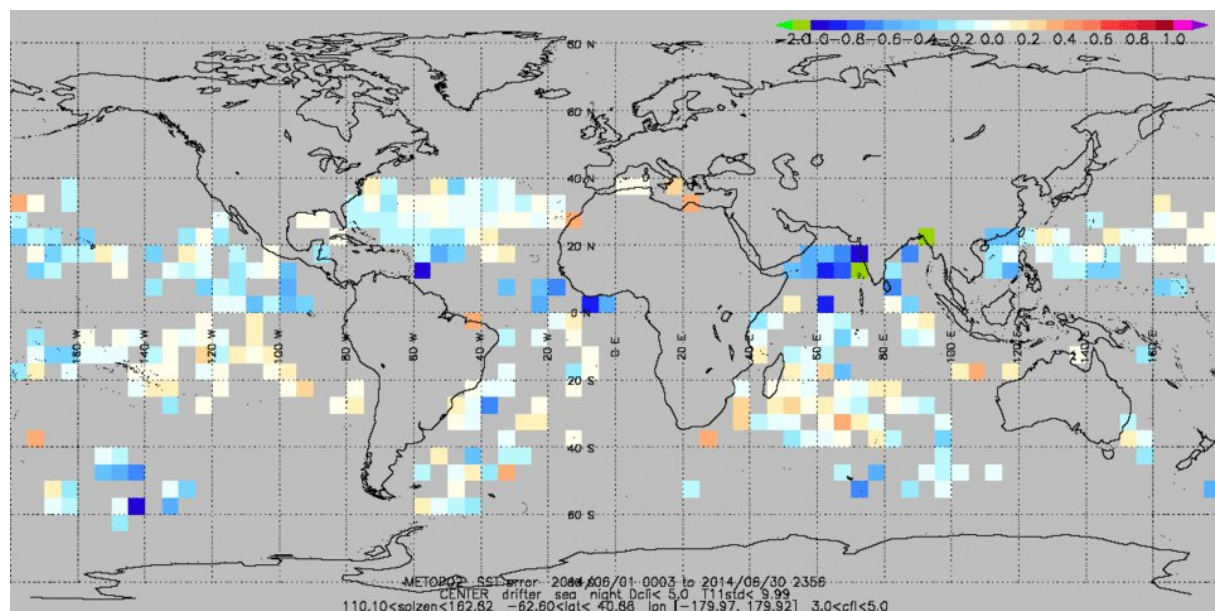

Figure 42 : Location of buoys for global Metop-A SST validation in JUNE 2014, for 3, 4, 5 quality indexes and by night.

The following table provides the METOP-derived SST quality results over the reporting period.

Global Metop-A SST quality results over 1st half 2014							
Month	Number of cases	Bias °C	Bias Req °C	Bias Margin (*)	Std Dev °C	Std Dev Req °C	Std Dev margin (**)
Jan. 2014	5139	-0.06	0.50	88.00	0.43	0.80	46.25
Feb. 2014	5222	-0.07	0.50	86.00	0.45	0.80	43.75
Mar. 2014	6577	-0.07	0.50	86.00	0.45	0.80	43.75
Apr. 2014	6384	-0.12	0.50	76.00	0.48	0.80	40.00
May 2014	5815	-0.08	0.50	84.00	0.43	0.80	46.25
Jun. 2014	5721	-0.10	0.50	80.00	0.43	0.80	46.25

table 8 : Quality results for global METOP SST over 1st half 2014, for 3,4,5 quality indexes and by night.

(*)   Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
100 refers then to a perfect product. 0 to a quality just as required. without margin.
A negative result indicates that the product quality does not fulfill the requirement.

Comments:
Quality results are good and quite stable.

The following graphs illustrate the evolution of global METOP SST quality results over the past 12 months.
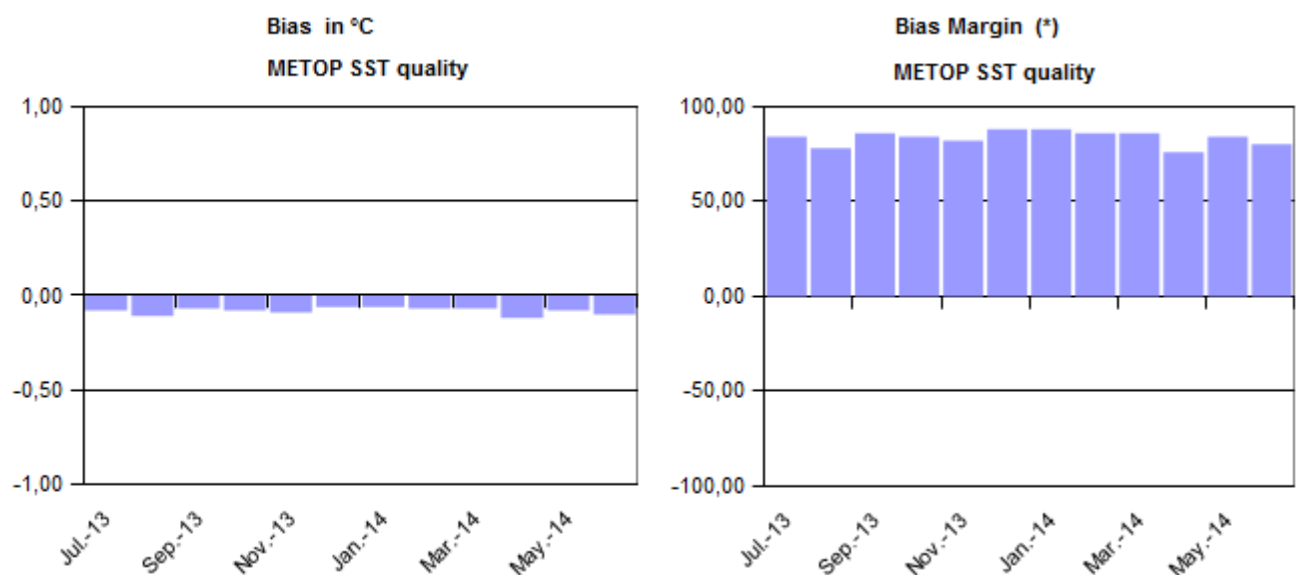
Figure 43 : Left: global Metop-A SST Bias. Right: global Metop-A SST Bias Margin.
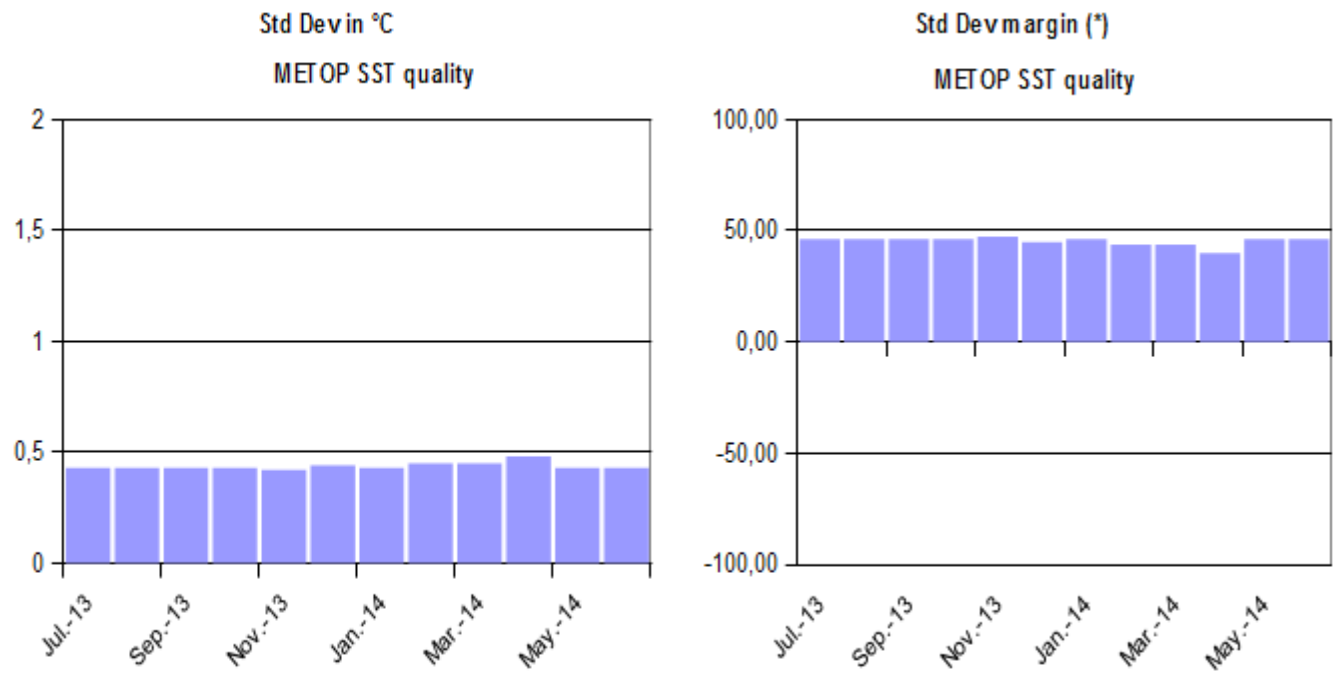
Figure 44 : **Left: global Metop-A SST Standard deviation. Right: global Metop-A SST Standard deviation Margin.**

Complementary validation statistics on Metop GLB SST
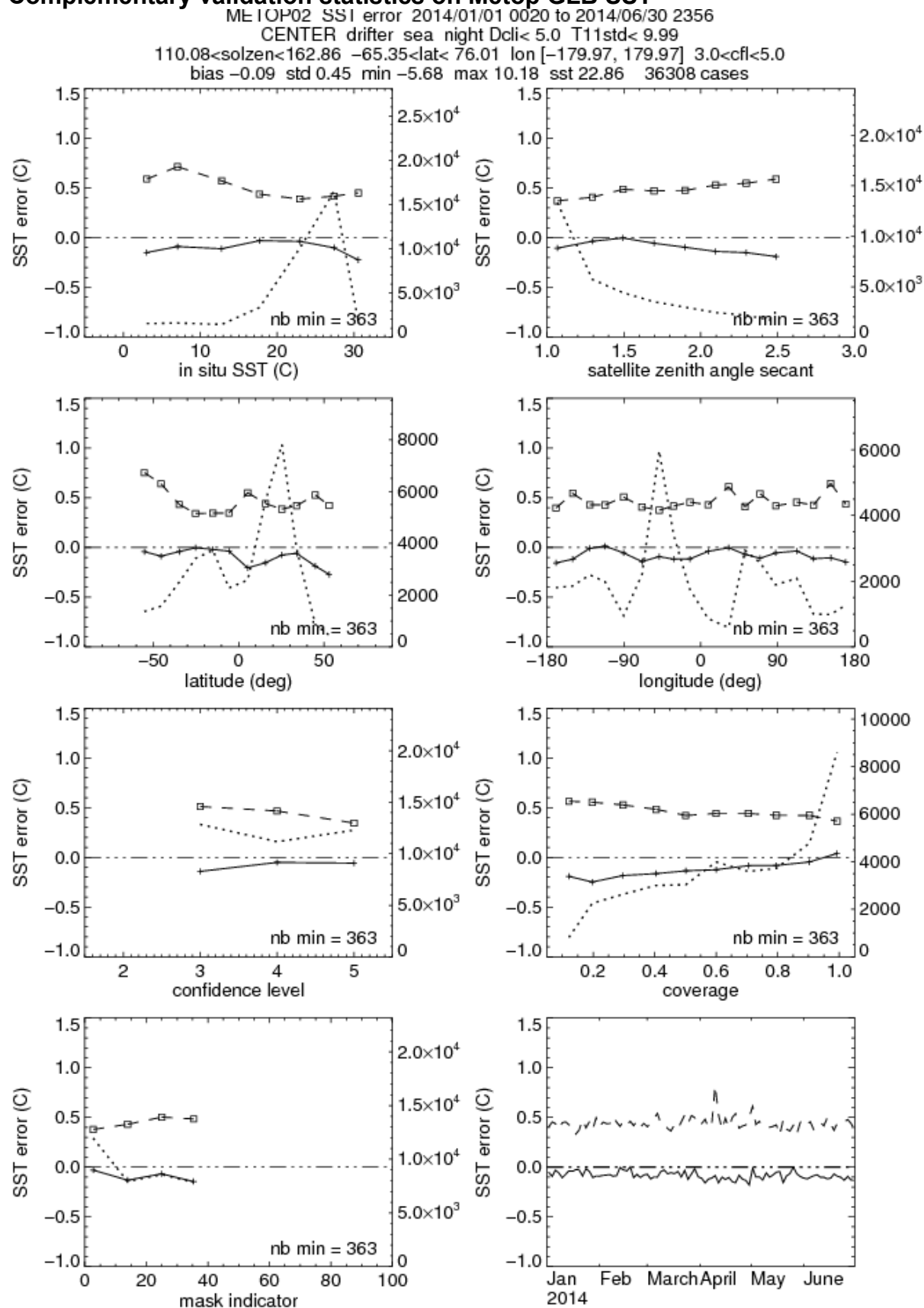
Figure 45 : Complementary validation statistics on Metop GLB SST.

5.1.5 AHL SST quality

The Atlantic High Latitude SST (AHL SST) is derived from polar satellites data, currently AVHRR on NOAA-18, NOAA-19 and METOP-A.

The following table provides the AVHRR-derived AHL SST quality results over the reporting period.
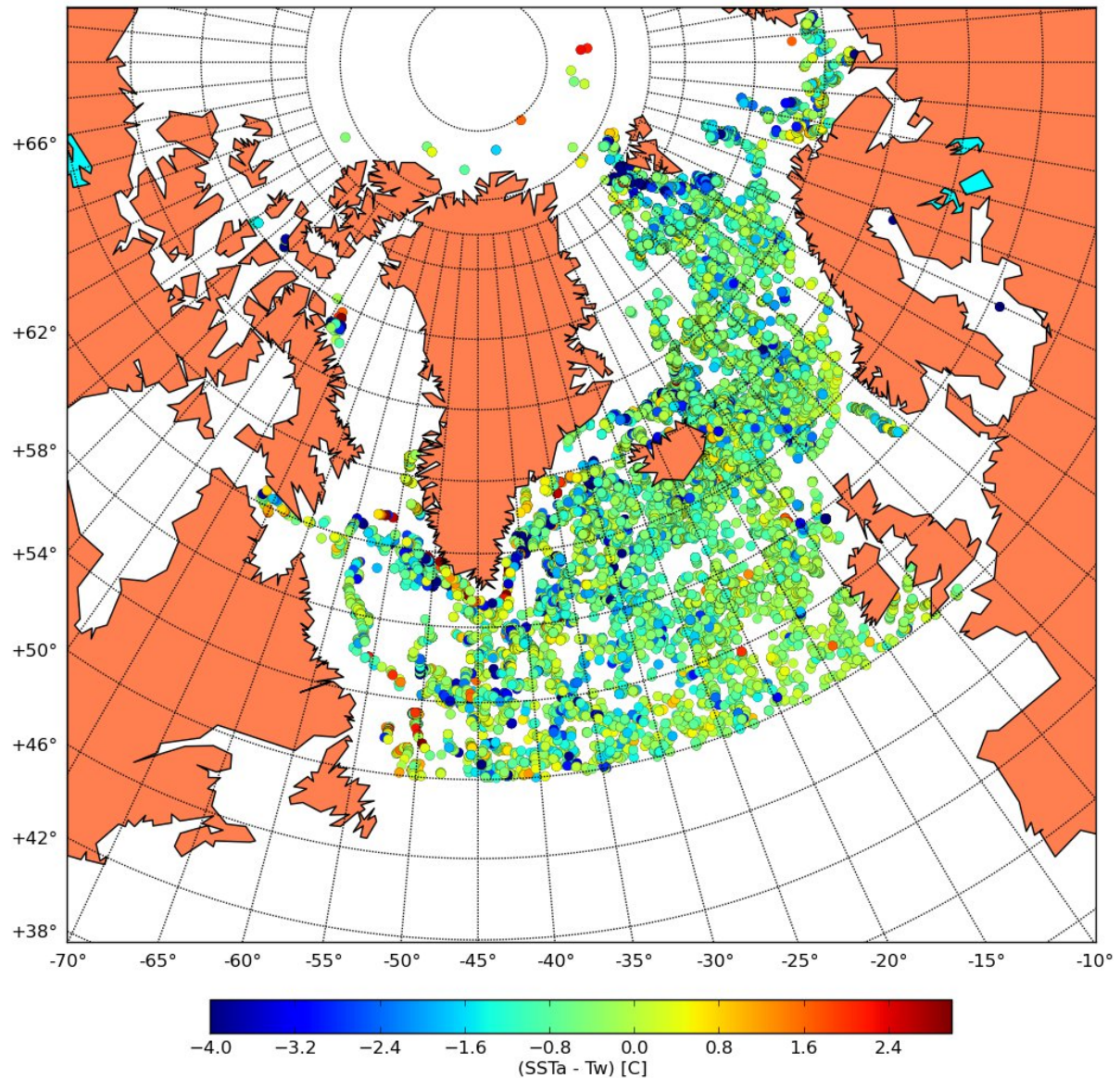
Figure 46 : Location of buoys for AHL SST validation in January to June 2014, for 3, 4, 5 quality indexes and by night.

AHL AVHRR SST quality results over 1st half 2014, nighttime						
Month	Number of cases	Bias °C	Bias Req °C	Bias Margin (*)	Std Dev °C	Std Dev Req °C	Std Dev margin (**)
July 2013	1381	-0.37	0.50	26.08	0.95	0.80	-18.34
Aug. 2013	2105	-0.52	0.50	-3.31	0.85	0.80	-6.30
Sept. 2013	2543	-0.49	0.50	1.30	0.80	0.80	-0.21
Oct. 2013	2370	-0.75	0.50	-50.44	0.75	0.80	6.57
Nov. 2013	1925	-0.52	0.50	-3.58	0.66	0.80	17.36
Dec. 2013	1676	-0.46	0.50	7.54	0.61	0.80	23.63
Jan 2014	1383	-0.46	0.50	7.17	0.73	0.80	8.92
Feb 2014	524	-0.51	0.50	-2.75	0.84	0.80	-5.19
Mar 2014	1348	-0.53	0.50	-6.38	0.75	0.80	6.37
Apr 2014	1423	-0.52	0.50	-3.92	0.76	0.80	4.96
May 2014	1155	-0.56	0.50	-11.78	0.77	0.80	3.23
Jun 2014	866	-0.54	0.50	-8.27	0.91	0.80	-13.87

AHL AVHRR SST quality results over 1st half 2014, daytime						
Month	Number of cases	Bias °C	Bias Req °C	Bias Margin (*)	Std Dev °C	Std Dev Req °C	Std Dev margin (**)
July 2013	1199	-0.07	0.50	85.84	0.65	0.80	18.63
Aug. 2013	1773	-0.22	0.50	56.94	0.58	0.80	27.45
Sept. 2013	2222	-0.31	0.50	37.05	0.62	0.80	22.94
Oct. 2013	1910	-0.54	0.50	-8.50	0.64	0.80	19.46
Nov. 2013	1862	-0.53	0.50	-5.33	0.63	0.80	21.03
Dec. 2013	1710	-0.57	0.50	-14.95	0.59	0.80	25.67
Jan 2014	1524	-0.59	0.50	-18.98	0.76	0.80	4.78
Feb 2014	432	-0.57	0.50	-14.72	0.92	0.80	-15.40
Mar 2014	1179	-0.46	0.50	8.54	0.68	0.80	15.28
Apr 2014	1183	-0.34	0.50	31.82	0.59	0.80	25.71
May 2014	1212	-0.41	0.50	17.81	0.65	0.80	19.23
Jun 2014	782	-0.31	0.50	37.58	0.69	0.80	13.77

table 9 : Quality results for AHL AVHRR SST over 1st half 2014, for 3,4,5 quality indexes, by night and by day.

(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
      100 refers then to a perfect product. 0 to a quality just as required. without margin.
      A negative result indicates that the product quality does not fulfill the requirement.

Comments:

The night time results are for the AHL 12 hourly product centered at 00 UTC. The results show a general cold bias, slightly below the requirement. The standard deviation is usually within the requirement, except in February and June. There are small differences between the day time and night time products, but the day time productes shows slightly better results. Cloud masks are usually less accurate at nighttime, and undetected clouds will lead to a cold bias in the SST products.

5.2 Radiative Fluxes quality

5.2.1 DLI quality

DLI products are constituted of the geostationary products (METEOSAT DLI and GOES-E DLI) and the polar ones (AHL DLI). DLI values are required to have the following accuracy when compared to land pyrgeometer measurements :
- monthly relative bias less than 5%,
- monthly difference standard deviation less than 10%.

The match-up data base the statistics are based on is continuously enriched, so that, for the same period, results may evolve depending on the date when the statistics were calculated.

5.2.1.1 METEOSAT and GOES-E DLI quality

The list of pyrgeometer stations used for validating the geostationary DLI products is available on the OSI SAF Web Site from the following page:
http://www.osi-saf.org/voir_images.php?image1=/images/flx_map_stations_2b.gif

The following table provides the geostationary DLI quality results over the reporting period.

Geostationary METEOSAT & GOES-E DLI quality results over 1ˢᵗ half 2014								
Month	Number of cases	Mean DLI in Wm^{-2}	Bias in %	Bias Req In %	Bias Marg in %(*)	Std Dev In %	Std Dev Req In %	Std Dev margin (**) in %
Jan. 2014	6148	257.94	-3.44	5.0	31.22	8.37	10.0	16.30
Feb. 2014	5352	259.77	-3.22	5.0	35.56	8.05	10.0	19.51
Mar. 2014	5852	274	-2.65	5.0	46.93	6.78	10.0	32.19
Apr. 2014	4814	305.13	-1.42	5.0	71.62	5.56	10.0	44.45
May 2014	5766	334.19	-0.84	5.0	83.18	4.79	10.0	52.12
Jun. 2014	4855	362.77	-0.64	5.0	87.26	4.16	10.0	58.38

table 10 : **Geostationary DLI quality results over 1ˢᵗ half 2014.**

(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
     100 refers then to a perfect product. 0 to a quality just as required. without margin.
     A negative result indicates that the product quality does not fulfill the requirement.

Comments:
Results meet the specifications with classical seasonal effects.

The following graphs illustrate the evolution of Geostationary DLI quality over the past 12 months.

Bias in %
DLI quality

Bias Margin (*)
DLI quality
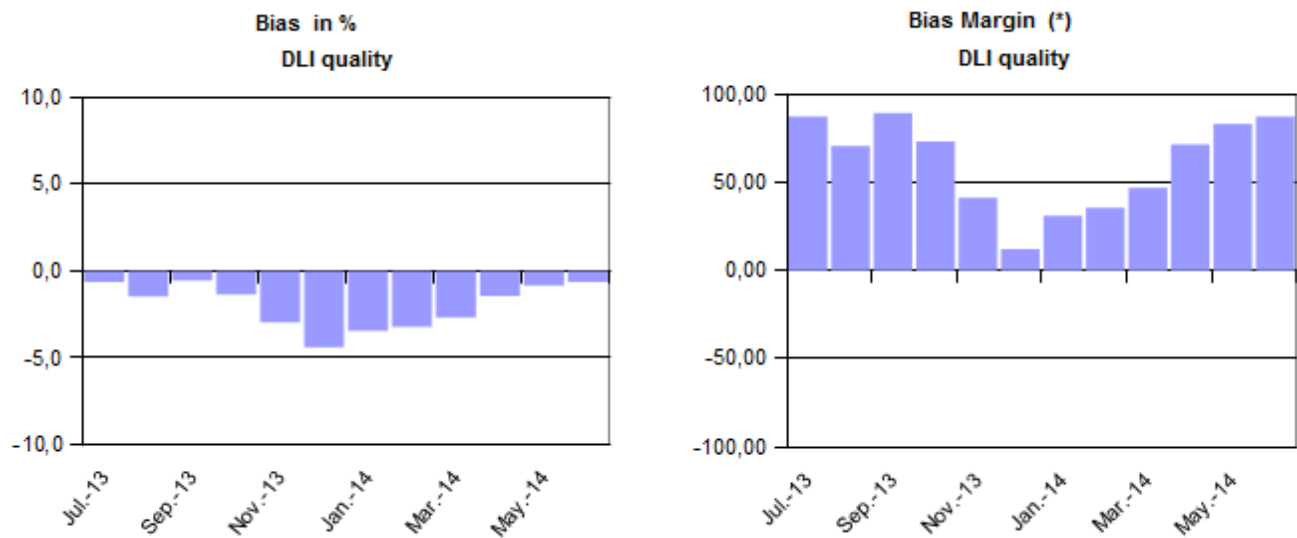
Figure 47 : **Left: Geostationary DLI Bias. Right Geostationary DLI Bias Margin .**

Std Dev in %
DLI quality

Std Dev margin (*)
DLI quality
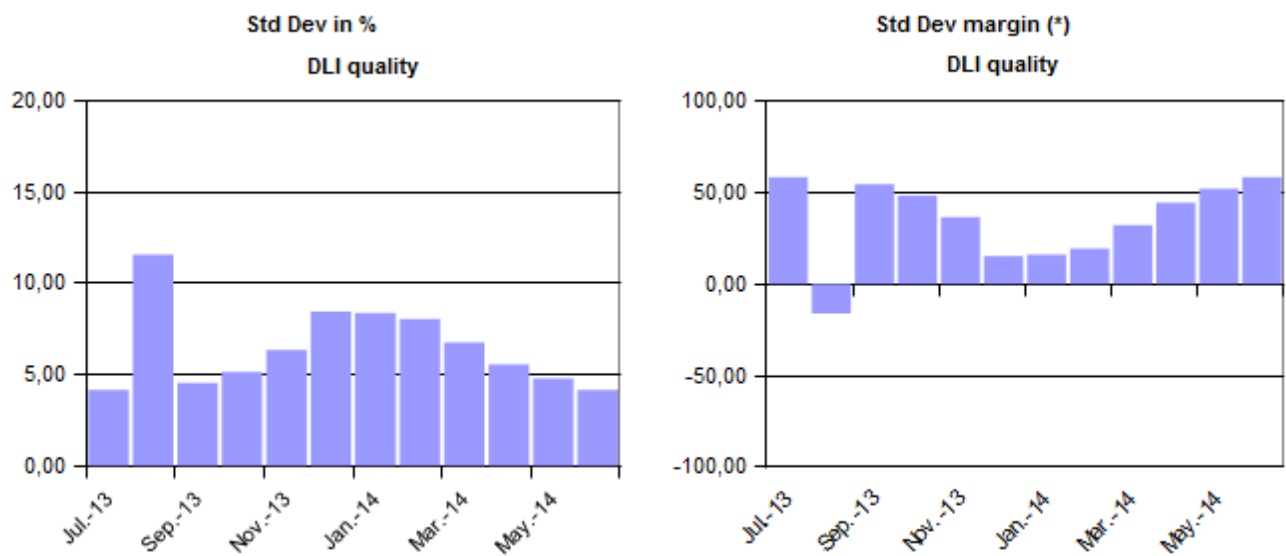
Figure 48 : **Left: Geostationary DLI Standard deviation. Right DLI Geostationary Standard deviation Margin.**

5.2.1.2 AHL DLI quality

The pyrgeometer stations used for validation of the AHL DLI product are are selected stations from Table 13. Specifically the following stations are currently used.
- Ekofisk
- Jan Mayen
- Bjørnøya
- Hopen

These stations are briefly described at http://nowcasting.met.no/validering/flukser/. A map illustrating the locations is provided in figure 51 : the stations used for SSI validation is also shown. More information on the stations is provided in 5.2.2.2.

The following table provides the AHL DLI quality results over the reporting period.

AHL DLI quality results over 1st half 2014								
Month	Number of cases	Mean DLI in Wm^{-2}	Bias in %	Bias Req In %	Bias Marg in %(*)	Std Dev In %	Std Dev Req In %	Std Dev margin (**) in %
July 2013	102	334.69	6.69	5.0	-33.8	3.12	10.0	68.8
Aug. 2013	112	335.14	6.68	5.0	-33.6	2.86	10.0	71.4
Sept. 2013	120	320.79	4.23	5.0	15.4	3.58	10.0	64.2
Oct. 2013	107	293.42	1.79	5.0	64.2	4.11	10.0	58.9
Nov. 2013	119	276.50	1.47	5.0	70.6	4.92	10.0	50.8
Dec. 2013	116	274.08	2.07	5.0	58.6	5.24	10.0	47.6
Jan. 2014	124	277.07	2.93	5.0	41.4	5.28	10.0	47.2
Feb. 2014	112	290.59	3.20	5.0	36	4.44	10.0	55.6
Mar. 2014	124	274.09	1.61	5.0	67.8	4.83	10.0	51.7
Apr. 2014	120	277.06	2.23	5.0	55.4	4.60	10.0	54
May. 2014	90	296.39	2.04	5.0	59.2	4.14	10.0	58.6
Jun. 2014	116	321.76	3.24	5.0	35.2	3.73	10.0	62.7

table 11 : **AHL DLI quality results over July 2013 to June 2014.**
(*)   Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
    100 refers then to a perfect product. 0 to a quality just as required. without margin.
    A negative result indicates that the product quality does not fulfill the requirement.

Comments:

The requirement was met in all months. Concerning validation results on individual stations, Hopen did not meet the requirement in January, February and June. Details are investigated. A preliminary validation against stations received through WMO GTS and email was also performed. Results were similar to the ones for the stations used, but are not included in this report. Further evaluation of the stations are required. The results of this evaluation will be documented in separate reports.

5.2.2 SSI quality

SSI products are constituted of the geostationary products (METEOSAT SSI and GOES-E SSI) and polar ones (AHL SSI). SSI values are required to have the following accuracy when compared to land pyranometer measurements :
- monthly relative bias less than 10%,
- monthly difference standard deviation less than 30%.

The match-up data base the statistics are based on is continuously enriched, so that, for the same period, results may evolve depending on the date when the statistics were calculated.

5.2.2.1 METEOSAT and GOES-E SSI quality

The list of pyranometer stations used for validating the geostationary SSI products is available on the OSI SAF Web Site from the following page:
http://www.osi-saf.org/voir_images.php?image1=/images/flx_map_stations_2b.gif

The following table provides the geostationary SSI quality results over the reporting period.

Geostationary METEOSAT & GOES-E SSI quality results over 1st half 2014										
Month	Number of cases	Mean SSI in Wm^{-2}	Bias in Wm^{-2}	Bias in %	Bias Req in %	Bias Marg in %(*)	Std Dev in Wm^{-2}	Std Dev in %	Std Dev Req in %	Std Dev margin (**) in %
Jan. 2014	5054	308.72	13.45	4.36	10.0	56.43	84.98	27.53	30.0	8.24
Feb. 2014	5579	329.22	7.08	2.15	10.0	78.49	92.59	28.12	30.0	6.25
Mar. 2014	4942	432.44	13.59	3.14	10.0	68.57	96.02	22.20	30.0	25.99
Apr. 2014	7422	458.28	13.33	2.91	10.0	70.91	84.02	18.33	30.0	38.89
May 2014	8611	456.41	-1.61	-0.35	10.0	96.47	82.46	18.07	30.0	39.78
Jun. 2014	7863	487.97	8.13	1.67	10.0	83.34	86.53	17.73	30.0	40.89

table 12 : **Geostationary SSI quality results over 1st half 2014.**
(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
　　100 refers then to a perfect product. 0 to a quality just as required. without margin.
　　A negative result indicates that the product quality does not fulfill the requirement.

Comments:
Results are within specifications.

The following graphs illustrate the evolution of Geostationary SSI quality over the past 12 months.
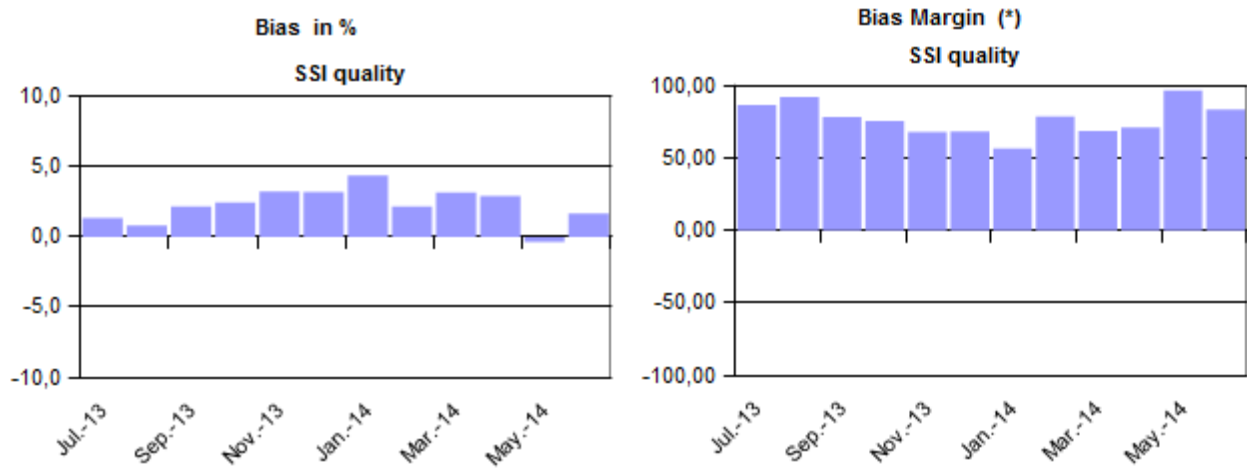
Figure 49 : Left: Geostationary SSI Bias. Right Geostationary SSI Bias Margin.
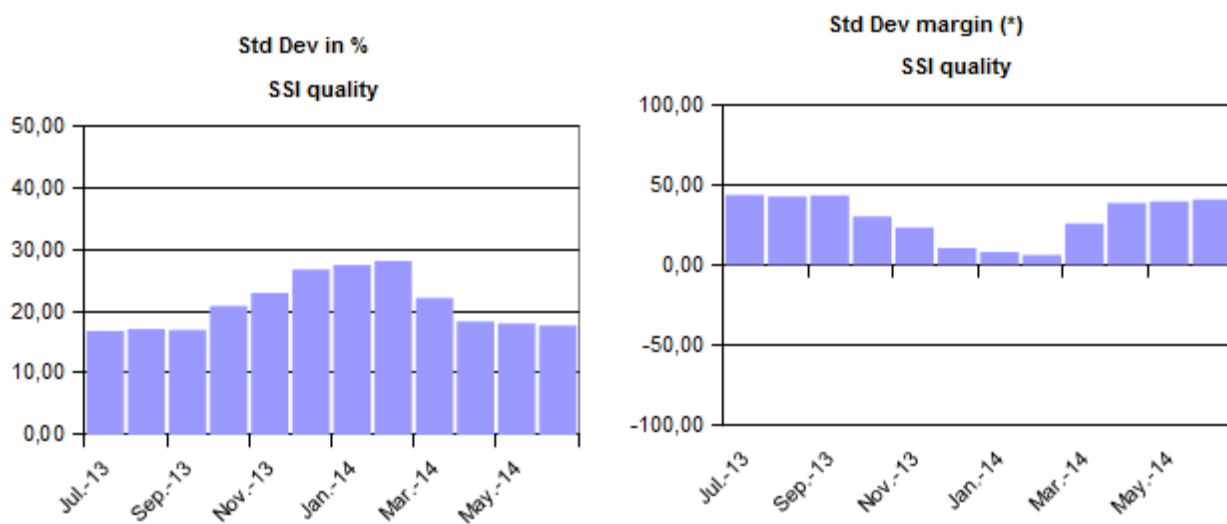
Figure 50 : Left: Geostationary SSI Standard deviation. Right Geostationary SSI Standard deviation Margin.

5.2.2.2 AHL SSI quality

The pyranometer stations used for validation of the AHL SSI product are shown in the following table.

Station	StId	Latitude	Longitude	Status
Tjøtta	76530	65.83°N	12.43°E	In use
Vågønes	82260	67.28°N	14.47°E	Not used currently
Holt	90400	69.67°N	18.93°E	Not used currently
Apelsvoll	11500	60.70°N	10.87°E	In use, under examination due to shadow effects.
Løken	23500	61.12°N	9.07°E	Not used currently
Landvik	38140	58.33°N	8.52°E	In use
Særheim	44300	58.78°N	5.68°E	In use
Fureneset	56420	61.30°N	5.05°E	In use
Kvithamar	69150	63.50°N	10.87°E	Not used currently
Jan_Mayen	99950	70.93°N	-8.67°E	In use, Arctic station with snow on ground much of the year, volcanic ash deteriorates instruments in periods.
Bjørnøya	99710	74.52°N	19.02°E	In use, Arctic station with snow on ground much of the year.
Hopen	99720	76.50°N	25.07°E	In use, Arctic station with snow on ground much of the year.
Ekofisk	76920	56.50°N	3.2°E	In use, shadow effects at certain directions.

table 13 : *Validation stations that are currently used for AHL radiative fluxes validation.*

Locations of these stations are provided in the illustration below (figure 51). The map illustrates whether stations are used for SSI or DLI validation. As readily can be seen, the map contains more stations than actually used (see the list above). The reason for this is that some stations have characteristics which makes them unsuitable for validation of daily SSI due to e.g. shadow effects or other surrounding characteristics. Furthermore, some of the stations listed are briefly described at : http://nowcasting.met.no/validering/flukser/.

The stations used in this validation is owned and operated by the Norwegian Meteorological Institute*,* University of Bergen, Geophysical Institute *and* Bioforsk*.*
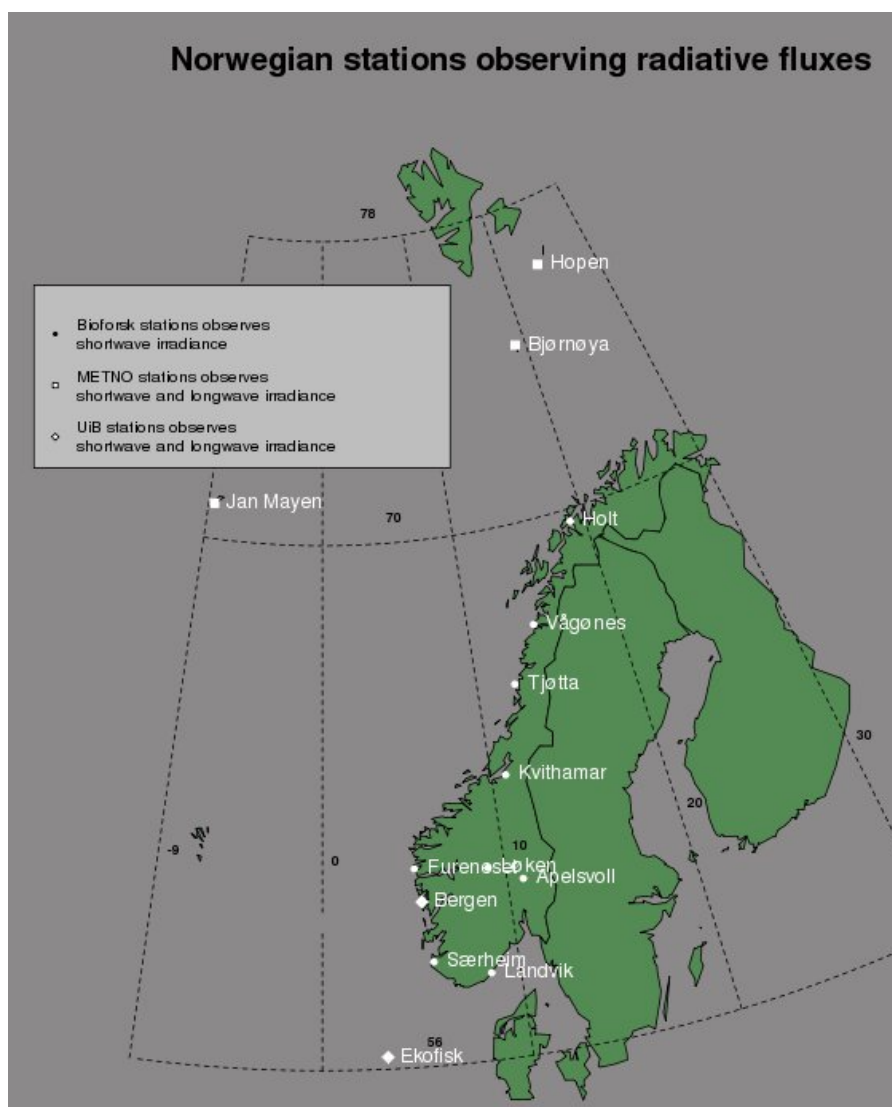
Figure 51 : Map of stations available for validation purposes of AHL radiative fluxes. Only a subset of these stations are used due to station characteristics when validation satellite remote sensing products.

New validation stations are currently tested for inclusion in the validation. It is expected that they will be included in the HYR 2014-2 report.

The following table provides the AHL SSI quality results over the reporting period.

AHL SSI quality results over 1st half 2014										
Month	Number of cases	Mean SSI in Wm^{-2}	Bias in Wm^{-2}	Bias in %	Bias Req in %	Bias Marg in %(*)	Std Dev in Wm^{-2}	Std Dev in %	Std Dev Req in %	Std Dev margin (**) in %
July 2013	269	203.78	1.89	5.17	10.0	48.3	37.82	19.60	30.0	34.67
Aug. 2013	271	158.15	5.87	6.21	10.0	37.9	24.72	16.27	30.0	45.77
Sept. 2013	251	91.65	-1.48	6.90	10.0	31	16.72	18.64	30.0	37.87
Oct. 2013	253	42.19	-2.96	8.01	10.0	19.9	8.63	25.11	30.0	16.3
Nov. 2013	261	19.70	-0.46	14.73	10.0	-47.3	12.10	51.16	30.0	-70.53

Dec. 2013	261	6.47	0.63	4.07	10.0	59.3	4.56	29.38	30.0	2.07
Jan. 2014	243	5.08	2.57	42.61	10.0	-326.1	5.40	68.73	30.0	-129.1
Feb. 2014	219	20.16	1.62	13.78	10.0	-37.8	7.62	37.02	30.0	-23.4
Mar. 2014	243	68.51	5.39	12.54	10.0	-25.4	12.46	18.94	30.0	36.87
Apr. 2014	235	136.38	7.60	8.40	10.0	16	15.57	11.67	30.0	61.1
May. 2014	215	198.49	13.31	8.37	10.0	16.3	23.06	11.69	30.0	61.03
Jun. 2014	232	223.48	2.55	6.53	10.0	34.7	28.05	12.86	30.0	57.13

table 14 : AHLSSI quality results over July 2013 to June 2014.

(*) Bias Margin = 100 * (1-(|Bias / Bias Req|))
(**) Std Dev margin = 100 * (1-(Std Dev / Std Dev Req))
    100 refers then to a perfect product. 0 to a quality just as required. without margin.
    A negative result indicates that the product quality does not fulfill the requirement.

Comments:

The following stations were used in the validation for the second period of 2014: 11500, 38140, 44300, 56420, 76530, 76920, 99710, 99950. Hopen is till not used as the shadow correction is yet not available, while Jan Mayen is now being used again after a recalibration of instrumentation.
Validation results meets the requirements in April, May and June, but fails in January, February and March. If the northernmost stations are excluded from the validation, results meet requirements in March as well. The main reason is snow on ground which the present alghorithm does not handle well.

5.3 Sea Ice quality

5.3.1 Validation results for the global sea ice concentration product

The OSI SAF sea ice concentration product is validated against navigational ice charts, as these are believed to be the best independent source of reference data currently available. These navigational ice charts originates from the operational ice charting divisions at DMI, MET Norway and National Ice Center. The ice charts are primarily based on SAR (Radarsat and Envisat) data, together with AVHRR and MODIS data in several cases. The validation results are shown separately for the three different sets of ice charts.

For the validation at the Northern Hemisphere, performed twice a week, the concentration product is required to have a bias and standard deviation less than 10% ice concentration on an annual basis. For the biweekly validation at the Southern Hemisphere the concentration product is required to have a bias and standard deviation less than 15% ice concentration on an annual basis.

For each ice chart concentration level the deviation between ice chart concentration and OSISAF ice concentration is calculated. Afterwards deviations are grouped into categories, i.e. ±10% and ±20%. Furthermore the bias and standard deviation is calculated for each concentration level. The bias and standard deviation are reported for ice (> 0% ice concentration), for water (0% ice concentration) and for both ice and water as a total. We use conventional bias and standard deviations for all calculations.

In addition, statistics from manual evaluation (on the confidence level of the products) are shown as additional information. There is no requirement on these statistics. The error codes for the manual evaluation is shown below.

Error code	Type	Description
1	Area	missing data
2	point	open water where ice was expected
3	Area	false ice where open water was expected
4	point	false ice induced from SSM/I processing errors
5	point	other errors
6	point	noisy false ice along coast

table 15 : **Error codes for the manual registration**

For the Northern Hemisphere, these validation results are given for the Greenland area. This area is the area covered by the bi-weekly DMI ice charts used for the comparison to the sea ice concentration data. The charts can be seen at http://www.dmi.dk/hav/groenland-og-arktis/iskort/.

They cover the waters surrounding Greenland including the Lincoln Sea, the Fram Strait, the Greenland Sea, the Denmark Strait and Iceland, the Southern Greenland area including Cape Farewell, the Davis Strait and all of Baffin Bay.
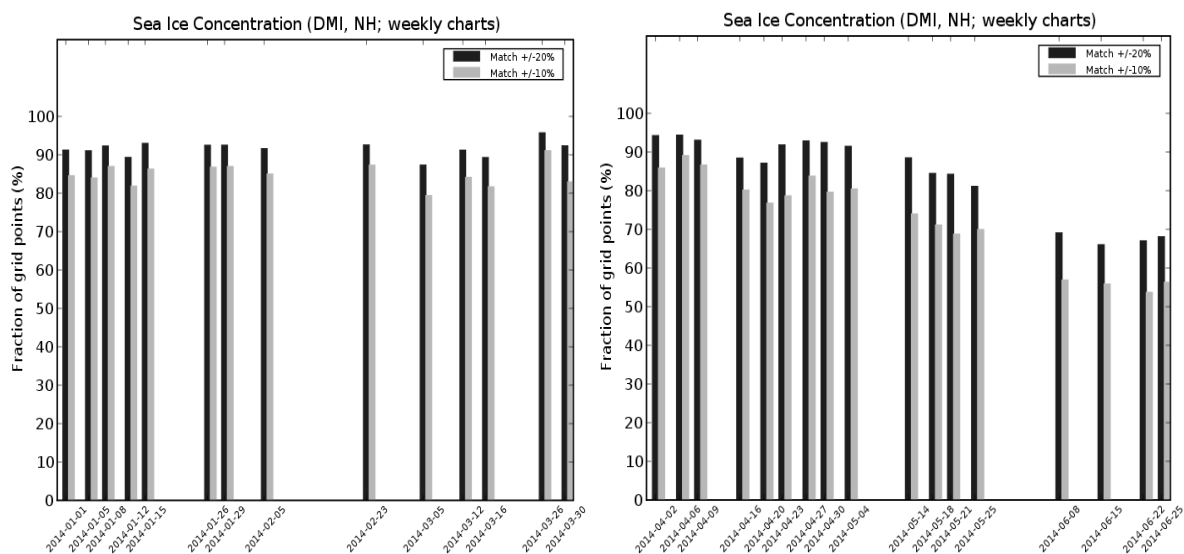
Figure 52 : **Comparison of ice concentrations from the weekly DMI ice analysis and the OSI SAF concentration product. Northern hemisphere. 'Match +/- 10%' corresponds to those grid points where concentrations are within the range of +/- 10%, and likewise for +/-20%.**
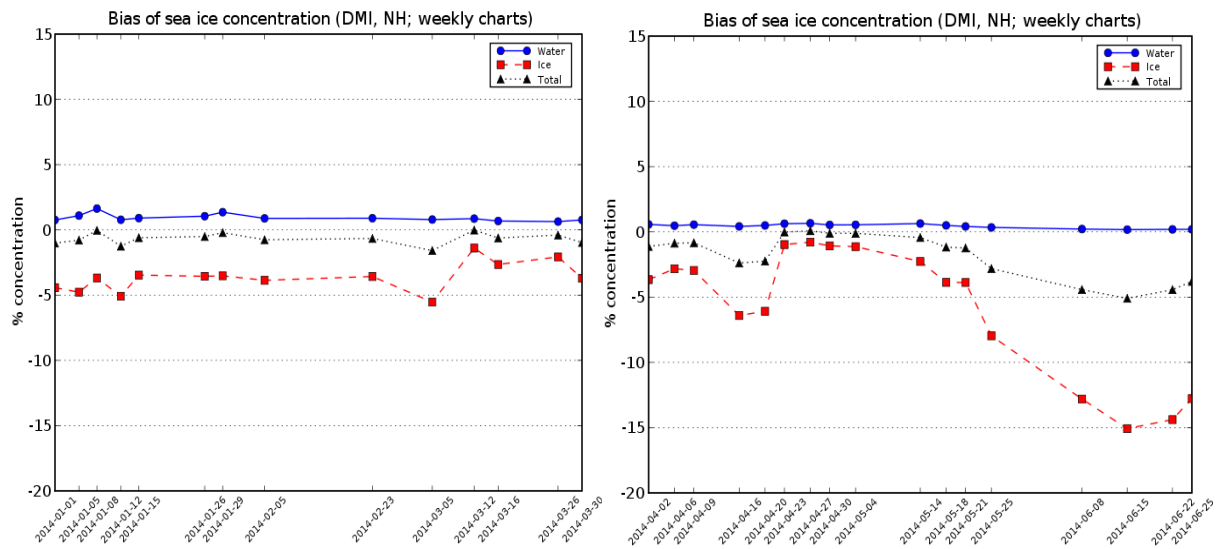
Figure 53 : **Difference between ice concentrations from the weekly DMI ice analysis and OSI SAF concentration product for three categories: water, ice and total. The total difference is the difference between the ice analysis and sea ice concentration product within the area covered by the ice analysis including both ice and water. When the difference is below zero, the OSI SAF sea ice concentration has a lower estimate than the ice analysis. Northern hemisphere.**
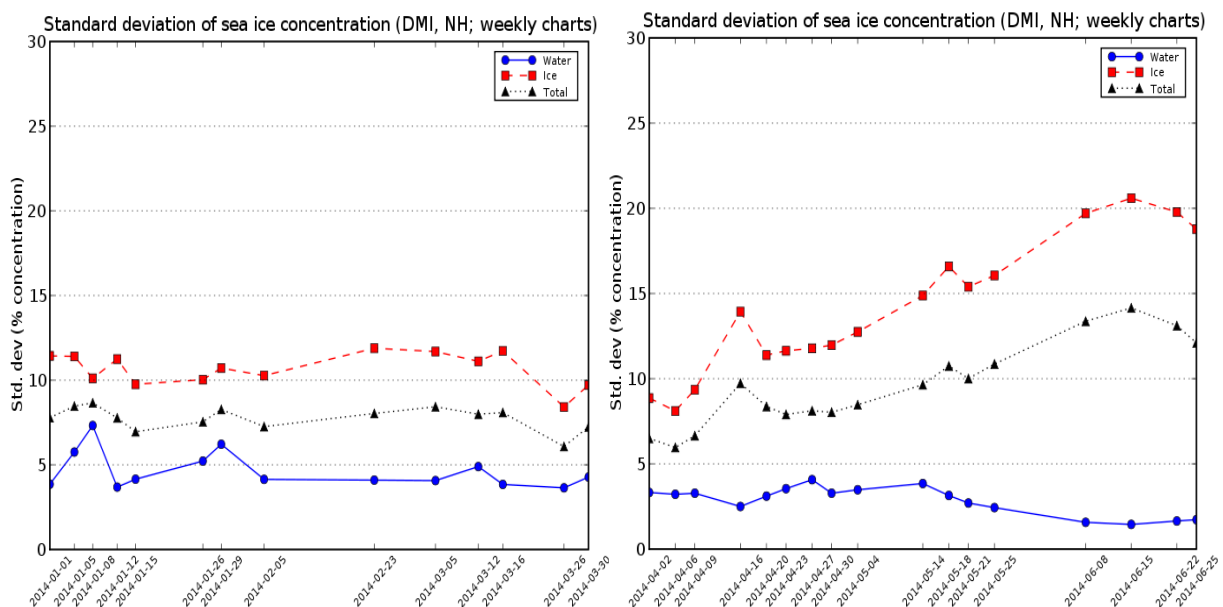
Figure 54 : **Standard deviation of the difference in ice concentrations from the weekly DMI ice analysis and OSI SAF concentration product for three categories: water, ice and total. Northern hemisphere.**

Sea Ice Concentration (DMI, NH; weekly charts)
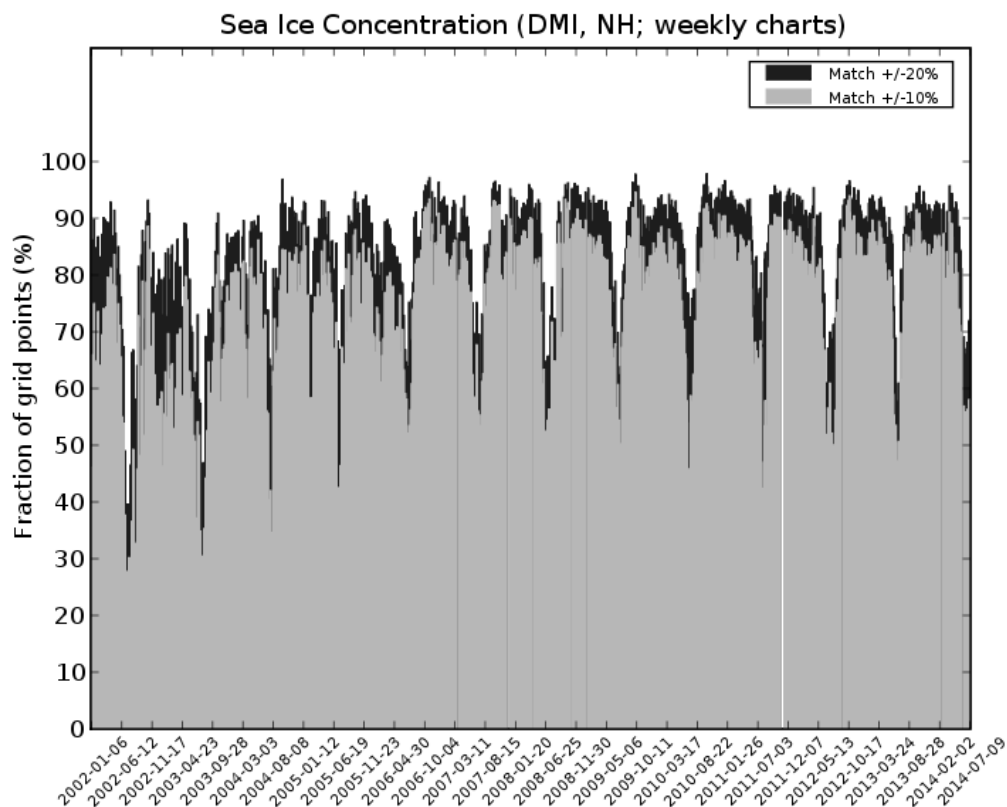
Figure 55 : **Multiyear variability. Comparison between ice concentrations from the weekly DMI ice analysis and the OSI SAF concentration product. 'Match +/-10%' corresponds to those grid points where concentrations are within the range of +/- 10%, and likewise for +/-20%. Northern hemisphere.**

Sea Ice Concentration (NIC, SH; bi-weekly charts)

Sea Ice Concentration (NIC, SH; bi-weekly charts)
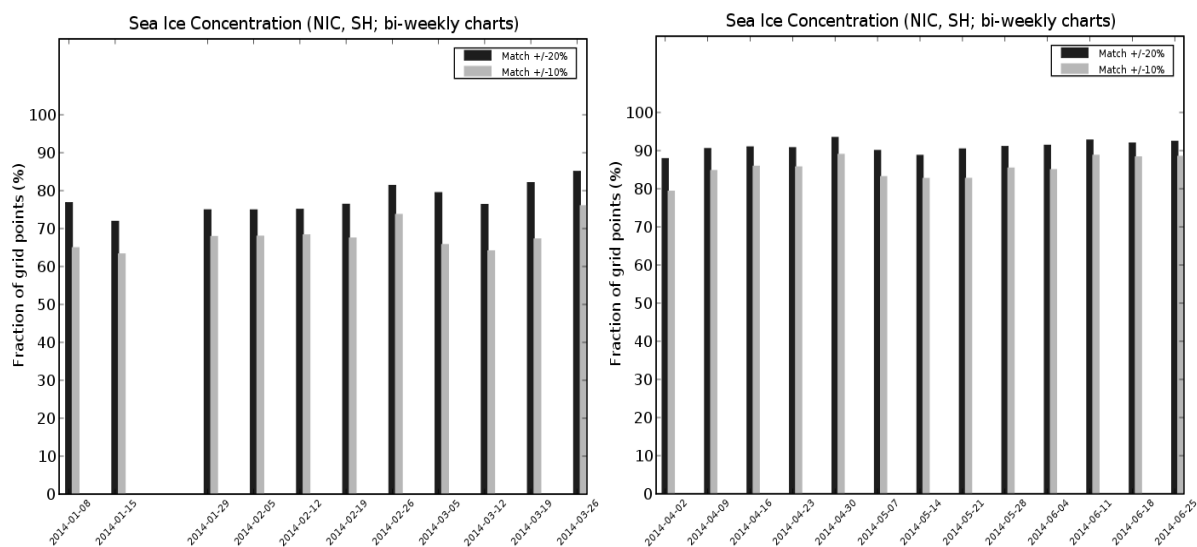
Figure 56 : **Comparison between ice concentrations from the biweekly NIC ice analysis and the OSI SAF concentration product. 'Match +/- 10%' corresponds to those grid points where concentrations are within the range of +/-10%, and likewise for +/-20%. Southern hemisphere.**
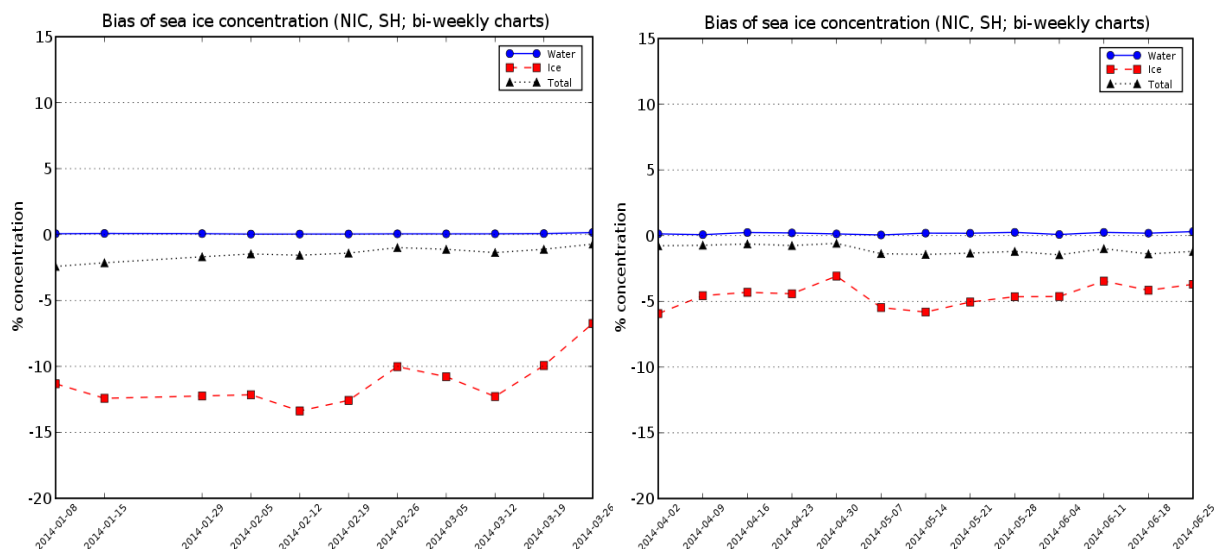
Figure 57 : **Difference between the ice concentrations from the biweekly NIC ice analysis and OSI SAF concentration product for three categories: water, ice and total. The total difference is the difference between the ice analysis and sea ice concentration product within the area covered by the ice analysis including both ice and water. When the difference is below zero, the OSI SAF sea ice concentration has a lower estimate than the ice analysis. Southern hemisphere.**
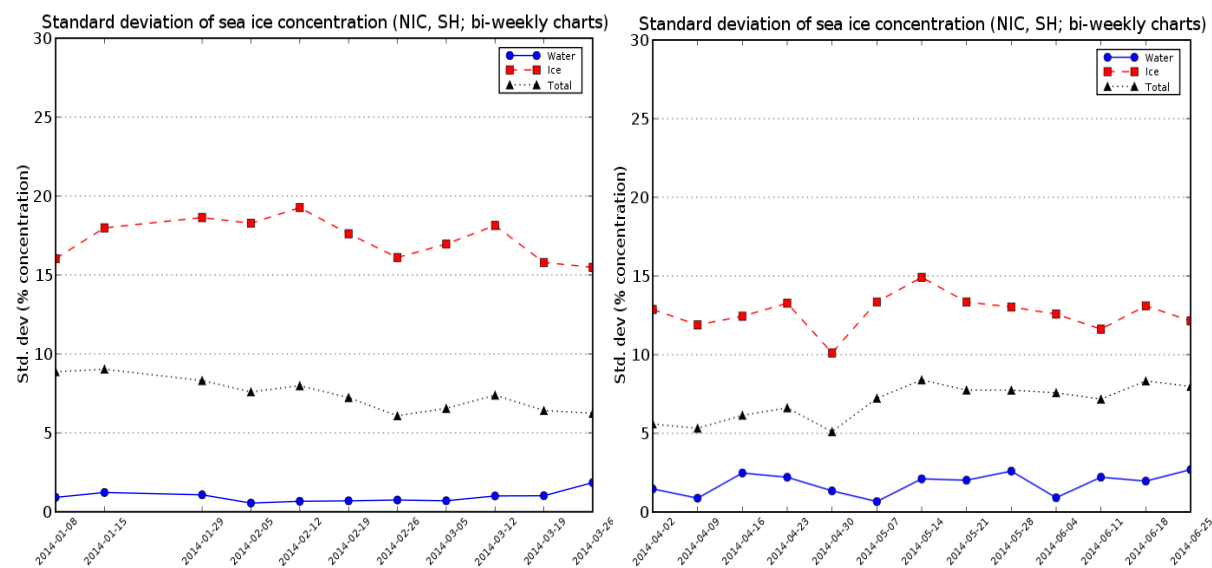
Figure 58 : **Standard deviation of the difference in ice concentrations from the biweekly NIC ice analysis and OSI SAF concentration product for three categories: water, ice and total. Southern hemisphere.**
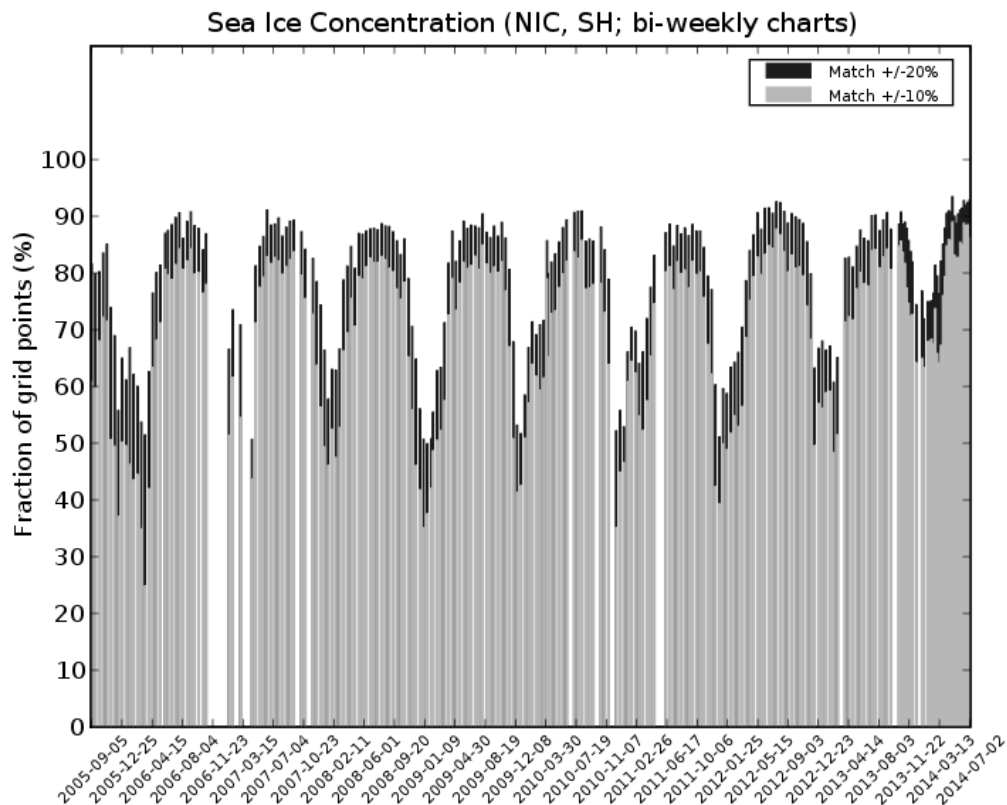
Figure 59 : Annual variability. Comparison between ice concentrations from the biweekly NIC ice analysis and the OSI SAF concentration product. 'Match +/- 10%' corresponds to those grid points where concentrations are within the range of +/- 10%, and likewise for +/-20%. Southern hemisphere.

| Year | Month | Concentration product | | | | |
		+/- 10%	+/- 20%	Bias	Stdev	Num obs
2013	JUL	63.27	73.66	-9.84	14.48	48465
2013	AUG	82.54	91.14	-2.91	10.23	68440
2013	SEPT	77.83	87.84	-3.72	11.77	56448
2013	OCT	85.27	94.08	-1.19	8.77	89485
2013	NOV	79.95	90.46	-3.89	10.57	118420
2013	DEC	76.42	90.03	-4.80	10.59	134500
2014	JAN	79.84	90.18	-0.12	11.63	111164
2014	FEB	80.12	89.60	-3.49	11.06	87794
2014	MAR	78.47	89.89	-3.95	11.13	108620
2014	APR	75.65	90.00	-4.87	10.83	151381
2014	MAY	69.96	84.77	-6.49	12.49	263397
2014	JUN	59.07	72.80	-6.34	16.92	164794

table 16 : Monthly validation results from comparing the OSI SAF sea ice concentration product to MET Norway ice service analysis for the Svalbard area. From July 2013 to June 2014.

Based on the quality flags in the sea ice products, monthly statistics for the confidence levels are derived for each product type. Explanation (see Product User Manual for more details): Code 1-5 is given as fraction of total processed data (code

5+4+3+2+1 = 100%). 'Unprocessed' is given as fraction of total data (total data = processed data + unprocessed data).

Year	Month	Code=5	code=4	code=3	code=2	code=1	Unprocessed
2014	JAN	86.18	12.67	1.12	0.03	0.00	55.93
2014	FEB	85.32	13.22	1.43	0.04	0.00	56.00
2014	MAR	85.02	13.44	1.50	0.04	0.00	55.98
2014	APR	85.18	13.37	1.41	0.04	0.00	55.88
2014	MAY	85.49	13.20	1.28	0.03	0.00	55.74
2014	JUN	86.12	12.66	1.19	0.03	0.00	55.35

table 17 : **Statistics for sea ice concentration confidence levels, code 0-5, Northern Hemisphere.**

Year	Month	Code=5	code=4	code=3	code=2	code=1	Unprocessed
2014	JAN	90.21	9.61	0.18	0.00	0.00	22.59
2014	FEB	91.96	7.85	0.19	0.01	0.00	22.59
2014	MAR	92.32	7.50	0.18	0.01	0.00	22.58
2014	APR	91.70	8.12	0.18	0.01	0.00	22.58
2014	MAY	90.08	9.63	0.28	0.01	0.00	22.68
2014	JUN	88.22	11.40	0.37	0.01	0.00	22.68

table 18 : **Statistics for sea ice concentration confidence levels, code 0-5, Southern Hemisphere.**

Comments:

Figure 54 and 58 provides the essential information on the compliance of the sea ice concentration product accuracy, showing the std.dev. of the difference in ice concentration between the OSI SAF product and the DMI ice analysis for NH and NIC ice analysis for SH, respectively. To fulfill the service specification of 10% yearly std.dev. for NH and 15% for the SH, the Total std.dev. (black curve) shall on average throughout the year be below 10% and 15%, respectively.

The validation of the sea ice concentration product against the MET Norway ice charts shows usual validation results, with increased uncertainty during the summer months. The yearly averaged standard deviation is a bit above the requirement of 10.0%. Since the validation data are only collected along the ice edge where the ice concentration is varying the most, we can expect that the standard deviation of ice concentration product in total is below the requirement.

Tables show that the quality of the OSI SAF ice concentration product is somewhat stable during the Arctic break-up season and decreasing during the Antarctic freeze-up season.

5.3.2 Validation results for the global sea ice edge product

The OSI SAF sea ice edge product is validated against navigational ice charts, as explained under the previous section on ice concentration.
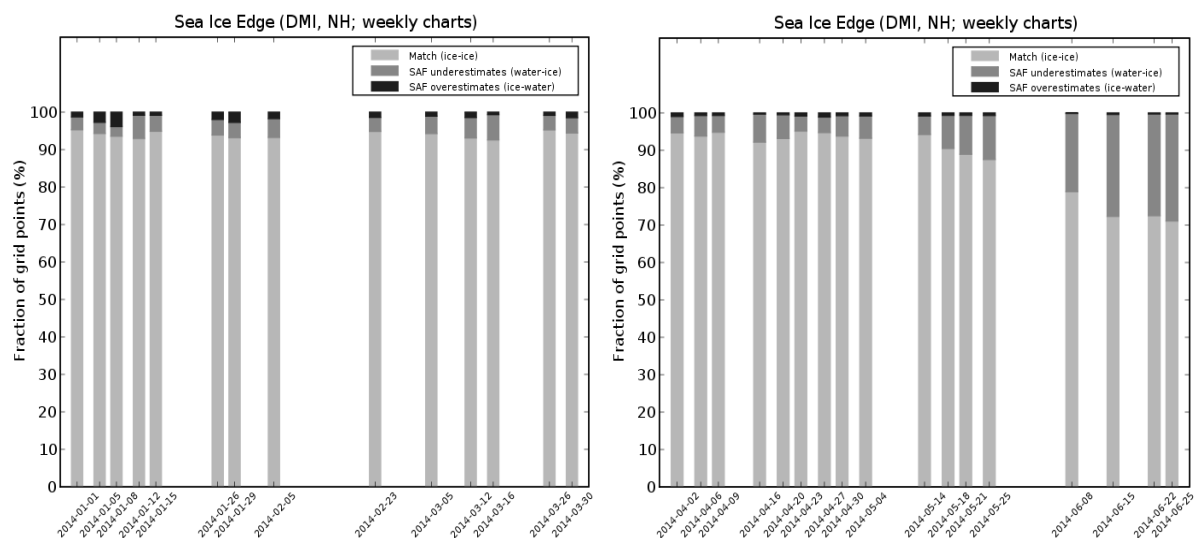
Figure 60 : **Comparison between the weekly DMI ice analysis and the OSI SAF sea ice edge product. Northern hemisphere. 'SAF water – DMI ice' means grid points where the OSI SAF product indicated water and the DMI ice analysis indicated ice and vice versa for the 'SAF ice – DMI water' category.**
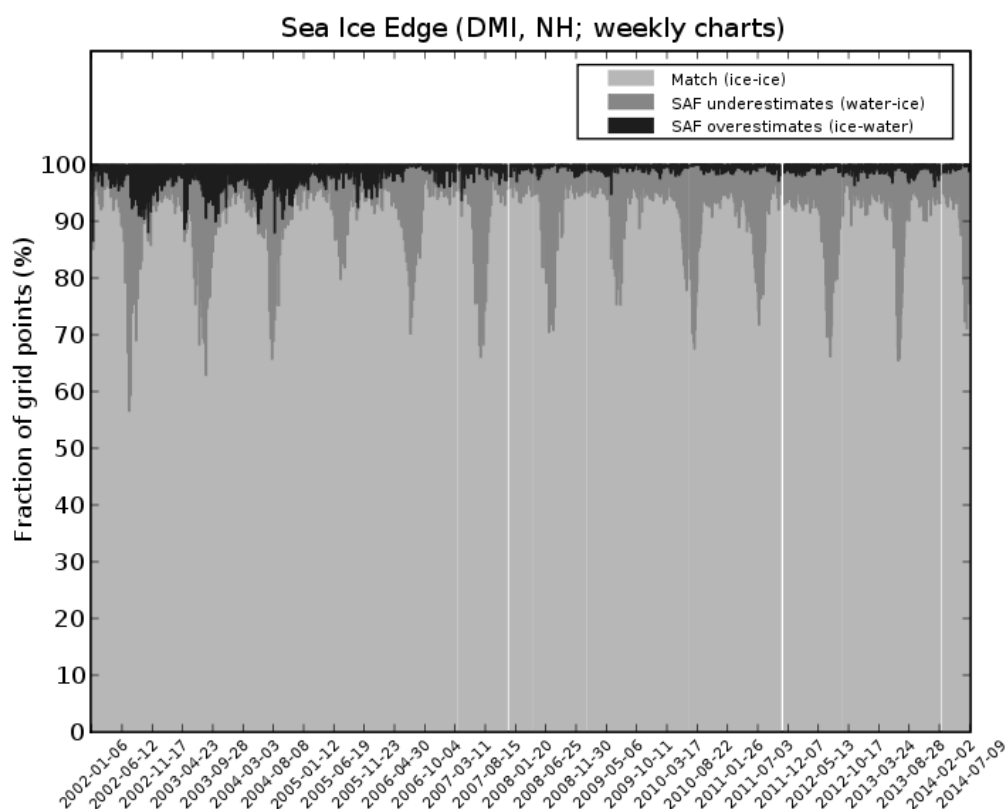
Figure 61 : Multiyear variability. Comparison between the weekly DMI ice analysis and the OSI SAF sea ice edge product. Northern hemisphere. 'SAF water – DMI ice' means grid points where the OSI SAF product indicated water and the DMI ice analysis indicated ice and vice versa for the 'SAF ice – DMI water' category.
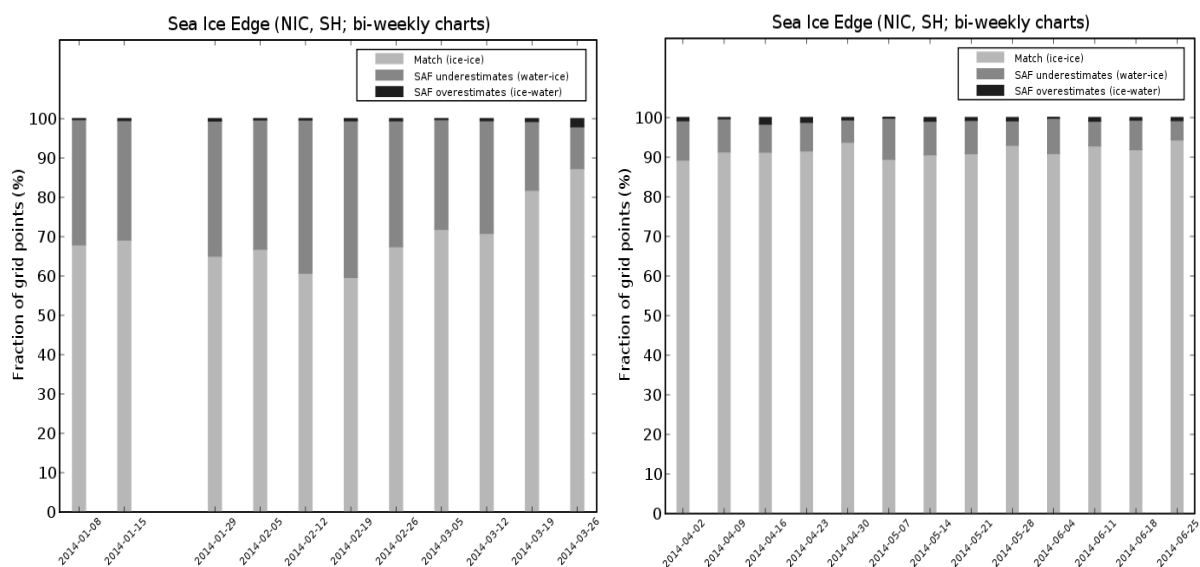
Figure 62 : Comparison between the biweekly NIC ice analysis and the OSI SAF sea ice edge product. Southern hemisphere. 'SAF water – NIC ice' means grid points where the OSI SAF product indicated water and the NIC ice analysis indicated ice and vice versa for the 'SAF ice – NIC water' category.

Sea Ice Edge (NIC, SH; bi-weekly charts)
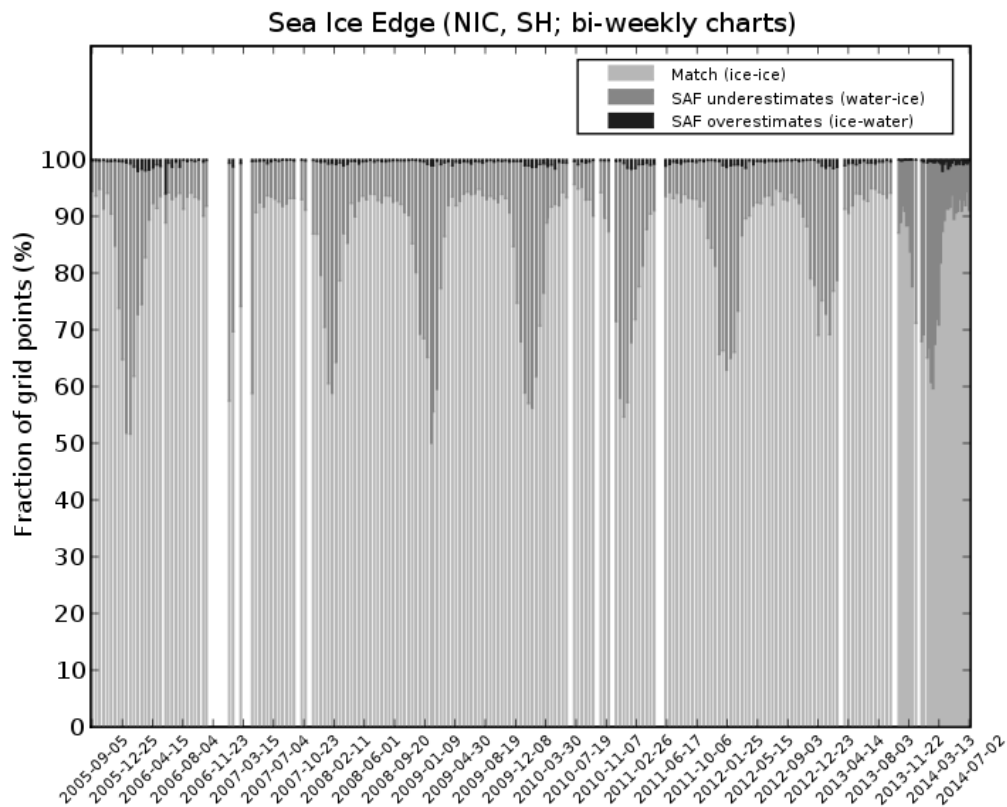
Figure 63 : **Annual variability. Comparison between the biweekly NIC ice analysis and the OSI SAF sea ice edge product. Southern hemisphere. 'SAF water – NIC ice' means grid points where the OSI SAF product indicated water and the NIC ice analysis indicated ice and vice versa for the 'SAF ice – NIC water' category.**

Comments:

		Edge product				
Year	Month	Correct (%)	SAF lower (%)	SAF higher (%)	Mean edge diff (km)	Num obs
2013	JUL	94.04	3.88	2.08	32.70	48549
2013	AUG	95.67	2.17	2.15	31.47	69264
2013	SEP	96.08	1.03	2.89	12.01	57017
2013	OCT	97.25	0.97	1.77	10.13	89760
2013	NOV	96.65	1.83	1.52	16.78	119293
2013	DEC	96.91	2.01	1.08	12.92	135342
2014	JAN	96.46	1.69	1.84	11.65	106268
2014	FEB	95.46	2.80	1.74	17.84	88132
2014	MAR	95.94	2.70	1.35	16.42	109652
2014	APR	97.21	1.87	0.92	14.47	153072
2014	MAY	96.23	2.73	1.04	23.22	267393
2014	JUN	93.70	5.16	1.15	31.03	152978

table 19 : **Monthly validation results from comparing OSI SAF sea ice products to MET Norway ice service analysis for the Svalbard area, from JANUARY 2014 to JUNE 2014 . Mean edge diff is the mean difference in distance between the ice edges in the OSI SAF edge product and MET Norway**

ice chart.

Year	Month	Code=5	code=4	code=3	code=2	code=1	Unprocessed
2014	JAN	93.79	1.42	2.49	1.80	0.50	55.38
2014	FEB	92.95	1.59	2.88	2.04	0.53	55.44
2014	MAR	92.25	1.76	3.09	2.28	0.62	55.42
2014	APR	92.35	1.74	3.03	2.26	0.62	55.33
2014	MAY	92.34	1.73	2.96	2.31	0.65	55.23
2014	JUN	91.94	1.82	2.99	2.49	0.75	54.88

table 20 : **1 Statistics for sea ice edge confidence levels,
code 0-5, Northern Hemisphere.**

Year	Month	Code=5	code=4	code=3	code=2	code=1	Unprocessed
2014	JAN	91.99	1.26	1.78	2.92	2.04	22.49
2014	FEB	93.73	0.94	1.39	2.29	1.65	22.50
2014	MAR	93.90	0.91	1.46	2.30	1.43	22.49
2014	APR	93.79	1.02	1.64	2.30	1.25	22.48
2014	MAY	93.41	1.15	1.95	2.35	1.13	22.59
2014	JUN	93.14	1.28	2.15	2.40	1.04	22.58

table 21 : **1 Statistics for sea ice edge confidence levels,
code 0-5, Southern Hemisphere.**

Comments:

The validation of the sea ice edge product against the MET Norway ice charts shows usual validation results, with increased uncertainty during the summer months. The yearly averaged mean edge difference is 19.2 km, which is below the requirement of 20.0km.

Tables show the normal seasonal pattern of decreasing quality of the OSI SAF ice edge product during the Arctic break-up season and an increase during the Antarctic freeze-up season.

5.3.3 Validation results for the global sea ice type product

The sea ice type validation is done as a monitoring of the monthly variation of the multi year area coverage, as presented in the table below.

Year	Month	Std dev wrt running mean	Mean MYI coverage
2013	Jul	NA	NA
2013	Aug	NA	NA
2013	Sep	NA	NA
2013	Oct	37348 km2	2973675 km2
2013	Nov	53669 km2	2888604 km2
2013	Dec	51471 km2	2532260 km2
2014	Jan	44409 km2	2559682 km2
2014	Feb	50960 km2	2536496 km2
2014	Mar	43454 km2	2307068 km2
2014	Apr	68011 km2	2427292 km2
2014	May	NA	NA
2014	Jun	NA	NA

table 22 : Monitoring of NH sea ice type quality by comparing the multi year coverage with the 11-days running mean.

Comments:

Due to the uncertainty in the sea ice type products during summer, the product is labelled unclassified from May to Sep, and hence there is no validation results during this period. The table above shows the NH sea ice type is within the requirement of 100,000 km2 std. dev. with regard to the 11-days running mean during the period the product is provided.

Year	Month	Code=5	code=4	code=3	code=2	code=1	Unprocessed
2014	JAN	89.76	1.71	7.35	1.04	0.14	55.38
2014	FEB	88.32	1.89	8.48	1.17	0.14	55.44
2014	MAR	88.33	1.65	8.79	1.07	0.15	55.42
2014	APR	88.60	1.61	8.54	1.10	0.15	55.33
2014	MAY	87.35	1.54	8.08	2.88	0.15	55.23
2014	JUN	85.89	1.35	7.21	5.35	0.20	54.88

table 23 : 1 Statistics for sea ice type confidence levels, code 0-5, Northern Hemisphere.

Year	Month	Code=5	code=4	code=3	code=2	code=1	Unprocessed
2014	JAN	87.94	0.38	10.97	0.37	0.34	22.49
2014	FEB	90.15	0.35	8.91	0.30	0.28	22.50
2014	MAR	90.42	0.32	8.73	0.27	0.25	22.49
2014	APR	88.94	0.31	10.28	0.26	0.22	22.48
2014	MAY	86.77	0.30	12.49	0.25	0.20	22.59

| 2014 | JUN | 84.25 | 0.29 | 15.01 | 0.26 | 0.18 | 22.58 |

**table 24 : 1 Statistics for sea ice type confidence levels,
code 0-5, Southern Hemisphere.**

Comments: Tables show that the quality of the OSI SAF ice type product is decreasing from March to June (the Arctic break-up season / Antarctic freeze-up season).

5.3.4   Validation of the low resolution sea ice drift product

Validation dataset

Validation is performed by collocation of the drift vectors with the trajectories of in situ drifters. Those drifting objects are generally buoys (e.g. the Ice Tethered Profilers) or ice camps (e.g. the Russian manned stations) that report their position at typically hourly intervals. Those trajectories are generally made available in near-real-time or at the end of the mission onto the ice. Position records are recorded either via the GPS (e.g. those of the ITPs) or the Argos Doppler-shift system (thos of the iABP). GPS positions are very precise (< 50 m) while those obtained by Argos have worse accuracy (approx. 350 m for 'high quality' records) and are thus not used in this report.

A nearest-neighbor approach is implemented for the collocation, and any collocation pair whose distance between the product and the buoy is larger than 30 km or the mismatch at start time of the drift is more than 3 hours is discarded. The duration of the drifts must also match within 1 hour.

Reported statistics

Because of a denser atmopshere and surface melting, the OSI-405 production is limited to the autumn-winter-spring period each year. No ice drift vectors are retrieved from 1st May to 30th September in the Arctic.

The Low Resolution Sea Ice Drift product comprises several single-sensor (e.g. SSM/I F15 or ASCAT Metop-A) and a merged (or multi-sensor) products that are all processed and distributed on a daily basis. The validation and monitoring results are thus presented for the multi-sensor product (multi-oi) and a selection of the single-sensor ones.

Validation statistics

In the following tables, validation statistics for the Northern Hemisphere (NH) products using multi-sensor (multi-oi) and SSM/I only (ssmi-f15) are reported upon. In those tables, X (Y) are the X and Y components of the drift vectors. b() is the bias and $\sigma()$ the standard deviation of the error $\varepsilon(X) = X_{prod} - X_{ref}$. Columns α, β and ρ are respectively the slope and intercept of the regression line between Prod and Ref data pairs and the Pearson correlation coefficient. N is the number of collocation data pairs.
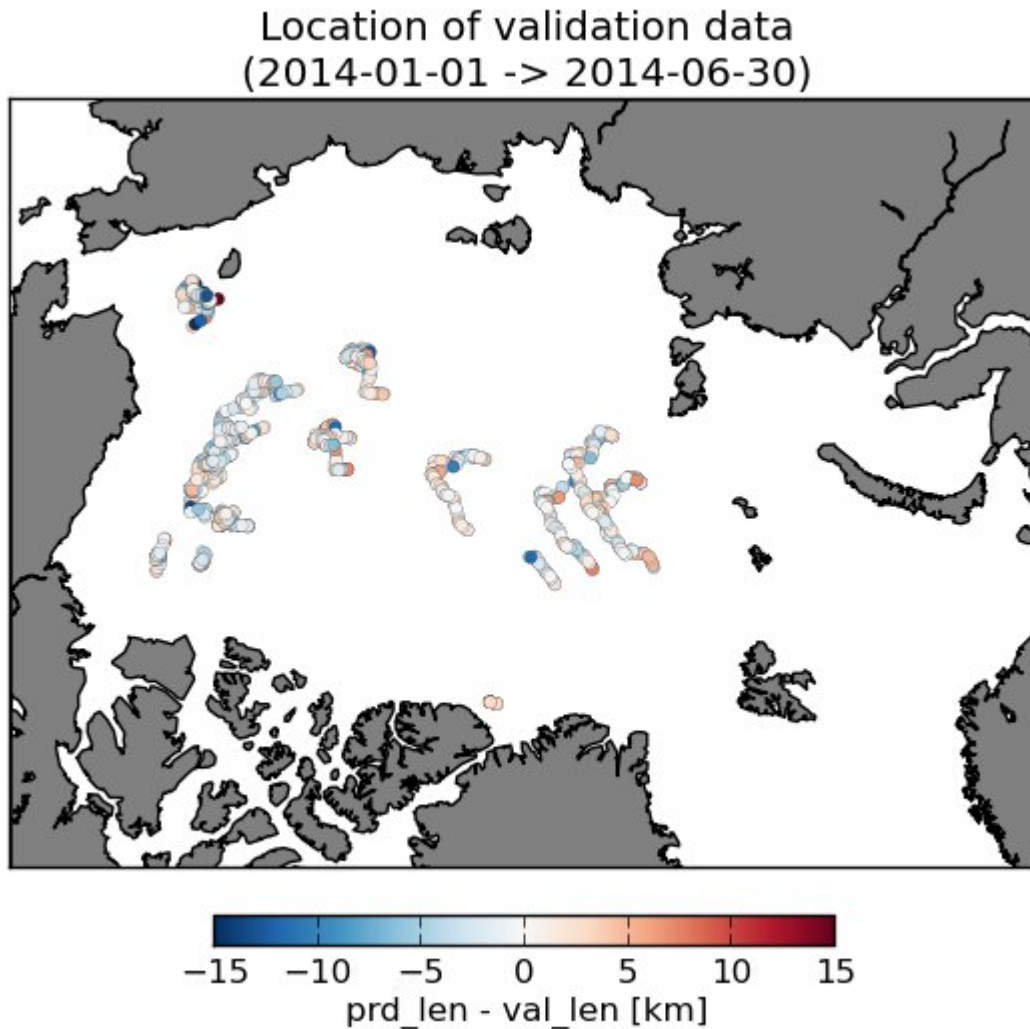
Figure 64 : **Location of GPS drifters for the validation period (OCT-DEC). The shade of each symbol represents the bias (prod-ref) in drift length (km over 2 days).**

Year	Month	b(X) [km]	b(Y) [km]	σ(X) [km]	σ(Y) [km]	α	β[km]	ρ	N
2013	JUL	--	--	--	--	--	--	--	0
2013	AUG	--	--	--	--	--	--	--	0
2013	SEP	--	--	--	--	--	--	--	0
2013	OCT	-0.548	-0.596	3.769	3.968	0.95	-0.295	0.96	450
2013	NOV	-0.113	-0.625	3.943	4.974	0.90	+0.237	0.95	424
2013	DEC	+0.265	-0.205	3.170	3.071	0.95	+0.025	0.97	335
2014	JAN	+0.555	+0.467	3.742	3.302	0.95	+3.338	0.96	288
2014	FEB	+0.048	-0.405	3.188	3.206	0.94	-0.214	0.97	279
2014	MAR	-0.065	-0.105	2.786	2.365	0.98	-0.050	0.97	356
2014	APR	-0.432	-0.211	3.365	3.074	0.97	-0.124	0.96	409
2014	MAY	-	-	-	-	-	-	-	0
2014	JUN	-	-	-	-	-	-	-	0

table 25 : **Validation results for the LRSID (multi-oi) product (NH) for JAN-JUN 2014.**

Year	Month	b(X) [km]	b(Y) [km]	σ(X) [km]	σ(Y) [km]	α	β[km]	ρ	N
2013	JUL	--	--	--	--	--	--	--	0
2013	AUG	--	--	--	--	--	--	--	0
2013	SEP	--	--	--	--	--	--	--	0
2013	OCT	-0.411	-0.522	4.437	4.203	0.97	-0.281	0.95	406
2013	NOV	-0.133	-0.107	4.161	3.690	0.95	+0.132	0.96	389
2013	DEC	+0.200	-0.077	2.976	3.398	0.96	+0.054	0.96	327
2014	JAN	+0.454	+0.200	4.248	3.828	0.94	+0.133	0.95	287
2014	FEB	+0.004	-0.320	4.293	3.815	0.94	-0.166	0.95	271
2014	MAR	+0.032	-0.228	3.332	2.821	0.99	-0.083	0.95	349
2014	APR	-0.417	-0.061	3.982	3.832	0.98	-0.164	0.94	361
2014	MAY	-	-	-	-	-	-	-	0
2014	JUN	-	-	-	-	-	-	-	0

table 26 : Validation results for the LRSID (ssmi-f17) product (NH) for JAN-JUN 2014.

Comments:

The monthly validation statistics are in line with those of previous periods, and meet the requirements.

5.4 Global Wind quality

The wind products are required to have an accuracy of better than 2.0 m/s in wind component RMS with a bias of less than 0.5 m/s in wind speed.

The scatterometer winds are monitored against forecast winds of the ECMWF global model. Forecasts of +3 to +15 hours are used and the model winds are interpolated with respect to time and location. The monitoring of relevant quality parameters as a function of time yields a sensitive method of detecting deviations of normal operation. However, one must be careful to regard the difference with reference background NWP model winds as the 'true' accuracy of the product, since both the NWP model winds and the scatterometer winds contain errors. Deviations in product quality usually appear as a step in one or more of the plots. See section 5.4.1 for the monthly averages.

The scatterometer winds are also compared to in situ equivalent neutral wind data from moored buoys, monthly averages are shown in section 5.4.2.

Seasonal weather variations imply differences in mean atmospheric stability, differences in dynamics, and differences in the distribution of wind speeds. These differences cause variations in the spatial representativeness errors associated with scatterometer wind validation and in the difference statistics. Such effects cause seasonal oscillations that appear mainly in the wind speed bias plots against both model winds and buoy winds. For more background information we refer to: Hans Hersbach (2010) *Comparison of C-band scatterometer CMOD5.N equivalent neutral winds with ECMWF*, J. Atmos. Oceanic Technol., **27**, 721–736.

We have studied the scatterometer wind speed bias against buoy winds for the tropics and the Northern Hemisphere mid latitudes separately. It appears that the

biases in the tropics are fairly constant throughout the year, whereas the wind speed biases in the NH are higher in the winter than in the summer. Hence the seasonal cycles are mainly caused by weather variations in the mid latitudes.

5.4.1 Comparison with ECMWF model wind data

The figure below shows the monthly results of October 2012 to June 2014. Note that the real model winds are converted to equivalent neutral winds by adding 0.2 m/s to the wind speed. In this way, a realistic comparison with the neutral scatterometer winds can be made.

It is clear from the plots in this section, that the products do meet the accuracy requirements from the User Requirements Document (bias less than 0.5 m/s and RMS accuracy better than 2 m/s) when they are compared to ECMWF forecast winds.
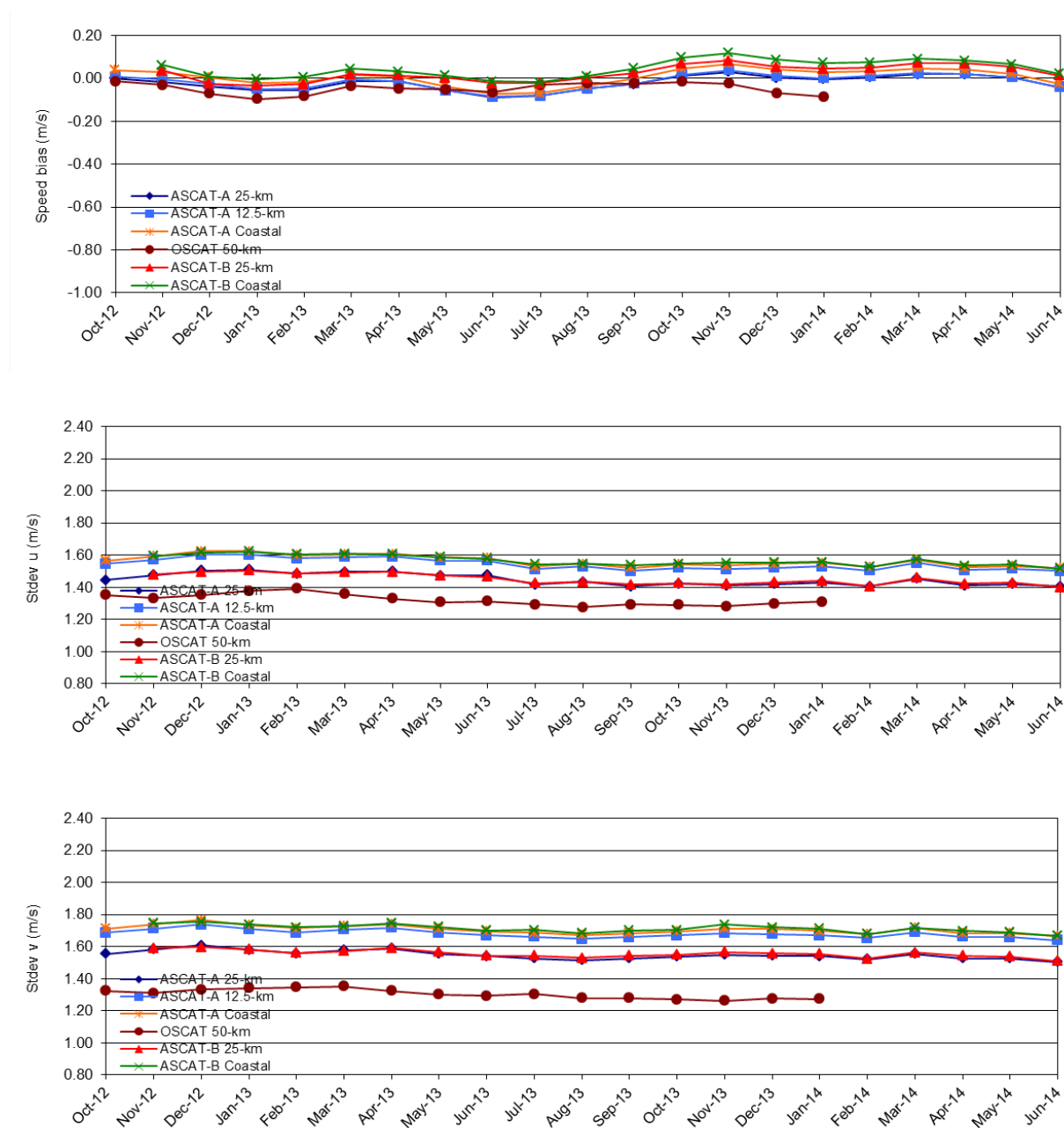
Figure 65 : Comparison of scatterometer winds against ECMWF NWP forecast winds (monthly averages). For each product, the wind speed bias (scatterometer minus ECMWF, top), wind *u* component standard deviation (middle) and wind *v* component standard deviation (bottom) are shown.

5.4.2 Buoy validations

We compare the scatterometer winds with wind data from moored buoys on a monthly basis. The buoy data of approximately 150 buoys spread over the oceans (most of them in the tropical oceans and near Europe and North America) are retrieved from the ECMWF MARS archive and collocated with scatterometer winds. The buoy winds are converted to 10-m neutral winds using the LKB model, see Liu, W.T., K.B. Katsaros, and J.A. Businger, *Bulk parameterization of air-sea exchanges of heat and water vapor including the molecular constraints in the interface*, J. Atmos. Sci., vol. 36, 1979.

The figure below shows the monthly results of November 2007 to June 2014.
Note that the ASCAT winds before 20 November 2008 are real winds rather than neutral winds. Neutral scatterometer winds are known to be 0.2 m/s higher than real scatterometer winds.

Note also that the statistics as shown for the different ASCAT products are not from a common set of buoy measurements. So the number of scat/buoy collocations differs per product, in some cases we do have an ASCAT coastal wind but no 12.5 km or 25 km wind due to (small) differences in quality control. This sampling issue gives rise to different bias and standard deviation scores in the plots below.

It is clear from the plots in this section, that the products do meet the accuracy requirements from the User Requirements Document (bias less than 0.5 m/s and RMS accuracy better than 2 m/s) when they are compared to buoy winds.
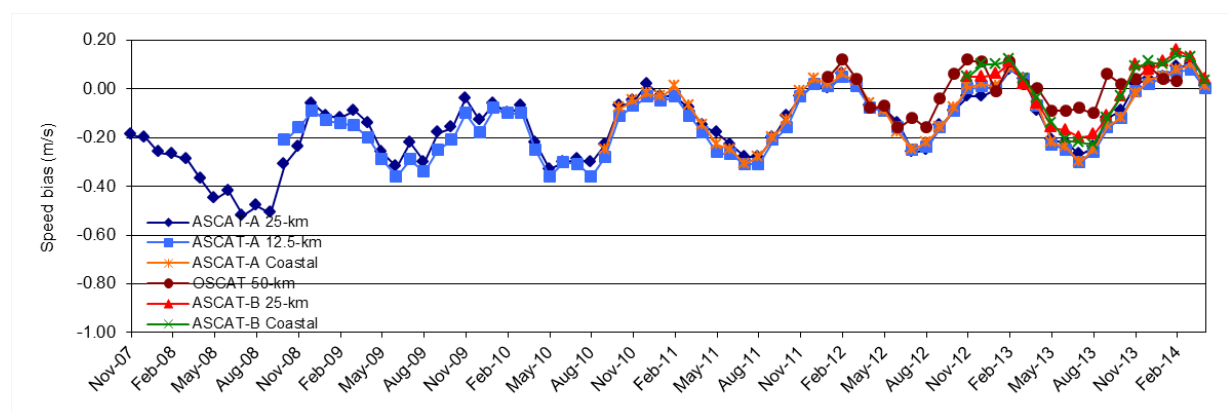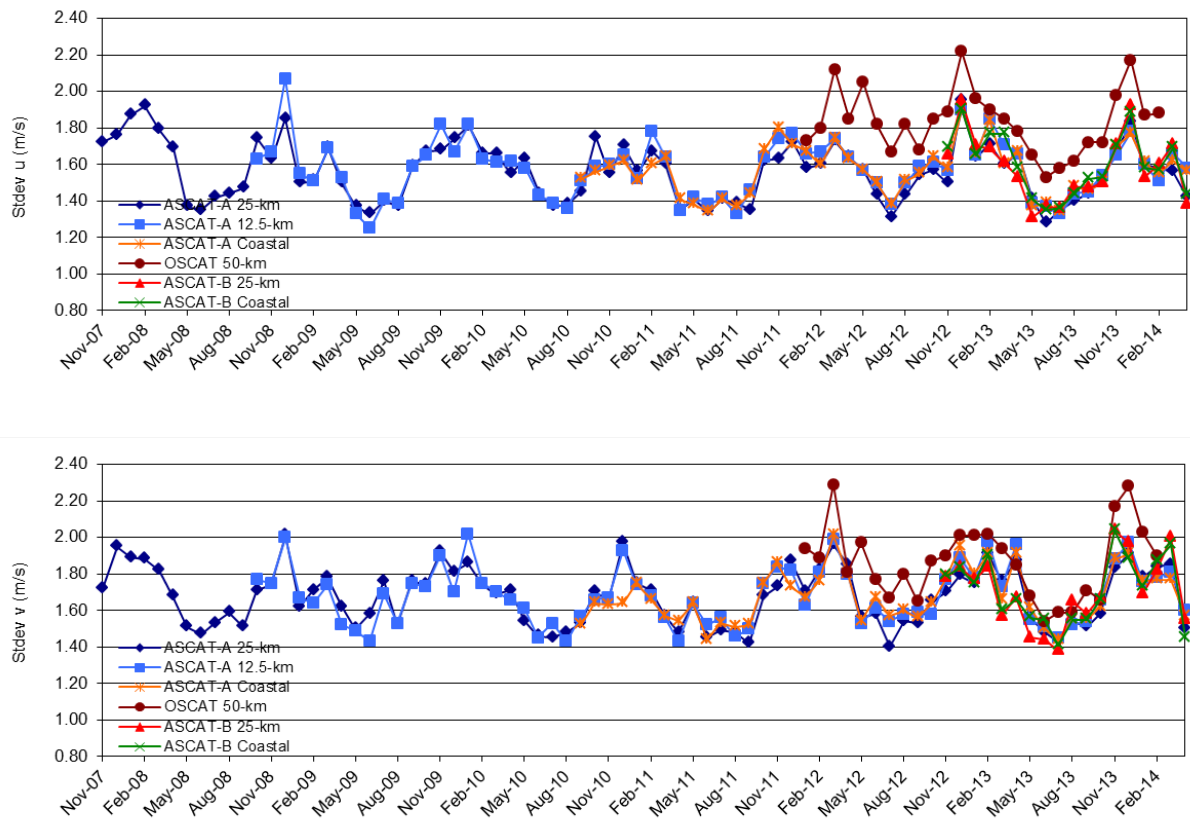
Figure 66 : Comparison of scatterometer winds against buoy winds (monthly averages). For each product, the wind speed bias (scatterometer minus buoy, top), wind *u* component standard deviation (middle) and wind *v* component standard deviation (bottom) are shown.

6   Service and Product usage

6.1 Statistics on the Web site and help desk

The OSI SAF offers to the users
- a central web site, www.osi-saf.org, managed by M-F/CMS,
- a web site for SS2, http://saf.met.no/, managed by MET Norway,
- a web site for SS3, http://www.knmi.nl/scatterometer/osisaf/, managed by KNMI.

Users are recommended to make requests preferably through the central Web site Help desk, with the guarantee that their demand will be acknowledged or answered quickly. However for requests concerning the HL or Wind products they may get access to direct contact points at MET Norway or KNMI.

6.1.1   Statistics on the central OSI SAF Web Site and help desk

6.1.1.1. Statistics on the registered users

Statistics on the central Web site use			
Month	Registered users	Sessions	User requests
January 2014	946	5310	3
February 2014	963	5291	5
March 2014	976	5350	2
April 2014	985	5040	2
May 2014	998	4440	0
June 2014	1010	5040	1

table 27 : **Statistics on central OSI SAF Web site use over 1st half of 2014.**

The following graph illustrates the evolution of external registered users on the central Web Site.
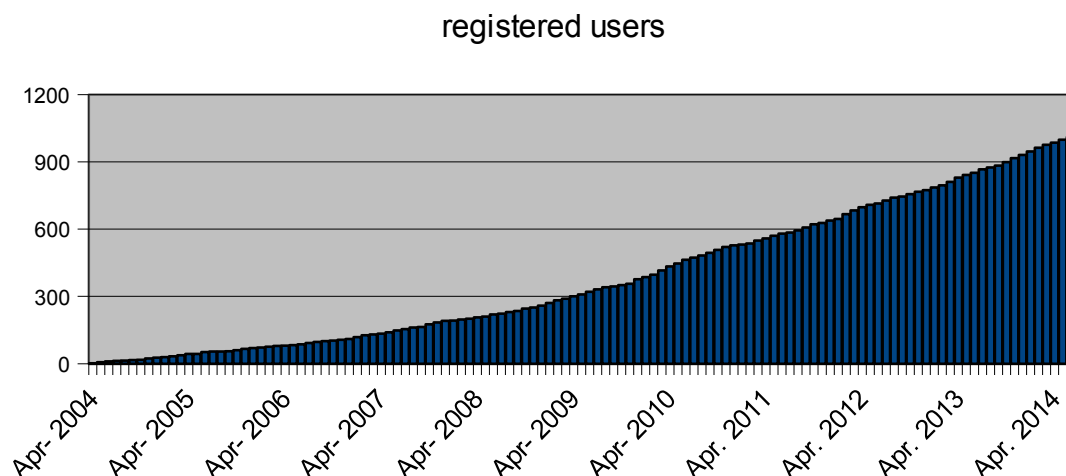
registered users

Figure 67 : **Evolution of external registered users on the central Web Site from April 2004 to June 2014.**

Comment :

The following table details the list of institutions or companies the registered users are from. Last registrations, made over the reporting period, are overlined in cyan blue..

Country	Institution, establishment or company	Acronym
Argentina	AgriSatelital	AgS
Australia	Bureau of Meteorology	BOM
Australia	Griffith University	Griff
Australia	James Cook University	University of Windsor
Australia	Tidetech LTD	Tidetech
Australia	University Of New South Wales	UNSW
Australia	eMarine Information Infrastructure (eMII), Integrated Marine Observing System (IMOS)	eMII
Belgium	Signal and Image Center	SIC
Belgium	Institut Royal Météorologique de Belgique	IRMB
Belgium	Université catholique de Louvain	UCL/TECLIM
Belgium	Université de Liège	UL
Brazil	Admiral Paulo Moreira Marine Research Institute	IEAPM
Brazil	Centro de Previsao de Tempo e Estudos Climáticos	CPTEC/INPE
Brazil	Fugro Brasil	FGB
Brazil	Instituto de Ciências Atmosféricas, Universidade Federal de Alagoas	UFAL/ICAT
Brazil	Instituto Nacional de Pesquisas Espaciais	INPE
Brazil	Universidade de Brasília - Instituto de Geociências	UNB-IG
Brazil	Universidade de São Paulo	USP
Brazil	Universidade Federal de Alagoas	UFAL
Brazil	Universitade Federal do Rio de Janeiro	LAMCE/COPPE/UFRJ
Brazil	Universidade Federal do Espírito Santo	UFES
Bulgaria	National Institute of Meteorology and Hydrology	NIMH
Canada	Canadian Ice Service	CIS
Canada	Canadian Meteorological Centre	CMC
Canada	Centre for Earth Observation Science	CEOS
Canada	Data Assimilation and Satellite Meteorology, Meteorological Research Branch Environment Canada	ARMA/MRB
Canada	Fisheries and Oceans Canada	DFO/IML/MPO
Canada	Institut National de la Recherche Scientifique	INRS
Canada	Institut de Recherche et de Développement en Agroenvironnement	IRDA
Canada	JASCO Research Ltd	JASCO
Canada	Memorial University of Newfoundland	MUN
Canada	University of Waterloo	UW
Canada	University of Windsor	UWD
Chile	Centro de Estudios Avanzados en Zonas Aridas	CEAZA
Chile	Centro i-mar, Universidad de Los Lagos	I-MAR
Chile	Universidad Catolica de la Santisima Concepcion	UCSC
Chile	Universidad de Chile	U Chile
China	anhuigongyedaxue	ahut
China	Chinese Academy of Meteorological Sciences	CAMS
China	China Meteorological Agency	CMA
China	Chinese Academy of Sciences	IOCAS
China	Dalian Maritime University	DMU
China	First Institute of Oceanography, State Oceanic Administration	FIO

China	Fujian Meteorological Observatory	MS
China	HK Observatory	HKO
China	Institute of Oceanology, Chinese Academy of Sciences	IOCAS
China	Institute of Remote Sensing Applications of Chinese Academy of Sciences	IRSA/CAS
China	Institute of Tropical and Marine Meteorology	ITMM
China	Nanjing University of Information Science and Technology	NUIST
China	National Marine and Environmental Forecasting Center	NMEFC
China	National Ocean Data Information Service	NODIS
China	National Ocean Technology Center	NOCT
China	National Satellite Meteorological Center	NSMC
China	National Satellite Ocean Application Service	NSOAS
China	Ocean Remote Sensing Institute	ORSI
China	Ocean University of China	OUC
China	Second Institute of Oceanography	SOI
China	Shandong Meteorology Bureau	SDMB
China	Shanghai Ocean University	SHOU
China	South China Sea Institute of Oceanology, Chinese Academy of Sciences	SCSIO, CAS
China	Sun Yat-Sen University	SYSU
China	Third Institute Oceanography	TIO/SOA
China	Tianjin University	TJU
China	Zhejiang Ocean University	ZOU
Croatia	Rudjer Boskovic Institute	IRB/ZIMO
Denmark	Aarhus University - Department of Bioscience	BIOS
Denmark	Danish Defense Acquisition and Logistics Organization	DALO
Denmark	Danish Meteorological Institute	DMI
Denmark	Royal Danish Administration of Navigation and Hydrography	RDANH
Denmark	Technical University of Denmark, Risø	DTU
Denmark	University of Copenhagen	UoC
El Savador	University of El Savador	UES
Estonia	Estonian Meteorological and Hydrological Institute	EMHI
Estonia	Tallinn University of Technology	TUT
Faroe Islands	Faroe Marine Research Institute	FAMRI
Finland	Finnish Institute of Marine Research	FIMR
Finland	Finnish Meteorological Institute	FMI
Finland	Valtion Teknillinen Tutkimuskeskus	VTT
France	ACRI-ST Brest	ACRI-ST
France	ACRI-ST sophia-antipolis	ACRI-ST
France	African Monitoring of the Environment for Sustainable Development	AMESD
France	Along-Track	Along-Track
France	Centre de Localisation Satellite	CLS
France	Centre de Soutien Météorologique aux Forces armées	CISMF
France	Centre National de la Recherche Scientifique	CNRS-LOB
France	Centre National de la Recherche Scientifique	CNRS/LOCEAN
France	Centre National d'Etudes Spatiales	CNES
France	CNRS Laboratoire d'Etudes en Géophysique et Océanographie Spatiales	LEGOS/CNRS
France	Creocean	Creocean
France	Ecole Nationale Supérieure des Mines de Paris	Mines Paris Tech
France	Ecole Nationale des Télécommunication de Bretagne	ENSTB
France	Ecole Nationale Supérieure des Techniques Avancées de Bretagne	ENSTA-Bretagne
France	Ecole Navale	ENGEP
France	Institut de Recherche pour le Développement	IRD
France	Institut Français de Recherché pour l'Exploitation de la MER	IFREMER
France	Institut National de la Recherche Agronomique	INRA

France	Institut National de l'Energie Solaire	INES
France	Institut Universitaire Européen de la Mer	IUEM
France	KiloWattsol	KiloWattsol
France	Laboratoire de Météorologie Dynamique	LMD
France	Laboratoire d'Océanographie et du Climat : Expérimentation et Approches Numériques	LOCEAN
France	Telespazio France	TelespazioFrance
France	Laboratoire de Physique des Océans, Université de Bretagne occidentale	LPO
France	Mercator Ocean	Mercator Ocean
France	Météo-Portugal	M-F
France	Météo-Portugal / Centre National de la Recherche Météorologique	M-F/CNRM
France	Museum National d'Histoire Naturelle de Paris	MNHN Paris
France	Observatoire français des Tornades et des Orages Violents	KERAUNOS
France	Service Hydrographique et Océanographique de la Marine	SHOM
France	Tecsol	TECSOL
France	TELECOM Bretagne	TB
France	Université de Bretagne Occidentale	UBO
France	Université de Corse, UMR SPE CNRS 6134	UC
Gambia	Water Resources Department	WRD
Germany	Alfred Wegener Institute for Polar and Marine Research	AWI
Germany	Bundesamt für Seeschifffahrt und Hydrographie	BSH
Germany	Bundesanstalt für Gewässerkunde	BFG
Germany	Center for Integrated Climate System Analysis and Prediction	CLISAP
Germany	Deutscher Wetterdienst	DWD
Germany	Deutsches Luft- und Raumfahrtzentrum	DLR
Germany	Deutsches Museum	DM
Germany	Drift and Noise Polar Services	DNPS
Germany	Energy & Meteo Systems GmbH.	EMSYS
Germany	EUMETSAT	EUMETSAT
Germany	EuroWind GmbH	EuroWind
Germany	FastOpt GmbH	FastOpt
Germany	Flottenkommando Abt GeoInfoD	Flottenkdo GeoInfoD
Germany	Freie Universität Berlin	FUB
Germany	German Aerospace Center	DLR
Germany	Institute of Physics – University of Oldenburg	Uni OL
Germany	Institute for Atmospheric and Environmental Sciences	IAU
Germany	Institute for Environmental Physics Uni. Heidelberg	IUP-HD
Germany	Institute for environmental physics, University of Bremen	IUP, Uni B
Germany	Leibniz Institut fur Meereswissenschaften	IFM-GEOMAR
Germany	Leibniz Institute for Baltic Sea Research Warnemünde	IOW
Germany	Max-Planck-Institute for Meteorology	MPI-M
Germany	O.A.Sys – Ocean Atmosphere Systems GmbH	OASYS
Germany	TU Dresden	TU DD
Germany	University of Hamburg	IFM/Hamburg
Greece	Hellenic National Meteorological Service	HNMS
Greece	National Observatory of Athens	NOA
Iceland	Icelandic Meteorological Office	IMO
Iceland	University of Iceland, Institute of Geosciences	UofI
India	ANDHRA UNIVERSITY	AU
India	Bharathiar University	BU
India	Centre for Mathematical Modelling and Computer Simulation	CSIR C-MMACS
India	CONSOLIDATED ENERGY CONSULTANTS LTD	CECL
India	Indian Institute of Space Science and Technology	IIST
India	Indian Institute of Technology Delhi	IITD

India	India Meteorological Department	IMD
India	Indian National Centre for Ocean Information	INCOIS
India	Indian Navy	IN
India	Indian Space Research Organization	ISRO
India	Ministry of Earth Sciences	MOES
India	Nansen Environmental Research Centre	NERCI
India	National Centre for Medium Range Weather Forecasting	NCMRWF
India	National Institute of Ocean Technology	NIOT
India	National Institute of Technology Karnataka	NITK
India	Naval Physical and Oceanographic Laboratory	NPOL
India	National Remote Sensing Centre	NRSC
India	Oceanic Sciences Divisions, MOG , Indian Space Applications Centre	ISRO
India	South Asia Strategic Forum	SASFOR
India	The Energy and Resources Institute	TERI
India	University of Pune	UP
Indonesia	Bureau of Meteorology, Climatology and Geophysic Region IV Makassar	BMCGR
Indonesia	Maxxima	AIS
Indonesia	Ministry of Marine Affairs and Fisheries	MMAF
Indonesia	Vertex	Mr
Israel	Bar Ilan University	BIU
Israel	Israel Meteorological Service	IMS
Israel	The Hebrew University	HUJI
Italy	Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile	ENEA
Italy	Centro Euro-Mediterraneo sui Cambiamenti Climatici	CEMCC
Italy	Centro Nazionale di Meteorologia e Climatologia Aeronautic	CNMCA
Italy	EC- Joint Research Centre	EC-JRC
Italy	Epson Meteo Center	EMC
Italy	ESA	ESA/ESRIN
Italy	Fondazione imc – onlus , International Marine Centre	IMC
Italy	Institute of Marine Science – CNR	ISMAR-CNR
Italy	Instituto di BioMeteorologia – Consiglio Nazionale delle Ricerche	IBIMET-CNR
Italy	Instituto Nazionale di Geofisica e Vulcanologia	INGV
Italy	Instituto Scienze dell'Atmosfera e del Clima – Consiglio Nazionale delle Ricerche	ISAC – CNR
Italy	Instituto Superiore per la Ricerca e la Protezione Ambientale	ISRPA
Italy	National Aquatic Resources Research and Development Agency	CITS
Italy	Italian Space Agency	ASI
Italy	NATO Undersea Research Centre	NURC
Italy	Ocean Project	ASD
Italy	Politecnico di Milano	PoliMi
Italy	Politecnico di Torino	DITIC POLITO
Italy	Universita degli Studi di Bari	USB
Italy	university of bologna	DISTA
Iran	Atmospheric Science and Meteorological Research Center	ASMERC
Japan	Center for Atmospheric and Oceanic Studies	CAOS
Japan	Hokkaido University	HU
Japan	Hydrospheric Atmospheric Research Center	HyARC
Japan	Japan Aerospace Exploration Agency	JAXA
Japan	Japan Agency for Marine-Earth Science and Technology	JAMSTEC
Japan	Japan Meteorological Agency	JMA
Japan	Meteorological Research Institute	MRI
Japan	Tokai University	Tokai U
Japan	Weathernews	WNI
Kenya	Jomo Kenyatta University of Agriculture and Technology	JKUAT

Latvia	Latvian Environment, Geology and Meteorology Centre	LEGMC
Lithuania	Institute of Aerial Geodesy	AGI
Lithuania	Lithuanian Hydrometeorological Service	LHMS
Lithuania	University of Vilnius	VU
Malaysia	Malaysian Remote Sensing Agency	MRSA
Marocco	University Ibn Tofail	UIT
Mauritius	Mauritius Oceanography Institute	MOI
Mexico	Facultad de Ciencias Marinas, Universidad Autónoma de Baja California	FCM/UABC
Mexico	Instituto Oceanografico del Pacifico	IOP
Mexico	Universidad de Colima	UCOL
Netherlands	Bureau Waardenburg bv	BuWa
Netherlands	Delft University of Technology	TU Delft
Netherlands	Deltares	Deltares
Netherlands	Meteo Consult on behalf of MeteoGroup Ltd.	Meteo Consult
Netherlands	National Aerospace Laboratory	NLR
Netherlands	Nidera	Nidera
Netherlands	Rijksinstituut voor Kust en Zee	RIKZ
Netherlands	Royal Netherlands Meteorological Institute	KNMI
Netherlands	WaterInsight	WaterInsight
New Zealand	Meteorological Service of New Zealand	MetService
New Zealand	University of Canterbury	UC
Niger	African Centre of Meteorological Applications for Development	ACMAD
Nigeria	African Centre of Meteorological Applications for Development	ACMAD
Norway	Institute of Marine Research	IMR
Norway	MyOcean SIW TAC	MyOcean SIW TAC
Norway	Nansen Environmental and Remote Sensing Center	NERSC
Norway	Norge Handelshoyskole	NHH
Norway	Norsk Polarinstitutt	NP
Norway	Norwegian Defense Research Establishment	FFI
Norway	Norwegian Meteorological Institute	Met.no
Norway	StormGeo AS	StormGeo
Norway	The University Centre in Svalbard	UNIS
Norway	University of Bergen	UiB
Norway	Uni Research AS	URAS
Peru	Instituto del Mar del Peru	IMARPE
Peru	Servicio Nacional de Meteorologia e Hidrologia	SENAMHI
Peru	Universidad Nacional Mayor de San Marcos	UNMSM
Philippines	Marine Science Institute, University of the Philippines	UP-MSI
Poland	Institute of Geophysics, University of Warsaw	IGF UW
Poland	Institute of Meteorology and Water Management	IMWM
Poland	Maritime Academy Gdynia	AM/KN
Poland	Media Fm	Media Fm
Poland	PRH BOBREK	Korn
Poland	University of Gdansk, Institute of Oceanography	UG/IO
Portugal	Centro de Estudos do Ambiente e do Mar – Univ Aveiro	CESAM
Portugal	Instituto de Investigação das Pescas e do Mar	IPIMAR
Portugal	Instituto de Meteorologia	IM
Portugal	Instituto Politécnico de Viana do Castelo	IPVC
Portugal	Laboratório Nacional de Energia e Geologia	LNEG
Portugal	Museu Nacional de Historia Natural	MNHN
Portugal	National Remote Sensing Centre	NRSC
Portugal	Universidade de Lisboa	CGUL
Portugal	Universitade dos Acores	UAC

Romania	Mircea cel Batran Naval Academy	MBNA
Romania	National Meteorological Administration	NMA
Romania	University of Bucharest	UB
Russia	V.I.Il`ichev Pacific Oceanological Institute	VIIPOI
Russia	Atlantic Research institute of Marine fisheries and oceanography	AtlantNIRO
Russia	Femco-West Ltd brach in Murmansk	FEMCO WEST
Russia	Geophysical Center of Russian Academy of Sciences	GC RAS
Russia	Institute of Ecology and Evolution, Russian Academy of Sciences	IEE RAS
Russia	Russia HycroMetCenter	RHMC
Russia	Kaliningrad State Technical University	KLGTU – KSTU
Russia	Murmansk Marine Biological Institute	MMBI
Russia	Nansen International Environmental and Remote Sensing Center	NIERSC
Russia	Russia State Hydrometeorological University	RSHU
Russia	Shirshov Institute of Oceanology RAS	SIO RAS
Russia	SRC PLANETA Roshydromet	PLANETA
Russia	State research Center Planeta	SRC
Russia	V.I.Il`ichev Pacific Oceanological Institute	POI FEB RAS
Scotland	University of Edinburgh	Edin-Univ
Senegal	Centre de Recherches Océanographiques de Dakar-Thiaroye	CRODT
Senegal	Ecole Supérieure Polytechnique de Dakar	ESP/UCAD
Singapore	Terra Weather Pte. Ltd.	TERRAWX
Singapore	Nanyang Technological University	NG
Slovenia	Slovenian Environment Agency	SEA
South Africa	Kaytad Fishing Company	KFC
South Africa	Marine and Coastal Management	MCM
South Africa	South African Weather Service-Cape Town Regional Office	SAWS
South Korea	Korea Meteorological Administration	KMA
South Korea	Korea Ocean Research and Development Institute	KORDI
South Korea	Korea Ocean Satellite Center	KOSC
South Korea	Jeju National University	JNU
South Korea	PKNU	MF
Spain	Basque Meteorology Agency	EUSKALMET
Spain	Fundacion Centro de Estudios Ambientales del Mediterraneo	CEAM
Spain	Isocero.com	ISOCERO
Spain	Instituto Català de Ciències del Clima	IC3
Spain	Instituto de Ciències del Mar	ICM
Spain	Instituto d'Estudis Espacials de Catalunya	IEEC
Spain	Instituto Canario de Ciencias Marinas	ICCM
Spain	Instituto de Hidráulica Ambiental de Cantabria – Universidad de Cantabria	IH
Spain	Instituto Español de Oceanografia	IEO
Spain	Instituto Mediterraneo de Estudios Avanzados	IMEDEA (CSIC-UIB)
Spain	Instituto Nacional de Meteorologia	INM
Spain	Instituto Nacional de Pesquisas Espaciais	INPE
Spain	Instituto Nacional de Tecnica Aeroespacial	INTA
Spain	MeteoGalicia – Departamento de Climatología y Observación	Meteogalicia
Spain	MINISTERIO DEFENSA – ARMADA ESPAÑOLA	MDEF/ESP NAVY – IHM
Spain	Mediterranean Institute for Advanced Studies	IMEDEA
Spain	Museo Nacional de Ciencias Naturales – Consejo Superior de Investigaciones Cientificas	MNCN-CSIC
Spain	Starlab Barcelona sl.	STARLAB BA
Spain	Universidad Autonoma de Madrid	UAM
Spain	Universidad de Las Palmas de Gran Canaria	ULPGC
Spain	Universidad de Oviedo	UdO
Spain	Universidad Politécnica de Madrid	UPM

Spain	Universidad de Valencia	UV
Spain	Universidad de Valladolid	LATUV
Spain	University of Jaén	UJA
Spain	University of Vigo	CACTI
Spain	Vortex	VORTEX
Sri Lanka	Department of Meteorology	DOM
Sri Lanka	National Aquatic Resources Research and Development Agency	NARA
Sweden	Chalmers University of Technology	CHALMERS
Sweden	Department of Earth Science, Uppsala University	DES-UU
Sweden	Stockholm University	SU
Sweden	Swedish Meteorological and Hydrological Institute	SMHI
Switzerland	Tecnavia S.A.	Tecnavia S.A.
Switzerland	World Meteorological Organization	WMO
Taiwan	Taiwan Ocean Research Institute	TORI
Taiwan	Fisheries Research Institute	FRI
Taiwan	Institute of Amos Physics, NCU ,Taiwan	ATM/NCU
Taiwan	National Central University	NCU/TAIWAN
Taiwan	Taiwan Ocean Research Institute	TORI
Taiwan	Taiwan Typhoon and Flood Research Institute	TTFRI
Turkey	Istanbul Technical University	YE
Turkey	Türkish State Meteorological Services	TSMS
Ukraine	Marine Hydrophysical Institute	MHI
Ukraine	World Data Center for Geoinformatics and Sustainable Development	WDCGSD
United Kingdom	Asgard Consulting Limited	Asgard
United Kingdom	Department of Zoology, University of Oxford	UOO
United Kingdom	ECMWF	ECMWF
United Kingdom	ExactEarth Europe Ltd	EEE
United Kingdom	Exprodat	Exprodat
United Kingdom	Flag Officer Sea Training - Hydrography and Meteorology	FOST HM
United Kingdom	Flasse Consulting Ltd	FCL
United Kingdom	GL Noble Denton	GLND
United Kingdom	Imperial College of London	ICL
United Kingdom	National Oceanography Centre, Southampton	NOCS
United Kingdom	National Renewable Energy Centre	NAREC
United Kingdom	Plymouth Marine Laboratory	PML
United Kingdom	Terradat	TDAT
United Kingdom	Telespazio VEGA	VEGA
United Kingdom	The Scottish Association for Marine Science	SAMS
United Kingdom	UK Met Office	UKMO
United Kingdom	University of Bristol	UoB
United Kingdom	University of East Anglia	UEA
United Kingdom	University of Edinburgh	Edin-Univ
United Kingdom	University of Gloucestershire	Uglos
United Kingdom	University of Leicester	UoL
United Kingdom	University of Plymouth	UOP
United Kingdom	University of Southampton	UoS
United Kingdom	Weatherquest Ltd	Weatherquest
Uruguay	DIRECCIÃ"N NACIONAL DE RECURSOS ACUÃTICOS	DNRA
USA	Alaska Department Of Fish and Game	ADFG
USA	Applied Weather Technology	AWT
USA	Atmospheric and Environmental Research	AER
USA	AWS Truepower	AWS
USA	Berkeley Earth Surface Temperature	BEST

USA	Center for Ocean-Atmosphere Prediction Studies	COAPS
USA	Clemson University	CU
USA	Colombia University	CU
USA	Colorado State University	CSU
USA	Cooperative Institute for Meteorological Studies	CIMSS
USA	Cooperative Institute for Research Environmental Sciences	CIRES
USA	Darmouth College	Dartmouth College
USA	Dept. of Environmental Conservation , Skagit Valley College	SVC
USA	Earth & Space Research	ESR
USA	Haskell Indian Nations University	INU
USA	International Pacific Research Institute - Univ. of Hawaii	IPRC
USA	Jet Propulsion Laboratory	JPL
USA	The John Hopkins University / Applied Physics Laboratory	JHU/APL
USA	Joint Typhoon Warning Center	JTWC
USA	Leidos	LEIDOS
USA	Locheed martin Corporation	LMCO
USA	NASA Langley Research Center, Affiliation Analytical Services and Materials, Inc.	NASA LaRC
USA	National Oceanic and Atmospheric Administration	NOAA/NESDIS
USA	National Oceanic and Atmospheric Administration	NOAA/NCDC
USA	National Oceanic and Atmospheric Administration	NOAA/NWS
USA	Naval Postgraduate School	NPS
USA	Roffer's Ocean Fishing Forecasting Service	ROFFS
USA	Scripps Institution of Oceanography	SIO
USA	Stanford Research Institute International	SRI
USA	Starpath School of Navigation	Starpath
USA	Texas A&M University	TAMU
USA	Texas Commission on Environmental Quality	TCEQ
USA	Tuskegee University	TU
USA	United States Navy	USN
USA	University at Albany-SUNY	UAlbany
USA	University of Maryland	UMCP
USA	University of Miami	RSMAS MPO
USA	University of South Carolina	USC
USA	University of South Florida	USF
USA	University of Washington	UW
USA	Vanderbilt University	VU
USA	Weather Routing Inc.	WRI
USA	Woods Hole Oceanographic Institution	WHOI
Venezuela	Escuela de Ingeniería Eléctrica Universidad	EIEU
Vietnam	Vietnam National Center for Hydro-Meteorological Forecast	NCHMF

table 28 : **List of Institutes registered on the central Web Site**

Moreover 18 new individual users, i.e. persons independent from any institute, establishment or company, registered on the period.

6.1.1.2. Statistics on the use of the OSI SAF central Web site.

The following graph illustrates the evolution of sessions on the OSI SAF central Web Site.
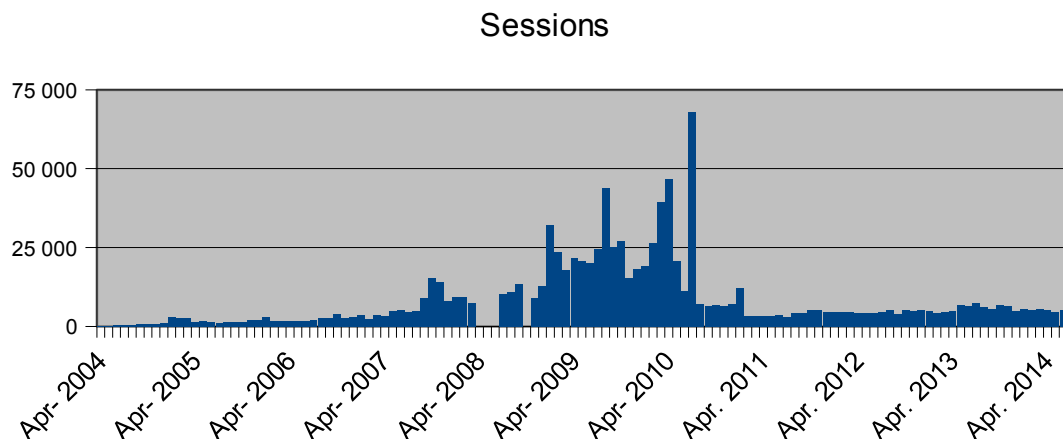
Sessions

Figure 68 : Evolution of sessions on the central OSI SAF Web Site from April 2004 to June 2014.

	Pages	Hits	Bandwidth
France	16985	18437	135.21 MB
Unknown	7333	9538	21.90 MB
Network	3039	4060	27.16 MB
Germany	2031	2667	1.41 MB
Commercial	1454	1716	2.34 MB
International	1039	1430	682.72 KB
Netherlands	644	779	4.39 MB
Belgium	642	945	630.42 KB
Canada	567	788	355.91 KB
Sweden	550	704	286.09 KB
Others		8105	31.45 MB
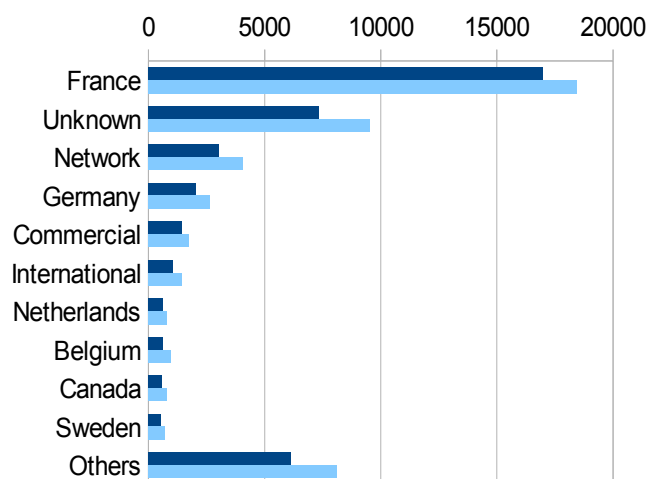
Figure 69 : Usage of the OSI SAF central Web Site by country in JANUARY 2014.

	Pages	Hits	Bandwidth
France	15584	16924	130.53 MB
Unknown	9672	11821	35.35 MB
Network	3882	5034	12.13 MB
Commercial	1955	2261	3.79 MB
Netherlands	1583	1844	4.66 MB
Germany	992	1315	649.31 KB
Greece	844	1026	1.70 MB
Oman	836	907	752.89 KB
Sweden	816	1100	457.26 KB
International	756	1048	443.18 KB
Others	9023	11374	15.93 MB
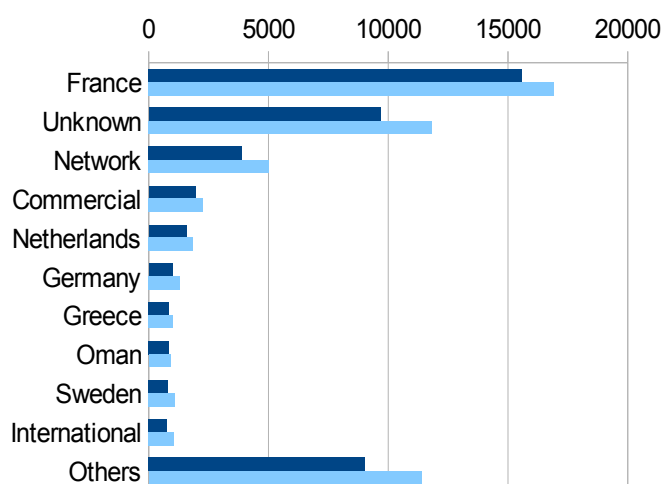
Figure 70 : Usage of the OSI SAF central Web Site by country in FEBRUARY 2014.

	Pages	Hits	Bandwidth
France	15946	17607	144.56 MB
Unknown	9159	11055	24.58 MB
Network	2620	3480	4.55 MB
Commercial	2191	2514	4.08 MB
Croatia	1453	1865	870.52 KB
Germany	1239	1690	935.03 KB
International	1115	1532	782.33 KB
Netherlands	949	1137	4.90 MB
Spain	836	961	603.18 KB
Italy	778	931	552.20 KB
Others	7959	10182	9.66 MB
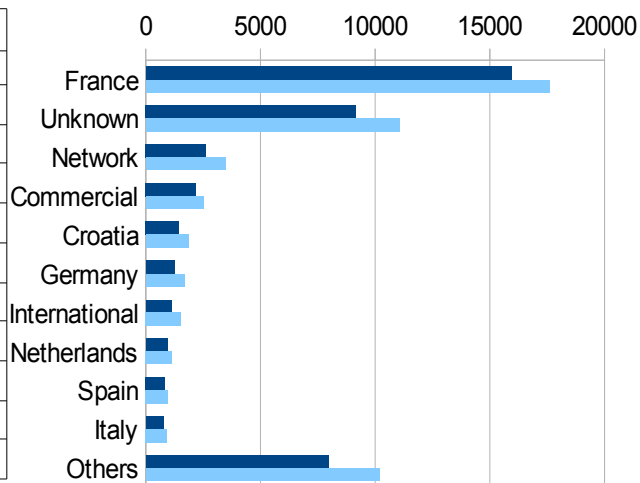
Figure 71 : Usage of the OSI SAF central Web Site by country in MARCH 2014.

	Pages	Hits	Bandwidth
France	19534	20912	141.43 MB
Unknown	9723	11749	19.53 MB
Commercial	2430	2754	16.48 MB
Network	1692	2257	17.93 MB
International	1427	1853	834.38 KB
Germany	1345	1754	933.97 KB
Japan	1254	1368	777.39 KB
Croatia	1248	1709	672.93 KB
Netherlands	887	1055	4.75 MB
Sweden	823	1001	551.37 KB
Others	5850	7449	13.64 MB
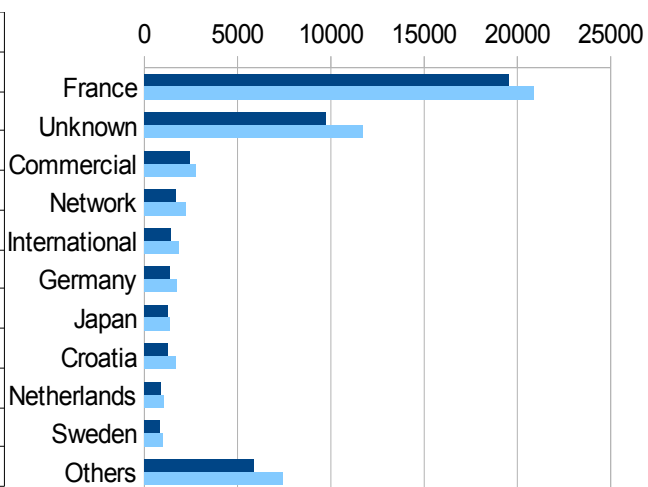
Figure 72 : Usage of the OSI SAF central Web Site by country in APRIL 2014.

	Pages	Hits	Bandwidth
France	21540	23033	177.07 MB
Unknown	6339	7812	37.28 MB
Network	2253	2960	3.34 MB
Denmark	1887	2168	1.04 MB
Germany	1499	2057	1.31 MB
Commercial	1472	1776	2.61 MB
Sweden	1382	1783	896.32 KB
Greece	1310	1536	1.90 MB
International	1003	1167	620.71 KB
Japan	909	1066	610.77 KB
Others	7832	10029	17.15 MB
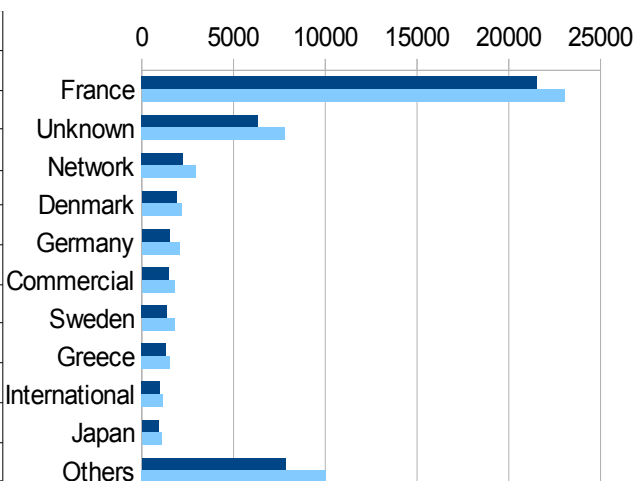
Figure 73 : Usage of the OSI SAF central Web Site by country in MAY 2014.

	Pages	Hits	Bandwidth
France	20110	21716	113.16 MB
Unknown	7181	9347	51.86 MB
Network	2807	3466	4.62 MB
Commercial	2002	2463	4.87 MB
Germany	1769	2518	1.20 MB
International	1375	1801	809.89 KB
Sweden	1172	1348	558.39 KB
Denmark	1070	1259	4.10 MB
Japan	656	736	511.96 KB
Belgium	602	829	422.10 KB
Others	7041	8947	25.11 MB
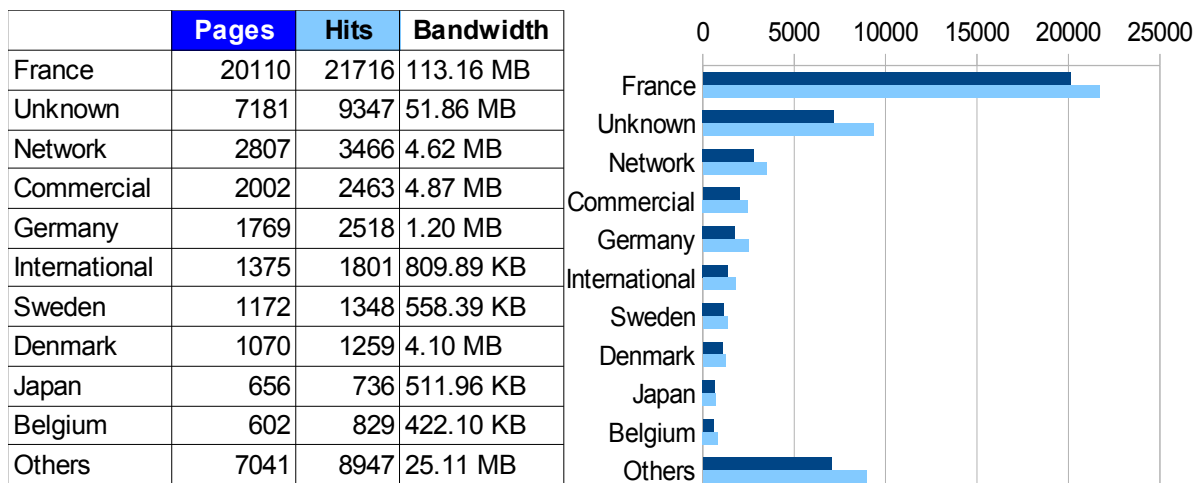
Figure 74 : Usage of the OSI SAF central Web Site by country in JUNE 2014.

6.1.1.3. Status of User requests made via the OSI SAF and EUMETSAT Help desks

Following table provides the status of requests made on the OSI SAF central Help Desk.

reference	Date	subject	status
140001	28/01/2014	Information Request about soil moisture	Closed
140002	30/01/2014	SSI data for Australia and Eastern Asia	Closed
140003	31/01/2014	Missing data SST L3C seviri on IFREMER server	Closed
140004	12/02/2014	Missing data NRT SST SEVIRI/MSG hourly files on IFREMER server	Closed
140005	12/02/2014	Missing data NRT SST SEVIRI/MSG hourly files on IFREMER server	Closed
140006	14/02/2014	Request for access to wind products	Closed
140007	19/02/2014	Information request about Quality Control Flags on ASCAT-A 25-km product	Closed
140008	19/02/2014	Information request about Quality Control Flags on ASCAT-A 25-km product	Closed
140009	03/03/2014	Information request about GOES-E SSI	Closed
140010	04/03/2014	Request for access to wind, SST and fluxes products	Closed
140011	07/04/2014	Information request about Ice Concentration range	Closed
140012	09/04/2014	Request for access to Eumetsat Data Centre	Closed
140013	04/06/2014	Missing data : sea ice concentration for 1st of June	Closed

table 29 : Status of User requests on central OSI SAF Help Desk.

Following table provides the status of requests forwarded from EUMETSAT Help Desk.

reference	Date	subject	status
300025958	30/05/2014	Time variable in surface solar irradiance netcdf	Closed

table 30 : Status of requests from EUMETSAT Help Desk.

6.1.2   Statistics on the OSI SAF Sea Ice Web portal and help desk

The following graph illustrates the evolution of number of visitors on the OSI SAF High Latitude portal (http://osisaf.met.no/).
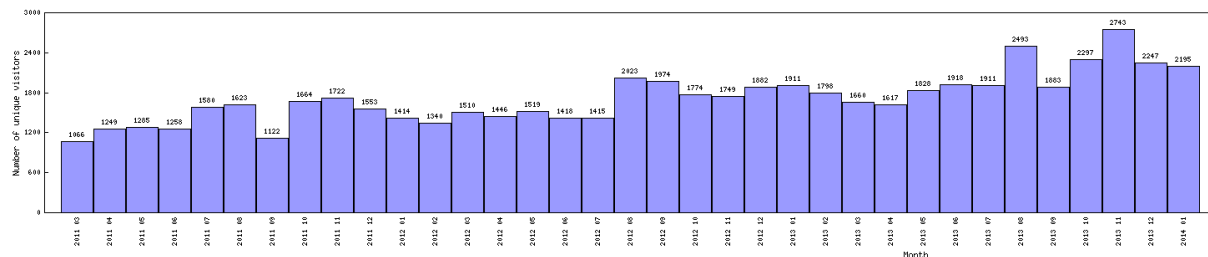
Figure 75 : Evolution of sessions and visitors on the HL OSI SAF Sea Ice portal from MARCH 2011 to JUNE 2014 (http://osisaf.met.no).

6.1.3   Statistics on the OSI SAF KNMI scatterometer web page and helpdesk

The following graph illustrates the evolution of page views on the KNMI scatterometer web pages, which are partly devoted to the OSI SAF wind products, from August 2005 to June 2014. Only external sessions (from outside KNMI) are counted.
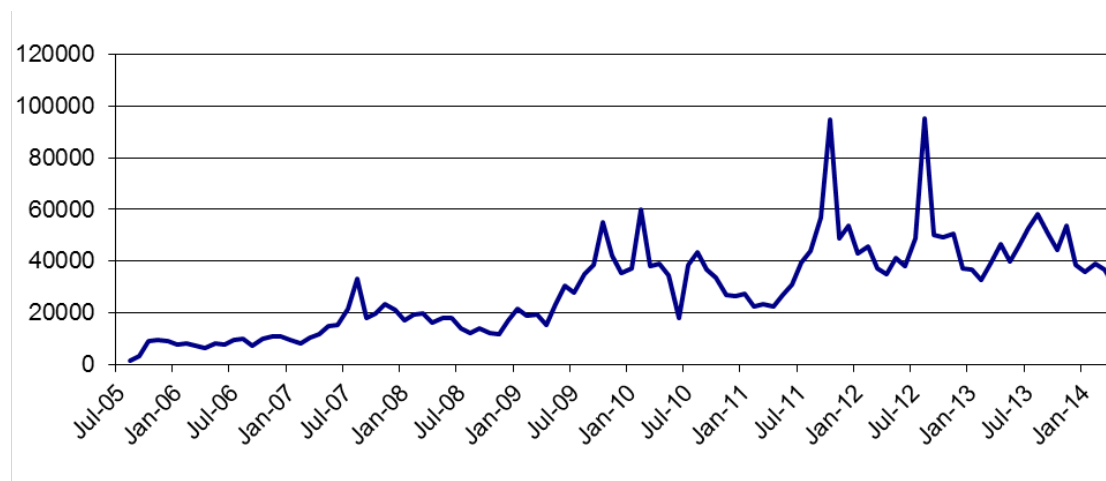
Figure 76 : Number of page views on KNMI scatterometer website per month.

At scat@knmi.nl, 85 Emails from 24 different addresses were received in the period Jan-Mar 2014, requesting wind data, processing software, and other support. For Apr-Jun 2013 an additional 60 Emails from 21 different addresses were received. This includes requests in the OSI SAF, the NWP SAF, and the EARS project. The total number of enquiries in this half year was 61, and 33 of them were identified as OSI SAF enquiries. All requests were acknowledged or answered within three working days.

The following table gives the list of the registered wind users at KNMI.

Entity	Shortened name	Country
Environment Canada		Canada
Koninklijk Nederlands Meteorologisch Instituut	KNMI	Netherlands
Centre Mediterrani d'Investigacions Marines I Ambientals	CMIMA-CSIC	Spain
Italian Air Force Weather Service		Italy
Norwegian Meteorological Institute	Met.no	Norway
BMT Argoss		Netherlands
Danish Meteorological Institute	DMI	Denmark
Jet Propulsion Laboratory	JPL	U.S.A.
EUMETSAT		Germany
Institute of Meteorology and Water Management Poland	IMGW	Poland
University of Concepcion CHILE		Chile
Turkish State Meteorological Services		Turkey
National Centre for Medium Range Weather Forecasting India		India
Nanjing University		China
Indian National Centre for Ocean Information Service	INCOIS	India
Rudjer Boskovic Institute / Center for Marine Research		Croatia
Consiglio Nazionale delle Ricerche – ISAC Laboratorio		Italy
Ifremer		France
NOAA/NESDIS		U.S.A.
MetService		New Zealand
UAE Met. Department		United Arab Erimates
The Ohio State University, Dept. of Electrical Eng.		U.S.A.
University of Wisconsin-Madison		U.S.A.
BYU Center for Remote Sensing, Brigham Young University		U.S.A.
Woods Hole Oceanographic Institution		U.S.A.
Remote Sensing Systems		U.S.A.
Institute of Low Temperature Science, Hokkaido University		Japan
Center for Atmospheric and Oceanic Studies, Tohoku University		Japan
Naval Research Laboratory	NRL	U.S.A.
ComSine Ltd		U.K.
Met Office		U.K.
Meteorology and Oceanography Group, Space Applications Centre, ISRO		India
Numerical Prediction Division, Japan Meteorological Agency		Japan
The First Institute of Oceanography	FIO	China
PO.DAAC Data Engineering Team		U.S.A.
ECMWF		U.K.
Satellite Observing Systems		U.K.
Météo France	M-F	France
School of Marine Science and Technology, Tokai University		Japan
Northwest Research Associates		U.S.A.
University of Washington		U.S.A.
Naval Hydrographic Service, Ministry of Defence		Argentina
Swedish Meteorological and Hydrological Institute	SMHI	Sweden
Chalmers University of Technology		Sweden

Entity	Shortened name	Country
Typhoon Research Department, Meteorological Research Institute		Japan
Gujarat University		India
Consiglio Nazionale delle Ricerche	CNR	Italy
Oceanweather Inc.		U.S.A.
Ocean University of China		China
Nanjing University of China		China
Hydrometeorological Research Center of Russia		Russia
Meteorology Scientific Institution of ShanDong Province		China
VisioTerra		France
China Meteorological Administration	CMA	China
Institut de Recherche pour le Développement	IRD	France
Weathernews Inc		Japan
NECTEC		Thailand
University of Ioannina		Greece
Bermuda Weather Service		Bermuda
Chinese Academy of Sciences		China
Naval Postgraduate School		U.S.A.
University of Hawaii		U.S.A.
Chinese Culture University		Taiwan
Federal University of Rio de Janeiro		Brazil
Flanders Marine Institute		Belgium
V. I. Il`ichev Pacific Oceanological Institute		Russia
Jet Propulsion Laboratory	JPL	U.S.A.
NASA		U.S.A.
National Center for Atmospheric Research	NCAR	U.S.A.
Chinese Academy of Meteorology Science		China
Weather Routing, Inc.	WRI	U.S.A.
Instituto Oceanográfico de la Armada		Equador
Leibniz Institute for Baltic Sea Research		Germany
Nansen Environmental and Remote Sensing Center		Norway
UNMSM		Peru
Centro de Estudos do Ambiente e do Mar		Portugal
Andhra University, Visakhapatnam		India
Unidad de Tecnología Marina (UTM – CSIC)		Spain
MyOcean Sea Ice Wind TAC (Ifremer)		France
Jeju National University		Korea
Weather Data Marine Ltd.		U.K.
Admiral Paulo Moreira Marine Research Institute		Brazil
IMEDEA (UIB-CSIC)		Spain
Hong Kong Observatory		Hong Kong
Observatoire Midi-Pyrenees		France
Tidetech		Australia
Weatherguy.com		U.S.A.
Marine Data Literacy		U.S.A.
Hong Kong University of Science and Technology		Hong Kong
Environmental Agency of the Republic of Slovenia		Slovenia
Fisheries and Sea Research Institute		Portugal
National Meteorological Center		China
National Oceanography Centre, Southampton		U.K.
National Taiwan University		Taiwan
Florida State University		U.S.A.
Charles Sturt University, Wagga Wagga		Australia

Entity	Shortened name	Country
Marine and Coastal Management		South Africa
Gent University		Belgium
Department of Meteorology		Sri-Lanka
Gwangju Institute of Science & Technology		South Korea
University of Hamburg		Germany
University of Las Palmas de Gran Canaria		Spain
The Third Institute of Oceanography		China
South China Sea Institute of Oceanology		China
Environmental Research Institute, University College Cork		Ireland
Shan dong meteorologic bureau		China
RPS MetOcean Pty Ltd		Australia
APL-UW		China
Korea Ocean Research and Development Institute		Korea
XMU		China
Collecte Localisation Satellites	CLS	France
Instituto de Meteorologia		Portugal
ISRO - NRSC		India
ACMAD		Niger
UTL-Technical University of Lisbon		Portugal
Bureau of Meteorology		Australia
CPTEC - INPE		Brazil
StormGeo AS		Norway
Vienna University of Technology (TU Wien)		Austria
NSOAS		China
Deutscher Wetterdienst	DWD	Germany
Far-Eastern Centre for Reception and Processing of Satellite Data		Russia
Roshydromet		Russia
Sorbonne Universities		France
Brazilian Navy		Brazil
25 independent users (not affiliated to an organization)		

table 31 : **List of registered Wind users at KNMI.**

6.2 Statistics on the FTP sites use

6.2.1 Statistics on the SS1 ftp sites use

SST and Fluxes products from SS1 are available on IFREMER FTP server.

Most of SST products are also available at the PODAAC. Although outside the OSI SAF the PODAAC kindly provides the OSI SAF with statistics on the downloading of the OSI SAF products on their server.

6.2.1.1 Statistics on the IFREMER FTP server use

Number of OSI SAF products downloaded on IFREMER FTP server over 1st half 2014						
	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014
SST MAP +LML	2	0	0	0	1	1
SSI MAP +LML	0	0	0	0	0	0
DLI MAP +LML	0	10	1	0	0	0
METEOSAT SST	7142	10722	4458	13281	5684	11393
GOES-E SST	3545	6927	1755	1535	1940	1742
METEOSAT SSI	125	351	29	0	1	1
GOES-E SSI	159	344	32	30	31	31
METEOSAT DLI	5358	26521	3545	2158	8223	19316
GOES-E DLI	1100	2537	853	719	9812	13914
NARSST	652	25707	7387	661	682	593
MGR SST	159385	272004	447838	345548	167878	203628
GBL SST	78	74	4196	63	68	429

table 32 : **Number of OSI SAF products downloaded on IFREMER FTP server over 1st half 2014.**
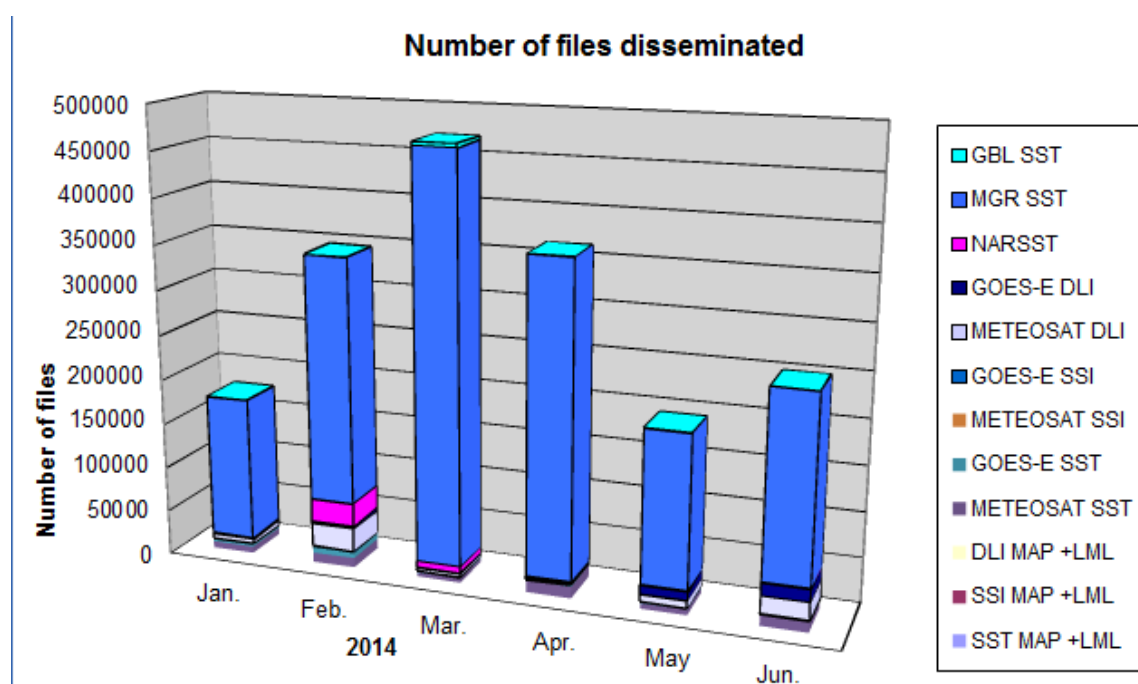
Figure 77 : **Number of OSI SAF products downloaded on IFREMER FTP server over 1st half 2014.**

6.2.1.2 Statistics on the PODAAC FTP server use

Currently NAR SST, GLB SST, MGR SST and METEOSAT SST are archived at the PODAAC.

OSI SAF product	Users	GB	Files
MGR SST	47	0	1096
GLB SST	85	0,9	2879
NOAA-17 NAR SST	1	0	1
NOAA-18 NAR SST	50	0	285
NOAA-19 NAR SST	81	0	1803
Metop NAR SST	70	0	2011
METEOSAT SST	60	0	241
Total	394	0,9	8 316

table 33 : Statistics of the OSI SAF products downloaded on the PODAAC FTP server in JANUARY 2014.

OSI SAF product	Users	GB	Files
MGR SST	84	1	5449
GLB SST	91	0	1113
NOAA-17 NAR SST	13	0	19
NOAA-18 NAR SST	47	0	306
NOAA-19 NAR SST	109	0	2769
Metop NAR SST	92	0	1135
METEOSAT SST	49	0	383
Total	485	1	11 174

table 34 : Statistics of the OSI SAF products downloaded on the PODAAC FTP server in FEBRUARY 2014.

OSI SAF product	Users	GB	Files
MGR SST	140	6,2	2174
GLB SST	104	1,2	400
NOAA-17 NAR SST	1	0	1
NOAA-18 NAR SST	18	0	33
NOAA-19 NAR SST	93	0	319
Metop NAR SST	93	0	255
METEOSAT SST	26	0	40
Total	475	7,4	3 222

table 35 : Statistics of the OSI SAF products downloaded on the PODAAC FTP server in MARCH 2014.

OSI SAF product	Users	GB	Files
MGR SST	169	8,4	2224
GLB SST	150	0	362
NOAA-17 NAR SST	4	0	4
NOAA-18 NAR SST	48	0	83
NOAA-19 NAR SST	70	0	96
Metop NAR SST	128	0	241
METEOSAT SST	44	0	55
Total	613	8,4	3065

table 36 : Statistics of the OSI SAF products downloaded on the PODAAC FTP server in APRIL 2014.

OSI SAF product	Users	GB	Files
MGR SST	151	15,1	4365
GLB SST	131	0,1	1211
NOAA-17 NAR SST	3	0	3
NOAA-18 NAR SST	45	0	124
NOAA-19 NAR SST	118	0	615
Metop NAR SST	134	0	1687
METEOSAT SST	52	0	108
Total	634	15,2	8113

table 37 : Statistics of the OSI SAF products downloaded on the PODAAC FTP server in MAY 2014.

OSI SAF product	Users	GB	Files
MGR SST	54	37,4	15219
GLB SST	86	107,4	7032
NOAA-17 NAR SST	2	0	2
NOAA-18 NAR SST	20	0	169
NOAA-19 NAR SST	63	0	863
Metop-A NAR SST	76	0	1339
METEOSAT SST	18	0	217
Total	319	144,8	24841

table 38 : Statistics of the OSI SAF products downloaded on the PODAAC FTP server in JUNE 2014.

6.2.2 Statistics on the SS2 ftp site use

The number of downloads of Sea Ice products from the OSI SAF Sea Ice FTP server are given in table below. The numbers include the ice concentration, ice edge and ice type product for each product area in GRIB and HDF5 format.

Month	Operational						Reprocessed Ice Conc
	Ice Conc	Ice Edge	Ice Type	Ice Emis	LR Ice Drift	MR Ice Drift	
JAN 2014	19207	9284	11157	-	6661	-	5543
FEB 2014	23610	10259	4318		3366	-	40455
MAR 2014	39399	10226	5211	-	3416	-	111428
APR 2014	9524	6125	5038	161	8694	223	16257
MAY 2014	6496	6560	3583	317	947	362	49000
JUN 2014	14208	18399	21922	302	786	132	14274

table 39 : Number of products downloaded from OSI SAF Sea Ice FTP server (ftp://osisaf.met.no).

The next figure shows the downloads sorted on domains.
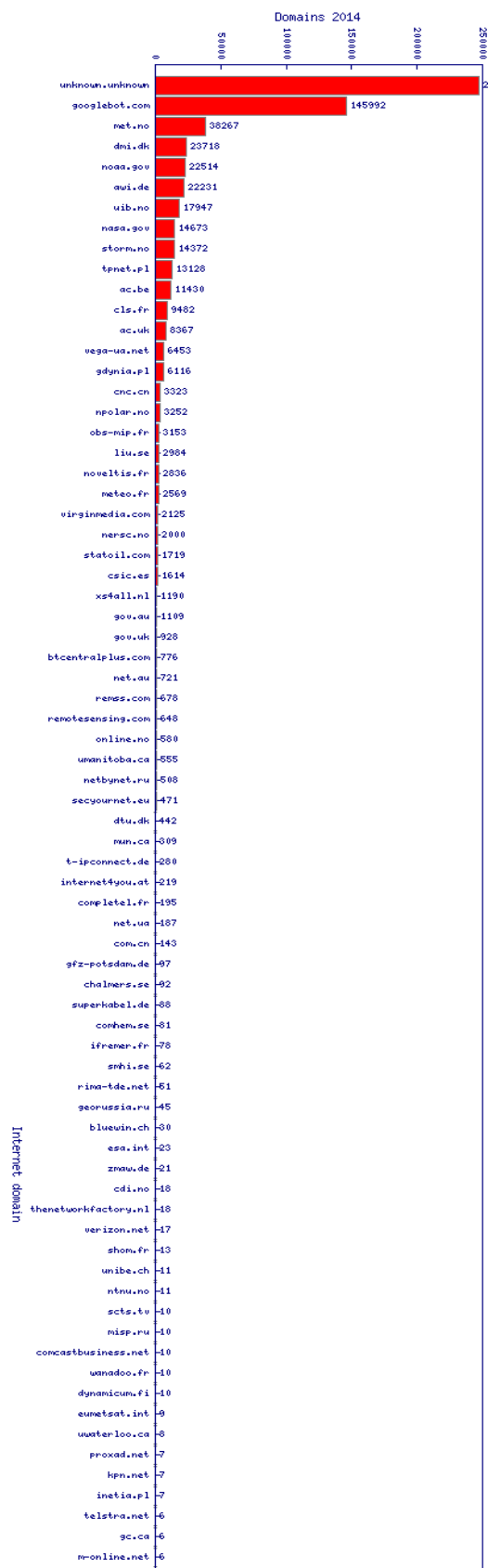
Figure 78 : **FTP downloads of sea ice products (more than 5) sorted on domains for 1st half 2014.**

6.2.3 Statistics on the SS3 ftp site use

KNMI keeps statistics of the retrieval of wind products of its FTP server.

The table below shows the number of downloads per product file in near-real time. Note that the BUFR products are also disseminated through EUMETCast.

We also receive statistics from PO.DAAC on the number of downloads of the historic ASCAT wind products in NetCDF format from their archive, these statistics are also shown in the table. Since PO.DAAC contains the complete archive of ASCAT data since the beginning of their dissemination, we assume that most of these users are using the data for climate studies.

We did not provide archived SeaWinds data to users during the reporting period. We provided archived OSCAT data to two users during the reporting period.

OSI SAF product	Number of downloads per file on KNMI FTP (BUFR	Number of downloads per file on KNMI FTP (NetCDF)	Number of downloads from PO.DAAC archive
ASCAT-A 25km	21	42	172,467 files by 145 users (Jan-Mar) 326,219 files by 161 users (Apr-Jun)
ASCAT-A 12.5km	20	42	199,582 files by 272 users (Jan-Mar) 287,112 files by 305 users (Apr-Jun)
ASCAT-A Coastal	14	26	50,265 files by 84 users (Jan-Mar) 76,522 files by 108 users (Apr-Jun)
ASCAT-B 25km	21	30	56,390 files by 52 users (Jan-Mar) 64,943 files by 56 users (Apr-Jun)
ASCAT-B Coastal	17	19	49,353 files by 44 users (Jan-Mar) 39,771 files by 43 users (Apr-Jun)
OSCAT 50km	14	27	

table 40 : Statistics of the OSI SAF products downloaded on the KNMI FTP server and from PO.DAAC.

6.3 Statistics from EUMETSAT central facilities

6.3.1 Users from EUMETCast

Here below the list of the OSI SAF users identified by EUMETSAT for the distribution by EUMETCast. The table 41 shows the overall number of OSI SAF users by country at 1st July 2014. In clear green, the countries with the greatest numbers of users.

Country		Country		Country	
Albania	3	Hungary	7	Sao Tome And Principe	2
Algéria	4	Iceland	1	Saudi Arabia	3
Angola	2	India	1	Senegal	6
Argentina	1	Iran, Islamic Republic Of	3	Serbia	3
Armenia	1	Iraq	1	Seychelles	2
Austria	18	Ireland	6	Sierra Leone	2
Bahrain	1	Isle Of Man	1	Slovakia	4
Belgium	9	Israel	6	Slovenia	1
Benin	2	Italy	248	Somalia	1
Bosnia And Herzegovina	1	Jordan	1	South Africa	21
Botswana	3	Kazakhstan	1	Spain	44
Brazil	37	Kenya	8	Sudan	3
Bulgaria	1	Korea, Republic Of	1	Swaziland	2
Burkina Faso	2	Kuwait	1	Sweden	3
Burundi	2	Kyrgyzstan	1	Switzerland	10
Cameroon	2	Latvia	1	Syrian Arab Republic	1
Canada	2	Lebanon	2	Tajikistan	1
Cape Verde	2	Lesotho	2	Tanzania, United Republic Of	3
Central African Republic	2	Liberia	2	Togo	2
Chad	3	Libyan Arab Jamahiriya	1	Tunisia	2
China	2	Lithuania	1	Turkey	4
Comoros	2	Luxembourg	1	Turkmenistan	1
Congo	2	Macedonia, The Former Yugoslav Republic Of	1	Uganda	3
Congo, The Democratic Republic Of The	4	Madagascar	3	Ukraine	2
Côte D'Ivoire	4	Malawi	2	United Arab Emirates	5
Croatia	2	Mali	2	United Kingdom	119
Cuba	1	Malta	2	United States	7
Cyprus	1	Martinique	1	Uzbekistan	1
Czech Republic	13	Mauritania	2	Viet Nam	1
Denmark	4	Mauritius	7	Yemen	1
Djibouti	2	Moldova, Republic Of	1	Zambia	2
Dominican Republic	1	Morocco	5	Zimbabwe	2
Egypt	4	Mozambique	4		
El Salvador	1	Namibia	5		
Equatorial Guinea	2	Netherlands	26		
Eritrea	2	Niger	6		
Estonia	3	Nigeria	3		
Ethiopia	5	Norway	4		
Finland	4	Oman	1		
France	50	Peru	1		
Gabon	2	Poland	11		
Gambia	2	Portugal	5		
Germany	97	Qatar	2		
Ghana	6	Reunion	1		
Greece	12	Romania	4		
Guinea	2	Russian Federation	5		
Guinea-Bissau	2	Rwanda	5		
Haiti	1	San Marino	1		

table 41 : **Overall number of EUMETCast users by country at 1st July 2014.**

6.3.2 Users and retrievals from UMARF

Orders Summary over the 1st half 2014

The table 42 below lists the persons who download data from the EUMETSAT Data Center and the volume of the downloaded data in megabytes (MB) by month. In yellow, the users who have downloaded more than 1GB of data at least during a month.

User Id	January 2014	February 2014	March 2014	April 2014	May 2014	June 2014	TOTAL (MB)
rainman00		3912					3912
vallgren		282					282
UBIMET		8					8
wugingouc			60765				60765
PBOLIVEIRA			22				22
mowwind1			11835				11835
jcotton			10067				10067
ydzhang			12532			40261	52793
SHAndersen			22				22
RDAILIDE			8				8
lishanyang					175		175
bhduan					69		69
hrobjartur					1868		1868
yushan					19836		19836
tic168						2072	2072
qgrice						4271	4271
fromano						2	2
TOTAL (MB)	0	4202	95251	0	21948	46606	168007

table 42 : Volume of data downloaded (in MB) by users and by month from UMARF over 1st half 2014.

Ingestion Summary over the 1st half 2014

The next tables list the expected and real received volume of OSI SAF products data as well as the received and missing percentage of data by month over the period. In red, there was clearly an outage of products as well under the OSI SAF monthly target performance of 95%. In orange, the performance even below the target remains acceptable.

Product	Jan-14				
	Expected	Received	% Received	Missing	% Missing
Global Sea Ice Concentration (DMSP-F17)	62	62	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (GOES-13)	31	31	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (GOES-13)	31	31	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (GOES-13)	744	744	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (GOES-13)	744	744	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (GOES-13)	744	744	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-B)	441	441	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-B)	441	441	**100.00%**	0	0.00%
ASCAT 12.5km Wind (Metop-A)	440	440	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-A)	440	440	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-A)	440	440	**100.00%**	0	0.00%
Global Sea Surface Temperature (Metop-A)	62	62	**100.00%**	0	0.00%
NAR Sea Surface Temperature (Metop-A)	62	62	**100.00%**	0	0.00%
AHL Downward Longwave Irradiance (Multi Mission)	31	31	**100.00%**	0	0.00%
Global Sea Ice Drift (Multi Mission)	62	62	**100.00%**	0	0.00%
Global Sea Ice Edge (Multi Mission)	62	62	**100.00%**	0	0.00%
Global Sea Ice Type (Multi Mission)	62	62	**100.00%**	0	0.00%
AHL Surface Solar Irradiance (Multi Mission)	31	31	**100.00%**	0	0.00%
AHL Sea Surface Temperature (Multi Mission)	62	62	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (MSG)	31	31	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (MSG)	31	31	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (MSG)	744	744	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (MSG)	744	744	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (MSG)	744	744	**100.00%**	0	0.00%
NAR Sea Surface Temperature (NOAA-19)	62	61	**98.39%**	1	1.61%
TOTAL	7348	7347	**99.99%**	1	0.01%

table 43 : **Expected and real received (plus % received/missing) volume of OSI SAF products data in JANUARY 2014.**

Product	Feb-14				
	Expected	Received	% Received	Missing	% Missing
Global Sea Ice Concentration (DMSP-F17)	56	56	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (GOES-13)	28	28	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (GOES-13)	28	28	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (GOES-13)	672	672	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (GOES-13)	672	672	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (GOES-13)	672	671	**99.85%**	1	0.15%
ASCAT 25km Wind (Metop-B)	398	398	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-B)	398	397	**99.75%**	1	0.25%
ASCAT 12.5km Wind (Metop-A)	397	397	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-A)	397	397	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-A)	397	397	**100.00%**	0	0.00%
Global Sea Surface Temperature (Metop-A)	56	56	**100.00%**	0	0.00%
NAR Sea Surface Temperature (Metop-A)	56	56	**100.00%**	0	0.00%
AHL Downward Longwave Irradiance (Multi Mission)	28	28	**100.00%**	0	0.00%
Global Sea Ice Drift (Multi Mission)	56	56	**100.00%**	0	0.00%
Global Sea Ice Edge (Multi Mission)	56	56	**100.00%**	0	0.00%
Global Sea Ice Type (Multi Mission)	56	56	**100.00%**	0	0.00%
AHL Surface Solar Irradiance (Multi Mission)	28	28	**100.00%**	0	0.00%
AHL Sea Surface Temperature (Multi Mission)	56	56	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (MSG)	28	28	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (MSG)	28	28	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (MSG)	672	672	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (MSG)	672	672	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (MSG)	672	672	**100.00%**	0	0.00%
NAR Sea Surface Temperature (NOAA-19)	56	51	**91.07%**	5	8.93%
TOTAL	6635	6628	**99.89%**	7	0.11%

table 44 : **Expected and real received (plus % received/missing) volume of OSISAF products data in February 2014.**

Product	Mar-14				
	Expected	Received	% Received	Missing	% Missing
Global Sea Ice Concentration (DMSP-F17)	62	62	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (GOES-13)	31	31	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (GOES-13)	31	31	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (GOES-13)	744	744	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (GOES-13)	744	744	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (GOES-13)	744	744	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-B)	440	440	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-B)	440	440	**100.00%**	0	0.00%
ASCAT 12.5km Wind (Metop-A)	440	440	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-A)	440	440	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-A)	440	440	**100.00%**	0	0.00%
Global Sea Surface Temperature (Metop-A)	62	62	**100.00%**	0	0.00%
NAR Sea Surface Temperature (Metop-A)	62	62	**100.00%**	0	0.00%
AHL Downward Longwave Irradiance (Multi Mission)	31	31	**100.00%**	0	0.00%
Global Sea Ice Drift (Multi Mission)	62	62	**100.00%**	0	0.00%
Global Sea Ice Edge (Multi Mission)	62	62	**100.00%**	0	0.00%
Global Sea Ice Type (Multi Mission)	62	62	**100.00%**	0	0.00%
AHL Surface Solar Irradiance (Multi Mission)	31	31	**100.00%**	0	0.00%
AHL Sea Surface Temperature (Multi Mission)	62	62	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (MSG)	31	31	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (MSG)	31	31	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (MSG)	744	743	**99.87%**	1	0.13%
Hourly Surface Solar Irradiance (MSG)	744	743	**99.87%**	1	0.13%
Hourly Sea Surface Temperature (MSG)	744	741	**99.60%**	3	0.40%
NAR Sea Surface Temperature (NOAA-19)	62	62	**100.00%**	0	0.00%
TOTAL	7346	7341	**99.93%**	5	0.07%

table 45 : Expected and real received (plus % received/missing) volume of OSISAF products data in March 2014.

Product	Apr-14				
	Expected	Received	% Received	Missing	% Missing
Global Sea Ice Concentration (DMSP-F17)	60	60	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (GOES-13)	30	30	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (GOES-13)	30	30	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (GOES-13)	744	719	**96.64%**	25	3.36%
Hourly Surface Solar Irradiance (GOES-13)	744	719	**96.64%**	25	3.36%
Hourly Sea Surface Temperature (GOES-13)	744	719	**96.64%**	25	3.36%
ASCAT 25km Wind (Metop-B)	426	426	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-B)	426	426	**100.00%**	0	0.00%
ASCAT 12.5km Wind (Metop-A)	424	424	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-A)	424	424	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-A)	424	424	**100.00%**	0	0.00%
Global Sea Surface Temperature (Metop-A)	60	60	**100.00%**	0	0.00%
NAR Sea Surface Temperature (Metop-A)	60	60	**100.00%**	0	0.00%
AHL Downward Longwave Irradiance (Multi Mission)	30	30	**100.00%**	0	0.00%
Global Sea Ice Drift (Multi Mission)	60	60	**100.00%**	0	0.00%
Global Sea Ice Edge (Multi Mission)	60	60	**100.00%**	0	0.00%
Global Sea Ice Type (Multi Mission)	60	60	**100.00%**	0	0.00%
AHL Surface Solar Irradiance (Multi Mission)	30	30	**100.00%**	0	0.00%
AHL Sea Surface Temperature (Multi Mission)	60	60	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (MSG)	30	30	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (MSG)	30	30	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (MSG)	744	719	**96.64%**	25	3.36%
Hourly Surface Solar Irradiance (MSG)	744	719	**96.64%**	25	3.36%
Hourly Sea Surface Temperature (MSG)	744	720	**96.77%**	24	3.23%
NAR Sea Surface Temperature (NOAA-19)	60	60	**100.00%**	0	0.00%
TOTAL	7248	7099	**97.94%**	149	2.06%

table 46 : **Expected and real received (plus % received/missing) volume of OSISAF products data in April 2014.**

Product	May-14				
	Expected	Received	% Received	Missing	% Missing
Global Sea Ice Concentration (DMSP-F17)	62	62	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (GOES-13)	31	31	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (GOES-13)	31	31	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (GOES-13)	744	744	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (GOES-13)	744	744	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (GOES-13)	744	744	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-B)	441	441	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-B)	441	441	**100.00%**	0	0.00%
ASCAT 12.5km Wind (Metop-A)	440	440	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-A)	440	440	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-A)	440	440	**100.00%**	0	0.00%
Global Sea Surface Temperature (Metop-A)	62	62	**100.00%**	0	0.00%
NAR Sea Surface Temperature (Metop-A)	62	62	**100.00%**	0	0.00%
AHL Downward Longwave Irradiance (Multi Mission)	31	31	**100.00%**	0	0.00%
Global Sea Ice Drift (Multi Mission)	62	60	**96.77%**	2	3.23%
Global Sea Ice Edge (Multi Mission)	62	62	**100.00%**	0	0.00%
Global Sea Ice Type (Multi Mission)	62	62	**100.00%**	0	0.00%
AHL Surface Solar Irradiance (Multi Mission)	31	31	**100.00%**	0	0.00%
AHL Sea Surface Temperature (Multi Mission)	62	62	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (MSG)	31	31	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (MSG)	31	31	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (MSG)	744	744	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (MSG)	744	744	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (MSG)	744	744	**100.00%**	0	0.00%
NAR Sea Surface Temperature (NOAA-19)	62	62	**100.00%**	0	0.00%
TOTAL	7348	7346	**99.97%**	2	0.03%

table 47 : Expected and real received (plus % received/missing) volume of OSISAF products data in May 2014.

Product	Jun-14				
	Expected	Received	% Received	Missing	% Missing
Global Sea Ice Concentration (DMSP-F17)	60	56	**93.33%**	4	6.67%
Daily Downward Longwave Irradiance (GOES-13)	30	30	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (GOES-13)	30	30	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (GOES-13)	720	715	**99.31%**	5	0.69%
Hourly Surface Solar Irradiance (GOES-13)	720	715	**99.31%**	5	0.69%
Hourly Sea Surface Temperature (GOES-13)	720	714	**99.17%**	6	0.83%
ASCAT 25km Wind (Metop-B)	426	426	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-B)	426	426	**100.00%**	0	0.00%
ASCAT 12.5km Wind (Metop-A)	426	426	**100.00%**	0	0.00%
ASCAT 25km Wind (Metop-A)	426	426	**100.00%**	0	0.00%
ASCAT 12.5km Coastal Wind (Metop-A)	426	426	**100.00%**	0	0.00%
Global Sea Surface Temperature (Metop-A)	60	60	**100.00%**	0	0.00%
NAR Sea Surface Temperature (Metop-A)	60	60	**100.00%**	0	0.00%
AHL Downward Longwave Irradiance (Multi Mission)	30	30	**100.00%**	0	0.00%
Global Sea Ice Drift (Multi Mission)	60	54	**90.00%**	6	10.00%
Global Sea Ice Edge (Multi Mission)	60	56	**93.33%**	4	6.67%
Global Sea Ice Type (Multi Mission)	60	56	**93.33%**	4	6.67%
AHL Surface Solar Irradiance (Multi Mission)	30	30	**100.00%**	0	0.00%
AHL Sea Surface Temperature (Multi Mission)	60	60	**100.00%**	0	0.00%
Daily Downward Longwave Irradiance (MSG)	30	30	**100.00%**	0	0.00%
Daily Surface Solar Irradiance (MSG)	30	30	**100.00%**	0	0.00%
Hourly Downward Longwave Irradiance (MSG)	720	720	**100.00%**	0	0.00%
Hourly Surface Solar Irradiance (MSG)	720	720	**100.00%**	0	0.00%
Hourly Sea Surface Temperature (MSG)	720	720	**100.00%**	0	0.00%
NAR Sea Surface Temperature (NOAA-19)	60	60	**100.00%**	0	0.00%
TOTAL	7110	7076	**99.52%**	34	0.48%

table 48 : Expected and real received (plus % received/missing) volume of OSISAF products data in June 2014.

7   Training

A User Training Meeting was held in Cork in February in the context of the ESA eSurge project, linking NWP and wind surge forecasting. See http://www.storm-surge.info/training-outputs/ for more information. A lecture on storm surge modelling was presented by Ad Stoffelen.

8   Documentation update

The following table provides the list of documents modified during the reporting period, as well as new documents made available to users. Last version of documents and new documents are available on the central Web Site (www.osi-saf.org).

Name of the Document	Reference	Latest versions	date
Low Earth Orbiter Sea Surface Temperature Product User Manual	SAF/OSI/CDOP2/M-F/TEC/MA/127	2.6	April 2014
Validation of ASCAT 12.5km Winds	SAF/OSI/CDOP/KNMI/TEC/RP/147	1.3	May 2013
Analysis of ASCAT-A Transponder Calibration for Wind Processing	SAF/OSI/CDOP2/KNMI/TEC/TN/163	6.1	August 2014
ASCAT coastal winds validation report	SAF/OSI/CDOP/KNMI/TEC/RP/176	1.5	May 2013
Wind Products Algorithm Theoretical Basis Document	SAF/OSI/CDOP2/KNMI/SCI/MA/197	1.1	February 2014
Analysis of ASCAT-B Transponder Calibration for Wind Processing	SAF/OSI/CDOP2/KNMI/TEC/RP/211	1.0	March 2014
OSI SAF Half-Yearly Operations Report for 2nd half 2013	SAF/OSI/CDOP2/M-F/TEC/RP/332	1.0	January 2014
OSI SAF CDOP-2 Product Requirement Document	SAF/OSI/CDOP2/M-F/MGT/PL/2-001	2.6	June 2014
OSI SAF CDOP-2 Service Specification Document	SAF/OSI/CDOP2/M-F/MGT/PL/2-003	2.2	February 2014
OSI SAF CDOP2 Project Plan	SAF/OSI/CDOP2/M-F/MGT/PL/2-005	1.2	June 2014
OSI SAF CDOP2 Master Schedule	SAF/OSI/CDOP2/M-F/MGT/PL/2-007	1.1	June 2014
OSI SAF CDOP-2 Funding Release Plan	SAF/OSI/CDOP2/M-F/MGT/PL/2-008	5	May 2014
Status Report n°5, for CDOP2 SG05	SAF/OSI/CDOP2/M-F/MGT/RP/2-015	1.0	May 2014
Minutes of the 5th CDOP2 Steering Group meeting	SAF/OSI/CDOP2/M-F/MGT/RP/2-105	1.0	June 2014

table 49 : Documentation updates.

Recent publications

None