

Global Collecting Centre

Annual Report 2014



GCC Germany

Deutscher Wetterdienst
GCC

Bernhard-Nocht-Str. 76
20359 Hamburg
Germany
email: gcc@dwd.de
www.dwd.de/gcc



Met Office

GCC United Kingdom

Met Office
GCC

S9 Saughton House
Broomhouse Drive
Edinburgh, EH11 3XQ
Scotland, UK
email: gcc@metoffice.gov.uk

Summary

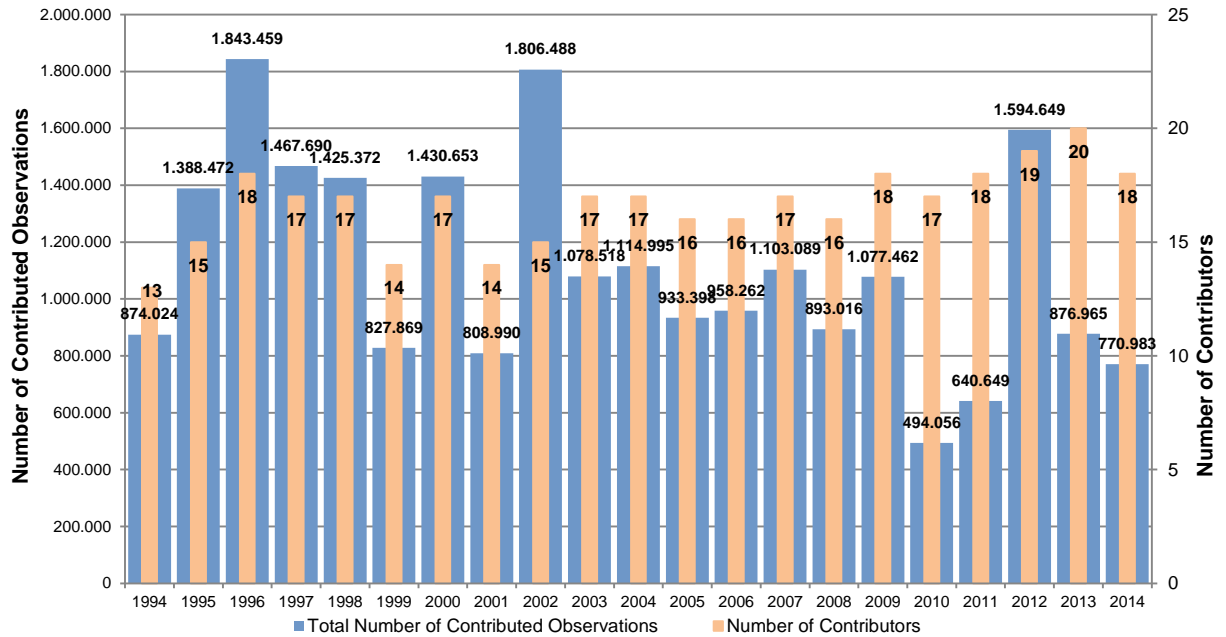
In 2014, the GCCs received data from 18 Contributing Members, 2 fewer than the record high of 20 in 2013 (see Figure 1). Similarly, the number of observations contributed declined for the second consecutive year. The majority of the observations were made in the last two years, with the oldest records dating back to 1987.

All data, original and MQC-checked, are available on the German WMO Information System (WIS) GISC http://gisc.dwd.de/GISC_DWD/toSimpleSearch.do.

Background

The two Global Collecting Centres (GCCs) for JCOMM's Marine Climatological Summaries Scheme (MCSS) were set up in 1993 to improve data flow and quality of delayed-mode Voluntary Observing Ship (VOS) data. Data is received regularly by the GCCs (Figure 1 and Appendix A) from the MCSS Contributing Members (CMs) (Appendix B). This is then quality ensured to the Minimum Quality Control Standard (MQCS-7) and, once quarterly, made available to Responsible Members (RMs) via FTP. For further information about the MCSS and GCCs work, terms of reference, data format and QC standards see WMO Manual 558 and WMO Guide 471.

Figure 1: Numbers of contributed observations and active Contributing Members by year since GCCs began to operate



VOS Data Volumes 2014

- 770,983 observations were received and processed by the GCCs during 2014.
- 18 CMs contributed data out of a total of 27 registered Members/Member States.
- 1,008 VOS ships made observations in 2014.
- The observation dates of the contributed data ranged from 1987 to 2014, however, 92% of the data were observed in the last two years, 2013 and 2014.
- 72% of the received observations were coded in IMMT-4 format and 4% in the most recent IMMT-5 format.
- 22% of the received observations were coded in the older IMMT-3 format, and 1% still in IMMT-1 and IMMT-2 format.

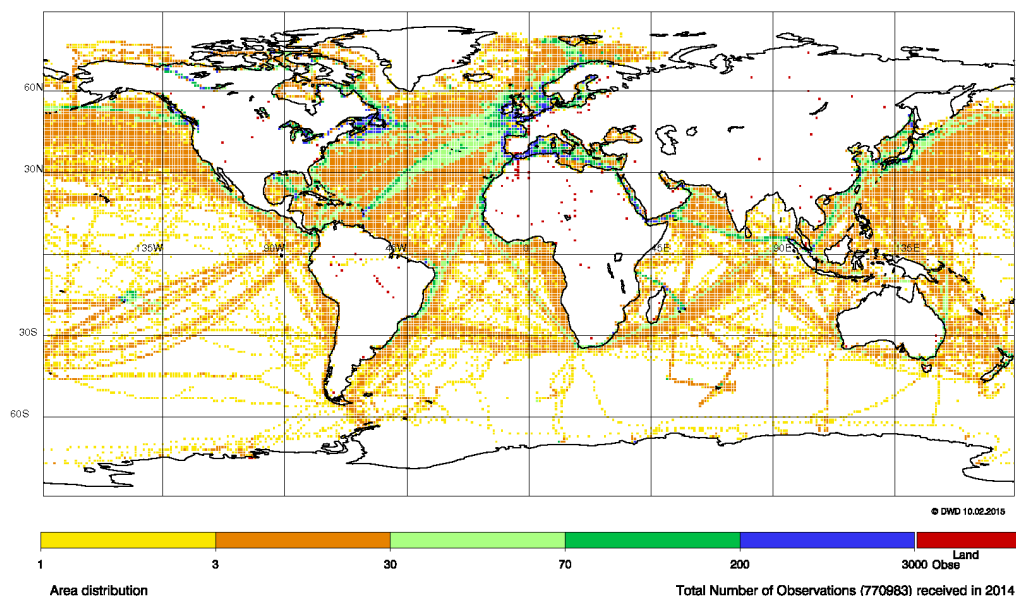
Figure 2: Number of observations by CMs for each quarter of 2014. (CMs without any contribution in 2014 are marked in red)

Number of CM Observations 2014					
Country Name	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Argentina					
Australia	28	448	1,224		1,700
Brazil					
Canada				310,490	310,490
Croatia		9,910			9,910
France	47,462		42,410	25,962	115,834
Germany	37,449		6,770	28,070	72,289
Greece					
Hong Kong, China	937		586	2,848	4,371
India					
Ireland	180			19,754	19,934
Israel					
Italy					
Japan	1,053	4,818	3,561	1,387	10,819
Kenya					
Malaysia	133		30	108	271
Netherlands	4,128	5,996	7,198	5,926	23,248
New Zealand	3,316			1,660	4,976
Nigeria					
Norway	14,175	14,033	15,075	15,790	59,073
Poland				1,117	1,117
Russian Federation	5,004	5,003	5,003	2,795	17,805
Singapore					
South Africa	447	74			521
Sweden		20,800			20,800
United Kingdom	41,719	18,300	8,707	17,178	85,904
USA	3,125	3,968	2,225	2,603	11,921
18 of 27 Contributing Countries	159,156	83,350	92,789	435,688	770,983

VOS Data Quality 2014

- When evaluated against the MQCS the majority of the reported elements were again found to be of good quality. Such elements were assigned a QC Flag of '1' meaning 'element appears correct'. For example frequently reported elements such as air pressure, wind direction, wind speed and sea surface temperature were flagged with a '1' in over 98% of cases, and air temperature in 92% of cases.
- There were 174 observations (0.02%) showing on-land positions. These are plotted as red dots in Figure 3.
- The TurboWin coding problem of the previous year persists leading to a number of IMMT-4 and -5 files being submitted with erroneous relative humidity values. These data were identified and the corrected files made available on the German GISC (Global Information System Centre). Until the coding problem is resolved, the GCCs will correct the data before processing and distribution.
- No previously exchanged datasets had to be corrected in 2014.
- Quarterly analysis of the exchanged datasets identified 171 duplicate observations (0.02%) that were rejected by the MQCS. Analysis of the yearly dataset highlighted that the number of observations rejected increased to 226. These observations failed MQC but were included at quarterly exchange.
- Many observations containing erroneous positions were selected and, after consultation with the appropriate CM, were deleted.
- Before the quarterly data exchanges the duplicates due to previously submitted observations were deleted. Unfortunately, duplicate contributions or files that were later present in another quarter cannot be identified.
- The RM USA (NOAA) supports the ICOADS (International Comprehensive Ocean-Atmosphere Data Set) with the quarterly MQC-checked dataset from the GCCs.

Figure 3: Distribution of observations received in 2014



VOSClim Class Data 2014

- 521,280 observations were received and processed from VOSClim registered ships by the GCCs during 2014.
- This makes up 68% of data received by the GCCs from the VOS fleet in 2014.
- 8 of the 11 CMs with registered VOSClim ships submitted observations (Figure 4) in 2014.
- In 2014, the GCCs received data from over 358 listed VOSClim ships.
- 200,261 of the VOSClim observations (38%) contained the VOSClim defined additional elements.
- The CMs France and Japan provided 100% of VOSClim elements in the VOSClim reports.

Figure 4: VOSClim class observations submitted by CMs for each quarter of 2014
(CMs without any contribution in 2014 are marked in red)

Total Number of Observations from VOSClim-Ships / Number of Observations with VOSClim-Elements from VOSClim-Ships / Number of Observations with VOSClim-Elements from not listed ships 2014															
Country Name	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			Total		
Australia	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Canada	0	0	0	0	0	0	0	0	0	301.060	0	0	301.060	0	0
France	45.515	45.515	1.245	0	0	0	39.855	39.855	1.385	24.425	24.425	1.537	109.795	109.795	4.167
Germany	8.707	7.807	443	0	0	0	2.511	2.149	436	7.998	7.198	83	19.216	17.154	962
Hong Kong, China	0	0	0	0	0	0	0	0	0	0	0	47	0	0	47
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Japan	0	0	0	3.026	3.026	0	0	0	0	0	0	0	3.026	3.026	0
Netherlands	3.364	3.352	471	3.705	3.670	775	5.297	5.270	1.431	2.667	2.474	187	15.033	14.766	2.864
New Zealand	991	941	2	0	0	0	0	0	0	0	0	0	991	941	2
United Kingdom	32.351	25.036	1.082	15.925	11.188	166	6.802	4.682	353	12.988	9.590	586	68.066	50.496	2.187
USA	2.947	2.945	44	688	682	377	308	308	1.117	150	148	361	4.093	4.083	1.899
8 of 11 countries	93.875	85.596	3.287	23.344	18.566	1.318	54.773	52.264	4.723	349.288	43.835	2.801	521.280	200.261	12.129

Recent Developments

MCSS and GCC Anniversaries

2014 marked the 50th anniversary of the founding of the marine climatological summaries scheme which was celebrated in a special session at the Fourth JCOMM Workshop on Advances in Marine Climatology (CLIMAR-4) in Asheville, USA. DWD put together a video highlighting the successes of the scheme featuring interviews with a number of experts who had been involved over the years. The 20th year of operation of the GCCs (2013) was also celebrated at the workshop. Over 22.5 million observations, contributed by 28 nations, were collected, quality checked and distributed by the GCCs.

MCDS Developments

Members of the Expert Team on Marine Climatology (ETMC) and Task Team on the Marine Climate Data System (TT-MCDS) met at CLIMAR-4 (June 2014). At the meeting the MCDS implementation plan for Data Acquisition Centres (DACs) and Global Data Assembly Centres (GDACs) was updated. The meeting also recognised that there was a need to review Technical Regulations to take MCDS developments into consideration.

East and West TT-MCDS teleconferences were held in December 2014 to discuss updates to the relevant sections of the WMO Guide to Marine Meteorological Services (No 471) and Manual on Marine Meteorological Services (No 558). New structures for the Marine Climatology sections were proposed with a view to having draft versions ready for ETMC-5 (June 2015). The membership of the TT-MCDS was also reviewed at the meeting.

In 2014 the CMOC (Centre for Marine-Meteorological and Oceanographic Climate Data) application from the State Oceanic Administration (SOA) National Marine Data and Information Service (NMDIS) in Tianjin, China was successfully evaluated against the CMOC evaluation criteria proposed by the ETMC and Data Management Coordination Group (DMCG). A draft resolution for submission at the 17th WMO congress has been prepared to approve China as the first official CMOC.

Assisting CM

DWD assisted Canada and the Netherlands in preparing their contributions in 2014.

HQC development

In 2014 the new Higher Quality Control Standard (HQCS) developed by DWD was used as the basis for a software package for automatic quality checks.

Documentation of the code was translated into English and will be made available in 2015. New features include:

A new spatial check and an integrated land-sea-mask with an accuracy of 0.1 degree which helps to identify observations with on-land-positions.

A climatology check based on the background fields using the ERA-Interim-Reanalysis 1981 – 2010.

VOSClm DAC

The National Climatic Data Centre (NCDC) VOSClm Data Assembly Centre (DAC) has transitioned from using the NCDC maintained VOSClm ship list to the list produced by E-SURFMAR (EUCOS-Surface Marine Operational Service). The E-SURFMAR database is now the primary source for VOSClm ship metadata. The first GCC VOSClm report using the E-SURFMAR database was produced for the 4th quarter of 2014.

Recommendations

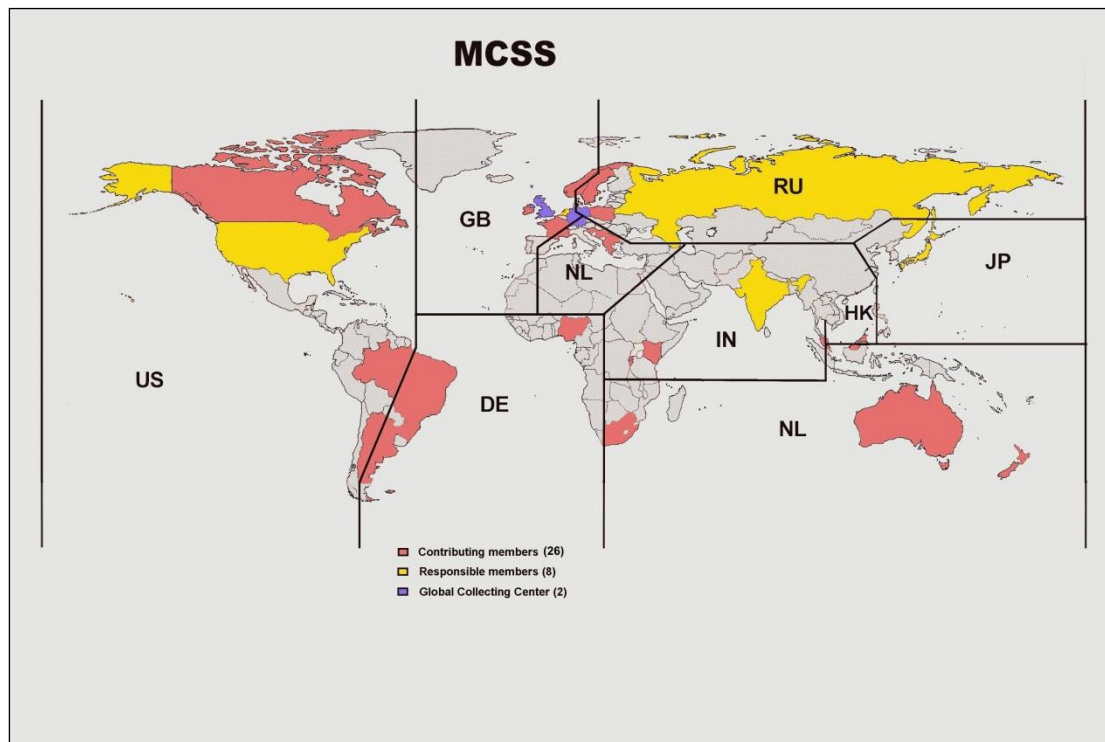
To improve data availability and quality, and in light of the recent developments, the GCCs make the following recommendations:

- CMs should submit their observations only once. If there is a requirement to resubmit data (e.g. quality improvements) then the GCCs should be made aware of this.
- CMs should submit data files in one IMMT format only – preferably now IMMT-5.
- Where problems arise that prevent a CM submitting its data e.g. when digitizing or converting into the IMMT format, GCCs should be asked for advice.
- By applying MQCS to data prior to submission, CMs can identify and solve significant problems, in particular issues within date, time and position.
- All VOSClim class ships should use the indicator for registered VOSClim ships in element 41 (observation Platform), in the newly adopted formats IMMT-4 and -5, with the option set to 4.
- All VOSClim class ship observations should include the additional VOSClim elements.
- CMs with VOS ships reporting the additional VOSClim elements should consider listing the vessels within the VOSClim program
- If possible convert all masked call signs (i.e. 'SHIP') back to the original ID prior to submission.
- CMs and RMs should stay up to date with TT-MCDS developments in order to ensure they know how they might be affected in the future or how they may contribute in the present. This can be done by attending meetings or reading workshop and session reports available on the JCOMM website.
- CMs and RMs should consider, if they wish to apply to be Data Acquisition Centres (DACs) and Global Data Assembly Centres (GDACs) in the future MCDS.

Appendix A: CM contribution by year since GCCs began operations in 1994

	ISO Alpha-2 code	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Number of Years with Contributions 1994 - 2014
Argentina	AR								X		X	X	X	X	X	X							7
Australia	AU							X		X	X	X	X		X	X	X	X	X		X	X	12
Brazil	BR	X	X	X	X																		4
Canada	CA																		X	X	X	X	4
Croatia	HR				X	X	X	X	X												X	X	7
France	FR	X	X	X	X	X		X		X	X	X	X	X	X	X	X		X	X	X	X	17
Germany	DE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	21
Greece	GR																	X	X	X			3
Hong Kong, China	HK	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	21
India	IN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	20
Ireland	IE			X	X	X				X							X	X	X	X		X	9
Israel	IL		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		18
Italy	IT																					X	1
Japan	JP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	21
Kenya	KE																						0
Malaysia	MY	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	19
Netherlands	NL	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	19
New Zealand	NZ													X	X	X	X	X	X			X	8
Nigeria	NG																						0
Norway	NO	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	18
Poland	PL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	21
Russian Federation	RU		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	20
Singapore	SG		X	X	X	X					X	X	X							X			9
South Africa	ZA						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	16
Sweden	SE			X													X	X	X		X	X	6
United Kingdom	GB	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	19
United States	US	X	X	X	X	X	X	X		X	X				X	X	X	X	X	X	X	X	17

Appendix B: Countries and regional responsibilities under the MCSS (updated 2009)



Appendix C: List of acronyms

APP	Ancillary Pilot Project
CM	Contributing Member
CMOC	Centre for Marine Meteorological and Oceanographic Climate Data
DAC	Data Acquisition Centre
DMCG	Data Management Coordination Group
DWD	Deutscher Wetterdienst
E-SURFMAR	EUCOS Surface Marine Programme
ETMC	Expert Team on Marine Climatology
FTP	File Transfer Protocol
GCC	Global Collecting Centre (MCSS / JCOMM)
GDAC	Global Data Assembly Centre
GISC	Global Information System Centre (of WIS)
HQCS	Higher Quality Control Standard
ICOADS	International Comprehensive Ocean-Atmosphere Data Set (USA)
IMMT	International Maritime Meteorological Tape Format
IOC	Intergovernmental Oceanographic Commission of UNESCO
IODE	International Oceanographic Data and Information Exchange
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
MCDS	Marine Climate Data System
MCSS	Marine Climatological Summaries Scheme
MQCS	Minimum Quality Control Standard
NCDC	National Climatic Data Centre
NMDIS	National Marine Data and Information Service
NOAA	National Oceanic and Atmospheric Administration (USA)
ODP	Ocean Data Portal
QC	Quality Control
RM	Responsible Member
SOA	State Oceanic Administration
SOT	Ship Observations Team
TT-MCDS	Task Team on Marine Climate Data System of ETMC
UK	United Kingdom
VOS	Voluntary Observing Ship
VOSclim	VOS Climate (Subset for High Quality Data)
WIS	WMO Information System
WMO	World Meteorological Organization