Global Collecting Centre

Annual Report 2013

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Summary

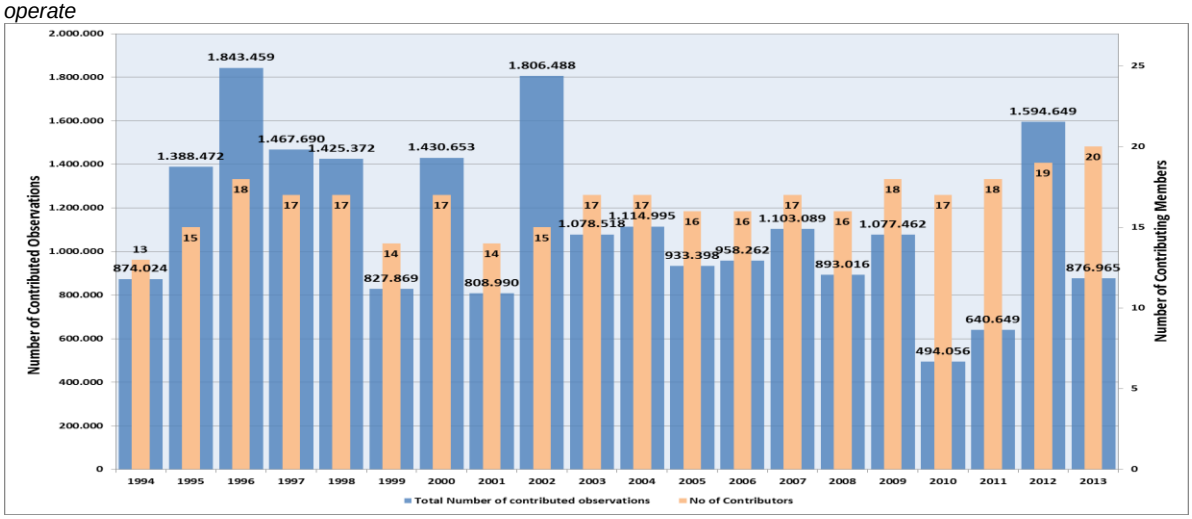
In 2013, 20 Contributing Members sent data to the GCCs, the highest number ever since the GCCs began operating in 1994. However, the number of contributed observations decreased considerably compared to the preceding year. This was due to a number of countries processing and contributing large volumes of backlogged data in 2012. Most of the records were not older than two years.

2013 marks the 20th year of GCC operation, 20 years of successful and effective data management. All data, original and MQC-checked, are available on the German WMO Information System's (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 & 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 & WMO Guide 471.

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



VOS Data Volumes 2013

- 876,965 observations were received and processed by the GCCs during 2013.
- 20 CMs contributed data out of a total of 27 registered Members/Member States.
- 1315 VOS ships made observations in 2013.
- The observation dates of the contributed data ranged from 1985 to 2013, however, 88% of the data were observed in the last two years, 2012 & 2013.
- 65% of the received observations were coded in IMMT-4 format and 2% in the most recent IMMT-5 format.
- 28% of the received observations were coded in the older IMMT-3 format, while 5% still in the core IMMT format, version 1.

Figure 2: Number of observations by CMs for each quarter of 2013.
(CMs without any contribution in 2013 are marked in red)

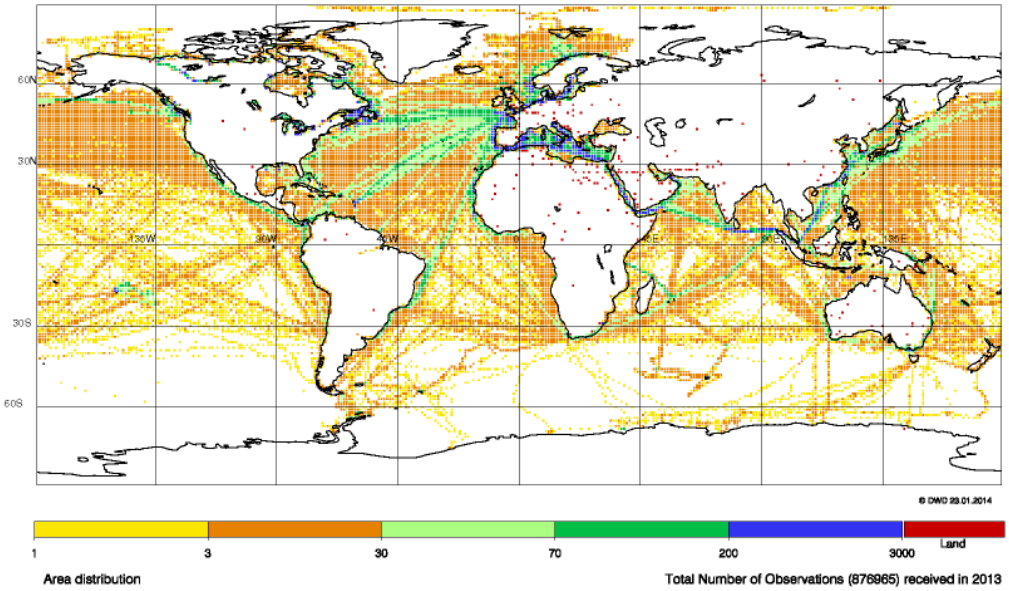
Country Name	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Argentina					
Australia		12828	1404	496	14.728
Brazil					
Canada	64660	227269			291.929
Croatia			43016		43.016
France	16884	39176	12812	27569	96.441
Germany	11973	74329	28071	23.512	137.885
Greece	167				167
Hong Kong, China	531	514		670	1.715
India		295			295
Ireland					
Israel	3664	1288			4.952
Italy			7847		7.847
Japan	3556	5535	2407	2760	14.258
Kenya					
Malaysia	1299		19	45	1.363
Netherlands	9030	5951	8777	17593	41.351
New Zealand					
Nigeria					
Norway	11608	12358	15054	13772	52.792
Poland				932	932
Russian Federation	5059	5132	5035	5039	20.265
Singapore					
South Africa	389		389		778
Sweden			47086	10390	57.476
United Kingdom		71982	15403		87.385
USA	112		1278		1.390
20 of 27 Contributing Countries	**128.932**	**456.657**	**188.598**	**102.778**	**876.965**

VOS Data Quality 2013

- The majority of observations were again of good quality. For example the most frequently reported elements such as air temperature, air pressure, wind direction and speed, were flagged in over 95 % with a 1, which means 'element appears correct'.
- There were 308 observations (0.04%) showing on-land positions. These are plotted as red dots in Figure 3.
- A TurboWin coding problem led to a number of IMMT-4 and -5 files being submitted with erroneous relative humidity values. The data were identified and the corrected files made available on the German GISC (Global Information System Centres). Until the coding problem is resolved, the GCCs will correct the data before processing and distribution.
- Several previously exchanged datasets were corrected in 2013. Three datasets distributed in 2012 were found to have erroneously calculated relative humidity values. This was a result of the previously mentioned TurboWin problem. One file, also distributed in 2012, was discovered to contain invalid positions created by a defective GPS system. The corrected files were made available to the RMs.
- Quarterly analysis of the exchanged datasets identified 493 duplicate observations (0.06%) that were rejected by the MQCS. Analysis of the yearly dataset highlighted that the number of observations rejected increased noticeably to 10,217. These observations (1% of total) failed MQC but were included at quarterly exchange.

- Before the quarterly data exchanges the duplicates due to previously submitted observations were deleted. Unfortunately, duplicate contributions or files resent in different quarters to the original 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 2013



VOSClim Class Data 2013

- 483,715 observations were received and processed from VOSClim registered ships by the GCCs during 2013.
- This makes up 55% of data received by the GCCs from the VOS fleet in 2013.
- 9 of the 10 CMs with registered VOSClim ships submitted observations (Figure 4) in 2013.
- In 2013, the GCCs received data from over 332 listed VOSClim ships.
- 181,151 of VOSClim observations (37%) contained the VOSClim defined additional elements.
- 42,967 observations from non-registered VOSClim ships were received with VOSClim defined additional elements. Also one ship recruited by E-SURFMAR and served by Italy, but not listed in the VOSClim ship list added the VOSClim elements.

Figure 4: VOSClim class observations submitted by CMs for each quarter of 2013
(CMs without any contribution in 2013 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 2013

Country Name	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			Total		
Australia	0	0	0	1.022	863	218	0	0	100	15	14	0	1.037	877	318
Canada	64.660	0	0	227.269	0	0	0	0	0	0	0	0	291.929	0	0
France	16.884	16.884	0	37.777	37.777	2.013	11.774	11.774	1.038	26.191	26.191	644	92.626	92.626	3.695
Germany	2.299	2.258	0	10.829	9.106	1	5.604	5.024	50	6.413	5.660	209	25.145	22.048	260
India	0	0	0	140	0	0	0	0	0	0	0	0	140	0	0
Italy	0	0	0	0	0	0	0	0	7.847	0	0	0	0	0	7.847
Japan	0	0	0	2.782	2.782	0	0	0	0	0	0	0	2.782	2.782	0
Netherlands	5.679	5.535	590	4.282	4.168	65	6.337	6.299	632	10.408	10.226	2.158	26.706	26.228	3.445
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
United Kingdom	0	0	0	34.726	29.836	22.001	7.680	5.811	4.981	0	0	0	42.406	35.647	26.982
USA	0	0	89	0	0	0	944	943	331	0	0	0	944	943	420
10 of 11 Countries	89.522	24.677	679	318.827	84.532	24.298	32.339	29.851	14.979	43.027	42.091	3.011	**483.715**	**181.151**	**42.967**

Recent Developments

New Contributions

In 2013 the GCCs received observations from some ships recruited by E-SURFMAR (the European Surface Marine Operational Service). But the country code “EU” is not part of the ISO Alpha-2 Code used in IMMT. It was decided to put the country code of Italy, which is managing the maintenance and visiting the ship. Therefore, Italy was added as the 27th MCSS-Member.

In addition, Croatia, with some help from the GCCs, was able to contribute their data for the first time since 2001.
Australia contributed its missing 2012 data after a computer problem preventing it from being sent was resolved.
Also in 2013, the GCCs successfully supported the contributions of Canada, Greece, Israel and Sweden, while digitising observations from paper logbooks and/or converting records from FM13 ship code to IMMT-5.

Meetings and Activities

In April 2013 the Ship Observations Team (SOT) met for its 7th session in Victoria, Canada. It was discussed if the GCCs could include observations from Ancillary Pilot Project (APP) ships and how to code these in the current IMMT format. The GCCs proposed that a blank country code (element 43) and code 9 (Others/data buoy) for observation platform (element 41) could be an indicator for APP ships which was agreed by the community. The next version of IMMT should add a new code figure for ancillary ships.

The TurboWin developers were asked to upgrade the software to allow coding in IMMT-5 format and to correct the invalid coding of relative humidity in whole percentage.

MCDS Development

The international oceanographic community discussed the MCDS Data Flow at the 22nd Session of the IODE Committee in Ensenada/Mexico (11-15 March 2013). The recommendations about IODE Global Data Assembly Centres (IODE GDACs) and the Marine Climate Data System (MCDS) were adopted. IODE-22 also decided to establish an ad hoc team to review the Implementation Plan during the coming intercessional period.

Up to now, only China has applied to become a CMOC (Centre for Marine Meteorological and Oceanographic Climate Data). The evaluation committee consisting of three persons has started the evaluation according to the agreed criteria and process.

Higher Quality Control Standard

DWD carried out a variety of tests of their new program to further improve the checking of the new standardised Higher Quality Control Standard (HQCS). A first version was sent to the National Oceanography Centre (NOC) in Southampton and the UK GCC for test purposes. Further improvements to the English documentation of the program are needed.

Recommendations

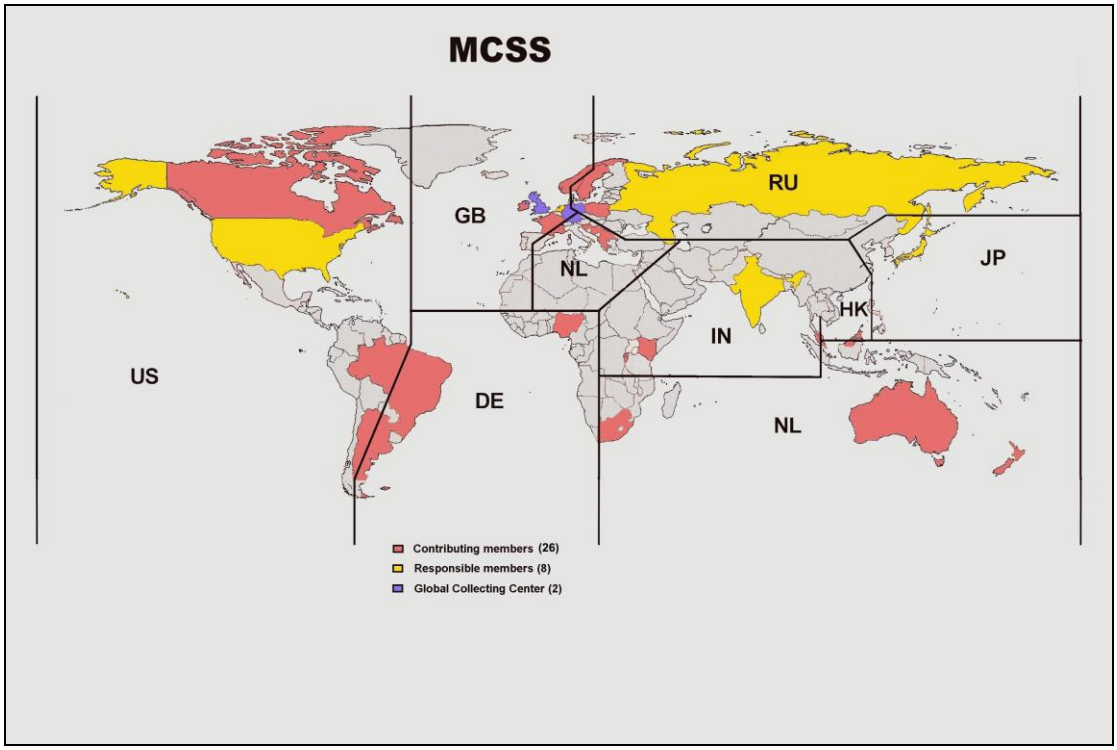
To improve data availability and quality, and in light of the recent developments, the GCCs make the following recommendations:

- 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 callsigns (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 a 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																				Number of Years with Contributions 1994 - 2013
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Argentina	AR								X		X	X	X	X	X	X						**7**
Australia	AU							X		X	X	X	X		X	X	X	X	X		X	**11**
Brazil	BR	X	X	X	X																	**4**
Canada	CA																		X	X	X	**3**
Croatia	HR				X	X	X	X	X												X	**6**
France	FR	X	X	X	X	X			X		X	X	X	X	X	X	X		X	X	X	**16**
Germany	DE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**20**
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	**20**
India	IN	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		**8**
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	**20**
Kenya	KE																					**0**
Malaysia	MY	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	**18**
Netherlands	NL	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	**18**
New Zealand	NZ													X	X	X	X	X	X	X		**7**
Nigeria	NG																					**0**
Norway	NO	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			X	X	**17**
Poland	PL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**20**
Russian Federation	RU		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**19**
Singapore	SG		X	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	**15**
Sweden	SE			X													X	X	X		X	**5**
United Kingdom	GB	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	**18**
United States	US	X	X	X	X	X	X	X		X	X				X	X	X	X	X	X	X	**16**

***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 Centres
DWD	Deutscher Wetterdienst
ETMC	Expert Team on Marine Climatology
GCC	Global Collecting Centre (MCSS / JCOMM)
GDAC	Global Data Assembly Centres
GISC	Global Information System Centres (of WIS)
E-SURFMAR	EUCOS Surface Marine Programme
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 Standards
NOAA	National Oceanic and Atmospheric Administration (USA)
ODP	Ocean Data Portal
RM	Responsible Member
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