

WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC
COMMISSION (OF UNESCO)

JOINT WMO/IOC TECHNICAL COMMISSION FOR
OCEANOGRAPHY AND MARINE METEOROLOGY (JCOMM)
EXPERT TEAM ON MARINE CLIMATOLOGY

ETMC-II/Doc. 8.1
(15.II.2007)

SECOND SESSION

ITEM 8.1

GENEVA, SWITZERLAND, 26 TO 27 MARCH 2007

Original: ENGLISH

MANUALS, GUIDES AND OTHER TECHNICAL PUBLICATIONS

Guide to the Applications of Marine Climatology

(Submitted by Mr Scott Woodruff)

Summary and purpose of document

This document provides information on the current status of the *Guide to the Applications of Marine Climatology* (both its "Static" and "Dynamic" Parts), and discusses plans and possibilities for future updates.

ACTION PROPOSED

The Expert Team on Marine Climatology is invited to:

- (a) Review the status and availability of the Dynamic Part of the *Guide to the Applications of Marine Climatology*, which includes the possibility of WMO hosting pdf files of articles from Gulev (2005) on its website starting around June 2007, and a recommended plan for its next update;
- (b) Review the availability and status of the Static Part of the *Guide to the Applications of Marine Climatology* (WMO-No. 781 (1994)).

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- Appendices:** (A.) Contents and Accompanying Editorial of the Most Recent Dynamic Part of the *Guide to the Applications of Marine Climatology* "Advances in Marine Climatology" (Gulev, 2005)
- (B.) Arrangement for International Journal of Climatology (IJC) special issue "Advances in Marine Climatology" (Vol. 25, No. 7, 15 June 2005) to become the "Dynamic Part" of the WMO *Guide to the Applications of Marine Climatology* (WMO-No. 781) (Gulev, 2005)

DISCUSSION

1. Background

The former WMO Commission for Marine Meteorology (CMM), now part of Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), agreed at its Twelfth Session (WMO 1997) that the *Guide to the Applications of Marine Climatology* should be comprised of two parts in the future, (“Static,” and the other “Dynamic”), to enhance utility and facilitate updates, and with the general aim of providing up-to-date guidance and technical support to respective National Meteorological Services (NMSs) in their acquisition, processing, analysis and application of marine meteorological data.

The existing *Guide*, WMO-No. 781 (1994), which is currently not available in electronic format, would form the “Static Part” and remain unchanged for a long duration, whilst the Dynamic Part would be updated approximately every four years. Accordingly, the Session supported a proposal to convene a workshop to provide input for the “Dynamic Part” of the *Guide*.

2. CLIMAR and MARCDAT workshops

The first WMO Workshop on Advances in Marine Climatology (CLIMAR99, also known as CLIMAR-I) was held in Vancouver, Canada in September 1999. Papers from said workshop were initially published in JCOMM (2003a). From amongst those papers, the First Session of JCOMM (WMO, 2001) recommended the publication of a selection, plus of an additional paper requested by the CMM (WMO, 1994) on Beaufort equivalent scales, by Ralf Lindau (Germany). After a peer review, the selected papers appeared in JCOMM (2003b) as the first Dynamic Part of the *Guide*. Moreover, it was intended that this dynamic component should be updated again on the basis of papers presented at a second CLIMAR workshop (CLIMAR-II).

Meanwhile, the first Workshop on Advances in the Use of Historical Marine Climate Data (MARCDAT-I) was held in Boulder, Colorado, USA, (from January to February 2002). MARCDAT-I made a range of recommendations for activities in marine climatological data development and research (Diaz, et al., 2002), and CLIMAR-II was organized partly, in light of these recommendations.

CLIMAR-II was held in Brussels, Belgium, November 2003 (Parker, et al. 2004), linked to a two-day celebration of the 150th anniversary of the 1853 Brussels Maritime Conference (JCOMM 2004a). Building on the previous workshops, the CLIMAR-II saw the need to continue to monitor and assess progress in marine climate data analysis by bringing together the global data-development and research communities approximately every two years. In accordance to these needs, it recommended:

- A sequel to MARCDAT-I should be held in 1-2 years' time;
- CLIMAR-III should be held in 2007.

Presentations made at CLIMAR-II appeared in JCOMM (2004b), and a selection of papers was later published in a special issue of the *International Journal of Climatology* (Gulev, 2005), thus forming the planned update of the Dynamic Part of the *Guide* (see Section 3).

Most recently, MARCDAT-II was held in Exeter, United Kingdom, in October 2005 (Rayner, et al., 2006, and Kent, et al. 2007). All these workshops brought together a wide spectrum of marine data users and managers of marine data and products, with extensive participation by the Expert Team on Marine Climatology Members, and have included an underlying focus on the continuing evaluation, utilization, and improvement of the ICOADS (Woodruff, et al. 2005 and Worley, et al., 2005).

In addition to the published outcomes, the previous workshops produced and tracked a consolidated set of scientific and technical recommendations (www.marineclimatology.net) to help guide the work of this group and provide feedback for the broader research community (see ETMC-II/Doc. 7).

The JCOMM-II (2005) endorsed the recommendation for a self-funded CLIMAR-III, and, following Poland's kind offer made in October 2006 to host, the workshop is currently being planned from 6 to 9 May 2008, in the 3-city complex of Gdansk/Sopot/Gdynia (see ETMC-II/Doc. 7). Therefore, a similar approach for updating the Dynamic Part of the *Guide* is suggested for consideration by the ETMC as an outcome from CLIMAR-III.

3. Status of the Dynamic Part of the *Guide* (Gulev 2005)

The special issue, "Advances in Marine Climatology" (Gulev 2005) of the *International Journal of Climatology* currently forms the Dynamic Part of the *Guide*. The CLIMAR-II participants proposed, and the Organizing Committee selected for submission, a set of papers falling under that general theme. In addition to regular journal papers, these included a small number of overview papers containing information of broad interest. Dr Sergey Gulev (Russia) kindly agreed to serve as Special Editor of this publication.

Normally, an IJC issue contains approximately eight full-length papers, each of approximately 6000 words and with a maximum of about 10 figures. However, in view of the strong interest, the publisher (Wiley) incorporated 13 papers for this issue (see Appendix A for further details).

In September 2006, according to terms proposed by the publisher (Wiley, see Appendix B), a WMO website link was made.

As a proposed next step, note from Appendix B that two years after the print publication of the papers in the *International Journal of Climatology* (i.e., June 2007), the publisher proposed to provide pdf files of the articles, which could be hosted on the WMO website, free of charge, but with the additional requirement that "...the Wiley copyright of the papers is credited, and that promotional copy from Wiley may be hosted on the WMO website."

References

†: Available from: www.wmo.ch/web/aom/marprog/Publications/publications.htm
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JCOMM, 2003b: *Advances in the Applications of Marine Climatology—Dynamic Part of the WMO Guide to the Applications of Marine Climatology*. WMO/TD–No. 1081 (JCOMM Technical Report No. 13)—CD-ROM. [Note: A correction for p. 213 is available on-line.]†*

JCOMM, 2004a: *An International Seminar to Celebrate the Brussels Maritime Conference of 1853 – An Historical Perspective of Operational Marine Meteorology and Oceanography: Proceedings*. WMO/TD–No. 1226 (JCOMM Technical Report No. 27)—CD-ROM.

JCOMM, 2004b: *Proceedings of CLIMAR-II: Second JCOMM Workshop on Advances in Marine Climatology (Brussels, Belgium, 17-22 November 2003)*. WMO/TD–No.1199 (JCOMM Technical Report 22)—CD-ROM.

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Appendices: 2

Appendix A

Contents and Accompanying Editorial of the Most Recent Dynamic Part of the Guide to the Applications of Marine Climatology “Advances in Marine Climatology”

Int. J. Climatol. **25**: 821-1022 (2005) (15 June 2005; Published Online: 6 Jun 2005)

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Editorial (p 821) Sergey Gulev (DOI: 10.1002/joc.1165)

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COADS release 2.1 data and products (p 823-842) Steven J. Worley, Scott D. Woodruff, Richard W. Reynolds, Sandra J. Lubker, Neal Lott (DOI: 10.1002/joc.1166)

Quantifying random measurement errors in Voluntary Observing Ships' meteorological observations (p 843-856) Elizabeth C. Kent, David I. Berry (DOI: 10.1002/joc.1167)

Impacts of *in situ* and additional satellite data on the accuracy of a sea-surface temperature analysis for climate (p 857-864) Richard W. Reynolds, Huai-Min Zhang, Thomas M. Smith, Chelle L. Gentemann, Frank Wentz (DOI: 10.1002/joc.1168)

Objective analyses of sea-surface temperature and marine meteorological variables for the 20th century using ICOADS and the Kobe Collection (p 865-879) Masayoshi Ishii, Akiko Shouji, Satoshi Sugimoto, Takanori Matsumoto (DOI: 10.1002/joc.1169)

A 1° monthly gridded sea-surface temperature dataset compiled from ICOADS from 1850 to 2002 and Northern Hemisphere frontal variability (p 881-894) Shoshiro Minobe, Atsushi Maeda (DOI: 10.1002/joc.1170)

Assessing bias corrections in historical sea surface temperature using a climate model (p 895-911) Chris Folland (DOI: 10.1002/joc.1171)

Regime shift in the global sea-surface temperatures: its relation to El Niño-southern oscillation events and dominant variation modes (p 913-930) Sayaka Yasunaka, Kimio Hanawa (DOI: 10.1002/joc.1172)

Objective analyses of annual, seasonal, and monthly temperature and salinity for the World Ocean on a 0.25° grid (p 931-945) Timothy Boyer, Sydney Levitus, Hernan Garcia, Ricardo A. Locarnini, Cathy Stephens, John Antonov (DOI: 10.1002/joc.1173)

A seasonally resolved bottom-water temperature record for the period AD 1866-2002 based on shells of *Arctica islandica* (Mollusca, North Sea) (p 947-962) Bernd R. Schöne, Miriam Pfeiffer, Thomas Pohlmann, Frank Siegismund (DOI: 10.1002/joc.1174)

Climatology, variability and extrema of ocean waves: the Web-based KNMI/ERA-40 wave atlas (p 963-977) Andreas Sterl, Sofia Caires (DOI: 10.1002/joc.1175)

Methods to homogenize wind speeds from ships and buoys (p 979-995) Bridget R. Thomas, Elizabeth C. Kent, Val R. Swail (DOI: 10.1002/joc.1176)

An overview of the airflow distortion at anemometer sites on ships (p 997-1006) Benjamin I. Moat, Margaret J. Yelland, Robin W. Pascal, Anthony F. Molland (DOI: 10.1002/joc.1177)

The effect of instrument exposure on marine air temperatures: an assessment using VOSCLIM Data (p 1007-1022) David I. Berry, Elizabeth C. Kent (DOI: 10.1002/joc.1178)

EDITORIAL

This special issue includes the papers presented at the CLIMAR-II Workshop on Advances in Marine Climatology held in Brussels in November 2003. This workshop marked the 150-year anniversary of the Brussels Maritime Conference of 1853, which established a Uniform system of meteorological observations at sea carried out by voluntary observing ships (VOSs). This workshop focused on today's critical issues of marine climatology. These are, first of all, the development of new-generation global and regional climatologies of the basic surface variables (sea-surface temperature (SST), air temperature, winds, waves, etc.) and surface air-sea fluxes governing the impact of the oceans on atmospheric climate variability. Furthermore, some new algorithms for the quantification and correction of biases in surface variables and fluxes were introduced. Nearly all workshop presentations, in one way or another, employed the newly updated outstanding world collection of marine observations known as the International Comprehensive Ocean-Atmosphere Data Set (ICOADS).

This special issue starts with the paper by Worley *et al.* giving a comprehensive guide on the ICOADS. The article by Kent and Berry addresses the issue of quantitative estimation of different sources of uncertainties in the basic surface meteorological variables. A detailed analysis of different error sources in air temperatures and marine winds is presented in the articles by Moat *et al.*, and Berry and Kent. Several articles (Reynolds *et al.*, Ishii *et al.*, Minobe and Maeda, Folland, and Boyer *et al.*) deal with the analysis of the new SST products that include both uncertainties estimation and field evaluation on regional and global scales. The attempt to quantify the climate variability modes (Yasunaka and Hanawa) shows that climatological VOS-based SST fields are well developed and could be used for variability studies. There are also attempts to evaluate SST characteristics from data sources other than from VOS. These are hydrographic databases (article by Boyer *et al.*) and palaeo records (Schöne *et al.*). Apart from the SST analyses, considerable efforts have been taken to improve the global fields of the wind and wave variables available from both in-situ observations and modelling (articles by Sterl and Caires, and by Thomas *et al.*). Altogether, 13 papers give extensive coverage of the burning issues of present-day marine climatology.

The Brussels Workshop was made possible thanks to the outstanding efforts of the organizing committee consisting of Scott Woodruff (Chair), David Dehenauw, Don Harrison, Teruko Manabe, Miroslaw Mietus, David E. Parker and Val Swail. The following agencies provided valuable sponsorship for the workshop: the World Meteorological Organization, the Intergovernmental Oceanographic Commission, the Royal Meteorological Institute of Belgium, the Belgian Federal Science Policy Office, Environment Canada, the Japan Meteorological Agency, the National Center for Atmospheric Research, and the National Oceanic and Atmospheric Administration. In June 2007 all articles of this Special Issue will appear (for free access) on the WMO Website in the Dynamical Part of the WMO Guide on Marine Climatology. We thank the Royal Meteorological Society and our publisher, John Wiley and Sons for the permission. Glenn McGregor, the Editor-in-Chief of the *International Journal of Climatology*, provided valuable support to this special issue. This journal, in general, holds marine climatology as one of its current major themes. Finally, I would like to thank Nadia Kovaleva for editorial assistance.

SERGEY GULEV
Guest Editor

Appendix B

Arrangements for *International Journal of Climatology* (IJC) special issue “Advances in Marine Climatology” (Vol. 25, No. 7, 15 June 2005) to become the “Dynamic Part” of the WMO *Guide to the Applications of Marine Climatology* (WMO-No. 781)

In agreement with our earlier discussions, Wiley summarized its offer as follows (excerpt from 4 May 2005 e-mail from Fiona Murphy, Journals Editor, Wiley; FMurphy@wiley.co.uk):

“To clarify previous correspondence: Wiley is offering WMO an Agreement which will allow them to host a link through to the Wiley IJC homepage immediately on print publication, in IJC, of the Special Issue papers concerned. This will allow visitors to the WMO website to click through to IJC online, and access the Abstracts and table of contents free of charge. Access to the full text of the articles will be available via paid subscription, or the Pay Per View service which allows non-subscribers to purchase access to individual articles online.

Two years after print publication of the papers in IJC, we will send WMO pdf files of the articles, and allow them to host these on their website free of charge. In order to activate this stage, please contact Michelle Theakston, the Production Editor either at the address below or directly (phone: +44 (0)1243 770294, email: mtheakst@wiley.co.uk) just before, or on, the second anniversary of publication.

At both stages, we require that the Wiley copyright of the papers is credited, and that promotional copy from Wiley may be hosted on the WMO website.”

1 October 2005
Scott Woodruff