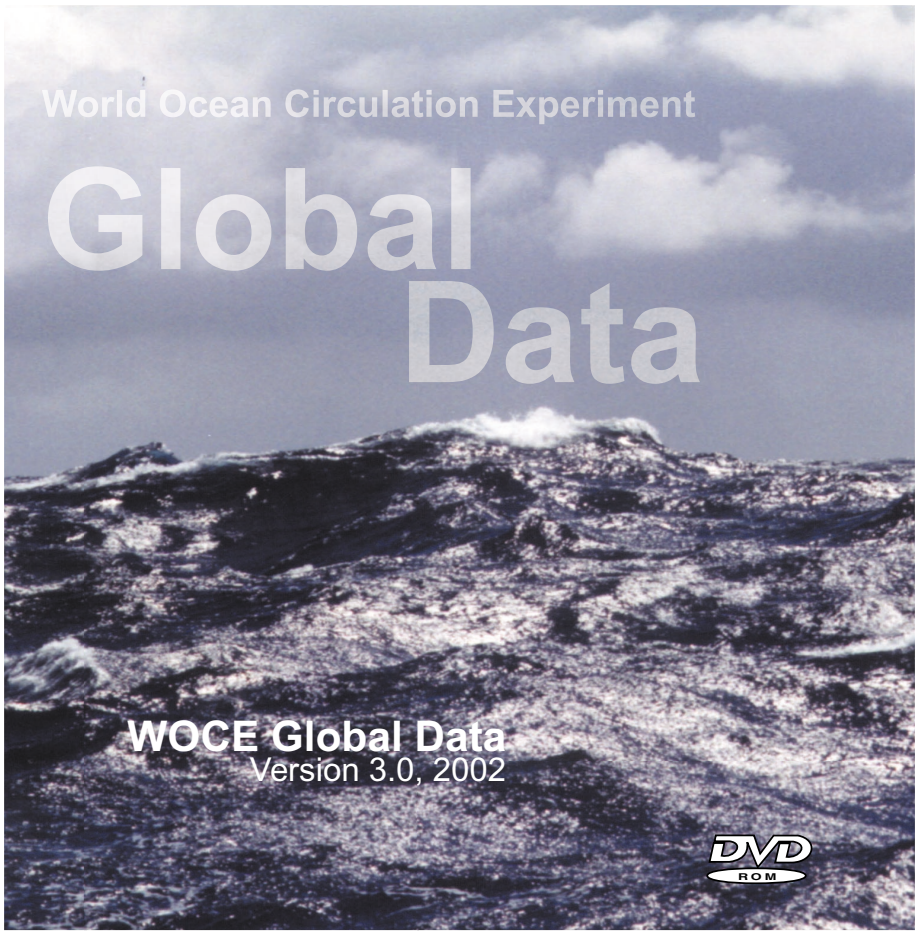
World Ocean Circulation Experiment
Global
Data
WOCE Global Data
Version 3.0, 2002
DVD
ROM

Acknowledgements

The World Ocean Circulation Experiment was an international project developed with the resources, efforts and co-operation of many countries, organisations, institutions and individuals. It is not possible to identify and thank individual sources of data here, but the contributions of Principal Investigators are gratefully acknowledged. Information about data providers is supplied wherever possible in the documentation that accompanies the data. Users of WOCE Global Data are requested to make every effort to acknowledge this data resource. The full reference for this DVD set is given at the base of this page.

The WOCE Data Products Committee devised the original concept of the WOCE Global Data disks, and guided their production and content. The DVD contents were constructed by the Data Assembly Centres, Special Analysis Centres and the Data Information Unit. Their contribution to this package is also gratefully acknowledged.

The WOCE International Project Office acknowledges the support of the U.S. National Oceanographic Data Center (NODC) in funding the reproduction of the WOCE Global Data Version 3.0 DVDs.

WOCE Data Products Committee, 2002. WOCE Global Data, Version 3.0.
WOCE International Project Office
WOCE Report No. 180/02, Southampton, UK.

Introduction

WOCE was one of the principal projects of the World Climate Research Programme. It was the first attempt to survey the oceanic circulation globally over a brief period, aiming to collect a data base to support the development of the global eddy-resolving ocean circulation models for use in climate research. WOCE also studied the inherent variability of the ocean during the 1990s. The WOCE data set forms a high quality baseline against which future and past change can be assessed.

New in Version 3.0

Version 3.0 is the complete WOCE data resource, containing more than 90% of all data collected for the WOCE programme. Data are supplied in the netCDF format, facilitating access to all data streams using the same software. Major advances for Version 3.0 are the integration tools provided with the data. These include a search tool which will locate all files in a given area, time period, or containing a selected parameter, and an electronic atlas of WOCE data for rapid visualisation and interactive analysis.

Contents

There are 2 DVDs of data, documentation and products. The data are in a series of folders from each Data Assembly Centre and Special Analysis Centre:

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Getting Started

The WOCE Global Data DVDs are single-sided/double-layered disks which means that they will be readable on all but the earliest DVD readers. All new personal computers come with DVD readers that can read these disks. If you do not have access to a DVD reader, we recommend that you purchase one either as a plug-in drive (available for PCs, Macintosh and unix) or in a new computer. Your investment in hardware will be well rewarded by desktop access to this unique data resource.

The DVDs are platform independent and are designed to be navigated with an internet browser. Each root directory contains an *index.htm* file which will lead you to the data, products, metadata and search tools.

Documentation is in ASCII, HTML or Adobe Acrobat PDF files. You may need to upgrade your software to read the pages correctly. Recent versions can be found on the disks and at:
http://www.adobe.com/products/acrobat/readstep2.html
http://www.microsoft.com/downloads/searchdl.asp?
http://browsers.netscape.com/browsers/main.tmpl

How to Find Data

The data are arranged by the elements of the field programme under which they were collected (see previous page for a list of the elements). You can access the data via your browser through links to the field programme elements from the top level *index.htm* file. Alternatively you can use the WOCE Integration Search Tool that allows you to search across the DVDs for data in a particular time period, location and/or containing specific parameters. Information on how to use the Search Tool and other facilities on the disks is provided on the Software/Resources and Help pages which are reproduced on both disks.

Data Format

All the data files are provided in the netCDF format, a self-describing binary data format that can be read by commonly used software packages. Many are also provide in ASCII. If you are unfamiliar with netCDF you can find guidance on how to view, plot and manipulate the data in the Primer, a first-time users guide to netCDF. The Primer can be found on the Help pages of the disks.

The WOCE Data System

The WOCE data management structure was a distributed system which utilised the expertise of scientists and data managers to attain the highest possible data quality and documentation. Each measurement technique produced an individual data stream, and the data system brought them together to form a single data resource for numerous investigators and analysis groups.

The Data Information Unit

was the central source of information on the status of WOCE, tracking all data collection, processing and archiving activities, and acting as the primary interface between the WOCE data system and all users.

Data Assembly Centres

were managed by scientists, handled assembly and quality control of data sets, and generated data products.

Special Analysis Centres

performed analysis and synthesis functions, including the generation of derived data sets.

The WOCE Archive

is at the U.S. National Oceanographic Data Center and will be distributed across the centres of the World Data Centre system.

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WOCE DATA INFORMATION UNIT

This directory summarises the design, implementation and status of WOCE. It details the elements of the experiment, the available datasets, the participating scientists, a bibliography, and the software required to search and access the data in the WOCE Global Data Version 3.0.

- A tool to search the WOCE data resource by location, date, variable and/or EXPOCODE.
- Tables and figures summarising WOCE data sets.
- Key publications relating to the design and implementation.
- Bibliography of refereed and unpublished papers.
- "Who's who" of WOCE scientists with addresses & e-mails.
- A description of netCDF and related resources needed to view and manipulate the data sets.
- Software including Acrobat Reader and browsers to access the contents.

HTML, Adobe Acrobat PDF and ASCII.

Produced by the Data Information Unit at University of Delaware
www.wocediu.org

WOCE AIR-SEA FLUXES

This folder contains a collection of surface flux fields either produced by the SAC or provided to the SAC for distribution. The disk includes tropical ocean pseudostress, global ocean stress fields, global flux climatologies, related documentation, plots, and a data inventory.

- Tropical Pacific and Indian Ocean pseudostress from Florida State University (FSU).
- Tropical Atlantic Ocean pseudostress, sea temperature from ORSTOM.
- Tropical Indian Ocean Fluxes from FSU.
- Air-sea heat, momentum, and freshwater flux climatologies from Southampton Oceanography Centre.
- A sample of 12-hourly NOGAPS stress from the U.S. Navy.
- A sample of QuikScat global pseudostress fields produced at FSU.

Data are supplied in netCDF and ASCII formats, documents in HTML, PDF, and text formats.

Produced by RVSMDC at COAPS, The Florida State University
www.coaps.fsu.edu/woce/SAC/

surface flux fields

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WOCE CURRENT METER MOORINGS

The Current Meter Data Assembly Center (CMDAC) is operated by the Buoy Group at Oregon State University. CMDAC has assembled a uniformly-processed, high-quality set of current meter records from WOCE experiments. All the WOCE records have been examined and brought up to a single, uniform standard. The archive also includes data from moored ADCPs.

In addition to the current meter records we have included site maps, references, quality-control information and short descriptions of the experiments. Each current record is accompanied by a page that shows metadata and statistics. Other tables list flow statistics, including mass and heat fluxes. Metadata files describe each file and its provenance.

The WOCE current records are present here in two formats: netCDF and the Buoy Group's Stranger format. The Stranger format is an easy-to-read ASCII format.

Produced by Buoy Group at Oregon State University
kepler.coas.oregonstate.edu

WOCE SURFACE VELOCITY PROGRAMME

The Surface Velocity Programme DAC is composed of the Global Drifter Center (GDC) at AOML and MEDS of Canada. The GDC assembles drifter data from all sources and provides data quality assessment. They apply an interpolation scheme to generate velocity estimates every 6 hours for all buoys that are operating. The original data as well as the interpolated data are sent to MEDS every 6 months for archiving and distribution.

The SVP folder contains data from drifters deployed before, during and after the WOCE period (1979 - 2000). All data have passed through the same quality assessment procedures and interpolations. The folder contains the interpolated data as well as information about each drifter, and analyses generated by the GDC from the data.

The data are in netCDF format, with one file containing all of the data from one year and one ocean basin.

Produced by the Drifter DACs at MEDS, Canada and AOML, USA
www.meds-sdmm.dfo-mpo.gc.ca/meds/Prog_Int/woce/WOCE_SVP/SVP_e.html
www.aoml.noaa.gov/phod/dac/

surface drifter lagrangian data

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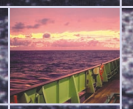

WOCE HYDROGRAPHIC PROGRAMME

The WOCE Hydrographic Program Office (WHPO) gathers, merges, and makes available data from the WHP (CTD and water sample data); improves the adherence of data to WHP format and content specifications; and assembles and provides relevant documentation. Please visit the WHPO web site to check for new and updated data sets and for repairs of file and data problems.

The WHP directories contain data and documentation for the WHP One-Time Survey cruises, for the WHP Repeat Hydrography cruises, and for WOCE Time Series Stations. Organization of cruise data and documentation is hierarchical by WHP program, ocean basin, WHP line designator, and cruise date. Maximum station information is present in "WOCE" data files. "WHP-Exchange" data files are easiest to read, and are the basis for the "WOCE netCDF" data files.

The WHP profile CTD and bottle data are in the ASCII "WOCE" and "WHP-Exchange" formats and the binary "WOCE netCDF" formats.

Produced by the WHP Office at the
UCSD Scripps Institution of Oceanography
whpo.ucsd.edu

PROFILING FLOATS

The data are profiling float data available in mid-2002, and are the result of help from the US WOCE Office, and individuals who willingly contributed the data and information. Because of the short time frame for assembly of the data, it was not possible to pass them through standardised quality assessment tests. The data have undergone quality checks conducted by the originator only. Users are cautioned to keep this in mind.

The disk contains data collected using profiling floats deployed between 1994 and 2001. In most cases only temperature profiles are available, though some have salinity too. Surface drift locations also appear if they were provided. The data are organised on the disk by contributor. Additional information about the floats provided with the data has been included. Some simple statistics are provided to show the distribution of data in time, vertically and geographically.

The data are in netCDF format. The profile data are in the format used for the Upper Ocean Thermal data. The surface drift data are in the format devised for the Argo Programme.

Produced by the Marine Environmental Data Service, Canada
meds-sdmm.dfo-mpo.gc.ca

surface salinity data

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SEA SURFACE SALINITY

The disk contains sea surface salinity data collected during the WOCE period by research vessels on WOCE sections, and by merchant vessels known as voluntary observing ships (VOS) through the French IRD (Institut de Recherche pour le Développement) network.

The disk contains data acquired with thermosalinographs during the period 1990-1998. Data location maps are also provided. Quality control procedures have been applied to the data, but were the responsibility of the data providers. The data are organised on the disk by WOCE section for research vessels data, and by ocean for VOS data.

Data are supplied in netCDF and ASCII formats. The netCDF format is derived from the Argo trajectories format.

Produced by the Sea Surface Salinity DAC
at IRD and IFREMER, Brest, France
www.ifremer.fr/orstom/sss/sss_dac/sss_dac.html

WOCE SHIPBOARD ACOUSTIC DOPPLER CURRENT PROFILERS

This DVD folder contains shipboard Acoustic Doppler Current Profiler (SADCP) data taken on WOCE cruises, as nominally hourly and 10 m depth averages. In addition, all available cruises from the Joint Archive for SADCP, a collaboration between the US National Oceanic and Atmospheric Administration's (NOAA) National Coastal Data Development Center (NCDDC) and the University of Hawaii (UH), are provided.

In addition to the SADCP data, plots are available for each cruise track, with mean vectors along the track at shallow (~30 m) and intermediate (~150 m) depth levels. Inventories and cumulative cruise track plots are provided for the One-time, Repeat Surveys, Special Surveys, Time Series, and miscellaneous cruises. Data are organised by cruise, which is the time segment as provided by the data originator. This may include a single leg (port to port) or multiple legs per file.

The nominally hourly/10 m averages are provided in WOCE Version 3.0 netCDF format as well as simple ASCII files.

Produced by the SADCP DAC which is co-located at the
Japan Oceanographic Data Center (JODC) and the Joint Archive for SADCP
www.jodc.go.jp/ and ilikai.soest.hawaii.edu/sadcp/

upper ocean current data

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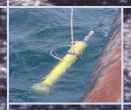

WOCE SUBSURFACE FLOATS

The WOCE Subsurface Float DAC has accumulated a large proportion of the Lagrangian data available from both historical and WOCE-era subsurface floats. Temperature and pressure information along the tracks are included, where available. This information is usable by scientists for statistical studies of currents and incorporation into ocean models.

Data available to the oceanographic community before November 1, 2002 are in this folder. In addition, there are background files, plots, a list of parameters for each float, and a list of papers written using the data. Data are generally organised by experiment, and for each experiment, there are three "zip" files containing the data in different formats.

The 3 formats are (i) the format received from the principal investigator, (ii) the historical, ASCII "floater" format, and (iii) the WOCE Version 3.0 netCDF format.

Produced by WOCE Subsurface Float DAC
at Woods Hole Oceanographic Institution, MA USA.
wfdac.whoi.edu

WOCE SURFACE METEOROLOGY

This folder contains a collection of quality evaluated underway surface meteorology data from research vessels that completed WOCE and select supplemental cruises. The disk includes standard meteorology and navigation data, associated data quality reports, cruise maps, documentation, and a data inventory.

- Underway data for 475 WOCE cruises and 2600 supplemental ship days.
- Meteorology data: winds, air and sea temperature, atmospheric pressure, humidity, precipitation, radiation, and clouds.
- Navigation data: vessel position, heading, course, and speed.

Data are supplied in COARDS/WOCE netCDF format, documents in HTML and PDF formats.

Produced by RVSMDC at COAPS, The Florida State University
www.coaps.fsu.edu/woce/

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WOCE UPPER OCEAN THERMAL

The Upper Ocean Thermal DAC primarily assembles temperature profile data collected from the upper 1000m. The UOT DAC has several members who share responsibilities in assembling data and information from real-time and delayed mode sources. The data all reside at the main archive centre at the U.S. NODC. More information about the roles of each participant is provided on the disk.

Data are mainly from XBTs (Expendable Bathy Thermographs) but also from CTDs and bottles. All data from 1990 to 1998 have passed through scientific assessment while those from later years have gone through basic data centre assessment. Corrections to depth were applied only to the XBT data, and only if there was sufficient information to be sure that a correction was appropriate. Data are presented with 1 station per file. Groups of files are arranged in compressed files by ocean basin and quarter of the year. Data from High Density XBT sections are presented in additional files.

Data are in netCDF format.

Produced by all the members of the UOT DAC
www.nodc.noaa.gov/GTSPP/gtspp-home.html

WOCE BATHYMETRY

The Marine Geology and Geophysics Division of the National Geophysical Data Center and the WOCE Data Information Unit have collaborated in assembling and quality controlling the available bathymetry data sets from WOCE cruises. These data were in a variety formats and in many cases a judgement needed to be made as to whether sound velocity corrections have been applied. Observation times were not always available.

Corrected depths and positions are available for 56 One-Time Hydrographic Cruises and 29 Repeat Cruises. Archived copies are in the NGDC Marine Trackline Database (GEODAS) and locatable by the NGDC identifier, by a search on “WOCE” or by Expocode and Line number.

The header and data files are in netCDF and MGD77 ASCII format. Within the 120 byte data format only the data set identifier, position, and corrected depth fields are certain to contain significant data.

Produced by the WOCE Data Information Unit at University of Delaware
www.wocediu.org

WOCE IN SITU SEA LEVEL (FAST DELIVERY)

The 'fast delivery' sea level DAC assembled and quality controlled the near-real time (1-1.5 month delay from collection) in situ sea level data for approximately 125 tide gauge sites. Where possible, data collected prior to the WOCE period were extended to 1985 for use with satellite altimetry products.

Hourly, daily and monthly in-situ sea level data for the identified WOCE fast delivery sites. Also data and products from the Joint Archive for Sea Level (JASL), a collaborative effort with the US National Oceanographic Data Center (NODC), and the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) Sea Level Program in the Pacific (SLP-Pac). Sample routines to scan and read the data.

The WOCE data are in WOCE Version 3.0 netCDF format as well as EPIC netCDF and ASCII formatted files. The JASL and SLP-Pac products and data are in ASCII formatted files.

Produced by University of Hawaii Sea Level Center, JIMAR, SOEST, University of Hawaii, Honolulu, Hawaii
uhslc.soest.hawaii.edu

WOCE IN SITU SEA LEVEL (DELAYED MODE)

The 'Delayed-mode' Sea Level DAC assembles and quality controls the comprehensive sea level data set for WOCE. This data set comprises high frequency (usually hourly) sea level data from approximately 160 coastal tide gauge sites and 50 deployments of deep sea bottom pressure recorders. Where possible, data collected prior to the WOCE period have also been included.

- Delayed-mode sea level data set (coastal tide gauge sites, deep sea bottom pressure recorders and supporting documentation).
- Tidal harmonic constants, confidence limits and power spectra (contributed by the Laboratoire d'Etudes en Geophysique et Oceanographie Spatiales (LEGOS), France).
- Permanent Service for Mean Sea Level (PSMSL) data set.
- IOC Global Sea Level Observing System (GLOSS) Station Handbook.

Data are supplied in both netCDF and ASCII formats.

Produced by the 'Delayed-mode' Data Assembly Centre at the British Oceanographic Data Centre, UK
www.bodc.ac.uk

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WOCE SATELLITE SEA SURFACE TEMPERATURE

NASA's Physical Oceanography Distributed Active Archive Center (PO-DAAC), located at the Jet Propulsion Laboratory, California Institute of Technology, manages oceanographic data collected by satellites, with special emphasis on sea surface height, temperature and winds. PO-DAAC is funded by NASA's Earth Observing System's Data and Information System.

This DVD folder contains sea surface temperature from the AVHRR instrument on the NOAA-n satellites, with Pathfinder algorithm, for 1/1990 to 8/2001. The data are gridded on 0.5 and 1.0 degree, 5 day grids. Both digital data and GIF images, software to animate the GIF images, and abundant documentation are included.

The data are in netCDF format. Sample routines to scan and read the data are included, but they assume the user has installed the netCDF library.

Produced by PO-DAAC, JPL, California Institute of Technology
podaac.jpl.nasa.gov

WOCE SATELLITE SEA SURFACE HEIGHT

NASA's Physical Oceanography Distributed Active Archive Center (PO-DAAC), located at the Jet Propulsion Laboratory, California Institute of Technology, manages oceanographic data collected by satellites, with special emphasis on sea surface height, temperature and winds. PO-DAAC is funded by NASA's Earth Observing System's Data and Information System.

This folder contains sea level from the TOPEX/POSEIDON and ERS altimeters spanning 10/1992 through 12/2001. The data are gridded on 0.5 degree/10 day and 1 degree/5 day grids. Both digital data and GIF images, software to animate the GIF images, and abundant documentation are included.

The data are in netCDF format. Sample routines to scan and read the data are included, but they assume the user has installed the netCDF library.

Produced by PO-DAAC, JPL, California Institute of Technology
podaac.jpl.nasa.gov

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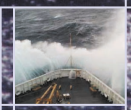

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WOCE SATELLITE SURFACE WINDS

This folder contains weekly and monthly mean wind fields calculated respectively from the following scatterometers : AMI-Wind onboard ESA (European Space Agency) satellites ERS-1 (1991-1996) and ERS-2 (1995-2001), NSCAT (NASA scatterometer) onboard NASDA satellite ADEOS-1 (1996-1997) and SeaWinds onboard NASA satellite QuikSCAT (1999-2002).

The following parameters are provided on a global 1 x 1 degree grid (0.5 x 0.5 degree for QuikSCAT):

- Wind velocity (magnitude, zonal & meridional components).
- Wind stress (magnitude, zonal & meridional components).
- Wind divergence.
- Wind curl.

These grids are provided with an estimation of the objective mapping error at each grid point. Documentation, quick-look pictures together with a browsing tool are also included.

Data are supplied as zipped files in netCDF format (with one file containing all grids from one week or one month, and from one scatterometer), documents in HTML and PDF format.

Produced by CERSAT at IFREMER, France
www.ifremer.fr/cersat

eWOCE: ELECTRONIC ATLAS OF WOCE DATA

Profile and sequence data from most WOCE data centres have been compiled into integrated, global or basin-wide data sets. When used with the Ocean Data View (ODV) visualisation software, this compilation constitutes an Electronic Atlas of WOCE Data that permits graphical display and interactive analysis of the data in many different ways. With extensive interactive controls this electronic atlas complements the printed WOCE atlases.

eWOCE contains profile and sequence data in integrated data sets for usage with the ODV software on Windows, Linux, Solaris, Irix and Mac OS X platforms. Included are ODV installation files and runtime environments for the same platforms. The runtime environments enable ODV to run directly from the DVD without the need to install the software first. More than 300 property plots along WHP sections are provided in the eWOCE gallery which can be accessed via interactive maps using your web browser.

Data are in binary format for dense storage and instant access by means of the Ocean Data View software.

Produced by R. Schlitzer at the Alfred Wegener Institute, Bremerhaven.
www.awi-bremerhaven.de/GEO/eWOCE/

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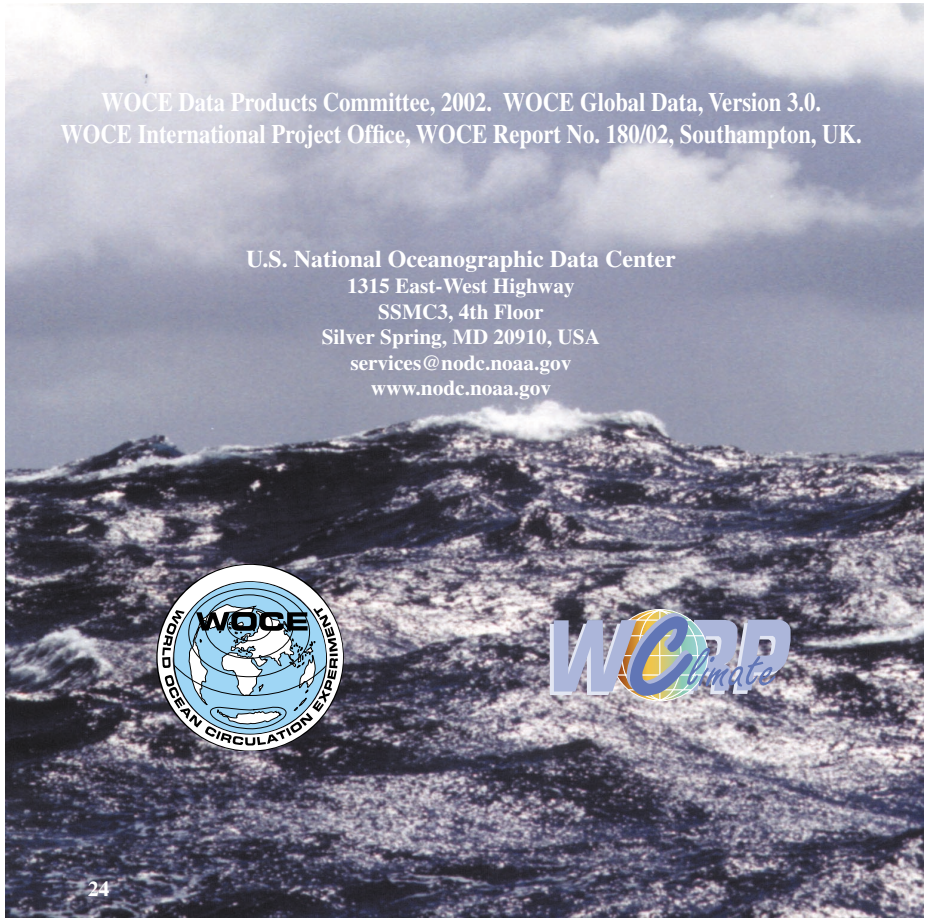
WOCE Data Products Committee, 2002. WOCE Global Data, Version 3.0.
WOCE International Project Office, WOCE Report No. 180/02, Southampton, UK.
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