World Ocean Database 2001
World Ocean Atlas 2001
World Ocean Atlas 2001 Figures

The Ocean Climate Laboratory (OCL) of NOAA's National Oceanographic Data Center (NODC) has completed the update of previous releases of global oceanographic data. The ***World Ocean Database 2001*** (WOD01) expands on earlier compilations by including new variables, data types, and additional historical and modern observations. Changes with this edition of the World Ocean Database fall into four categories: stations added; stations with major changes (changes to position, date, depth of measurements and/or measured variables); stations removed; and stations moved from one database to another. The WOD01comprises a total of eight CD-ROMs. Discs 1 through 7 contain the observed depth profile, surface, and plankton data; disc 8 contains global standard depth level data. The CD-ROM contents are based on the different instrument types used to sample data: Ocean Station Data, Expendable Bathythermograph, Mechanical Bathythermograph, High Resolution Conductivity-Temperature-Depth (CTD), Bottle and Low Resolution CTD, Undulating Oceanographic Recorders, Floats, Buoys, Continuous measurements. A series of publications is also available detailing the temporal distributions of • Bathythermograph profiles • Conductivity/Salinity-Temperature-Depth (Pressure) Casts • Temperature, Salinity and Oxygen Profiles • Nutrient Profiles • pH, Alkalinity, pCO2 and tCO2 Data • Chlorophyll and Plankton Data

Data Type	Climatological Atlas of the World (1982)	NODC 1991 Global Ocean T/S Profiles (CD-ROM)	WOA94	WOD98	WOD01
Station data & low resolution C/STD profiles	425,000	783,921	1,194407	1,373,440	2,121,042
High resolution CTD profiles	na	66,450	89,000	189,555	311,943
MBT profiles	775,000	980,377	1,922,170	2,077,200	2,376,206
XBT profiles	290,000	704,424	1,281,942	1,537,203	1,743,590
Moored Buoys (MRB)	na	na	na	107,715	297,936
Drifting Buoys	na	na	na	na	50,549
Profiling Floats	na	na	na	na	22,637
Undulating Oceanographic Recorders	na	na	na	na	37,645
Autonomous Pinniped Bathythermograph	na	na	na	na	75,665
Total Stations	**1,490,000**	**2,535,163**	**4,487,519**	**5,285,113**	**7,037,213**
Surface only data* (cruises)	na	na	na	na	4,743

* Surface data are represented differently in the database - all observations in a single cruise have been combined into one "station" with depth, value of variable measured, and latitude, longitude and Julian year-day to identify data and position of individual observations.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service
National Oceanographic Data Center
Ocean Climate Laboratory

October 2002

World Ocean Database, Atlas, and Atlas Figures 2001

The ***World Ocean Atlas 2001*** (WOA01) contains ASCII data of statistics and objectively analyzed fields for one-degree and five-degree squares generated from World Ocean Database 2001standard level flagged data. The ocean variables included in the atlas are: in-situ temperature, salinity, dissolved oxygen, apparent oxygen utilization, percent oxygen saturation dissolved inorganic nutrients (phosphate, nitrate, and silicate), chlorophyll at standard depth levels, and plankton biomass sampled from 0 - 200 meters. Objectiv analyzed fields (one-degree grid) and difference from the annual mean fields are available for all of these variables. Statistics for one-degree and five degree squares for all variables (except plankton biomass) include:

- number of observations;
- arithmetic mean;
- standard deviation about the arithmetic mean; and
- standard error of the mean.

Additional computed and available fields include

- the number of grid points which contain data within the radius of influence surrounding each grid box by one-degree squares (grid point fields);
- annual and seasonal fields of unanalyzed means minus objectively analyzed means by one-degree squares for each one-degree square that contains data (interpolation error);
- land-sea mask used in the analysis at standard depth levels;
- definition of basins used in the analysis at standard depth levels.

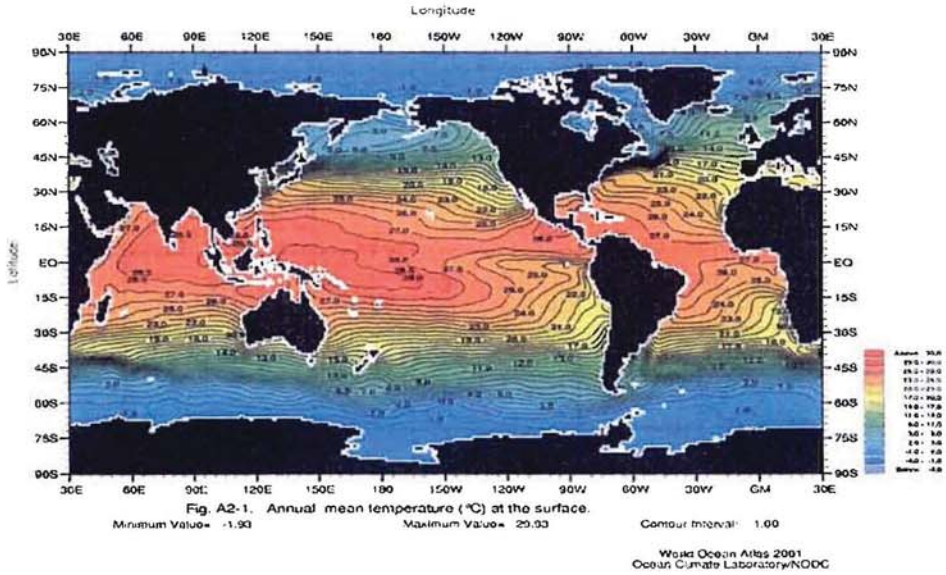
Fields available for plankton biomass include:

- annual and seasonal number of observations by one-degree square in the 0 - 200 meter layer;
- annual and seasonal fields of the unanalyzed means by one-degree in the 0 - 200 meter layer

The ***World Ocean Atlas 2001 Figures*** (WOAF01) product contains both JPG and PDF images of the fields described above as:

- annual, seasonal, and monthly global data statistics of observed, unanalyzed data for one-degree and five-degree squares at standard depth levels (see Table 1). The following statistics for each grid box are included: 1) number of observations, 2) arithmetic mean, 3) standard deviation, 4) standard error of the mean, 5) "interpolation error" of the objectively analyzed fields defined as fields of unanalyzed means minus objectively analyzed means of one-degree squares at standard depth levels.
- annual, seasonal, and monthly objectively analyzed mean fields by one-degree squares at standard depth levels.
- seasonal and monthly objectively analyzed fields minus annual mean objectively analyzed fields by one-degree squares at standard depth levels.

For the purpose of this product, the seasons are defined based on the Northern Hemisphere as Winter (January-March), Spring (April-June), Summer (July-September), and Fall (October-December). These data are also available online in JPEG or PDF formats.



All three World Ocean products are available on CD-ROM (WOD and WOA) or DVD (WOAF), in publication form, and online via the NODC webpage (http://www.nodc.noaa.gov). Online data access is free. The CD-ROM's and publications may be ordered via the order form included in this flyer, or may be ordered online at http://www.nndc.noaa.gov. All *online orders* are priced at the discount rate th would otherwise be available only to US government, research and educational facilities.

Please specify requested products in the section below, entering quantities and the total amount for each item. Enter total payment due and complete shipping and payment information on the Payment Form page. Note shipping and handling charges detailed on the next page.

Data Product Selection			
WORLD OCEAN DATABASE 2001 CD-ROM SELECTION:	**Unit Price ***	**Quan.**	**Total**
• **NODC-148** WOD-01-01: Ocean Station & Surface Data (Observed Depth Data)	$80.00/60.00		
• **NODC-149** WOD-01-02: North Atlantic 0°-90° (Observed Depth Data) (Conductivity, Temperature, Depth Probe; Undulating Oceanographic Recorder)	$80.00/60.00		
• **NODC-150** WOD01-03: North Pacific 0°-90° (Observed Depth Data) (Conductivity, Temperature, Depth Probe; Undulating Oceanographic Recorder)	$80.00/60.00		
• **NODC-151** WOD01-04: Southern Hemisphere, Indian Ocean (Observed Depth Data) (Conductivity, Temperature, Depth Probe; Undulating Oceanographic Recorder)	$80.00/60.00		
• **NODC-152** WOD01-05: North Atlantic 0°-90° (Observed Depth Data) (XBT; MBT; Autonomous Pinniped BT; Moored Buoy; Profiling Float; Drifting Buoy)	$80.00/60.00		
• **NODC-153** WOD01-06: North Pacific 0°-90° (Observed Depth Data) (XBT; MBT; Autonomous Pinniped BT; Moored Buoy; Profiling Float; Drifting Buoy)	$80.00/60.00		
• **NODC-154** WOD01-07: Southern Hemisphere, Indian Ocean (Observed Depth Data) (XBT; MBT; Autonomous Pinniped BT; Moored Buoy; Profiling Float; Drifting Buoy)	$80.00/60.00		
• **NODC-155** WOD01-08: All Instrument Types (Standard Depth Data)	$80.00/60.00		
• **World Ocean Database CD-ROM set** (Complete Set of 8 CD-ROM's)	**$640/$480**		
WORLD OCEAN DATABASE 2001 PUBLICATION LIST:			
• **NODC IR-16** - WOD 2001 CD-ROM Data Set Documentation	Free		
• **NA-42** - WOD 2001 Volume 1: Introduction	$20.00/15.00		
• **NA-43** - WOD 2001 Volume 2:Temporal Distribution of Bathythermograph Profiles	$20.00/15.00		
• **NA-44** - WOD 2001 Volume 3: Temporal Distribution of Conductivity/Salinity-Temperature-Depth (Pressure) Casts	$20.00/15.00		
• **NA-45** - WOD 2001 Volume 4: Temporal Distribution of Temperature, Salinity and Oxygen Profiles	$20.00/15.00		
• **NA-46** - WOD 2001 Volume 5: Temporal Distribution of Nutrient Profiles•	$20.00/15.00		
• **NA-47** - WOD 2001 Volume 6: Temporal Distribution of pH, Alkalinity, pCO_2 and tCO_2 Profiles	$20.00/15.00		
• **NA-48** - WOD 2001 Volume 7: Temporal Distribution of Chlorophyll and Plankton Data	$20.00/15.00		
• **World Ocean Database publication set** (Complete Set of 7 Publications)	**$140/$105**		
		SUBTOTAL	

Order online and SAVE!! The discount price is available only to government agencies, universities, and other nonprofit organizations located and operating in the United States if the order is placed via mail, phone or fax. However, *all* customers, regardless of affiliation or location, who order online will be charged the lower price. We accept Visa, MasterCard, American Express and Discover credit cards. Visit the NNDC Online Store at http://www.nndc.noaa.gov.

ORDER FORM

Please specify requested products in the section below, entering quantities and the total amount for each item. Enter total payment due and complete shipping and payment information on the Payment Form available on the next page.

Data Product Selection			
WORLD OCEAN ATLAS 2001 CD-ROM SELECTION:	**Unit Price**	**Quan.**	**Total**
• **NODC-156** WOA-01-01: Temperature and Salinity: *Objectively Analyzed Fields & Statistics*	$80.00/60.00		
• **NODC-157** WOA-01-02: Oxygen: *Objectively Analyzed Fields & Statistics*	$80.00/60.00		
• **NODC-158** WOD01-03: Nutrients, Chlorophyll, Plankton: *Objectively Analyzed Fields & Statistics*	$80.00/60.00		
• **World Ocean Atlas CD-ROM set** (Complete Set of 3 CD-ROM's)	**$240/$180**		
WORLD OCEAN ATLAS 2001 FIGURES DVD'S			
• **NODC-DVD-01** WOA01F-01: Temperature & Salinity: *Objectively Analyzed Fields & Statistics*	$80.00/60.00		
• **NODC-DVD-02** WOA01F-02: Oxygen: *Objectively Analyzed Fields & Statistics*	$80.00/60.00		
• **NODC-DVD-03** WOA01F-03: Nutrients, Chlorophyll, Plankton: *Objectively Analyzed Fields & Statistics*	$80.00/60.00		
• **World Ocean Atlas 2001 Figures (Complete Set of 3 DVD's)**	**$240/$180**		
WORLD OCEAN ATLAS 2001 PUBLICATION LIST:			
• **NODC IR-17:** WOA2001: Objective Analyses, Data Statistics, & Figures CD-ROM Documentation	Free		
• **NA-49** - WOA 2001 Volume 1: Temperature	$20.00/15.00		
• **NA-50** - WOA 2001 Volume 2: Salilnity	$20.00/15.00		
• **NA-51** - WOA 2001 Volume 3: Oxygen	$20.00/15.00		
• **NA-52** - WOA 2001 Volume 4: Nutrients	$20.00/15.00		
• **NA-53** - WOA 2001 Volume 5: Plankton	$20.00/15.00		
• **NA-54** - WOA 2001 Volume 6: Chlorophyll	$20.00/15.00		
• **World Ocean Atlas 2001 (Complete Set of 6 Publications)**	**$120/$90**		
		SUBTOTAL:	
		SUBTOTAL from previous page:	
		Shipping and Handling surcharge: Order less than $50, add $5; orders greater than or equal to $50, add $11:	
		Foreign shipping and handling surcharge: For shipments to a non-U.S. address please also add $10 to orders under $100 or $20 for orders over $100:	
		Overnight rush surcharge: For delivery by express package service, add $100 ($75 for government agencies, universities, and other nonprofit organizations in the United States:	
		Overnight rush surcharge: For delivery by express package service, add $100 ($75 for government agencies, universities, and other nonprofit organizations in the United States:	
*Available only to government agencies, universities, and other nonprofit organizations in the United States for orders by mail, phone or fax; available to *all* customers who order online using a credit card		**TOTAL PAYMENT DUE:**	

Note that some of these products may not be available at the time of this printing. The World Ocean Atlas and Atlas Figures products *are* available online via http://www.nodc.noaa.gov, but the hardcopy products are still in final production. Please check with NODC User Services or the NNDC Online Store for availability.

PAYMENT FORM

Customer Identification/Shipping Information

HIP TO:

Name _____

Title/Department _____

Organization _____

Street Address _____

City _____ State _____ Zip _____

Country _____

Telephone No. (with area code) _____

Total payment due (from previous pages): _____

DEPARTMENT OF COMMERCE REGULATIONS REQUIRE PREPAYMENT FOR ALL NON-FEDERAL ORDERS.

Checks and money orders must be in U.S. dollars drawn on a U.S. bank, made payable to "NOAA National Data Centers - NODC", and contain your banks' 9-digit ABA (American Banking Association) routing and transit number.
Please do not send cash.

Orders may be charged to a credit card (Visa, MasterCard, American Express, or Discover) by mail, telephone, fax or e-mail. Please include credit card account number, expiration date, authorized signature (if by fax or mail), and telephone number are required.

NOTE! If using a credit card, the discount prices are available to anyone who orders via the NNDC Online Store accessible from http://www.nndc.noaa.gov

PAYMENT METHOD

☐ **Enclosed check or money order payable to "NOAA National Data Centers - NODC"**

Mail this form with *check or money order* to:

NOAA National Data Centers - NODC
Attn.: Fiscal Group
151 Patton Avenue
Asheville, NC 28801

Please charge to my: ☐ **Visa** ☐ **MasterCard** ☐ **American Express** ☐ **Discover**

Account No. _____ **Expiration Date** _____

Authorized charge card signature _____

Please print name _____

Credit Card Orders and inquiries should be directed to:

National Oceanographic Data Center
NOAA/NESDIS, User Services, E/OC1
SSMC3, 4th Floor
1315 East-West Highway
Silver Spring, MD 20910-3282

■ TELEPHONE: 301-713-3277 ■ FAX: 301-713-3302 ■ E-MAIL: NODC.services@noaa.gov

Foreign wires should be sent directly to BankOne, routing transit code 0710-00013, with credit to DDA #11-71542 (NOAA National Data Centers). ***You must add an additional $15 to your order to cover the bank's service charge.***