World Ocean Atlas 2013 (WOA13) Product Documentation

This document describes WOA13 statistical and objectively analyzed field files. This description includes the types of statistical fields available, the oceanographic variables analyzed, and at which standard depth levels, time spans, time periods and grid resolutions they were analyzed. This description also includes the naming convention for the files, as well as the structure and format for the files.

For a description of the data used, and the procedures for calculating WOA statistical fields, see http://www.nodc.noaa.gov/OC5/woa13/pubwoa13.html

Please note that WOA13 will be released incrementally. Grey-shaded cells in Table 4 indicate variables and grid resolutions which have not yet been released.

1. Available grid resolution

The World Ocean Atlas 2013 has objectively analyzed climatological mean fields on both a quarter- and on a one-degree longitude/latitude grids. Statistical fields used in quality control (but not objectively analyzed climatological means) are available on a five-degree longitude/latitude grid.

2. Available time spans and time periods

Time span refers to the years represented in the climatological mean and statistical fields. Time period refers to the divisions of a calendar year. The time periods are annual, seasonal (by three-month periods; Winter = January, February, and March; Spring, Summer, and Fall are the sequentially following three-month periods), and monthly. Time spans are mostly decadal (10 year) spans, but also include 'all', denoting all data used regardless of year, and 'decav', an average of all available (year specific) time spans. An objective analysis for a specific time period is considered to be representative of that time period for the given time span. **Table 1** lists all time spans that are part of WOA13.

Table 1. Time Spans for World Ocean Atlas 2013

Time Span	Abbreviation	Comment
1955 – 1964	5564	First decade with sufficient data for climatological mean fields
1965 – 1974	6574	
1975 – 1984	7584	
1985 – 1994	8594	
1995 – 2004	95A4	
2005 – 2012	A5B2	Global coverage of Argo floats from 2005
1955 – 2012	decav	Average of six decadal means
All available years	all	

3. Available fields

Table 2 presents the list of statistical fields and the grid resolutions at which the fields are available. Quarter-degree fields represent the world as 1440x720 quarter-degree longitude / latitude boxes. One-degree fields represent the world as 360x180 one-degree longitude / latitude boxes. Five-degree fields divide the world into 72x36 five-degree longitude / latitude boxes. Five-degree statistical fields are the fields used for standard deviation window checks to filter the data; data that pass these statistical checks are then used to calculate the quarter-degree and one-degree climatology fields.

Table 2. Available objectively analyzed and statistical fields

Field Name	Quarter-degree field calculated	One-degree field calculated	Five-degree field calculated	Field Type Code (for file names)
Objectively analyzed climatology	√	√		an
Statistical mean	√	√	√	mn
Number of observations	√	√	√	dd
Seasonal or monthly climatology minus annual climatology	√	√		ma
Standard deviation from statistical mean	√	√	√	sd
Standard error of the statistical mean	√	√	√	se
Statistical mean minus objectively analyzed climatology	√	√		oa
Number of mean values within radius of influence	√	√		gp

Short description of the statistical fields in WOA13

- **Objectively analyzed climatologies** are the objectively interpolated mean fields for an oceanographic variable at standard depth levels for the World Ocean.
- The **statistical mean** is the average of all interpolated data values that pass quality control checks at each standard depth level for each variable in each quarter-degree, one-degree, or five-degree square which contain at least one measurement for the given oceanographic variable.
- The **number of observations** of each variable in each quarter-degree, one-degree, or five-degree square of the World Ocean at each standard depth level.
- The **standard deviation** about the statistical mean of each variable in each quarter-degree, one-degree, or five-degree square at each standard depth level.
- The **standard error of the mean** of each variable in each quarter-degree, one-degree, or five-degree square at each standard depth level.

- The **seasonal or monthly climatology minus the annual climatology** at each quarter-degree or one-degree square at each standard depth.
- The **statistical mean minus the climatological mean** at each quarter-degree or one-degree square at each standard depth. This value is used as an estimate of interpolation and smoothing error.
- The **number of one-degree squares within the smallest radius of influence** around each quarter-degree or one-degree square that contain a statistical mean value.

In addition to the statistical fields found in http://www.nodc.noaa.gov/OC5/WOA13/woadata13.html, there are two types of mask files (ending in suffix .msk). These files contain information used to calculate the statistical fields.

- The **landsea_XX.msk** contains the standard depth level number at which the bottom of the ocean is first encountered at each quarter-degree or one-degree square for the entire world. Land will have a value of 1, corresponding to the surface. Values of standard depth levels are listed in **Table 3**.
- The **basin_XX.msk** contains the basin code number defined for each grid square at each standard depth from the surface to 5500m. Each basin is identified by a code number that ranges from 1 to 58. The basin code number in a given quarter-degree and one-degree square may change with increased depth level. **Appendix 1** lists the geographic basin names, the code number associated with each basin, and the standard depth level at which the given basin is first encountered.

  XX in the above mask names is either 01 (one-degree) or 04 (quarter-degree), depending on the resolution used to generate the land-sea and basin masks. These mask files are found at http://data.nodc.noaa.gov/woa/WOA13/MASKS/.

4. Available oceanographic variables.

The statistical fields were calculated for six oceanographic variables: temperature, salinity, dissolved oxygen, nitrate, phosphate, and silicate. Due to the irregularity in data distribution at various depths for different variables, not all variables were analyzed at all depths for all averaging periods (annual, individual seasons and months). **Table 4** lists the depth limits for each variable for each averaging period.

Temperature and Salinity fields are available on *one-degree* and *quarter-degree* grids as follow:

- ***One-degree* annual, seasonal, and monthly fields are available for 5564, 6574, 7584, 8594, 95A4, A5B2, and 'decav' time spans;**
- ***Quarter-degree* annual and seasonal fields are available for 5564, 6574, 7584, 8594, 95A4, A5B2, and 'decav' time spans;**
- ***Quarter-degree* monthly fields are ONLY available for A5B2 and 'decav' time spans.**

***One-degree* and *quarter-degree* grids Temperature and Salinity fields are NOT available for the 'all' time span.**

Oxygen, Nitrate, Phosphate, and Silicate fields are available ONLY for *one-degree* grid and for the 'all' time span.

***Five-degree* grid statistics are available only for 'all' time span.**

Table 3. Depths associated with each standard level number

Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level
0	1	475	36	2300	70	5700	104
5	2	500	37	2400	71	5800	105
10	3	550	38	2500	72	5900	106
15	4	600	39	2600	73	6000	107
20	5	650	40	2700	74	6100	108
25	6	700	41	2800	75	6200	109
30	7	750	42	2900	76	6300	110
35	8	800	43	3000	77	6400	111
40	9	850	44	3100	78	6500	112
45	10	900	45	3200	79	6600	113
50	11	950	46	3300	80	6700	114
55	12	1000	47	3400	81	6800	115
60	13	1050	48	3500	82	6900	116
65	14	1100	49	3600	83	7000	117
70	15	1150	50	3700	84	7100	118
75	16	1200	51	3800	85	7200	119
80	17	1250	52	3900	86	7300	120
85	18	1300	53	4000	87	7400	121
90	19	1350	54	4100	88	7500	122
95	20	1400	55	4200	89	7600	123
100	21	1450	56	4300	90	7700	124
125	22	1500	57	4400	91	7800	125
150	23	1550	58	4500	92	7900	126
175	24	1600	59	4600	93	8000	127
200	25	1650	60	4700	94	8100	128
225	26	1700	61	4800	95	8200	129
250	27	1750	62	4900	96	8300	130
275	28	1800	63	5000	97	8400	131
300	29	1850	64	5100	98	8500	132
325	30	1900	65	5200	99	8600	133
350	31	1950	66	5300	100	8700	134
375	32	2000	67	5400	101	8800	135
400	33	2100	68	5500	102	8900	136
425	34	2200	69	5600	103	9000	137
450	35						

Table 4. Depth ranges and standard depth levels numbers for annual, seasonal, and monthly statistics of each available oceanographic variable.

One-letter codes are first letter of file names for given variable.

Oceanographic Variable (one-letter code)	Depths for Annual Climatology	Depths for Seasonal Climatology	Depths for Monthly Climatology
Temperature (**t**)	0-5500 meters (102 levels)	0-5500 meters (102 levels)	0-1500 meters (57 levels)
Salinity (**s**)	0-5500 meters (102 levels)	0-5500 meters (102 levels)	0-1500 meters (57 levels)
Oxygen (**o**)	0-5500 meters (102 levels	0-5500 meters (102 levels)	0-1500 meters (57 levels)
Nitrate (**n**)	0-5500 meters (102 levels)	0-500 meters (37 levels)	0-500 meters (37 levels)
Phosphate (**p**)	0-5500 meters (102 levels)	0-500 meters (37 levels)	0-500 meters (37 levels)
Silicate (**i**)	0-5500 meters (102 levels)	0-500 meters (37 levels)	0-500 meters (37 levels)

5. Data formats

WOA13 data files are available in four formats:

- Climate and Forecast (CF) compliant netCDF,
- Comma-separated value (csv) format,
- ArcGIS-compatible shapefiles,
- Compact grid format (a legacy WOA ASCII format)

Appendix 3 gives an example of the csv format and **Appendix 4** gives an example of the structure of the netCDF file. The legacy ASCII format is provided for applications that have been set up to read this format in previous WOA releases. Usage of this format is not encouraged, as it does not explicitly give depth, possibly resulting in confusion when reading WOA13 files in software set up for previous releases of World Ocean Atlas, or vice-versa. For information regarding to the legacy WOA ASCII format, please see http://data.nodc.noaa.gov/woa/WOA09/DOC/woa09documentation.pdf. Each csv file contains all depths for a single statistical field; please note that this differs from the csv files released for WOA09.

5.1. FILE NAMING CONVENTION

All files, regardless of format, are follows the same naming convention:

woa13_[DECA]_[v][tp][ft][gr].[form_end]

Where:

[DECA] represents decade, the time span (years) represented by the objectively analyzed means and other statistical fields as listed in Table 1:

[v] represents the oceanographic variable using one-letter code as listed in **Table 4**;

[tp] represents the averaging period, two digit code as follows:

00 – annual statistics, all data used;
01 to 12 – monthly statistics (starting with 01 – January, to 12 – December);
13 to 16 – seasonal statistics:
Season 13 – North Hemisphere winter (January - March);
Season 14 – North Hemisphere spring (April - June);
Season 15 – North Hemisphere summer (July - September);
Season 16 – North Hemisphere autumn (October - December);

[ft] represents field type, describing the calculated statistic represented in the file, as listed in **Table 2**

[gr] represents the grid size, two digit code as follows:

04 – quarter-degree grid resolution
01 – one-degree grid resolution
5d – five-degree grid resolution

[form_end] format suffix (filename extension), dependent on format as follows:

csv – comma-separated value format
nc – netCDF format
dbf, shp, shx – shapefiles (when downloaded will be in a .tar file together)
dat – compact grid data format (legacy WOA ASCII format)

Example: **woa13_95A4_s02an01.nc** is a file containing World Ocean Atlas 2013, February objectively analyzed salinity on one-degree grid resolution for the years 1995-2004 in netCDF format.

6. Utilities

Folder **utils** contains decompression freeware: **gzip124.exe** – self-extracting *DOS* executable, and **gzip124.tar** – a compressed file containing source code for *UNIX* users.

A. Installing gzip for the first time

DOS Users: The file **gzip124.exe** is a self-extracting DOS executable.

Copy **gzip124.exe** to your hard drive,
Run **gzip124.exe** and use the file **gzip.exe** to uncompress data as described in Section **B**.

UNIX Users:

Copy **gzip124.tar** to your UNIX system

Run the following command: **tar -xvf gzip124.tar**

This command will create a directory named **gzip-1.2.4** that includes the **gzip** source code and documentation about copyrights, compression methods and how to compile and install the **gzip** code. Read through the README file and when ready to build the **gzip** executable, follow instructions in the INSTALL file.

B. Decompressing data from WOA

To decompress the WOA files, it is recommended to first copy the data files to a hard disk. Use **gzip** to decompress selected files or a directory and all subdirectories with one command. The **gzip** utility has a limited help menu accessible with the **-h** option (e.g. **gzip -h**); additional information may be found at www.gzip.org.

To decompress a single file:

```
gzip -nd <filename>
```

To decompress the contents of a directory and all of its subdirectories:

```
gzip -ndr <directoryname>
```

If an older version of gzip is used, the -n option is required in order to preserve the correct file names.

Appendix 1. Basins defined for objective analysis and the shallowest standard depth level for which each basin is defined.

#	BASIN	STANDARD DEPTH LEVEL	#	BASIN	STANDARD DEPTH LEVEL
1	Atlantic Ocean	1*	30	North American Basin	82
2	Pacific Ocean	1*	31	West European Basin	82
3	Indian Ocean	1*	32	Southeast Indian Basin	82
4	Mediterranean Sea	1*	33	Coral Sea	82
5	Baltic Sea	1	34	East Indian Basin	82
6	Black Sea	1	35	Central Indian Basin	82
7	Red Sea	1	36	Southwest Atlantic Basin	82
8	Persian Gulf	1	37	Southeast Atlantic Basin	82
9	Hudson Bay	1	38	Southeast Pacific Basin	82
10	Southern Ocean	1*	39	Guatemala Basin	82
11	Arctic Ocean	1	40	East Caroline Basin	87
12	Sea of Japan	1	41	Marianas Basin	87
13	Kara Sea	22	42	Philippine Sea	87
14	Sulu Sea	25	43	Arabian Sea	87
15	Baffin Bay	37	44	Chile Basin	87
16	East Mediterranean	41	45	Somali Basin	87
17	West Mediterranean	47	46	Mascarene Basin	87
18	Sea of Okhotsk	47	47	Crozet Basin	87
19	Banda Sea	55	48	Guinea Basin	87
20	Caribbean Sea	55	49	Brazil Basin	92
21	Andaman Basin	62	50	Argentine Basin	92
22	North Caribbean	67	51	Tasman Sea	87
23	Gulf of Mexico	67	52	Atlantic Indian Basin	92
24	Beaufort Sea	77	53	Caspian Sea	1
25	South China Sea	77	54	Sulu Sea II	37
26	Barents Sea	77	55	Venezuela Basin	37
27	Celebes Sea	62	56	Bay of Bengal	1*
28	Aleutian Basin	77	57	Java Sea	16
29	Fiji Basin	82	58	East Indian Atlantic Basin	97

Basins marked with a "" can interact with adjacent basins in the objective analysis.

Appendix 2 Sample from csv file format

File=woa13_5564_t00an01.csv

```
#WOA13ANNUAL temperature Climatological mean
#COMMA SEPARATED LATITUDE, LONGITUDE, AND VALUES AT DEPTHS
(M):0,5,10,15,20,25,30,35,40,45,50,55,60,65,70,75,80,85,90,95,100,125,
150,175,200,225,250,275,300,325,350,375,400,425,450,475,500,550,600,65
0,700,750,800,850,900,950,1000,1050,1100,1150,1200,1250,1300,1350,1400
,1450,1500,1550,1600,1650,1700,1750,1800,1850,1900,1950,2000,2100,2200
,2300,2400,2500,2600,2700,2800,2900,3000,3100,3200,3300,3400,3500,3600
,3700,3800,3900,4000,4100,4200,4300,4400,4500,4600,4700,4800,4900,5000
,5100,5200,5300,5400,5500
-77.500,-178.500,-0.396,-0.485,-0.554,-0.595,-0.661,-0.729,-0.825,-
0.899,-0.976,-1.061,-1.128,-1.185,-1.239,-1.258,-1.278,-1.290,-1.303,-
1.294,-1.299,-1.297,-1.300,-1.294,-1.284,-1.353,-1.347,-1.497,-1.671,-
1.681,-1.765,-1.871,-1.956,-2.026,-2.054,-2.096,-2.097,-2.098,-2.049,-
2.011,-
1.958,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
-77.500,-177.500,-0.488,-0.558,-0.610,-0.645,-0.702,-0.760,-0.847,-
0.915,-0.982,-1.060,-1.131,-1.184,-1.241,-1.262,-1.282,-1.296,-1.309,-
1.300,-1.308,-1.307,-1.312,-1.297,-1.277,-1.332,-1.327,-1.478,-1.635,-
1.629,-1.723,-1.830,-1.921,-1.994,-2.042,-2.095,-2.097,-2.098,-2.010,-
2.021,-
1.974,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
-77.500,-176.500,-0.597,-0.636,-0.662,-0.692,-0.741,-0.791,-0.884,-
0.953,-1.019,-1.091,-1.150,-1.193,-1.245,-1.268,-1.288,-1.303,-1.317,-
1.308,-1.319,-1.319,-1.325,-1.303,-1.278,-1.321,-1.314,-1.472,-1.605,-
1.579,-1.668,-1.798,-1.896,-1.962,-2.035,-2.094,-2.095,-2.099,-2.053,-
2.048,-1.989,-
1.683,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
-77.500,-175.500,-0.697,-0.711,-0.722,-0.742,-0.779,-0.820,-0.893,-
0.960,-1.024,-1.098,-1.158,-1.197,-1.250,-1.276,-1.297,-1.314,-1.327,-
1.318,-1.332,-1.335,-1.343,-1.314,-1.284,-1.312,-1.315,-1.473,-1.576,-
1.535,-1.625,-1.750,-1.855,-1.937,-2.026,-2.090,-2.092,-2.098,-2.047,-
2.021,-
2.002,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
```

Appendix 3 Sample from netCDF file format

```
netcdf woa13_5564_t00_01 {
dimensions:
        nbounds = 2 ;
        lat = 180 ;
        lon = 360 ;
        depth = 102 ;
        time = 1 ;
variables:
        int crs ;
                crs:grid_mapping_name = "latitude_longitude" ;
                crs:epsg_code = "EPSG:4326" ;
                crs:longitude_of_prime_meridian = 0.f ;
                crs:semi_major_axis = 6378137.f ;
                crs:inverse_flattening = 298.2572f ;
        float lat(lat) ;
                lat:standard_name = "latitude" ;
                lat:long_name = "latitude" ;
                lat:units = "degrees_north" ;
                lat:axis = "Y" ;
                lat:bounds = "lat_bnds" ;
        float lat_bnds(lat, nbounds) ;
                lat_bnds:comment = "latitude bounds" ;
        float lon(lon) ;
                lon:standard_name = "longitude" ;
                lon:long_name = "longitude" ;
                lon:units = "degrees_east" ;
                lon:axis = "X" ;
                lon:bounds = "lon_bnds" ;
        float lon_bnds(lon, nbounds) ;
                lon_bnds:comment = "longitude bounds" ;
        float depth(depth) ;
                depth:standard_name = "depth" ;
                depth:bounds = "depth_bnds" ;
                depth:positive = "down" ;
                depth:units = "meters" ;
                depth:axis = "Z" ;
        float depth_bnds(depth, nbounds) ;
                depth_bnds:comment = "depth bounds" ;
        float time(time) ;
                time:standard_name = "time" ;
                time:long_name = "time" ;
                time:units = "months since 0000-01-01 00:00:00" ;
                time:axis = "T" ;
                time:climatology = "climatology_bounds" ;
        float climatology_bounds(time, nbounds) ;
                climatology_bounds:comment = "This variable defines the
bounds of the climatological time per
iod for each time" ;
        float t_an(time, depth, lat, lon) ;
                t_an:standard_name = "sea_water_temperature" ;
                t_an:long_name = "Objectively analyzed mean fields for
sea_water_temperature at standard dept
h levels." ;
```

```
                t_an:cell_methods = "area: mean depth: mean time: mean" ;
                t_an:grid_mapping = "crs" ;
                t_an:units = "degrees_celsius" ;
                t_an:_FillValue = 9.96921e+36f ;
        float t_mn(time, depth, lat, lon) ;
                t_mn:standard_name = "sea_water_temperature" ;
                t_mn:long_name = "Average of all unflagged interpolated
values at each standard depth level f
or sea_water_temperature in each grid-square which contain at least one
measurement." ;
                t_mn:cell_methods = "area: mean depth: mean time: mean" ;
                t_mn:grid_mapping = "crs" ;
                t_mn:units = "degrees_celsius" ;
                t_mn:_FillValue = 9.96921e+36f ;
        int t_dd(time, depth, lat, lon) ;
                t_dd:standard_name = "sea_water_temperature" ;
                t_dd:long_name = "The number of observations of
sea_water_temperature in each grid-square at
each standard depth level." ;
                t_dd:cell_methods = "area: sum depth: point time: sum" ;
                t_dd:grid_mapping = "crs" ;
                t_dd:units = "1" ;
                t_dd:_FillValue = -32767 ;
        float t_sd(time, depth, lat, lon) ;
                t_sd:standard_name = "sea_water_temperature" ;
                t_sd:long_name = "The standard deviation about the
statistical mean of sea_water_temperature
in each grid-square at each standard depth level." ;
                t_sd:cell_methods = "area: mean depth: mean time: standard
deviation" ;
                t_sd:grid_mapping = "crs" ;
                t_sd:units = "degrees_celsius" ;
                t_sd:_FillValue = 9.96921e+36f ;
        float t_se(time, depth, lat, lon) ;
                t_se:standard_name = "sea_water_temperature" ;
                t_se:long_name = "The standard error about the statistical
mean of sea_water_temperature in e
ach grid-square at each standard depth level." ;
                t_se:cell_methods = "area: mean depth: mean time: mean" ;
                t_se:grid_mapping = "crs" ;
                t_se:units = "degrees_celsius" ;
                t_se:_FillValue = 9.96921e+36f ;
        float t_oa(time, depth, lat, lon) ;
                t_oa:standard_name = "sea_water_temperature" ;
                t_oa:long_name = "statistical mean value minus the
objectively analyzed mean value for sea_wa
ter_temperature." ;
                t_oa:cell_methods = "area: mean depth: mean time: mean" ;
                t_oa:grid_mapping = "crs" ;
                t_oa:units = "degrees_celsius" ;
                t_oa:_FillValue = 9.96921e+36f ;
        int t_gp(time, depth, lat, lon) ;
                t_gp:standard_name = "sea_water_temperature" ;
                t_gp:long_name = "The number of grid-squares within the
smallest radius of influence around e
ach grid-square which contain a statistical mean for sea_water_temperature."
```

```
;
                t_gp:cell_methods = "area: mean depth: mean time: mean" ;
                t_gp:grid_mapping = "crs" ;
                t_gp:units = "1" ;
                t_gp:_FillValue = -32767 ;

// global attributes:
                :standard_name_vocabulary = "CF-1.6" ;
                :featureType = "Grid" ;
                :cdm_data_type = "Grid" ;
                :Conventions = "CF-1.6" ;
                :title = "World Ocean Atlas 2013 : sea_water_temperature
Annual 1.00 degree" ;
                :summary = "Climatological mean temperature for the global
ocean from in situ profile data" ;
                :references = "Locarnini, R. A., A. V. Mishonov, J. I.
Antonov, T. P. Boyer, H. E. Garcia, O.
 K. Baranova, M. M. Zweng, C. R. Paver, J. R. Reagan, D. R. Johnson, M.
Hamilton, and D. Seidov, 2013: World
Ocean Atlas 2013, Volume 1: Temperature. S. Levitus, Ed., A. Mishonov
technical editor, NOAA Atlas NESDIS 72.
" ;
                :institution = "National Oceanographic Data Center(NODC)" ;
                :comment = "global climatology as part of the World Ocean
Atlas project" ;
                :id = "SPECIAL" ;
                :naming_authority = "gov.noaa.nodc" ;
                :time_coverage_start = "0000-01-01" ;
                :time_coverage_duration = "P01Y" ;
                :time_coverage_resolution = "P01Y" ;
                :geospatial_lat_min = -90.f ;
                :geospatial_lat_max = 90.f ;
                :geospatial_lon_min = -180.f ;
                :geospatial_lon_max = 180.f ;
                :geospatial_vertical_min = 0.f ;
                :geospatial_vertical_max = 5500.f ;
                :geospatial_lat_units = "degrees_north" ;
                :geospatial_lat_resolution = "1.00 degrees" ;
                :geospatial_lon_units = "degrees_east" ;
                :geospatial_lon_resolution = "1.00 degrees" ;
                :geospatial_vertical_units = "m" ;
                :geospatial_vertical_resolution = "" ;
                :geospatial_vertical_positive = "down" ;
                :creator_name = "Ocean Climate Laboratory" ;
                :creator_email = "NODC.Services@noaa.gov" ;
                :creator_url = "http://www.nodc.noaa.gov" ;
                :project = "World Ocean Atlas" ;
                :processing_level = "processed" ;
                :keywords = "<ISO_TOPIC_Category>
Oceans</ISO_TOPIC_Category>" ;
                :keywords_vocabulary = "ISO 19115" ;
                :contributor_name = "Ocean Climate Laboratory" ;
                :contributor_role = "Calculation of climatologies" ;
                :publisher_name = "National Oceanographic Data Center" ;
                :publisher_url = "http://www.nodc.noaa.gov/" ;
                :publisher_email = "NODC.Services@noaa.gov" ;
```

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                :nodc_template_version = "NODC_NetCDF_Grid_Template_v1.0" ;
                :license = "These data are openly available to the public.
Please acknowledge the use of these
data with the text given in the acknowledgment attribute." ;
                :Metadata_Conventions = "Unidata Dataset Discovery v1.0" ;
                :metadata_link =
"http://www.nodc.noaa.gov/OC5/WOA13/pr_woa13.html" ;
                :date_created = "2013-09-29 " ;
                :date_modified = "2013-09-29 " ;
data:

 crs = _ ;
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