MOAA GPV

Grid Point Value of the Monthly Objective Analysis using the Argo data

Ver. 1.0

Quick instruction

Ver. March 28, 2017

Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

1. About MOAA GPV

JAMSTEC produces a gridded dataset named "MOAA GPV" (**G**rid **P**oint **V**alue of the **M**onthly **O**bjective **A**nalysis using the **A**rgo data) for the global mapping of temperature and salinity in quasi-real time. The gridded data is created from January 2001 by using 2-D optimal interpolation method (e.g., White, 1995) for temperature and salinity profiles obtained from Argo float, TRITON (Triangle Trans Ocean Buoy Network) mooring and available shipboard CTD. For all used Argo float data, real-time and delayed mode quality controls are conducted following Argo data processing procedure. TRITON mooring data are averaged as monthly mean data for each mooring site based on real-time and delayed mode quality control data.

Based on the temperature and salinity profiling data, monthly horizontal distributions of global temperature, salinity and those anomalies are estimated from World Ocean Atlas 2001 climatology, not only in surface layer but also subsurface and deeper layers (Boyer et al., 2002; Stephens et al., 2002). The grid point values of potential density and geopotential height are calculated from the gridded temperature and salinity values, being available through the same directories of our web site. We also display the monthly map of temperature and salinity distributions on Argo JAMSTEC web site (http://www.jamstec.go.jp/ARGO/argo_web/argo/?page_id=56&lang=en). Specifications and notice for use of MOAA GPV are listed below. Further information of MOAA GPV is needed, please refer to the technical document (Hosoda et al., 2008).

Table1. Specification summary of MOAA GPV.

Method	Horizontal 2-dimensional optimal interpolation on pressure surface
Parameters	Temperature and salinity
Analysis area	Global Ocean without sea ice area (70.5°N-60.5°S, 0.5°-359°E) Pacific 60.5°N-60.5°S, Atlantic 70.5°N-60.5°S, Indian 30.5°N-60.5°S (Including Bering Sea and Excluding marginal seas) Note: Area of the dataset (74.5°S~79.5°N, 0.5°~359.5°) is wider than the analysis area. Out of the analysis area are filled with missing value.

Resolution	Horizontal: 1°x1°, 25 levels from 10 to 2000dbar (Standard pressure levels: 10, 20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1750, 2000 dbar)
Data Source	Argo floats, TRITON buoys, available CTD casts (corporates with Japan Meteorological Agency, Japan Coast Guard and Japan Oceanographic Data Center)
Period	From January, 2001 – on going (monthly) Note: Valiable "TIME" in each file is defined as month from Jan.1, 1990.

Table2. Conditions for profile selection.

Maximum depth	Deeper than 900 dbar
Minimum depth	Shallower than 15 dbar
Number of observed levels	More than 15 levels
Spacing of observed levels	< 400 dbar: Less than 50 dbar, 400 – 1000 dbar: Less than 100 dbar > 1000 dbar: Less than 300 dbar

2. Filename example

The conventions of NetCDF format for MOAA GPV have been registered with Unidata as the COARDS convention. Users can be converted for Ascii, GrADS, or Ocean Data View (ODV) format using ncdump in NetCDF utilities.

<Temprature, Salinity, Potential density, geopotential height>
File name: moaa_[tmp/sal/pod/dhi]_[yyyymm]00_010.nc
<Monthly climatology>
File name: moaaclim_[tmp/sal/pod/dhi]_[mm]_010.nc

・"yyyymm" is year(yyyy) and month(mm).
・"tmp" and "sal" include Temperature (^{o}C: ITS90), Temperature interpolation error (ITS90), Salinity (PSS-78), and Salinity interpolation error (PSS-78) parameters.
・"pod" and "dhi" include potential density (kg m^{-3}), and geopotential height (m^2 s^{-2}) parameters (potential density and geopotential height were calculated from the

estimated temperature and salinity).

3. Use of MOAA GPV

- Reprint without permission, the re-distribution, the modification, and the commercial use are prohibited though JAMSTEC doesn't disturb the free use of this data in principle.

> S. Hosoda, T. Ohira, T. Nakamura, 2008: A monthly mean dataset of global oceanic temperature and salinity derived from Argo float observations. JAMSTEC Rep. Res. Dev., Vol. 8, 47-59.

- Please source the above when you make the result using this data public.
- JAMSTEC doesn't assume the responsibility to any damage of the user of this data.
- Documents about MOAA GPV in the web site are occasionally modified or corrected. Users should check the version when any research result from the dataset is published.

4. Update History of this document for MILA GPV v1.0

First Edition: 28th March, 2017

5. References

Boyer, T. P., C. Stephens, J. I. Antonov, M. E. Conkright, R. A. Locarnini, T. D. O'Brien, and H. E. Garcia (2002): World Ocean Atlas 2001, vol. 2: Salinity, NOAA Atlas NESDIS 50, U.S. Gov. Print. Off., Washington, D. C., 165pp.

Hosoda, S., T. Ohira, and T. Nakamura (2008): A monthly mean dataset of global oceanic temperature and salinity derived from Argo float observations. JAMSTEC Rep. Res. Dev., Vol. 8, 47-59.

Stephens, C., J. I. Antonov, T. P. Boyer, M. E. Conkright, R. A. Locarnini, T. D. O'Brien, and H. E. Garcia (2002), World Ocean Atlas 2001, vol. 1: Temperature, NOAA Atlas NESDIS 49, U.S. Gov. Print. Off., Washington, D. C., 167 pp.

White, W. B. (1995), Design of a global observing system for gyre-scale upper ocean temperature variability, *Prog. Oceanogr., 36*, 169-217.