

Final Agenda

CLIVAR/GODAE Meeting on
A Pilot Evaluation Effort of Global Ocean Syntheses
ECMWF
August 31 - September 1, 2006

THURSDAY, AUGUST, 31:

8:30 Goal of Synthesis Evaluation Effort and Charge to the meeting (D. Stammer)
8:45 CLIVAR Data Sets (David Legler)
9:15 CLIVAR Surface Flux Reference Data (Simon Josey)
9:45 Discussion of Data and Error Requirements (Carl Wunsch)

10:15 COFFE BREAK

PROJECTS SUMMARY

10:40 Bruce Ingleby: Reanalysis from 1956-present and ENSEMBLES
10:50 Mike Bell: DEPRESYS project
11:00 Magdalena Balmaseda: ECMWF ocean reanalysis.
11:10 Ben Giese: SODA
11:20 Masafumi Kamachi: MOVE system in JMA/MRI
11:30 Toshiyuki Awaji: Four-dimensional variational coupled data assimilation (K-7)
11:40 T. Lee: JPL Kalman filter effort
11:50 P. Heimbach: ECCO-GODAE effort at MIT/AER

12:00 LUNCH BREAK

13:00 A. Köehl: SIO/Hamburg effort
13:10 Dimitris Menemenlis - ECCO2
13:20 E. Remy: MERCATOR
13:30 Srdjan Dobricic: INGV
13:40 Dmitry Sidorenko: AWI
13:50 Anthony Weaver: CERFACS
14:00 Michele Rienecker - GMAO

14:10 Ocean Indices from Data (OOPC, Albert Fischer)
14:30 CLIVAR/GODAE Metrics for Ocean Analysis (Detlef Stammer)
14:50 Data archiving/DODS (Peter Hacker and Paco Doblus-Reyes)

15:00 COFFE BREAK

PLENARY DISCUSSION OF INTERCOMPARISON TOPICS

15:30 Group: RMS Model-Data misfits (P. Heimbach and D. Menemenlis)
16:30 Group: Meridional Transports (A. Köehl)
17:30 General Discussion

18:00 Adjourn

FRIDAY, SEPTEMBER, 1

8:30 Group: Surface Fluxes (L. Yu)

9:30 Group: Sea Level Changes + Group: Heat and Salt Content (M. Balmaseda and A. Weaver)

10:30 COFFE BREAK

11:00 Group: Transports through key regions (T. Lee)

12:00 LUNCH BREAK

13:00 Group: Water Masses (K. Haines and T. Lee)

14:00 Group: Indices (A. Fischer)

15:00 COFFE BREAK

15:30 Carbon Program and Synthesis (D. Wallace)

15:50 General Discussion

16:30 Summary and Next Steps

17:00 END OF MEETING

Intercomparison Periods:

1992 through present

1952 through present

Intercomparison Quantities:

1. RMS Model-Data Misfits: (Discussion Leads: Patrick Heimbach and Dimitris Menemenlis)

- Difference from WOA01 climatological (monthly, Jan.-Dec.) potential T & S
- RMS misfit from Reynolds SST
- RMS misfit from in-situ T & S profiles (including XBT, CTD, Argo, moorings)
- RMS misfit from altimeter-derived SSH
- RMS misfit from tide-gauge SSH

2. Meridional Transports: (Discussion Lead: Armin Koehl)

- Time-means of the period 1992-2001 (indicate the period used, if not possible) of meridional (overturning) transport stream function of the global ocean, Atlantic (north of 34S), and Indo-Pacific (north of 34S) as a function of latitude and depth and for the global ocean as a function of latitude and potential density. The stream function is defined as

$$\psi(y, z, t) = \int_z^0 \int_{x_w}^{x_e} V(x, y, z, t) dx dz$$

where V is meridional velocity; x_w and x_e are longitudes of the western and eastern boundary of a basin at latitude y . For global ocean estimates, x_w and x_e wraps around.

For streamfunction estimates as a function density instead of depth: .

$$\psi(y, \sigma, t) = \int_{\sigma}^{\sigma^s} \int_{x_w}^{x_e} V(x, y, \sigma, t) dx d\sigma$$

where σ is potential density, and σ^s is surface value of σ at (x, y, z, t) .

- Time means of the period 1992-2001 of meridional heat and freshwater transports of the global ocean, Atlantic (north of 34S), and Indo-Pacific (north of 34S) as a function of latitude

$$HT(y, t) = \int_{-H}^0 \int_{x_w}^{x_e} V(x, y, z, t) \cdot T(x, y, z, t) dx dz$$

and

$$FWT(y, t) = \int_{-H}^0 \int_{x_w}^{x_e} V(x, y, z, t) \cdot (1 - S(x, y, z, t) / 35) dx dz$$

- Time series of maximum MOC strength and heat transport at 25N, 48N in North Atlantic

3. Heat and Salt Content (Discussion Leads: Magdalena Alonso Balmaseda; Anthony Weaver)

- Monthly means of averaged temperature (proxy to heat content) and salinity over the upper 300m/750m and 3000m.
- Time series for spatial averages within a list of 30 pre-defined boxes in various parts of the ocean.

4. Sea Level Changes (Discussion Leads: Anthony Weaver and Magdalena Alonso Balmaseda)

- Monthly means of sea level, and optionally steric height and/or bottom pressure.
- Time series for spatial averages within a list of 30 pre-defined boxes in various parts of the ocean.

5. Transports through Key Regions: (Discussion Lead: Tong Lee)

Monthly (averaged) value of top-to-bottom integrated transport for the following straits, integrated from top to bottom for whatever period that your analysis product covers:

- Indonesian throughflow volume transport (add up all transports of various straits in the Indonesian Seas or compute the transport between Indonesian and Australia in the Southeast tropical Indian Ocean).
- ACC volume transport through the Drake passage.
- Florida Strait volume transport, temperature flux, and salinity flux.

6. Water Masses: (Discussion Lead: Keith Haines and Tong Lee)

- Annual means of 18-C water volume in the N Atlantic Ocean, computed from monthly or shorter-period averaged temperature output. The 18C water volume is defined here as the volume of water with temperature between 18.5C and 17.5C in the subtropical North Atlantic (north of 22.5N, excluding Marginal Seas such as the Mediterranean and Gulf of Mexico).
- Volume-weighted average salinity of the 18C water as a function of month.
- Annual Maximum mixed layer depth within the Labrador sea and the T,S properties of that mixed layer. Suggested MLD defined as surface temperature - 0.1C.
- Warm-water volume in the equatorial Pacific (5S-5N, 120E-80W) AND tropical Pacific (20S-20N, 120E-80W), defined as the volume of water with temperature higher or equal to 20C (excluding the Indonesian Seas). Again, the computation should be performed based on monthly or shorter-period averaged field.
- Depth of 20 degree isotherm in Pacific Ocean as a function of longitude, latitude, and month.

7. Indices: (Discussion Lead: Albert Fischer)

Sea surface temperature anomaly indices averaged over lat-lon boxes in the ocean. In order to compare the same thing for all products, please provide the raw SST averaged over the box, without computing an anomaly. I will compute the anomalies in a standardized way. Here are the indices:

Pacific

- Nino1+2 90-80W, 0-10S
- Nino3 150-90W, 5S-5N
- Nino3.4 170-120W, 5S-5N
- Nino4 160E-150W, 5S-5N

Indian

- SETIO 90E-110E, 10S-0
- WTIO 50E-70E, 10S-10N

For the N. Atlantic, a transport index:

- Curry and McCartney transport index: this one requires some more explanation - this index is based on the vertically-integrated (between 0 and 2000 db) potential energy anomaly (PEA) difference between Bermuda (63.5-65W, 31.5-33N) and the Labrador Sea (54-48W, 55-59N). Details of the calculation can be read on this page:

http://ioc3.unesco.org/oopc/state_of_the_ocean/sub/berm_lab_trans.php

8. Surface Fluxes: (Discussion Lead: Lisan Yu)

- Annual mean and climatological monthly means of net surface heat and freshwater flux as function of geographic location.
- Time mean of net surface heat flux and freshwater flux over entire model domain.
- Zonal averages of annual mean net surface heat flux and freshwater flux over the model domain.