

Ocean Model Development Panel

Simon Marsland, simon.marsland@csiro.au
Baylor Fox Kemper, baylor@brown.edu

Panel overview

The key roles for the Ocean Model Development Panel in CLIVAR and WCRP are to: (i) Collaborate with and to advise other CLIVAR panels and Research Foci Teams on issues related to ocean modelling; (ii) Coordinate activities aimed at addressing modelling needs (e.g., experimental protocols and analysis methods), especially to identify and address model biases (e.g., eastern boundary upwelling), improve ocean process representation and parameterizations, and (iii) address other issues impeding progress of CLIVAR core activities, research foci, and WCRP Grand Challenges.

Membership Update: Gokhan Danabasoglu (National centre of atmosphere research, USA) and Robert Hallberg (GFDL, USA) were rotated off. Alistair Adcroft (Ocean and Ice Processes Group/NOAA-GFDL, Princeton University, USA) and Stephen Yeager (NCAR, USA) joined the panel in 2018. Baylor Fox Kemper (Brown University, USA) became one of the co-chairs of the panel in 2018. Gokhan Danabasoglu (Global climate and ocean modelling; overflows; CORE / OMIP; parameterizations; decadal variability; AMOC) became an emeritus in 2018. Petteri Uotila renewed his membership for another 2-year term.

Achievements for 2017-18

Workshops and Meetings

- A lunch meeting at the 2018 AGU Ocean Sciences meeting was held to facilitate planning for JRA-55do simulations and the Tallahassee meeting. Many OMDP members were able to attend.
- 2018 Pre-AGU Workshop on Greenland Freshwater Fluxes (Baylor Fox-Kemper is on the steering committee). The workshop gathered to develop mutual appreciation of the challenges, identify individual and cross-community needs, highlight potential approaches for improvement, and build cross-community efforts.
- Planning of the 2019 OMDP/USCLIVAR PSMIP joint meeting in March, 2019 at Florida State University, Tallahassee, Florida.

Scientific results from activities

- The JRA-55do publications have appeared this year, including much input from OMDP.
- A paper was submitted to the OceanObs'19 proceedings, updating Griffies et al. (2010) to feature the last decade of ocean and sea ice modelling.

- Coordinated comparison of ocean-sea ice models driven by the JRA-55do forcing datasets in ongoing, and will be featured at the Tallahassee meeting.
- High-resolution model comparisons are also to be featured.
- Coupled simulations for CMIP6 are ongoing now, and will be discussed at the Tallahassee meeting.

Scientific capacity building and career support

- 2018 Pre-AGU Workshop on Greenland Freshwater Fluxes (Fox-Kemper attending).

Plans for 2019 and beyond

Workshops and Meetings

Workshop on Sources and Sinks of Ocean Mesoscale Eddy Energy / 5th Session OMDP Uncertainties (co-organized with US CLIVAR)

Arne Biastoch has suggested that GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel would like to host the next OMDP meeting, probably in early Fall 2020.

Articles published in 2017/18 as part of panel activities (if any)

- B. Fox-Kemper, A. Adcroft, C. W. Boning, E. P. Chassignet, E. Curchitser, G. Danabasoglu, C. Eden, M. H. England, R. Gerdes, R. J. Greatbatch, S. M. Griffies, R. Hallberg, E. Hanert, P. Heimbach, H. T. Hewitt, C. N. Hill, Y. Komuro, S. Legg, J. L. Sommer, S. Masina, S. J. Marsland, S. G. Penny, F. Qiao, T. D. Ringler, A. M. Treguier, H. Tsujino, P. Uotila, and S. G. Yeager. Challenges and prospects in ocean circulation models. In *Oceanobs19: An Ocean of Opportunity*. Frontiers, October 2018. Submitted.
- Tsujino, H., Urakawa, S., Nakano, H., Small, R.J., Kim, W.M., Yeager, S.G., Danabasoglu, G., Suzuki, T., Bamber, J.L., Bentsen, M. and Böning, C.W., 2018. JRA-55 based surface dataset for driving ocean–sea-ice models (JRA55-do). *Ocean Modelling*, 130, pp.79-139.

Budget and other needs for 2019

~\$5,000 for next panel meeting (application below)

Annex A

Proforma for CLIVAR Panel requests for SSG approval for meetings

1. **Panel or Working Group:** Ocean Model Development Panel
2. **Title of meeting or workshop:** Three day workshop on Sources and Sinks of Ocean Mesoscale Eddy Energy / 5th Session OMDP Uncertainties (co-organized with US CLIVAR)
3. **Proposed venue:** Tallahassee, Florida
4. **Proposed dates:** March, 2019
5. **Proposed attendees, including likely number**
Attendees will be part of the panel members (around 6-7) and some invited speakers
6. **Rationale, motivation and justification, including: relevance to CLIVAR science & WCRP Grand Challenges, and any cross-panel/research foci links and interactions involved**
Ocean mesoscale eddies and their energy sources and sinks are a direct example of process-level understanding that contributes to our comprehension of climate variability and change as it relates to the ocean. By targeting scientists at the forefront of high-resolution modelling and research, development, and applications, this workshop will advance our understanding of the ocean mesoscale eddies and their influence on the climate variability and change.
7. **Specific objectives and key agenda items**
The specific objectives include: (1) Reviewing recent theoretical and observational advances on the understanding of eddy-mediated energy exchanges; (2) Identifying future observations that could better constrain our estimation of these exchanges; (3) Guiding the representation of these exchanges in ocean circulation models through physical parameterizations.
8. **Anticipated outcomes (deliverables)**
A key outcome of the workshop is the interaction and information exchange among the participants. In addition, members of the organizing committee and others plan to publish an article in the Journal of Advances in Modeling Earth Systems (JAMES), reviewing major research breakthroughs, outcomes, accomplishments, and future directions.
9. **Format:** Three day workshop
10. **Science Organizing Committee (if relevant)**
11. **Local Organizing Committee (if relevant)**
12. **Proposed funding sources and anticipated funding requested from WCRP:**
~\$5,000 to support travel costs for some panel members and for room hire. It is anticipated that many members can support their own travel.