

Ocean modelling

Instructions for the project

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Project

Individual project using the model MITgcm to investigate a question relevant to ocean physics and/or ocean modelling.

The project will be graded as follows:

- Project report 50%
- Reviews and response to reviewers 20%
- Oral presentation 30%

Schedule

- Introduction to the project work – 05/12
- Project report – first version: 07/01
- Submit reviews: 10/01
- Revised version of report + Response to reviewers: 15/01
- Oral presentation: 17/01

Examples of questions

- Baroclinic Instability of a frontal jet
- Realism of a coarse resolution simulation
- Sensitivity to physical parameters
- Comparison of Numerical schemes
- Influence of vertical resolution
- Mixed-layer dynamics
- ...

Overview of the MITgcm tutorial configurations

- Barotropic Ocean Gyre
- Baroclinic Ocean Gyre
- Ocean Gyre Advection Schemes
- Global Ocean Simulation
- Surface Driven Convection
- Gravity Plume On a Continental Slope

Project report

- Report mimicking the style of a short scientific publications.
- Structure (10-15 pages):
 - Introduction (2-3 pages)
 - Method (2-4 pages)
 - Results (4-6 pages)
 - Discussion and conclusions (2 pages)
- Figures and tables must have appropriate captions.
- Do not forget to add line and page numbers.
- Upload your project report on Canvas, using the pdf format, and the naming convention xxx_project_report_v1.pdf where xxx is your family name.

Review

- Each student must read two project reports and write a review.
- A good review is constructive, well organized and honest. Avoid colloquial language. Say what you like BEFORE you say what you did not like.
- Structure (1-3 pages):
 - Title stating the name of the manuscript report, the author of the report, and the name of the reviewer
 - Brief description of the study (1 paragraph)
 - General opinion on the work: Main strengths? Limitations? (1 paragraph)
 - Major comments : list 3 points that could/should be improved, and suggest how this could be done.
 - Minor comments : list of comments regarding English wording, figures, structure of the manuscript, interpretation of results. Usually ordered chronologically.
- IMPORTANT: Always give line numbers and clear reference to the place in the document that you are referring to.
- The reviews must be uploaded on Canvas in pdf format following the naming convention: xxx_project_review_of_yyy.pdf where xxx is the family name of the report author, and yyy is the name of the reviewer.

Response to reviewer

- Once you got your reviews, you must:
 - Revise your project report
 - Write a response to reviewer (**point by point**)
- Structure of the response to reviewer:
 - Title stating the name of the manuscript report, the author of the report, and the name of the reviewer
 - Copy the review, and for each paragraph of the review, write a response that explains what you've changed in the report to address the comment.
 - Don't forget to thank the reviewer for his kind review (even if it's not kind).
 - Example:
 - Comment 1**
 - Reponse 1
 - Comment 2**
 - Response 2
 - ...
- Remember that the response to reviewer is ultimately addressed to the editor (i.e. me in this case).
- The response to reviewers must be uploaded on Canvas in pdf format following the naming convention: xxx_project_response_to_yyy.pdf where xxx is the family name of the report author, and yyy is the name of the reviewer.
- Upload your revised project report on Canvas, using the pdf format, and the naming convention xxx_project_report_v2.pdf where xxx is your family name.

Oral presentation

- Oral type typical for major scientific conferences such as EGU.
 - 14 minutes! No less than 13 minutes. No more than 14 minutes. I will stop the presentation after 15 minutes, and the grade will be affected if you don't fall in the 13-14 minutes range.
 - The presentation will be followed by ~5 minutes of questions.
 - Probably no time for more than 12 slides.
- Structure:
 - Introduction with background, problematic and outline
 - Method, introducing briefly the model and the runs
 - Results, showing model results and analysis
 - Conclusion, briefly recapitulating the problematic, strategy and main results
 - Perspective of your work, discussing the potential implications of your results and how you could extend your study
- Rehearse your presentation at least once!
- Upload your presentation on Canvas, using the pdf format, and the naming convention xxx_project_presentation.pdf where xxx is your family name.