

Reviewer #1:

Thank you for your constructive comments and helpful suggestions. We drafted some substantial revisions to the paper based on them – as explained below.

The report of Schiller et al., entitled 'Atmospheric Forcing as a driver for Ocean Forecasting' illustrates different ways of provisioning surface momentum, heat, and freshwater fluxes to operational ocean models.

The report presents two kinds of flux dataset sources (observational vs. numerical prediction systems) and then gives some relevant considerations about the application of atmospheric forcing to ocean forecasting systems for global vs. regional/coastal systems. The brief conclusion does not give any recommendations, except that the suitable atmospheric forcing depends on “the applications and users”.

I understand that the report can not be exhaustive about the available atmospheric or flux products and can not list in details how each operational ocean forecasting system is currently driven in surface. Nevertheless, the report is here more confusing than clarifying, especially section 1.

We agree that the manuscript lacks some clarity regarding different options for forcing an Oofs at the surface. In the revised version of the manuscript we have adopted the suggestions by reviewer #1 as outlined below and substantially rewritten old section 1 (now section 2) of the manuscript.

Furthermore, to aid clarity we also added a brief introduction section.

Here are in details my main concerns:

- Using observations is, by definition, a way to drive an ocean monitoring system or to produce a (re)analysis. Obviously, using an atmospheric forecast appears mandatory to do an ocean forecast. Somehow, this is never clearly mentioned in the paper.

This important point is now included in the paper at the beginning of section 1.

- To my knowledge, surface fluxes are not directly observed by remote-sensors, but are computed using different geophysical observed variables, generally from different platforms, and using parametrization for computation. It could be interesting here to mention if there is any initiative to gather and evaluate specific satellite flux (or atmospheric near-surface parameters) products designed for operational oceanography.

We made this point about surface (heat) fluxes not being directly observed by remote sensing (old section 1.1). However, for sake of clarity we now also highlight this point at the beginning of section 2.1.

The authors of this manuscript are unaware of any dedicated initiative to gather and evaluate any satellite-based observations (or atmospheric near-surface parameters) products specifically designed for operational oceanography.

- For ocean forecasts, the use of an atmospheric forecast as surface forcing can be done by 4 methods:

- using directly the atmospheric fluxes produced by NWP systems of weather services/centres. For that, the relevant questions for OOFS are the data availability, space-time resolution and domains for regional/coastal OOFS;
- using a so-called “bulk” forcing, i.e. the near-surface atmospheric parameters. This method permits to use the ocean surface explicit variables (temperature, current, albedo) to compute inline and eventually at each time step the turbulent fluxes and the upward radiative fluxes, and so to introduce a pseudo-coupling. This method brings the same questions than the first one, plus, the choice of the surface flux parametrization that is here crucial;
- using an intermediate simplified atmospheric model (e.g. ABL1D) driven for the large-scale by the atmospheric NWP 3D fields and producing surface fluxes consistent with the ocean evolution and resolution;
- a full ocean-3D atmosphere coupling but with specific issues relative to the numerical cost and the initialisation/assimilation, but the advantages (compared to the 3 first methods) i) to have no (or for regional OOFS a lower) dependence to the data availability from external providers and ii) to ensure a two-way consistency.

We added a brief section 3 to the revised paper which addresses the above options for implementation of ocean-atmosphere fluxes into an ocean model.

In my opinion, an improved way to present information about atmospheric forcing for OOFS can be done by following the suggested outlines hereafter:

1. atmospheric forcing for ocean forecasts. There come only NWP systems as possible forcing, but with the methods and considerations explained before, and additionally the issue of open boundaries/surface forcing consistency for regional OOFS, that is well described in the current section 2.2.
2. atmospheric forcing for ocean analyses/monitoring systems. There could be a discussion of using atmospheric analyses or “observational” flux products;
3. atmospheric forcing for re-analyses/OOFS evaluation/past case studies. For this purpose, using reanalyses or any best fit of observed data is clearly recommended.

We adopted the above structure proposed by the reviewer (section 2 of the revised manuscript).

With these comments and suggestions, I recommend a revision of the paper.