

I previously understood the purpose of this manuscript to be a description of the Met Office Operational Wave Forecasting System. Therefore, I expect to see a description of the whole system rather than only half of it. I think that a more robust rebuttal of reviewer 1 would have been appropriate. While it is of course true that not everything we write down gets published, so there is a level of uncertainty over what exactly the reviewer is suggesting, the purpose of GMD is to enable peer reviewed publication of such technical details that may be useful to the wider community as well as to future developers of the model. I have not been involved directly in wave modelling since the last century, and I have the attention span of a gnat, but I didn't find the original manuscript too long or difficult.

A possible response to a reviewer finding a manuscript overwhelming is to suggest a rigorous restructuring. Things like a clear description of the structure of the manuscript near the start, updates on the flow between sections at certain points in the manuscript and keeping sections short and focussed can help, on top of removing irrelevant content (or content already published elsewhere that can be cited). I appreciate that your rewriting has already improved some of these aspects. I would like to see the full system described while retaining these kind of improvements.

However, in your response, you agree with the reviewer that removing description of half the system from your description is appropriate. Please can you explain to me how this is OK? Where do you intend to publish the description of the other half of the forecasting system?

We thank the editor for these comments which have helped to significantly improve the manuscript.

Note that line number corresponds to the revised manuscript with "All Markup".

Our original reply to reviewer 1 resulted in a restructuration of the manuscript, including a significant reduction of content. We believe those changes have made the manuscript clearer without compromising reproducibility aspects. We took care to include references to all the models that are part of the Met Office operational system to ensure that the details are easily accessible by the readers. However, we agree with the editor that Section 2, where we describe the system, resulted in a reduced emphasis on AS512L4EUK and AMM15SL2.

Following the editor recommendations, we have now included the description of all Met Office operational configurations (GS512L4EUK, AS512L4EUK and AMM15SL2) as different sections. Please note that AMM15SL2 configuration is used in a wave-only wave model system and in an ocean-wave system. This is introduced in L185 as "AMM15SL2 is the baseline configuration used for the UK waters wave-only and AMM15 ocean-wave coupled models" and both model systems are now described in section 2.3.3 (L185-212). Furthermore, Section 2.4 (L223) also describes the operational production of all 4 models. We maintain the focus of the manuscript on the evaluation on the baseline configurations as the ensemble and coupled systems are already documented in published works. See L303, "For a detailed evaluation of AMM15 Ocean-Wave Coupled Model and AS512L4EUK wave ensemble refer to Saulter (2020b), Bruciaferri et al. (2021), and Bunney and Saulter (2015), respectively."

The introduction and the abstract have been modified to reflect this change:

- Abstract (L12-17): "The operational system includes a global forecast deterministic model (GS512L4EUK) and two regional models nested one-way covering the Northwest (NW) European shelf and UK waters (AMM15SL2) as well as an Atlantic wave ensemble (AS512L4EUK). GS512L4EUK and AS512L4EUK are based on a multi-resolution four tier SMC 25-12-6-3km grid. The regional AMM15SL2 configuration uses a two tier SMC 3-1.5km grid and is run operationally both as a standalone forced model (includes wave-current interactions) and as the wave component of a two-way ocean-wave coupled operational system."
- Introduction (paper overview; L51): "A description of the operational wave modelling system which includes a global model and two regional models nested one-way covering the Northwest European shelf and United Kingdom (UK) waters and the Atlantic wave ensemble is presented in Sect. 2."

I would also like to see a slightly more technical version of section "2.1 Research to operations" put back in. Practical considerations are critical context. By more technical I suppose that I mean that details such as a meaningful indication of the computer power required to run the system would be very interesting.

A slightly modified version of Section “2.1 Research to operations” (L74) was included again in the manuscript and additional information about the computer power used to run the operational systems has been added. This section now reads as follows:

“All mission critical NWP models at the Met Office are run under an operationally maintained supercomputer production system known as the Operational Suite (OS) which cycles model tasks on a dedicated high-performance supercomputing environment. Since 2016, the Met Office’s operational supercomputer has been a Cray XC40 comprising 6212 nodes of Intel Broadwell/Haswell processors with up to 36 cores per node, connected by a high-speed Aries network. As of 2024, this system is due to be replaced by multiple HPE Cray EX systems which together will provide over 3000 nodes of AMD Milan processors with 128 cores per node connected via a high-performance Slingshot interconnect. At the time of writing, the operational GS512L4EUK model runs on 10 Broadwell nodes (360 PEs; processing elements), the AMM15SL2 deterministic on 8 nodes (304 PEs), the AMM15SL2 coupled on 62 nodes (252PEs for the wave component, 1536PEs for the ocean component) and the Atlantic Ensemble on 2 nodes per member (72 PEs).

To maintain consistency and operational resilience, scientific and technical updates to these models follow a prescribed process defined in Parallel Suite (PS) projects, which aim to ensure the successful pull through of scientific improvements of the Met Office’s Numerical Weather Prediction Models into the Operational environment. For the upstream NWP modelling systems a PS is essentially a copy of the latest operational suite to which scientific and technical updates are applied. The PS is run in parallel with the current OS for a 6-8 week period during which verification and performance metrics will be collected. The models described here correspond to the latest Met Office operational systems that became operational in May 2022 after PS45, run in parallel with OS44.”