Response to reviewer Johnny Johannessen

We would like to thank the reviewer for his helpful comments. The corrections and suggestions made all serve to improve the paper, for which we are grateful.

Responses to the detailed comments are given below.

Response to comments

Section 2 presents the monitoring and prediction systems in operation at the UK Met Office. This provides a useful overview. It would help if the essence of this section were summed up in a table.

This has been incorporated, with the table including at the end of this document being included at the beginning of Section 2:

The heading of section 2.3 should also be spelled out, e.g. Operational Sea Surface Temperature and Sea Ice Analyses (OSTIA).

Done

In section 3 the heading could be modified to "Science Challenges and Priorities" to better signal the content of the section.

Done

Page 8, lines 10--18: Here I miss a clear reference to Argo profiling floats both with respect to validation and quality control as well as data assimilation.

That is a valid point. The following text has been added:
"Argo profiling floats have made a significant difference to the sampling in the open ocean of subsurface temperature and salinity, and the use of Argo is already well established for data assimilation as well as verification and validation in our forecasting systems. The Argo programme will continue to evolve, and making the best use of new Argo datasets, for example biological or near surface data,will ensure our systems continue to improve."

Page 8, lines 28--- 29: Here it is stated that waves from scatterometers have similar….. This is slightly confusing and misleading. The scatterometer derived vector wind field is used to drive the wave models, whereas the wave spectra are observed from Synthetic Aperture Radar (SAR) observations while the Significant wave height is derived from altimetry. Please be more clear on this matter.

The text has been updated to be clear on this point

Page 9, line 5: …..by intellectual property rights……..

Corrected

Page 9, line 29:…..increasing the range of…

Corrected

Section 3.2 on Page 10, lines 23--- 31 and Page 11, lines 1--- 10: addressed the coupled modeling whereas section 3.5 addresses coupled prediction. This could preferably be combined under the latter section.

We agree, and have done so, merging the text as appropriate.

In general Section 3.2 Ocean modeling could also have been broken into some sort of subheadings (numbered or not) such as Vertical Mixing; Advection/Diffusion schemes; Parameterization; Shelf Seas modeling; Biogeochemistry.
Page 13, line 3: ….present a number of challenges…….

We agree, and have done so.

Page 16, line 14. The sentence should end with . and not ,

Corrected

Page 24, line 15: Ocean services in support of blue and green growth are available…..This statement regarding blue and green growth comes in the conclusion for the first time. Should be qualified further and also perhaps addressed in the introduction. For consistency the summary should also reflect on the Marine Strategy Framework Directive (MSFD) that is mentioned in the introduction.

We have responded to this advice by making changes to both the summary and introduction.

References
Hasselmann et al is listed on Page 29, line 5. However, I could not find it in the text. Please make a thorough check on the references to avoid such situations with references not cited in the text.

Apologies, Hasselmann has 2 ‘n’s; the issue was caused by a misspelling in the text using Hasselman [sic]. This has been corrected

System	Domain	Latitude	Longitude	Resolution	Assimilation	Forcing	Ensemble	Cycle
Waves	Global	-80 to 80	-180 to 180	35 km	None	UM Global	None	4 x daily
	European	30 to 70	-20 to 42	8 km	None	UM Global	None	4 x daily
	NWS	46 to 61	-12 to 6	4 km	None	UM Global	None	4 x daily
	Atlantic	-80 to 80	Bound by continents	SMC 25-16-5 km	None	MOGREPS	24 lagged	2 x daily
Surge	NWS	40 to 62	-20 to 13	$1/9^{o}$ x $1/6^{o}$ (~12km)	None	UM Global	None	4 x daily
	NWS	40 to 62	-20 to 13	$1/9^{o}$ x $1/6^{o}$ (~12km)	None	MOGREPS	24 lagged	2 x daily
Ocean	Global	-83 to 90	-180 to 180	$1/4^{o}$ (~25 km)	SST, T/S, SLA	UM Global	None	Daily
	Med	30 - 47.5	-5.5 to 42	$1/12^{o}$ (~9 km)	SST, T/S, SLA	UM Global	None	Daily
	N Atlantic	20 to 80	-90 to 20	$1/12^{o}$ (~9 km)	SST, T/S, SLA	UM Global	None	Daily
	Indian	-25 to 31	33 to 106	$1/12^{o}$ (~9 km)	SST, T/S, SLA	UM Global	None	Daily
	NWS	40 to 62	-20 to 13	$1/15^{o}$ x $1/10^{o}$ (~7km)	SST	UM Global	None	Daily
OSTIA	Global	-90m to 90	-180 to 180	$1/20^{o}$	SST	n/a	GMPE	Daily

Table 1: The main Met Office marine analysis and prediction systems and their key characteristics. Please refer to the text for details.