Response to Prof. Ian Young

We thank Prof. Ian Young for evaluation of the manuscript and useful comments and suggestions. Below we provide our replies in a point-by-point manner with the responses given in blue and the comments of Prof. Ian Young given in italic black.

IY 1: *The English language expression needs to be improved. There were some sections where it was difficult to understand exactly what had been done because of the English expression.*

AC: We thank Prof. Ian Young for this comment. The manuscript underwent proofreading and many text pieces were entirely rewritten. We are very much hopeful that now English grammar and punctuations meet standards of ESSD.

IY 2: *Line 92: "SeaVision can be used for operational monitoring of the current wind waves' field for individual ships and continuous collection…" – I don't understand what this means? Do you mean SeaVision can be used to measure currents and wind waves? Which it can.*

AC: Thank you for this comment. We edited this sentence in the revised version. Now it reads as follows:

…."We present the design and pre-processing methodology of the SeaVision system along with the dataset collected during three research cruises (Fig. 1)"….
We also should mention that in the present configuration we have not tested an ability of the SeaVision for measurement of the currents. This is planned for the future separate studies.

IY 3: *Line 164: "ocean waves (Fig. 3): Ω = sqrt(𝑔𝑘 tanh(𝑘𝐻)), where k is the wave number absolute value (rad/m), g is the gravity acceleration (m•s-1) and H is significant wave height. – this statement is incorrect. In the linear dispersion relation, H is the water depth. I hope this is just a typo and it has not really been applied as written.*

AC: Thank you for the comment to this mistake. Of course, it has not been applied in practice and did not affect the computations themselves. In the revised version we corrected this typo and now the equation is given as below:

$$\omega = \sqrt{gk} + kUcos\theta \ ,$$

where *k* is the wave number (rad/m), *g* is gravity (m/s^2), *U* is the surface velocity (m/s) which includes surface current velocity and ship drift, and θ is the angle between the wave vector $\vec{k}$ and velocity vector $\vec{U}$.

IY 4: *On the figure significant wave height (I assume this is what it is) is written as H0, above in the text it is Hs and as noted in Point 3, erroneously as H. Can you please use just one symbol for significant wave height. I suggest Hs.*

AC: Thank you for noticing this inconsistency. In the revised version we corrected the usage of symbols throughout of the whole manuscript.

IY 5: *On the bottom left panel there is a 1D spectrum with the horizontal axis as period. On the bottom right panel there is a directional spectrum with the radial distance as frequency. This makes comparison very difficult. Please express all spectra in terms of frequency, as is normally done in the literature.*

AC: Thank you for this comment. We swapped the horizontal axis as periods in terms of frequencies in Figure 4, we also removed directional spectra estimates for a better consistency across figures and dataset output parameters in the MS (directional spectra were not provided).

IY 6: *Line 225: What wind was used to force the WW3 model? ERA5?*

AC: WW3 model was forced by 1-hourly wind speeds and sea ice concentrations from ERA5 reanalysis with spatial resolution of ~27 km (Hershbach et al., 2020). It is now stated in the revised version of the manuscript.

IY 7: *Conclusions: I was expecting some attempt to explain the observed differences between the buoys and the radar. Is it the difference between a measurement at a point compared to a measurement over a region etc? I think the reader needs some suggestions as to the reasons for the observed differences.*

AC: Thank you for this comment. We considerably reworked Section 3 and provided reasonable explanations of the observed differences. In particular the following text was added in the revised version of manuscript:

…"Overall, the analysis of significant wave heights among these three sources of data (Spotter, SeaVision and WW3) shows that the highest H_s values are measured by the Spotter buoy, lowest are simulated by WW3, with SeaVision being in between. These results are intuitively correct as wave buoys measure the actual elevations of ocean surface, SeaVision provides a proxy of local wave conditions from image analysis (thus imposing averaging over the domain) and is not expected to be as accurate as wave buoy data.*"*….