Review of ‘Analysis of the effect of fish oil on wind waves and implications for air-water interaction studies’, Benetazzo et. al.

I think this is a very nice manuscript that presents refined measurements on complex problematics. I personally enjoyed reading the manuscript and I think that, while the subject has been studied previously in the literature, the experimental evidences presented here are numerous and of high enough quality to definitely improve the current state of the literature on the topic.

I have a couple of relatively minor comments. I think that they may help still improve the quality of the final paper as well as its potential reach and audience, while requiring relatively little work, so I would like the authors to consider including them in their final manuscript.

- 1: Regarding the reach and novelty of the paper, I think that it is already satisfactory as is, but that a bit more can be done. I am thinking more specifically about ‘cross-field’ applications of the measurements you perform.

More specifically, there are a few more fields where applications of your findings could be relevant:

– a) The detection and tracking of oil spills. While you talk here about fish oils, and you mention that they present some differences compared with mineral oils, I think that in a modern context there is more interest in the effect of mineral oil leaks on the environment than fish oil. Could you discuss about this in the introduction, and put into context for example oil spill detections based on capillary waves damping? See for example:

‘Damping of gravity-capillary waves in the presence of oil slicks according to data from laboratory and numerical experiments’, Ermakov et. al. 2012.

‘Oil Spill Remote Sensing: A Review’, Fingas and Brown.

‘Drift and deformation of oil slicks due to surface waves’, Christensen and Terrile, 2009.

– b) Another field receiving much attention recently is the interaction between waves and sea ice. This is obviously a ‘hot’ topic currently due to the current global climate trends. There also, elastic forces appear at the surface of the water masses, but this time due to the presence of ice. This field of research would be worth to mention in your introduction and / or conclusion, as it presents many analogies with your present study and making the waves in ice community aware of your findings will definitely be of interest. The parallels between those fields are visible in several works, for example:

‘Transient and steady drift currents in waves damped by surfactants’, Christensen 2005.

‘Measurements of wave damping by a grease ice slick in Svalbard using off-the-shelf sensors and open source electronics’, Rabault et. al. 2017.

‘The attenuation of monochromatic surface waves due to the presence of an inextensible cover’, Sutherland et. al., 2017.

- 2: p 5 l 21: can you give us an idea of which parameters you use in your Welch transformation, and why you chose them so? I ask about this because the choice of those parameters may participate in influencing the shape of your spectra later in the manuscript.

- 3: p 14 Fig. 4: Are you sure that the W06-O signal is well resolved? In particular, you need a signal-to-noise ration high enough to trust the graph shown on the right panel. I ask about this because the red curve has a scale much collapsed compared with the blue one, and therefore I cannot visually check how well you can resolve it. Consider adding a small sentence discussing the accuracy of you measurements in the methodology section, and discussing it in regards to your measurements here.

- 4: p 15 Fig. 5: Why do you provide the ^-4 and ^-5 slopes? Please make it clearer in the text what you want to show with them. Also, if you still want to keep them, please add a sentence or two discussing how compelling evidence they provide. Your spectra display a power law behavior for ranges of frequency that span typically slightly less than a decade, which is arguably quite little.

- 5: p 17 Fig. 7: Please add error bars. For some help about error bars, you may consider reading for example: https://www.ittc.info/media/8099/75-02-07-014.pdf , ‘Confidence Intervals for Significant Wave Height and Modal Period’. Similarly, Sutherland et. al. previously cited also show some ways of obtaining error bars on this kind of statistical quantities.

- 6: p 17 l. 20: sec → s

- 7: p 18 Fig. 8: Do the spikes in your figure correspond to noise or waves? Here also an estimate of the Signal To Noise Ratio would help.

- 8: p 23 Fig. 13: same comment about confidence intervals as for Fig. 7.