

## **AUTHOR'S RESPONSE TO THE ANONYMOUS REFEREE'S #2 INTERACTIVE COMMENT.**

**General comments:** The disappearance of the Boeing 777-200ER of Malaysian Airlines in early 2014 is one of recent history's big mysteries. It is important for us as scientists and engineers to stay relevant to public interests and questions. I would like to see even more studies like the one presented here. I found the manuscript very interesting and relevant. The structure of the paper is well thought through and reads logically. I also found the figures very helpful in communicating both the study set-ups and finally the results. The use of biological information obtained from the barnacles on the recovered debris was probably my favourite part of the study especially when the modelling results could explain the temperature variations associated with the barnacle growth. In general, the four scenarios modelled, was also well constructed and adequately linked with the various debris drift scenarios.

**Author's response:** Thank you for your interest in my work, and for positive feedback.

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**Specific comments.** The author did an adequate literature review. I would have like to see a bit more time spent on reviewing and/ or referencing other studies using a similar statistical approach. Or at least it would have been nice to get a clearer idea of how this drift study compares with other drift studies, not just studies related to MH370 debris. This is just a comment and not needed to make the manuscript acceptable. The coverage of other studies investigating the MH370 debris was well done and reads nicely. A non-technical person could read the introduction and get a clear idea of the context and relevance of the study. The three main aims listed on page 3 I also agree with. Refining the efficacy of search and rescue campaigns are crucial for future campaigns. As mentioned before, the cross correlation of the barnacle growth to surrounding water temperatures is my favourite part of the study and challenges us as scientist to think wider when it comes to answering scientific questions. I like the method of narrowing down the drift particles associated with debris discoveries on page 16. If the qualification 'window' for a particle was made to strict potential particle candidates, and thus traveling paths, might have been overlooked. As part of the conclusion it was reassuring to see that the study results agree with the high-priority search zone by the ATSB in June 2014.

**Author's response:** MH370 case is unique in terms of debris drift analysis. Firstly, this is because fragments are scattered across the whole Indian Ocean. Secondly, because currents and winds in these remote areas are relatively poorly studied. Thirdly, because recovered aircraft's fragments are mainly light-weight composite honeycomb structures having the shapes of thin plates, in contrast to ship containers, buoys, boats, etc., which were subjects of a number of previous studies. Also, I am not aware of other published works that would include temperature analysis to help in establishing drifting debris origin.

**Changed to manuscript:** I added 2 references in this regard: Daniel et al. (2002) and Breivik et al. (2011).

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**Technical correction #1:** As I mentioned before I would have like to see more references.

**Author's response:** In attempt to balance between the references related to the drift studies, ocean modelling, turbulence, math, numerical methods, and MH370-specific papers, I added 2 new references related to the drift studies, which use similar approach.

**Changed to manuscript:** 2 new references are added: Daniel et al. (2002) and Breivik et al. (2011).

**Technical correction #2:** In general, it is nice to read the introduction to a figure before the figure appears in the manuscript. The same goes for tables.

**Author's response:** There is difference between placement of figures and tables is the single- (OSD) and double-column (OS) LaTeX template. Originally I aimed to place figure or table on the same page where it was first referenced in a double-column layout. Should my manuscript be accepted, I will pay attention to this.

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**Technical correction #3:** Equation 8 on page 6 was confusing due to unbalanced brackets. Please correct. Also, please reference literature used in this derivation or reference other studies using a similar technique or use literature to justify your approach.

**Author's response:** Thank you for pointing this out. Brackets are corrected in revised manuscript – please note it became Eq. (10). As long as the Referee #1 also requested for the clarifications related to this equation, I have revamped the whole Section 2.1.3. In particular, references to Daniel et al. (2002) and Breivik et al. (2011) were included, along with justifications relevant to horizontally floating thin plates.

**Changed to manuscript:** Revamped Section 2.1.3.

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**Technical correction #4:** Equation 10 on page 7 the drag coefficient  $CDs$  must surely be  $CD_w$ ?

**Author's comment:** Yes, thank you for pointing this out.

**Changed to manuscript:** Corrected.

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**Note other changes:** As requested by Referee #1; the flaperon was discovered on July 29, not August 29 – corrected through the text of the manuscript; bars are added to indicate deterministic nature of the velocity components according to the commonly used convention; minor tweaks in the text.