

Topic Editor Decision: Publish subject to technical corrections (25 Apr 2018) by John M. Huthnance

Comments to the Author:

Thank-you for your revised manuscript addressing the referees' comments. I am now asking you to consider the "Technical Corrections" below after which it will go directly to the Copernicus publication process. This will involve copy editing which I expect will make changes to the use of English. Please therefore check that the final version keeps your intended meaning.

Thank-you for submitting to Ocean Science.

Author's response: Thank you for your decision, and thank you for your help in improving my manuscript. Detailed responses are in blue.

Page and line numbers are as in the 2-column version that I now have.

Page 1.

Line 50. Meaning of "respective region" unclear. Delete "has".

Modified into "...whose geographical responsibility for rescue and recovery covers a region of the Indian Ocean where the terminus of 9M-MRO path could have been located according to the satellite data..."

Line 55. ". . April 27, 2014," ? *Added.*

Page 2.

Line 35. "what" -> "which". *Corrected.*

Line 81. "walking" -> "walk". *Corrected.*

Line 94. "which could have reached . . by July 29, 2015 and could have been subjected . ." *Corrected.*

Page 3.

Line 15. ". . other hand, the large study domain . ." *Corrected.*

Line 29. ". . ellipsoid, as follows" *Corrected.*

Page 5.

Line 27. Better ". . in one of the four ensembles of simulations (section 2.2)." ? [To reinforce the relation of this section to what follows.] *Modified as requested.*

Lines 45 and 52 imply $\sigma^2 = 1/2$. I might not have followed the statistics correctly but this seems to be a choice affecting the distribution in figure 3, which looks to have most leeway factors less than those mentioned in section 2.1.3, and likewise mostly less than the 3.29% or even the 2.76% of the other ensembles in section 2.2. Does this give the random leeway factor ensemble a bias towards wind-forced motion? Information about the sensitivity of the results to this is of course available in the results of the four ensembles of section 2.2. Maybe a short comment about this could be added, at the end of section 3 or in section 4?

In brief, this choice of σ does not give the random leeway factor ensemble a bias towards wind-forced motion, although it affects distribution shown in Fig3. The mean leeway factor of the particles of the proposed distribution is approximately 2%, which is lower than the windage of 3.3% I would expect for a thin horizontally floating object (which is consistent with the experimental data for the flaperon established by DGA, although CSIRO argues that it is lower). This decrease of the leeway factor is mainly due to partial submerging rather than the choice of σ . In other words, the random model biased against wind-induced motion compared to thin horizontally-floating objects. In comparison, Jansen et al. (2015) studied 0.5% to 2.5% with the discrete increments of 0.5%; Griffin et al. (2015-2017): 0.0%, 1.0%, 1.2%, 1.8%, 2.8%, and 3%.

Page 6.

Line 14. ". . in a variety . ." *Corrected.*

Line 17. ". . displacements exceeding . ." [Corrected](#).
Line 57. "Close to a shore . ." [delete "the" in any case] [Corrected](#).
Line 65. Delete "of". [Corrected](#).
Line 72. "arithmetic." [Corrected](#).

Page 7.

Line 2. "scenarios". This should be the same word as later where "model" is mostly used (e.g. lines 12, 14; also in figure 5). I am not sure that "model" is the best word but is probably the most practical. Then better (for line 2) "Four scenarios – hereafter "models" – with respect to . .").
Line 19. "The study domain extended from 20°E . ." [Modified as requested](#).
Line 28. "The following datasets were used in this study . ." [Modified as requested](#).

Page 8.

Figure 5 caption. ". . originating from . . for two models . ." [Corrected](#).
Line 29. ". . from nine . ." [Corrected](#).
Line 39. Delete "of" [Corrected](#).

Page 9.

Line 11. "what" -> "which". [Corrected](#).
Line 22. ". . originating from . ." [Corrected](#).
Line 25. ". . originating from" [Corrected](#).

Page 11.

Line 55. ". . as of April 2017 . ." [meaning any time up to April; not only in April] [Corrected](#).
Line 58. "at Thirsty Point. . ." [Corrected](#).

Page 13.

Line 1. "An example of the so-estimated concentration . ." [Modified as requested](#).
Line 11. ". . concentration near Cape Leeuwin" [Modified as requested](#).
Line 18. ". . landed near Thirsty Point . ." [Modified as requested](#).
Line 28. ". . object, it had covered a long distance . ." [Corrected](#).

Page 14.

Lines 35-37. Better order might be "Considerable beaching, particularly in Australia and Sri Lanka where no fragments were found; . ." However this does give a slightly different emphasis which you may not want. Otherwise, please remove ",," after "beaching".

[",," removed as the former version changes intended meaning.](#)

Lines 40-42. Similar (but not quite the same); please remove ",," after "countries". [Removed](#).
Line 44. ". . originating from . ." [Corrected](#).
Line 51. "to Thirsty Point." [Corrected](#).
Line 62. "declares" [Corrected](#).
Line 63. "Acknowledgements. Use . ." [Modified as requested](#).

[Other changes:](#)

[Page 1.](#)

[Line 57. "on March 18" is deleted and replaced with "...from the air..." \[debris were spotted not only on a single day\].](#)

[Page 2.](#)

Line 39. "...study conducted..." replaced with "...report published..." [too many repetitions of 'study'].

Line 52. "... The latest CSIRO study..." removed to make it shorter, i.e. "Griffin et al (2017) disagrees..."

Line 101. "model" replaced with "study".

Page 3.

Line 13. Added "On the one hand..."

Line 17, 22. "Transformation..." is moved into the beginning of sentence.

Page 4.

Line 26. "... as applied in Daniel et al. (2002) and Breibik et al. (2011) to study drift of ship containers"

Line 27. "horizontally" changed into "nearly horizontally"

Line 33. "dynamic velocity" changed into "friction velocity".

Line 51. "for ship containers" removed.

Line 64. "x 0.25 m" added.

Line 69. "typically" replaced with "normally"

Line 70. "reduced to" replaced with "approximated by"

Page 5.

Line 15. "In those scenarios" is replaced with "In two of the four considered models" [to make it in line with the requested changes].

Line 30. "a slightly tilted orientation" replaced with "slightly tilted orientations".

Line 43. "0-" changed into "0 – " [space added].

Line 46. ", " removed.

Page 7.

Line 17. Added "constant in time" and "all the 40 ensembles (Section 2.2.1) were identical in terms of the particles they were comprised of" [to stress that the leeway factors did not change in time].

Page 8.

Line 15. *"...to understand contribution of wind to these errors (e.g., Griffin et al. (2017) suggests that the average leeway factor of the GDP buoys is around 1.2%), ..."* added.

Page 9.

Line 29. "goals" changed into "major goals"

Page 10.

Fig. 7 caption: "LW: leeway factor; DA: drift angle" added [abbreviation in figures].

Page 11.

Line 21. "are shown in Figure 7" moved to the end of sentence.

Line 23. "fitting" replaced with "fittings".

Line 31. "predicted" changed to "indicated".

Line 36. "corresponding" inserted, "'released' there" removed.

Line 43. ", " added.

Line 67. "S2" replaced with "S2a" [there are 2 animations in the supplement corresponding to this simulation, one using 50,000 particles, and the other one – using 500,000].

Page 12.

Figure 9. "moonsoon" corrected to "monsoon" [typo error].

Page 13.

Line 4. "Figure and Animation S5".

Page 14.

Line 10. "Respective animation S2b is included into the Supplement" added.

Line 21. "with regard to" changed to "with respect to".

Also units in axis captions are indicated with parentheses to make style uniform though the manuscript.