Answer to Referee 1

The authors thank the anonymous referee for his comments, and will answer to each of them.

- *I'm quite surprised it has not already been done after 56 years from the original work of Miles. The authors should make sure that their result is indeed original.*
  Of course, the pioneering works of Miles were improved since its early publication in 1957. For instance, one can find in Janssen (2004) descriptions of non-linear wave-wave interactions, or quasi-linear wind-wave interaction with feedback from the wave to the wind. In Belcher and Hunt (1993), several complex models of wave generation and amplification are reviewed as well. But these theoretical works are restricted to the deep water case.

  Contrary to the theoretical situation a lot of **experimental and numerical studies on the growth rates of wind-waves in finite depth** already exist. Particularly the **experiments** in Lake George (Australia) carried out by Young and co-workers (Young (1997a), Young (1997b)) which were the starting point to understand the dynamics of surface wind-waves in finite depth.

  Reference Montalvo et al. (2013) provided **for the first time** mathematical laws able to reproduce the main features of the field experiments of Young and co-workers. In that work were studied families of Miles growth rates for a constant depth (the one of the Lake George) and variable winds. In the present work we study **families of both Miles growth rates for variable depths and wind inputs.**

- *i) Should the boundary conditions, eqs (3) and (4), be applied on $z = 0$ and not $z = \eta$?*
  The air-water interface (the free surface) is described by the equation

  $$z - \eta(x, t) = 0.$$

  The air and water motions **are coupled** by equation (4) and are at the heart of the **exchanges of momentum and energy between air and sea.** Consequently the evaluation at $z = \eta(x, t)$ of (4) is **absolutely necessary in order to have wind-wave generation.** The equation (3) (linearized kinematic boundary condition) must be also evaluated at $z = \eta(x, t)$. Furthermore, the evaluation of the vertical water velocity w at $z = 0$ ($w(0)$) results from the processus of linearization of the kinematic boundary condition (through a Taylor expansion around $z = 0$).

- *ii) Page 3104: Archimedian should probably be Archimedean. I understand what the authors mean but I have never heard of "Archimedean interaction".*
  The error has been corrected and the formulation changed to "Archimedean case".

- *iii) While discussing the mapping of the forced NLS to the standard NLS, a Taylor expansion is performed. Should $n(t)$ be $1/(1 - 2Dt)$ and not $n(t) = (1-2Dt)$. the transformation is not identical to the one of Onorato and Proment, see eq (58) and eq (8) in Onorato and Proment.*
  Both typos have been corrected after verification.

References

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Janssen, P.: The Interaction of Ocean Waves and Wind, Cambridge University Press, UK, 2004 2004.

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