Review of

"Simulations and observation of nonlinear internal waves on the continental shelf: Korteweg-de Vries and extended Korteweg-de Vries solutions"

by K. O'Driscoll and M. Levine

1. I appreciate that rotational effects may not be large but after the times cited I would expect them to be apparent. See for example Figure 15(a) in Lamb and Warn-Varnas which shows differences after 23 hours at a latitude of about 20° N where rotational effects would be smaller than at the CMO site which is at 40° north. Figures 4 and 5 in Grimshaw *et al.* (JPO, 2015) also show differences by this time. Both of these papers are already cited. I do suggest a brief discussion of this be added.

2. Regarding 'solitary waves always travel faster than gravity waves, $V = c + \frac{\alpha\eta_0}{3}$. This is true for solitary waves propagating in an undisturbed medium but for solitary waves superimposed on other longer waves, e.g., and internal tide, they can propagate at less than c. For example if a solitary wave of depression with amplitude $\eta_{ISW} <$ is riding on a wave of elevation with amplitude $\eta_{elev} > 0$ sufficiently large. Consider the KdV equation with $\eta \to \eta_{elev} + \eta'$ where η_{elev} is treated as a constant. Then η' satisfies the KdV equation with that same nonlinear coefficient but c replaced by $c + \alpha\eta_{elev} < c$.

3. Page 2, line 15: "Comparisons .... solutions *are made*."

4. Page 4, line 1. I would say it is the nonlinearity of fluid flow that causes the tidal waves to defore. Not the nonlinear terms in an equation.

5. Page 5, line 16: Do you mean Q accounts for the horizontal variability of the ocean depth?

6. Page 5, lines 17: M_0 and c_0 are not defined.

7. Page 8, line 11: "layer *thicknesses* at ..."

8. Page 9, line 10: This needs rewording. Nonlinear waves are not prevented from developing into solitary waves because higher-order terms become of $O(\alpha)$ because here solutions of the KdV equation are being discussed and this equation has no higher-order terms to prevent the development of solitary waves.

9. Page 10, line 13: I suggest “so we expect a wave train to develop sooner ....” as the internal tide is nonlinear from the start.

10. Page 10, line 15: “... dispersive KdV *equation* becoming ...”

11. The author did change a number of statements like ’the leading face steepens’ without stating whether the leading face is the leading side of the crest or trough but there are a few places where this change wasn’t made: page 17, line 5; page 20k line 12; page 21, line 18

12. Page 12, last line: I am not sure why this figure is Figure S1. Supplementary material? I would keep it in the main body of the article. It is only one figure.

13. Page 11, line 20: I don’t see why the first 4–5 waves look like solitary waves and the rest like a dispersive packet. Should explain this.