

## ***Interactive comment on “On the shelf resonances of the English Channel and Irish Sea” by D. J. Webb***

**D.J. Webb**

djw@soton.ac.uk

Received and published: 28 March 2013

Preliminary Response to Reviewer 1.

I would like to thank the reviewer for raising a number of interesting points. Here I give a preliminary response to two of these:

1. The Open Boundary Condition.

The paper used the same fixed open boundary conditions as in my previous paper (Webb 2012). This was done on purpose as I did not want to introduce too many changes at once and the boundary condition had given useful results last time.

In the paper I mentioned the possibility of using a radiational boundary condition and

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



this option has been raised again by the reviewer. Here I would like to report that after completing the work reported in the paper, I tried a version of Flather's radiational condition to see what would happen. The change removed many of the problems with continental shelf waves but otherwise its effect on the main resonances was much smaller than I had expected.

The changes are of interest but are not enough to justify a full paper. For this reason I have written up the work as a NOC technical report (<http://eprints.soton.ac.uk/id/eprint/349401>). This will be referred to when (if?) a revised paper is submitted.

## 2. A Better Deep Sea Solution

In validating the model the paper uses a solution for the M2 tide in the Atlantic published by Cartwright, Edden, Spencer and Vasse. The reviewer has suggested using a satellite altimeter derived solution. I now have the OTIS solution for the M2 tide and have used it in another piece of research.

I could now redo the validation part of the present paper using the OTIS solutions but this might get rid of the problem I had with the high diurnal tides to the west of Ireland. I hope that this section of the paper highlighted the fact that there is a problem here in explaining the diurnal tides, probably in term of continental slope waves, which is waiting to be tackled.

An alternative, which I prefer, is to redo the calculation with the satellite data but, assuming there is no major change, just add one paragraph to the paper explaining what happens.

Of course the satellite solutions themselves will not be perfect as altimeter data, with errors, has been assimilated, with errors, into a model, with errors. One possible problem is the assumption, made during assimilation, that the tidal response functions are smooth and that they can be represented by a low order polynomial. In regions where

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



resonances are important and the response functions have high curvature this may be a poor approximation.

---

Interactive comment on Ocean Sci. Discuss., 10, 393, 2013.

**OSD**

10, C97–C99, 2013

---

Interactive  
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

