

Interactive comment on “Modelling temperature and salinity in Liverpool Bay and the Irish Sea: sensitivity to model type and surface forcing” by C. K. O’Neill et al.

Anonymous Referee #1

Received and published: 12 April 2012

General comment:

On page 657, lines 24-28 and page 658, lines 1-11 introduce some confusion in the way data and model are processed. Especially for the comparison at the mooring station, it is unclear whether or not tidal fluctuations are filtered out, and if it is the case whether this is done by means of computation of running means or by application of the Doodson filter. This confusion makes it difficult to evaluate the paper.

Specific comments:

On page 655, line 11: The meteorological forcing of the Met Office North East Atlantic model has a resolution (0.11°) equal to that of the NEMO model in one direction ($1/9^\circ$).

C149

Is the grid of the meteorological data set equal to that of NEMO in both directions? Moreover the influence of the resolution of the meteorological forcing on the model results is not discussed throughout the paper.

On page 659: adding a section numbered "2.4" should be removed, otherwise "2.5" and "2.6" should be renumbered.

On page 659, lines 20-25: Is the mentioned spatial averaging of the ferry data only used for the calculation of the rms error or is it used for other skill scores and all the figures?

On page 659, line 3: Allen et al., [2007] do not really use this type of cost function (see equation 3 of Allen et al.).

On page 661: For the skill scores: 1. the authors should clarify if it is the correlation coefficient r or its square r^2 that is used (negative values in table 2 as well as in the text on page 661, line 16 seem to indicate that it is the correlations coefficient), 2. giving the bias between the model results and observations should help to better understand the results.

On page 664, lines 1-9: The first sentence is unclear. How do the authors explain the influence on the sensible heat flux of time and space resolutions in the atmospheric forcing? Is this the sole influence?

On page 664, line 18: It is unclear how the defined cost function allows to assess the skill of the model with respect to tidal variability. In particular, for temperature in table 3, χ is less than 1 in all the comparisons while the three types of data do not equivalently allow to assess the tidal variability.

On page 665, lines 15-19: Strain induced period stratification (SIPS) is presented in the introduction (page 651, line 6) as an important phenomena in the Liverpool Bay. However it is only discussed in this last paragraph of the discussion. No mention is made of the possible impact of the resolution of the meteorological forcing on this

C150

process.

Figures 3 and 8: Scatter plots would be easier to read if the same range was used for X- and Y- axes.

Interactive comment on Ocean Sci. Discuss., 9, 649, 2012.