

# ***Interactive comment on “Reviews and syntheses: Hidden Forests, the role of vegetated coastal habitats on the ocean carbon budget” by Carlos M. Duarte***

## **Anonymous Referee #2**

Received and published: 25 September 2016

### General comments:

This manuscript is a significant addition to the author’s previous 4 reviews and syntheses on the role of vegetated shallow coastal ecosystems in carbon sinks (Nellemann et al., 2009; McLeod et al., 2011; Duarte et al., 2013a; Krause-Jensen and Duarte, 2016); in particular, a new inclusion of estimates of “off-site blue carbon sink”, i.e., carbon export from coastal habitats and subsequent sequestration in the deep sea (Table 2).

The manuscript is generally well-written and easy to follow; however, I found numerous inconsistencies between the citation in the text and the reference list, which should be corrected.

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The result was a surprising because the author estimated that, by including previously overlooked macroalgal contributions, the carbon export far exceeds carbon burial, which is previously thought to be the major mechanism for coastal carbon sequestration. Although, as the author mentioned, this estimate has a large 10-fold uncertainties and not well constrained at this stage, this manuscript would potentially revise our recognition on the role of vegetated coastal habitats on carbon sequestration.

In terms of carbon budget in vegetated coastal habitats, this synthesis still lacks quantification of two boundary conditions (terrestrial inputs and air-water carbon exchanges) and their effects on the carbon sequestration. However, my understanding is that we have large research gaps in this two components and can be mentioned in the Future Trends and Research Needs section, although several recent papers have been dealing with air-sea CO<sub>2</sub> exchanges in such a vegetated shallow waters and other papers have shown the separated estimation of green (terrestrial allochthonous) and blue (autochthonous) carbon in the sediments.

Specific comments:

P17 Table2: I understand that the estimates of Export is new; however, are the estimates of NPP and Burial new? i.e, are these estimates overall the same as the previous your publications (Nellemann et al., 2009; McLeod et al., 2011; Duarte et al., 2013a; Krause-Jensen and Duarte, 2016) and Pendleton et al. (2012) or revised values? If revised, how much is the differences compared to the previous estimates?

Technical corrections:

P2L11, P4L8, P: Duarte et al. 2009 is missing in the Reference

P2L26: Duarte et al. 1991 is missing in the Reference

P2L29: Gattuso et al. 2006, not 2006 but 2005?

P3L19: Chmura et al, 2003 is missing in the Reference

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P4L10: Waycott et al 2006 is missing in the Reference, 2009?

P4L12: Whitaker and Likens 1973 is missing in the Reference

P5L2: Duarte et al. 2011 is missing in the Reference

P5L8: Fourqurean et al. 2014 is missing in the Reference

P5L9, P8L10: Duarte et al. 2013, “a” or “b” here?

P5L32: Coupland et al. 2007 is missing in the Reference

P7L16: Mazarrasa et al. 2015 is missing in the Reference

P7L23: Smith 2013 is missing in the Reference

P7L28: May 1994 is missing in the Reference

P8L12: Waycott et al. 2011 is missing in the Reference, 2009?

P7L28: Duarte et al. 2002 is missing in the Reference

P9L30: Macreadie?

P10L18: not cited in the text

P11L22: not cited in the text

P12L4: not cited in the text

P13L13: not cited in the text

P14L8: not cited in the text

P15L4: not cited in the text

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