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Biogeosciences Discussions

# *Interactive comment on* "Biogenic sediments from coastal ecosystems to Beach-Dune Systems: implications for the adaptation of mixed and carbonate beaches to future sea level rise" *by* Giovanni De Falco et al.

**Anonymous Referee #2**

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The present article aim at quantifying the carbonate inputs from adjacent seagrass meadows to the beach-dune system in Mediterranean. This is to me very interesting as it enforces the role of carbonate production in blue carbon habitats, an aspect that has been so far neglected or maybe a little avoided, as calcification produce CO2. I must state that I am not a geologist and that the present study quite differs from the "Blue Carbon" studies I am used to. Abstract Ln 10: this seems to me an overstatement, what about bivalve reefs for examples, or calcifiers in seaweed meadows / forests, or maerl? I don't think that this statement is valid for e.g. the rest of the coastlines of Europe. Introduction: Ln 20 to ln35 the authors are implying that the carbonates in the meadows



comes from the associated flora and fauna. This is I think an overstatement. Looking at the cited literature, Serrano 2012 show a burial rate of 38 g Cinorg m-2 yr-1 in the Baleares while Canals and Balestero 1997 are stating that the epiphytic production is about 5-6 gCinorg m-2 yr-1, so as Barron et al, 2006 (estuaries and Coasts). This represents only about 15% of the buried material. So the rest of the carbonate is from another origin, maybe terrestrial considering the nature of the surface terrestrial bedrock in the Baleares: see http://ecoexplorer.arcgis.com/eco/maps.html; rock type: "carbonate rock". The confusion remains in ln 30, Mazarassa et al. 2015 are reporting a burial rate, not a carbonate production by seagrass, of 126.3±31.05 g Cinorg m-2 yr-1 (I cannot trace back the 1050 gDW CaCO3 m-2 a-1), based on stock (gCinorg cm-3) and sediment accretion rates 0.2 cm y-1 of from Duarte et al. 2013 (Nature climate change). It is very abusive to state that these carbonates all come from the meadows. As you might see in her article, the stock of Cinorg is far higher in tropical seagrass meadows than in temperate meadows. As you state in line 11 -13, corals are important calcifiers and adjacent seagrass are accumulating coral sand. Material and Methods. Could you give more details regarding the 14C dating? Please give more details on the method of sampling and what reservoir correction was used. Ln 25 remove. 9-11 unclear

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