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Biogeosciences Discussions

Interactive comment on "Changes in the spectrum and rates of extracellular enzyme activities in seawater following aggregate formation" *by* K. Ziervogel et al.

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In response to the comments of all three reviewers, we have added a much more detailed description of the roller table experiments and the handling of aggregates. This new section in the material and methods (p. 4-6 in the revised manuscript) should clarify all of the reviewers' concerns. In detail: -Reviewer 1 was particularly concerned about the determination of the aggregate dry weights. As now stated in the revised methods section, aggregate dry weight was determined after 7 and 20 days of substrate incubation in spring 2006 and fall 2008, respectively (p. 5, l. 154-157). Reviewer 1: "How fast were the cylinders rotated?"- We added the rotation speed of the roller bot-

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tles, i.e. 6 rpm; other investigators used rotation speeds between < 1 (e.g. Engel et al., 2009; Deep Sea Res II, 56) and 15 rpm (e.g. Shanks and Edmondson, 1989). In our experiments, 6 rpm was the optimal speed facilitating rapid formation of aggregates. - Regarding the sample size/volume for whole seawater, the total initial volume for one incubation is not 15 but 50 ml (the reference containing details about the incubation of whole seawater is giving in the text on p. 6, l. 162). In brief, 50 ml water samples containing 3.5 uM monomer equivalents of substrate are divided into three glass vials (ie $\sim$16.7 ml each vial) and hydrolysis is monitored in each of the triplicate vials. Despite small differences in total volume, all of the incubations (aggregates, aggregate-free water, and whole seawater) had the same final monomer-equivalent concentration of substrates added, which allows us to compare hydrolytic activities among the different incubations. Reviewer 1 also asked about aggregate size and number in each roller bottle. We do not have data for sizes and numbers of aggregates formed in the tanks because we were not monitoring aggregate formation. The initial water did not contain any visible macro-aggregates, however.

Interactive comment on Biogeosciences Discuss., 6, 11293, 2009.