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Interactive comment on "Effect of salinity induced pH changes on benthic foraminifera: a laboratory culture experiment" *by* R. Saraswat et al.

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Reviewer's Comment: First, the experimental design does not provide a mechanism to discern between the effects of salinity and pH.

Authors' Response: The experiment was designed to understand the nature and extent of natural dissolution of foraminiferal calcite under seasonal very low salinity condition. A seasonal very low salinity zone develops in shallow water regions of the monsoon influenced areas. We tried to understand how this low salinity waters which obviously have low pH, will affect foraminiferal calcite. Therefore, this experiment is an attempt to understand the component of dissolution of carbonates not associated with CO2 induced global ocean acidification. We have not tried to distinguish between the effect of salinity and pH on foraminifera. The objective of this paper is to understand how

the natural seasonal salinity changes, which also lead to a change in seawater pH and alkalinity, affect foraminifera.

Reviewer's Comment: Is this foraminiferan responding to changes in salinity, alkalinity, or pH?

Authors' Response: The foraminifera is responding to the seasonal change in salinity, which also leads to a change in pH and alkalinity. We have already discussed the relationship between salinity and pH. The revised manuscript contains details of alkalinity measurement, which suggest that drop in pH of the low saline water is primarily responsible for the adverse effect on benthic foraminiferab (please see attached figure).

Reviewer's Comment: There is no way to tell because salinity and pH co-vary. Alkalinity was not measured.

Authors' Response: We agree with the reviewer that salinity and pH co-vary within broad range of salinity. Therefore, in order to address the issue of dissolution of foraminifera in shallow water regions, we have measured alkalinity, as mentioned above. Moreover, we have not tried to distinguish between the effects of salinity and pH on foraminifera. Rather we have tried to understand how seasonal salinity changes cause dissolution of foraminiferal tests by measuring possible parameters that affect calcite dissolution, i.e. pH and alkalinity. The dissolution of shells below 20 salinity despite high alkalinity suggests that drop in pH due to fresh water influx causes dissolution.

Reviewer's Comment: Are the authors certain that this species is indeed R. globularis?

Authors' Response: Yes, this species is indeed R. globularis. We have compared our specimens with the 'type species' from Ellis and Messina catalogue of foraminifera.

Reviewer's Comment: Are the abnormally formed individuals mentioned simply growing around clumps of food? It is not uncommon for species of Rosalina to conform to the shape of the substrate.

Authors' Response: No, the abnormalities are not associated with the presence of clumps of food. No food clumps formed during the experiment.

Interactive comment on Biogeosciences Discuss., 8, 8423, 2011.

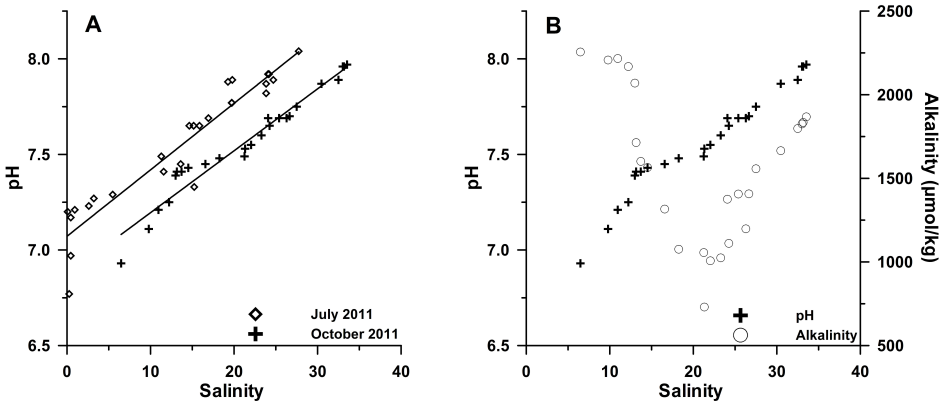

Fig. 1. Relationship between salinity, pH and alkalinity of the seawater collected from the Mandovi-Zuari estuaries.