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Publications Coordinator
Integrated Ocean Drilling Program (IODP)
1000 Discovery Drive
Texas A&M University
College Station, TX 77845

Dear Publications Coordinator,

Please find enclosed our revised IODP Data Report #322-205, entitled "Permeability, compressibility, and microstructure of resedimented mudstones from IODP Expedition 322, Site C0011". We appreciate the opportunity to resubmit, and thank the Editorial Review Board for their detailed reviews.

We find all of the suggestions very valuable and appropriate. The key criticisms were that it was unclear what amount from which depth interval got blended into the mixture, and that some details on methods and samples were missing. We have responded to the criticisms in the following manner:

1. We added a sample list as Table T1 that includes the mass, core number, depth range, lithologic unit, and facies for each sample that went into the blended mudstone mixture.
2. It was suggested by the external reviewer that we should also provide compression (C_c) and expansion (C_e) indices for the low stress range so that the reader can assess the magnitude of change compared to the high stress range. We added C_c values for the low stress range to Table T6 and the main text. C_e was incorrectly stated to change with vertical effective stress. We deleted this statement. Thus, C_e at low stresses is not required.
3. We added details on the grinding and mixing process of our material, the commercial silt we added to the mixtures, the disaggregation procedure and dispersing agent used in

grain-size analyses, the specifics on consolidation testing equipment, and the XRD methods such as sample preparation, analysis, method for expandibility, and errors.

4. We added a comparison of our wt.% values to the values that were calculated from the shipboard XRD measurements of bulk powders (Underwood et al., 2009) and to the values published by Guo and Underwood (2012) in the IODP 314/315/316 data report.
5. Some confusion was expressed about the grain-size analyses being performed after the compression of samples. We added an explanation stating that we wanted grain-size distributions from the exact same specimens that were resedimented and consolidated and that we compared grain-size distributions before and after compression and found no difference in composition indicating no mechanical effects on the grain-size distribution.
6. We agree with the co-chief's comment that the SEM images could be used to estimate particle sizes, which might substantially differ from the spherical equivalent settling behavior shown by grain-size data. However, we used a well-recognized, repeatable approach to characterize the material and stuck to it.
7. The co-chief offered an explanation for the difference in liquid limit between air-dried and oven-dried material. We came to the same conclusion, however, had not made it clear in the data report. We added a statement that this difference could be due to the loss of interlayer water from smectite during oven-drying and specified the temperature used for oven-drying.

We included in our resubmission a point-by-point response to the reviewers' comments, the main text as Microsoft Word Document, 5 color figures as Adobe Illustrator files, 8 black-and-white figures as Adobe Illustrator files, and 7 tables as Microsoft Word Documents. No changes have been made to the supporting data that accompany this data report, including 12 Microsoft Excel spreadsheets and 220 TIF files.

Please feel free to contact me with any questions. Thank you very much.

Sincerely and with respect,

Julia S. Reece

Julia S. Reece and co-authors