Retraction: Constraints on future sea-level rise from past sea-level change

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This Letter presented projections of future sea-level rise based on simulations of the past 22,000 years of sea-level history using a simple, empirical model linking sea-level rise to global mean-temperature anomalies. One of the main conclusions of the Letter was that the model results supported the projections of sea-level rise during the twenty-first century that are reported in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Unfortunately, we have since found that our projections were affected by two oversights in our model approach. First, we tested the sensitivity of our results to the length of the time step used in the integration of the model for the period of deglaciation, which we found to be robust. However, we overlooked that the simulations of the twentieth and twenty-first centuries are sensitive to this time step, which led to an overestimation of the sea-level response to warming in the simulations for these centuries. Second, we did not include the effect of the uncertainty in the temperature reconstructions since the Medieval Climate Anomaly in our uncertainty estimates for the twenty-first-century projections. This led to an inconsistency between the twentieth-century simulation used to test the predictive capability of the model and the twenty-first-century simulation, owing to a provisional allowance for warming since the Little Ice Age in the twentieth-century simulations. Thus we no longer have confidence in our projections for the twentieth and twenty-first centuries, and for this reason the authors retract the results pertaining to sea-level rise after 1900. Both our simulations of the last deglaciation, and the result that the equilibrium response of sea-level change to temperature is non-linear over the last deglaciation, are robust to the length of the time step used, and are still valid.

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