implementation. This, however, is not IFC's action plan—it belongs to the broad community that gathered at FLOW 2008 and created these action items.

Conference planners and attendees hope that this spirit of interaction and cooperation will endure, and that those who volunteered to provide leadership on certain action plan elements will help advance the collective agenda to create real institutional, policy, and ecosystem changes that will benefit instream flows and river health in the long term.

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The Sea Level Conundrum: Insights From Paleo Studies

Empirical Constraints on Future Sea Level Rise; Bern, Switzerland, 25–29 August 2008

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Eustatic sea level (ESL) rise during the 21st century is perhaps the greatest threat from climate change, but its magnitude is contested. Geological records identify examples of nonlinear ice sheet response to climate forcing, suggesting a strategy for refining estimates of 21st-century sea level change. In August 2008, Past Global Changes (PAGES), International Marine Past Global Change Study (IMAGES), and the University of Bern cosponsored a workshop to address this possibility. The workshop highlighted several ways that paleoceanography studies can place limits on future sea level rise, and these are enlarged upon here.

The meeting featured presentations discussing the implications of the Intergovernmental Panel on Climate Change Fourth Assessment Report (AR4), which predicted 21st-century global warming of 1.1º–6.4°C for a range of emissions scenarios. Paleoclimate Modeling Intercomparison Project (PMIP) studies concluded that global warming during the last glacial termination (TI, 21,000 years ago to present) was 3.3º–5.1°C. Given the similarity between the magnitude and rate of warming predicted for the 21st century and the TI warming, workshop speakers considered the relevance of the TI ESL response to understanding future change. TI data (see Figure S1 and caveats in the electronic supplement to this *Eos* issue, http://www.agu.org/eos_elec/) support the notion that the ESL response is rapid following a perturbation but then reduces over time as ice sheets reach a new steady state. However, workshop participants noted that the model used for the AR4 prediction of twentieth-century sea level rise does not capture the mode of integrated ice sheet response observed during TI. Attendees concluded that ice sheet models used to predict future ESL rise must be able to capture the dynamics revealed by the paleo sea level record if we are to have confidence in them.

Workshop participants also discussed how relative sea level (RSL) data from sites distant from the high-latitude ice sheets for the last interglacial period (LIG) suggest that sea level attained a peak 3–6 meters above modern sea level. Greenland ice sheet (GrIS) modeling for LIG conditions suggests that GrIS reduction may have contributed 3 meters to ESL rise during this period, adequate to account for the lowest estimate of LIG sea level rise but not for estimates above 3 meters. Participants noted that higher estimates of sea level during the LIG likely require additional contributions from ocean thermal expansion and the West Antarctic ice sheets (WAIS).

RSL and modeling results for the LIG suggest GrIS and WAIS are vulnerable to a warming climate. Although there are direct observations of rapid ice sheet responses to global warming, such observations are typically of several decades duration, and workshop attendees stressed that one cannot conclude whether rapid processes will have a larger-scale impact on the ice sheets. Because the rapid changes observed in modern ice sheets are in general agreement with paleo observations of the response of ESL to rising temperatures, the rapid reduction of ice sheets in response to climate change is a serious possibility.

Additional information, Figure S1, and a bibliography for this report are available in the electronic supplement (http://www.agu.org/eos_elec/).

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