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A relative sea level constrained deglaciation chronology for Eurasia

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Past 3D deglaciation models for Eurasia have generally have generally relied either on the application of geophysical inversion methods that are not glaciological self-consistency or on a small number of simulations using essentially unconstrained glaciological models. To remedy this unsatisfactory situation, we present a new deglaciation chronology for Eurasia based on the results of a 500 member ensemble of runs with the University of Toronto Glacial Systems Model. This model includes a 3D thermo-mechanically coupled ice sheet model, fast flow components, and an accurate representation of visco-elastic bedrock response. The systems model has over twenty ensemble parameters that enable it to capture uncertainties in deglacial climate and ice dynamics. The model is also further constrained to fit a geologically-inferred deglacial ice-margin chronology. By scoring ensemble results against predicted fits to a large set of relative sea level observations, objective confidence intervals can be assigned. Key regions in need of further constraint are also identified.