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KlimaCampus Kolloquium

Dr. Tamsin Edwards

Quantifying uncertainty in Antarctic ice sheet instability

Antarctic marine ice sheet instability (MISI) - a proposed self-sustaining retreat of the grounding line triggered by oceanic or atmospheric changes – may have the potential to cause substantial sea level rise. But it is challenging to predict: models with sufficient spatial resolution have been too computationally expensive to assess their uncertainties, and models that parameterise the processes have been only loosely constrained by observations.

I will show results from a new statistical-physical study in which 3000 simulations from an Antarctic ice sheet model are constrained with observations in a Bayesian framework, giving predictions of sea level rise due to instability over the next 200 years. We find a most likely estimate of 10 cm of sea level rise by 2100 under the A1B climate scenario, with a 5% chance of exceeding 30 cm, lower than some previous studies. By 2200 the predictions have two modes (49 cm, 6 cm) due to model structural uncertainty in how ice slides over the bed.

Dr. Edwards from the The Open University is invited by Thorsten Mauritsen from the Max-Planck-Institute for Meteorology

Bundesstraße 53, Room 22/23 (ground floor)