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The contribution of the East Antarctic Ice Sheet to future sea level rise

Jim Jordan¹, Hilmar Gudmundsson¹, Adrian Jenkins¹, Chris Stokes², Stewart Jamieson², and Bertie Miles²

¹Department of Geography and Environmental Sciences, Northumbria University, Newcastle, U.K.

²Department of Geography, Durham University, Durham, U.K.

The East Antarctic Ice Sheet (EAIS) is the single largest potential contributor to future global mean sea level rise, containing a water mass equivalent of 53 m. Recent work has found the overall mass balance of the EAIS to be approximately in equilibrium, albeit with large uncertainties. However, changes in oceanic conditions have the potential to upset this balance. This could happen by both a general warming of the ocean and also by shifts in oceanic conditions allowing warmer water masses to intrude into ice shelf cavities.

We use the Úa numerical ice-flow model, combined with ocean-melt rates parameterized by the PICO box mode, to predict the future contribution to global-mean sea level of the EAIS. Results are shown for the next 100 years under a range of emission scenarios and oceanic conditions on a region by region basis, as well as for the whole of the EAIS.