



ANTScape's Antarctic paleotopography for 70 Ma

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We present the latest versions of ANTScape's Late Cretaceous (70 Ma) model paleotopography. The paleotopography is built for a plate kinematic reconstruction based on recent studies of the ocean basins surrounding Antarctica. It reveals an austral landmass organised around Antarctica, with connections to Australia and South America at its margins. Offshore depths are forwardly modelled from estimates of ocean floor age, crustal thickness, and sediment cover, and our understanding of the evolution of the variety of processes that we expect to have led the oceans surrounding Antarctica to attain their current depth. Continental paleotopography, in contrast, is modelled by applying process-based adjustments to the present-day measured sub-ice topography. Two candidate topographies are presented with the aim of accommodating ongoing controversy about the origin of the Transantarctic Mountains. The mountains do not feature in one of these candidates, on the understanding that they developed as a marginal uplift to the younger West Antarctic Rift System. The other candidate shows the mountains as parts of a West Antarctic altiplano, supported by thickened crust related to plate convergence at Gondwana's active margin. We anticipate the paleotopographies will be useful boundary conditions for modelling of paleo-ice sheets, regional circulation, and paleoclimate.