{rokbox title=|Global average land surface temperature :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-underestimated-land-heat-melo-2024-thumb-et-al.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-underestimated-land-heat-melo-2024-et-al.jpg{/rokbox}

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, Elena García-Bustamante, Johann Jungclaus, Jesús Fidel González-Rouco,2024.
Underestimated Land Heat Uptake Alters the Global Energy Distribution in CMIP6 Climate Models.
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Abstract:Current global warming results in an uptake of heat by the Earth system, which is distributed among the different components of the climate system. However, current-generation climate models deliver heat inventory and partitioning estimates of Earth system components that differ from recent observations. Here we investigate the global heat distribution under warming by using fully-coupled CMIP6 Earth system model experiments, including a version of the MPI-ESM with a deep land model component, accommodating the required space for more realistic terrestrial heat storage. The results show that sufficiently deep land models exert increased subsurface land heat uptake, leading to a heat uptake partitioning among the Earth system components that is closer to observational estimates. The results are relevant for the understanding of Earth's heat partitioning and highlight the importance of the land heat sink in the Earth heat inventory.

Keywords:global heat inventory, land heat uptake, climate change, Earth system energy balance, land model depth.