## Global climate model wind bias impacts ocean carbon storage and uptake

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The Southern Hemisphere westerly winds in global climate model simulations show a systematic equatorward bias relative to observed winds. Equatorward wind-stress biases impact the transport of the Antarctic Circumpolar Current, the nature of Southern Ocean water mass formation and are hypothesized to reduce the volume of North Atlantic Deep Water outflow. However, it is not known what influence the wind-stress biases have on oceanic carbon uptake and storage. Here we demonstrate using the UVic Earth Systems Climate Model that the equatorward wind-stress biases reduce equilibrium ocean carbon storage, redistribute carbon within the ocean and affect oceanic carbon uptake during transient climate simulations. The wind-stress biases act directly by influencing Ekman pumping dynamics in the Southern Ocean, but they also have an indirect effect on the overturning circulation and carbon distribution through the Agulhas leakage and Indo-Atlantic salt flux. These results are relevant to the fully-coupled climate models because they indicate that pre-industrial wind-stress biases will affect ocean carbon storage.