



CLIMBER-X: a new model to explore climate-carbon cycle interactions of the Pleistocene

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We present CLIMBER-X, a newly developed Earth System model of intermediate complexity designed to explore and understand climate-carbon cycle-cryosphere interactions on temporal scales ranging from decades to glacial-interglacial variations.

CLIMBER-X includes a frictional-geostrophic 3D ocean model (GOLDSTEIN), a sea ice model, a semi-empirical statistical-dynamical atmosphere model (SESAM), an ocean biogeochemistry model including sediments (HAMOCC), a land carbon cycle and dynamic vegetation model (PALADYN) which also comprises a dust emission model and a weathering model. All components are run on a horizontal resolution of $5 \times 5^\circ$, except the atmosphere which runs on a $10 \times 10^\circ$ grid. The land-ocean mask is allowed to vary with changing sea level. CLIMBER-X also includes the thermomechanical ice sheet model SICOPOLIS.

The comprehensive global carbon cycle model of CLIMBER-X will be presented together with first sensitivity experiments of the global carbon cycle response to climate perturbations.