Earth System
Dynamics

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Supplement of

Multi-centennial evolution of the climate response and deep-ocean heat uptake in a set of abrupt stabilization scenarios with EC-Earth3
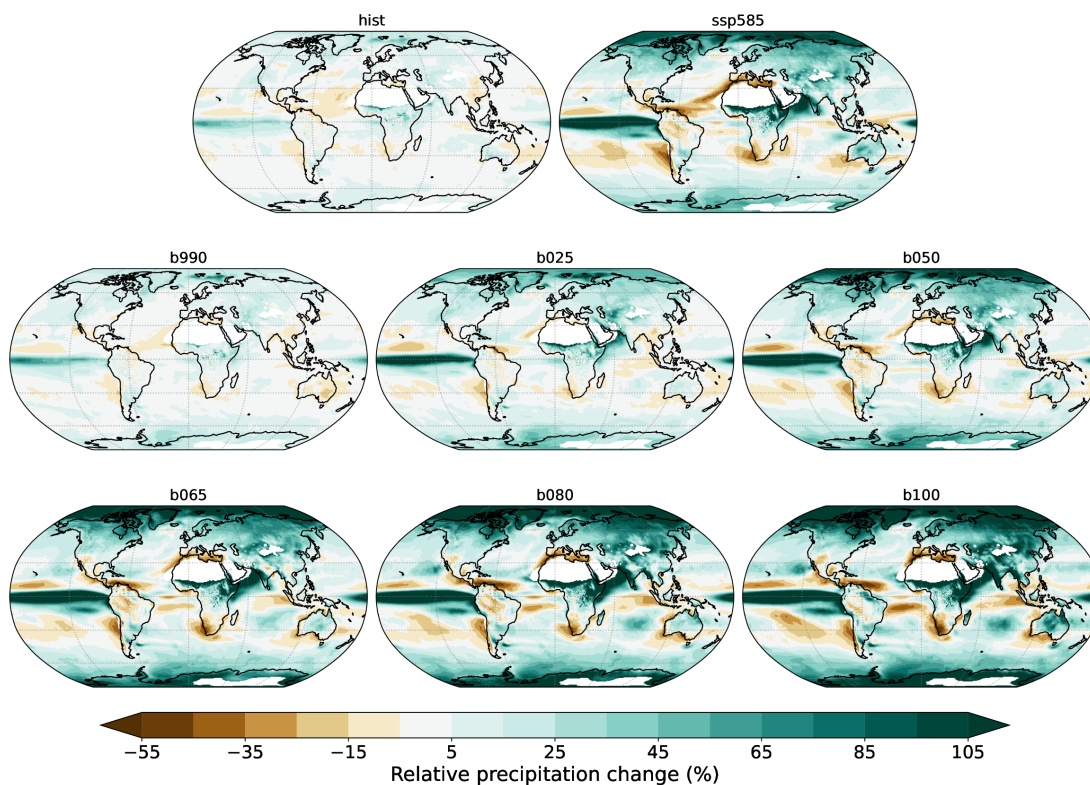
Federico Fabiano et al.

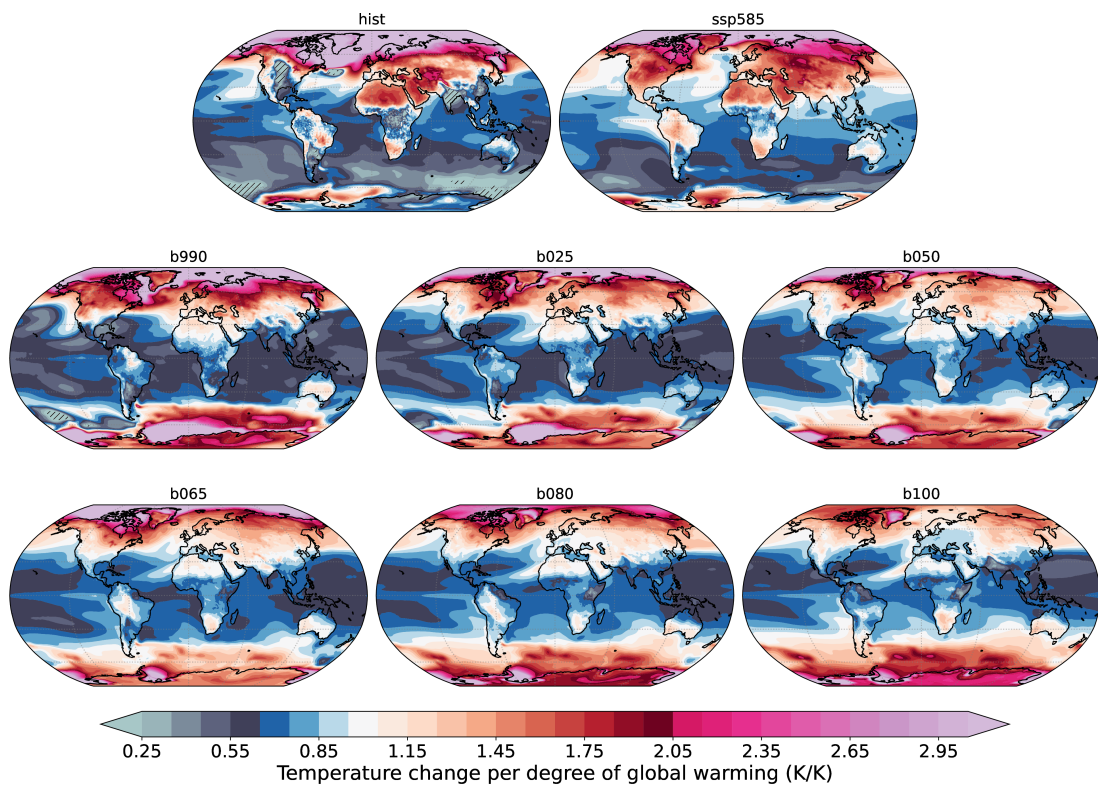*Correspondence to:* Federico Fabiano (f.fabiano@isac.cnr.it)

Multi-centennial evolution of the climate response and deep ocean heat uptake in a set of abrupt stabilization scenarios with EC-Earth3 - Supplementary material
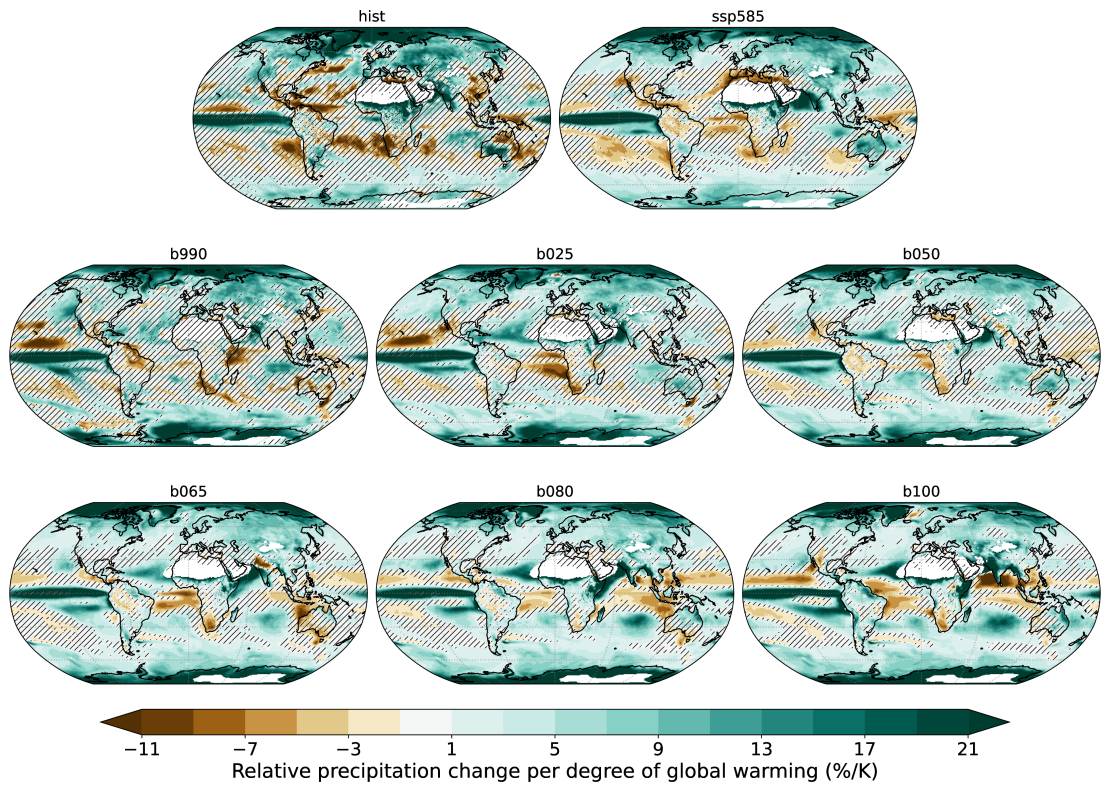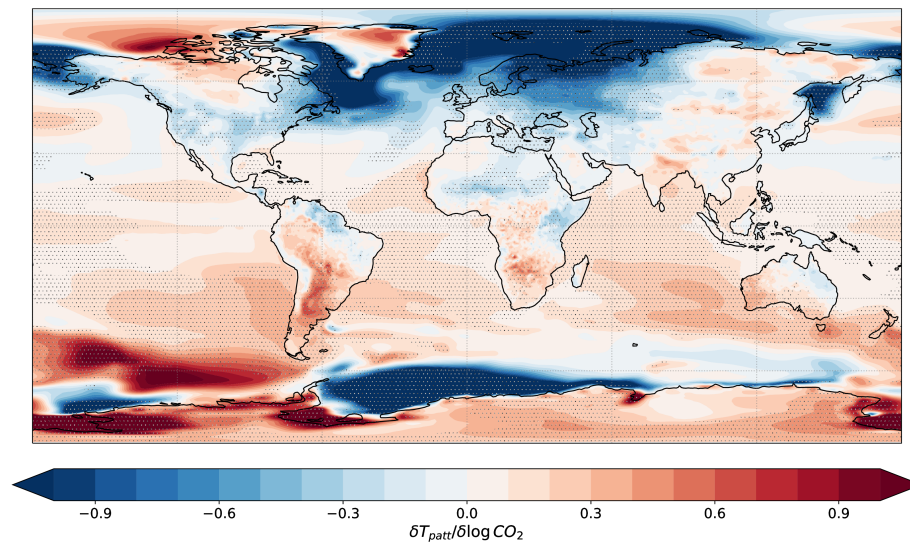
February 28, 2024

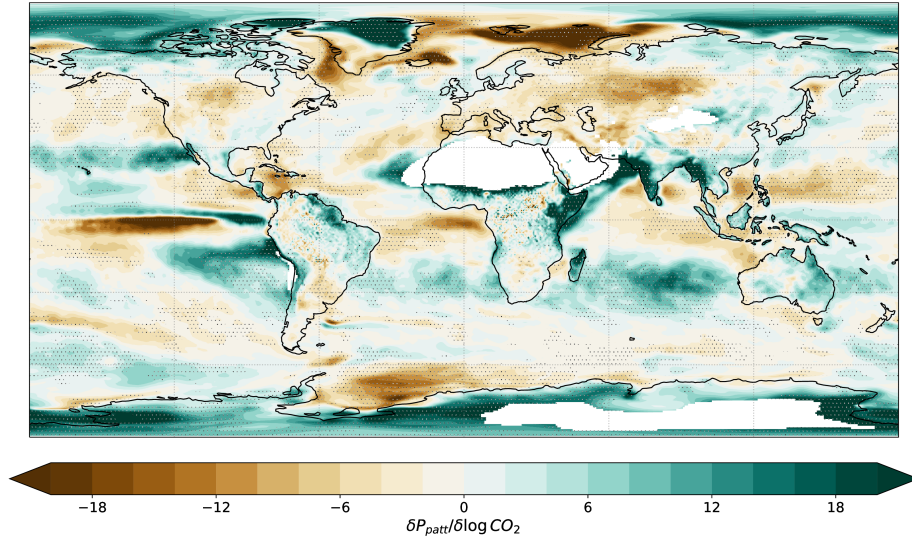**Figure S1.** Precipitation change relative to pre-industrial at the end of the simulations.

Figure S2. Temperature change per degree of global warming during the course of the simulation.

Figure S3. Relative precipitation change per degree of global warming during the course of the simulation.


Figure S4. Dependence of the warming pattern on the forcing level. The map shows the regression of each simulation's warming pattern with respect to the logarithm of the CO_2 concentration, which we assume close to the effective external forcing. Dots indicate regions with a significant regression.

Figure S5. As before, but for the pattern of relative precipitation change.

Table S1. As in Table 4, but showing the relative amount of additional heat stored in each layer at the end of the runs.
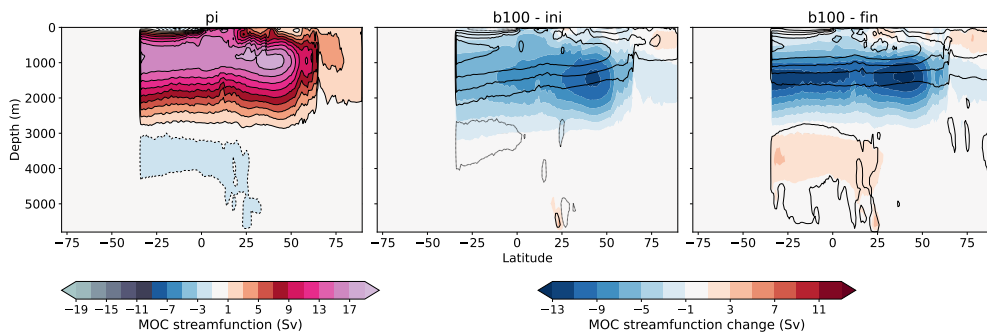
| Layer	b990	b025	b050	b065	b080	b100
Upper ($<$ 700 m)	18%	24%	29%	32%	35%	39%
Mid (700-2000 m)	27%	32%	37%	40%	41%	41%
Deep ($>$ 2000 m)	55%	44%	35%	28%	24%	20%
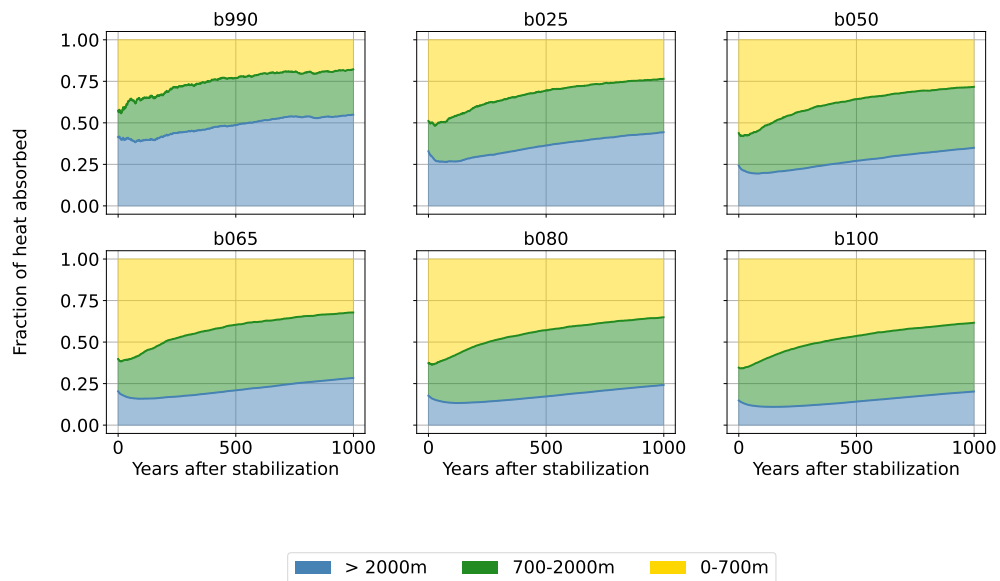
Figure S6. Relative distribution of heat in three depth regions of the global ocean: 0-700m, 700-2000m and below 2000m.
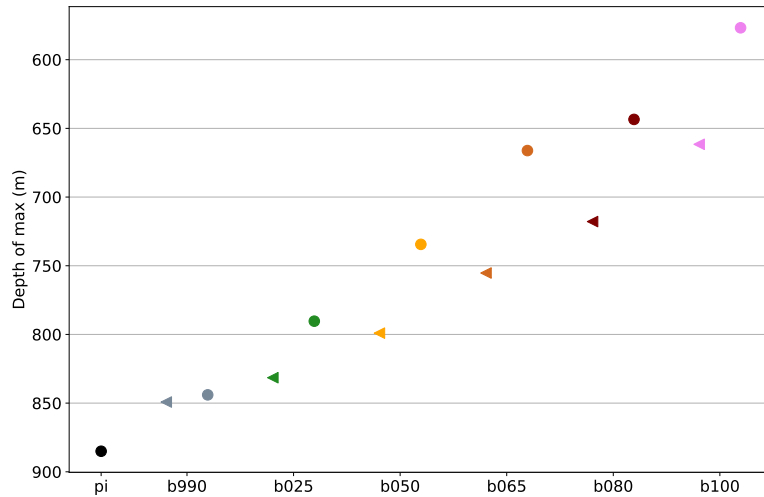
Figure S7. Depth of the absolute maximum of the AMOC at the beginning (dots) and at the end of the simulations (triangles).

Figure S8. MOC streamfuction (Sv) of the Atlantic ocean for the average pre-industrial (shading, left panel), and the initial and final states of the b100 simulation (mid and right panel; shading: difference to PI, contour: full field at steps of 3 Sv)
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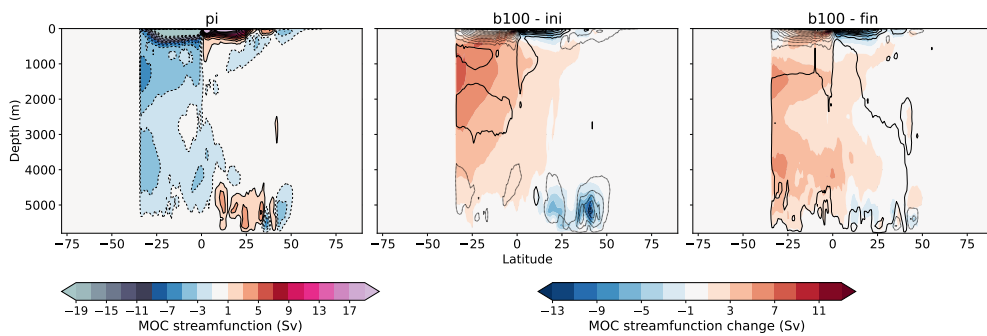
Figure S9. MOC streamfuction (Sv) of the Pacific/Indian oceans for the average pre-industrial (shading, left panel), and the initial and final states of the b100 simulation (mid and right panel; shading: difference to PI, contour: full field at steps of 3 Sv)
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