

1 **The NASA-GISS ModelE2.1-CC2 ESM: development and simulations**

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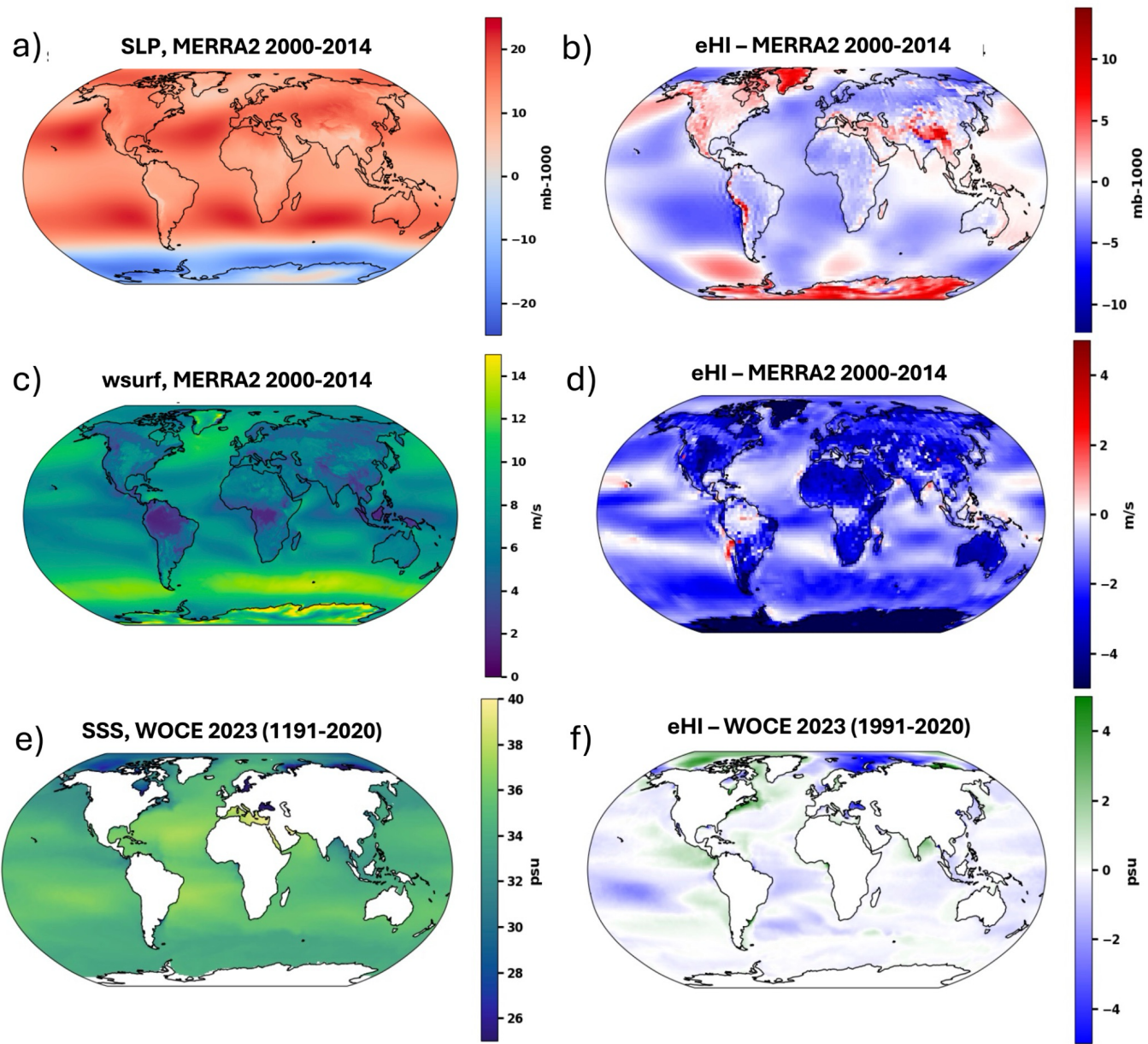


Figure S1: SLP, wsurf and SSS from eHI and observations

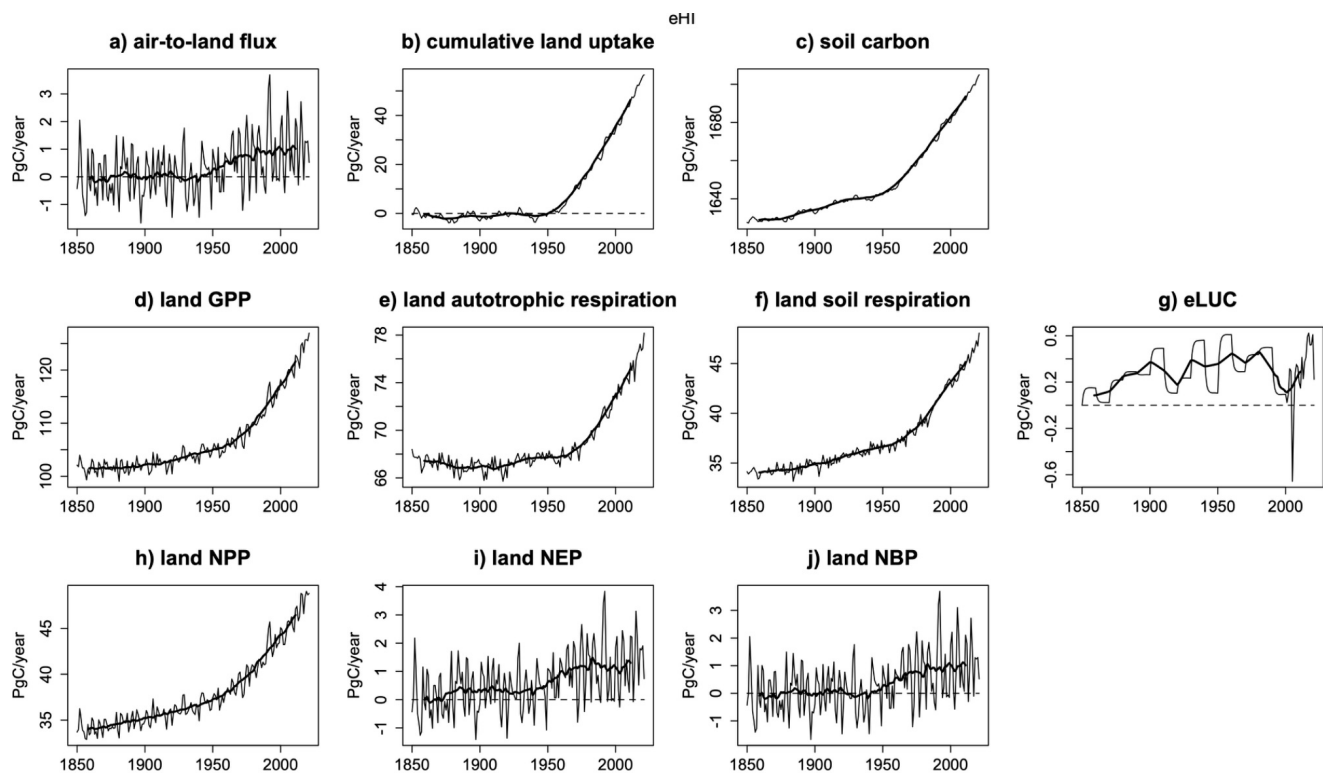


Figure S2: Land fluxes and soil carbon from eHI, with annual (thin line), 20-year moving average (thick line), and zero line (dashed line). a) air-to-land flux, b) cumulative land uptake since 1850, c) soil carbon stocks, d) land gross primary productivity (GPP), e) land autotrophic respiration, f) land soil respiration, g) emissions due to land use change (LUC), h) land net primary productivity (NPP), i) land net ecosystem productivity (NEP), and j) land net biome productivity (NBP).

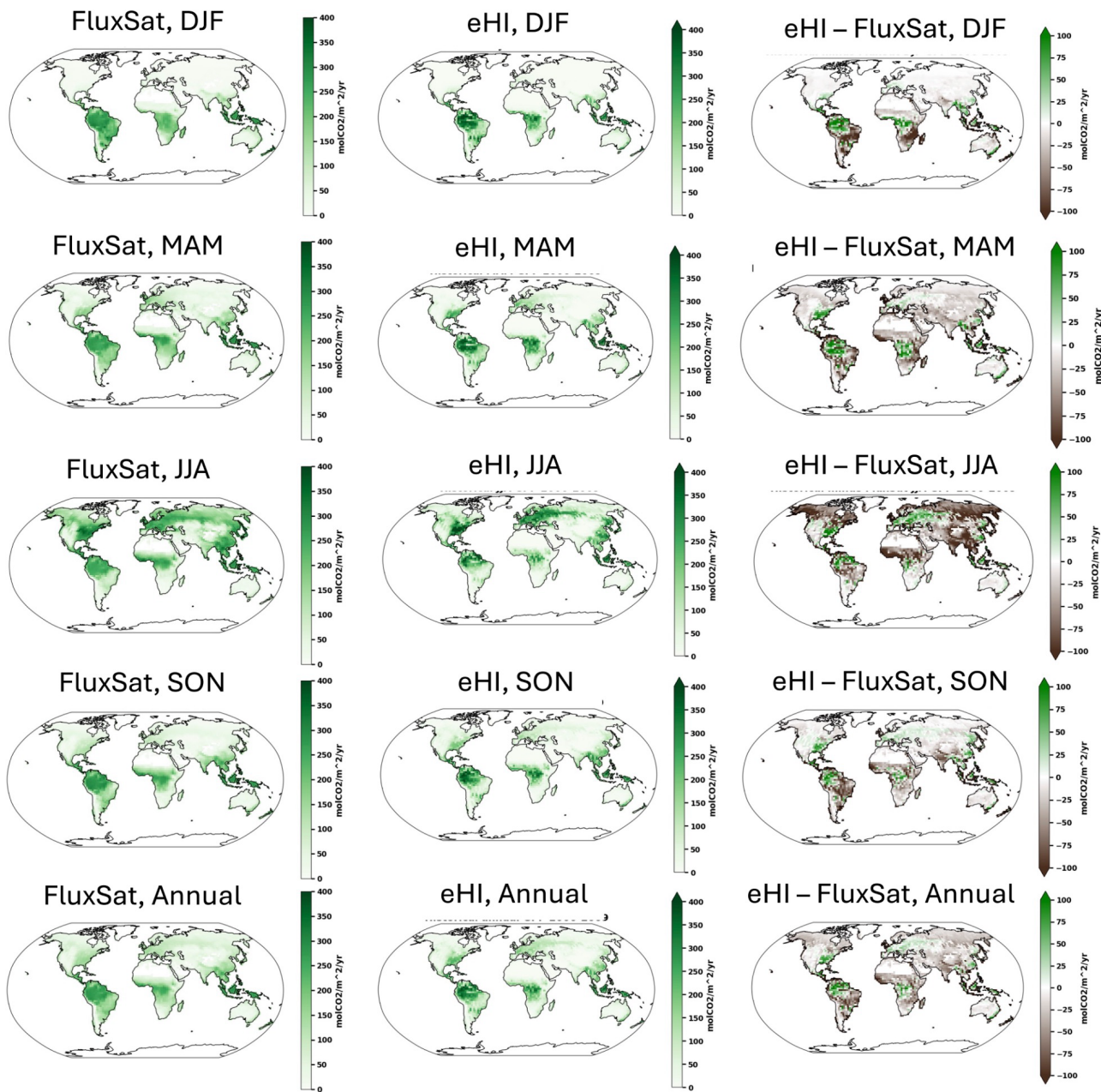


Figure S3: Land carbon seasonality from eHI and FluxSat.

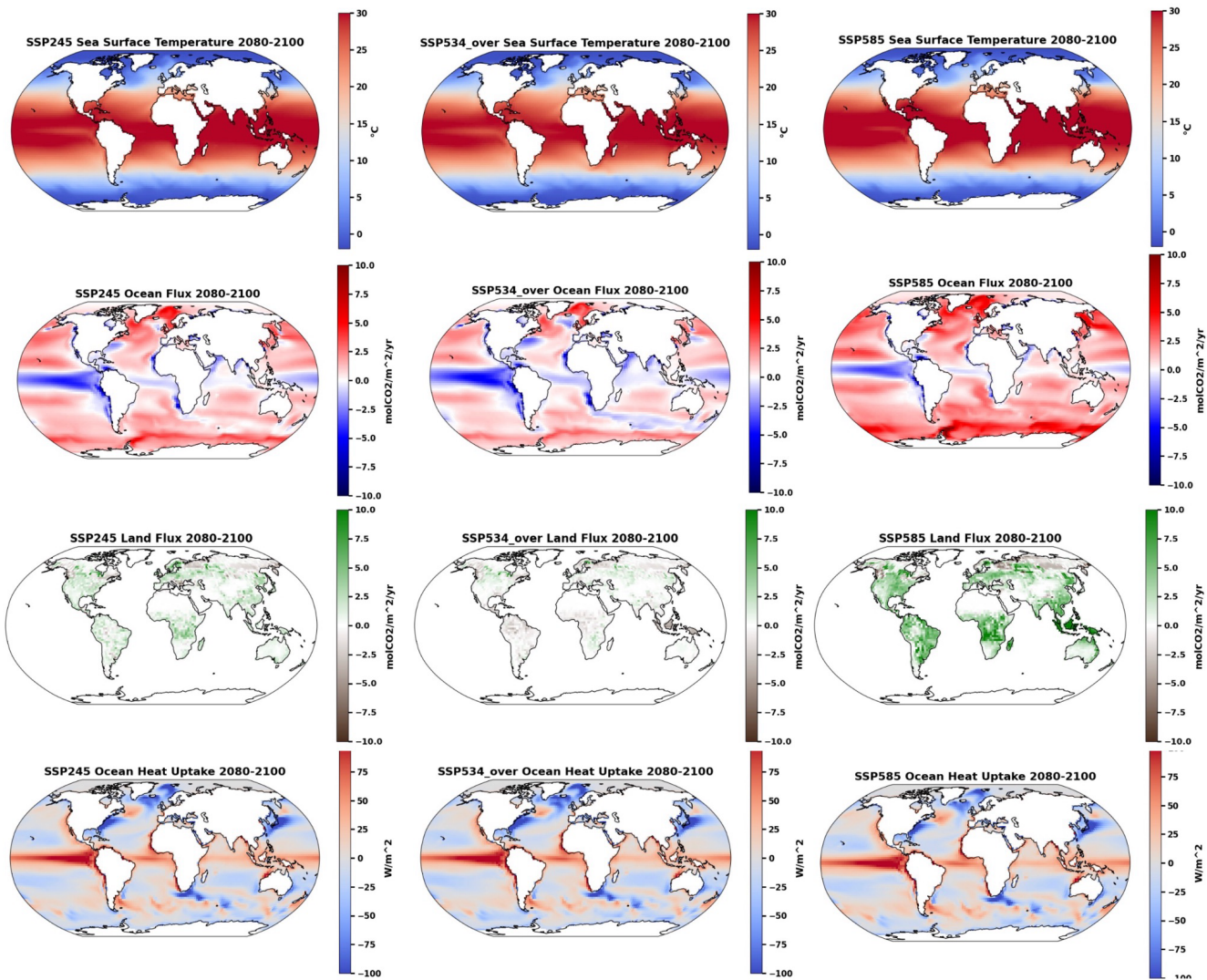


Figure S4: Averaged climatologies of the last 20 years in SSPs.