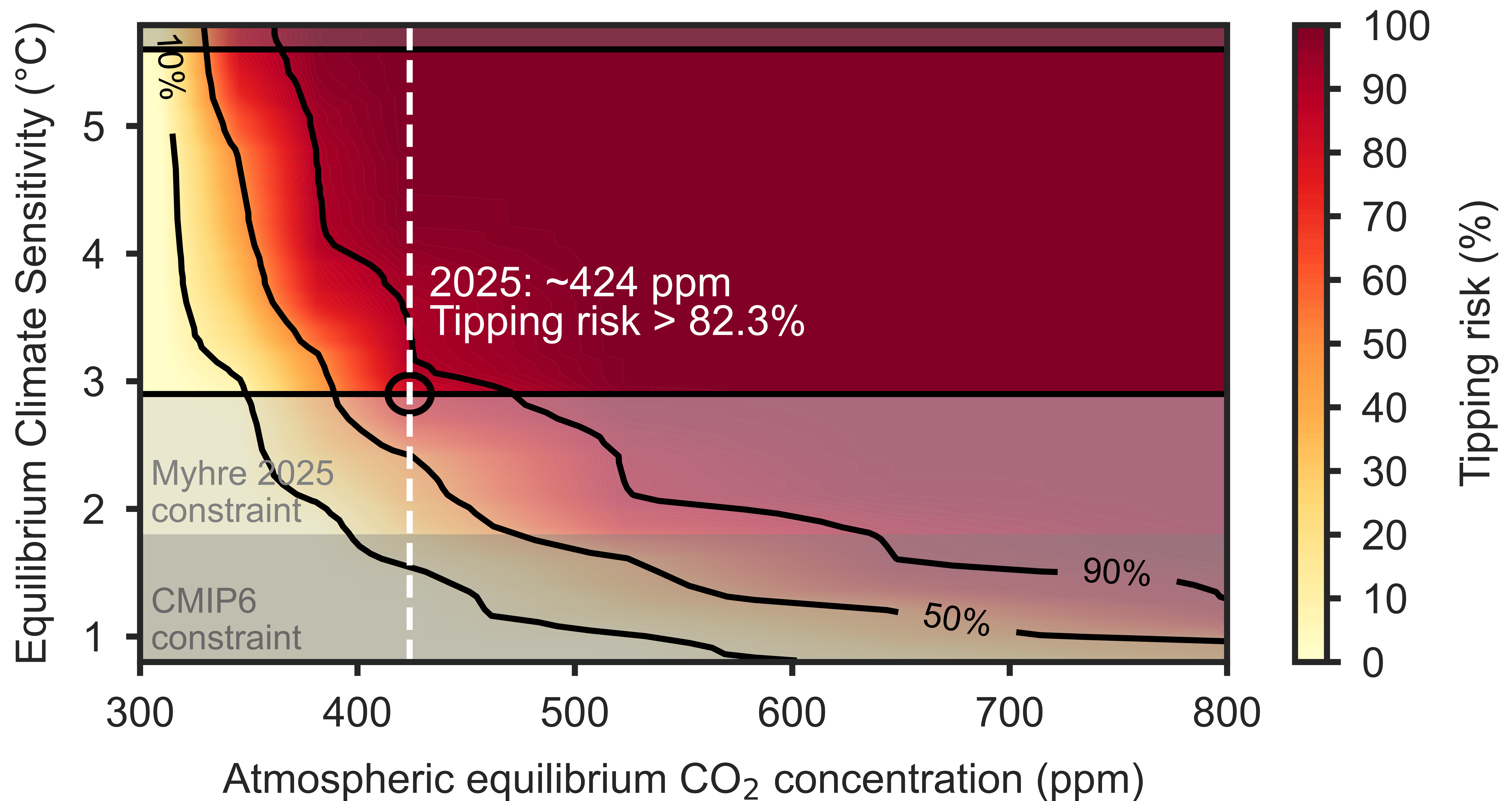


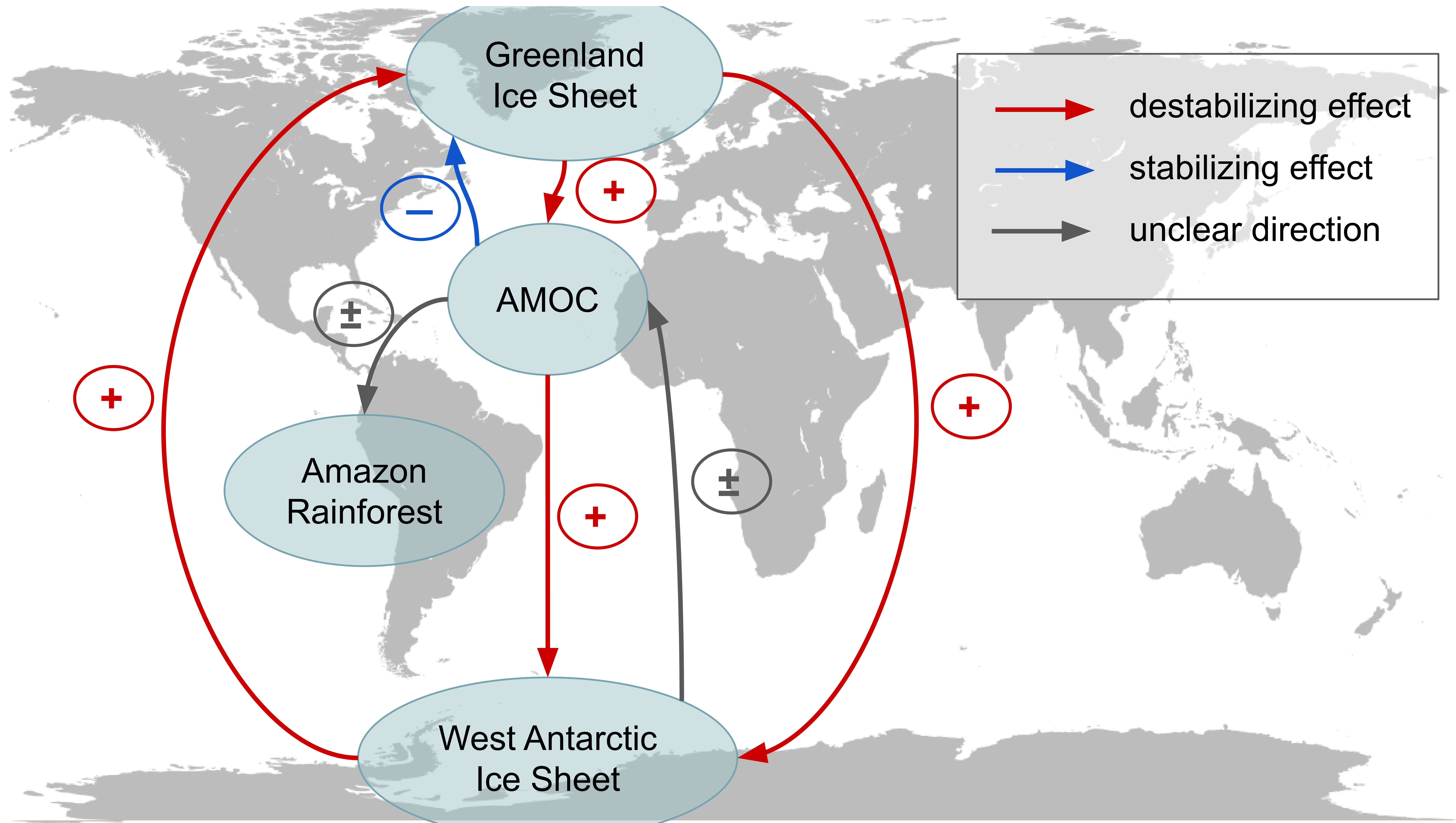
# Supplementary Figures

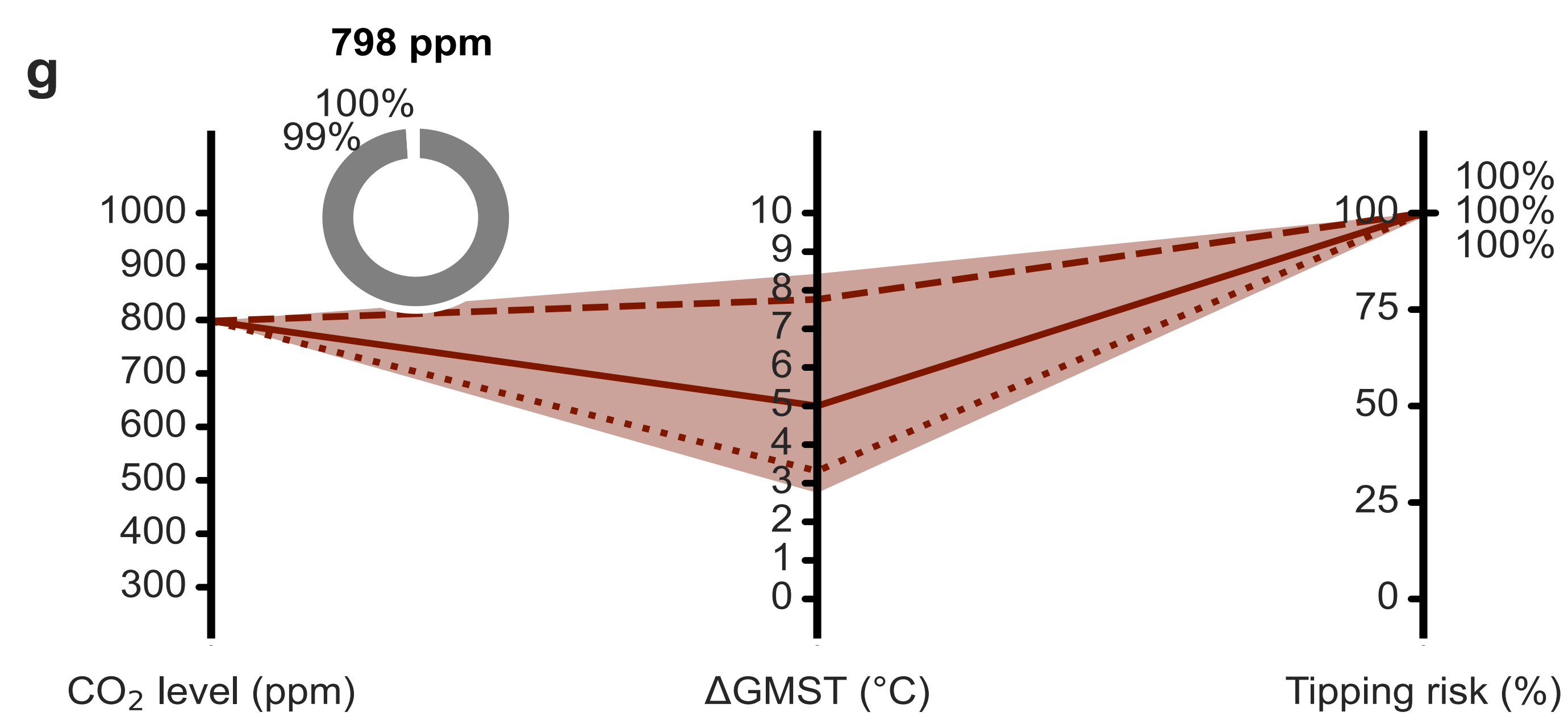
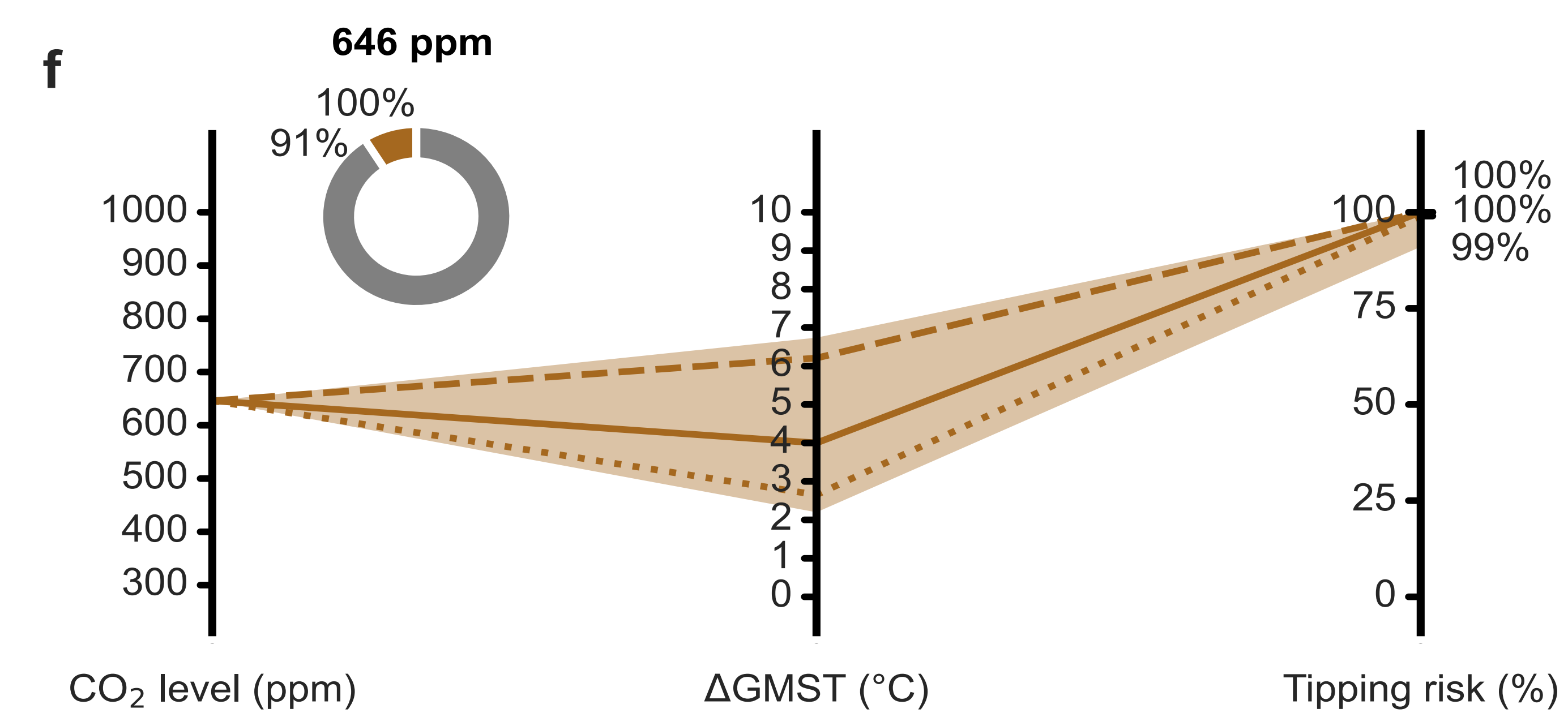
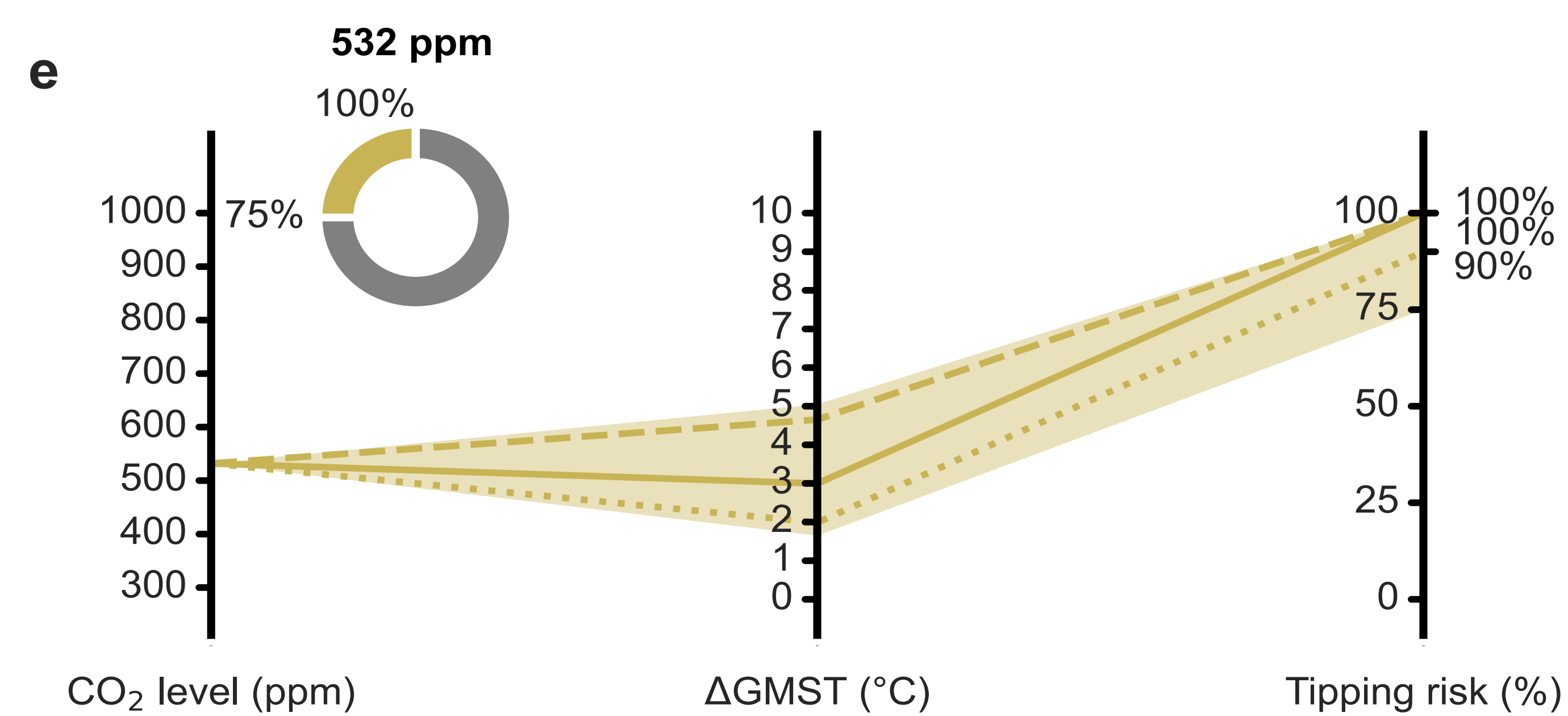
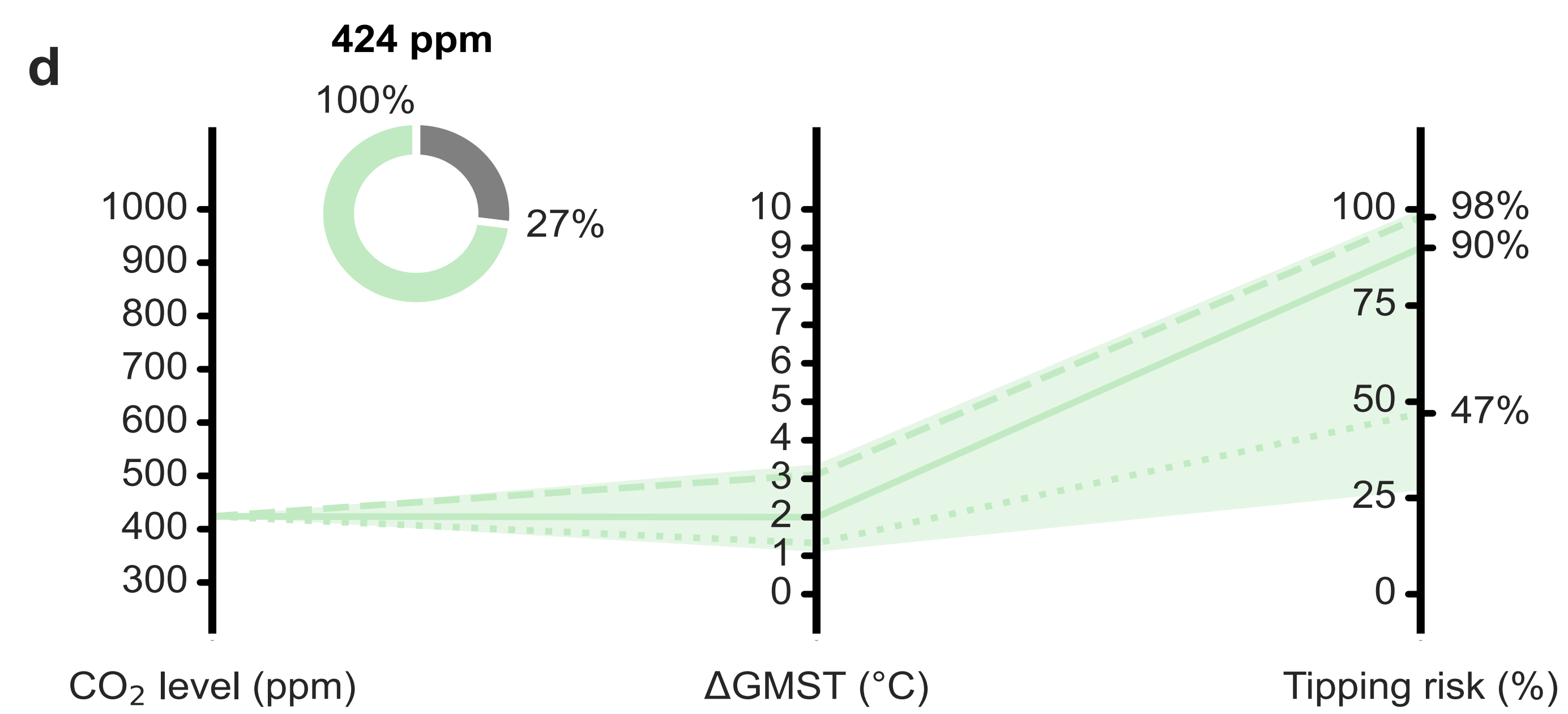
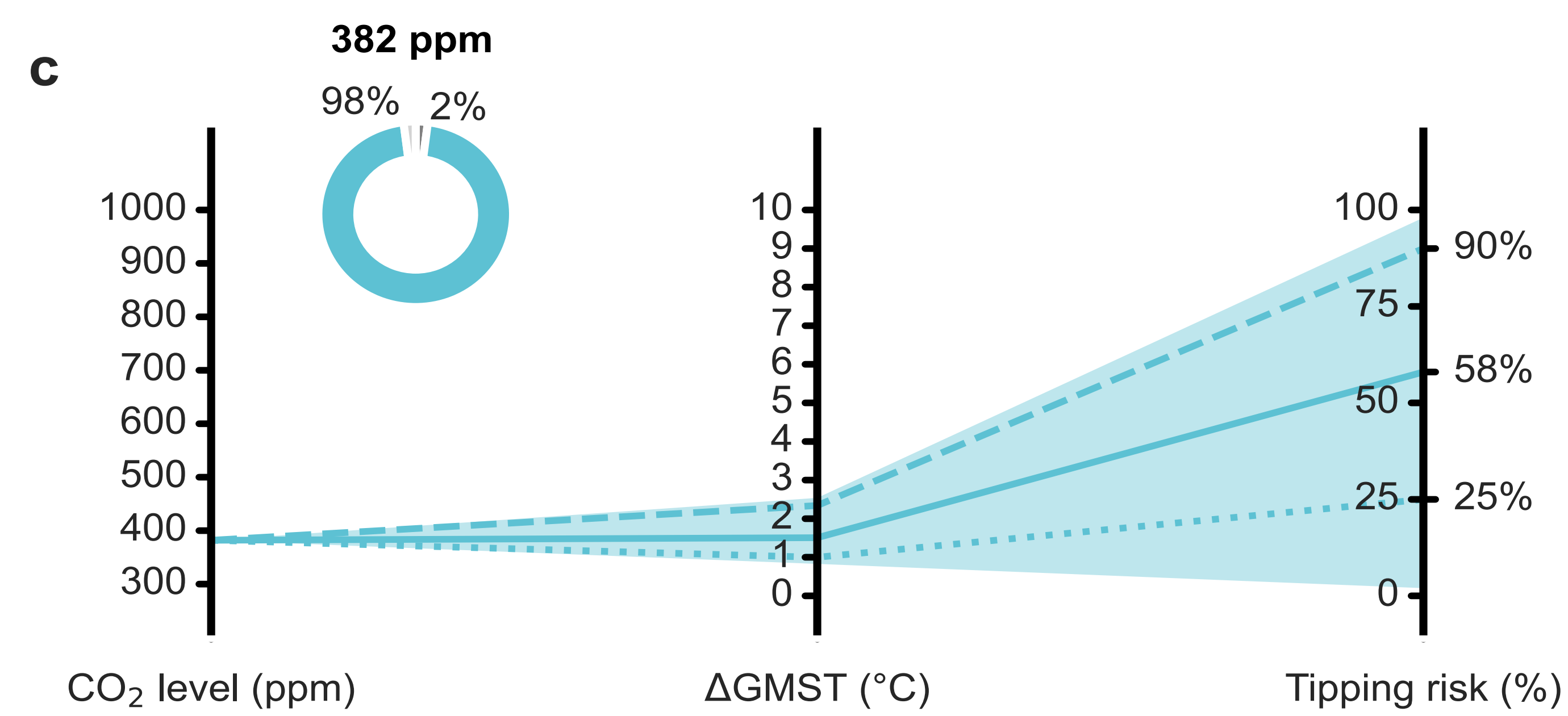
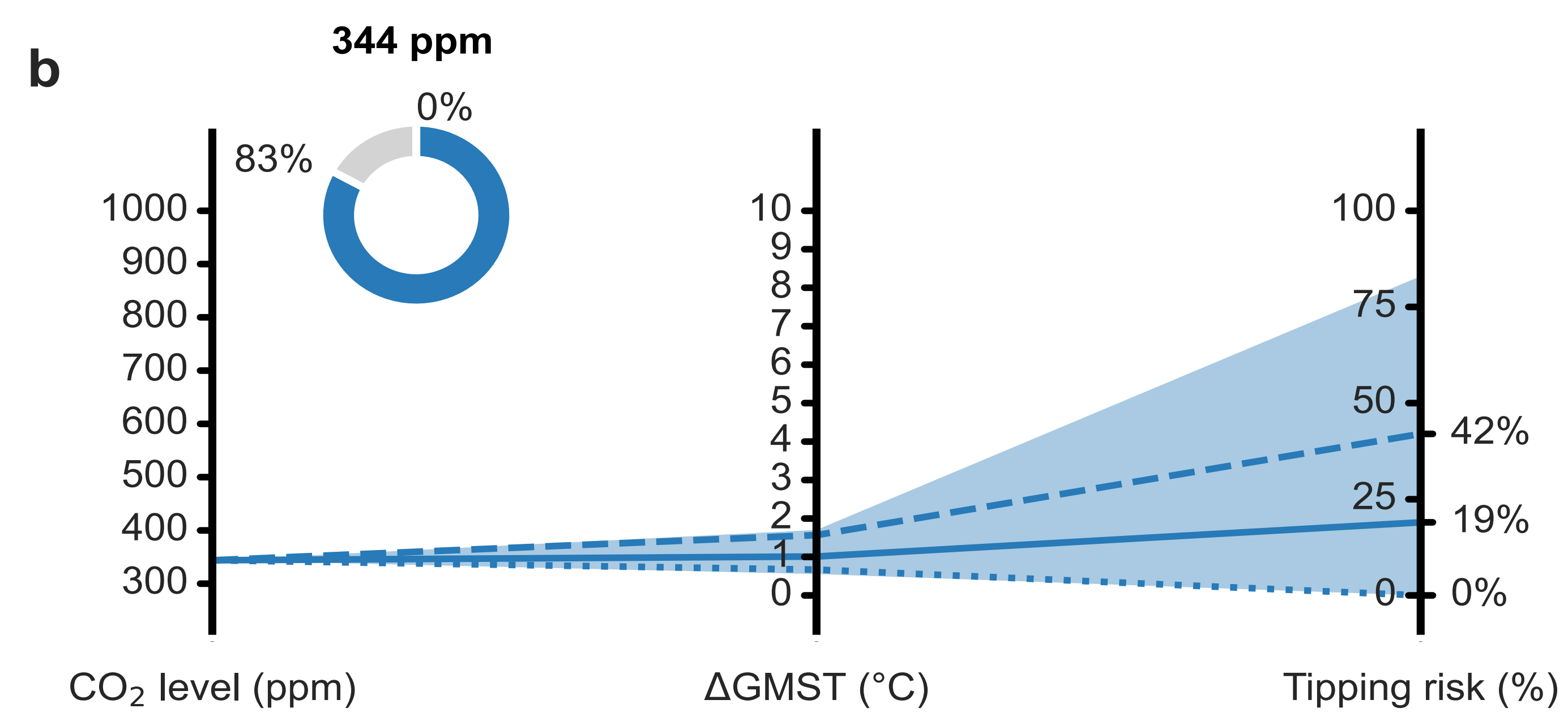
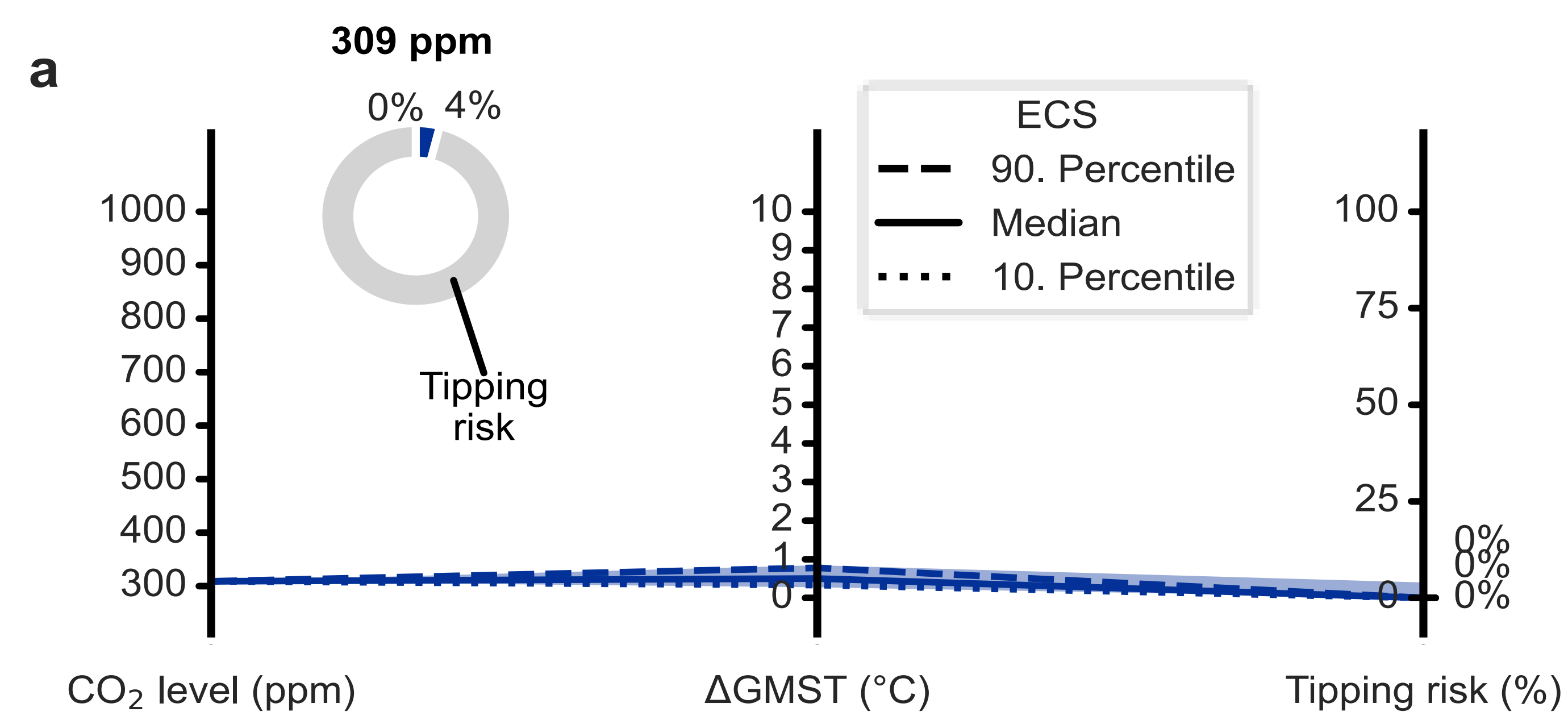


*Climate tipping risk as a function of atmospheric CO<sub>2</sub> concentration and Equilibrium Climate Sensitivity (ECS). Light gray area marks ECS constraint estimated by Myhre et al. (2025), showing that ECS < 2.9 °C is unlikely. The dark gray area marks the ECS values excluded under CMIP6, restricting likely ECS to lay between 1.8 °C and 5.6 °C. Black circle highlights the minimum tipping risk of stabilizing at 424 ppm under the constraint of observational evidence, being > 82%.*

**Table 1 | Minimum ECS for tipping risks per CO<sub>2</sub> level.** Stabilization CO<sub>2</sub> level, Global mean surface temperature change ( $\Delta$ GMST), ECS thresholds, and tipping risks per idealized CO<sub>2</sub> scenario. Stabilization levels were chosen to correspond to median temperature changes of 0.5, 1.0, 1.5, 2.0, 3.0, 4.0, and 5.0°C under the sample’s median ECS of 3.3°C. These CO<sub>2</sub> values should be interpreted as stylized, representative stabilization levels. A tipping risk > 0 % here means that in at least one model run of the Monte Carlo ensemble at least one element tipped.

<b>CO<sub>2</sub> Level</b> (ppm)	<b><math>\Delta</math>GMST Median</b> <b>(5–95th pctl) (°C)</b>	<b>ECS for &gt; 0 % Risk</b> (°C)	<b>ECS for &gt; 50 % Risk</b> (°C)	<b>ECS for 100 % Risk</b> (°C)
309	0.5 (0.27–0.68)	4.91	–	–
344	1.0 (0.54–1.37)	2.44	4.8	–
382	1.5 (0.81–2.05)	1.65	3.23	–
424	2.0 (1.07–2.7)	1.4	2.42	4.77
523	3.0 (1.61–4.08)	0.89	1.6	3.19
646	4.0 (2.16–5.44)	–	1.63	3.19
798	5.0 (2.73–6.81)	–	1.06	2.39





*Tipping risk as a function of CO<sub>2</sub> concentration, global mean surface temperature change ( $\Delta$ GMST), and equilibrium climate sensitivity (ECS) across seven representative CO<sub>2</sub> levels. Represented ECS are constricted to the CMIP6 ECS range (1.8–5.6 °C). a–g, Each panel corresponds to one scenario, highlighting the 10<sup>th</sup> (Ecs = 2.18 °C), median (ECS = 3.3 °C), and 90<sup>th</sup> (ECS = 5.16 °C) percentile ECS values. Shaded areas indicate the uncertainty range introduced by ECS for each scenario. Pie-charts show the resulting possible tipping risks (outer circle from 0 to 100%). Colored area indicates the possible values, while dark gray marks excluded lower values and light gray excluded upper values*