

Figure S1. An ensemble of three *Hist* simulations. Light blue lines represent individual runs and the dark blue line stands for the mean. Arrangement of sub panels are the same as in Fig. 2 in the main text

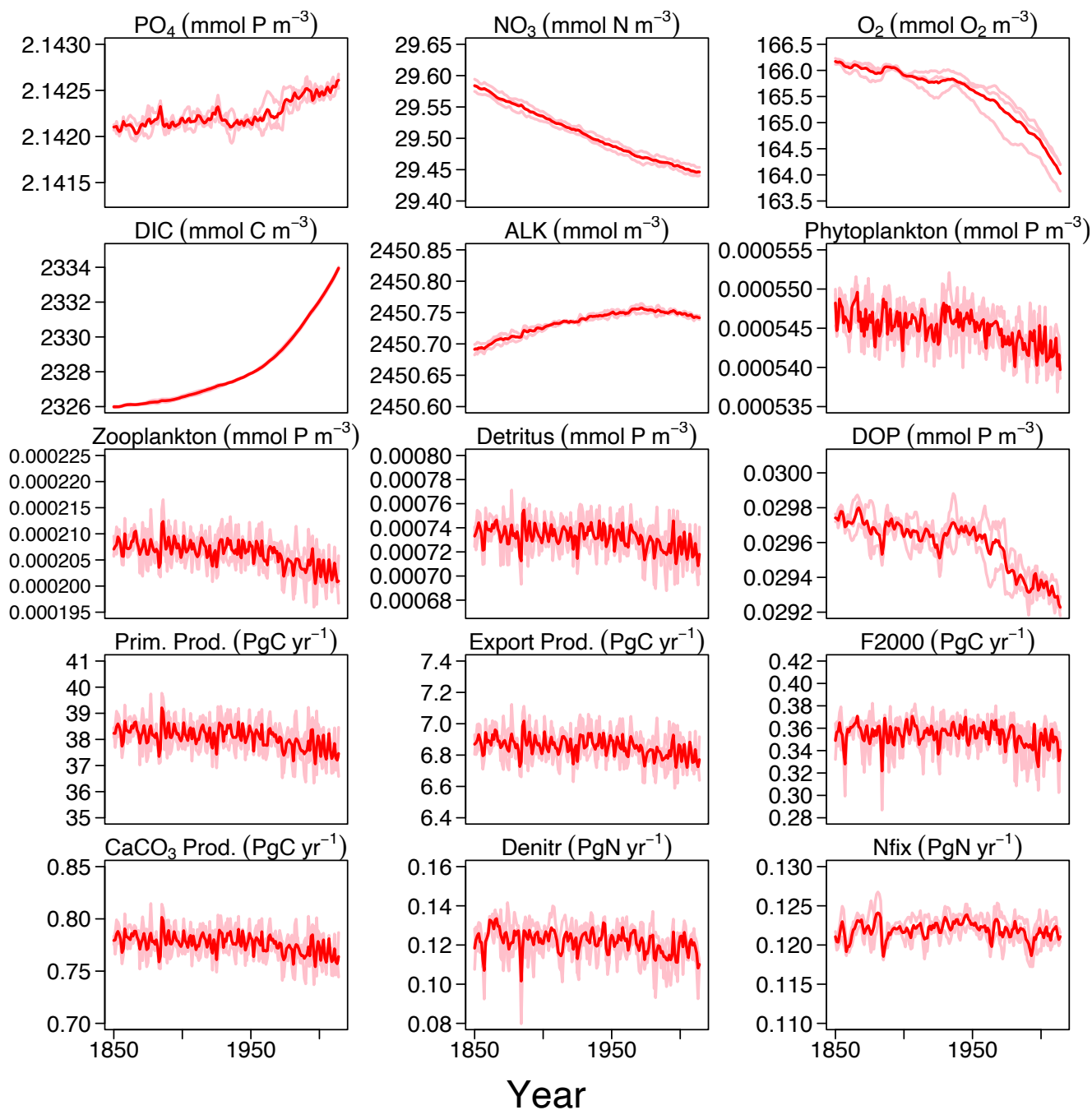


Figure S2. An ensemble of three *ESM-Hist* simulations. Light red lines represent individual runs and the dark red line stands for the mean. Arrangement of sub panels are the same as in Fig. 2 in the main text

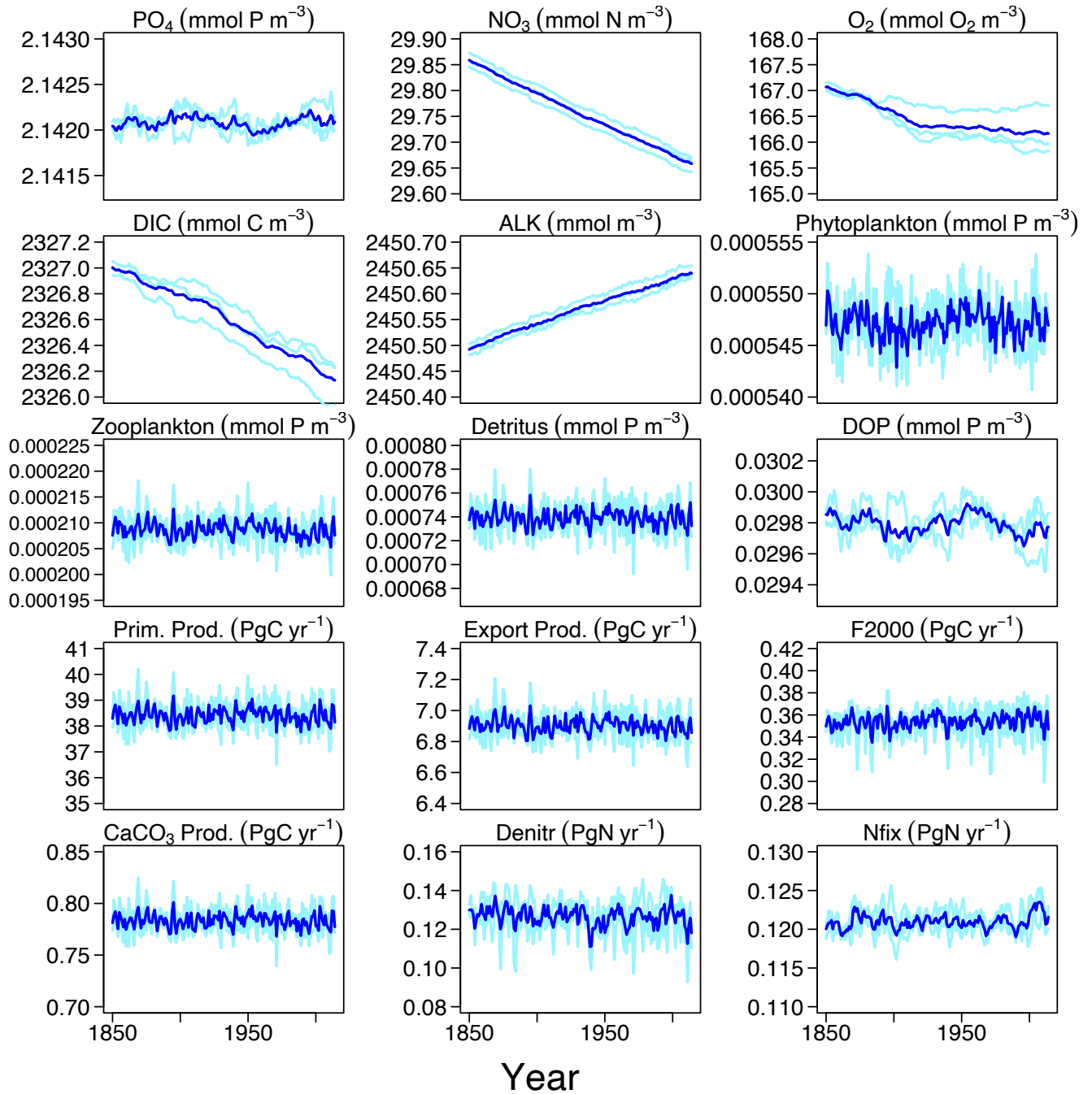


Figure S3. An ensemble of three *piControl* simulations. Light blue lines represent individual runs and the dark blue line stands for the mean. Arrangement of sub panels are the same as in Fig. 2 in the main text

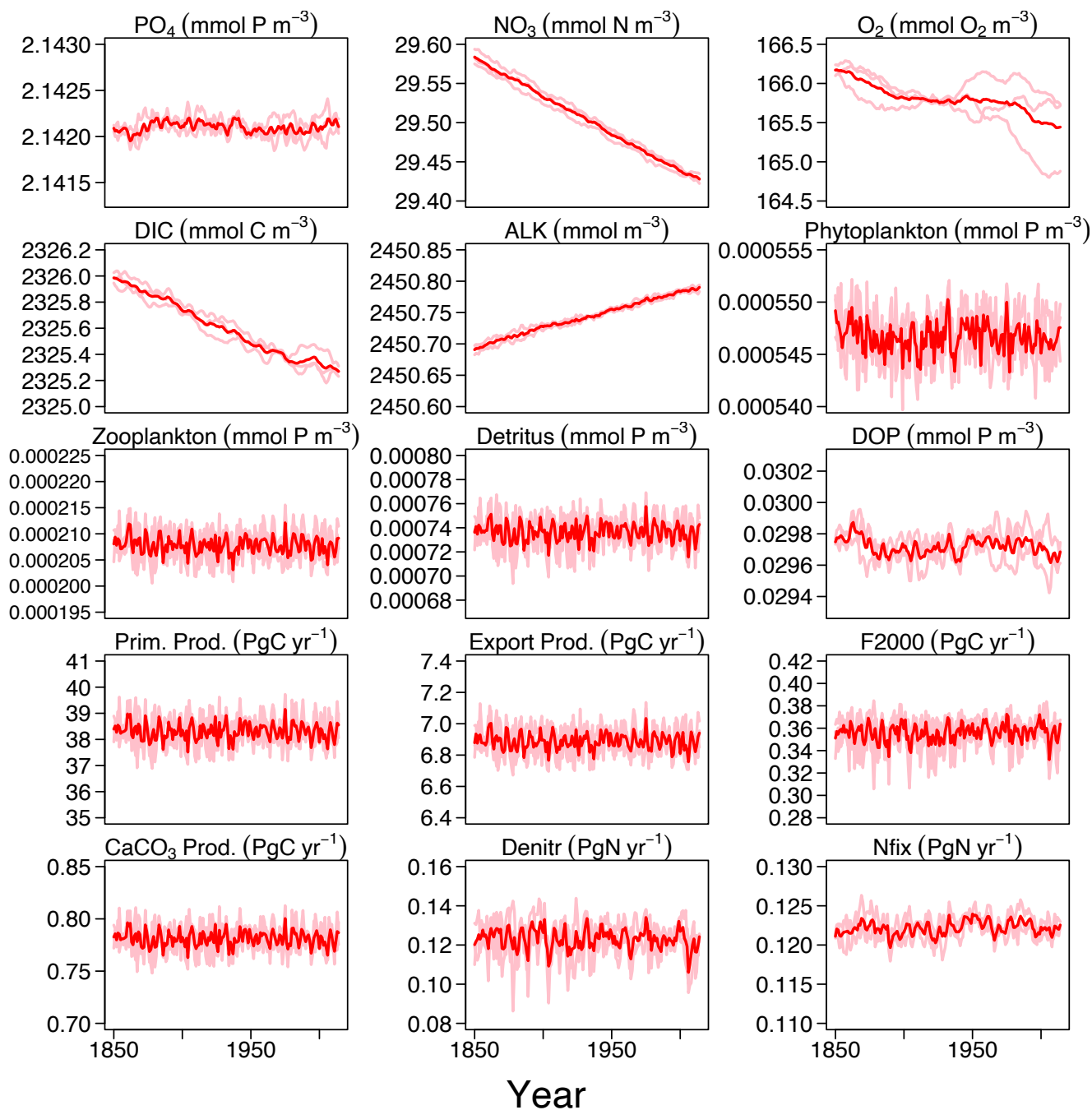


Figure S4. An ensemble of three *ESM-piControl* simulations. Light red lines represent individual runs and the dark red line stands for the mean. Arrangement of sub panels are the same as in Fig. 2 in the main text

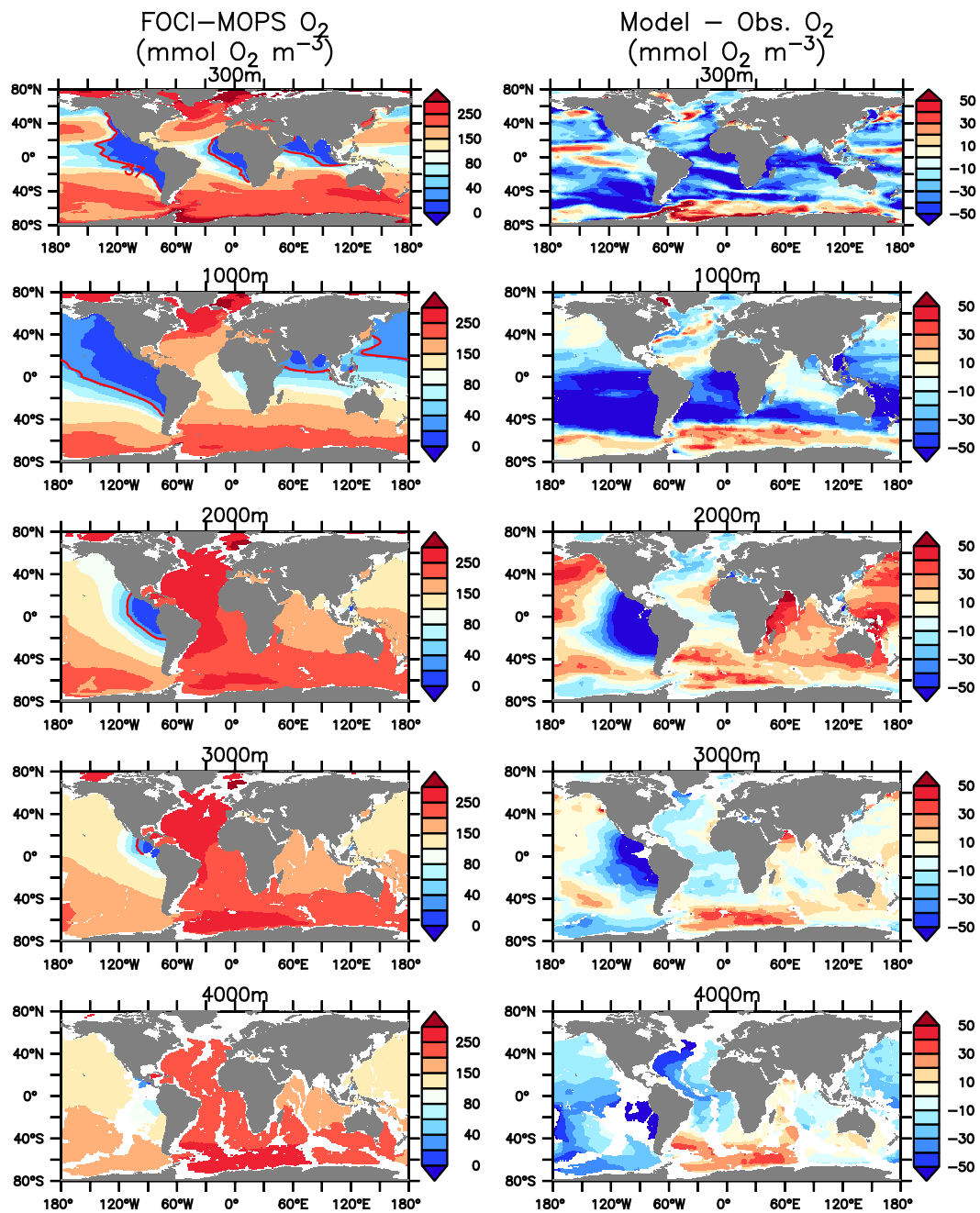


Figure S5. Hist model mean and model - observation of O_2 at 300, 1000, 2000, 3000, and 4000 m. Red contours in model indicate O_2 concentration at 36 mmol m^{-3} .