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Evidence for a CO increase in the SH during the 20th century based on firn air samples from Berkner Island, Antarctica

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Abstract. Trends of carbon monoxide (CO) for the past 100 years are reported as derived from Antarctic firn drilling expeditions. Only one of 3 campaigns provided high quality results. The trend was reconstructed using a firn air model in the forward mode to constrain age distributions and assuming the CO increase to be proportional to its major source, namely CH_4. The results suggest that CO has increased by ~38%, from 38±7 to 52.5±1.5 ppbv over a period of roughly 100 years. The concentrations are on the volumetric scale which corresponds to ~1.08 of the scale used by NOAA/CMDL. The estimated CO increase is somewhat larger than what is estimated from the CO budget estimations and the CH_4 growth alone. The most likely explanation might be an increase in biomass burning emissions. Using CH_3Cl as another proxy produces a very similar reconstruction.

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