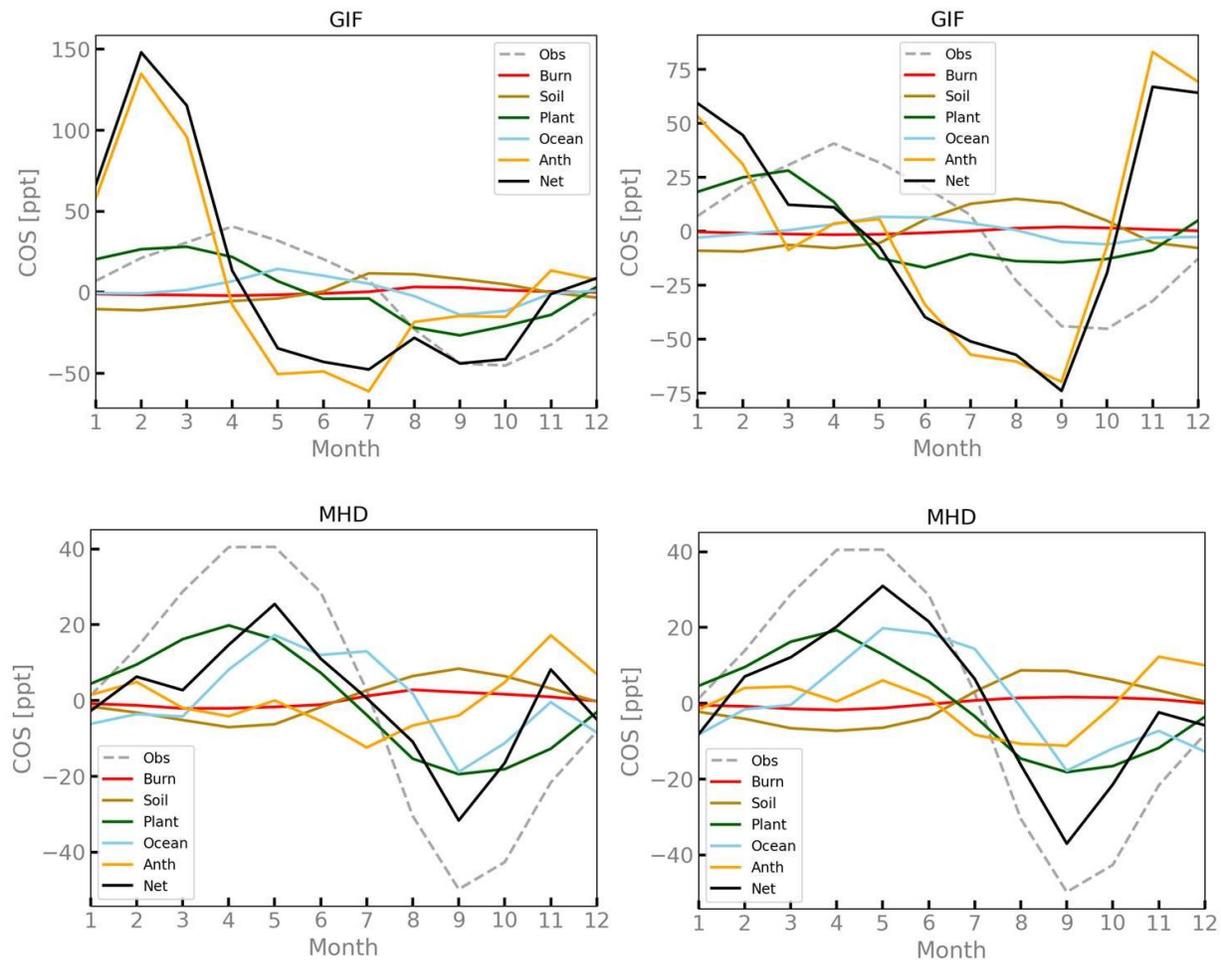


# Supplementary Materials: Ongoing decline of the atmospheric COS seasonal cycle amplitude over western Europe: implications for surface fluxes

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**Figure S1.** Simulations of the mean seasonal cycle of tropospheric COS mixing ratios over the years 2011-2015 (right column, NH mean annual atmospheric COS concentration in the range 483.7 – 491.5 ppt) and 2016-2019 (left column, decreasing NH mean annual atmospheric COS concentration in the range 486.9 – 467.8 ppt, see Figure 3) at the GIF (A, C) and MHD (B, D) monitoring stations. Those simulations only account for the first-order relationship between the COS plant/soil fluxes and NH mean annual atmospheric COS concentrations. The net signal (black line) is obtained from a global LMDz simulation using all the dominant sources and sinks while the signal components (colored lines) are obtained by running the global atmospheric simulation with one component flux at a time. Observations are shown in grey (dashed line). Here optimized marine emissions instead of the standard ones (cf., Figure 4) have been used.