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Odds and ends of atmospheric mercury in Europe and over the North Atlantic Ocean: temporal trends of 25 years of measurements

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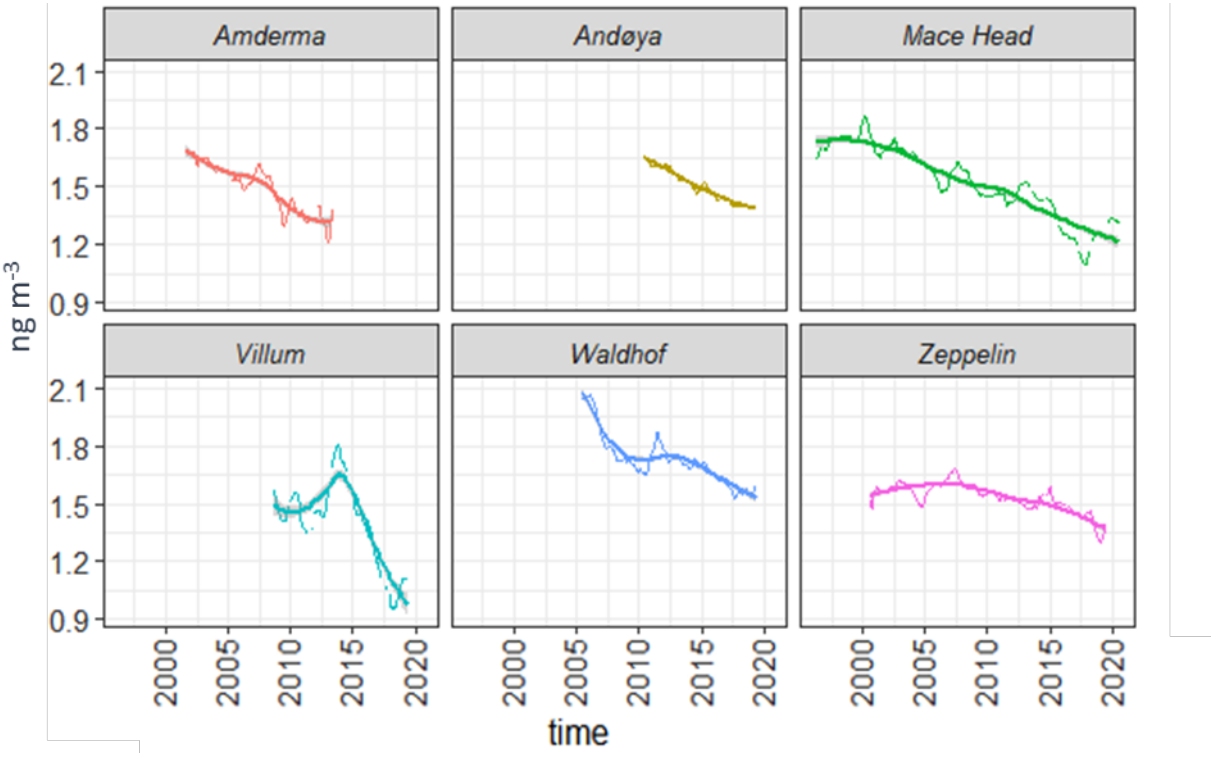

Figure S1: Kernel-regression of TGM at Amderma, Andøya, Mace Head, Villum (GEM), Waldhof, and Zeppelin for the period of 2001-2013, 2010-2019 , 1995-2019, 2008-2019, 2006-2019, and 2000-2019 respectively. The smooth lines and shaded areas represent the Kernel-regression at 95% significance level. The thin lines show the monthly time series of TGM after removing annual cycles with amplitudes of 0.49 ng m^{-3}, 0.23 ngm^{-3}, 0.17 ng m^{-3}, 0.30 ng m^{-3}, 22 ng m^{-3}, and 0.25 ng m^{-3}respectively for Amderma, Andøya, Mace Head, Villum, Waldhof, and Zeppelin.

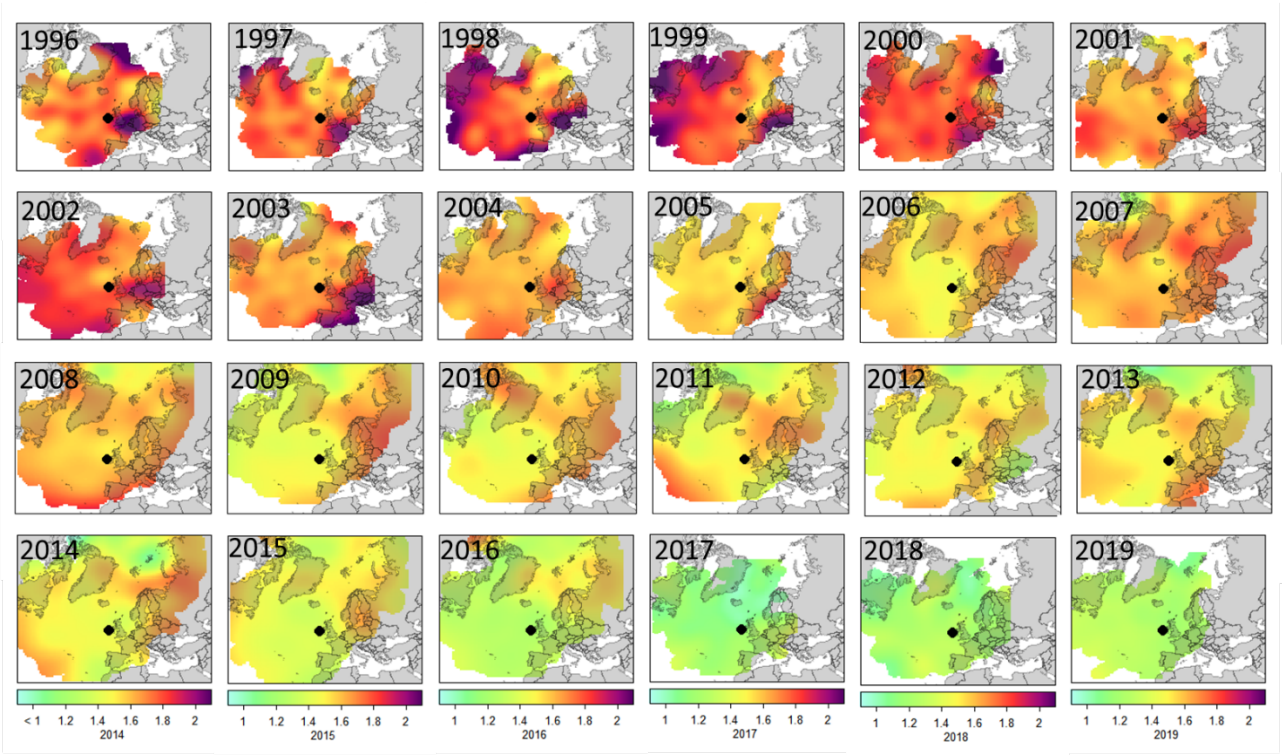

Figure S2: Mean annual concentration map of 120-h back-trajectories for Mace Head (1996-2019) calculated every 12 h each year. Each individual 120-h back-trajectory line was converted into 120 hourly air mass points. The density of these points within each 100 km^2 grid cell across the continent accounts for both the total distance covered by each air mass and its residence time within each grid cell.

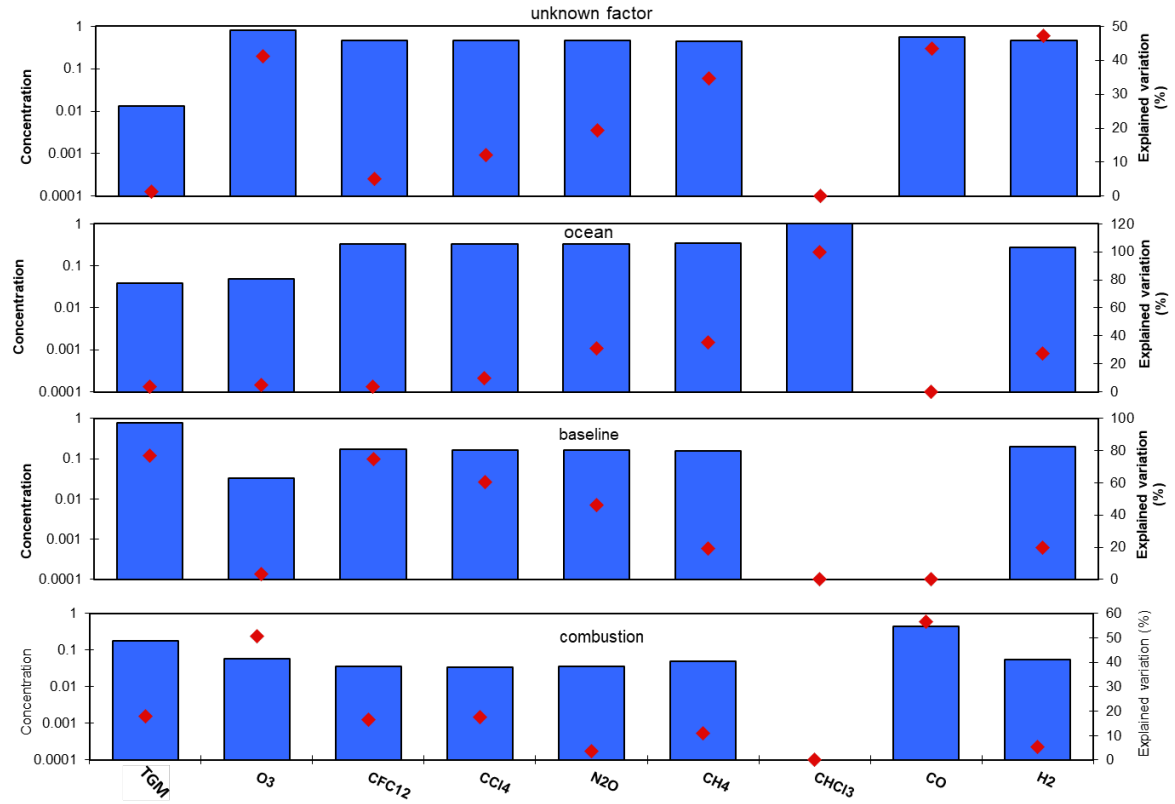

Figure S3: Factors solved by the PMF applied to reconstruct the TGM mass at Mace Head. The primary axis represents the relative mass contribution of each species loaded into the respective factor (blue bars). The secondary axis represents the percentage of the total mass explained by each factor (red dot).

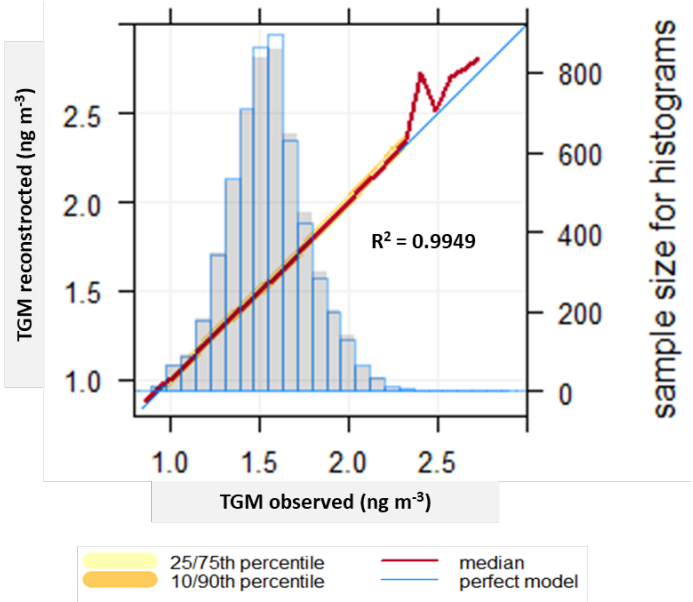

Figure S4: Correlation among total gas mercury measured at Mace Head and mercury reconstructed by the PMF solution. Also the conditional quantile plot showing the difference between PMF solution and observation. The observations are split up into bins according to the correspondent reconstructed value. The median prediction line together with the 25th/75th and 10th/90th quantile values are plotted together with a line showing a "perfect model". Also shown is a histogram of reconstructed TGM (shaded grey) and a histogram of observed TGM (shown as a blue line).

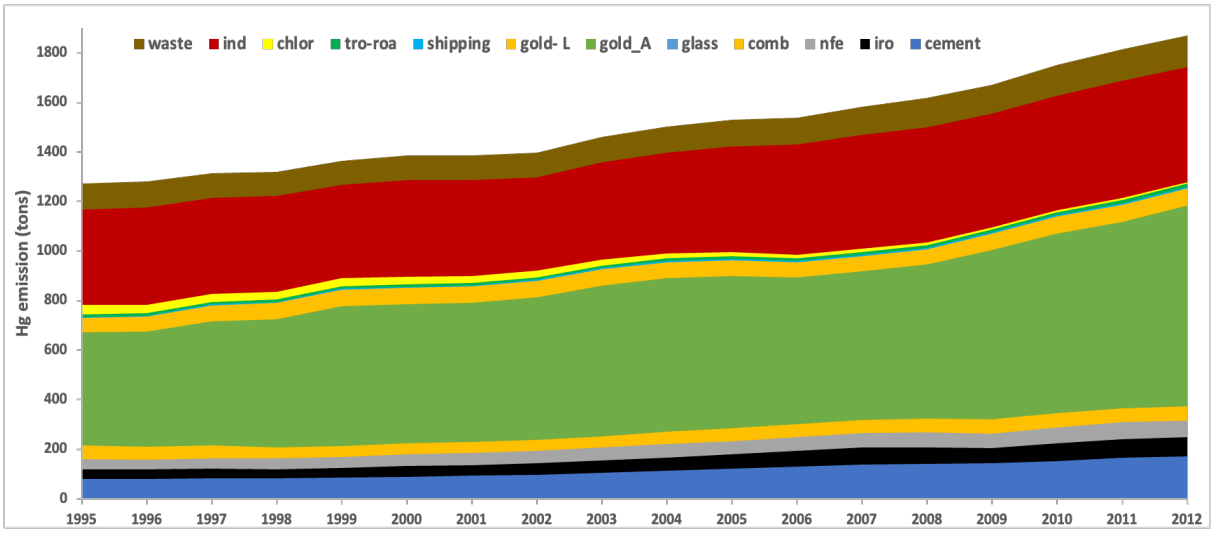

Figure S5: Time-series of global mercury emission. Emission inventory provided by Emissions Database for Global Atmospheric Research (EDGARv4.tox2, 2018). The inventory data is available at https://edgar.jrc.ec.europa.eu/dataset_tox4#sources. *The time-series Displays the time variability of 12 sectors reported as cement production (cement), combustion in residential and other combustion (comb), glass production (glass), artisanal and small scale gold production (gold_A), large scale gold production (gold_L), shipping (shipping emission), road transportation (tro-roa), chlor-alkali industry, mercury cell technology (chlor), combustion in power generation and industry (ind), and solid waste incineration and agricultural waste burning (waste).