Supplemental material to

Evidence for the effectiveness of the Montreal Protocol to protect the ozone layer

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Model performance using a linear trend (LT) or the evolution of EESC

For illustration purposes we show here the performance of the multiple regression models using either LT or EESC, for four stations: Resolute (Canada, North Polar), Hohenpeissenberg (Germany, Northern Mid-latitude) – both preferring EESC – Toronto (Canada, Northern Mid-latitude) and Naha (Japan, Tropics) – both preferring LT. From the top panels in Figures S1 to S4 the good fit between both types of regression models and the observations is obvious.

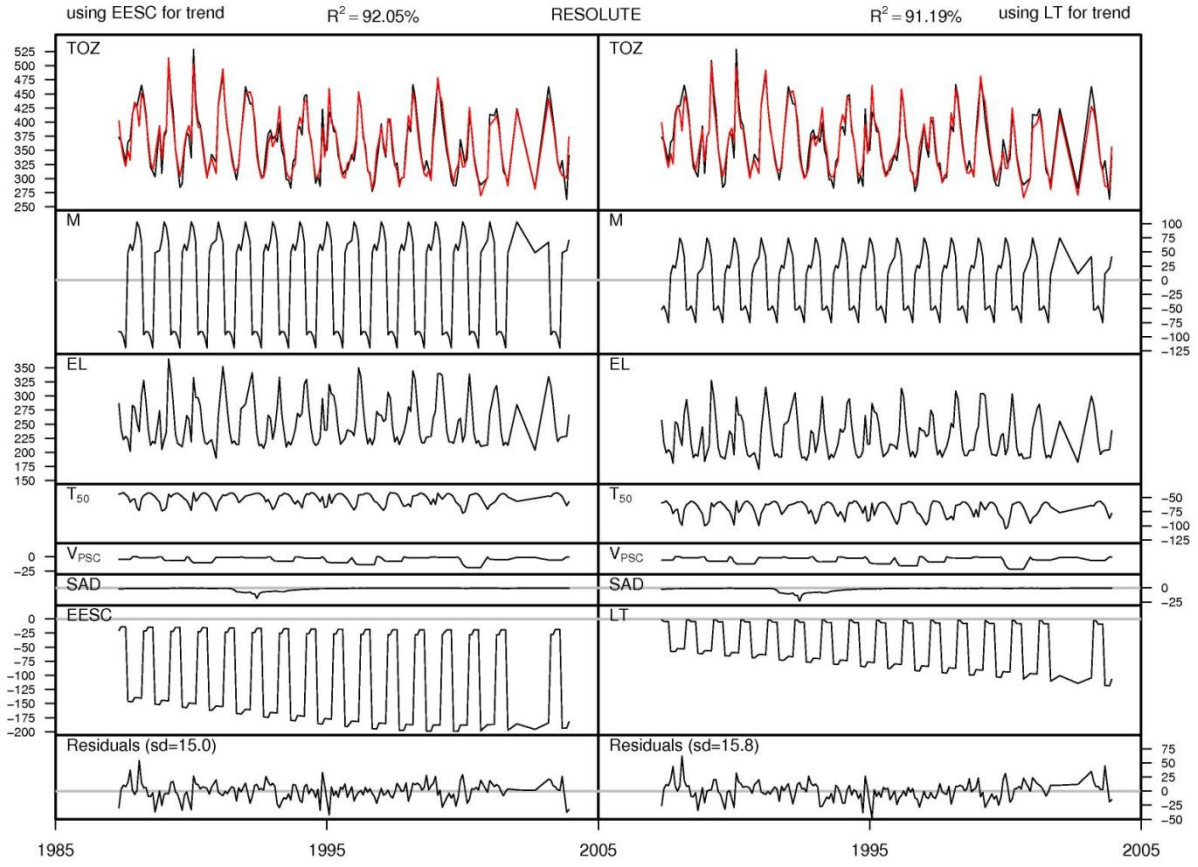

Figure S1: Left hand panels show results for the multiple regression model using LT while right hand panels show results using EESC trend at Resolute, Canada (75°N / 95°W). (TOZ) observed (black) and fitted (red) monthly averages of total ozone, (M) seasonal cycle, (EL) equivalent latitude proxy, (T_{50}) temperature at 50 hPa, (V_{PSC}) cumulative volume of polar stratospheric clouds, (SAD) vertically integrated stratospheric aerosol surface area density, (EESC) equivalent effective stratospheric chlorine, (LT) linear trend, (Residuals) difference between observed and fitted column ozone from (TOZ). All panels are given in Dobson Units (DU).

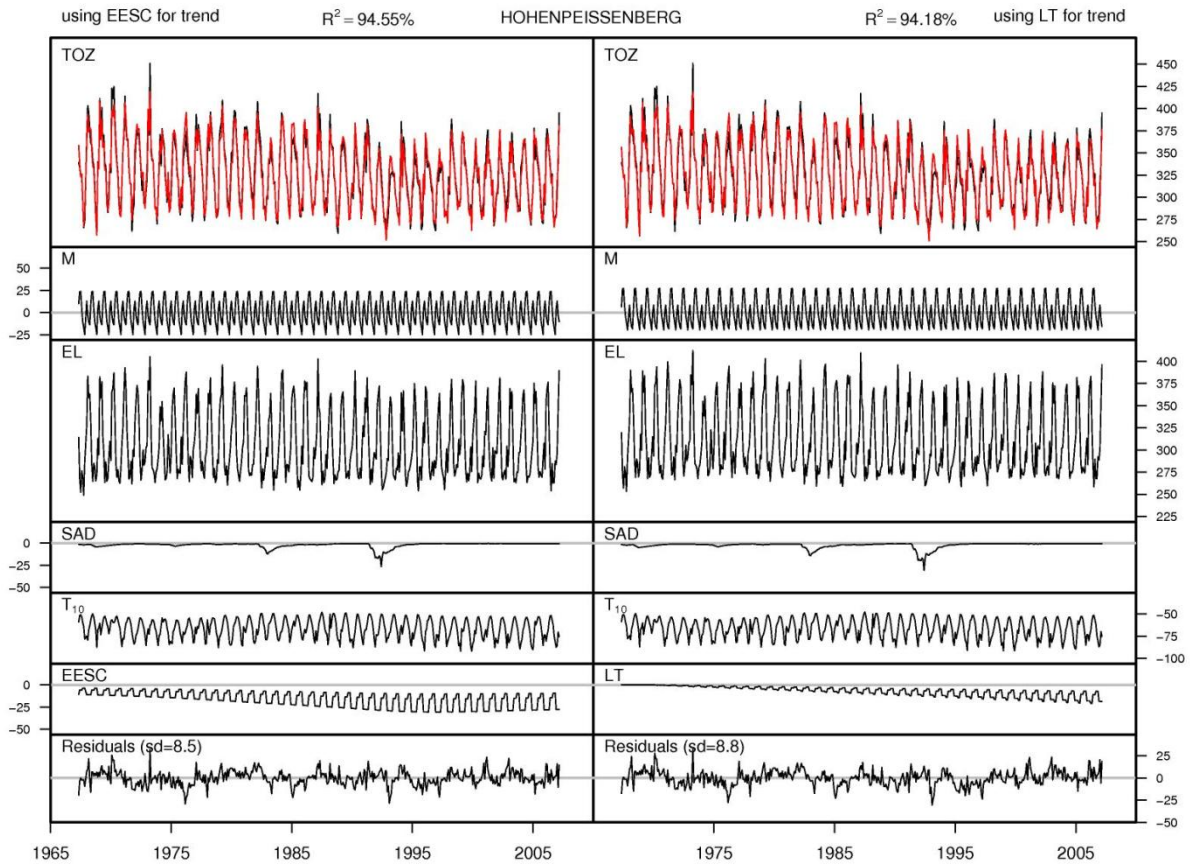

Figure S2: Left hand panels show results for the multiple regression model using LT while right hand panels show results using EESC trend at Hohenpeissenberg, Germany (48°N / 11°E). (TOZ) observed (black) and fitted (red) monthly averages of total ozone, (M) seasonal cycle, (EL) equivalent latitude proxy, (SAD) vertically integrated stratospheric aerosol surface area density, (T_{10}) temperature at 10 hPa, (EESC) equivalent effective stratospheric chlorine, (LT) linear trend, (Residuals) difference between observed and fitted column ozone from (TOZ). All panels are given in Dobson Units (DU).

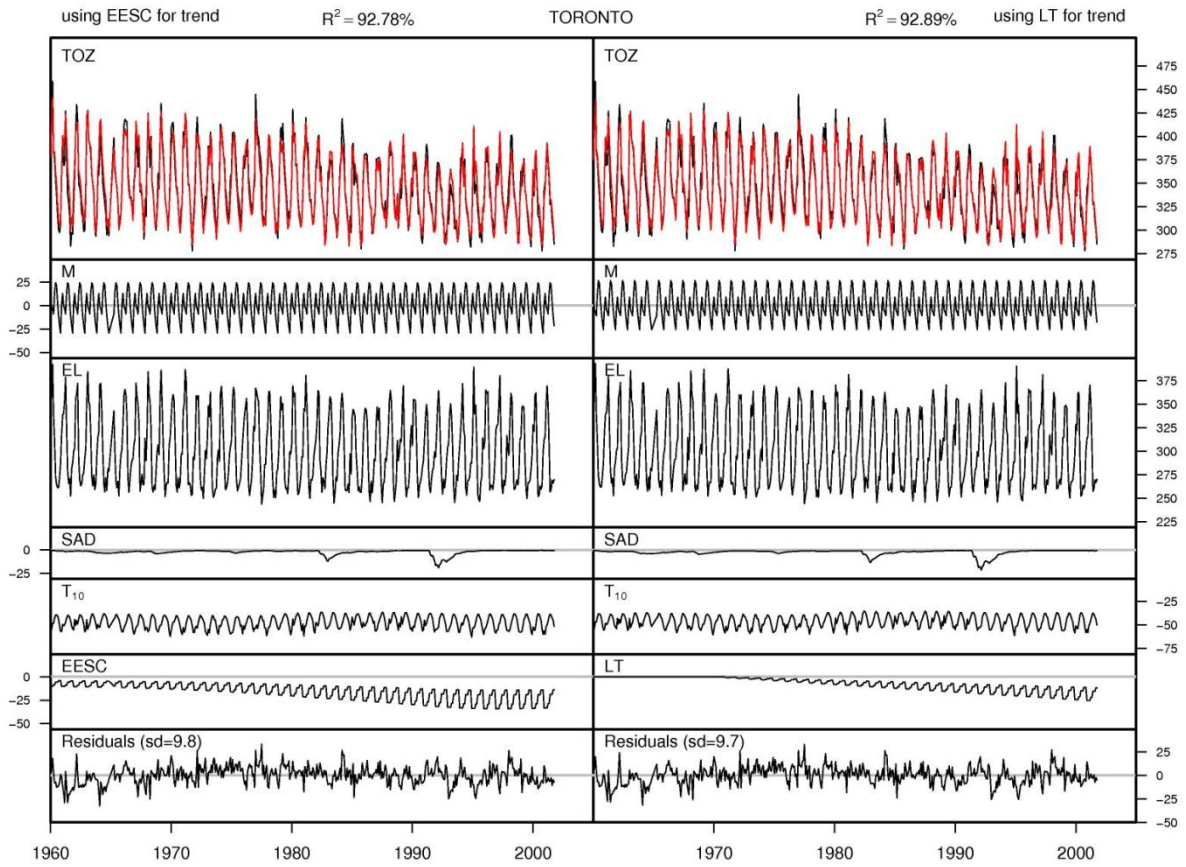

Figure S3: Left hand panels show results for the multiple regression model using LT while right hand panels show results using EESC trend at Toronto, Canada (44°N / 79°W). (TOZ) observed (black) and fitted (red) monthly averages of total ozone, (M) seasonal cycle, (EL) equivalent latitude proxy, (SAD) vertically integrated stratospheric aerosol surface area density, (T_{10}) temperature at 10 hPa, (EESC) equivalent effective stratospheric chlorine, (LT) linear trend, (Residuals) difference between observed and fitted column ozone from (TOZ). All panels are given in Dobson Units (DU).

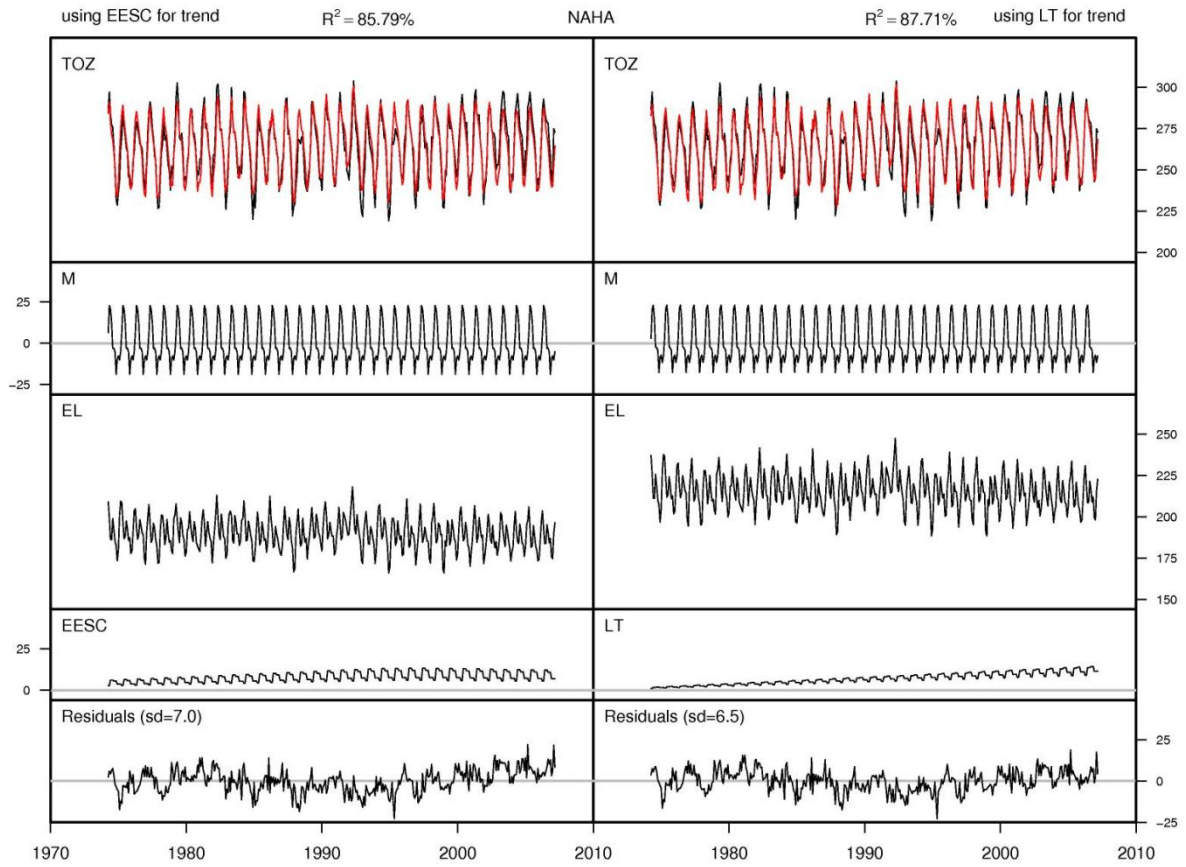

Figure S4: Left hand panels show results for the multiple regression model using LT while right hand panels show results using EESC trend at Naha, Japan (26°N / 128°E). (TOZ) observed (black) and fitted (red) monthly averages of total ozone, (M) seasonal cycle, (EL) equivalent latitude proxy, (EESC) equivalent effective stratospheric chlorine, (LT) linear trend, (Residuals) difference between observed and fitted column ozone from (TOZ). All panels are given in Dobson Units (DU).