Earth's Future

Supporting Information for

Local Arctic air pollution: A neglected but serious problem

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Introduction

This supporting information provides more details of the emission scenarios discussed in section 3.1 of the original paper.

Text S1.

Spatial distributions of baseline 2010 and 2050 emissions of BC, SO_2 and NOx for each ECLIPSE (Klimont et al., 2017) scenario are shown in Figures S1-S3. While the magnitude of BC emissions changes substantially between the scenarios, their spatial pattern (Figure S1) remains broadly similar, with major emission regions associated with flaring activity in the north-eastern part of European Russia and in western Siberia. Largest SO_2 emissions remain in high latitude Eastern Europe and western Siberia out to 2050, with largest reductions achieved across these regions under the maximum technically feasible reduction (MTFR) scenario. Large fractional reductions in NOx emissions are projected across northern Russia under the MTFR and short-lived climate

pollutants (SLCP) scenarios, with more modest NOx emission reductions across the region under the baseline and current legislation (CLE) scenarios. or paper.

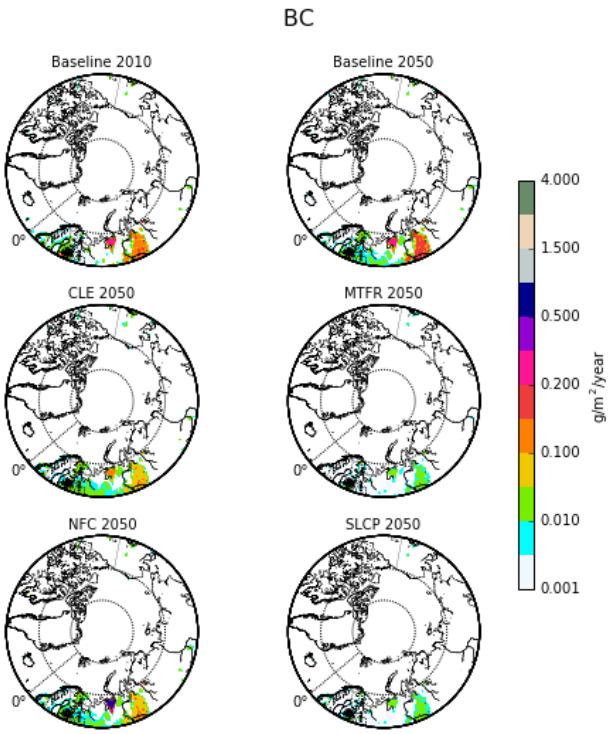

Figure S1. Gridded 0.5 x 0.5 degrees BC emission fluxes for the year 2010 (baseline) north of 60 °N, and future emission flux projections for 2050 based on the Baseline, current legislation (CLE), maximum technically feasible reduction (MFTR), no further control (NFC) and short-lived climate pollutants (SLCP) scenarios.

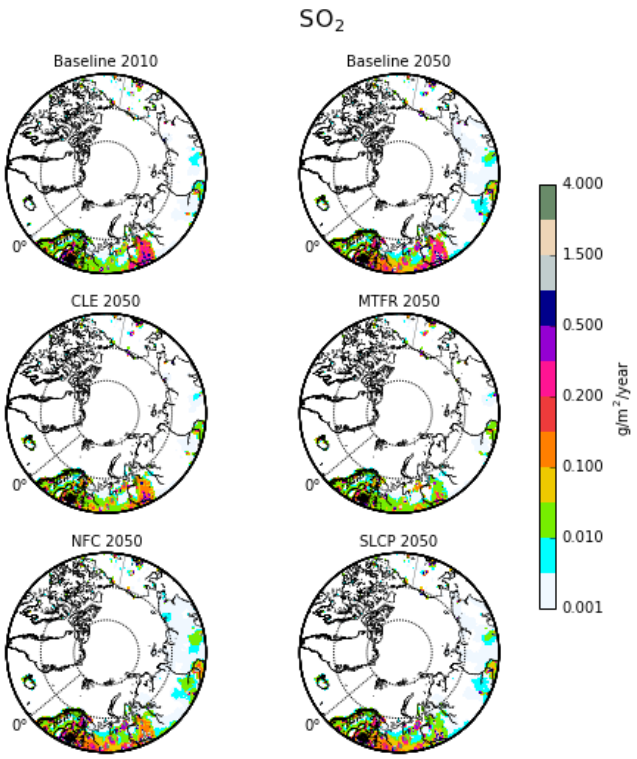

Figure S2. Same as Figure S1 but for SO2 emissions.

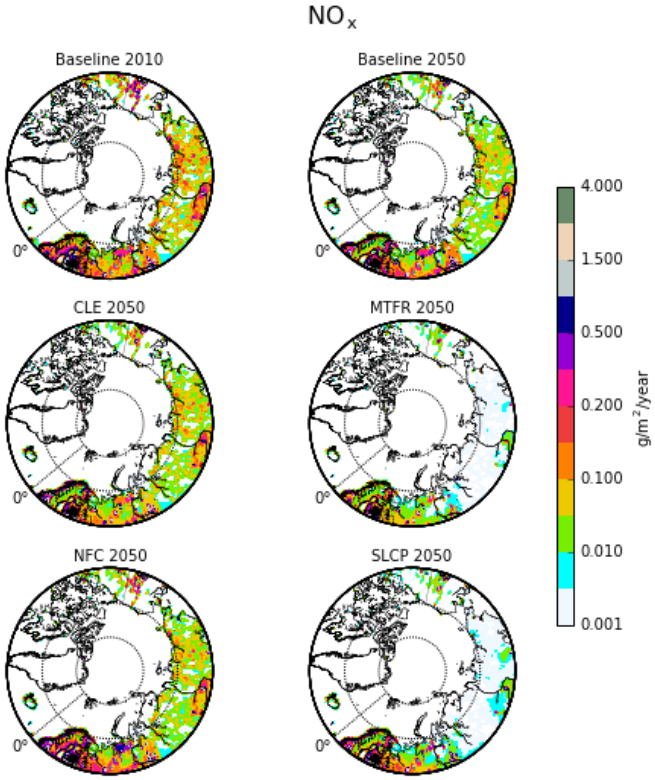

Figure S3. Same as Figure S1 but for NOx emissions.

Reference

Klimont, Z., Kupiainen, K., Heyes, C., Purohit, P., Cofala, J., Rafaj, P., . . . Schöpp, W. (2017). Global anthropogenic emissions of particulate matter including black carbon. *Atmospheric Chemistry and Physics, 17*(14), 8681-8723. doi:10.5194/acp-17-8681-2017