Supplemental document

**Protocol for the measurement of the concentrations of NO3- and NO2-**

Eight hundred mg VCl3 were dissolved in 100 mL of 0.1 M HCl (Solution A). The solution was filtered (0.45 µm). Solution B was made of 200 mg N-1-naphthylethylenediamine dihydrochloride in 100 mL H2O. Solution C was made of 2 g sulfanilamide in 100 mL HCl 10%. These solutions were kept in amber bottle at 4°C for one month. Solutions D and E were made fresh. For solution D, solutions A, B and C were mixed at the proportion of 5:1:1. For solution E, solutions B and C were mixed at 1:1 proportion. The assays were carried out in 96-well plates. To determine the NOx concentrations (NO3- + NO2-), samples (120 µL) were added to one plate, then 100-µL solution D was quickly added and mixed with a multichannel micropipet. The plate was covered and immediately incubated for 60 min at 45°C. To measure NO2- already present in the medium, the same samples (200 µL) were added to another plate, then 20-µL solution E was quickly added and mixed with a multichannel micropipet. The plate was covered and immediately incubated for 30 min at 45°C. Both plates were read at 540 nm with a plate reader. The concentrations were determined with standard solutions. Linear response ranged from 0.1 to 2 mg-N/L (either NO3- or NO2-). Results from the NO3- reduction by VCl3 generated the NOx concentrations (NO3- + NO2-). Therefore, NO3- concentrations were calculated as NOx – NO2-.