

1 **High resolution measurements of carbon monoxide along a late**  
2 **Holocene Greenland ice core: evidence for in-situ production**

3 **SUPPORTING INFORMATIONS**

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9 **2.2 Detecting CO with OF-CEAS**

10 The OF-CEAS spectrometer was calibrated on dry gas by direct injection of two synthetic standards  
11 gas precisely calibrated (CO concentration of 50.2 and 95.4 ppbv respectively, reported as standards  
12 1 and 2) onto the NOAA/WMO 2004 scale.

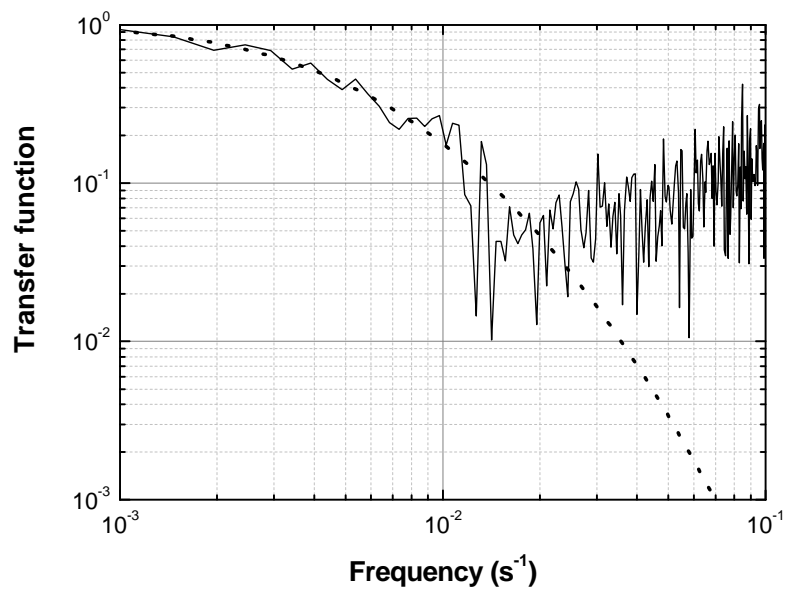
13 Both standards were injected to the OF-CEAS spectrometer using mass flow controller (MFC, 5850E,  
14 Brooks Instrument, USA) at the beginning of the analytical campaign. We measured  $49.9 \pm 0.8$  ppbv  
15 and  $89.0 \pm 0.9$  ppbv respectively for standard 1 and 2. The linear regression obtained using a chi-  
16 square fitting, which takes into account individual standard deviations, is shown in Equation (1) :

17 (1)  $[\text{CO}]_{\text{measured}} = a \times [\text{CO}]_{\text{NOAA}} + b$  where  $a = 0.86 \pm 0.03$  and  $b = 6.47 \pm 1.96$

18 We report a a factor lower than 1 because both standard gas cylinders were accurately recalibrated  
19 by the NOAA GMD Carbon Cycle Group after the measurements campaign, revealing CO levels higher  
20 than the initial values used for calibration of the OF-CEAS spectrometer before analysis of the NEEM-  
21 2011-S1 core. However, this did not affected the precision of our measurements (see Romanini et al.,  
22 2006, for more details about OF-CEAS calibration).

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24 **2.4. Data processing and depth scaling**



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26 **Figure S1.** Transfer function of the continuous CO measurements system (full loop) obtained by switching  
27 between two gas standard (continuous line), and of the theoretical case of zero- noise measurements (dashed  
28 line).

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30 Reference

31 Romanini, D., Chenevier, M., Kassi, S., Schmidt, M., Valant, C., Ramonet, M., Lopez, J., and  
32 Jost, H. J.: Optical-feedback cavity-enhanced absorption: a compact spectrometer for real-  
33 time measurement of atmospheric methane, *Applied Physics B-Lasers and Optics*, 83, 659-  
34 667, doi:10.1007/s00340-006-2177-2, 2006.