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Supplement of

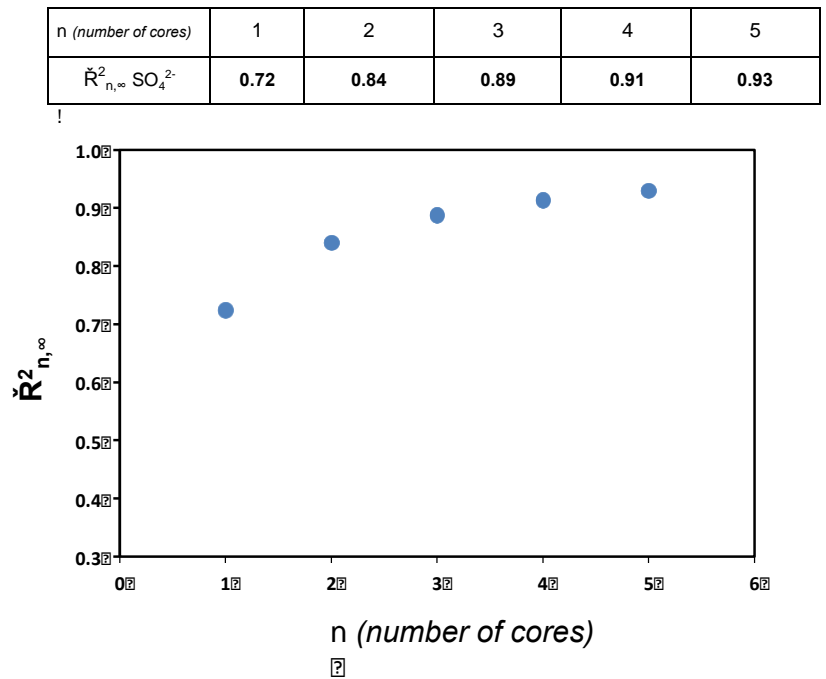
Variability of sulfate signal in ice core records based on five replicate cores

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1 Gfeller *et al.* (2014) method relies on calculating inter-series correlation (expressed as $R_{n,N}$, n being a
 2 subset of N time series). To calculate the representativeness of the mean of a given subset of cores,
 3 and by letting N going to infinity (simulating a fictive infinite number of cores), Gfeller *et al.* (2014)
 4 use the $\check{R}_{n,\infty}^2$ proxy. We used the same proxy of sulfate representativeness on Dome C 5 cores and
 5 obtained the following results:
 6



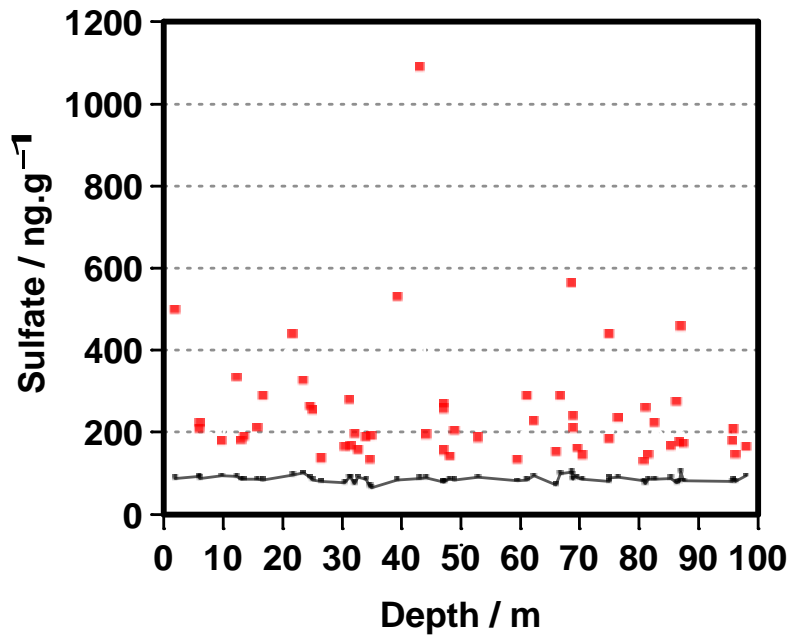
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10 Figure S1: Representativeness of sulfate in the cores ($\check{R}_{n,\infty}^2$) as a function on the number of cores n
 11 (based on <https://www.ncdc.noaa.gov/data-access/paleoclimatology-data> et al., 2014 approach).

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 13 References

14 Gfeller, G., Fischer, H., Bigler, M., Schüpbach, S., Leuenberger, D., and Mini, O.: Representativeness
 15 and seasonality of major ion records derived from NEEM firn cores, *The Cryosphere*, 8, 1855-1870,
 16 10.5194/tc-8-1855-2014, 2014.

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19 Figure S2 - Variation of the background along depth in core 1, red dots are detected peaks, the dark
20 line stands for the background concentration.

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