Response to Editor technical corrections

I thank the editor for carefully checking the manuscript and evaluating the referees constructive comments.

*Line 30, page 12, I think "data" should be plural.*

The change has been made

*2. Suppl. Figs 1 & 2: It seems that Na\_IT data are slightly less than Na\_AUS. There is also an offset found in Br\_IT and Br\_AUS. Could you discuss the meaning/significance of the offsets?*

As shown by the regression gradients between the Na and Br data series’ (Figs S1 and S2) there is an offset of 8±2% between the measurements of the two laboratories. We attribute this to a difference in the overall accuracies of the standard calibrations applied to the raw data, as the deviation of 8% is consistent for both elements. If the offset were due to element-specific bias’ such as differential ionization efficiencies or variable blank corrections, the offset would be different for the two elements.

As we have written in the text (page 7, lines 21-22), the relative standard deviation (RSD) is less for sodium than for bromine, mostly due to the larger signal size and therefore better counting statistics, for sodium as compared to bromine:

Distributions of residuals show an average measurement offset of -0.64 ± 0.19 ppb (sodium, RSD=2.0 ± 0.2 ppb) and -0.03 ± 0.01 ppb (bromine, RSD=0.11 ± 0.01 ppb).

Ultimately, the influence of this minor offset is negated by our use of bromine enrichment values, which are calculated as the ratio of bromine to sodium. As the offset between sodium and bromine is consistent, it is negated when taking the ratio of the two.

*3. Do you have any information about long term analytical drift or standardization, since the measurements took place over a long time period?*

We apologize for not providing sufficient detail in the revised version – we have updated the text accordingly.

Despite the quantity of measurements presented, they did not take place over a long time period. The measurement of each set of ice core samples was conducted in campaigns taking no longer than 2 to 3 weeks. Instrument stability was evaluated during each analysis by monitoring an 115In internal standard for the Perth measurements (page 6, line 15) and 129Xe plasma signal for the Venice measurements (page 7, line 15). Longer term (hours to days) stability was evaluted using multielement quality control/external standards.

At Curtin University (Perth, Australia), the measurements of DSS1213 were conducted in June 2015. The measurements of Law Dome traverse and DSS1516 samples were conducted in late February 2016.

At the University Ca’ Foscari of Venice (Italy) DSS0506 samples were measured in March 2014.

The Greenland snow pit samples used for inter-lab comparison were measured in Venice in December 2015 and in Perth in February 2016.