Seasonally resolved ice core records from West Antarctica indicate a sea ice source of sea salt aerosol and a biomass burning source of ammonium

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Introduction

The auxiliary figures are referenced in the main text and show data that support the interpretations in main text, but are included in the supplement due to space limitations.

Figure Captions

Figure S1. The average annual cycle (duplicated over 24 months) of hydrogen peroxide (H₂O₂) in the three ice cores from 1985–2005. The symmetric shape is interpreted to indicate that precipitation is, on average, distributed evenly throughout the year.

Figure S2. The top panel shows the time series of measured acidity (thick black line) and computed acidity (dashed red line) using Eq. 2 from the main text. The remaining panels show the individual species that contribute to the computed acidity and which appear in the average annual cycles shown in Figure 4 of the main text. The 1984–1999 time period shown here is the same as that which produced Figure 4.

Figure S3. Normalized monthly concentrations (duplicated over 24 months) of BC and NH₄⁺ in the THW2010 (top) and PIG2010 (bottom) cores averaged from 1920–2005. The purple line shows the difference between the normalized NH₄⁺ and BC signals, indicating the presence of a secondary peak in NH₄⁺ during summer.

Figure S4. Average annual cycle in nitrate concentration during high accumulation years (75–95 percentile) at each site.

Figure S5. Overlaid time series of full (top) and detrended (bottom) composite BC and NH₄⁺ records. The full series is correlated at r = 0.39 (p < 0.0001) and the detrended series is correlated at r = 0.73 (p << 0.0001).