Interactive comment on “The calcium-dust relationship in high-resolution data from Dome C, Antarctica” by F. Lambert et al.

Anonymous Referee #2

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The authors compare three species used as dust proxies (insoluble dust particles, Ca²⁺ and nssCa²⁺), measured in high resolution along the EPICA Dome C ice core, and evaluate their level of correlation over the past 800 kyr. The ms is in need of improvement - the data have been previously published (Lambert et al, Nature v.452, 2008) so the ms relies on its interpretation for novelty, and the interpretation is far from exhaustive. The ms is reasonably well written but there are some areas where the argumentation can be made clearer, more appropriate reference can be made to previous studies, and the author can attempt to provide a more far-reaching interpretation of the data, appropriate to a “discussion” forum.

Specific comments:

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and the red end for warmer climate regimes. It seems strange that only one glacial termination is discussed. Obviously the most recent termination would be the best resolved but cannot be used due to the large gap in the data, so perhaps MIS 13-11 could be used for comparison to see if the trends in Fig 6 are repeatable? Further, it seems strange to describe dust as "interglacial" based on its nssCa/dust ratio and infer that this dust originates from South America. A growing body of evidence indicates that South America is not a unique source of dust to Antarctica, especially during interglacials, so it seems to be a quite tenuous link that is drawn from behavior observed in MIS 7-5 to South American glacial dynamics. The authors could spend much more time here developing a stronger appreciation for what such an enormous dataset has to offer.

Interactive comment on Clim. Past Discuss., 7, 1113, 2011.