

Interactive comment on “Black carbon concentrations from a Tibetan Plateau ice core spanning 1843–1982: recent increases due to emissions and glacier melt” by M. Jenkins et al.

Anonymous Referee #4

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Table 2 shows median black-carbon concentrations of 1.3 and 0.3 ng/g for Geladaindong and Everest, respectively. These values are smaller than any other reported values for BC in northern-hemisphere snow (e.g., Arctic values are typically 2–30 ng/g), and in fact are comparable to those of Antarctic snow, the cleanest snow on Earth. The values in Table 2, when put into any suitable model of radiative transfer in snow, such as Flanner’s SNICAR, will cause an insignificant albedo reduction of 0.0001–0.0004. These data could therefore be useful in narrowing the search for causes of glacial retreat in Tibet and the Himalaya, ruling out BC as a contributor.

Yet the authors do not draw that conclusion. Why not? Because the authors do not believe their own numbers. Most of the paper is devoted to explaining why the BC
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analysis method used here cannot be trusted.

It is important that the values in Table 2 (and in Figures 2 and 3) not be published. Yes, the text explains why the values are wrong, but many readers will not read the text and will instead just grab numbers from the table and figures; those numbers are sure to be cited as measured values if they are published.

There are some misleading statements in the paper regarding the importance of BC for glaciers. On page 4870 line 11 the authors quote a scenario about the consequences of a 2–5% albedo reduction, but neglect to point out that to achieve such an albedo reduction the BC concentration would have to be 300 times greater than what they measured.

How to salvage something from this arduous expedition? Since the absolute values of BC cannot be trusted, an alternative would be not to present any values with units, and instead to present only ratios of BC values relative to a reference year.

Interactive comment on The Cryosphere Discuss., 7, 4855, 2013.