Recommendations for the Interpretation of "Black Carbon" Measurements

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Although Black Carbon (BC) is one of the key atmospheric particulate components driving climate change and air quality, there is no agreement on the terminology that considers all aspects of specific properties, definitions, measurement methods, and related uncertainties. As a result, there is much ambiguity in the scientific literature of measurements and numerical models that refer to BC with different names and based on different properties of the particles, with no clear definition of the terms. A recommended terminology is presented to clarify the terms used for BC in atmospheric research, with the goal of establishing unambiguous links between terms, targeted material properties and associated measurement techniques. Briefly, the recommendations are:

- Black Carbon (BC) is a useful qualitative description when referring to light-absorbing carbonaceous substances in atmospheric aerosol; however, for quantitative applications the term requires clarification of the underlying determination.
- Equivalent Black Carbon (EBC) should be used instead of black carbon for data derived from optical absorption methods, together with a suitable mass absorption coefficient for the conversion of light absorption coefficient into mass concentration.
- Elemental Carbon (EC) should be used instead of black carbon for data derived from methods that are specific to the carbon content of carbonaceous matter.
- refractory Black Carbon (rBC) should be used instead of black carbon for measurements derived from incandescence methods.
- Soot is a useful qualitative description when referring to carbonaceous particles formed from incomplete combustion.

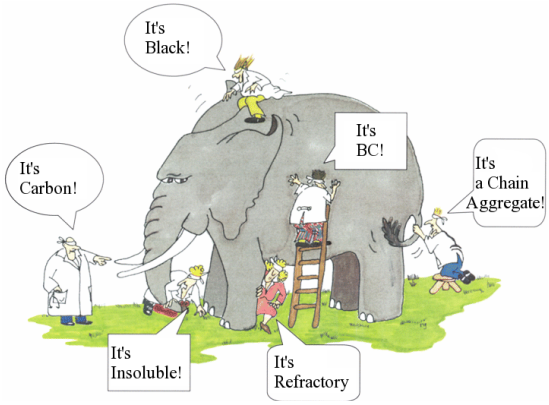

Figure 1. Confusion over black carbon terminology: The parable of the blind men and the elephant.