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Climate sensitivity is usually defined as the change in the global mean temperature of the earth with doubling concentrations of atmospheric CO2. It has been computed explicitly for well over a century; most commonly with respect to pre-industrial concentrations but also in different circumstances.

Arrhenius (1896) computed the climate sensivity for 1.5x, 2.0x, 2.5x and 3.0x CO2 concentration. His figure for CO2 doubling was approx. 6.0 degrees Celcius, surprisingly close to modern estimates (e.g. Moss and Schneider, 2000, Stainforth et al. 2005).

Here we explore the confidence which may be associated with such evaluations and the implications for decision making in the context of a changing climate. The development of these estimates is traced through time and contrasted with estimates of physical constants such as the speed of light, over the same time period. Arguments regarding the current uncertainty in climate sensitivity are noted and their relevance to modern industrial decision making in the reinsurance sector are discussed.

Arrhenius, S. (1896). On the influence of carbonic acid in the air upon the temperature of the ground. The London, Edinburgh and Dublin Philosophical Magazine and Journal of Science, 5, 1896.

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Stainforth et al. (2005). Uncertainties in predictions of the climate response to rising levels of greenhouse gases, Nature, 433, 403-406.