

## Reply to Comment on 'Premature deaths attributed to source-specific BC emissions in six urban US regions'

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## REPLY

## Reply to Comment on 'Premature deaths attributed to source-specific BC emissions in six urban US regions'

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Matthew D Turner<sup>1</sup>, Daven K Henze<sup>1</sup>, Shannon L Capps<sup>1</sup>, Amir Hakami<sup>2</sup>, Shunliu Zhao<sup>2</sup>, Jaroslav Resler<sup>3</sup>, Gregory R Carmichael<sup>4</sup>, Charles O Stanier<sup>4</sup>, Jaemeen Baek<sup>4</sup>, Adrian Sandu<sup>5</sup>, Armistead G Russell<sup>6</sup>, Athanasios Nenes<sup>7</sup>, Rob W Pinder<sup>8</sup>, Sergey L Napelenok<sup>8</sup>, Jesse O Bash<sup>8</sup>, Peter B Percell<sup>9</sup> and Tianfeng Chai<sup>10</sup>

<sup>1</sup> Mechanical Engineering Department, University of Colorado, Boulder, CO 80309, USA

<sup>2</sup> Department of Civil and Environmental Engineering, Carleton University, Ottawa, Ontario K1S 5B6, Canada

<sup>3</sup> Nonlinear Modeling, Institute of Computer Science, Prague 182 07, Czech Republic

<sup>4</sup> Department of Chemical and Biochemical Engineering, University of Iowa, Iowa City, IA 52242, USA

<sup>5</sup> Computer Science, Virginia Tech, Blacksburg, VA 24061, USA

<sup>6</sup> School of Civil and Environmental Engineering, Georgia Tech, Atlanta, GA 30331, USA

<sup>7</sup> School of Earth and Atmospheric Sciences, Georgia Tech, Atlanta, GA 30331, USA

<sup>8</sup> Atmospheric Modeling and Analysis Division, US EPA, Research Triangle Park, NC 27711, USA

<sup>9</sup> Department of Geosciences, University of Houston, Houston, TX 77004, USA

<sup>10</sup> College of Computer, Mathematical, and Natural Sciences, University of Maryland, College Park, MD 20742, USA

In response to Morfeld and Erren's comment that the estimations of premature deaths in our article titled 'Premature deaths attributed to source-specific BC emissions in six US regions' are potentially biased, we stand by the approach taken in our publication. Morfeld and Erren note that the theoretical bounds on  $F = (RR1)/RR$  are quite large, where RR is the relative risk. They further claim that the uncertainty associated with an estimate of RR should be presented in terms of the % difference between the bounds and the value of RR employed. In our work, we account for uncertainty associated with RR using the 95% confidence interval reported in Krewski *et al* [1]. While the limits of RR may be bounded in the range as suggested by Greenland [2], the fit parameters from Krewski *et al* [1] are asymptotically normally distributed as discussed therein. Their reported uncertainty is thus interpreted as an error variance, and propagated through the dose-response equation (equation (1) of Turner *et al* [3]) using well-established (e.g., Ku [4]) error variance propagation techniques (equation (S1) of Turner *et al* [5]) to arrive at uncertainties in estimates of premature death. Hence, this use of the 95% confidence intervals from Krewski *et al* [1] is a valuable assessment of uncertainty, and more useful than stating the minimum and maximum theoretical bounds of  $F$ , as promoted by Morfeld and Erren, as the latter is not associated with any particular likelihood. Further, our interpretation of the error associated with estimating premature deaths using RR from Krewski *et al* [1] is consistent with several previous studies that have

estimated uncertainties in health impact assessments when using the dose-response relationship based on Krewski *et al* [1], such as Li *et al* [6], Dedoussi and Barrett [7], Anenberg *et al* [8], Caiazzo *et al* [9].

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