Project: **777**

Project title: **Evaluating the Climate and Air Quality Impacts of Short-Lived Pollutants (ECLIPSE)**

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Report period: **1.1.2014 - 31.12.2015**

The ECLIPSE project has assessed the effect of a reduction of short-lived climate pollutants on air quality and climate (Stohl et al., 2015). Our simulations contributed one out of three Earth System Model simulation sets to the intercomparison.

In comparison to observations, we found that the ECHAM6-HAM2 model system performs acceptably well to observations, or at least as good as the other model systems, both in the East Asian region (Quennehen et al., 2015) and in the Arctic (Eckhardt et al., 2015), although many deficiencies remain, some of which are attributable to problems in the emissions. Also in terms of simulated trends, the model behaves well compared to observations over Europe (Cherian et al., 2014).

A fundamental result, reproduced in Fig. 1, is that a reduction in black carbon even by 100% of the anthropogenic emissions is not clearly mitigating global warming. While ECHAM6-HAM2 indicates a certain beneficial effect on global-mean surface temperature, the HadGEM model does not.

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Figures

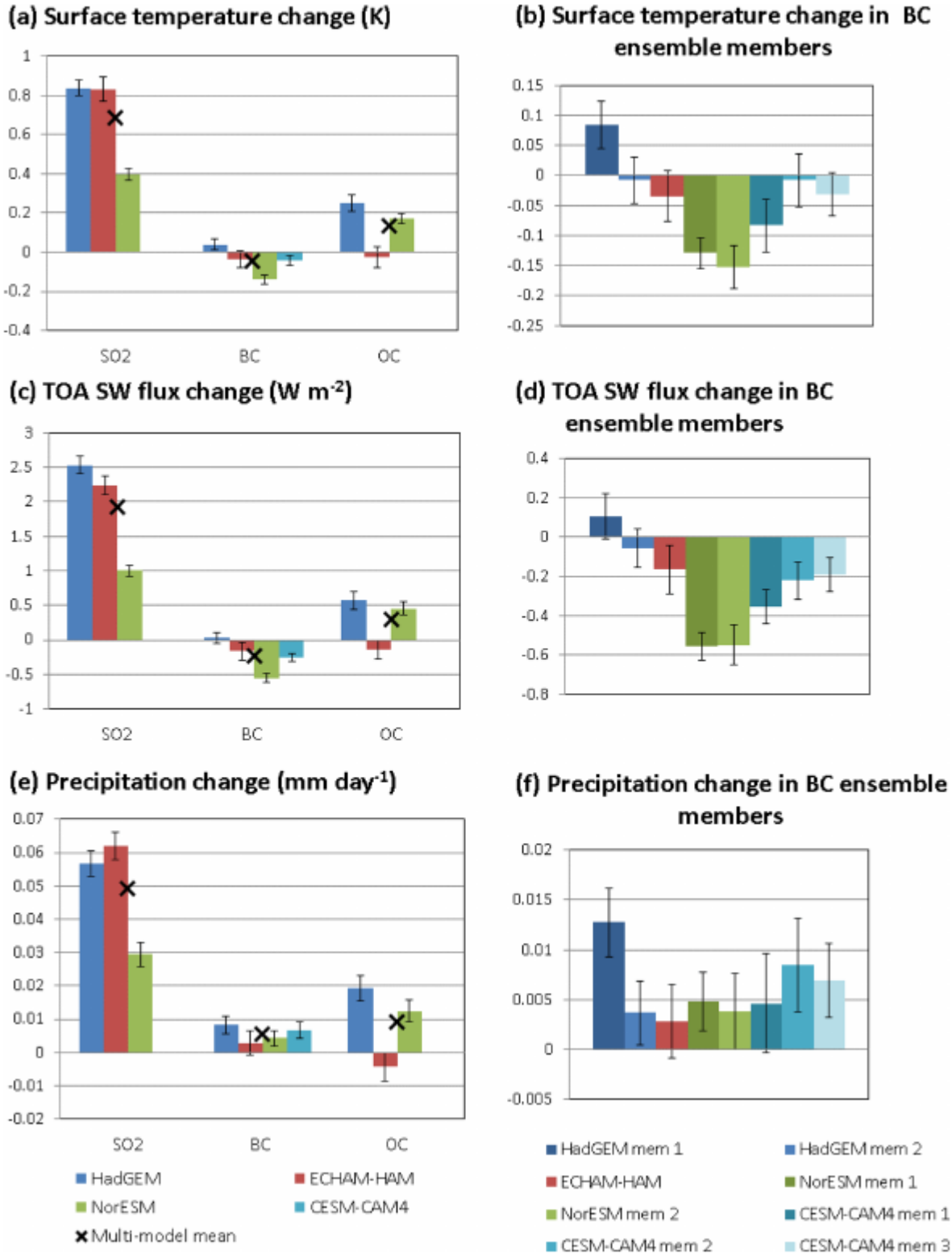

Fig. 1: Summary of global mean annual average changes in (a,b) surface temperature, (c, d) all-sky TOA SW flux and (e, f) precipitation. In the left panels the values shown for the BC simulations are the means for each model (where more than one simulation wasrun). The values for the individual BC simulations are shown in theright panels. The error bars indicate the 95 % confidence interval√on the error in the mean (2σ/ n, where n is the number of years of data included in the mean; i.e. n is 50× the number of ensemble members). (From Baker et al., 2015).