



Projections of climate change in the AVOID programme

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Sizeable negative impacts on human systems (for instance to health, food and water supply) are likely to result from the climate changes associated with most business as usual emissions scenarios. Furthermore, while there remains uncertainty over the precise conditions that could trigger abrupt or irreversible changes in the earth system, the probability of such events occurring is likely to be higher for warmer temperatures.

The AVOID programme (which is led by the Met Office Hadley Centre and includes the Tyndall Centre, Walker Institute and the Grantham Institute for Climate Change) is delivering information on the science and economics of avoiding dangerous climate change to DECC and other Government stakeholders. The first phase has developed a set of emission scenarios and is now examining the climate change, climate impacts, costs of impacts and cost of mitigation for these scenarios.

This talk will examine the climate outcomes for a range of emission pathways with different amounts of mitigation, focusing on the relative importance of the date of peak emissions and the post peak reduction rate. The “emissions floor” is also found to be important for long-term climate change, with zero values allowing temperatures to eventually decline slowly, and the non-zero values we considered typically leading to post 2100 warming. We will also consider the reversibility of large temperature increases, and the amount of time spent over a particular temperature target. This time-scale appears to depend on several factors, including the long term rate of atmospheric CO₂ concentration reduction, and the amount of forcing from more rapidly removed greenhouse gas species. Faster temperature decline rates might be possible using geo-engineering methods.