



Global impacts of regional growth in aircraft NO_x emissions

M.O. Köhler (1,2), J.A. Pyle (1,2,3)

(1) Centre for Atmospheric Science, Department of Chemistry, University of Cambridge, Cambridge, U.K., (2) Institute for Aviation and the Environment, University of Cambridge, Cambridge, U.K., (3) NCAS-Climate, University of Cambridge, Cambridge, U.K.

Nitrogen oxide emissions from global air traffic act as indirect forcing agents by affecting the concentration of atmospheric ozone and methane. Earlier studies have shown that the atmospheric impact is highly dependent on the geographical distribution of the emissions. We investigate the impact of increasing aircraft NO_x emissions in different regions of the world, both in established and emerging markets, by regionally perturbing aircraft emissions from a global inventory and by employing a global 3D chemistry transport model and an off-line radiation code. We examine which geographical regions of the atmosphere are most sensitive to changes in aircraft emissions and aim to assess the likely regional and global impacts of predicted air traffic growth in these regions. This work is carried out within the scope of the EPSRC/NERC-funded Aviation Integrated Modelling (AIM) Project.