



Influences of the Indian Summer Monsoon on tracer concentrations in the UTLS as simulated by chemistry climate models

M. Kunze (1), U. Langematz (1), P. Braesicke (2), S. Bekki (3), C. Brühl (4), M. Chipperfield (5), M. Dameris (6), R. Garcia (7), M. Giorgetta (8), and G. Stiller (9)

(1) Freie Universität Berlin, Institut für Meteorologie, Fachbereich Geowissenschaften, Berlin, Germany
(Markus.Kunze@met.fu-berlin.de), (2) NCAS-Climate, University of Cambridge, Cambridge, United Kingdom, (3) Institut Pierre-Simon Laplace, Paris, France, (4) Max-Planck-Institut für Chemie, Mainz, Germany, (5) University of Leeds, Leeds, United Kingdom, (6) Deutsches Zentrum für Luft- und Raumfahrt, Oberpfaffenhofen, Germany, (7) National Center for Atmospheric Research, Boulder, USA, (8) Max-Planck-Institut für Meteorologie, Hamburg, Germany, (9) Institut für Meteorologie und Klimaforschung, Karlsruhe, Germany

The Indian summer Monsoon (ISM) is a major source of interannual variability on the northern hemisphere. It is a significant moisture source for the upper troposphere outside the deep tropics with a potential to moisten the lower stratosphere.

The current generation of IPCC coupled ocean-atmosphere climate models shows variable skill in capturing aspects of the monsoon variability.

Here, we study the ability of current chemistry-climate models to capture the climatology of the ISM and its impact on water vapour and ozone.

We use REF1/REF2 simulations of five chemistry climate models (CCMs) performed for the WMO/UNEP assessment of stratospheric ozone 2006, which are driven with prescribed (observed) sea-surface temperatures, assessing their mean ISM, their ISM related transport regimes as manifested in water vapour and ozone, and their interannual variability of the ISM and its impact on tracers in comparison with reanalyses and MIPAS satellite data.

Two questions form the main focus: Are the models capable to capture the mean state of the upper tropospheric/lower stratospheric ISM anticyclone? Are the models able to capture the observed inter-annual variability of the ISM anticyclone?