Geophysical Research Abstracts
Vol. 13, EGU2011-1989, 2011
EGU General Assembly 2011

Modelling trace species transport and scavenging in deep convective clood using a general circulation model.

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Deep convection has a significant impact on the vertical distribution of aerosols. Deep convective updrafts and downdrafts can quickly move aerosols along the vertical until they are scavenged by dry and wet deposition.
Trace species are of importance to analyse large-scale transport, horizontal and vertical transport, as well as chemical interactions between aerosols and gaseous species and exchanges between stratosphere and troposphere. Moreover due to their opposite and well-known sources 7Be and 210Pb are useful for testing and validating deep convection parameterization in a general atmospheric circulation model.
With the courtesy of the Comprehensive Nuclear-Test-Ban Treaty Organization, daily data records of 7Be and 210Pb are available from its worldwide network: they provide a good framework for validating General Circulation Models (GCMs).
In the present study, we present a new scavenging model for the Emanuel convection scheme implemented in the Laboratoire de Me´te´orologie Dynamique GCM (LMDz). We first analyse the way this new scavenging scheme performs in a single column model: the role of unsaturated downdrafts is emphasized. In a second part, we present GCM simulations results and compare them to observations.