



The development of a system for the assimilation of satellite data for TM3

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In order to make use of carbon dioxide measurements by both current and planned satellite missions, a data assimilation system for the TM3 transport model was developed. The satellite data was represented both synthetically through retrieved columns from forward simulations using the WRF mesoscale model with time-varying surface fluxes from a biosphere model, fossil fuel inventories, and ocean climatology. Carbon dioxide column data retrieved from AIRS and SCIAMACHY was also used. The averaging time period and spatial scale used for both synthetic and real remotely-sensed column concentrations was varied, in order to assess the impact on the resulting inverted fluxes. The results were compared to those derived only from the network of surface stations, again using both real and simulated data. The application of the assimilation system to other trace gases is discussed.