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Reductions of NO2 Detected from Space During the 2008 Beijing Olympic Games

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During the 2008 Olympic Games (from August 8 to August 24), the Chinese authorities took extensive air quality measures in Beijing and surrounding provinces to improve the air quality in the city. Industrial activities and traffic were reduced to decrease emissions. Cars, for example, were only allowed to circulate on days corresponding to their number plate.

The AMFIC project (Air Quality Monitoring and Forecasting in China) monitors and forecasts the air quality in China by combining satellite measurements, ground measurements and chemical transport model simulations. Within the AMFIC framework the effect of the air quality measures in Beijing during the Olympic Games was studied by using NO2 tropospheric column retrievals from the satellite instruments OMI and GOME-2. To compensate for the atypical meteorological conditions, the retrievals have been compared with the simulations of the regional chemical transport model CHIMERE, which has been implemented successfully in East China, based on the INTEX-B emission inventory. Analysis of the comparison shows a strong reduction of the tropospheric NO2 column concentrations of about 60% above Beijing during the Olympic period. The air quality measures were especially effective in the Beijing area, but also noticeable in surrounding cities of Tianjin and Shijiazhuang.