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Change in NO_2 reveals Parade Blue is cleaner than APEC Blue

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The spectacular Parade Blue (blue sky), and APEC Blue (blue sky) were renowned worldwide caused by the limiting discharge policy of the Chinese government. For evaluating the reduction of these two events, we analyzed the variation of NO_2 columns Beijing by looking at a long-term monitoring using Multi-Axis Differential Optical Absorption Spectroscopy (MAX-DOAS) and the Ozone Monitoring Instrument (OMI) satellite observations from August 2014 to November 2015, covering Grand Military Parade (GMP, September 2015) and APEC (November 2014) period. We found that the NO_2 columns abruptly decreased both GMP and APEC. However, change in the MAX-DOAS and the OMI NO_2 during GMP was larger than during APEC via comparison with the same period in 2014, indicating Parade Blue is cleaner than APEC Blue. The spatial distribution of NO_2 and backward trajectories together with meterological parameters suggested that GMP Blue may be due to the regional significant decreasing discharge in peripheral cities. No weekend effect during GMP further confirmed the role of controlling discharge. This study provides direct evidence that it is possible to clean air in China.