

7-year temporal trend of anthropogenic SO₂ emissions over China identified from GOME observations

M. F. Khokhar (1), S. Birle(1), U. Platt,(1) and T. Wagner(1)

Institute of Environmental Physics, University of Heidelberg, Germany

Fossil fuels such as coal and oil contain significant amounts of sulfur. When burned, this sulfur is generally converted to SO₂. The GOME observations showed enhancements of SO₂ column amounts due to anthropogenic emission sources. These enhancements are identified from the regions with extensive burning of coal, smelting of metal ores and heavy industrial activities such as from China, Eastern USA, the Arabian Peninsula, Eastern Europe, South Africa, and particularly Norilsk, Russia. Also, a comparison with GOME observations of anthropogenic NO₂ column amounts is presented.

In this paper we present time series of SO₂ SCDs over China. We analyzed GOME data for the time period 1996-2002. Time series over the highly industrialized regions, Beijing and Shanghai showed a slight increase in the SO₂ SCD, attributable to the increased use of coal for power generation in China [Zhou, 2001]. Especially, during the GOME-period (1996-2001), coal consumption and SO₂ time series reflect similar behaviour. However, Richter et al., [2005] calculated a significant increase in the NO₂ concentrations over the industrial areas of China for the time period of 1996-2004. Additionally, preliminary results of atmospheric SO₂ from SCIAMACHY (on board EnviSAT-1 since March 2002) instrument with broader spectral and better spatial resolution is presented. The better spatial resolution will help to study and localize the impacts of SO₂ emissions on a finer spatial scale.

References:

Richter, A., J. P. Burrows, H. Nueß, C. Granier and U. Niemeier: Increase in tropospheric nitrogen dioxide over China observed from space, Volume 437/1 September 2005, doi: 10.1038 / nature04092, 2005

Zhou J. P.: The Current situation of China's Electric Power Industry, (online version updated on, 2005-03-15: http://www.eva.ac.at/projekte/china_power.htm). Report published in Energy, magazine of Austrian Energy Agency, 2001