Verification of energy consumption in China during 1996-2330 by using satellite observational data

Hajime Akimoto[1]; Toshimasa Ohara[2]; Jun-ichi Kurokawa[2]; Nobuhiro Horii[3]

[1] FRCGC/JAMSTEC; [2] NIES; [3] IDE-JETRO

There is substantial difference in the coal consumption data in China during 1996-2003 among the three official energy statistics; the province-by-province data in the China Energy Statistics Yearbook (PBP-CESY), the energy balance tables by International Energy Agency (IEA2004), and the country-total data in the China Energy Statistics Yearbook (CT-CESY). Verification of these data was made by GOME satellite observational data for tropospheric NO2 column density in Northern China Plain reported by Irie et al (2005) and Richter et al. (2005). The NO2 column increase from 1996 to 2002 averaged for the two reports is about 50%, whereas the NOx emission increases based on the PBP-CESY and IEA2004 are 25 and 15 %, respectively, and that for CT-CESY is even lower. The discrepancy of the increasing trends between the satellite data and the PBP-CESY emission inventory could be within the uncertainty level with a reservation that the increase in total fuel consumption in PBP-CESY may still be underestimated particularly after the year of 1999. The increasing rates of NOx emissions during 1996-2002 calculated by using the IEA2004 and CT-CESY statistics are apparently underestimated beyond the uncertainty level of the satellite observation, and they are recommended not to be used for emission inventory studies in China during the period.