

Return to the decade-ago level of tropospheric nitrogen dioxide pollution in East Asia

*Hitoshi Irie¹, Takuya Muto¹, Syuichi Itahashi², Jun-ichi Kurokawa³, Itsushi Uno⁴

1.Chiba University, 2.Central Research Institute of Electric Power Industry, 3.Asia Center for Air Pollution Research, 4.Kyushu University

Long-term (2005-2015) tropospheric nitrogen dioxide (NO₂) column data recorded by the satellite-borne Ozone Monitoring Instrument (OMI) in East Asia were analyzed to investigate annual trends quantitatively and their potential causes. We found an evident decrease in the NO₂ level over China after 2011 and then a return to the 2005 level in 2015. The grid-basis trend analysis implies that the rapid decrease occurred on a provincial or larger spatial scale and was likely due to a nationwide action such as the widespread use of denitrification units. Other prominent features were seen in Japan. Despite a significant substitution from nuclear to thermal power after 2011 as a consequence of a massive earthquake off the Pacific coast of northern Japan, the NO₂ level continued to decrease for both periods (2005-2011 and 2011-2015). The decrease contributed to a return to the decade-ago level of tropospheric NO₂ pollution in East Asia.

Keywords: NO₂, trend, East Asia, OMI