

Short-term trends of lower and upper tropospheric ozone over China from IASI observations

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Important progresses in the field of atmospheric ozone sounding from space have been accomplished during the last decade. The lower troposphere is now available from IASI (Infrared Atmospheric Sounding Interferometer) with a maximum of sensitivity between 3 and 4 km. We use satellite observations from IASI on board the MetOp satellites to evaluate the short-term trends of tropospheric ozone over East Asia for the period 2008-2015. The availability of two semi-independent columns of ozone from the surface up to 12 km allow ones to derive ozone trends for the lower (surface to 6 km a.s.l) and the upper troposphere (6 to 12 km a.s.l). Short-term trends are calculated from deseasonalized monthly timeseries. Preliminary results show a negative trend of about -0.50%/yr in the lower troposphere whereas a positive trend ($\sim +0.7\%/\text{yr}$) is observed in the upper troposphere. If the negative trend appears to be significant in the lower troposphere, the positive trend in the upper troposphere remains poorly significant over such a short period. A seasonal analysis shows that the negative trend in the lower troposphere is driven by the pre-monsoon period. The IASI-derived trends are compared to independent in situ observations provided by ozone sounding at different sites of East Asia for evaluation. The different processes driving the short-term trends of lower and upper tropospheric ozone during the 2008-2015 period are discussed.