

Atmos. Chem. Phys. Discuss., referee comment RC2  
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## Comment on acp-2021-227

Anonymous Referee #2

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Referee comment on "Measurement report: Long-term variations in surface NO<sub>x</sub> and SO<sub>2</sub> mixing ratios from 2006 to 2016 at a background site in the Yangtze River Delta region, China" by Qingqing Yin et al., Atmos. Chem. Phys. Discuss.,  
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### General comments

The authors present a concise study on long-term trends of NO<sub>x</sub> and SO<sub>2</sub> in the region of the Yangtze River Delta

based on data acquired at the global GAW station Lin'an.

They interpret diurnal, seasonal and long-term changes and put them in context with trends measured in several other regions or cities in China and across the globe.

They assess correlations with meteorological parameters and emissions by different sources.

To identify source regions a potential source analysis of NO<sub>x</sub> and SO<sub>2</sub> is applied on the YRD region.

Changes in average diurnal patterns of NO<sub>x</sub> and SO<sub>2</sub> from 2006 to 2016 were found and attributed to long-term changes of vehicle emissions and industrial emissions, respectively.

### Specific comments

l.30, l.307, table 1: Why not denoting it SO<sub>2</sub>/NO<sub>x</sub> or Sulph./Nitrog.? S/N might be mixed up with signal-to-noise ratio.

l.85: For NO<sub>x</sub>: The method of NO<sub>2</sub> to NO conversion is missing and must be explained. Furthermore, were corrections for humidity (respective quenching for CLD technique) and ozone reaction within the inlet line applied on the presented data?

l.97: Item (4) might describe more specifically what kind of checks, testings are done and what self-diagnosis does comprise of or even better give a reference where it is explained in more detail.

For example, I'm wondering what self-diagnosis means: Is it applying internal thresholds for operating parameters and, if yes, which one and what are the consequences for the instrument or measurements? Is this automatically done by the instrument or by the data acquisition system?

l.215: Is it adequate to call it already "effect" if this is an investigation of correlations? Is

causality approved yet?

l.328: Reference for a change of (specific) air pollution control measures?

Technical corrections

Figure 2: P (hPa), factor 10 missing?