

A survey of global NO_x emissions from shipping in the S5P/TROPOMI data

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Ships are important emission sources of nitrogen oxides (NO_x), which are relevant pollutants in the atmosphere affecting the environment and human health. Global shipping plays a big role in transporting goods around the world. For decades, some of the busiest shipping lanes have been tracked by satellites from space. With TROPOMI aboard the Sentinel 5-Precursor (S5P), the potential for detecting shipping emissions has increased due to its low noise and high spatial resolution of 5.5 x 3.5 km². Previous studies have shown that even individual ship plumes can be identified from TROPOMI data.

In this study, we use different filtering methods to identify on a global scale as many shipping emission signals as possible from the TROPOMI data. One important aspect is to focus on finding real shipping signals and avoiding inadvertently interpreting a priori information. The aim of this study is to contribute to the progress of satellite remote sensing of shipping emissions and to better understand air pollution caused by the shipping sector and their effect on the environment.