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## **Pinpointing Nitrogen Oxide Emissions from Space**

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### **Abstract**

Satellite observations of nitrogen dioxide ( $\text{NO}_2$ ) have been shown to provide valuable information on the location and strength of  $\text{NO}_x$  emissions, but spatial resolution is limited by horizontal transport and smearing of temporal averages due to changing wind fields. In this study, we map  $\text{NO}_x$  emissions on high spatial resolution from TROPOMI observations of  $\text{NO}_2$  combined with wind fields, based on the continuity equation. The divergence of horizontal fluxes proves to be highly sensitive for point sources like exhaust stacks. Thus  $\text{NO}_x$  emissions from individual power plants can be clearly resolved and quantified even on top of considerably high urban pollution from the Saudi-Arabian capital city Riyadh. This allows us to catalog  $\text{NO}_x$  emissions from power plants and other point sources globally.