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Optical technologies applied alongside on-site and remote approaches for climate gas emission quantification at a wastewater treatment plant

WATER RESEARCH

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## Revised manuscript intended for publication in Water Research PT

- 1 Optical technologies applied alongside on-site and remote approaches for
- 2 climate gas emission quantification at a wastewater treatment plant
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- 16 Highlights
- Emissions of CH<sub>4</sub>, N<sub>2</sub>O, and NH<sub>3</sub> were quantified from a wastewater treatment plant
- Whole-plant and on-site emissions were measured using optical analytical techniques
- Biosolid stockpiles accounted for 70% of total CH<sub>4</sub> emission
- N<sub>2</sub>O was principally (about 82%) emitted from nitrifying trickling filters
- Important NH<sub>3</sub> emission sources were biosolid stockpiles and mechanical dewatering
- 23 **Keywords:** Methane, nitrous oxide, ammonia, biosolid stockpiles, sewage sludge, emission factors

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