

## Ground based remote sensing of greenhouse gases – recent developments and their use for satellite and model validation

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### Abstract:

Ground-based remote sensing measurements have become an important component in the global observing system for greenhouse gases. These measurements are vital for the calibration and validation of satellite retrievals. In addition they are well suited for model validation and are complementary to in situ measurements, providing additional information about the carbon cycle. Here we present the achievements within the INGOS project, but also recent developments within the global network TCCON and beyond.