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# Performance assessment in the ICOS ATC Metrology laboratory and in the field of more than 70 CO analyzers

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To develop an accurate measurement network of greenhouse gases, instruments in the field need to be stable and precise and thus require infrequent calibrations and a low consumption of consumables. For about 15 years, cavity ring-down spectroscopy (CRDS) analyzers for $CO_2$ and CH4 have been available that meet these stringent requirements for precision and stability. For CO, whose measurements in the near-infrared as $CO_2$ and CH4 is challenging, analyzers have been available for about 7-8 years. Here, we present the results of tests of CO CRDS in the near-infrared instruments in the laboratory (about 60 instruments) and in the field (about 15 instruments). The precision and stability of the measurements are studied. In the field, we see the importance of individual diagnostics during the installation phase, and we show the value of calibration and target gases that assess the quality of the data. Finally, we show results from CO measurements using different laser technologies that offer a better precision but are more prone to drift.