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Simultaneous measurements of carbon and oxygen isotopologues of carbon dioxide using a mid-ir laser based platform

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We are leveraging the strong absorption lines in the mid-infrared to simultaneously measure both isotopologues δ^{18}O and δ^{13}C of carbon dioxide at atmospheric concentration. For many applications, such as ecosystem fluxes or atmospheric monitoring, precision and accuracy required is less than $<0.1\ ^{0}/_{00}$.

In the mid-infrared, CO_2 has very strong transitions that are particularly suited to achieve this goal using a robust multi-pass absorption cell. We will present results from laboratory tests of sensitivity and precision of a sensor currently under development.