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First Eddy Covariance Flux Measurements of Methanol by PTR-TOF

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The recently developed PTR-TOF instrument was evaluated to measure methanol fluxes using the eddy covariance method. The PTR-TOF was employed at a well characterized temperate meadow field site in the Stubai valley, Austria, to measure VOC fluxes above an intensively farmed grass land. The high time resolution of the PTR-TOF allowed storing full mass spectra up to m/z 315 with a frequency of 10 Hz. Due to the high mass resolving power of the PTR-TOF three isobaric peaks were found at a nominal mass of m/z 33. Only one of the three peaks contributed to eddy covariance fluxes. The exact mass of this peak agrees well with the exact mass of protonated methanol (m/z 33.0335). The eddy covariance methanol fluxes measured with PTR-TOF were compared to virtual disjunct eddy covariance methanol fluxes simultaneously measured with a conventional PTR-MS. The methanol fluxes from both instruments show excellent agreement.