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## Intercomparison of four different in-situ techniques for ambient formaldehyde measurements in urban air

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**Abstract.** Results from an intercomparison of several currently used in-situ techniques for the measurement of atmospheric formaldehyde (CH<sub>2</sub>O) are presented. The measurements were carried out at Bresso, an urban site in the periphery of Milan (Italy) as part of the FORMAT-I field campaign. Eight instruments were employed by six independent research groups using four different techniques: Differential Optical Absorption Spectroscopy (DOAS), Fourier Transform Infra Red (FTIR) interferometry, the fluorimetric Hantzsch reaction technique (five instruments) and a chromatographic technique employing C18-DNPH-cartridges (2,4-dinitrophenylhydrazine). White type multi-reflection systems were employed for the optical techniques in order to avoid spatial CH<sub>2</sub>O gradients and ensure the sampling of nearly the same air mass by all instruments. Between 23 and 31 July 2002, up to 13 ppbv of CH<sub>2</sub>O were observed. The concentrations lay well above the detection limits of all instruments. The formaldehyde concentrations determined with DOAS, FTIR and the Hantzsch instruments were found to agree within ±11%, with the exception of one Hantzsch instrument, which gave systematically higher values. The two hour integrated samples by DNPH yielded up to 25% lower concentrations than the data of the continuously measuring instruments averaged over the same time period. The consistency between the DOAS and the Hantzsch method was better than during previous intercomparisons in ambient air with slopes of the regression line not significantly differing from one. The differences between the individual Hantzsch instruments could be attributed in part to the calibration standards used. Possible systematic errors of the methods are discussed.

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