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On the distribution of formaldehyde in the western Po-Valley, Italy, during FORMAT 2002/2003

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Abstract. Formaldehyde was measured in the area of Milano, Italy, during the 2002 and 2003 FORMAT campaigns at three ground field sites and from an ultralight aircraft. The horizontal distributions show a strong impact of local emissions at a site in the centre of Milano and more photochemically driven diurnal patterns in the remote locations north and south of the city. The mixing ratios in the agricultural areas upwind of Milano were comparable to those downwind indicating the importance of biogenic emissions and anthropogenic agricultural activities. The vertical distributions were dominated by transport processes with advection of CH₂O above the planetary boundary layer by cloud venting. Comparison to previously published model calculations, based on part of the data set, show discrepancies both, in the diurnal patterns and in the regional distribution which allude to uncertainties in emission inventories.

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