

Interactive comment on “2-D reconstruction of atmospheric concentration peaks from horizontal long path DOAS tomographic measurements: parametrisation and geometry within a discrete approach” by A. Hartl et al.

Anonymous Referee #2

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The authors present an interesting theoretical framework on the reconstruction of two-dimensional spatial distributions of atmospheric trace gases using a number of intersecting light paths, applying tomographic inversion. The paper thoroughly explores and compare the different ART, SART and SIRT methods of reconstruction on the basis of geometries, solution and the extension of the concentration distribution. This technique has recently been applied with success to the construction of a two-dimensional map of NO₂ from vehicle emission plume and provides a new powerful tool to gain information

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about the distribution of atmospheric species in the atmosphere. This paper fits well into the scope of ACP and I recommend its publication.

Minor points:

p.11785, line 21: When describing the geometry of one of the configurations in Fig. 1 the authors mention 39 light paths, is it 39 or 36 as it is considered throughout the paper?. Also, from Figure 1 it seems that the number of light paths in the different configurations differ from 36, please double check that the figure shows 36 light paths.

When using different simultaneous light paths with a single telescope/detector system, how do the authors overcome the problem of the pixel-to-pixel variability arising from the different photon response of individual pixels across the detector. Also, how are the different spectral line shapes (i.e. for different light paths) dealt with when dispersed onto a two-dimensional CCD?

Typos:

p. 11784 line 2, p.11785 line1 and 4:

“fit” change to “fitted”

p.11784, line 8/9:

“has to be” change to “is”

p.11784, line 24:

“much” change to “significantly”

p.11798, line 12:

“we like” change to “we would like”

p.11802, line 5:

“Here not the full degrees of freedoms are reached” change to “Here the full degrees

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of freedoms are not reached”

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 11781, 2005.

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