Geoscientific
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Interactive comment on "A robust method for inverse transport modelling of atmospheric emissions using blind outlier detection" *by* M. Martinez-Camara et al.

Anonymous Referee #2

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Review of Martinez-Camara et al., "A robust method for inverse transport modelling of atmospheric emissions using blind outlier detection"

Martinez-Camara et al. present improvements in emission estimation through inverse modeling of measurements through the inclusion of a blind outlier detection method. The authors present improvements in reconstructing the ETEX tracer release when including an improved version of the RANSAC outlier detection into their modeling system.

The manuscript is well written and provides useful information for the inverse modeling community. The methods used seem appropriate and the conclusions drawn are rea-

sonable. The manuscript fits within the scope of Geoscientific Model Development and hence I recommend publication after the following few comments are addressed.

Major comments

The authors evaluate their approach against an emission pulse, a short but strong signal. They also clearly mention in the introduction that the inversion approach is also well suited for emissions that are continuous or variable over time. Some discussion is needed on how well the new blind outlier detection would perform if the source to be reconstructed is not an emissions pulse, but rather a continuous signal.

Minor comments

p 3196 l 2: explain why 120 unknowns

p 3197 l 7-9: reference needed

p 3198 l 1-2: how reasonable is it to assume that the errors are indeed random, independent and identically distributed? Given e.g. that a wrongly predicted polar low will result in erroneous transport that affects multiple stations at the same time - the errors are not independent anymore. Discuss.

p 3199 l 1-3: references are need to support this statement

p 3201 l 25: so does this mean TRANSAC is now very sensitive to beta instead of eta?

Interactive comment on Geosci. Model Dev. Discuss., 7, 3193, 2014.