

## ***Interactive comment on “3-D chemistry-transport model Polair: numerical issues, validation and automatic-differentiation strategy” by V. Mallet and B. Sportisse***

### **Anonymous Referee #1**

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This paper covers a general description of tangent linear equations of a model including complex chemistry.

### **General comments**

The general impression of this paper is rather a technical note than a scientific paper. The model described is also partly outdated according the authors. Applications of the tangent linear model is absent in the paper that makes it hard to merit its values, and thus of less interest for publication.

I recommend the authors to come back with two papers, 1) a model description for peer-review scrutinizing (a proceeding paper and an internal technical note are pro-

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duced so far), 2) a more comprehensive paper about the tangent linear equations of the model, with special emphasis on the issues concerning complex chemistry (simplifications needed, code constructions, what for other scientists to be aware of, etc), combined with some sensitivity analysis, based on the tangent linear model, that could bring some insight into what parameters in a complex chemistry model that would have the most profound impact on the results, and thus be of special interest for data assimilation strategies.

There paper could benifit from improvement of the English language.

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Interactive comment on Atmos. Chem. Phys. Discuss., 4, 1371, 2004.

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