**Nonlinear Processes
in Geophysics**
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Discussions

Interactive comment on "Statistical optimization for passive scalar transport: maximum entropy production vs. maximum Kolmogorov–Sinay entropy" *by* M. Mihelich et al.

Anonymous Referee #2

Received and published: 28 December 2014

This paper is not easy to understand. There is a mixture of turbulence (passive scalar transport), of maximum entropy production, of Kolmogorov Sinai entropy and of zero-range process. I suggest to reject this paper since the content is too narrow and far from geosciences, thus not adapted to NPG.

Major points:

1) The title is not adapted to the content: the title mentions passive scalar transport in turbulence, but in fact the manuscript is dealing only with a 1D toy model of passive scalar, called ASEP (asymmetric exclusion Markov process). With such restriction, the topic of the present paper seems rather far from geosciences. The link with ASEP

and numerical models used in the geosciences is not obvious, and only justified in the perspectives and conclusion of this manuscript. While the mathematical content of the paper seems correct [compute analytically the heat flux f for maximum entropy production and for Kolmogorov Sinai entropy, equations (19) and (20), consider for which cases the maximum coincides in both analytical expressions], its scope seems very narrow [to show that a toy model has two ways to estimate the heat flux corresponding to a maximum entropy situation] to be useful for geosciences applications

2) The paper is not self-contained and it is very difficult to understand the point without reading other papers. The model ASEP cannot be understood by reading this manuscript. Equation (2) uses z, the fugacity, which is not precisely defined. One is lost at this point. The maximum entropy production concept is used in the title and in many places in the manuscript, but its meaning is not recalled.

Other points: The review paper Martyushev and Selesnev (Maximum entropy production principle in physics, chemistry and biology, Physics Report 426 (2006) 1-45) should be cited since it nicely and clearly introduces the MEP.

Typos: line 4 page 1695 -> passive scalar; line 11 same page: decor related jumps -> decorrelated

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