

## ***Interactive comment on “Trajectory encounter number as a diagnostic of mixing potential in fluid flows” by Irina I. Rypina and Larry J. Pratt***

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It is only the short comment, not deep review. We can see many finite time Lagrangian descriptors suggested last time, maybe 20 or 30 years. For example, the Poincare section is calculated for finite time. Most descriptors follow from dynamical systems theory constructions. It well discussed in reviewers comments. I have an analogous question. Is it possible to make some connection between the encounter number and the Poincare recurrence.

In any case, I think, the most Lagrangian descriptors used, for example, in oceanography have no strong mathematical foundation, but very useful for data analyze and interpretation. I also think the descriptor suggested here is more expensive in comparison with FLTE or some other. But it seems, it has some advantage in physical

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interpretation.

I think the manuscript is suitable for publication in Nonlinear Processes in Geophysics, after some revision.

I can find few misprints in the manuscript which not mentioned by reviewers.

Minor technical issues and correction

lines 336,371-373

$t_0$  is used and may be better to use  $t_0$

Caption to figure 8

U-star and Nstar are used. Maybe it will be better to use  $U^*$  and  $N^*$

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