

# ***Interactive comment on “Tritium as hydrological tracer in Mediterranean precipitation events” by Tobias R. Juhlke et al.***

## **Anonymous Referee #1**

Received and published: 24 October 2019

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## General comments

In their manuscript entitled “Tritium as hydrological tracer in Mediterranean precipitation events” the authors address questions for tritium sources, sinks and transfer processes. They aim at comparing spatial tritium distribution patterns with moisture source regions of discreetly sampled precipitation events. They present isotope data from a one year field sampling campaign, where tritium concentrations of 46 samples of individual precipitation events on the island of Corsica were analyzed and compared to their moisture origin. To better understand short term tritium variations, air mass back-trajectory modelling (HYSPLIT) was applied to identify the sources of water vapor. They could show

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that model-derived source region tritium concentrations agreed well with annual mean station values. Overall, the manuscript is well structured and nicely written. The topic fits well to the scope of the journal. I only suggest minor revisions prior to acceptance and publication in Atmospheric Chemistry and Physics.

#### Specific comments

##### 4.2.2 Low tritium events

Strictly speaking, if the time of precipitation for outlier event F is unknown, modelling and evaluation of the moisture origin is not correct. However, the pattern of the trajectories shows the resulting high uncertainty impressively. Did you check the event on 2017-12-10 (and on 2017-09-15) as well? Their tritium concentrations are also very close to the 2 TU line.

##### Fig. 3

Outlier events could be better distinguished if pale colors or dotted or dashed symbols for the corresponding events would be used.

##### Fig. 6

The different regression lines are hard to distinguish. Perhaps scale y-axis from 1 to 11 or enlarge the diagram.

#### Technical corrections

Blank is missing after the ‘;’ when more than one REF is cited throughout the manuscript, e.g. l. 43, l. 44, l. 70, l. 104, l. 129, l. 240, l. 257, l. 278, l. 317, l. 321, l. 326.

##### l. 340

‘originate’ instead of ‘originates’.

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Please also note the supplement to this comment:

<https://www.atmos-chem-phys-discuss.net/acp-2019-725/acp-2019-725-RC1-supplement.pdf>

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-725>, 2019.

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