

Interactive comment on “Lagrangian process attribution of isotopic variations in near-surface water vapour in a 30-year regional climate simulation over Europe” by Marina Dütsch et al.

Anonymous Referee #1

Received and published: 17 October 2017

General Comments

This paper presents a novel method to diagnose meteorological processes based on isotopes in atmospheric water vapor output from two isotope-enabled climate model. The applications of the methods described here could be far-reaching and apply to other regions of the world, providing a much-needed approach to filling a knowledge gap. This paper is well written, and the figures are of high quality to convey the authors' meaning. I recommend accepting this paper for publication after minor issues are clarified.

Specific Comments

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p. 4, Line 15 – Could you discuss your rationale for assuming that no fractionation takes place during ET? This discussion could be just a few words with references. For example, do you assume that there is no fractionation because this is a transpiration-dominated system throughout most of the year? On p. 6 line 2, you state that “moisture is assumed to have evaporated from the surface” if q increases during a time step. Why wouldn't fractionation take place during evaporation?

Technical Corrections

p. 5, Line 2 – This sentence is a bit awkward: “At all stations only the months are considered, for which a GNIP measurement and values from both models are available.” Consider rewording. (Suggestion: “At all stations, months are included if a GNIP measurement and values from both models are available.”)

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-744>, 2017.

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