

Atmos. Chem. Phys. Discuss., referee comment RC1
<https://doi.org/10.5194/acp-2021-269-RC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on acp-2021-269

Anonymous Referee #1

Referee comment on "Disentangling different moisture transport pathways over the eastern subtropical North Atlantic using multi-platform isotope observations and high-resolution numerical modelling" by Fabienne Dahinden et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-269-RC1>, 2021

The paper investigates different moisture pathways to the Canary Islands using a multi-platform approach that is based on water isotopes. The use of an isotope-enabled numerical model, which is carefully validated against observations, is quite an innovative technique and allows great insights into the origin of the air parcels that reach the Canary Islands. The paper is overall well written, and the results are significant. I think it should be published following minor reviews.

Minor comments:

Are the different pathways associated with different weather patterns (e.g., cold front vs. trade wind shower)? If so, maybe this should be stated clearly and discussed a bit.

Could you give some more reasons as to why certain pathways in the period you examined occur more/less frequently than the climatology? For instance, can you link this to large-scale modes like the NAO? You hint at this around line 825, but it would be nice to see a more in-depth discussion.

Technical comments:

Line 24: "and thus allows" --> "thus allowing"

Line 39: "large scale-flow" --> "large-scale flow"

Line 60: Just to make the paper a bit more self-contained, please define "Intertropical Discontinuity"

Line 421: "preliminary" --> "mainly"

Line 434: "alter" --> "change"

Fig 7: Is there anything that could be learnt from deuterium excess?

Line 777: "travel" --> "travels"

Line 814: "This dynamical environment, on the one hand" --> "On the one hand, this dynamical environment"