

The submitted paper by Dar et al presents an analysis of isotopic data from southern latitudes. These data are compared with a set of models and associated coefficients. While worthwhile, a revision of the structure and error analysis of conducted here would greatly improve this submission.

The structure of the paper has been modified according to the suggestions and error analysis included. The standard errors in both slope and intercept have been mentioned where ever the regression analysis has been done. The root mean square errors and the standard error for the model vs observed comparisons have been included.

First, the overall structure of this paper is a bit jumbled. Much of the discussion material about the CG models should be moved into the methods section. Similarly, the discussion of how the HYSPLIT back trajectories were ran should also be described in the methods section.

The stucture has been modified according to the suggestions.

Second, the error analysis needs to be more fully documented. The testing of different model formulations and parameters is helpful, however the authors do not fully evacuate the errors and biases associated with each model. A more rigorous description of errors across all variables is needed. Finally, is there an optimal set of an parameters that others should use (i.e. what value of x and fractionation factors minimizes errors and bias)?

- **The error and biases associated with each model are well known and described in the number of previous studies, for e.g. The isotopic composition of atmospheric vapour is a factor responsible for the larges uncertainty in the model. Since our observations are mostly over the ocean AT 15 M LEVEL we have taken the global closure assumption i.e. the isotopic composition of atmospheric vapour is equal to the isotopic composition of evaporating water.**
- **In the modified version the performance of the models evaluated for different turbulence indices (i.e. the ratios of molecular and turbulent diffusion). The models were run for the values of x ranging from 0-1 with an increment of 0.1. We found that while the MJ and CD diffusivity ratios perform equally well for both the models, the PW values show the greater difference between the observed and modelled values.**
- **We found that UCG MJ for x=0.8, UCG CD for x=0.6 and TCG MJ for x=0.6 and TCG CD for x=0.7 perform equally well within the uncertainty limits.**

L4: Add latitudes numbers here.

- **Done**

L5: Reword the sentence that starts “The inter annual”, its not clear what your trying to say

- **The sentence has been rephrased**

L19: Nearly and your double tilde are redundant.

- **This has been removed.**

L25: Missing an ‘A’ at the beginning?

- **Done**

L52: Define what you mean here by boundary later? Where these really at the boundary layer?

- **The sentence has been removed as the Swv samples have been omitted from the modified version of the manuscript.**

L65: This text on HYSPLIT methods should move to section 2.

- **Done**

L76: Careful with your terminology here. A positive delta value signifies that it was more enriched in heavy isotopes relative to VSMOW only.

- **The sentence has been rephrased.**

L110-L120 What are the significance and or uncertainties of these regressions.

- **This information has been added to the table**

L132: Why not put the regression coefficients and stats from Figs 5 & 6 in a table

- **Done**

L143-201: This needs to all move to methods.

- **Done**

L197: Please directly state the numbers you used here for the diffusivities

- **Done**

L209: While differences between the slopes and intercepts are interesting, a more error though analysis should be conducted. What is the overall bias associated with each model, what are the root mean squared errors, etc.

- **The standard errors and root mean squared errors have been added in form of a table (Table 5)**