

## Reply to Editor Peter Haynes

Dear Editor Peter Haynes,

Thanks for these final comments which we think do indeed further strengthen the message of the paper. We addressed all of them in the following way:

### 1.) Abstract:

After discussion among the Co-authors we decided to slightly strengthen the formulation in the abstract.

"At 20km and in the NH stratosphere, ERA5 age values are at the upper margin of the uncertainty range from tracer observations, indicating a comparatively slow BDC." → "At 20km and in the NH stratosphere, ERA5 age values are around the upper margin of the uncertainty range from historical tracer observations, indicating a somewhat slow-biased BDC."

Being even stronger in this statement about a potential slow-bias of the BDC in ERA5 would be inadequate in our opinion, as the considered measurement data is too localized in time and space and associated with a too large uncertainty. For this reason, we also refrain from including a related final sentence in the abstract as proposed.

### 2.) Conclusions:

We adopted the text change almost as proposed, to state the slightly slow-biased BDC in ERA5 more explicitly.

"At higher stratospheric levels above the TTL and in the NH, on the other hand, ERA5 mean age is found to be at the upper margin of the observational uncertainty range." → "At higher stratospheric levels above the TTL and in the NH, on the other hand, ERA5 mean age is found to be biased somewhat high relative to observational estimates and ERA-Interim is biased slightly low, but within the uncertainty associated with the data presented. The high bias of ERA5 is, if anything, larger than the low bias of ERA-Interim."

Related to the above wording changes, we also modified the final sentence accordingly:

"However, whether the representation of stratospheric transport is indeed improved compared to ERA-Interim reanalysis is, so far, unclear." → "However, the presented comparison to observationally-based age indicates a slow-biased BDC in ERA5, although further investigations would be needed to determine the global significance of this bias."

### 3.) Regression method description (MC3):

We agree that adding this sentence could only enhance clarity about the method and we included it (in Sect. 4, first paragraph): "The regression did not attempt to extract any signals of interannual variability such as QBO, ENSO or volcanic influence."