

Atmos. Meas. Tech. Discuss., author comment AC2
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Reply on RC2

Jack A. Hutchings and Bronwen L. Konecky

Author comment on "Optimization of a Picarro L2140-i cavity ring-down spectrometer for routine measurement of triple oxygen isotope ratios in meteoric waters" by Jack A. Hutchings and Bronwen L. Konecky, Atmos. Meas. Tech. Discuss.,
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Thanks for the positive and helpful review! Here are a few thoughts for the open discussion period.

Our samples were stored in glass vials with polyethylene-cone cap liners. Parafilm was additionally applied to each vial to seal the gap between the cap and the neck of the vial. We have no reason to believe that organics were desorbed off the containers, but this could certainly occur with other vials. While we did not test for this explicitly, we store many waters in these vials and have never found, after storage, that a sample would 'develop' organic contamination.

We used BSM as our second normalization because, during the period of this paper, we were measuring tropical precipitation samples that are not particularly depleted.

We didn't actually calculate any memory effect for D17O in the same sense as the primary isotope measurements. Instead, when investigating whether or not memory correction of the primary isotope parameters improved secondary parameters (d-excess and D17O), we calculated errors with or without primary isotope memory correction and looked for improvement due to memory correction. This is shown in Fig S1, but we'll definitely clarify that a bit in the main text.

Our usage of Kona for drift correction is largely arbitrary. Any other standard would also work fine. The main selection criteria is that the drift standard is somewhat similar in isotopic composition as samples to further minimize any impact of memory on the drift standard measurements so that any 'signal' we observe is due to instrument drift.

Your comments on sample ordering are interesting, but I think I'll need to dwell on them a bit to give a proper response. Very briefly, even doing a 1-injection sequence would 'compromise' the vials such that additional vials would need preparing. Some considerations (larger vials with more water in them) could be made, but that would involve additional pros/cons. I'm also not quite sure how time would be saved from ordering sample vials isotopically - do you mean that we could get away with doing less than 6 injections? If so, we would need to consider the actual sample-to-sample isotope differences and come up with thresholds of differences that justify 3, 4, 5, 6, etc. injections... but varying injection number on the fly is quite limited by the autosampler software.

