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Discussions

Interactive comment on "Effects of variation in background mixing ratios of N$_2$, O$_2$, and Ar on the measurement of δ^{18}O-H$_2$O and δ^2H-H$_2$O values by cavity ring-down spectroscopy" *by* Jennifer E. Johnson and Chris W. Rella

Anonymous Referee #2

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This paper describes an interesting test of the ability of a particular make of cavity-ring down spectrometer (the L2120-i by Picarro, Inc.) to accurately assess the concentration of isotopic species of water in the presence of backgrounds of molecular nitrogen and oxygen and of atomic argon. The authors describe a series of carefully controlled measurements that reveal subtle deviations of the true isotopic content from that reported by the spectrometer as a consequence of changing the concentration and composition of background gases. An empirical model is proposed and used to assess the sensitivity of the deviations to various powers of the water mixing ratio, as well as to

mixing ratio of the background gases. The model is believable and reveals a great deal about the trends of the deviations.

Papers such as these are important both to provide a critical assessment of the capability of an instrument to make research-grade measurements, and to establish a methodology for the assessment. Since the paper is very clearly written and logically organized, it achieves these objectives. Through multiple readings I have found nothing in either the text or in the figures that requires change. I expect that the community will find this document useful, and recommend that it be published in its current form.