Subject: Re:
Date: Tuesday, September 13, 2022 at 8:18:20 PM Eastern Daylight Time
From: Brandon, Mark
To: Lucas Fennell
CC: michael.hren@uconn.edu
Attachments: image001.png

Lucas,
I made changes to the text to reflect your comments below. I left row #45 as is given that was the way it was used in OPI. We can add corrections after the first zenodo submission.
Thanks once again.
Best,
Mark

From: Lucas Fennell <lucasfennell90@gmail.com>
Date: Tuesday, September 13, 2022 at 4:17 PM
To: Mark Brandon <mark.brandon@yale.edu>
Cc: Michael Hren <michael.hren@uconn.edu>
Subject: Re:

Mark,

I'm glad my reply was helpful. It was also good for me to go back and revise what I did 3 years ago. The only remaining issue I see in the text you sent is the amount of local precipitation samples, which you state is 49. I just checked the spreadsheet and yes, **of the 651 rows, 49 of them are labeled with L**. However, one of them (row 45) was sampled directly from ice of a glacier, which I labeled as L, but I now think I should have either labeled it as C, or excluded it from the spreadsheet (note that I never included snow and lake/pond samples). Personally, I would leave it as it is, or now label it as C and change the flag from %rep to %glac.

From the other **48, 9 are averages and 39 are weighted means** from a particular amount of samples. **27 of these samples were compiled from published works and 12 come from the GNIP site**. However, 3 of the ones from the GNIP sites are %low d, 5 are from sites located %too far east, and the other 4 are flagged as %no prec given that they are a long term weighted mean from less than 20 samples, showing high dispersion. These were consistently flagged as outliers by OPI, so we decided to exclude them since they were probably biased by seasonality. **Of the 27 weighted means compiled from published works, only 3 of them are from more than 20 individual samples:** Mendoza, Santiago and Chillan. Although these 3 are reported in papers, all of them are based on GNIP data not released on the website yet.

Therefore, **from the 49 rows labeled as L, OPI only used 3 of them for calculations**, since precipitation samples only reflect individual events, and we need year-round and statistically robust weighted means for them to be comparable with our catchment samples.

I hope this helps.
Best,
Lucas

El mar, 13 sept 2022 a las 16:08, Brandon, Mark (<mark.brandon@yale.edu>) escribió:

> Lucas,
> Your detailed reply was VERY helpful. I have substituted my version of the excel spreadsheet with your edited version. In addition, I have adopted your approach for describing the data. The relevant revised text follows below. Let me know if there are any remaining problems.
> Best,
> Mark
>
> **This study**
> The analysis reported here is designed to support an investigation of the Cenozoic evolution of topography in Argentina at the latitude of 35.5 S (Fennell et al., 2022). The Fennell et al. study is based on a detailed stratigraphic record (55 to 10 Ma) of the hydrogen isotopic composition, δ^2H, of ancient precipitation, as recorded in samples of hydrated volcanic glass collected near Malargüe, Argentina. The hydration of volcanic glass is estimated to occur over a time scale of 1 to 10 ka, so our analysis should be focused on estimating the time-averaged spatial distribution of precipitation isotopes.
>
> Our analysis is based on a compilation of isotopic analyses of modern meteoric water from a 365 x 575 km area surrounding Malargüe. These data are made available here in an Excel spreadsheet, entitled "Mendoza area water isotopes (32-38S) 10 Sep 2019.xlsx".
>
> The compilation contains isotope analyses for 589 unique locations, of which 83 are new, and 506 are from the published literature (references for the published data are given in the section below, entitled "References for Water Isotope Data"). Our compilation is focused on samples that are representative of the long-term average of precipitation isotopes in the vicinity of the sample location. We distinguish between "local" samples, where precipitation was collected at a single point, and "catchment" samples, where water samples were collected from rivers. There are 49 local samples of precipitation. The isotope analyses for these data are reported as a time series of monthly samples, which we reduce to precipitation-weighted averages.
>
> Most of the remaining samples are from rivers, and thus are catchment samples. For these, we have tried to focus on samples that were collected during base flow (summer months), because base flow in rivers is sourced by discharge of ground water from the subsurface. Natural ground water originates from precipitation that falls within the upslope catchment above the sample location. The residence time of ground water that discharges in small catchments is estimated to be about 1 to 3 years (McGuire and others, 2005), which indicates that the water and its stable isotopes are averaged over many precipitation events.
>
> These data were reduced to a subset of analyses for 197 unique locations. The selection process is described below. Note that the Excel spreadsheet contains details about the decision to select or reject.
>
> ---
>
> **From:** Lucas Fennell <lucasfennell90@gmail.com>
> **Date:** Tuesday, September 13, 2022 at 12:29 PM
> **To:** Mark Brandon <mark.brandon@yale.edu>
> **Cc:** Michael Hren <michael.hren@uconn.edu>
> **Subject:** Re:
>
> Mark,

The numbers are not correct. Remember that when I built this spreadsheet, I did not know it was going to be used in a publication, so it's not very easy to understand in the form you have it, and that may explain the difference between our counts. I'm attaching it again, where the only changes I made were to column A (%), where I completed the reason for flagging (before many of them only had a %, but no explanation), and included the explanation for %no prec and %too far east at the top. Let me clarify the numbers for you so there is no confusion between the submitted spreadsheet, the text and the amount of samples used for OPI calculations.

There are **651 rows with data** in the spreadsheet, but not all of them are real samples, since **62 rows correspond to averages**. This gives us a total of **589 unique water samples, where 83 of them are our new analyses**, as detailed in the lab spreadsheet I gave you and in the Table S1 of the supplementary material I originally submitted. Note that in the spreadsheet you sent me, our analyses are listed from rows 408 to 492, totaling 85 rows. However, one of my analyses (row 421) was done in the exact same spot as Ugan et al. 2012 (row 420), so I averaged them (422). Therefore, when you remove both the row from Ugan and the average, you remain with 83 rows, the ones corresponding to our analyses. Therefore, **from the 589 samples listed, 83 are new samples, and 506 have been compiled from the literature.**

In the Table S1 we originally submitted, we only reported 449 water samples, since I did not include GNIP stations too far east, precipitation weighted means with less than 20 samples and trunks or wells with allochtonous recharge because we did not use them in any of the figures or calculations. However, now that we decided to upload the spreadsheet you used for calculations, we need to change the 449 value I mention in the text. Now that the issue with the data is settled, let's go back to the amount of rows we have on the spreadsheet, and how we end with only 197 samples.

From the 651 rows: 6 of them don't have a location, don't land a catchment, or there is an error with the reported location (%bad loc); 80 are low d (%low d); 4 report anomalously light values for their location (%anomalous); 7 are fed directly from a rock/ice glacier (%glac); 301 are replicates (%rep); 38 are trunks (%trunk); 13 are from precipitation whose weighted mean is based on less than 20 samples showing high dispersion (%no prec); 5 are from gnip stations located too far to the east of our study area (%too far east). The resulting number is 197 samples that fulfil all the criteria and, therefore, can be used for calculations. Of these, only 3 are from precipitation (L), and 194 from baseflow from small catchments (C).

I hope this helps clarify this issue and puts us all in the same page so we can move on.

Best,
Lucas

El mar, 13 sept 2022 a las 11:07, Brandon, Mark (<mark.brandon@yale.edu>) escribió:

> Lucas,
> Thanks once again for the comments about the Malargue zenodo submission.

I went back and did a careful count of the analyses in the Mendoza excel spreadsheet used for the OPI runs.

There are a total of 651 analyses listed in the spreadsheet (finalized in 10 Sept 2019, see attached). This number includes both accepted and rejected analyses, and it does not include those entries that are averages for replicates listed in the spreadsheet (there are only five such averages). à I do not see how you get a total of 538 analyses.

As listed in this spreadsheet, there are 84 new analyses. (Remember that, after our EPSL submission, we are going to update the spreadsheet to deal with changes that occurred after this spreadsheet was finalized in 2019. So I am ignoring those changes for now.)

The OPI runs indicate that 197 of the analyses were used for those calculations.

Let me know if these numbers are correct. Maybe there is a difference between the spreadsheet you are looking at and the one that I am using.
Best,
Mark

From: Lucas Fennell <lucasfennell90@gmail.com>
Date: Monday, September 12, 2022 at 4:59 PM
To: Mark Brandon <mark.brandon@yale.edu>
Cc: Michael Hren <michael.hren@uconn.edu>
Subject: Re:

Find attached the word document with my comments.

El lun, 12 sept 2022 a las 12:33, Lucas Fennell (<lucasfennell90@gmail.com>) escribió:

> Sounds great, will do as soon as I get to my office, and I'll send it back at the end of the day.
>
> El El lun, 12 sep. 2022 a la(s) 12:18, Brandon, Mark <mark.brandon@yale.edu> escribió:
>
> > Lucas, if you have time I suggest before Mike makes his revisions and finishes his revisions and I suggest that you read through and comment on the Malargue weigh water data Opie summary that I sent you yesterday. That way you'll have a good sense of of where that document stands before you start revising the final paper. Best Mark