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Corrigendum to “Early precipitated micropyrite in microbialites: A capsule of microbial sulfur cycling” by Marin-Carbonne *et al.*, 2022

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Corrigendum

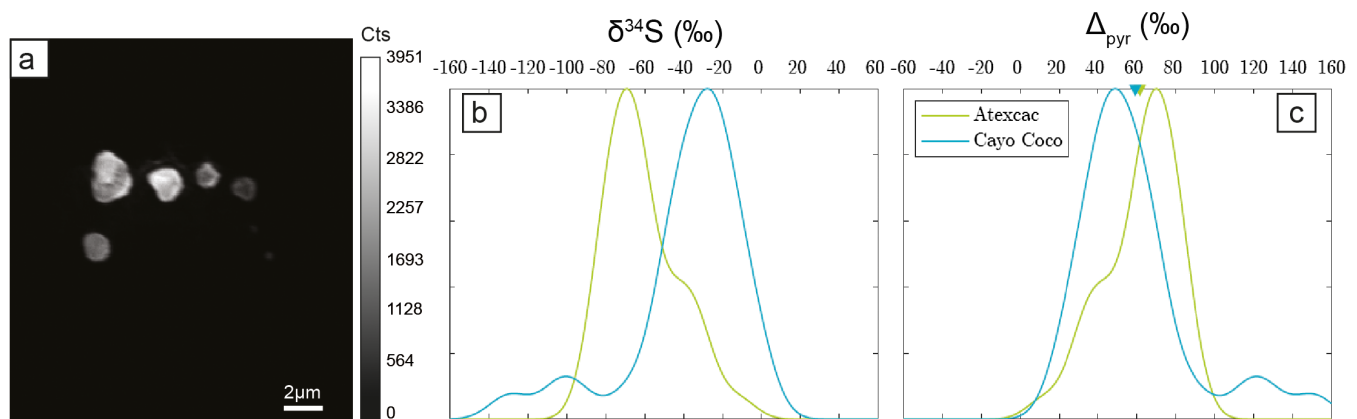
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Correction to the Quasi Simultaneous Arrival effect

After reviewing our work based on the suggestion of a careful reader, we have identified a miscalculation in the correction of the Quasi-Simultaneous Arrival (QSA) effect. This error affected the results presented in the article and was propagated to both the standard and sample data. The error has caused a slight change in the instrumental mass fractionation determination, resulting in a 2 ‰ shift in the corrected data. However, this correction remains negligible as corrected values remain within the error bars of each data. The average Δ_{pyr} values for Lake Atexcac and Cayo Coco Lagoon are 61.4 ± 18.3 ‰ and 59.1 ± 29.6 ‰ respectively, which is consistent with the equilibrium sulfate-sulfide fractionation observed in natural settings with low microbial sulfate reduction respiration rates. However, the data distribution has slightly changed, as shown in the corrected Figure 4.



Corrected Figure 4 (a) NanoSIMS ³²S image of submicrometric pyrites. (b) δ³⁴S probability density function, taking account of the range of uncertainties from 1 ‰ to 8 ‰ of micropyrites from Cayo Coco (blue line) and Atexcac (green line). (c) Δ_{pyr} distribution calculated for both environments, the average values are represented by the triangles.

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We have thoroughly reviewed the revised data and found that the conclusion drawn from the corrected results is consistent with the original article.

Corrections have been made to the “Microbialitic Micropyrrite Preserve Primary Isotopic Microbial Fractionation Signatures” section in the main text and to Figure 4, also the Sulfur Isotope Analyses by NanoSIMS section in the Supplementary Information (methods) and Tables S-4 and S-5. The corrected Figure 4 and text are shown below. The corrected Supplementary Information is also available for download at the online version of the original article.

Microbialitic Micropyrrite Preserve Primary Isotopic Microbial Fractionation Signatures. In the first paragraph on page 11, the following sentence is now corrected to:

“Considering these hugely contrasting isotopic compositions of sulfate, micropyrrites display surprisingly similar Δ_{pyr} values (i.e. $\Delta_{\text{pyr}} = \delta^{34}\text{S}_{\text{SO}_4} - \delta^{34}\text{S}_{\text{pyr}}$) of 61.4 ± 18.3 ‰ and 59.1 ± 29.6 ‰ for Atexcac and Cayo Coco, respectively (Fig. 4).”

Sulfur Isotope Analyses by NanoSIMS (Methods) in the Supplementary Information. In the second paragraph the QSA correcting factor has been corrected:

“Using different aperture slits to produce variations of the secondary ion signal over primary current ratio on the standard, we determined a QSA correcting factor of 0.523 and 0.586 for $^{34}\text{S}/^{32}\text{S}$ ratio for each session consistent with the value of 0.69 previously published (Slodzian *et al.*, 2004; Bontognali *et al.*, 2012; Marin-Carbonne *et al.*, 2018).

The caption to Table S-4 and columns describing $^{34}\text{S}/^{32}\text{S}$ measured, 1σ and the IMF have been corrected, as shown below:

Table S-4 Measured $^{34}\text{S}/^{32}\text{S}$ ratios and $\delta^{34}\text{S}$ values corrected from QSA effect in two different sessions for the Maine and UCLA pyrite standards. Instrumental mass fractionation was 1.0044 in the first session and 1.0140 in the second.

| Standards | $\delta^{34}\text{S}$ true (‰) | $^{34}\text{S}/^{32}\text{S}$ true | $^{34}\text{S}/^{32}\text{S}$ measured | 1σ | IMF |
|---------------------|--------------------------------|------------------------------------|--|----------------------|--------|
| <i>Session MNHN</i> | | | | | |
| UCLA | 1.5 | 0.04423001 | 0.044448 | $7.37 \cdot 10^{-5}$ | 1.0044 |
| MAINE | -20.1 | 0.04327607 | 0.043424 | $7.18 \cdot 10^{-6}$ | |
| <i>Session EPFL</i> | | | | | |
| UCLA | 1.5 | 0.04423001 | 0.04442 | $1.04 \cdot 10^{-4}$ | 1.0140 |
| MAINE | -20.1 | 0.04327607 | 0.44304 | $5.71 \cdot 10^{-5}$ | |

Table S-5 reporting Sulfur isotope compositions of framboidal and micropyrrites has also been corrected and is available for download at the online version of this article. [Download Table S-5 \(xlsx\)](#)

Additional Information



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