General comments:
Dumitru et al. have compiled relevant data from the submerged speleothem archive that can be used to provide valuable relative sea level data for the last interglacial period (130 – 75 ka). They focus on a specific, but loosely defined time window – the last interglacial period- that will see plenty of attention because of the multitude of allied studies for this 'analogue 'for future sea level change. This component of the WALIS database will prove to be extremely useful. Speleothems provide robust constraints on sea level elevation, and phreatic overgrowths on speleothem provide precise sea level index points. The community needs such a framework; one that demands comprehensive documentation (and is sadly incomplete and inconsistent for some datasets – I am guilty myself for some of the gaps, and I have learned a great deal by revisiting the older data tables). Having said that, the database (and data) needs attention. The accompanying text also needs corrections and clarifications (see below).
A: We are grateful for your thorough review and very useful suggestions. Thank you also for catching some of the errors that added confusion into our text; these have now been corrected. Please find below a point-by-point answer to your comments.

I would like to see some indication of the management and governance of this facet/query of the database (i.e. speleothems). Some of this is inherited from WALIS general principles and guidelines, but it would benefit from repetition in brief, within the text. Is this a 'living dataset', and hence first version, or might it be described as an illustration of what might be call a thematic subset of data from the global standardised database WALIS?
A: Thank you for pointing out this missing information. We have now included in the revised manuscript the following text (starting at line 33 and at line 174):

"We refer the readers to the official documentation of the WALIS database at: https://walis-help.readthedocs.io/en/latest/ where the meaning of each field is thoroughly explained. All the data inserted in the manuscript will be available in WALIS v1.0, which will provide a user-friendly interface for quick visualization, extraction and downloading of the data."

For more details on the WALIS structure and data fields, please see the answer provided by Alessio Rovere, the editor who is directly in charge of taking care of this.

On data coverage: Comprehensive, as far as I am aware, for MIS stage 5 in the strictest sense, but it would be worth reflecting on samples that have ages within the time window in title, but outside marine isotope stage 5 and could usefully be included because they help constrain the timing of the last interglacial (see data, for example, from the Bahamas incl. Gascoyne et al, 1984; Richards et al 1994; Smart et al, 1998 – see references).
A: Thank you for suggesting these references we overlooked in the first draft of the database. We fully agree that data older and younger than MIS 5 would help constraining the timing of last interglacial. This is why we initially chose the broadest sense of MIS 5 from 130 to75 ka. We have now further extended this interval from 140 to 70 ka. However, to be in accordance with the time interval targeted by WALIS, our discussion does not include samples of ages outside the range mentioned above. Therefore, for completeness, the database will contain all ages reported in the original publications, but in the discussion of the manuscript we include only those between 140 to 70 ka. An updated version of the database will be uploaded shortly.

A key concern (for authors and database managers, editors) that relates to this database (and SISALv2, Comas-Bru et al., 2020) is the consistency of reporting measured U and Th ratios and terminology with respect to 'corrected ages'. Corrected ages as described in the database attributes are strictly 'initial Th-corrected ages '(using a correction based on a priori estimate of initial Th). 'Corrected ages 'are distinguished from 'recalculated ages', which are based on new information (improved decay constants and or further insight into initial Th). There is also the possibility of 3-d U-Th isochron ages that might require an alternative column (and not require 'correction 'for detrital Th). Please address these differences in the text and consider alternative attributes. It would be worth commenting on the extent to which ages could be recalculated for speleothems, perhaps by referral to the supplementary information at https://essd.copernicus.org/articles/12/2579/2020/essd-12- 2579-2020-supplement.pdf.
A: We thank you for bringing this concern to our attention. To avoid any confusion, we now included in the manuscript the following clarifying text (line 293):

"We emphasize that this database includes the ages as they are reported in the original publications and therefore, it contains two columns: reported ages and corrected ages. The latter one represents the ages to which the original authors applied a correction for detrital Th based on a priori estimation of initial Th. We did not apply any further corrections when compiling this database, so it does not include any "recalculated ages". All data contains the minimum required information (as recommended by Comas-Bru et al., 2020, suppl.) to calculate uncorrected ages, however, not all of them provide the initial $^{230}Th/^{232}Th$ activity ratio to allow the calculation of detritus corrected ages."

Also important – and not covered: Speleothems provide periods of continuous growth and additional chronological information beyond the U-Th ages alone. To accurately constrain sea levels, one needs to know the growth rate, sample mid-point etc to define start and cessation of growth. This is a challenge to accommodate in the database, but ought to be considered or at least discussed in relation to the age-model work in SISALv2 etc.
A: We agree with the reviewer's point that speleothems offer much more than just the U-Th chronology, but for SVS, even if the periods of continuous growth (and rate of growth) are precisely documented, we cannot really tell where exactly the position of sea level was with respect to the speleothem. Nevertheless, acknowledging the importance of the reviewer's point, we added the following text in the revised manuscript (lines 137-145):

"The age of growth initiation and cessation is dependent on sample position and growth rate. A highly resolved U-Th chronology defines the degree of continuous growth and a high-quality petrographic examination of the sample would support that. These ages can be used to calculate the growth rate, allowing to better define the onset and cessation of deposition for either POS or SVS samples. This information bears significance since one can use the growth rate to project the onset of a hiatus, which in coastal caves provides evidence for when sea level emerged above that particular speleothem elevation. To provide robust chronologies with temporal uncertainties, we refer the readers to the workflow to treat records with hiatuses developed by Comas-Bru et al (2020)."

**Please reinforce statements seen elsewhere in speleothem review articles related to the safety risks of sample collection in such settings and also encourage the adherence to principles of conservation and preservation of these caves. Returning to samples sites should be discouraged if sufficient material and appropriate documentation has been archived by the original authors. **
A: Thank you for noting this important aspect that has been overlooked. We fully agree that this concern should be explicitly stated in the manuscript. We now included the following information in the revised manuscript (lines 245-252):

"The caves have unique scientific, recreational, and scenic value; hence, speleothems sampling strategies must be selective and reconcile cave conservation with the scientific goal (Baeza et al., 2018). For this reason, we emphasize that the utmost effort should be made to minimize the future impacts of sampling by following the conservation and preservation guidelines. We strongly encourage that great care must be paid to more sustainable sampling strategies and, if sufficient material and appropriate documentation has been archived by the original authors, making them available for future researchers is desirable. Similarly, we recommend to preferentially sample already broken speleothems whenever the original location can be established, as suggested by Frappier (2008). Another sustainable sampling strategy is coring the central part of speleothems rather than collecting the entire specimen and patching the drill holes (Spötl & Mattey, 2012)."

Details:
Abstract. Line13 on. Cave deposits include much more than the POS and SVS presented here, one can get beach deposits and corals within caves that provide sea level information. Declare focus on secondary carbonate precipitates, or speleothems. Best to be more specific.. many cave deposits are not suitable for U-series dating. There are examples of cave sediments having been dated by OSL.
A: We changed the text to: "Two main categories of secondary carbonate precipitates in the caves…"

Cave deposits can provide archives of valuable information, alternative to 'powerful archives'.
A: We updated the text accordingly.

Line 16. POS on pre-existing vadose supports.. but what of walls?
A: We adjusted the text to: "…precipitate on preexisting supports (vadose speleothems or cave walls)".

Title and elsewhere – explain the terms sensu stricto, lato (strictest sense, broadest sense) – not commonly used. And perhaps refer to alternative texts that define the last interglacial (marine isotope stage 5 or 5a-e or 5.1-5.5 etc)
A: We have now explained in the abstract: "Here we describe a compilation that summarizes the current knowledge of the complete last interglacial (in its broadest sense - sensu lato - also known as marine isotope stage (MIS) 5) sea level captured by speleothems". We also added in the Introduction: "Understanding sea-level changes during the last interglacial period (MIS 5e; in its strictest sense - sensu stricto - from 130–116 ky)."

Line 24. Focussed on MIS 5e, but also data that have the potential to constrain sea level fluctuations during the longer duration MIS 5. Not just 5a and 5c, because speleothems assist with constraining low stands also (e.g. 5b and 5d).
A: Included now in the text.

Line 26 use U, Th isotopes used to generate U-Th ages
A: This has been replaced in the manuscript.

Line 28. Why 'more importantly'? And (i) and (ii) need rewording.. One would expect abstract to address the 'living database 'aspects.. unless you think this is a given because of the journal demands.
A: We rephrased the text which now reads: "Furthermore, the paper emphasizes the usefulness of these indicators not only to render information regarding the eustatic sea level, but also for their contribution to refine the glacial isostatic adjustments models and to constrain regional tectonic uplift rates". We also included in the abstract the following: "We refer the readers to the official documentation of the WALIS database at: https://walis-help.readthedocs.io/en/latest/, where the meaning of each field is explained in detail".

__ Section 1.
Line 38.. Expand on the 'samples and samples sites ..are better preserved'. I presume you mean that the context has been preserved and hence interpretation easier. Line 38 'sea level evolution ' –choose alternative.. and do you mean relative sea level
A: We only meant to say that the records that formed during the MIS 5e are better preserved than those from older interglacial periods. For clarity, we rephrased to:" Sea level indicators that formed during MIS 5e are often better preserved compared to those formed in earlier interglacial periods and thus, the relative sea level during this time interval is especially informative".

Line 40 'Yet to date . . .. are being debated 'reword.
A: We rephrased to: "However, significant uncertainties regarding the precise timing, duration, and amplitude of MIS 5e sea level remain".

Line 46. There are many potential references, examples so use e.g Thompson et al., 2011.. etc. and consider Chutchavaran and Dutton (ESSD, this volume)
A: We cited in the updated manuscript: Hibbert et al. (2016), Chutcharavan and Dutton (2021) as examples for corals used as sea level indicators and Antonioli et al. (2015), Bini et al. (2014)) for studies using tidal notches.

Line 50 use 'providing 'rather than 'suggesting 'maximum elevations
A: Replaced.

Line 55 include S+M 1972.. and maybe Dill, R.F., 1977, The blue holes, geologically significant submerged sinkholes and caves off British Honduras and Andros, Bahama Islands: 3rd International Coral Reef Symposium, Proceedings, v. 2, p. 237–242. It was recognised 50 years ago that such deposits would be useful see Benjamin (1970) in National Geographic

A: Based on your recommendation, we included the papers of Benjamin (1970) and Spalding and Mathews (1972).

Line 82. Age of carbonate material below hiatus is a _maximum_ age for timing of submergence (assuming no post-depositional alteration of exposed surfaces)
A: Thank you for bringing this typo to our attention; we have changed to (line 115): "Dating the carbonate layer immediately above each of these hiatuses provides a minimum estimate of when the cave became air-filled again constraining the minimum age for the sea-level fall. The carbonate layer below a hiatus indicates the maximum age, assuming no post-depositional alteration of the exposed surfaces, for when this location in the cave was air-filled and the sea level was clearly below the speleothem elevation."

Line 83. Avoid the 'dipstick 'analogy.. dipsticks indicate level, not binary status.
A: We agree, we deleted this analogy and we rephrased to: "Hence, they stop growing when sea levels are above their elevation and deposition commences when sea level falls below them".

Line 84.. choose alternative to roughly.. constraints are robust and accurate (elevation), but there may be lag between the constraint and changing water levels.
A: This has been changed in the text.

Line 87 on. Use the term minimum estimate. I would challenge that initiation of growth can be rapid after emerence, but difficult to predict. The likelihood/duration of lagged response has yet to be established. Rough estimate is overstating things. Another advantage, not mentioned in the work is that further growth over the earliest calcite, post emergence, is 'protected 'by subsequent growth. This is not the case for ages prior to hiatuses, which are susceptible to diagenetic alteration.
A: We adjusted the text accordingly and we also included: "It is worth noting that the earliest layers deposited above the hiatuses are protected by further carbonate precipitation, whereas those below the hiatuses are susceptible to diagenetic alteration or even dissolution."

Line 94.. they do not document the "moment".. they can constrain the maximum and minimum age of sea level change at this depth.
A: Agree, we have changed the text to: "Hence, while these hiatuses can be chronologically well constrained, the vadose speleothems can only provide the maximum and minimum age when a particular part of the cave became flooded or air-filled…".

Line 95. Time will tell.. speleothems have the potential to document the rise and fall of sea levels in stage 5. Maye the that ideal sites have not been identified yet.
A: We agree, vadose speleothems have indeed the potential to provide more accurate results if carefully and comprehensively analyzed.

Line 96. Choose alternative to 'difficult'. The data are unambiguous and easy to interpret, once it is established that they are constraints and NOT sea level index points.

A: We updated the sentence to: "Therefore, the growth of vadose speleothems is a sea-level terrestrial limiting point and thus, its relationship with the sea level position must be interpreted correspondingly."

Fig. 1. A useful figure, but needs refinement. e.g. constraints on sea level in (b).. label vadose calcite and hiatus/biogenic overgrowths. (c).. grey background, poor reproduction and use of T1 to T3 will have reader question why the internal morphology with changing MSL is not illustrated. POS should start earlier than T1 and at lower elevations than illustrated.
A: The reviewer is correct on that POS will begin their growth slightly before T1, however, if the rate of sea-level rise is high, the amount of carbonate encrusting the pre-existing speleothem will be insignificant. Instead, when sea level rise is very slow or remains stable for at least 200-300 years, the POS develop their unique morphology. This is the reason why we showed only a fully developed POS at time T1 (within the tide range) and its subsequent evolution to T3. We addressed your other comments and revised the figure accordingly.

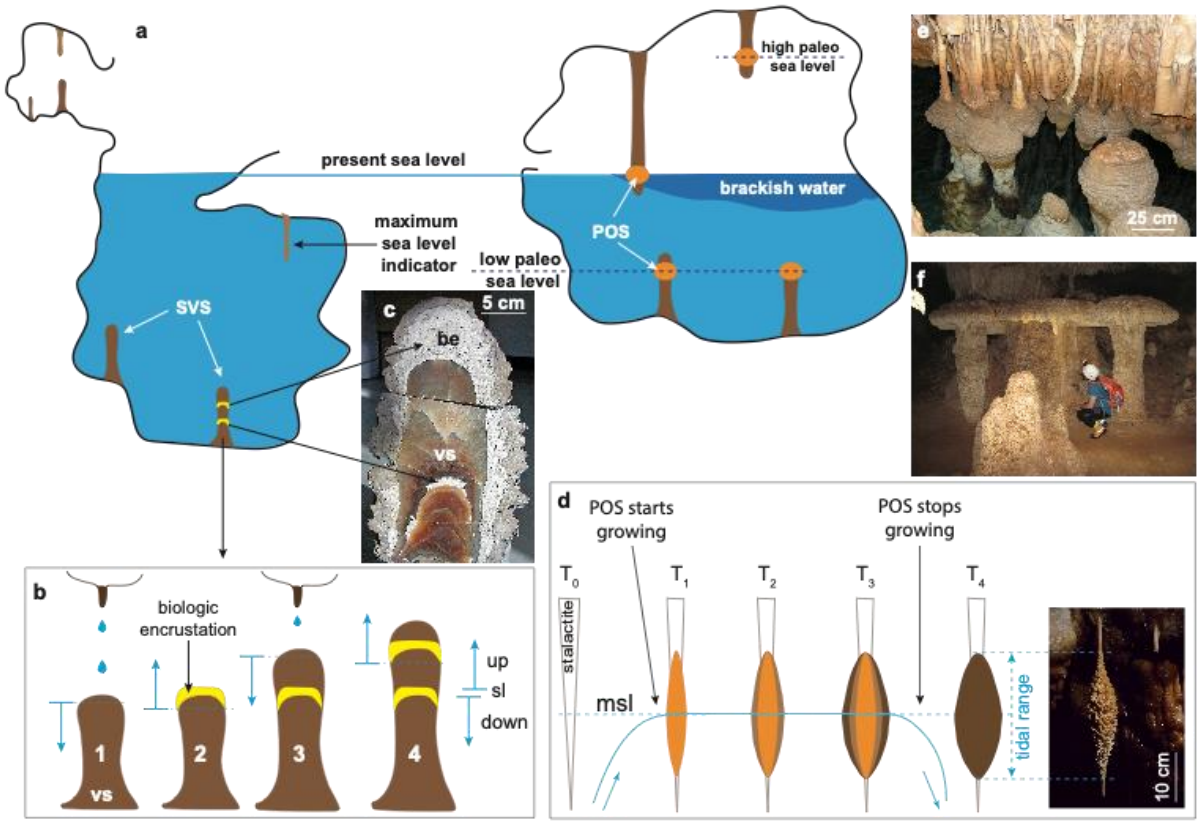


Figure 1 a) Composite diagram showing how SVS (left) and POS (right) in littoral caves act as sea-level indicators. b) Conceptual model showing that: b1) Growth of vadose speleothem (vs) indicates times when sea level (sl) was lower than their elevation; b2) Biologic encrustation (be) suggests sea level higher than the SVS elevation; b3) SVS resumes its deposition when sea level fell below its elevation; b4) Sea-level rise causes the deposition of a second biologic encrustation (growth hiatus). c) SVS from Argentarola Cave (Italy; photo courtesy F. Antonioli). d)

Conceptual model showing how POS form; as long as sea level remains at the same elevation (T1-T3), POS will precipitate within the tidal range and will continue to grow until the sea level drops below the speleothem (T4). e) POS in Cala Varques Cave, Mallorca. f) Mushrooms-shaped POS in Santa Catalina Cave, Cuba (photo courtesy B. P. Onac).

Line 116.. shorten to 'Cave deposits have received little or no attention in prior compilations'.
A: We updated the sentence in question in accordance with your suggestion.

—
Section 2
Line 146 'varying 'quality.. avoid. I'd accept 'variable'.. but you have not discussed criteria thus far. And on this note, it would be worth illustrating the range in RSL data quality (1 to 5, compiler defined) For this section, MIS stage 5 boundaries might be determined by material that falls outside MIS 5 (e.g. Bahamas data in Li et al 1989; Richards et al, 1994; Lundberg and Ford 1994).
A: We adjusted the text accordingly and also included the following information: "All POS records have precisely measured elevation, a narrow indicative range, and a sub-metric RSL uncertainty, hence they are excellent sea level index points. A guide for SVS records' evaluation as terrestrial limiting points can be found in Table 1 of WALIS 'official documentation (https://walis-help.readthedocs.io/en/latest/Relative%20Sea%20Level/).

Table 1. Sites For 'not mentioned '(Moseley et al, 2013) – numerous caves in Quintana Roo, or similar. Additional information on Bahamas samples/sites. Richards et al., 1994. AN samples are from Stargate, Andros; GB samples Sagittarius Cave, Grand Bahama.
A: We updated the table accordingly.

Location	Cave name	Type of cave	Reference
Mallorca	Cova de Cala Varques A	POS	Dorale et al., 2010; Polyak et al., 2018
	Cova de Cala Varques B		Polyak et al., 2018
	Cova del Dimoni		
	Cova de Cala Falcó		
	Cova des Pas de Vallgornera		
	Cova Genovesa		
	Cova de s'Òmix		
	Coves del Pirata		
	Cova des Serral		
	Coves del Drac		
	Cova de sa Tortuga		
Sardinia	Grotta di Nettuno	POS, SVS	Tuccimei et al., 2007
Cuba	Santa Catalina Cave	POS	De Waele et al., 2017; 2018
Bermuda	Government Quarry Cave	SVS	Harmon et al., 1978; 1981
	Bierman Quarry Cave		
	Crystal Cave		
	Wilkinson Quarry Cave		Wainer et al., 2017
Yucatan Peninsula	Ccaves in Quintana Roo	SVS	Moseley et al., 2013
Krk Island, Croatia	U Vode Pit	SVS	Surić et al., 2009
Andros Island, Bahamas	Blue Hole in South Bight	SVS	Gascoyne et al., 1979
	Stargate	SVS	Richards et al., 1994
Grand Bahama, Bahamas	Lucayan Caverns	SVS	Lundberg and Ford, 1994
			Richards et al., 1994
	Sagittarius Cave	SVS	Richards et al., 1994

Line 160. Barometric altimeter (or diver depth gauge) adjusted for density profile, where possible with information about the vertical density profile associated with fresh- water, brackish and saline zones. This is declared in database but referred to in discussed in text.
A: We added the following text at the end of the Elevation measurements and their uncertainties section: "We recommend that the elevations of submerged samples to be corrected for density variation in the water column whenever salinity profiles are available and that the vertical density profile associated with freshwater, brackish, and saline zones to be included with the depth information when using barometric altimeter (or diver depth gauge) in future work."

Line 177. Sample ID – samples may have been referred to in a number of papers. Declare best endeavour to find the first occurrence for sample ID might be useful phrase here.
A: Reviewer's point is valid. We added the following text:

"Since samples once collected may end up having several IDs (collection, dating lab, etc.), it is recommended that whenever included in a database, authors should always use the ID associated with its first description and when the lab ID is different, this should also be added."

Line 180. Reported ID - this might be sample ID or lab code. Database may need expanding to reflect this. For many geochronology laboratories, the analysis has separate codes to that provided by the group responsible for sub-sampling (e.g. Moseley et al 2013).
A: We understand your concern. In order to avoid any confusion and to include all details, our best attempt for cases like Moseley et al. (2013) was to refer to the Reported ID as the Sample ID in the paper but including the lab code as well. To clarify this for our readers we added in the manuscript the following sentence:

"Finally, the Reported ID is the published sample identifier or Laboratory ID offered by the authors in the original paper. Since samples once collected may end up having several IDs (collection, dating lab, etc.), it is recommended that whenever included in a database, authors should always use the ID associated with its first description and when the lab ID is different, this should also be added. We note that for samples that have different Laboratory ID than the Sample identifier, i.e., Moseley et al. (2013), both are included in our Reported ID."

Line 192. Please allow for possibility of using broken speleothems where possible, to preserve the aesthetic quality of caves. For many cases, the original location of a broken sample can be established.
A: We addressed this point above in your "General comments" section.

Line 194. Mineralogy does not affect the reliability.. it may dictate the susceptibility to alteration, but equally important is the geochemical setting. Low magnesium calcite is a relatively stable form of calcium carbonate in fresh and/or saline water, but mixing zone corrosion can cause serious dissolution. Encourage use of petrographic investigation. Also, marine borings, encrustations etc can dramatically alter the isotopic signal
A: In response to your comment, we revised the first part of this paragraph that now reads (lines 255-266):

"The geochemical setting and sample mineralogy may dictate the susceptibility to alteration. For example, samples that show conversion of aragonite to calcite or calcite recrystallization, could have been subjected to uranium loss, which is an important factor that impacts U-Th ages (Lachniet et al., 2012; Bajo et al., 2016). To allow recognition of diagenetic fabrics, XRD screening is desirable for dating purposes (aragonite is preferred vs calcite). In order to make the best selection of samples, we encourage the use of petrographic investigation as well. Thin sections can help to better identify the speleothem layers just below and above the hiatus for dating purpose. Also, they reveal the internal structure and hence, areas affected by recrystallization can be avoided for sampling. However, only some of the studies compiled here report the mineral assemblage of the samples by X-ray diffraction (Surić et al., 2009; De Waele et al., 2017; 2018). De Waele et al. (2018), for example, complemented the screening method with petrographic investigations (thin sections) and imaging using scanning electron microscopy. We do not exclude the possibility that screening was performed in the other publications, but it has been not reported. For future studies, we strongly recommend including information on mineral assemblage, as well as diagenetic and crystalline descriptions."

Line 204 Dutton et al (2017) "is very applicable... for speleothems aswell". It was written to apply to all U-Th geochronology. Please reword.
A: We addressed this point and avoided redundancy.

Line 209 use 'alpha spectrometry', or 'alpha counting'. 'Alpha detector 'is use in database, which is usually reserved for more basic instruments.
A: We used "alpha counting".

Line 211 use measured isotopic 'ratios and concentrations', not 'characteristics'.
A: Replaced.

Line 212. Use 'analyses of well-characterised internationally-recognised standards or certified reference materials are used to demonstrate the reliability of results'.
A: This information has been now included in the text.

Line 213 'reduced 'age uncertainties – not 'lowered'
A: This has been replaced in the revised manuscript.

Line 214 delete 'progressively'
A: Deleted.

Line 217 insert 'reported alpha spectrometry . . .or TIMS _results_'
A: Inserted.

Line 220 insert used: initial ratios and the decay constants used
A: Inserted.

Line 221 delete the effect of detrital thorium concentration. NB it is not only detrital Th one needs to consider, but also what some would call hydrogenous Th. Use of a threshold value of 300 (Helstrom, 2006) for 230Th/232Th is arbitrary and depends on the ratio used for initial Th.
A: Reviewer #2 raised the concern that detrital correction in speleothem dating is critical and suggested that we should include the different procedures used by laboratories to apply this correction. We tried to address both reviewers' suggestions on this point and the text now reads as follows (lines 285-295):

"The correction for the initial non-radiogenic sources (i.e., hydrogenous, colloidal, and carbonate or other detrital components; Richards et al., 2012) of ^{230}Th incorporated at the time of speleothem deposition is extremely important for age calculation and is sensitive for samples that contain very little uranium or an abundance of detrital thorium. The $^{230}Th/^{232}Th$ activity ratio of 0.825 with an arbitrarily assigned uncertainty of 50% found in the mean bulk Earth or upper continental crustal has been commonly assumed for initial ^{230}Th corrections. However, several studies have shown that this value may not cover all situations. Therefore, laboratories apply different corrections for the non-radiogenic detrital ^{230}Th fraction through either direct measurement of sediments associated with speleothems (Hoffmann et al., 2018) or computed isochron methods and stratigraphical constraints (Hellstrom, 2006; Richards et al., 2012). Most POS included in this database fulfill the criterion suggested by Hellstrom (2006) that samples with ratios of $^{230}Th/^{232}Th$ higher than 300 are considered clean, with very few samples having lower values (Tuccimei et al., 2007). However, the use of this threshold value is arbitrary and depends on the ratio used for initial Th."

Line 230 on. This text needs to be improved. I think it is fair to accept that if ages are not presented as BP (or AD1950) or yr b2k, you can assume that dates are calculated with respect to date of analysis.
A: We updated the sentence in question in accordance with your suggestion.

Line 232 declare ±100 years (2 sigma) for age uncertainties for material of last interglacial age and add typical U concentration and declare insignificant 230Th initial
A: However, with the improvements made using MC-ICP MS (Cheng et al., 2013), ages on good quality samples (i.e., aragonite mineralogy, high U content, insignificant ^{230}Th correction) of last interglacial are now possible to uncertainties of ± 100 years (2σ), making how the age is reported more important (i.e., BP)."

3. Discussions
Line 236. correlated to the _same_ (insert?)
A: We completed this sentence which now reads: "The elevation of a sea-level indicator is not always coincident with the position of relative sea level (RSL) at the time of its formation, but rather is correlated to it by a quantifiable relationship."

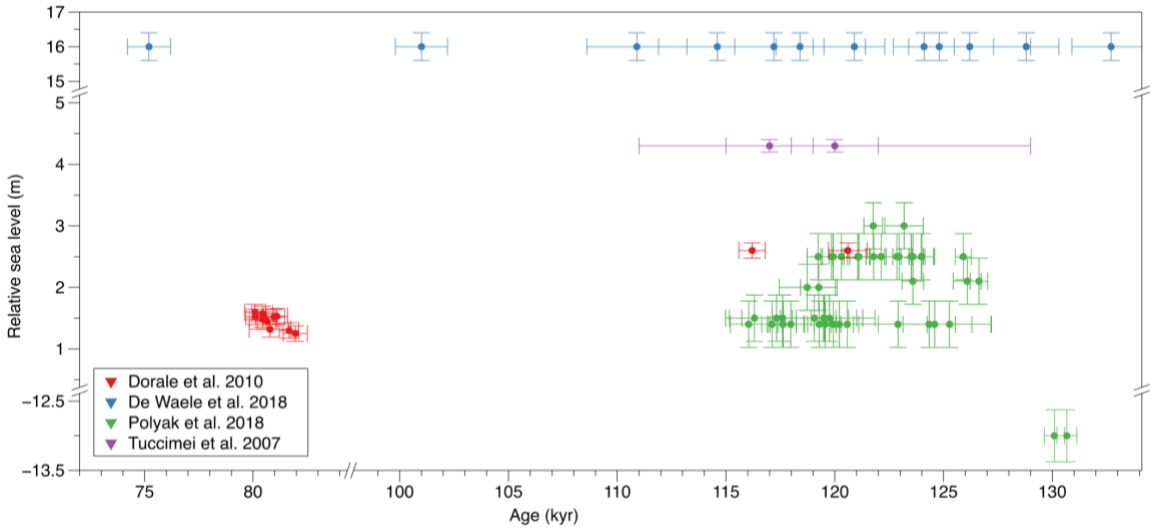
Line 250 replace 'clear 'with 'unambiguous'
A: Replaced.

Line 255 delete 'absolute', also declare early in text that all age uncertainties are quoted at 2 sigma.

A: Done. We also replaced "errors" with "uncertainties". We added at the end of Section 2.6: "Except for Gascoyne et al. (1984, 1979) in which uncertainties are reported as 1σ, Harmon et al. (1978) as standard error, and not mentioned in Harmon et al. (1981), all ages are reported with 2σ absolute uncertainties. As Dutton et al. (2017) suggested, we strongly recommend the use of the term "uncertainty" which is more appropriate to use in this context than the term error."

Figure 3. You declare all ages are corrected for detrital Th. Begs the question – in original paper?, using updated decay constants? Please add more information.
A: We agree that further explanation is needed here. We updated the figure and its caption which now reads:

"Paleo RSL position recorded by POS. Except for Tuccimei et al. (2007), all U-Th ages are corrected for detrital Th as per the original publications. No other further corrections have been applied."



Line 281. Calcite growth above and below (or before and after) a growth hiatus (not bottom and top).
A: Replaced.

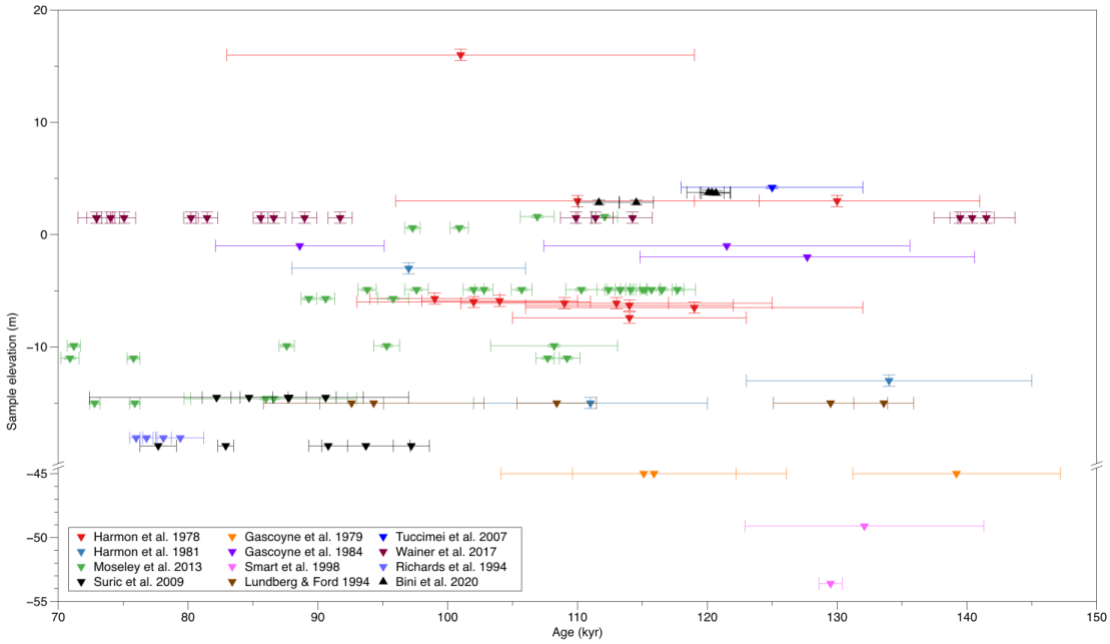
Line 283. Again, avoid use of 'roughly'
A: Done.

Line 288 from not form; deciphering the timing of stillstands – if that is what you mean
A: Yes, thank you for these corrections.

Line 290.. be consistent you use mapsl elsewhere and m here. Is there a difference?
A: No, there is no difference. We adjusted the text accordingly.

Para L300 on. Andros – in addition to the data for Gascoyne et al (1979), there are data in Gascoyne (1984), Richards et al (1994), Smart et al (1998) - see references above. Mostly alpha-spectrometric or TIMS U-Th ages.
A: We included these references in the database and the ages that are within the interval targeted here are discussed in the text.

Figure 4 does not include dates from Andros (Gascoyne, 1984; Richards et al 1994) or Grand Bahama (Richards et al, 1994; Smart et al, 1998). Not necessary, but there is a suggestion that data relating to MIS 5 in broadest sense is included. Also.. plotting U-Th ages alone only goes so far. The duration of continuous growth is required (see earlier comment). This figure does not illustrate this. It is not necessary, but the point needs to be made that these are ages only and _not_ growth periods. Awkward placement of legend, it distracts from the data.
A: As suggested, we updated Figure 4. We extended the age range from 150-70 ka and we included dates from the indicated references that overlap with this time interval. The figure caption now reads: "Figure 4. SVS (terrestrial limiting points) sample elevations and their U-series ages indicating RSL below (down-pointing triangles) or above (up-pointing triangles) them. Note that these are ages only and not growth periods. None of the data are corrected for GIA or long-term deformation."



It was not clear to us if you suggested to add horizontal bars to highlight the growth periods of some of the speleothems instead of their ages only. If this is your request, we can update the figure in the revised manuscript.

Line 365. The Bahama archipelago (includes the Bahamas and Turks and Caicos).
It is worth noting the work conducted by the Miami group to assess the subsidence of the Bahamas, in part because of loading through periodic carbonate production on the platform. e.g. McNeil, D.F.; Ginsburg, R.N.; Chang, S.-B.R., and Kirshvink, J.L., 1988. Magnetostratigraphic dating of shallow water carbonates from San Salvador, Bahamas. Geology, 16(1), 8–12.

A: Thank you for your suggestion. We cited instead a more recent paper of McNeil (2005) and we included in the manuscript (line 454):
"In addition to the GIA corrections, the long-term subsidence of the platform needs to be also considered when assessing the LIG sea-level record. Subsurface drill core data from shallow water stacked facies indicate that the Bahamas is subsiding at rates of several meters per 100 kyr (McNeill, 2005)."

In addition.. it would be worth acknowledging the additional constraints on sea levels that are provided by the flank-margin caves that host such speleothem deposits in some places. Perhaps at the same time as notches are mentioned (e.g. papers by Mylroie et al., 2020; Carew and Mylroie, 1990; Mylroie and Carew, 1995).
A: We thank you for suggesting these additional references. We included flank margin caves as LIG sea level indicators in the introduction and the text has been updated to: "Other indicators such as erosional notches (Bini et al., 2014; Antonioli et al., 2015;) or flank margin caves (Carew and Mylroie, 1990; Mylroie et al., 2020) pinpoint sea level, but lack tight age control."

From journal guidelines: Ma and Myr (also Ga, ka; Gyr, kyr): "Ma" stands for "mega- annum" and literally means millions of years ago, thus referring to a specific time/date in the past as measured from now. In contrast, "Myr" stands for millions of years and is used in reference to duration (CSE, p. 398; North American commission on stratigraphic nomenclature).
A: We updated the text accordingly.

The data compilation/spreadsheet (speleothems - last interglacial from WALIS):
It would be useful to refer to the site https://walis-help.readthedocs.io/en/latest/ (or acceptable zenodo URL) earlier in body of text. A lot of critical relevant material can be found here.
File name needs to be more specific with date, perhaps? Or is this the standard file name for a query download? I note that other database compilations have name of first author compiler and version/ date.
A: We agree with your suggestion and have now referred the readers to the official documentation of the WALIS database. Also, thank you for suggesting a more specific name for the file. We will upload a new version of the database and will update the file name as well.

Tuccimei et al. URL link is broken
A: The link was updated and now opens the file on the journal's page at: http://www.museucienciesnaturals.org/userFiles/File/Publicaciones/articles_cientifics/08tuccimei_cuerda.pdf

For data on vertical movements – what qualifies here? Needs guidance.
A: This section includes vertical land movement due to tectonics. Data should be compiled only if independent vertical land motions are available for the site (https://walis-help.readthedocs.io/en/latest/RSL_data.html).

Please comment on the "Quality of age information", or signpost where this information can be found for speleothems in particular.
A: Following your recommendation, we refer the reader to evaluation guide on the Age information quality and included in the manuscript the following text:

"We refer the reader to the guide on the evaluation of the ages' quality which can be found in WALIS' official documentation at: https://walis-help.readthedocs.io/en/latest/RSL_data.html.

A component that needs to be considered is the definition of continuous growth. The age of growth initiation and cessation is dependent on sample position and growth rate. This caveat needs to be included in the paper. Would the database be expanded to include such information?
A: We acknowledge the importance of this caveat and addressed the concern related to the continuous growth earlier in our response above. We included this caveat in the revised manuscript (lines 137-145). We agree that this would be a useful addition to the database.

Reported age – please define (is this uncorrected for initial 230Th, for example). And what does corrected reported age mean? There is information at the WALIS website, but this should be included in the text for this paper.
A: This concern has been addressed earlier in the General comments section.

Please reflect on the reporting of symmetrical U-Th age uncertainties for last interglacial ages. delta234U (declare that these are per mil values).
A: For consistency with the format of WALIS database we report all U-Th ages with symmetrical uncertainties. To do so we calculated an average of the asymmetrical uncertainties given by Wainer et al. (2017). This is noted in the "Comments on the age determination" column: "The original authors report $^{232}Th/^{230}Th$ values but for consistency we calculated and included them in the database as $^{230}Th/^{232}Th$. Also, the authors report asymmetric uncertainties for the ages and for the initial $^{234}U/^{238}U$, however, we show here an average of those values and refer those interested in the asymmetric values to the Suppl. Table 1 of the original paper".
We also added in the per mil measure unit in columns CH and CI.

There is an assumption that [U] = [238U].. e.g Dorale et al (2010) quote [U] ppm, but spreadsheet is [238U]*. Please comment. *Only 0.73% difference, but outside uncertainty of typical measurement.
A: We checked with the authors and they confirmed that they measured ^{238}U.

In database.. please distinguish between activity ratios and abundance ratios. Generally OK, but see heading for 230Th/232Th.. this is activity ratio.
A: We assume that you may be referring to the column of $^{230}Th/^{232}Th$ initial which indeed was not mentioned that it was activity ratio – we have now updated the column head to [$^{230}Th/^{232}Th$ initial]ACT.

Report latitude and longitude to full precision declared in paper ie. 87.00 rather than 87 to avoid confusion (see Moseley et al, 2013).
A: This has been updated in the database spreadsheet. We would like to note that the coordinates are converted to decimal degrees to be consistent with the entire WALIS database.

Explain the difference between coordinates and reported coordinates (latter not complete, see Cova del Dimoni, Mallorca).
A: To clarify this, we added in the revised manuscript: "Except for the SVS from Yucatan Peninsula reported by Moseley et al. (2013) and from Bermuda (Wainer et al., 2017), studies do

not report the exact cave location from where samples were collected. Hence, the latitude and longitude for these indicators were determined using Google Earth to match locations from publication maps and noted accordingly."

We also clarified this difference by adding a note in the "Comments on geographic coordinates" column of the database spreadsheet, which reads: "estimated using Google Earth" for all the coordinates that have not been reported by the authors.

Additional references referred to in text above

Mylroie, J.E. and Carew, J.L. (1990) The flank margin model for dissolution cave development in carbonate platforms. Earth Surface Processes and Landforms, 15(5), 413–424.
Carew, J.L. and Mylroie, J.E. (1995). Quaternary tectonic stability of the Bahamian Archipelago: Evidence from fossil coral reefs and flank margin caves. Quaternary Science Reviews, 14(2), 144–153.
Mylroie, J, Lace, M., Albury, N and Mylroie, J. (2020) Flank Margin Caves and the Position of Mid- to Late Pleistocene Sea Level in the Bahamas. Journal of Coastal Research, 36(2), 249-260.
Gascoyne M. (1984) Uranium-series ages of speleothems from Bahamian blue holes and their significance. Cave Science, 11(1) 45-49.
Smart PL, Richards DA, Edwards RL. (1998) Uranium-series ages of speleothems from South Andros, Bahamas: Implications for Quaternary sea-level history and palaeocli- mate. Cave and Karst Science 25(2), 67-74.

A: We included all these references in the manuscript as well as all the others referred to in the text above.

We would like to add that based on Rev. no 2 and your recommendations, we consider including in the manuscript the following section with the necessary information that we strongly encourage researchers publishing new sea-level studies based on speleothems to report.

"To build a more valuable dataset that will have more longevity and use within the discipline, we strongly encourage researchers publishing new sea-level studies based on speleothems to include the following information:

- *Sea-level indicator and its relationship to sea level: i) site location (latitude and longitude of the cave); ii) the elevation of the sea-level indicator, the instrument type used and its precision, and the error associated with the elevation measurement (when using barometric altimeter or diver depth gauge for submerged samples, the elevations should be adjusted for density profile); iii) the sea level datum to which the elevations are referred and how the indicative meaning has been quantified.*
- *Screening results: XRD, petrography, and polarizing/scanning electron imaging, including information on mineral assemblage, as well as diagenetic and crystallization descriptions (e.g., fabric).*
- *U-series data: In order to collectively improve the utility of U-series data we encourage researchers publishing new sea-level studies based on speleothems to follow the recommendations suggested by Dutton et al. (2017) in reporting their data. These authors specify the required data to enable calculation and, if needed, re-calculation of the same ages using different parameters and also, to facilitate the interpretation in the*

context of other studies. The checklist of minimum data to report includes: uncertainties for all parameters, state whether uncertainties on ages include decay constant uncertainties; Names, descriptions, and reference values of reference materials; Decay constants; Isotopes in spike and method of spike calibration; Method of calibration for all activity or atom ratios reported; Activity or atom ratios for $^{230}Th/^{238}U$ (or $^{230}Th/^{234}U$) and $^{234}U/^{238}U$; $^{230}Th/^{232}Th$ activity or atom ratio; Details of procedures and values used to interpret ages using isochrons or other models; Date of analysis or reference age (e.g., BP, b2k, etc.). These recommendations will increase the usefulness of this type of analytical results in the U-series geochronology community (Dutton et al., 2017). We also recommend reporting continuous growth rate which allows to better define the onset and cessation of deposition for either POS or SVS samples."