

SISAL version 2.0: updates since SISAL version 1b

This document describes all changes made to the SISALv1b (Comas-Bru et al., 2019) database to produce SISALv2 (Comas-Bru et al., 2020).

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References:

Atsawawaranunt, K., Harrison, S., Comas-Bru, L.: SISAL (Speleothem Isotopes Synthesis and AnaLysis Working Group) database Version 1.0. University of Reading. Dataset.

<http://dx.doi.org/10.17864/1947.147>, 2018a.

Atsawawaranunt, K., Comas-Bru, L., Amirnezhad Mozhdghi, S., Deininger, M., Harrison, S. P., Baker, A., Boyd, M., Kaushal, N., Ahmad, S. M., Ait Brahim, Y., Arienzo, M., Bajo, P., Braun, K., Burstyn, Y., Chawchai, S., Duan, W., Hatvani, I. G., Hu, J., Kern, Z., Labuhn, I., Lachniet, M., Lechleitner, F. A., Lorrey, A., Pérez-Mejías, C., Pickering, R., Scropton, N. and SISAL Working Group Members: The SISAL database: a global resource to document oxygen and carbon isotope records from speleothems, *Earth Syst. Sci. Data*, 10(3), 1687–1713,

<http://dx.doi.org/10.5194/essd-10-1687-2018>, 2018b.

Atsawawaranunt, K., Harrison, S., Comas-Bru, L.: SISAL (Speleothem Isotopes Synthesis and AnaLysis Working Group) database Version 1b. University of Reading. Dataset.

<http://dx.doi.org/10.17864/1947.189>, 2019.

Comas-Bru, L., Harrison, S. P., Werner, M., Rehfeld, K., Scropton, N., Veiga-Pires, C., and SISAL working group members: Evaluating model outputs using integrated global speleothem records of climate change since the last glacial, *Clim. Past*, 15, 1557–1579,

<https://doi.org/10.5194/cp-15-1557-2019>, 2019.

Comas-Bru, L., Atsawawaranunt, K., Harrison, S.: SISAL (Speleothem Isotopes Synthesis and AnaLysis Working Group) database Version 2.0. University of Reading. Dataset, 2020.

Comas-Bru et al., Rehfeld K., Roesch C., Amirnezhad-Mozhdghi S., Harrison S.P., Atsawawaranunt K., Ahmad S.M., Ait Brahim Y., Baker A., Bosomworth M., Breitenbach S.F.M., Burstyn Y., Columbu A., Deininger M., Demény A., Dixon B., Fohlmeister J., Hatvani I.G., Hu J., Kaushal N., Kern Z., Labuhn I., Lechleitner F.A., Lorrey A., Martrat B., Novello V.F., Oster J., Pérez-Mejías C., Scholz D., Scropton N., Sinha N., Ward B.M., Warken S., Zhang H., SISAL working group members: SISALv2: A comprehensive speleothem isotope database with multiple age-depth models, *Earth Syst. Sci. Data Discussions*, <https://doi.org/10.5194/essd-2020-39>, 2020.

This list is ordered chronologically, with the most recent changes at the top.

Modify note

- UPDATE `sisalv2`.`notes` SET `notes` = 'Entity POM1 (entity_id=582): Although it contradicts the published age-depth plot, the author stated that the dates at 30.3mm (dating_id=10380) and 298mm (dating_id=10391) were used to construct the original chronology. However, it is suggested to leave these out in age-depth modelling. Isotope precisions have been corrected by the author.' WHERE (`site_id` = '72');

Correct isotope precisions

- Entity_id =582. Run "UPDATE d18O SET d18O_precision = '0.209582654074446' WHERE sample_id = '361842'" and ""UPDATE d13C SET d13C_precision = '0.209582654074446' WHERE sample_id = '361842'"; for all sample_ids in SELECT sample_id FROM entity JOIN sample USING (entity_id) JOIN d18O USING (sample_id) WHERE entity_id = 582;
- Entity_id=588: Run this statement "UPDATE d18O SET d18O_precision = '0.1' WHERE sample_id = '12260';" for all sample_ids in SELECT sample_id FROM entity JOIN sample USING (entity_id) JOIN d18O USING (sample_id) WHERE entity_id = 588;

Delete samples with wrong data:

- DELETE FROM sisalv2.sample WHERE sample_id = 266759;
- DELETE FROM sisalv2.sample WHERE sample_id = 266776;
- DELETE FROM sisalv2.sample WHERE sample_id = 266785;
- DELETE FROM sisalv2.sample WHERE sample_id = 266801;
- DELETE FROM sisalv2.sample WHERE sample_id = 266817;
- DELETE FROM sisalv2.sample WHERE sample_id = 266877;
- DELETE FROM sisalv2.sample WHERE sample_id = 266931;

Update dating table of entity 423

- INSERT INTO `sisalv2`.`dating` (`entity_id`, `date_type`, `depth_dating`) VALUES ('423', 'Event; end of laminations', '25');
- UPDATE `sisalv2`.`dating` SET `date_used` = 'yes', `corr_age` = '-42', `corr_age_uncert_pos` = '0', `corr_age_uncert_neg` = '1' WHERE (`dating_id` = '12264');
- UPDATE `sisalv2`.`dating` SET `date_type` = 'Event; start of laminations' WHERE (`dating_id` = '7536');

Modified notes:

- UPDATE `sisalv2`.`notes` SET `notes` = 'YOKG (entity_id = 210): Chronology was built by counting annual cycles in d13C, anchored to 14C bomb spike. Raw data (isotopes and depths) not provided.' WHERE (`site_id` = '107');
- UPDATE `sisalv2`.`notes` SET `notes` = 'Laminae counting of WY27 (entity_id = 542) and WY33 (entity_id = 543) constrained by 210Pb dating (samples not in db). Raw depths of WY27 (entity_id= 542) and WY33 (entity_id = 543) not provided.' WHERE (`site_id` = '250');
- UPDATE `sisalv2`.`notes` SET `notes` = 'Age-depth model for MOD-22 (entity_id = 179) was recalculated. Laminae data for MOD-27 (entity_id = 631) was based on 14C bomb

peak. MOD-27 (entity_id = 631) is a soda straw and its laminae depths are only given for depths with 14C measurements. Age model for MOD-21 (entity_id = 632) not available from publication. Sisal_chronologies for entity_id=632 were run manually.' WHERE (`site_id` = '86');

Added notes:

- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('96', Boss (entity_id=192), BFM-9 (entity_id=193) and F2 (entity_id=194): Laminae depths only given for those depths where we have corresponding isotopes);
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('131', 'ER76 (entity_id=279): The lower part of the stal is based on a floating lamina-counted chronology that is adjusted to the U-Th data.');

Updated dating table:

- UPDATE `sisalv2`.`dating` SET `decay_constant` = NULL WHERE (`dating_id` = '8058');
- UPDATE `sisalv2`.`dating` SET `decay_constant` = NULL WHERE (`dating_id` = '8210');
- UPDATE `sisalv2`.`dating` SET `decay_constant` = NULL WHERE (`dating_id` = '8211');
- UPDATE `sisalv2`.`dating` SET `decay_constant` = NULL WHERE (`dating_id` = '10924');
- UPDATE `sisalv2`.`dating` SET `decay_constant` = NULL WHERE (`dating_id` = '10935');
- UPDATE `sisalv2`.`dating` SET `decay_constant` = NULL WHERE (`dating_id` = '10951');
- UPDATE `sisalv2`.`dating` SET `decay_constant` = NULL WHERE (`dating_id` = '10959');
- UPDATE `sisalv2`.`entity` SET `depth_ref` = 'from top' WHERE (`entity_id` = '471'); # not a composite and it was "not applicable"

Modified data DOI URL:

- UPDATE `sisalv2`.`entity` SET `data_Doi_URL` = 'https://www.ncdc.noaa.gov/paleo/study/13685' WHERE (`entity_id` = '452');
- UPDATE `sisalv2`.`entity` SET `data_Doi_URL` = 'https://www.ncdc.noaa.gov/paleo/study/13685' WHERE (`entity_id` = '690');

Modified notes:

- UPDATE `sisalv2`.`notes` SET `notes` = 'Entity So-2 (entity_id = 456): There are 26 sets of samples with repeated interp_age (different sample depths).' WHERE (`site_id` = '141');

Modified notes:

- UPDATE `sisalv2`.`notes` SET `notes` = 'The age model of AF12 (entity_id = 152) is taken from Frumkin et al. (1999, Fig 3) and is only approximate. Extraction was done with \"get data\" app. Original depth info unknown. There are inconsistencies between the isotope data in Frumkin et al., 2000 and that in NOAA.' WHERE (`site_id` = '68');
- UPDATE `sisalv2`.`notes` SET `notes` = 'Dating_thickness, lab_num, material_dated, min_weight and max_weight in entity_id 352 and 353 are approximated from standard practices at the GSI lab (i.e. these aren't exact measurements). Entity 353 (2N-HR): Avoid using isotope samples between sample_depths 105.1 and 107.95 mm for studies interested in resolutions lower than 100yrs. The age/depth profile in this section was problematic possibly due to several parallel inter-annual measurements. Original publication for entity_id 352 and 353 does not mention the existence of hiatuses. Soreq-Composite185 (entity_id = 690): First 140kyr from Bar-Matthews et al., 2000 (10.1016/S0009-2541(99)00232-6).

Entities which make the Soreq_Composite185 (entity_id=690) = '1-1','2-6','2Z','2-8','1-4','2N','7-2','1-2','8-4','10-12','11-2','2-10','9','3','1-1','3-35','2-5','MN-5','2-22'. These are not available in SISAL ' WHERE (`site_id` = '160');

Updated data DOI

- UPDATE `sisalv2`.`entity` SET `data_Doi_URL` = 'https://www.ncdc.noaa.gov/paleo/study/23098' WHERE (`entity_id` = '352')
- UPDATE `sisalv2`.`entity` SET `data_Doi_URL` = 'https://www.ncdc.noaa.gov/paleo/study/23099' WHERE (`entity_id` = '353');
- UPDATE `sisalv2`.`entity` SET `data_Doi_URL` = 'https://www.ncdc.noaa.gov/paleo/study/5423' WHERE (`entity_id` = '354');

Modified notes:

- UPDATE `sisalv2`.`notes` SET `notes` = 'Entity So-2 (entity_id = 456): There are 23 pairs of samples with repeated interp_age (different sample depths).' WHERE (`site_id` = '141');

Updated coordinates:

- UPDATE `sisalv2`.`site` SET `latitude` = '66.5500', `longitude` = '13.9200' WHERE (`site_id` = '57');
- UPDATE `sisalv2`.`site` SET `latitude` = '47.0900' WHERE (`site_id` = '58');
- UPDATE `sisalv2`.`site` SET `latitude` = '50.1300', `longitude` = '5.1600' WHERE (`site_id` = '268');

Updated site metadata:

- UPDATE `sisalv2`.`site` SET `rock_age` = 'Jurassic' WHERE (`site_id` = '40');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '58');
- UPDATE `sisalv2`.`site` SET `elevation` = '110' WHERE (`site_id` = '73');
- UPDATE `sisalv2`.`site` SET `elevation` = '1040' WHERE (`site_id` = '121');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '289');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '81');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '83');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '119');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '206');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '122');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '212');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '9');

Updated reference:

- UPDATE `sisalv2`.`reference` SET `citation` = 'Voarintsoa, N. R. G., Railsback, L. B., Brook, G. A., Wang, L., Kathayat, G., Cheng, H., Li, X., Edwards, R. L., Rakotondrazafy, A. F. M. and Madison Razanatsiheno, M. O.: Three distinct Holocene intervals revealed in NW Madagascar: evidence from two stalagmites from two caves, and implications for ITCZ dynamics, Clim. Past 13, 1771–1790, 2017.', `publication_Doi` = '10.5194/cp-13-1771-2017' WHERE (`ref_id` = '53');
- UPDATE `sisalv2`.`reference` SET `publication_Doi` = 'https://hdl.handle.net/10520/AJA00382353_7827 ' WHERE (`ref_id` = '21');

Change in site name:

- UPDATE `sisalv2`.`site` SET `site_name` = 'Orlova Chuka cave' WHERE (`site_id` = '263'); UPDATE `sisalv2`.`site` SET `site_name` = 'Ascunsă cave' WHERE (`site_id` = '72');

- UPDATE `sisalv2`.`site` SET `site_name` = 'Modrič cave' WHERE (`site_id` = '86');
- UPDATE `sisalv2`.`site` SET `site_name` = 'Urșilor cave' WHERE (`site_id` = '91');
- UPDATE `sisalv2`.`site` SET `site_name` = 'Cloșani cave' WHERE (`site_id` = '179');
- UPDATE `sisalv2`.`site` SET `site_name` = 'Tăușoare cave' WHERE (`site_id` = '213');

Updates on data_DOI_URL

- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://www.nature.com/articles/ngeo1106#supplementary-information ' WHERE (`entity_id` = '456');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://www.nature.com/articles/ngeo1106#supplementary-information ' WHERE (`entity_id` = '426');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://ars.els-cdn.com/content/image/1-s2.0-S0031018218310198-mmc1.xlsx ' WHERE (`entity_id` = '671');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://ars.els-cdn.com/content/image/1-s2.0-S027737911630720X-mmc1.xls ' WHERE (`entity_id` = '160');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://ars.els-cdn.com/content/image/1-s2.0-S027737911630720X-mmc1.xls ' WHERE (`entity_id` = '159');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://ars.els-cdn.com/content/image/1-s2.0-S1040618218307201-mmc2.xlsx ' WHERE (`entity_id` = '595');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://ars.els-cdn.com/content/image/1-s2.0-S1040618212003709-mmc3.xls ' WHERE (`entity_id` = '177');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://static-content.springer.com/esm/art%3A10.1038%2Fsrep13560/MediaObjects/41598_2015_BFsrep13560_MOESM1_ESM.pdf ' WHERE (`entity_id` = '168');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://static-content.springer.com/esm/art%3A10.1038%2Fsrep13560/MediaObjects/41598_2015_BFsrep13560_MOESM1_ESM.pdf ' WHERE (`entity_id` = '169');
- UPDATE `sisalv2`.`entity` SET `data_DOI_URL` = 'https://static-content.springer.com/esm/art%3A10.1038%2Fsrep13560/MediaObjects/41598_2015_BFsrep13560_MOESM1_ESM.pdf ' WHERE (`entity_id` = '170');

Updated depth dating:

- UPDATE `sisalv2`.`dating` SET `depth_dating` = '233.9' WHERE (`dating_id` = '11112');

Add notes:

- Site 105: INSERT INTO `sisalv2_20200128`.`notes` (`site_id`, `notes`) VALUES ('105', 'The sisal_chronology age models of entity_id=663 were run manually');

References update:

- UPDATE `sisalv2`.`reference` SET `citation` = 'Moseley, G. E., Spötl, C., Brandstätter, S., Erhardt, T., Luetscher, M. and Edwards, R. L.: NALPS19: Sub-orbital scale climate variability recorded in Northern Alpine speleothems during the last glacial period, Climate of the Past, 16, 29-50, 2020', `publication_DOI` = '10.5194/cp-16-29-2020' WHERE (`ref_id` = '423');

Change in hiatus' depth

- UPDATE `sisalv2`.`dating` SET `depth_dating` = '480' WHERE (`dating_id` = '6123');

Add missing actively growing:

- INSERT INTO `sisalv2`.`dating` (`entity_id`, `date_type`, `depth_dating`, `date_used`, `corr_age`, `corr_age_uncert_pos`, `corr_age_uncert_neg`) VALUES ('548', 'Event; actively forming', '0', 'yes', '-56', '1', '1');

Change of site name

- UPDATE `sisalv2_20191127`.`site` SET `site_name` = 'Akalagavi cave' WHERE (`site_id` = '238');

Changes done in dating U/Th metadata for many entities:

A list of all the variables modified in the U/Th metadata is available upon request.

Changes in date_used:

- UPDATE `sisalv2`.`dating` SET `date_used` = 'yes' WHERE (`dating_id` = '9952');

Updated references:

- Update unknown reference of BAN-3 (entity_id = 647) from Babylon cave (site_id = 283).
- UPDATE `sisalv2`.`reference` SET `citation` = 'P. Williams et al., unpublished' WHERE (`ref_id` = '425');

Revise format of unpublished entities for consistency:

- UPDATE `sisalv2`.`reference` SET `citation` = 'H. Cheng et al., unpublished' WHERE (`ref_id` = '338')
- UPDATE `sisalv2`.`reference` SET `citation` = 'A. Mangini et al., unpublished' WHERE (`ref_id` = '337');
- UPDATE `sisalv2`.`reference` SET `citation` = 'R. Drysdale et al., unpublished' WHERE (`ref_id` = '236');

Add newly published reference:

- UPDATE `sisalv2_20191114`.`reference` SET `citation` = 'Baldini, L. M., Baldini, J. U. L., McDermott, F., Arias, P., Cueto, M., Fairchild, I. J., Hoffmann, D. L., Matthey, D. P., Müller, W., Nita, D. C., Ontañón, R., Garcíá-Moncó, C., and Richards, D. A.: North Iberian temperature and rainfall seasonality over the Younger Dryas and Holocene, Quaternary Science Reviews, 226, 105998, 2019.', `publication_Doi` = '10.1016/j.quascirev.2019.105998' WHERE (`ref_id` = '428');

Updated/modified notes:

- site 113: 'This site's elevation has been extracted from the "NOAA NGDC GLOBE topo" Digital Elevation Model:
<http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NGDC/.GLOBE/topo/> The sisal_chronology age models for entity_id=38 were run manually.'
- site 115: UPDATE `sisalv2_20200128`.`notes` SET `notes` = 'Entity HOL-16 (entity_id = 231), HOL-17 (entity_id = 232) and HOL-18 (entity_id = 233) do not have individual age models in original publication. Entity HOL-19 (entity_id = 664): date at 199.5mm depth (dating_id = 11701) is an isochron age and all hiatuses are thick sections of calcified sand

- (ca. 5cm) and technically not hiatuses. The `sisal_chronology` age models for `entity_id=231`, 232 and 233 were run manually.' WHERE (`site_id` = '115');
- site 123: UPDATE `sisalv2_20200128`.`notes` SET `notes` = 'Entity MB-6 (entity_id = 258) does not have age model in original publication. The sisal_chronologies for entity_id=258 has been run manually' WHERE (site_id = '123');`
 - site 167: UPDATE `sisalv2_20200128`.`notes` SET `notes` = 'Entity Waiau (entity_id = 363) does not have age model in original publication. The sisal_chronologies for this entity were run manually' WHERE (site_id = '167');`
 - site 86: UPDATE `sisalv2_20200128`.`notes` SET `notes` = 'Age-depth model for MOD-22 (entity_id = 179) was recalculated. Laminae data for MOD-27 (entity_id = 631) was based on 14C bomb peak. MOD-27 (entity_id = 631) is a soda straw. Age model for MOD-21 (entity_id = 632) not available from publication. Sisal_chronologies for entity_id=632 were run manually.' WHERE (site_id = '86');`
 - site 280: UPDATE `sisalv2_20200128`.`notes` SET `notes` = 'Entity AH-1 (entity_id = 639): Original age model not in the database because of the existence of age inversions. The sisal_chronologies for entity_id = 639 were run manually.' WHERE (site_id = '280');`
 - site 282: UPDATE `sisalv2_20200128`.`notes` SET `notes` = 'Entity WS-5d (entity_id = 691) does not have age model in original publication. The sisal_chronologies for entity_id = 691 were run manually' WHERE (site_id = '282');`
 - site_id 293 (Tham Doun Mai) / `entity_id=672` (TM-17): UPDATE `sisalv2`.`notes` SET `notes` = 'Entity TM-17 (entity_id = 672): U/Th date at 27mm (dating_id = 11833) was not used in age model due to high uncertainty. The chronology was constructed from continuous Sr laminae anchored to the U-Th dates. Age-depth model uncertainties include the layer counting errors as well as the average LC error of 3% propagated between the U-Th error bars (see supplementary material of publication for details). Corrected ages assume the initial 230Th/232Th atomic ratio of 5.38 with a positive uncertainty of 5.38 and a negative uncertainty of 4.84 ppm.' WHERE (site_id = '293');`
 - Add a note for the site's where elevations has been extracted from NOAA's DEM: Robinsons cave (`site_id = 233`): UPDATE `sisalv2`.`notes` SET `notes` = 'Age model of KR1 (entity_id = 511) differs from original publication by 0-33 years and reports the mean of the individual ages per depth. The AM uncertainty was calculated as the maximum age uncertainty for each isotopic depth plus the difference between both isotopic ages. KR1 (entity_id = 511) data not available in original publication and assumed to be the same than other publications from same authors: iso_precision=0.1, date_type = MC-ICPMS, decay_constant = Cheng et al., 2013. This site's elevation has been extracted from the \"NOAA NGDC GLOBE topo\" Digital Elevation Model: http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NGDC/.GLOBE/topo/' WHERE (site_id = '233');`
 - site 288: Revised note for clarification in Wet Neck cave (`site_id 288`): UPDATE `sisalv2`.`notes` SET `notes` = 'WN-4 (entity_id = 654): The dating_id=11567 at 205mm used to calculate interp_age differs from published data by 18 years. WN-11 (entity_id = 655): There is a discrepancy of up to 5 years in the corr_ages with respect to published values. The corr_ages presented here are those used to create the original chronology fields.' WHERE (site_id = '288');`
 - site 287: Revised note for clarification in Twin Forks cave (`site_id 287`): UPDATE `sisalv2`.`notes` SET `notes` = 'Entity TF-2 (entity_id = 653): Dating information at 195mm (dating_id = 11564) is not published. Primary data sheet supplied to SISAL has TIMS ages at 33mm (dating_id = 11562) and 130mm (dating_id=11563) that appear 4 years younger than what is published in Williams et al., 2005. The latter have been used here.' WHERE (site_id = '287');`

- site 163: Gardener's gut (site 163). Added a note saying that a range of elevations are provided in the ubclidation UPDATE `sisalv2`.`notes` SET `notes` = 'Elevations between 60-120m altitude are given in publications for speleothems in site_id=163. Entity GG1 (entity_id = 357) and GG2 (entity_id = 358) do not have age models in original publication. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline. GG1 (entity_id = 357): the basal TIMS date (9104 ka) has a large error because of detrital thorium and so is statistically indistinguishable from the next youngest date (9163 ka), which has a small 2-sigma error. In order to avoid an apparent age reversal, the basal date was therefore assigned a value of 9721 ka.' WHERE (`site_id` = '163');
- site 168: Wazpreti (site id 168): Add note regarding elevation range: UPDATE `sisalv2`.`notes` SET `notes` = 'Entity WP-1 (entity_id = 364) does not have an age model in the original publication. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline. This site covers a range of elevations. Here we use 95masl as in Whittaker, 2008.' WHERE (`site_id` = '168');
- site 133: Add note to explain why decay_constant = other. Remove text on duplicated averages (not applicable any more): UPDATE `sisalv2`.`notes` SET `notes` = 'RL4_2006 (entity_id = 282), RL4_2016 (entity_id = 283) and RL4_2018 (entity_id = 381) share the same U-Th dates. Their "decay_constant=other" because they were calculated using the following decay constants: 234U: 2.835×10^{-6} /yr and 230Th: 9.195×10^{-6} /yr. Duplicate isotope samples of RL4_2006 (entity_id = 282) at depth_sample = 80.1, 78.63, 82.1mm with different interp_age and isotope values have been averaged. RL4_2018 (entity_id = 381) supersedes RL4_2006 (entity_id = 282) and RL4_2016 (entity_id = 283).' WHERE (`site_id` = '133');
- site 100: Add info on the lack of ini Th data. UPDATE `sisalv2`.`notes` SET `notes` = 'Annual laminae information for K1 (entity_id = 199) and K3 (entity_id = 200) not available. K1 (entity_id=199) and K3 (entity_id=200): Detrital Th correction not made in original publication and therefore initialTh data is not existent.' WHERE (`site_id` = '100');
- site 102: dd info on the lack of ini Th data. UPDATE `sisalv2`.`notes` SET `notes` = 'Elevation is an average of a range provided in the publications: 540-600 m asl. Geology is mixed (limestone and marble). Entity K11 (entity_id = 202) is missing depth information. K1 (entity_id=450): Detrital Th correction not made in original publication and therefore initialTh data is not existent.' WHERE (`site_id` = '102');
- site 72. Add note on dates used in original chronology not matching the actual AM. INSERT INTO `sisalv2_20191114`.`notes` (`site_id`, `notes`) VALUES ('72', 'Entity POM1 (entity_id=582): Although it contradicts the published age-depth plot, the author stated that the dates at 30.3mm (dating_id=10380) and 298mm (dating_id=10391) were used to construct the original chronology. However, it is suggested to leave these out in age-depth modelling.');
- site 121. Add note to provide information on why some dating metadata is missing: INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('121', 'TKS (entity_id=252) has unclear U isotope notation in the original paper (dU). Because of this, U isotope data is missing in the dating table.');
- site 258. Add note to provide information on why some dating metadata is missing: INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('258', 'STAL-B7-7 (entity_id=560) has unclear U isotope notation in the original paper (dU). Because of this, U isotope data is missing in the dating table.');
- site 77. Add info on initial Th and decay constants. INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('77', ' Chau-stm6 (entity_id=166): Detrital Th correction not made in original publication and therefore initial Th data is not existent. U-Th ages for entity_id=166 were calculated using the following decay constants: 234U: 2.835×10^{-6} /yr, 238U: 1.55125×10^{-10} /yr, 230Th: 9.1952×10^{-6} /yr, 232Th: 4.9475×10^{-11} /yr. Decay

constants are probably derived from the following papers: 230Th: Meadows et al.,1980, 234U: average value from De Bievre et al. 1971 and Lounsbury and Durham 1971.);

- Add info on decay constants and missing init Th. INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('83', 'Min-stm1 (entity_id=176): Detrital Th correction not made in original publication and therefore initialTh data is not existent. U-Th ages for entity_id=176 were calculated using the following decay constants: 234U: $2.835 \cdot 10^{(-6)}$ /yr, 238U: $1.55125 \cdot 10^{(-10)}$ /yr, 230Th: $9.1952 \cdot 10^{(-6)}$ /yr, 232Th: $4.9475 \cdot 10^{(-11)}$ /yr. Decay constants are probably derived from the following papers: 230Th: Meadows et al.,1980, 234U: average value from De Bievre et al. 1971 and Lounsbury and Durham 1971.);
- Add info on decay constants and missing init Th. INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('4', 'Vil-stm11 (entity_id=29): Detrital Th correction made only on the top two samples (dating_id = 8198 and 8199). U-Th ages for entity_id=29 were calculated using the following decay constants: 234U: $2.835 \cdot 10^{(-6)}$ /yr, 238U: $1.55125 \cdot 10^{(-10)}$ /yr, 230Th: $9.1952 \cdot 10^{(-6)}$ /yr, 232Th: $4.9475 \cdot 10^{(-11)}$ /yr. Decay constants are probably derived from the following papers: 230Th: Meadows et al.,1980, 234U: average value from De Bievre et al. 1971 and Lounsbury and Durham 1971.)

Revised site names:

- Remove „cave” word as it is already included in „Muknal”: UPDATE `sisalv2`.`site` SET `site_name` = 'Actun Tunichil Muknal' WHERE (`site_id` = '229')
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Botuverá cave' WHERE `site_id`='144';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Marota cave' WHERE `site_id`='230';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Venado cave' WHERE `site_id`='281';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Rio Secreto cave system' WHERE `site_id`='232';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Gol-E-Zard cave' WHERE `site_id`='270';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Qingtian cave' WHERE `site_id`='176';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Yamen cave' WHERE `site_id`='178';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Patate cave' WHERE `site_id`='222';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Haozhu cave' WHERE `site_id`='242';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Wuya cave' WHERE `site_id`='250';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='Metro cave' WHERE `site_id`='272';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='La Vierge cave' WHERE `site_id`='221';
- UPDATE `sisalv2_20191111`.`site` SET `site_name`='B7 cave' WHERE `site_id`='258';

Modify decay constants:

- Entity_id=91,92,604-607 to Cheng et al 2013
- Entity_id=166,176 and 29 to „other”

Revise corr_age_uncertainties of entities 665,666,667 and 668

Revise coordinates:

- UPDATE `sisalv2_20191127`.`site` SET `latitude` = '-18.12', `longitude` = '-65.77' WHERE (`site_id` = '237')
- Chaara cave (site_id = 215) coordinates should be 33.9558 -4.2461: UPDATE `sisalv2`.`site` SET `latitude` = '33.9558', `longitude` = '-4.2461' WHERE (`site_id` = '215');

- Diva cave (site_id = 38) Lat: -12.3819 Lon: -41.5733: UPDATE `sisalv2`.`site` SET `latitude` = '-12.3819', `longitude` = '-41.5733' WHERE (`site_id` = '38');
- Torrinha (site_id = 62): Lat: -12.3495 Lon: -41.6038: UPDATE `sisalv2`.`site` SET `latitude` = '-12.3495', `longitude` = '-41.6038' WHERE (`site_id` = '62');
- Lapa Doce cave (site_id = 103): Lat: -12.3344 Lon: -41.604352: UPDATE `sisalv2`.`site` SET `latitude` = '-12.3344', `longitude` = '-41.6043' WHERE (`site_id` = '103');
- Abissal cave (site_id = 18): Lat: -5.5642 Lon: -37.6659: UPDATE `sisalv2`.`site` SET `latitude` = '-5.5642', `longitude` = '-37.6659' WHERE (`site_id` = '18');
- Rainha cave (site_id = 111): Lat: -5.5782 Lon: -37.6432: UPDATE `sisalv2`.`site` SET `latitude` = '-5.5782', `longitude` = '-37.6432' WHERE (`site_id` = '111');
- Guning-buda cave (site_id = 146): Lat 4.020 Lon 114.48: UPDATE `sisalv2`.`site` SET `latitude` = '4.0200', `longitude` = '114.4800' WHERE (`site_id` = '146');
- Max's cave (site_id 164): UPDATE `sisalv2`.`site` SET `latitude` = '-38.2667', `longitude` = '175.0167' WHERE (`site_id` = '164');
- Guillotine cave (site_id 151): lat -42.3108, lon 172.2178 (undo old revision that was incorrect): UPDATE `sisalv2`.`site` SET `latitude` = '-42.3108', `longitude` = '172.2178' WHERE (`site_id` = '151');
- Site 82: Hollywood cave (site_id = 82): UPDATE `sisalv2`.`site` SET `longitude` = '171.47' WHERE (`site_id` = '82');

Add/modify elevation:

- Shigao cave (site_id = 249): UPDATE `sisalv2`.`site` SET `elevation` = '970' WHERE (`site_id` = '249');
- Metro cave (site_id = 272): UPDATE `sisalv2`.`site` SET `elevation` = '60' WHERE (`site_id` = '272');
- Robinson cave (site_id = 233): UPDATE `sisalv2`.`site` SET `elevation` = '2007' WHERE (`site_id` = '233'); + add note as this is coming from NOAA's DEM.
- Gardener's Gut cave site has a range of elevations. Use mean value here and add a note. UPDATE `sisalv2`.`site` SET `elevation` = '90' WHERE (`site_id` = '163');

Modify date_used:

Revised date_used info (problem identified from AM plots)

- UPDATE `sisalv2_20191111`.`dating` SET `date_used`='yes' WHERE `dating_id`='9693';
- UPDATE `sisalv2_20191111`.`dating` SET `date_used`='yes' WHERE `dating_id`='9694';
- UPDATE `sisalv2_20191111`.`dating` SET `date_used`='yes' WHERE `dating_id`='9695';

Update decay constants for the following entities:

- Entity 83: from "unknown" to "Cheng et el. 2000" (dating_id from 1386 to 1400; ignoring event types)
- Entity 84: from "unknown" to "Cheng et el. 2000" (dating_id from 1403 to 1428; ignoring event types)
- Entity 614 from "Cheng et el. 2000" to "Cheng et el. 2013" (dating_id from 11106 to 11122; ignoring event types)
- Entity 615 from "Cheng et el. 2000" to "Cheng et el. 2013" (dating_id from 11123 to 11132; ignoring event types)
- Entity 616 from "Cheng et el. 2000" to "Cheng et el. 2013" (dating_id from 11133 to 11142; ignoring event types)

Revise issue with mineralogy=unknown and arag_corr=yes for entity_id= 436 from site_id=208:

```
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282113');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282368');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282369');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282370');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282371');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282899');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282900');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282901');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282902');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282903');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282904');
UPDATE `sisalv2`.`sample` SET `mineralogy` = 'aragonite' WHERE (`sample_id` = '282905');
```

Add notes saying that this has been done

```
UPDATE `sisalv2`.`notes` SET `notes` = 'Entity TA12-2 (entity_id = 436): Depths below the hiatus at 440mm are estimated. More details in the paper. d13C must be treated with caution because of a lack of significant testing on the aragonite-calcite correction by original authors. Some samples\' mineralogy (sample_id= 282113, 282368, 282369, 282370, 282371, 282899, 282900, 282901, 282902, 282903, 282904, 282905) has been assumed to be aragonite (the primary fabric) in the absence of a definite mineralogy.' WHERE (`site_id` = '208');
```

Link entities from site_id = 291 to site_id = 105 and delete site_id = 291:

- UPDATE `sisalv2`.`entity` SET `site_id`='105' WHERE `site_id`='291';
- DELETE FROM `sisalv2`.`site` WHERE `site_id`='291';

Delete notes from the following site:

- Munagamanu cave (site_id = 157) and Nettlebed cave (site_id = 158)
- DELETE FROM `sisalv2`.`notes` WHERE `site_id`='157';
- DELETE FROM `sisalv2`.`notes` WHERE `site_id`='158';

Updated pre-existing notes:

- UPDATE notes SET notes = 'Entity HOL-16 (entity_id = 231), HOL-17 (entity_id = 232) and HOL-18 (entity_id = 233) do not have individual age models in original publication. Entity HOL-19 (entity_id = 664): date at 199.5mm depth (dating_id = 11701) is an isochron age and all hiatuses are thick sections of calcified sand (ca. 5cm) and technically not hiatuses.' WHERE site_id = 115;
- UPDATE notes SET notes = 'Entity Calcite (entity_id = 356): the age model in the original study was linear interpolation between TIMS ages. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline.' WHERE site_id = 162;
- UPDATE notes SET notes = 'Entity GG1 (entity_id = 357) and GG2 (entity_id = 358) do not have age models in original publication. This update is based on COPRA (Breitenbach et

- al., 2012) using a PCH spline. // GG1 (entity_id = 357): the basal TIMS date (9104 ka) has a large error because of detrital thorium and so is statistically indistinguishable from the next youngest date (9163 ka), which has a small 2-sigma error. In order to avoid an apparent age reversal, the basal date was therefore assigned a value of 9721 ka.' WHERE site_id = 163;
- UPDATE notes SET notes = 'Entity RK05-1, RK05-3 and RK05-4 (entity_id = 676, 677, 678): Year when the U/Th chemistry was performed assumed to be 2006 based on dates of thesis publication and field work (would not be earlier than 2005). Entity RK-C, RK-A, RK-B, RK05-1, RK05-3 and RK05-4 (entity_id = 360, 674, 675, 676, 677, 678): Age model in original study was linear interpolation between TIMS ages; this update is based on COPRA (Breitenbach et al., 2012) using a PCH spline.' WHERE site_id = 165;
 - UPDATE notes SET notes = 'Entity WP-1 (entity_id = 364) does not have an age model in the original publication. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline.' WHERE site_id = 168;
 - UPDATE notes SET notes = 'WR5 (entity_id = 149) chronology is matched to GC08 (entity_id = 186) from Green Cathedral cave using the AnalySeries software. The site elevation of 250m comes from NOAA/NCEI repository but the elevation of the chambers from which WR12-01 and WR12-12 (entity_id = 685, 686) were retrieved is 120-200masl. No hiatuses reported in original publication.' WHERE site_id = 65;
 - UPDATE notes SET notes = 'CC-5_2009 (entity_id = 317) is a resampled series from CC-5_2005 (entity_id = 314). CC-1_2009 (entity_id = 316) is a resampled series from CC-1_2005 (entity_id = 313). CC-1_2004, CC-1_2009, CC1_2018 (entity_id=313, 316, 665), CC-5_2005, CC-5_2009, CC5_2018 (entity_id=314, 317, 666), CC-7_2009, CC7_2018 (entity_id=318, 667) and CC-28_2007, CC28_2018 (entity_id=315, 668) were collected from a single chamber between 1999 and 2005. ' WHERE site_id = 145;
 - UPDATE notes SET notes = "Dating_thickness, lab_num, material_dated, min_weight and max_weight in entity_id 352 and 353 are assumed from standard practises at the GSI lab (i.e. these aren't exact measurments). Entity 353 (2N-HR): Avoid using isotope samples between sample_depths 105.1 and 107.95 mm for studies interested in resolutions lower than 100yrs. The age/depth profile in this section was problematic possibly due to several parallel inter-annual measurements. Original publication for entity_id 352 and 353 does not mention the existence of hiatuses. Soreq-Composite185 (entity_id = 690): First 140kyr from Bar-Matthews et al., 2000 (10.1016/S0009-2541(99)00232-6). Entities which make the Soreq_Composite185 (entity_id=690) = '1-1','2-6','2Z','2-8','1-4','2N','7-2','1-2','8-4','10-12','11-2','2-10','9','3','1-1','3-35','2-5','MN-5','2-22'. These are not available in SISAL" WHERE site_id = 160;
 - UPDATE notes SET notes = 'Entity MAXS (entity_id = 359) does not have age model in original publication. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline. Discrepancy between age at 215 mm (dating_id=11840) and age provided and used for this model (age = 5286 years). Exact year of chemistry unknown, but should be between 2001-2004. it is suggested that +/-4 years is added to age uncertainty for this reason.' WHERE site_id = 164;

Uploaded new notes:

- INSERT INTO sisalv2.notes (site_id, notes) VALUES (288,'WN-4: Discrepancy between published date (listed in this SISAL entry) and that provided for this analysis at 205 mm (corrected age 16136 +/- 127 years: 18 year difference). WN-4: Age of 205 mm 16136 +/- 127 years (2sigma) used in age model. WN-11: Discrepancies of up to 5 years all between published dates (presented in this workbook) and those provided to Drew (which were used in this age model)');
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (287,'Entity TF-2 (entity_id = 653): Dating information at 195mm (dating_id = 11564) is not published.');
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (82, "Year when the U/Th chemistry for HW-3 (entity_id = 175) was done assumed to be 2006 CE. This was based on dates of thesis publication and field work.");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (128, "Entity BCC-10_2019 (entity_id = 682): Samples from the section below 204.75mm in original dataset not included due to age inversions.");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (161, "Entity Aurora 3 (entity_id = 355): the age model in the original study was linear interpolation between TIMS ages. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline.");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (169, "Entity Doubtful Xanadu (entity_id = 365): the age model in the original study was linear interpolation between TIMS ages. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline.");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (223, "Entity WXSM-51, WXSM-52 (entity_id = 679, 680): Age corrections were made assuming that initial U and Th were derived from crustal silicates with a $232\text{Th}/238\text{U} = 1.2 \pm 0.6$, $234\text{U}/238\text{U} = 1.0 \pm 0.1$, and $230\text{Th}/238\text{U} = 1.0 \pm 0.1$ ");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (292, "Entity KTR-2 (entity_id = 671): Despite the mentioned presumed minor hiatus in the original paper, this has not been added here following authors' suggestion. The thickness of the limestone varies from a few tens to a few hundred meters, see original reference. According to Peter Rowe, a negative age uncertainty of -39 yrs was erroneously reported by StalAge at interp_age 10642.62 yr BP (dating_id = 400608). This has not been entered here.");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (294, "Entity PA-2b (entity_id = 684): Isotope samples at 127 and 127.5mm removed because of their proximity to the hiatus at 127.25 mm. ");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (282, "Entity WS-5d (entity_id = 691) does not have age model in original publication.");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (151, "Entity GT05-5 (entity_id = 326): no age model in original publication. This update is based on COPRA (Breitenbach et al., 2012) using a PCH spline. Actively growing event in 2006 assumed based on thesis publication and field work dates.");
- INSERT INTO sisalv2.notes (site_id, notes) VALUES (286,'The elevation of the cave (85 masl) differs with the elevation of the lower gallery from which La Garma speleothems were collected (59 masl). The C14 data (not provided here) is available in Rudzka et al., 2011 (10.1016/j.gca.2011.05.022). GAR-01_drill (entity_id=650) and GAR-01_laser data (entity_id= 651 and 652) were obtained from GAR-01 stalagmite using a handheld

conventional drill (drill) at ~2.2 mm spatial resolution and by laser ablation (LA-GC-IRMS) with a ~500 micron resolution. GAR-01_laser_d13C (entity_id=652) and GAR-01_laser_d18O (entity_id=651) series are treated separately in the database because there is a small non-constant offset in the corresponding age-depth models. Baldini et al., 2015 (10.1016/j.epsl.2015.03.015) used the StalAge Algorithm but the ages determined using COPRA are provided here. There is excellent agreement between the two age models over the Younger Dryas Interval (see Baldini et al., QSR, in review). ');

- INSERT INTO sisalv2.notes (site_id, notes) VALUES (293, 'Entity TM-17 (entity_id = 672): U/Th date at 27mm (dating_id = 11833) was not used in age model due to high uncertainty. The chronology was constructed from continuous Sr laminae anchored to the U-Th dates. Age-depth model uncertainties include the layer counting errors as well as the average LC error of 3% propagated between the U-Th error bars (see supplementary material of publication for details). Corrected ages assume the initial 230Th/232Th atomic ratio of 5.38 +5.38/-4.84 ppm. ');

Updated latitude, longitude and rock age for Nettlebed cave (site_id = 158)

- UPDATE `sisalv2`.`site` SET `latitude`=-41.2300', `longitude`='172.68', `rock_age`='Ordovician' WHERE `site_id`='158';

Updated latitude, longitude, elevation, geology and rock age for Guillotine cave (site_id = 151) from 42.3108, 172.2178, 740, unknown, unknown

- UPDATE `sisalv2`.`site` SET `latitude`=-42.31', `longitude`='172.21', `elevation`='130', `geology`='marble', `rock_age`='Ordovician' WHERE `site_id`='151';

Replaced the current entities with new workbooks

- MD3 (entity_id = 350) from Nettlebed cave (site_id = 158) (references already cleaned)
- GT05-5 (entity_id = 326) from Guillotine cave (site_id = 151)

Uploaded new entities to existing site:

- SO-4, SO-6 and SO-14B (entity_id = 687, 688 and 689) from Sofular cave (site_id = 141)
- Soreq-composite185 (entity_id = 690) from Soreq cave (site_id = 160)

Updated entity status and corresponding current of Soreq-composite and Soreq-composite185 (entity_id = 354, 690) from Soreq cave (site_id = 160)

- UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='690';
- UPDATE `sisalv2`.`entity` SET `entity_status`='current, partially modified', `corresponding_current`='690' WHERE `entity_id`='354';

Uploaded the following new site/entity:

- WS-5d (entity_id = 691) from Wadi Sannur cave (site_id = 282)

Remove a repeated Event; actively forming from MOD-22 (entity_id = 179) (dating_id = 9196).

- Previous inclusion of this Event; actively forming in the Missing_active_event GD file is a mistake

- DELETE FROM `sisalv2`.`dating` WHERE `dating_id`='9196';

Clean up some repeated references:

- UPDATE entity_link_reference SET ref_id = 309 WHERE ref_id = 443;
- DELETE FROM reference WHERE ref_id = 443;
- UPDATE entity_link_reference SET ref_id = 193 WHERE ref_id = 442;
- DELETE FROM reference WHERE ref_id = 442;

Updated the following publication DOI to https link (as they https link works here)

- UPDATE `sisalv2`.`reference` SET `publication_DOI`='https://hdl.handle.net/10092/5762' WHERE `ref_id`='394';
- UPDATE `sisalv2`.`reference` SET `publication_DOI`='https://ww.caves.org/pub/journal/PDF/V61/v61n1-Lauritzen.pdf' WHERE `ref_id`='374';

Clean up a reference

- UPDATE reference SET citation = 'El-Shenawy, M. I., Kim, S. T., Schwarcz, H. P., Asmerom, Y. and Polyak, V. J.: Speleothem evidence for the greening of the Sahara and its implications for the early human dispersal out of sub-Saharan Africa, Quat. Sci. Rev., 188, 67–76, 2018.' WHERE ref_id = 444;

Updated longitude of Lehman caves (site_id = 14). This is now the most definitive coordinate, along with the elevation, and most used among publications.

- UPDATE `sisalv2`.`site` SET `longitude`='-114.22' WHERE `site_id`='14';

Updated d18O water equilibrium from WP1 (entity_id= 364) from unknown to 'yes' to match old entity

- UPDATE `sisalv2`.`entity` SET `d18O_water_equilibrium`='yes' WHERE `entity_id`='364';

Clean the following references in the reference table

- UPDATE reference SET citation = 'Moseley, G. E., Spötl, C., Brandstätter, S., Erhardt, T., Luetscher, M. and Edwards, R. L.: NALPS19: Sub-orbital scale climate variability recorded in Northern Alpine speleothems during the last glacial period, Clim. Past Discuss., 1–25, 2019, in review.' WHERE ref_id = 423;
- UPDATE reference SET citation = 'unknown, unpublished' WHERE ref_id = 425;
- UPDATE reference SET citation = 'Baldini, L. M., McDermott, F., Baldini, J. U. L., Arias, P., Cueto, M., Fairchild, I. J., Hoffmann, D. L., Matthey, D. P., Müller, W., Nita, D. C., Ontañón, R., Garcíá-Moncó, C. and Richards, D. A.: Regional temperature, atmospheric circulation, and sea-ice variability within the Younger Dryas Event constrained using a speleothem from northern Iberia, Earth Planet. Sci. Lett., 419, 101–110, 2015.' WHERE ref_id = 427;
- UPDATE reference SET citation = 'Baldini, L. M. et al., Manuscript covering Younger Dryas to Present day in review at Quaternary Science Reviews.' WHERE ref_id = 428;
- UPDATE reference SET citation = 'Tzedakis, P. C., Drysdale, R. N., Margari, V., Skinner, L. C., Menviel, L., Rhodes, R. H., Taschetto, A. S., Hodell, D. A., Crowhurst, S. J., Hellstrom, J.

C., Fallick, A. E., Grimalt, J. O., McManus, J. F., Martrat, B., Mokeddem, Z., Parrenin, F., Regattieri, E., Roe, K. and Zanchetta, G.: Enhanced climate instability in the North Atlantic and southern Europe during the Last Interglacial, *Nat. Commun.*, 9(1), 4235, 2018.' WHERE ref_id = 430;

- UPDATE reference SET citation = 'Isola, I., Zanchetta, G., Drysdale, R. N., Regattieri, E., Bini, M., Bajo, P., Hellstrom, J. C., Banerjee, I., Lionello, P., Woodhead, J. and Greig, A.: The 4.2 ka event in the central Mediterranean: New data from a Corchia speleothem (Apuan Alps, central Italy), *Clim. Past*, 15(1), 135–151, 2019.' WHERE ref_id = 431;
- UPDATE reference SET citation = 'Peckover, E. N., Andrews, J. E., Leeder, M. R., Rowe, P. J., Marca, A., Sahy, D., Noble, S. and Gawthorpe, R.: Coupled stalagmite – Alluvial fan response to the 8.2 ka event and early Holocene palaeoclimate change in Greece, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 532, 109252, 2019.' WHERE ref_id = 432;
- UPDATE reference SET citation = 'Wang, J. K., Johnson, K. R., Borsato, A., Amaya, D. J., Griffiths, M. L., Henderson, G. M., Frisia, S. and Mason, A.: Hydroclimatic variability in Southeast Asia over the past two millennia, *Earth Planet. Sci. Lett.*, 525, 115737, 2019.' WHERE ref_id = 433;
- UPDATE reference SET citation = 'Williams, P. W., Neil, H. L. and Zhao, J. X.: Age frequency distribution and revised stable isotope curves for New Zealand speleothems: Palaeoclimatic implications, *Int. J. Speleol.*, 39(2), 99–112, 2010.' WHERE ref_id = 436;
- UPDATE reference SET citation = 'Johnson, K. R., Lynn Ingram, B., Sharp, W. D. and Zhang, P.: East Asian summer monsoon variability during Marine Isotope Stage 5 based on speleothem $\delta^{18}\text{O}$ records from Wanxiang Cave, central China, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 236(1–2), 5–19, 2006.' WHERE ref_id = 439;
- UPDATE reference SET citation = 'Cheng, H., Springer, G. S., Sinha, A., Hardt, B. F., Yi, L., Li, H., Tian, Y., Li, X., Rowe, H. D., Kathayat, G., Ning, Y. and Edwards, R. L.: Eastern North American climate in phase with fall insolation throughout the last three glacial-interglacial cycles, *Earth Planet. Sci. Lett.*, 522, 125–134, 2019.' WHERE ref_id = 440;
- UPDATE reference SET citation = 'Rivera-Collazo, I., Winter, A., Scholz, D., Mangini, A., Miller, T., Kushnir, Y. and Black, D.: Human adaptation strategies to abrupt climate change in Puerto Rico ca. 3.5 ka, *Holocene*, 25(4), 627–640, 2015.' WHERE ref_id = 441;

Alter coordinates for Sofular cave (site_id = 141) from latitude/longitude = 41.42/31.93 to 41.4167/31.9333

- UPDATE `sisalv2`.`site` SET `latitude`='41.4167', `longitude`='31.9333' WHERE `site_id`='141';

Clean up contact names

- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías, Belen Martrat' WHERE `entity_id`='665';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías, Belen Martrat' WHERE `entity_id`='666';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías, Belen Martrat' WHERE `entity_id`='667';

- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías, Belen Martrat' WHERE `entity_id`='668';
- UPDATE `sisalv2`.`entity` SET `contact`='István G. Hatvani' WHERE `entity_id`='671';

Updated entity status:

- Entity_status of RK-C (entity_id = 360) from Ruakuri cave (site_id = 165) entered as 'current' instead of NULL
UPDATE entity SET entity_status = 'current' WHERE entity_id = 360;

Renamed the following entity from Sofular cave (site_id = 141)

- So-1 to SO-1 (entity_id = 305)
 - UPDATE `sisalv2`.`entity` SET `entity_name`='SO-1' WHERE `entity_id`='305';
- So-17A to SO-17A (entity_id = 429)
 - UPDATE `sisalv2`.`entity` SET `entity_name`='SO-17A' WHERE `entity_id`='429';
- So-2 to SO-2 (entity_id = 456)
 - UPDATE `sisalv2`.`entity` SET `entity_name`='SO-2' WHERE `entity_id`='456';

Clean up repeated references

- UPDATE entity_link_reference SET ref_id = 206 WHERE ref_id = 424;
- DELETE FROM reference WHERE ref_id = 424;
- UPDATE entity_link_reference SET ref_id = 205 WHERE ref_id = 426;
- DELETE FROM reference WHERE ref_id = 426;
- UPDATE entity_link_reference SET ref_id = 100 WHERE ref_id = 435;
- DELETE FROM reference WHERE ref_id = 435;
- UPDATE entity_link_reference SET ref_id = 204 WHERE ref_id = 434;
- DELETE FROM reference WHERE ref_id = 434;
- UPDATE entity_link_reference SET ref_id = 204 WHERE ref_id = 438;
- DELETE FROM reference WHERE ref_id = 438;
- UPDATE entity_link_reference SET ref_id = 423 WHERE ref_id = 429;
- DELETE FROM reference WHERE ref_id = 429;
- UPDATE entity_link_reference SET ref_id = 193 WHERE ref_id = 437;
- DELETE FROM reference WHERE ref_id = 437;

Revised site metadata:

- Updated elevation, geology and rock_age of Te Reinga cave (site_id = 166) from 243.0/unknown/unknown to 100/limestone/Pliocene. The elevation in the database was originally taken from Digital Elevation Model: <http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NGDC/.GLOBE/topo/> and therefore is replaced here.
- UPDATE `sisalv2`.`site` SET `elevation`='100', `geology`='limestone', `rock_age`='Pliocene' WHERE `site_id`='166';

Remove notes:

- Notes for Te Reinga cave (site_id = 166) has been removed. Old notes say “Entity Te Reinga A (entity_id = 361) and Te Reinga B (entity_id = 362) do not have age model in original publication. This site's elevation has been extracted from the "NOAA NGDC GLOBE topo" Digital Elevation Model: <http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NGDC/.GLOBE/topo/>” but this is no longer true.
- DELETE FROM `sisalv2`.`notes` WHERE `site_id`='166';

Replace Te Reinga A and Te Reinga B (entity_id = 361, 362) from Te Reinga cave (site_id = 166); now called TR-A and TR-B. Reference was cleaned in the workbook so no further clean up is needed.

Updated the elevation and rock_age of Whiterock cave (site_id = 65) from 447.0/unknown to 250/Pleistocene

- UPDATE `sisalv2`.`site` SET `elevation`='250', `rock_age`='Pleistocene' WHERE `site_id`='65';

Uploaded new entities from Whiterock cave (site_id = 65):

- WR12-01 and WR12-12 (entity_id = 685, 686)

Relink entity CDR3 and WR11 (entity_id = 641, 642) from Lehman cave (site_id = 282) to Lehman caves (site_id = 14) and site_id = 282 deleted. The coordinates and name of site is to be confirmed by regional coordinators

- UPDATE `sisalv2`.`entity` SET `site_id`='14' WHERE `entity_id`='641';
- UPDATE `sisalv2`.`entity` SET `site_id`='14' WHERE `entity_id`='642';
- DELETE FROM `sisalv2`.`site` WHERE `site_id`='282';

Elevation of Hulu cave (site_id = 6) updated from 90 to 86m.

- UPDATE `sisalv2`.`site` SET `elevation`='86' WHERE `site_id`='6';

Clean up the following reference:

- UPDATE `sisalv2`.`reference` SET `citation`='Orland, I. J., Bar-Matthews, M., Kita, N. T., Ayalon, A., Matthews, A. and Valley, J. W.: Climate deterioration in the Eastern Mediterranean as revealed by ion microprobe analysis of a speleothem that grew from 2.2 to 0.9 ka in Soreq Cave, Israel, Quat. Res., 71(1), 27–35, 2009.' WHERE `ref_id`='201';

Add the following “Event; actively growing” to the dating table of:

- Entity Mun-stm2, Mun-stm1 (entity_id = 348, 349) from Munagamanu cave (site_id = 157)
 - INSERT INTO `sisalv2`.`dating` (`entity_id`, `date_type`, `depth_dating`, `date_used`, `corr_age`, `corr_age_uncert_pos`, `corr_age_uncert_neg`) VALUES ('348', 'Event; actively forming', '0', 'yes', '-60', '0', '0');
 - INSERT INTO `sisalv2`.`dating` (`entity_id`, `date_type`, `depth_dating`, `date_used`, `corr_age`, `corr_age_uncert_pos`, `corr_age_uncert_neg`) VALUES ('349', 'Event; actively forming', '0', 'yes', '-60', '0', '0');

- Entity AF12 (entity_id = 152) from Jerusalem west cave (site_id = 68)
 - INSERT INTO `sisalv2`.`dating` (`entity_id`, `date_type`, `depth_dating`, `date_used`, `corr_age`, `corr_age_uncert_pos`, `corr_age_uncert_neg`) VALUES ('152', 'Event; actively forming', '0', 'yes', '-48', '0', '0');
- Entity IFK1 (entity_id = 118) from Ifoulki cave (site_id = 42)
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('42', 'Entity IFK1 (entity_id = 118) is not actively growing when collected.');
- Entity SSC01, SCH02 (entity_id = 319, 320) from Gunung-buda cave (snail shell cave) (site_id = 146)
 - INSERT INTO `sisalv2`.`dating` (`entity_id`, `date_type`, `depth_dating`, `date_used`, `corr_age`, `corr_age_uncert_pos`, `corr_age_uncert_neg`) VALUES ('319', 'Event; actively forming', '0', 'yes', '-50', '0', '0');
 - INSERT INTO `sisalv2`.`dating` (`entity_id`, `date_type`, `depth_dating`, `date_used`, `corr_age`, `corr_age_uncert_pos`, `corr_age_uncert_neg`) VALUES ('320', 'Event; actively forming', '0', 'yes', '-50', '0', '0');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('146', 'Entity SSC01, SCH02 (entity_id = 319, 320): Both entities are assumed to be actively growing when collected and the date of collection is assumed to be 2000CE.');

Average the duplicated sample in Munagamanu cave (site_id) at sample_id = 189644 and 189645. sample_depth is averaged. The averaged value is kept in sample_id = 189644 and sample_id = 189645 is removed.

- UPDATE `sisalv2`.`d18O` SET `d18O_measurement`=-4.816767' WHERE `sample_id`='189644';
- UPDATE `sisalv2`.`d13C` SET `d13C_measurement`=-2.620324' WHERE `sample_id`='189644';
- UPDATE `sisalv2`.`sample` SET `depth_sample`='63.5' WHERE `sample_id`='189644';
- DELETE FROM `sisalv2`.`sample` WHERE `sample_id`='189645';

Updated longitude of Soreq cave (site_id = 160) from 35.0224 to 35.0226

- UPDATE `sisalv2`.`site` SET `longitude`='35.0226' WHERE `site_id`='160';

Replace entity 2-6 and 2N (entity_id = 352, 353) from Soreq cave (site_id = 166); now called 2-6-HR and 2N-HR . Reference was cleaned in the workbook so no further clean up is needed.

Renamed entity BCC-10 (entity_id = 275) to BCC-10_2014

- UPDATE `sisalv2`.`entity` SET `entity_name`='BCC-10_2014' WHERE `entity_id`='275';

Update elevation and geology of Wazpretti cave (site_id = 168)

- UPDATE `sisalv2`.`site` SET `elevation`='95', `geology`='limestone' WHERE `site_id`='168';

Update latitude and longitude for Buckeye creek (site_id = 128)

- UPDATE `sisalv2`.`site` SET `latitude`='37.98', `longitude`='-80.4' WHERE `site_id`='128';

Notes attached to Wanxiang cave (site_id = 223) removed

- DELETE FROM `sisalv2`.`notes` WHERE `site_id`='223';

Updated rock age and monitoring for Wanxiang cave (site_id = 223) from unknown/no to Silurian/yes

- UPDATE `sisalv2`.`site` SET `rock_age`='Silurian', `monitoring`='yes' WHERE `site_id`='223';

Updated the elevation, geology and monitoring for Hollywood cave (site_id = 82) to match new workbook:

- UPDATE `sisalv2`.`site` SET `elevation`='100.0', `geology`='limestone', `monitoring`='unknown' WHERE `site_id`='82';

Uploaded the following new entities to pre-existing sites

- HW-1 (entity_id = 673), Hollywood cave (site_id = 82)
- RK-A, RK-B, RK05-1, RK05-3, RK05-4 (entity_id = 674, 675, 676, 677, 678), Ruakuri cave (site_id = 165).
- WXSM-51, WXSM-52 (entity_id = 679, 680), Wanxiang cave (site_id = 223)
- BCC-9, BCC-10_2019, BCC-30 (entity_id = 681, 682, 683), Buckeye creek (site_id = 128)

Replace the following entities already in the database (removed old entity and replace with new entity)

- Doubtful Xanadu (entity_id = 365), Doubtful Xanadu (site_id = 169). Notes attached to site_id = 169 also removed.
- HW3 (entity_id = 175), Hollywood cave (site_id = 82). entity_name changed to HW-3.
- Ruakuri C (entity_id = 360), Ruakuri cave (site_id = 165), entity_name changed to RK-C.
- GG1, GG2 (entity_id = 357, 358) Gardener's Gut (site_id = 163).
- WP-1 (entity_id = 364), Wazpretti cave (site_id = 168). entity_name changed to WP1.

Replace the following sites already in the database (removed old site and replace with new site) (Notes no longer carried over anyways).

- Te Anau Fiordland (site_id = 161), entity Aurora (entity_id = 355). Site now called "Aurora cave" and entity called "Aurora 3". The site metadata is completely replaced and the notes are to be replaced.
- Calcite cave (site_id = 162), entity Calcite (entity_id = 356). Site now called "Calcite cave (Mt Luxmore, Fiordland)". The site metadata is completely replaced and the notes are to be replaced.

Uploaded new entity (new site)

- PA-2b (entity_id = 684), Palco cave (site_id = 294)

Updated entity status of entity BCC-10_2014 (entity_id = 275)

- UPDATE `sisalv2`.`entity` SET `entity_status`='superseded', `corresponding_current`='682' WHERE `entity_id`='275';

Updated the entity_status of BCC-10 2019 (entity_id = 682) to 'current'

- UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='682';

Renamed the following entities from Antro del Corchia (site_id = 145)

- CC1_2018 (entity_id = 665) to CC-1_2018
 - UPDATE `sisalv2`.`entity` SET `entity_name`='CC-1_2018' WHERE `entity_id`='665';
- CC5_2018 (entity_id = 666) to CC-5_2018
 - UPDATE `sisalv2`.`entity` SET `entity_name`='CC-5_2018' WHERE `entity_id`='666';
- CC7_2018 (entity_id = 667) to CC-7_2018
 - UPDATE `sisalv2`.`entity` SET `entity_name`='CC-7_2018' WHERE `entity_id`='667';
- CC28_2018 (entity_id = 668) to CC-28_2018
 - UPDATE `sisalv2`.`entity` SET `entity_name`='CC-28_2018' WHERE `entity_id`='668';
- entity CC-28 (entity_id = 318) to CC-28_2007
 - UPDATE `sisalv2`.`entity` SET `entity_name`='CC-28_2007' WHERE `entity_id`='315';
- entity CC-7 (entity_id = 318) to CC-7_2009
 - UPDATE `sisalv2`.`entity` SET `entity_name`='CC-7_2009' WHERE `entity_id`='318';

Updated the entity_status and corresponding_current of entities from Antro del Corchia (site_id = 145)

- CC-1_2004 (entity_id = 313): entity_status from current to superseded, corresponding current to 665
 - UPDATE `sisalv2`.`entity` SET `entity_status`='superseded', `corresponding_current`='665' WHERE `entity_id`='313';
- CC-5_2005 (entity_id = 314): entity_status from current to superseded, corresponding current to 666
 - UPDATE `sisalv2`.`entity` SET `entity_status`='superseded', `corresponding_current`='666' WHERE `entity_id`='314';
- CC-28_2007 (entity_id = 315): entity_status from current to superseded, corresponding current to 668
 - UPDATE `sisalv2`.`entity` SET `entity_status`='superseded', `corresponding_current`='668' WHERE `entity_id`='315';
- CC-1_2009 (entity_id = 316): entity_status from current partially modified to superseded, corresponding current from 313 to 665
 - UPDATE `sisalv2`.`entity` SET `entity_status`='superseded', `corresponding_current`='665' WHERE `entity_id`='316';
- CC-5_2009 (entity_id = 317): entity_status from current partially modified to superseded, corresponding current from 314 to 666

- UPDATE `sisalv2`.`entity` SET `entity_status`='superseded',
`corresponding_current`='666' WHERE `entity_id`='317';
- CC-7_2009 (entity_id = 318): entity_status from current to superseded, corresponding current to 667
 - UPDATE `sisalv2`.`entity` SET `entity_status`='superseded',
`corresponding_current`='667' WHERE `entity_id`='318';
- CC-1_2018 (entity_id = 665): entity_status from NULL to current
 - UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='665';
- CC-5_2018 (entity_id = 666): entity_status from NULL to current
 - UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='666';
- CC-7_2018 (entity_id = 667): entity_status from NULL to current
 - UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='667';
- CC-28_2018 (entity_id = 668): entity_status from NULL to current
 - UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='668';

Updated the sisal_chronology table to include Bchron_age and Bacon_age and their uncertainties

- ALTER TABLE `sisalv2`.`sisal_chronology` ADD COLUMN `Bacon_age` DOUBLE NULL DEFAULT NULL AFTER `Bchron_age_uncert_neg`, ADD COLUMN `Bacon_age_uncert_pos` DOUBLE UNSIGNED NULL DEFAULT NULL AFTER `Bacon_age`, ADD COLUMN `Bacon_age_uncert_neg` DOUBLE UNSIGNED NULL DEFAULT NULL AFTER `Bacon_age_uncert_pos`;
- ALTER TABLE `sisalv2`.`sisal_chronology` ADD COLUMN `Bchron_age` DOUBLE NULL DEFAULT NULL AFTER `linear_regress_age_uncert_neg`, ADD COLUMN `Bchron_age_uncert_pos` DOUBLE UNSIGNED NULL DEFAULT NULL AFTER `Bchron_age`, ADD COLUMN `Bchron_age_uncert_neg` DOUBLE UNSIGNED NULL DEFAULT NULL AFTER `Bchron_age_uncert_pos`;

Update the dating table to include Bchron and Bacon agemodels

- ALTER TABLE `sisalv2`.`dating` ADD COLUMN `date_used_Bchron` ENUM('yes', 'no', 'cannot be performed') NULL AFTER `date_used_linear_regress`;
- ALTER TABLE `sisalv2`.`dating` ADD COLUMN `date_used_Bacon` ENUM('yes', 'no', 'cannot be performed') NULL AFTER `date_used_Bchron`;

Altered foreign keys for SISAL_chronology table so that if the entities are deleted, the sisal chronologies are also deleted. Previously, this prevents the deletion of the entity:

```
SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS,
FOREIGN_KEY_CHECKS=0;
SET @OLD_SQL_MODE=@@SQL_MODE,
SQL_MODE='TRADITIONAL,ALLOW_INVALID_DATES';
```

```
ALTER TABLE `sisalv2`.`sisal_chronology`
DROP FOREIGN KEY `fk_table1_sample1`;
```

```
ALTER TABLE `sisalv2`.`sisal_chronology`
ADD CONSTRAINT `fk_table1_sample1`
  FOREIGN KEY (`sample_id`)
  REFERENCES `sisalv2`.`sample` (`sample_id`)
  ON DELETE CASCADE
  ON UPDATE CASCADE;
```

```
SET SQL_MODE=@OLD_SQL_MODE;
SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS;
SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS;
```

Uploaded uncorr_age and corr_age for entity K1 (entity_id = 450), Korallgrottan cave (site_id = 102).

- UPDATE `sisalv2`.`dating` SET `uncorr_age`='6070', `uncorr_age_uncert_pos`='72', `uncorr_age_uncert_neg`='72', `corr_age`='5805', `corr_age_uncert_pos`='73', `corr_age_uncert_neg`='73' WHERE `dating_id`='8426';
- UPDATE `sisalv2`.`dating` SET `uncorr_age`='7555', `uncorr_age_uncert_pos`='38', `uncorr_age_uncert_neg`='38', `corr_age`='7529', `corr_age_uncert_pos`='38', `corr_age_uncert_neg`='38' WHERE `dating_id`='8427';
- UPDATE `sisalv2`.`dating` SET `uncorr_age`='8727', `uncorr_age_uncert_pos`='143', `uncorr_age_uncert_neg`='143', `corr_age`='8612', `corr_age_uncert_pos`='143', `corr_age_uncert_neg`='143' WHERE `dating_id`='8428';
- UPDATE `sisalv2`.`dating` SET `uncorr_age`='8629', `uncorr_age_uncert_pos`='198', `uncorr_age_uncert_neg`='198', `corr_age`='8611', `corr_age_uncert_pos`='198', `corr_age_uncert_neg`='198' WHERE `dating_id`='8429';

Updated latitude and longitude of Gardener's Gut (site_id = 163)

- UPDATE `sisalv2`.`site` SET `latitude`='-38.25', `longitude`='175.02' WHERE `site_id`='163';

Updated the latitude, longitude and monitoring information for Antro del Corchia (site_id = 145)

- UPDATE `sisalv2`.`site` SET `latitude`='43.9833', `longitude`='10.2167', `monitoring`='yes' WHERE `site_id`='145';

Uploaded the following new sites/entities to the database:

- Babylon cave (site_id = 283), entity BN-1, BN-2, BN-3 (entity_id = 645, 646, 647)
- Creighton's cave (site_id = 284), entity CN-1 (entity_id = 648)
- Disbelief cave (site_id = 285), entity Disbelief (entity_id = 649)
- La Garma (site_id = 286), entity GAR-01_drill, GAR-01_laser_d180, GAR-01_laser_d13C (entity_id = 650, 651, 652)
- Twin Forks cave (site_id = 287), entity TF-2 (entity_id = 653)
- Wet Neck cave (site_id = 288), entity WN-4, WN-11 (entity_id = 654, 655)

- Gassel Tropfsteinhöhle (site_id = 289), entity GAS-12, GAS-13, GAS-22, GAS-25, GAS-27, GAS-29 (entity_id = 656, 657, 658, 659, 660, 661)
- Grete-Ruth Shaft (site_id = 290), entity HUN-14 (entity_id = 662)
- Schneckenloch (site_id = 291), entity SCH-6 (entity_id = 663)
- Limnon cave (site_id = 292), entity KTR-2 (entity_id = 671)
- Tham Doun Mai (site_id = 293), entity TM-17 (entity_id = 672)

Uploaded the following new entities to pre-existing site

- BA-5 and BA-7 (entity_id = 643, 644), Baschg cave (site_id = 15)
- HOL-19 (entity_id = 664), Holloch im Mahdtal cave (site_id = 115)
- CC1_2018, CC5_2018, CC7_2018, CC28_2018, CC_stack, CC27 (entity_id = 665-670), Antro del Corchia (site_id = 145)

Alter isotope values and arag_corr to calcite equivalents for entity TA12-2 (entity_id = 436)

- Notes altered from: "Entity TA12-2 (entity_id = 436): Depths below the hiatus at 440mm are estimated. More details in the paper. Corrected oxygen isotope value to calcite equivalent available at <https://www.ncdc.noaa.gov/paleo-search/study/23790>." to "Entity TA12-2 (entity_id = 436): Depths below the hiatus at 440mm are estimated. More details in the paper. d13C must be treated with caution because of a lack of significant testing on the aragonite-calcite correction by original authors."
- UPDATE `sisalv2`.`notes` SET `notes`='Entity TA12-2 (entity_id = 436): Depths below the hiatus at 440mm are estimated. More details in the paper. d13C must be treated with caution because of a lack of significant testing on the aragonite-calcite correction by original authors.' WHERE `site_id`='208';

Depths (depth_sample) added to the following entity:

- Entity KC1 (entity_id = 417), Klaus Cramer cave (site_id = 197)
- Entity EXC3, EXC4 (entity_id = 397, 398), Beatus cave (site_id = 185)

Depths (depth_dating) added to the hiatuses of the following entity:

- Entity EXC3, EXC4 (entity_id = 397, 398), Beatus cave (site_id = 185)
 - UPDATE `sisalv2`.`dating` SET `depth_dating`='42.975' WHERE `dating_id`='7255';
 - UPDATE `sisalv2`.`dating` SET `depth_dating`='252.125' WHERE `dating_id`='7275';

Replace the following entities already in the database (removed old entity and replace with new entity)

- MAXS (entity_id = 359), Max's cave (site_id = 164). Entity now named 'Maxs'

Fixed coordinates:

- UPDATE `sisalv2`.`site` SET `longitude` = '-84.7700' WHERE (`site_id` = '281');
- UPDATE `sisalv2`.`site` SET `latitude` = '-17.0300', `longitude` = '125.0000' WHERE (`site_id` = '13');
- UPDATE `sisalv2`.`site` SET `latitude` = '-15.3000', `longitude` = '128.6200' WHERE (`site_id` = '155');

- UPDATE `sisalv2`.`site` SET `latitude` = '-14.3700', `longitude` = '-44.28' WHERE (`site_id` = '23');
- UPDATE `sisalv2`.`site` SET `latitude` = '42.0875', `longitude` = '-111.519' WHERE (`site_id` = '200');

Monitoring info updated as follows:

- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '13');
- UPDATE `sisalv2`.`site` SET `monitoring` = 'yes' WHERE (`site_id` = '155');

Remove repeated citations in reference table: (update entity_link_reference table first, then followed by removing reference from table).

- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='45' WHERE `ref_id`='412';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='104' WHERE `ref_id`='417';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='340' WHERE `ref_id`='355';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='274' WHERE `ref_id`='401';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='29' WHERE `ref_id`='405';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='114' WHERE `ref_id`='420';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='115' WHERE `ref_id`='419';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='339' WHERE `ref_id`='404';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='265' WHERE `ref_id`='341';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='315' WHERE `ref_id`='397';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='46' WHERE `ref_id`='402';
- UPDATE `sisalv2`.`entity_link_reference` SET `ref_id`='323' WHERE `ref_id`='400';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='412';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='417';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='355';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='401';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='405';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='420';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='419';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='404';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='341';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='397';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='402';
- DELETE FROM `sisalv2`.`reference` WHERE `ref_id`='400';

Clean up citation in reference table

- UPDATE `sisalv2`.`reference` SET `citation`='Apaéstegui, J., Cruz, F. W., Vuille, M., Fohlmeister, J., Espinoza, J. C., Sifeddine, A., Strikis, N., Guyot, J. L., Ventura, R., Cheng, H. and Edwards, R. L.: Precipitation changes over the eastern Bolivian Andes inferred from speleothem ($\delta^{18}O$) records for the last 1400 years, Earth Planet. Sci. Lett., 494, 124–134,2018.' WHERE `ref_id`='340';
- UPDATE `sisalv2`.`reference` SET `citation`='Cheng, H., Sinha, A., Cruz, F. W., Wang, X., Edwards, R. L., d'Horta, F. M., Ribas, C. C., Vuille, M., Stott, L. D. and Auler, A. S.: Climate

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- UPDATE `sisalv2`.`reference` SET `citation`='Wilcox, P. S., Dorale, J. A., Baichtal, J. F., Spötl, C., Fowell, S. J., Edwards, R. L. and Kovarik, J. L.: Millennial-scale glacial climate variability in Southeastern Alaska follows Dansgaard-Oeschger cyclicity, *Sci. Rep.*, 9(1), 7880, 2019.' WHERE `ref_id`='342';
 - UPDATE `sisalv2`.`reference` SET `citation`='Asmerom, Y., Polyak, V. J., Rasmussen, J. B. T., Burns, S. J. and Lachniet, M.: Multidecadal to multicentury scale collapses of Northern Hemisphere monsoons over the past millennium, *Proc. Natl. Acad. Sci.*, 110(24), 9651–9656, 2013.' WHERE `ref_id`='343';
 - UPDATE `sisalv2`.`reference` SET `citation`='Frappier, A., Sahagian, D., González, L. A. and Carpenter, S. J.: El Niño Events Recorded by Stalagmite Carbon Isotopes, *Science*, 298(5593), 565–565, 2002.' WHERE `ref_id`='344';
 - UPDATE `sisalv2`.`reference` SET `citation`='Frappier, A. B., Sahagian, D., Carpenter, S. J., González, L. A. and Frappier, B. R.: Stalagmite stable isotope record of recent tropical cyclone events, *Geology*, 35(2), 111, 2007.' WHERE `ref_id`='345';
 - UPDATE `sisalv2`.`reference` SET `citation`='Jamieson, R. A., Baldini, J. U. L., Frappier, A. B. and Müller, W.: Volcanic ash fall events identified using principal component analysis of a high-resolution speleothem trace element dataset, *Earth Planet. Sci. Lett.*, 426, 36–45, 2015.' WHERE `ref_id`='346';
 - UPDATE `sisalv2`.`reference` SET `citation`='Strikis, N. M., Cruz, F. W., Barreto, E. A. S., Naughton, F., Vuille, M., Cheng, H., Voelker, A. H. L., Zhang, H., Karmann, I., Edwards, R. L., Auler, A. S., Santos, R. V. and Sales, H. R.: South American monsoon response to iceberg discharge in the North Atlantic., *Proc. Natl. Acad. Sci. U. S. A.*, 115(15), 3788–3793, 2018.' WHERE `ref_id`='347';
 - UPDATE `sisalv2`.`reference` SET `citation`='Kanner, L. C., Burns, S. J., Cheng, H., Edwards, R. L. and Vuille, M.: High-resolution variability of the South American summer monsoon over the last seven millennia: insights from a speleothem record from the central Peruvian Andes, *Quat. Sci. Rev.*, 75, 1–10, 2013.' WHERE `ref_id`='348';
 - UPDATE `sisalv2`.`reference` SET `citation`='Medina-Elizalde, M., Burns, S. J., Polanco-Martínez, J. M., Lases-Hernández, F., Shen, C.-C. and Wang, H.-C.: High-resolution speleothem record of precipitation from the Yucatan Peninsula spanning the Maya Preclassic Period, *Glob. Planet. Change*, 138, 93–102, 2016.' WHERE `ref_id`='349';
 - UPDATE `sisalv2`.`reference` SET `citation`='Medina-Elizalde, M., Burns, S. J., Polanco-Martínez, J., Lases-Hernández, F., Bradley, R., Wang, H.-C. and Shen, C.-C.: Synchronous precipitation reduction in the American Tropics associated with Heinrich 2, *Sci. Rep.*, 7(1), 11216, 2017.' WHERE `ref_id`='350';
 - UPDATE `sisalv2`.`reference` SET `citation`='Polyak, V. J., Asmerom, Y. and Lachniet, M. S.: Rapid speleothem $\delta^{13}\text{C}$ change in southwestern North America coincident with Greenland stadial 20 and the Toba (Indonesia) supereruption, *Geology*, 45(9), 843–846, 2017.' WHERE `ref_id`='351';
 - UPDATE `sisalv2`.`reference` SET `citation`='Cruz, F. W., Burns, S. J., Karmann, I., Sharp, W. D. and Vuille, M.: Reconstruction of regional atmospheric circulation features during the

- late Pleistocene in subtropical Brazil from oxygen isotope composition of speleothems, *Earth Planet. Sci. Lett.*, 248(1–2), 495–507, 2006.' WHERE `ref_id`='352';
- UPDATE `sisalv2`.`reference` SET `citation`='van Breukelen, M. R., Vonhof, H. B., Hellstrom, J. C., Wester, W. C. G. and Kroon, D.: Fossil dripwater in stalagmites reveals Holocene temperature and rainfall variation in Amazonia, *Earth Planet. Sci. Lett.*, 275(1–2), 54–60, 2008.' WHERE `ref_id`='353';
 - UPDATE `sisalv2`.`reference` SET `citation`='Wendt, K. A., Häuselmann, A. D., Fleitmann, D., Berry, A. E., Wang, X., Auler, A. S., Cheng, H. and Edwards, R. L.: Three-phased Heinrich Stadial 4 recorded in NE Brazil stalagmites, *Earth Planet. Sci. Lett.*, 510, 94–102, 2019.' WHERE `ref_id`='354';
 - UPDATE `sisalv2`.`reference` SET `citation`='Apaéstegui, J., Cruz, F. W., Vuille, M., Fohlmeister, J., Espinoza, J. C., Sifeddine, A., Strikis, N., Guyot, J. L., Ventura, R., Cheng, H. and Edwards, R. L.: Precipitation changes over the eastern Bolivian Andes inferred from speleothem ($\delta^{18}\text{O}$) records for the last 1400 years, *Earth Planet. Sci. Lett.*, 494, 124–134, 2018.' WHERE `ref_id`='355';
 - UPDATE `sisalv2`.`reference` SET `citation`='Yadava, M. G., Ramesh, R. and Pant, G. B.: Past monsoon rainfall variations in peninsular India recorded in a 331-year-old speleothem, *The Holocene*, 14(4), 517–524, 2004.' WHERE `ref_id`='356';
 - UPDATE `sisalv2`.`reference` SET `citation`='Liu, X., Rao, Z., Shen, C., Liu, J., Chen, J., Chen, S., Wang, X. and Chen, F.: Holocene Solar Activity Imprint on Centennial- to Multidecadal-Scale Hydroclimatic Oscillations in Arid Central Asia, *J. Geophys. Res. Atmos.*, 124(5), 2562–2573, 2019.' WHERE `ref_id`='357';
 - UPDATE `sisalv2`.`reference` SET `citation`='Laskar, A. H., Yadava, M. G., Ramesh, R., Polyak, V. J. and Asmerom, Y.: A 4 kyr stalagmite oxygen isotopic record of the past Indian Summer Monsoon in the Andaman Islands, *Geochemistry, Geophys. Geosystems*, 14(9), 3555–3566, 2013.' WHERE `ref_id`='358';
 - UPDATE `sisalv2`.`reference` SET `citation`='Krause, C. E., Gagan, M. K., Dunbar, G. B., Hantoro, W. S., Hellstrom, J. C., Cheng, H., Edwards, R. L., Suwargadi, B. W., Abram, N. J. and Rifai, H.: Spatio-temporal evolution of Australasian monsoon hydroclimate over the last 40,000 years, *Earth Planet. Sci. Lett.*, 513, 103–112, 2019.' WHERE `ref_id`='359';
 - UPDATE `sisalv2`.`reference` SET `citation`='Zhang, H., Griffiths, M. L., Huang, J., Cai, Y., Wang, C., Zhang, F., Cheng, H., Ning, Y., Hu, C. and Xie, S.: Antarctic link with East Asian summer monsoon variability during the Heinrich Stadial–Bølling interstadial transition, *Earth Planet. Sci. Lett.*, 453, 243–251, 2016.' WHERE `ref_id`='360';
 - UPDATE `sisalv2`.`reference` SET `citation`='Gautam, P. K., Narayana, A. C., Band, S. T., Yadava, M. G., Ramesh, R., Wu, C.-C. and Shen, C.-C.: High-resolution reconstruction of Indian summer monsoon during the Bølling-Allerød from a central Indian stalagmite, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 514, 567–576, 2019.' WHERE `ref_id`='361';
 - UPDATE `sisalv2`.`reference` SET `citation`='Dong, J., Shen, C.-C., Kong, X., Wu, C.-C., Hu, H.-M., Ren, H. and Wang, Y.: Rapid retreat of the East Asian summer monsoon in the middle Holocene and a millennial weak monsoon interval at 9 ka in northern China, *J. Asian Earth Sci.*, 151, 31–39, 2018.' WHERE `ref_id`='362';
 - UPDATE `sisalv2`.`reference` SET `citation`='Sinha, N., Gandhi, N., Chakraborty, S., Krishnan, R., Yadava, M. and Ramesh, R.: Abrupt climate change at ~2800 yr BP evidenced

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WHERE `ref_id`='363';

- UPDATE `sisalv2`.`reference` SET `citation`='Partin, J. W., Quinn, T. M., Shen, C.-C., Okumura, Y., Cardenas, M. B., Siringan, F. P., Banner, J. L., Lin, K., Hu, H.-M. and Taylor, F. W.: Gradual onset and recovery of the Younger Dryas abrupt climate event in the tropics, *Nat. Commun.*, 6(1), 8061, 2015.' WHERE `ref_id`='364';
- UPDATE `sisalv2`.`reference` SET `citation`='Marsh, A., Fleitmann, D., Al-Manmi, D. A. M., Altaweel, M., Wengrow, D. and Carter, R.: Mid- to late-Holocene archaeology, environment and climate in the northeast Kurdistan region of Iraq, *The Holocene*, 28(6), 955–967, 2018.' WHERE `ref_id`='365';
- UPDATE `sisalv2`.`reference` SET `citation`='Amin Al-Manmi, D. A. M., Ismaeel, S. B. and Altaweel, M.: Reconstruction of palaeoclimate in Shalaih Cave, SE of Sangaw, Kurdistan Province of Iraq, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 524, 262–272, 2019.' WHERE `ref_id`='366';
- UPDATE `sisalv2`.`reference` SET `citation`='Tan, L., Cai, Y., Cheng, H., Edwards, L. R., Lan, J., Zhang, H., Li, D., Ma, L., Zhao, P. and Gao, Y.: High resolution monsoon precipitation changes on southeastern Tibetan Plateau over the past 2300 years, *Quat. Sci. Rev.*, 195, 122–132, 2018.' WHERE `ref_id`='367';
- UPDATE `sisalv2`.`reference` SET `citation`='Jiang, X., He, Y., Shen, C., Kong, X., Li, Z. and Chang, Y.: Stalagmite-inferred Holocene precipitation in northern Guizhou Province, China, and asynchronous termination of the Climatic Optimum in the Asian monsoon territory, *Chinese Sci. Bull.*, 57(7), 795–801, 2012.' WHERE `ref_id`='368';
- UPDATE `sisalv2`.`reference` SET `citation`='Tan, L., An, Z., Huh, C.-A., Cai, Y., Shen, C.-C., Shiao, L.-J., Yan, L., Cheng, H. and Edwards, R. L.: Cyclic precipitation variation on the western Loess Plateau of China during the past four centuries, *Sci. Rep.*, 4(1), 6381, 2015.' WHERE `ref_id`='369';
- UPDATE `sisalv2`.`reference` SET `citation`='Yin, J.-J., Rao, Z.-G., Shen, C.-C., Mii, H.-S., Pillutla, R. K., Hu, H.-M., Li, Y.-X. and Feng, X.: Variations of monsoonal rain and vegetation during the past millennium in Tianguai Mountain, North China reflected by stalagmite $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ records from Zhenzhu Cave, *Quat. Int.*, 447, 89–101, 2017.' WHERE `ref_id`='370';
- UPDATE `sisalv2`.`reference` SET `citation`='Scropton, N., Burns, S. J., McGee, D., Hardt, B., Godfrey, L. R., Ranivoharimanana, L. and Faina, P.: Competing Temperature and Atmospheric Circulation Effects on Southwest Madagascan Rainfall During the Last Deglaciation, *Paleoceanogr. Paleoclimatology*, 34(2), 275–286, 2019.' WHERE `ref_id`='371';
- UPDATE `sisalv2`.`reference` SET `citation`='Van Rempelbergh, M., Fleitmann, D., Verheyden, S., Cheng, H., Edwards, L., De Geest, P., De Vleeschouwer, D., Burns, S. J., Matter, A., Claeys, P. and Keppens, E.: Mid- to late Holocene Indian Ocean Monsoon variability recorded in four speleothems from Socotra Island, Yemen, *Quat. Sci. Rev.*, 65, 129–142, 2013.' WHERE `ref_id`='372';
- UPDATE `sisalv2`.`reference` SET `citation`='Braun, K., Bar-Matthews, M., Matthews, A., Ayalon, A., Cowling, R. M., Karkanis, P., Fisher, E. C., Dyez, K., Zilberman, T. and Marean, C. W.: Late Pleistocene records of speleothem stable isotopic compositions from Pinnacle

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- UPDATE `sisalv2`.`reference` SET `citation`='Lauritzen, S.-E. and Onac, B. P.: Isotopic Stratigraphy of a Last Interglacial Stalagmite from Northwestern Romania: Correlation with the Deep-Sea record and Northern-Latitude Speleothem, *J. Cave Karst Stud.*, 61, 22–30, 1999.' WHERE `ref_id`='374';
 - UPDATE `sisalv2`.`reference` SET `citation`='Jex, C. N., Baker, A., Eden, J. M., Eastwood, W. J., Fairchild, I. J., Leng, M. J., Thomas, L. and Sloane, H. J.: A 500 yr speleothem-derived reconstruction of late autumn–winter precipitation, northeast Turkey, *Quat. Res.*, 75(3), 399–405, 2011.' WHERE `ref_id`='375';
 - UPDATE `sisalv2`.`reference` SET `citation`='Jex, C. N., Baker, A., Fairchild, I. J., Eastwood, W. J., Leng, M. J., Sloane, H. J., Thomas, L. and Bekaroğlu, E.: Calibration of speleothem $\delta^{18}\text{O}$ with instrumental climate records from Turkey, *Glob. Planet. Change*, 71(3–4), 207–217, 2010.' WHERE `ref_id`='376';
 - UPDATE `sisalv2`.`reference` SET `citation`='Jex, C. N., Phipps, S. J., Baker, A. and Bradley, C.: Reducing uncertainty in the climatic interpretations of speleothem $\delta^{18}\text{O}$, *Geophys. Res. Lett.*, 40(10), 2259–2264, 2013.' WHERE `ref_id`='377';
 - UPDATE `sisalv2`.`reference` SET `citation`='Niggemann, S., Mangini, A., Richter, D. K. and Wurth, G.: A paleoclimate record of the last 17,600 years in stalagmites from the B7 cave, Sauerland, Germany, *Quat. Sci. Rev.*, 22(5–7), 555–567, 2003.' WHERE `ref_id`='378';
 - UPDATE `sisalv2`.`reference` SET `citation`='Rossi, C., Mertz-Kraus, R. and Osete, M.-L.: Paleoclimate variability during the Blake geomagnetic excursion (MIS 5d) deduced from a speleothem record, *Quat. Sci. Rev.*, 102, 166–180, 2014.' WHERE `ref_id`='379';
 - UPDATE `sisalv2`.`reference` SET `citation`='Osete, M.-L., Martín-Chivelet, J., Rossi, C., Edwards, R. L., Egli, R., Muñoz-García, M. B., Wang, X., Pavón-Carrasco, F. J. and Heller, F.: The Blake geomagnetic excursion recorded in a radiometrically dated speleothem, *Earth Planet. Sci. Lett.*, 353–354, 173–181, 2012.' WHERE `ref_id`='380';
 - UPDATE `sisalv2`.`reference` SET `citation`='Columbu, A., Spötl, C., De Waele, J., Yu, T.-L., Shen, C.-C. and Gázquez, F.: A long record of MIS 7 and MIS 5 climate and environment from a western Mediterranean speleothem (SW Sardinia, Italy), *Quat. Sci. Rev.*, 220, 230–243, 2019.' WHERE `ref_id`='381';
 - UPDATE `sisalv2`.`reference` SET `citation`='Rossi, C., Bajo, P., Lozano, R. P. and Hellstrom, J.: Younger Dryas to Early Holocene paleoclimate in Cantabria (N Spain): Constraints from speleothem Mg, annual fluorescence banding and stable isotope records, *Quat. Sci. Rev.*, 192, 71–85, 2018.' WHERE `ref_id`='382';
 - UPDATE `sisalv2`.`reference` SET `citation`='Breitenbach, S. F. M., Plessen, B., Waltgenbach, S., Tjallingii, R., Leonhardt, J., Jochum, K. P., Meyer, H., Goswami, B., Marwan, N. and Scholz, D.: Holocene interaction of maritime and continental climate in Central Europe: New speleothem evidence from Central Germany, *Glob. Planet. Change*, 176, 144–161, 2019.' WHERE `ref_id`='383';
 - UPDATE `sisalv2`.`reference` SET `citation`='Pawlak, J., Błaszczyk, M., Hercman, H. and Matoušková, Š.: A continuous stable isotope record of last interglacial age from the

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- UPDATE `sisalv2`.`reference` SET `citation`='Lončar, N., Bar-Matthews, M., Ayalon, A., Faivre, S. and Surić, M.: Holocene climatic conditions in the eastern Adriatic recorded in stalagmites from Strašna peć Cave (Croatia), *Quat. Int.*, 508, 98–106, 2019.' WHERE `ref_id`='385';
 - UPDATE `sisalv2`.`reference` SET `citation`='Dumitru, O. A., Onac, B. P., Polyak, V. J., Wynn, J. G., Asmerom, Y. and Fornós, J. J.: Climate variability in the western Mediterranean between 121 and 67 ka derived from a Mallorcan speleothem record, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 506, 128–138, 2018.' WHERE `ref_id`='386';
 - UPDATE `sisalv2`.`reference` SET `citation`='Budsky, A., Scholz, D., Wassenburg, J. A., Mertz-Kraus, R., Spötl, C., Riechelmann, D. F., Gibert, L., Jochum, K. P. and Andreae, M. O.: Speleothem $\delta^{13}\text{C}$ record suggests enhanced spring/summer drought in south-eastern Spain between 9.7 and 7.8 ka – A circum-Western Mediterranean anomaly?, *The Holocene*, 29(7), 1113–1133, 2019.' WHERE `ref_id`='387';
 - UPDATE `sisalv2`.`reference` SET `citation`='Denniston, R. F., Houts, A. N., Asmerom, Y., Wanamaker, A. D., Haws, J. A., Polyak, V. J., Thatcher, D. L., Altan-Ochir, S., Borowske, A. C., Breitenbach, S. F. M., Ummenhofer, C. C., Regala, F. T., Benedetti, M. M. and Bicho, N.: A Stalagmite Test of North Atlantic SST and Iberian Hydroclimate Linkages over the Last Two Glacial Cycles, *Clim. Past Discuss.*, 1–39, 2017.' WHERE `ref_id`='388';
 - UPDATE `sisalv2`.`reference` SET `citation`='Verheyden, S., Keppens, E., Quinif, Y., Cheng, H. J. and Edwards, L. R.: Late-glacial and Holocene climate reconstruction as inferred from a stalagmite-Grotte du Père Noël, Han-sur-Lesse, Belgium, *Geol. Belgica*, 17(1), 83–89, 2014.' WHERE `ref_id`='389';
 - UPDATE `sisalv2`.`reference` SET `citation`='Verheyden, S., Keppens, E., Fairchild, I. J., McDermott, F. and Weis, D.: Mg, Sr and Sr isotope geochemistry of a Belgian Holocene speleothem: implications for paleoclimate reconstructions, *Chem. Geol.*, 169(1–2), 131–144, 2000.' WHERE `ref_id`='390';
 - UPDATE `sisalv2`.`reference` SET `citation`='Flohr, P., Fleitmann, D., Zorita, E., Sadekov, A., Cheng, H., Bosomworth, M., Edwards, L., Matthews, W. and Matthews, R.: Late Holocene droughts in the Fertile Crescent recorded in a speleothem from northern Iraq, *Geophys. Res. Lett.*, 44(3), 1528–1536, 2017.' WHERE `ref_id`='391';
 - UPDATE `sisalv2`.`reference` SET `citation`='Carolin, S. A., Walker, R. T., Day, C. C., Ersek, V., Sloan, R. A., Dee, M. W., Talebian, M. and Henderson, G. M.: Precise timing of abrupt increase in dust activity in the Middle East coincident with 4.2 ka social change, *Proc. Natl. Acad. Sci.*, 116(1), 67–72, 2019.' WHERE `ref_id`='392';
 - UPDATE `sisalv2`.`reference` SET `citation`='Webb, M., Dredge, J., Barker, P. A., Müller, W., Jex, C., Desmarchelier, J., Hellstrom, J. and Wynn, P. M.: Quaternary climatic instability in south-east Australia from a multi-proxy speleothem record, *J. Quat. Sci.*, 29(6), 589–596, 2014.' WHERE `ref_id`='393';
 - UPDATE `sisalv2`.`reference` SET `citation`='Logan, A. J.: A new paleoclimate record for North Westland, New Zealand, with implications for the interpretation of speleothem based paleoclimate proxies, PhD Thesis, The University of Canterbury., 2011.' WHERE `ref_id`='394';

- UPDATE `sisalv2`.`reference` SET `citation`='McCabe-Glynn, S., Johnson, K. R., Strong, C., Berkelhammer, M., Sinha, A., Cheng, H. and Edwards, R. L.: Variable North Pacific influence on drought in southwestern North America since AD 854, *Nat. Geosci.*, 6(8), 617–621, 2013.' WHERE `ref_id`='395';
- UPDATE `sisalv2`.`reference` SET `citation`='Lachniet, M. S., Johnson, L., Asmerom, Y., Burns, S. J., Polyak, V., Patterson, W. P., Burt, L. and Azouz, A.: Late Quaternary moisture export across Central America and to Greenland: evidence for tropical rainfall variability from Costa Rican stalagmites, *Quat. Sci. Rev.*, 28(27–28), 3348–3360, 2009.' WHERE `ref_id`='396';
- UPDATE `sisalv2`.`reference` SET `citation`='Staubwasser, M., Drăgușin, V., Onac, B. P., Assonov, S., Ersek, V., Hoffmann, D. L. and Veres, D.: Impact of climate change on the transition of Neanderthals to modern humans in Europe., *Proc. Natl. Acad. Sci. U. S. A.*, 115(37), 9116–9121, 2018.' WHERE `ref_id`='397';
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- UPDATE `sisalv2`.`reference` SET `citation`='Apaéstegui, J., Cruz, F. W., Sifeddine, A., Vuille, M., Espinoza, J. C., Guyot, J. L., Khodri, M., Strikis, N., Santos, R. V., Cheng, H., Edwards, L., Carvalho, E. and Santini, W.: Hydroclimate variability of the northwestern Amazon Basin near the Andean foothills of Peru related to the South American Monsoon System during the last 1600 years, *Clim. Past*, 10(6), 1967–1981, 2014.' WHERE `ref_id`='402';
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 - UPDATE `sisalv2`.`reference` SET `citation`='Demény, A., Kern, Z., Németh, A., Frisia, S., Hatvani, I. G., Czuppon, G., Leél-Őssy, S., Molnár, M., Óvári, M., Surányi, G., Gilli, A., Wu, C.-C. and Shen, C.-C.: North Atlantic influences on climate conditions in East-Central Europe in the late Holocene reflected by flowstone compositions, *Quat. Int.*, 512, 99–112, 2019.' WHERE `ref_id`='406';
 - UPDATE `sisalv2`.`reference` SET `citation`='Czuppon, G., Demény, A., Leél-Őssy, S., Óvári, M., Molnár, M., Stieber, J., Kiss, K., Kármán, K., Surányi, G. and Haszpra, L.: Cave monitoring in the Béke and Baradla caves (Northeastern Hungary): implications for the conditions for the formation cave carbonates, *Int. J. Speleol.*, 47(1), 13–28, 2018.' WHERE `ref_id`='407';
 - UPDATE `sisalv2`.`reference` SET `citation`='Weber, M., Scholz, D., Schröder-Ritzrau, A., Deininger, M., Spötl, C., Lugli, F., Mertz-Kraus, R., Jochum, K. P., Fohlmeister, J., Stumpf, C. F. and Riechelmann, D. F. C.: Evidence of warm and humid interstadials in central Europe during early MIS 3 revealed by a multi-proxy speleothem record, *Quat. Sci. Rev.*, 200, 276–286, 2018.' WHERE `ref_id`='408';
 - UPDATE `sisalv2`.`reference` SET `citation`='Kanner, L. C., Burns, S. J., Cheng, H., Edwards, R. L. and Vuille, M.: High-resolution variability of the South American summer monsoon over the last seven millennia: insights from a speleothem record from the central Peruvian Andes, *Quat. Sci. Rev.*, 75, 1–10, 2013.' WHERE `ref_id`='409';
 - UPDATE `sisalv2`.`reference` SET `citation`='Burns, S. J., Welsh, L. K., Scroxton, N., Cheng, H. and Edwards, R. L.: Millennial and orbital scale variability of the South American Monsoon during the penultimate glacial period, *Sci. Rep.*, 9(1), 1234, 2019.' WHERE `ref_id`='410';
 - UPDATE `sisalv2`.`reference` SET `citation`='Warken, S. F., Scholz, D., Spötl, C., Jochum, K. P., Pajón, J. M., Bahr, A. and Mangini, A.: Caribbean hydroclimate and vegetation history across the last glacial period, *Quat. Sci. Rev.*, 218, 75–90, 2019.' WHERE `ref_id`='411';
 - UPDATE `sisalv2`.`reference` SET `citation`='Strikis, N. M., Chiessi, C. M., Cruz, F. W., Vuille, M., Cheng, H., de Souza Barreto, E. A., Mollenhauer, G., Kasten, S., Karmann, I., Edwards, R. L., Bernal, J. P. and Sales, H. dos R.: Timing and structure of Mega-SACZ events during Heinrich Stadial 1, *Geophys. Res. Lett.*, 42(13), 5477-5484A, 2015.' WHERE `ref_id`='412';
 - UPDATE `sisalv2`.`reference` SET `citation`='Asmerom, Y., Polyak, V., Burns, S. and Rasmussen, J.: Solar forcing of Holocene climate: New insights from a speleothem record, southwestern United States, *Geology*, 35(1), 1, 2007.' WHERE `ref_id`='413';
 - UPDATE `sisalv2`.`reference` SET `citation`='Cheng, H., Edwards, R. L., Wang, Y., Kong, X., Ming, Y., Kelly, M. J., Wang, X., Gallup, C. D. and Liu, W.: A penultimate glacial monsoon record from Hulu Cave and two-phase glacial terminations, *Geology*, 34(3), 217, 2006.' WHERE `ref_id`='414';

- UPDATE `sisalv2`.`reference` SET `citation`='Cai, Y., Chiang, J. C. H., Breitenbach, S. F. M., Tan, L., Cheng, H., Edwards, R. L. and An, Z.: Holocene moisture changes in western China, Central Asia, inferred from stalagmites, *Quat. Sci. Rev.*, 158, 15–28, 2017.' WHERE `ref_id`='415';
- UPDATE `sisalv2`.`reference` SET `citation`='Rudzka-Phillips, D., McDermott, F., Jackson, A. and Fleitmann, D.: Inverse modelling of the 14C bomb pulse in stalagmites to constrain the dynamics of soil carbon cycling at selected European cave sites, *Geochim. Cosmochim. Acta*, 112, 32–51, 2013.' WHERE `ref_id`='416';
- UPDATE `sisalv2`.`reference` SET `citation`='Rudzka, D., McDermott, F. and Surić, M.: A late Holocene climate record in stalagmites from Modrič Cave (Croatia), *J. Quat. Sci.*, 27(6), 585–596, 2012.' WHERE `ref_id`='417';
- UPDATE `sisalv2`.`reference` SET `citation`='Niggemann, S., Mangini, A., Mudelsee, M., Richter, D. K. and Wurth, G.: Sub-Milankovitch climatic cycles in Holocene stalagmites from Sauerland, Germany, *Earth Planet. Sci. Lett.*, 216(4), 539–547, 2003.' WHERE `ref_id`='418';
- UPDATE `sisalv2`.`reference` SET `citation`='Scropton, N., Burns, S. J., McGee, D., Hardt, B., Godfrey, L. R., Ranivoharimanana, L. and Faina, P.: Hemispherically in-phase precipitation variability over the last 1700 years in a Madagascar speleothem record, *Quat. Sci. Rev.*, 164, 25–36, 2017.' WHERE `ref_id`='419';
- UPDATE `sisalv2`.`reference` SET `citation`='Burns, S. J., Godfrey, L. R., Faina, P., McGee, D., Hardt, B., Ranivoharimanana, L. and Randrianasy, J.: Rapid human-induced landscape transformation in Madagascar at the end of the first millennium of the Common Era, *Quat. Sci. Rev.*, 134, 92–99, 2016.' WHERE `ref_id`='420';
- UPDATE `sisalv2`.`reference` SET `citation`='Lachniet, M. S., Asmerom, Y., Burns, S. J., Patterson, W. P., Polyak, V. J. and Seltzer, G. O.: Tropical response to the 8200 yr B.P. cold event? Speleothem isotopes indicate a weakened early Holocene monsoon in Costa Rica, *Geology*, 32(11), 957, 2004.' WHERE `ref_id`='421';
- UPDATE `sisalv2`.`reference` SET `citation`='Steponaitis, E., Andrews, A., McGee, D., Quade, J., Hsieh, Y.-T., Broecker, W. S., Shuman, B. N., Burns, S. J. and Cheng, H.: Mid-Holocene drying of the U.S. Great Basin recorded in Nevada speleothems, *Quat. Sci. Rev.*, 127, 174–185, 2015.' WHERE `ref_id`='422';

Clean up pub DOI in reference table

- UPDATE `sisalv2`.`reference` SET `publication_Doi`='10.1038/s41598-018-37854-3' WHERE `ref_id`='410';
- UPDATE `sisalv2`.`reference` SET `publication_Doi`='10.1130/G23145A.1' WHERE `ref_id`='345';
- UPDATE `sisalv2`.`reference` SET `publication_Doi`='10.1016/j.palaeo.2018.11.006' WHERE `ref_id`='361';
- UPDATE `sisalv2`.`reference` SET `publication_Doi`='10.1016/j.gca.2013.02.032' WHERE `ref_id`='416';

Clean data DOI URL in entity table

- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/23870' WHERE `entity_id`='472';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/23870' WHERE `entity_id`='473';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/23870' WHERE `entity_id`='474';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/9640' WHERE `entity_id`='327';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/19038' WHERE `entity_id`='641';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/19038' WHERE `entity_id`='642';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/19885' WHERE `entity_id`='238';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/13217' WHERE `entity_id`='186';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/15075' WHERE `entity_id`='458';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/15075' WHERE `entity_id`='459';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8629' WHERE `entity_id`='471';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='482';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='483';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='484';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='485';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='486';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='487';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='488';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='489';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='490';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='491';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='492';

- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='493';
- UPDATE `sisalv2`.`entity` SET
`data_DOI_URL`='https://www.ncdc.noaa.gov/paleo/study/8641' WHERE `entity_id`='494';

Clean contact name in entity table (spelling of names standardised)

- UPDATE `sisalv2`.`entity` SET `contact`='Jun Hu, Jack Krone' WHERE `entity_id`='389';
- UPDATE `sisalv2`.`entity` SET `contact`='James Apaéstegui' WHERE `entity_id`='93';
- UPDATE `sisalv2`.`entity` SET `contact`='James Apaéstegui' WHERE `entity_id`='94';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='525';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='526';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='280';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='281';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='617';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='618';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='619';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='261';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='208';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='250';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='251';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='252';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='310';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='313';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='314';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='315';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='316';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='317';
- UPDATE `sisalv2`.`entity` SET `contact`='Carlos Pérez-Mejías' WHERE `entity_id`='318';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='528';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='529';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='530';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='531';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='532';
- UPDATE `sisalv2`.`entity` SET `contact`='Eric Park, Jun Hu' WHERE `entity_id`='533';
- UPDATE `sisalv2`.`entity` SET `contact`='István G. Hatvani' WHERE `entity_id`='631';
- UPDATE `sisalv2`.`entity` SET `contact`='István G. Hatvani' WHERE `entity_id`='632';
- UPDATE `sisalv2`.`entity` SET `contact`='Jun Hu, Jack Krone' WHERE `entity_id`='383';
- UPDATE `sisalv2`.`entity` SET `contact`='Jun Hu, Jack Krone' WHERE `entity_id`='384';
- UPDATE `sisalv2`.`entity` SET `contact`='Jun Hu, Jack Krone' WHERE `entity_id`='385';
- UPDATE `sisalv2`.`entity` SET `contact`='Jun Hu, Jack Krone' WHERE `entity_id`='386';
- UPDATE `sisalv2`.`entity` SET `contact`='Jun Hu, Jack Krone' WHERE `entity_id`='387';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='612';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='89';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='90';

- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='91';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='92';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='312';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='614';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='615';
- UPDATE `sisalv2`.`entity` SET `contact`='Nicolás M. Stríkis' WHERE `entity_id`='616';
- UPDATE `sisalv2`.`entity` SET `contact`='Zoltán Kern, István G. Hatvani' WHERE `entity_id`='559';
- UPDATE `sisalv2`.`entity` SET `contact`='Syed Masood Ahmad' WHERE `entity_id`='527';

All notes checked with regards to the corrections made with respect to hiatus, mineralogy and event; actively forming.

Updated the following notes for the following sites already in the database:

KNI-51 (site_id = 155)

- UPDATE `sisalv2`.`notes` SET `notes`='KNI-51-0 (entity_id = 331), KNI-51-3 (entity_id = 332), KNI-51-4 (entity_id = 333), KNI-51-7 (entity_id = 334), KNI-51-10 (entity_id = 335), KNI-51-11 (entity_id = 336), KNI-51-A2-side1 (entity_id = 337), KNI-51-A2-side2 (entity_id = 338), KNI-51-C (entity_id = 339), KNI-51-F (entity_id = 340), KNI-51-G (entity_id = 341), KNI-51-H (entity_id = 342), KNI-51-I (entity_id = 343), KNI-51-J (entity_id = 344), KNI-51-N (entity_id = 345), KNI-51-O (entity_id = 346), KNI-51-A1 (entity_id = 418) and KNI-51-P (entity_id = 419): all samples have been corrected by -1 permil to be a calcite equivalent. In the original paper, entity KN51-10 was arbitrarily offset by -1 permil to match other records; this offset has been removed. \\\ 234U/238U values for KNI-51-1 (entity_id = 637) and KNI-51-8 (entity_id = 638) are derived from d234U.' WHERE `site_id`='155';

Anjohibe (site_id = 94)

- UPDATE `sisalv2`.`notes` SET `notes`='A lower resolution record from stalagmite AB2 was published in Burns et al., 2016 but was superseded by Scroxton et al., 2017 - including an enhanced age model. \\\ Entity AB2, AB3 (entity_id = 188, 187): Data shown in paper and online at NOAA are either raw values or corrected to aragonite. Data deposited in SISAL has been corrected to calcite, by the original author, to facilitate comparisons. Conversion made using -0.7 for d18O and -2.5 for d13C for 100% aragonite to calcite. \\\ AB2 (entity_id = 188): Mixed mineralogy has been converted as a proportion of the mineralogies present, measured by XRD and XRF: 29% calcite between 90.5 (sample_id = 388296) and 105.1mm (sample_id = 388360) and 24% calcite between 1029.2 (sample_id = 388918) and 1096.2mm (sample_id = 388947).' WHERE `site_id`='94';

Added the following notes for the following sites to the database:

- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('13', '234U/238U values of BGC-5, BGC-10, BGC-11_2018, BGC-16 (entity_id = 633, 634, 635, 636) are derived from d234U values.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('177', 'CMa (entity_id = 609) and CMb (entity_id = 610) are two small side stalagmites of CM (entity_id = 608, 388). Aged model of CMa (entity_id = 609) tuned to the aged model of CM_2019 (entity_id = 608) via

the best correlation of the oxygen isotope records. The given uncertainties are the maximum uncertainties derived by the initial stalage age model.');

- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('227', 'According to Paul S. Wilcox, the offset between U/Th dates and isotope ages in the upper part of EC-16-5-F (entity_id = 505) is an artefact of Oxcal.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('228', 'Initial $^{230}\text{Th}/^{232}\text{Th}$ ratios in BC-11 (entity_id = 506) were corrected using an empirical relationship between Th concentration and initial $^{230}\text{Th}/^{232}\text{Th}$ ratios. See publication for details. Weighted average U/Th ages at the same depth were used for the age-depth model of entity_id = 506. BC-11 (entity_id = 506) has apparent continuous annual banding, with all dates (except 2) falling within the band-counted age model. Laminae depths not provided. Depth_lam in BC-11 (entity_id = 506) were calculated from cumulative sum of laminae thicknesses, which results in a slight offset between depth_lam and depth_sample. Error of laminae thickness measurements given as $\pm 10\%$. Depth of date_type="event; start of laminations" in BC-11 (entity_id = 506) was assumed from cumulative laminae thickness and its error assumed to be 0.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('229', 'ATM-7 (entity_id = 507): Differences in precision between stable isotope depths (depth_sample) reported to ± 5 microns (based on the micromilling system) and lamina midpoint depths (depth_lam) reported to ± 100 microns (based on microsampling and microscopy) result in offsets that are well within the age model error.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('232', 'Rio Secreto cave (site_id = 232) coordinates are inexact (nearby village). The Holocene part of Itzamna (entity_id = 510) was published in Medina-Elizalde et al. (2016) and its age-depth model is based on "a piecewise-linear model to account for an apparent slight non-linearity in stalagmite growth between sample_depth 57 and 86 mm ". The glacial part of Itzamna (entity_id = 510) was published in Medina-Elizalde et al. (2017). ');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('233', 'Age model of KR1 (entity_id = 511) differs from original publication by 0-33 years and reports the mean of the individual ages per depth. The AM uncertainty was calculated as the maximum age uncertainty for each isotopic depth plus the difference between both isotopic ages. KR1 (entity_id = 511) data not available in original publication and assumed to be the same than other publications from same authors: iso_precision=0.1, date_type = MC-ICPMS, decay_constant = Cheng et al., 2013.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('234', 'St8-a (entity_id = 512) and St8-b (entity_id = 531) are two growth axes of the same stalagmite (St8; not in database) ');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('238', 'MGY (entity_id = 519): calib_used = INTCAL98 assumed and not verified by original author.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('240', 'Corr_age in AN4 (entity_id = 521) and AN8 (entity_id = 522) are calibrated ^{14}C ages (cal yr BP; 1950 CE) given as the mid-point of the calibrated age range. AN4 (entity_id = 521) and AN8 (entity_id = 522) were collected from two opposite corners of the same cave separated by c.25m.

- Date with lab_num=PRL-3229 (dating_id = 9624; depth_dating = 80) in AN4 (entity_id = 521) is not on central growth axes and was not used to create the age model.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('250', 'Laminae counting of WY27 (entity_id = 542) and WY33 (entity_id = 543) constrained by 210Pb dating (samples not in db).');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('253', 'According to publication, isotopic signal in Hq-1 (entity_id = 546) is exaggerated by kinetic fractionation: magnitude of change not reliable proxy, direction of change likely reliable. Although original publication states continuous growth of STM1 (entity_id = 547), we have identified a possible hiatus between depth_sample = 427.5mm (sample_id = 349662) and depth_sample = 428.5mm (sample_id = 349663).');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('254', 'The host rock of site PP29 (site_id = 254) is Table Mountain Sandstone, a Paleozoic quartzite. The carbonate sources are overlying Pleistocene calcretes and aeolianites. The age models of 46745, 46746-a, 46747, 138862.1, 139962.2a, 142828, 46746-b, 138862.2b (entity_id = 549, 550, 551, 552, 553, 554, 555, 556) are based on ages not corrected for detrital thorium. The age model for 46747 (entity_id = 551) has been corrected from publication to use the correct depth_dating = 22mm for dating_id = 9929 (the depth used in the published age model was 21mm by mistake).');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('255', 'The Isochron age (dating_id = 9972) is used in the original OXCAL age model and its use is recommended to recalculate the age model. If original chemistry is required to recalculate corrected ages then the axis age (dating_id = 9968 at depth_dating = 813.7mm) is an acceptable alternative to the isochron age.');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('256', 'Only U/Th dates with lab_num=LFG 2k (dating_id = 10003) and lab_num=LFG 2l (dating_id = 10004), were corrected because of their low 230/232Th ratios.');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('257', '2p (entity_id = 559): Original publication suggests a laminae age uncertainty of +/-2-3%.');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('259', 'Entity PA-8 (entity_id = 561): Some U-Th ages are outside the range of the isotopic sampling. The published age model was created using laminae data not provided here.');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('260', 'The identification of calcite layers in CA (entity_id = 562) is approximate because a proper mineralogical study has not been done.');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('270', 'Entity GZ-14-1 (entity_id = 574) is located at the back of the cave. Bedrock of site_id = 270 is tertiary in age (period not specified).');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('273', 'Entity CRC-3 (entity_id = 577): Two different values of the atm ratio used to correct U/Th ages are provided in the original publication.');
 - INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('275', 'Entity BG6LR (entity_id = 587): Sampling gap between sample_id 363143 and 363144 (depth = 254.5 and 764.5).');

- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('276', 'The ages between detph_dating = 3.4mm and depth_dating = 19.65 mm in entity BNT-2 (entity_id = 613) were obtained by fitting the measured pMC values to the IntCal13 (Reimer et al., 2013) dataset. This approach defined the 5% dead carbon applied in deeper sections. See publication for details.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('277', 'PeruMIS6Composite (entity_id = 602) created from splicing three original records: P09-H1b (entity_id = 599), P10-H5 (entity_id = 600) and P10-H2 (entity_id = 601).');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('278', 'PP1 (entity_id = 613) data not available in original publication and assumed to be the same than other publications from same authors: iso_precision=0.1; decay_constant=Cheng et al., 2000. Mineralogy inferred from U content. Some U/Th dates were measured twice and the weighted average was used for the age model (samples with lab_num ending with \"_wa\"). The individual U/Th dates were hence set to date_used = no.');
- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('279', 'The host rock of Staircase (site_id = 279) is Table Mountain Sandstone, a Paleozoic quartzite. The carbonate sources are overlying Pleistocene calcretes and aeolianites. The age models of 46322, 46330-a, 46330-b, 46861, 50100, 142819, 142820 (entity_id = 624, 625, 630, 626, 627, 628, 629) are based on ages not corrected for detrital thorium.');

Deleted the following notes from the database as the notes are no longer applicable after new uploaded workbooks replaced the old ones:

- Palestina (site_id = 25)
 - DELETE FROM `sisalv2`.`notes` WHERE `site_id`='25';
- El Condor cave (site_id = 192)
 - DELETE FROM `sisalv2`.`notes` WHERE `site_id`='192';

Uploaded Venado (site_id = 281), entity V1 (entity_id = 640)

- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('281', 'ISO-1 (dating_depth = 0mm, dating_id = 11393) from entity V1 (entity_id = 640) is derived from isochron subsamples A (dating_id = 11390), B (dating_id = 11391) and C (dating_id = 11392). ISO-2 (dating_depth = 314.5mm, dating_id = 11402) from entity V1 (entity_id = 640) is age derived from isochron subsamples 124 (dating_id = 11399), 125 (dating_id = 11400) and 126 (dating_id = 11401). ISO-1 (dating_id = 11393) and ISO-2 (dating_id = 11402) were corrected with the initial 230Th/232Th ratio derived from the isochrones. For the other non-isochron samples, the authors chose an initial 230Th/232Th ratio between both isochrones. Age model of entity V1 (entity_id = 640) constructed using a fifth-order polynomial visually weighted to follow the most robust age determinations.');

Updated notes for Minnetonka (site_id = 200), entity MC08-1 (entity_id = 422) as newly uploaded workbook replaces old workbook and has known mineralogy (remove sentence with regards to mineralogy)

- UPDATE `sisalv2`.`notes` SET `notes`='Entity MC08-1 (entity_id = 422): Analytical precision of isotope is better than 0.1 per mil. Three hiatuses are present at ~28, 31 and 112 mm from visual identification from figures.' WHERE `site_id`='200';

Added notes for Lianhua, Shanxi (site_id = 244) with regards to LH4, LH5 and LH9 (entity_id = 529, 530, 532).

- INSERT INTO `sisalv2`.`notes` (`site_id`, `notes`) VALUES ('244', 'Entities LH4, LH5 and LH9 (entity_id = 529, 530, 532): All three records completely supersede records in Dong et al. (2015) (<https://doi.org/10.1016/j.palaeo.2015.06.013>) which are not in the SISAL database.');

Updated the entity_status for Lianhua, Shanxi (site_id =244), entity LH4, LH5 and LH9 (entity_id = 529, 530, 532) from NULL to 'current'

- UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='529';
- UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='530';
- UPDATE `sisalv2`.`entity` SET `entity_status`='current' WHERE `entity_id`='532';

Alter entity MOD-21 (entity_id = 632) from Modric cave (site_id = 86) to the database. The data provided in the workbook is actually the SISAL linear regression age model and not the original age model. Notes updated accordingly (with new details about MOD-21 and MOD-27 (entity_id = 632, 631)).

- UPDATE `sisalv2`.`dating` SET `date_used_linear_regress`=`date_used` WHERE entity_id = 632;
- UPDATE `sisalv2`.`dating` SET `date_used`='no' WHERE entity_id = 632;
- INSERT INTO `sisalv2`.`sisal_chronology` (sample_id, linear_regress_age, linear_regress_age_uncert_pos, linear_regress_age_uncert_neg) (SELECT sample_id,interp_age, interp_age_uncert_pos, interp_age_uncert_neg FROM sample JOIN original_chronology USING (sample_id) WHERE entity_id = 632);
- SET SQL_SAFE_UPDATES=0;
- DELETE FROM `sisalv2`.`original_chronology` WHERE `sample_id` IN (SELECT sample_id FROM (SELECT sample_id FROM sample JOIN original_chronology USING (sample_id) WHERE entity_id = 632) as t);
- SET SQL_SAFE_UPDATES=1;
- UPDATE `sisalv2`.`notes` SET `notes`='Age-depth model for MOD-22 (entity_id = 179) was recalculated. Laminae data for MOD-27 (entity_id = 631) was based on 14C bomb peak. MOD-27 (entity_id = 631) is a soda straw. Age model for MOD-21 (entity_id = 632) not available from publication.' WHERE `site_id`='86';

Add three columns in `sisal_chronology` table and one column to `dating` to accomodate SISAL linear regression age model. These are: linear_regress_age, linear_regress_age_uncert_pos, linear_regress_age_uncert_neg.

- ALTER TABLE `sisalv2`.`sisal_chronology` ADD COLUMN `linear_regress_age` DOUBLE NULL DEFAULT NULL AFTER `linear_age_uncert_neg`, ADD COLUMN `linear_regress_age_uncert_pos` DOUBLE UNSIGNED NULL DEFAULT NULL AFTER

- ```
`linear_regress_age`, ADD COLUMN `linear_regress_age_uncert_neg` DOUBLE
UNSIGNED NULL DEFAULT NULL AFTER `linear_regress_age_uncert_pos`;
- ALTER TABLE `sisalv2`.`dating` ADD COLUMN `date_used_linear_regress` ENUM('yes',
'no') NULL DEFAULT NULL AFTER `date_used_linear`;
```

Alter the dropdown list for date\_type in dating table, removing 'Sampling gap' from the option.

- ```
- ALTER TABLE `sisalv2`.`dating` CHANGE COLUMN `date_type` `date_type` ENUM('C14',
'MC-ICP-MS U/Th', 'ICP-MS U/Th Other', 'Alpha U/Th', 'TIMS', 'U/Th unspecified', 'Cross-
dating', 'Multiple methods', 'Event; hiatus', 'Event; actively forming', 'Event; start of
laminations', 'Event; end of laminations', 'other', 'unknown') NULL DEFAULT NULL ;
```

Link PeruMIS6Composite (entity_id = 410) from Huagapo cave (site_id = 277) to individual entities P09-H1b, P10-H5 and P10-H2 (entity_id = 599, 600, 601) through composite_link_entity table

- ```
- INSERT INTO `sisalv2`.`composite_link_entity` (`composite_entity_id`, `single_entity_id`)
VALUES ('602', '599');
- INSERT INTO `sisalv2`.`composite_link_entity` (`composite_entity_id`, `single_entity_id`)
VALUES ('602', '600');
- INSERT INTO `sisalv2`.`composite_link_entity` (`composite_entity_id`, `single_entity_id`)
VALUES ('602', '601');
```

Notes added:

- Upload the workbook
- Alter the dating table by moving date\_used to date\_used\_COPRA
  - UPDATE `sisalv2`.`dating` SET `date\_used\_COPRA`=`date\_used` WHERE entity\_id = 639;
- Alter the dating table by changing date\_used to all 'no' (no original age model).
  - UPDATE `sisalv2`.`dating` SET `date\_used`='no' WHERE entity\_id = 639;
- The interp\_age(s) in the original chronology table is then to be transferred to the SISAL\_chronology table.
  - INSERT INTO sisal\_chronology (sample\_id, COPRA\_age, COPRA\_age\_uncert\_pos, COPRA\_age\_uncert\_neg) (SELECT sample\_id,interp\_age, interp\_age\_uncert\_pos, interp\_age\_uncert\_neg FROM sample JOIN original\_chronology USING (sample\_id) WHERE entity\_id = 639);
- Delete data in the original\_chronology table.
  - SET SQL\_SAFE\_UPDATES=0;
  - DELETE FROM `sisalv2`.`original\_chronology` WHERE `sample\_id` IN (SELECT sample\_id FROM (SELECT sample\_id FROM sample JOIN original\_chronology USING (sample\_id) WHERE entity\_id = 639) as t);
  - SET SQL\_SAFE\_UPDATES=1;
- Notes added to say that there is no original age model
  - INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('280', 'Entity AH-1 (entity\_id = 639): Original age model not in the database because of the existence of age inversions.');

The following newly uploaded entities superseded current entities and therefore the entity names and the entity status had to be altered:

- Ball Gown cave (site\_id = 13), BGC-11\_2017 (entity\_id = 635) supersedes BGC-11\_2013 (entity\_id = 65). entity\_status of BGC-11\_2013 changed from 'current' to 'superseded' and corresponding\_current changed from NULL to 635. entity\_status for BGC-11\_2017 changed from NULL to 'current'.
  - UPDATE `sisalv2`.`entity` SET `entity\_status`='current' WHERE `entity\_id`='635';
  - UPDATE `sisalv2`.`entity` SET `entity\_status`='superseded', `corresponding\_current`='635' WHERE `entity\_id`='65';
  
- Paixao cave (site\_id = 113), PX\_2018 (entity\_id = 612) supersedes PX\_2015 (entity\_id = 228). entity\_status of PX\_2015 changed from 'current' to 'superseded' and corresponding\_current changed from NULL to 612. entity\_status for PX\_2018 changed from NULL to 'current'.
  - UPDATE `sisalv2`.`entity` SET `entity\_status`='current' WHERE `entity\_id`='612';
  - UPDATE `sisalv2`.`entity` SET `entity\_status`='superseded', `corresponding\_current`='612' WHERE `entity\_id`='228';
  
- Santo Tomas cave (site\_id = 177), CM\_2019 (entity\_id = 608) supersedes CM\_2013 (entity\_id = 388). entity\_status of CM\_2013 changed from 'current' to 'superseded' and corresponding\_current changed from NULL to 608. entity\_status for CM\_2019 changed from NULL to 'current'.
  - UPDATE `sisalv2`.`entity` SET `entity\_name`='CM\_2013' WHERE `entity\_id`='388';
  - UPDATE `sisalv2`.`entity` SET `entity\_status`='current partially modified', `corresponding\_current`='388' WHERE `entity\_id`='608';

Santo Tomas cave (site\_id = 177), change monitoring from 'yes' to 'no'

- UPDATE `sisalv2`.`site` SET `monitoring`='no' WHERE `site\_id`='177';

Uploaded the following entities to old sites:

- Kesang cave( site\_id = 2), Entity CNKS-7, CNKS-2, CNKS-9, CNKS-3 (entity\_id = 622, 620, 623, 621)
- Hulu cave( site\_id = 6), Entity MSP, MSX, MSH (entity\_id = 617, 618, 619)
- Ball Gown cave( site\_id = 13), Entity BGC-10, BGC-11\_2017, BGC-5, BGC-16 (entity\_id = 634, 635, 633, 636)
- Lapa grande cave( site\_id = 23), Entity LG10, LG25, LG12B (entity\_id = 615, 616, 614)
- Lapa sem fim cave( site\_id = 24), Entity LSF9, LSF13, LSF15, LSF11, LSF3\_2018 (entity\_id = 607, 605, 603, 606, 604)
- Tamboril cave( site\_id = 27), Entity TM6 (entity\_id = 594)
- Ascunsa cave( site\_id = 72), Entity POM1 (entity\_id = 582)
- Modric cave( site\_id = 86), Entity MOD-21, MOD-27 (entity\_id = 632, 631)
- Paixão cave( site\_id = 113), Entity PX7\_2018, PX5 (entity\_id = 612, 611)
- Bunker cave( site\_id = 117), Entity Bu2\_2018 (entity\_id = 596)

- Grotte de Piste( site\_id = 135), Entity GP2 (entity\_id = 591)
- KNI-51( site\_id = 155), Entity KNI-51-1, KNI-51-8 (entity\_id = 637, 638)
- Santo Tomas cave( site\_id = 177), Entity CMb, CM\_2019, CMa (entity\_id = 610, 608, 609)
- Kotumsar cave( site\_id = 182), Entity KOT-I (entity\_id = 590)
- El Condor cave( site\_id = 192), Entity ELC-A, ELC-B (entity\_id = 592, 593)
- Chaara cave( site\_id = 215), Entity Cha2\_2019, Cha1 (entity\_id = 588, 589)

Uploaded the following sites:

- Buraca Gloriosa( site\_id = 275), Entity BG67, BG41, BG611, BG66, BG6LR (entity\_id = 585, 583, 586, 584, 587)
- Béke cave( site\_id = 276), Entity BNT-2 (entity\_id = 595)
- Huagapo cave( site\_id = 277), Entity P00-H2, PeruMIS6Composite, P10-H5, P00-H1, P10-H2, P09-H1b (entity\_id = 597, 602, 600, 598, 601, 599)
- Pink Panther cave( site\_id = 278), Entity PP1 (entity\_id = 613)
- Staircase cave( site\_id = 279), Entity 46322, 142820, 50100, 46330-a, 46330-b, 142819, 46861 (entity\_id = 624, 629, 627, 625, 630, 628, 626)

Lapa sem fim cave (site\_id = 24) upload new entities including one current partially modified. Name of entity already in db (entity\_id = 92) had to be changed from LSF3 to LSF3\_2015 and entity\_status and corresponding current of new entity (entity\_id = 604) updated.

- UPDATE `sisalv2`.`entity` SET `entity\_name`='LSF3\_2015' WHERE `entity\_id`='92';
- UPDATE `sisalv2`.`entity` SET `entity\_status`='current partially modified', `corresponding\_current`='92' WHERE `entity\_id`='604';

Link previously uploaded ELC composite (entity\_id = 410) to newly uploaded ELC-A (entity\_id = 592) and ELC-B (entity\_id = 593) through composite link\_entity table

- INSERT INTO `sisalv2`.`composite\_link\_entity` (`composite\_entity\_id`, `single\_entity\_id`) VALUES ('410', '592');
- INSERT INTO `sisalv2`.`composite\_link\_entity` (`composite\_entity\_id`, `single\_entity\_id`) VALUES ('410', '593');

Alter entity\_name of PX7 (entity\_id = 228) from Paixao cave (site\_id = 113) to PX7\_2015 to accomodate for a new record which supersedes it.

- UPDATE `sisalv2`.`entity` SET `entity\_name`='PX7\_2015' WHERE `entity\_id`='228';

Alter entity\_status and corresponding current of Bu2\_2018 (entity\_id = 596) from Bunker cave (site\_id = 117) as Bu2\_2018 partially modifies Bu2\_2012 (entity\_id = 241)

- UPDATE `sisalv2`.`entity` SET `entity\_status`='current partially modified', `corresponding\_current`='241' WHERE `entity\_id`='596';

Alter entity\_name of Bu2 (entity\_id = 241) from Bunker cave (site\_id = 117) to Bu2\_2012 to accomodate for a new record (Bu2\_2018; entity\_id = 596).

- UPDATE `sisalv2`.`entity` SET `entity\_name`='Bu2\_2012' WHERE `entity\_id`='241';

Reupload a workbook to replace a record already in the database (delete record in database, uploaded workbook and change the entity\_id to match the old one.

- Entity LAVI-4 (469), La Vierge (site\_id = 221)
- Entity PATA-1 (entity\_id = 470), Patate (site\_id = 222)
- Entity MC08-1 (entity\_id = 422), Minnetonka cave (site\_id = 200)
- Entity PAL3, PAL4 (entity\_id = 93, 94), Palestina cave (site\_id = 25). Note that this reupload fixes the issue with the set of samples from the same depth in PAL3.

Alter entity\_status and corresponding current of Cha2\_2018 (entity\_id = 460) and Cha2\_2019 (entity\_id = 588) from Chaara cave (site\_id = 215) as Cha2\_2019 supersedes it completely

- UPDATE `sisalv2`.`entity` SET `entity\_status`='superseded', `corresponding\_current`='588' WHERE `entity\_id`='460';
- UPDATE `sisalv2`.`entity` SET `entity\_status`='current' WHERE `entity\_id`='588';

Alter entity\_name of Cha2 (entity\_id = 460) from Chaara cave (site\_id = 215) to Cha2\_2018 to accomodate for a new record (Cha2\_2019; entity\_id = 588).

- UPDATE `sisalv2`.`entity` SET `entity\_name`='Cha2\_2018' WHERE `entity\_id`='460';

Alter entity\_name of BGC-11 (entity\_id = 65) from Ball Gown cave (site\_id = 13) to BGC-11\_2013 to accomodate for a current, partially modified record.

- UPDATE `sisalv2`.`entity` SET `entity\_name`='BGC-11\_2013' WHERE `entity\_id`='65';

Alter entity name from Ball Gown cave (site\_id = 13) to follow the new nomenclature of new entities uploaded from the same cave - from BGC6, BGC11, BGC14 (entity\_id = 64, 65, 66) to BGC-6, BGC-11, BGC-14.

- UPDATE `sisalv2`.`entity` SET `entity\_name`='BGC-6' WHERE `entity\_id`='64';
- UPDATE `sisalv2`.`entity` SET `entity\_name`='BGC-11' WHERE `entity\_id`='65';
- UPDATE `sisalv2`.`entity` SET `entity\_name`='BGC-14' WHERE `entity\_id`='66';

Add option "other" for calib\_used

- ALTER TABLE `sisalv2`.`dating` CHANGE COLUMN `calib\_used` `calib\_used` ENUM('INTCAL13 NH', 'INTCAL13 SH', 'INTCAL13 marine', 'INTCAL09', 'INTCAL09 marine', 'INTCAL04 NH', 'INTCAL04 SH', 'INTCAL98', 'FAIRBANKS09', 'not calibrated', 'unknown', 'other') NULL DEFAULT NULL ;

Uploaded the following sites to the database (workbooks as is)

- Chiflonkhakha cave( site\_id = 225), Entity Boto 1, Boto 3, Boto 7 (entity\_id = 497, 498, 499)
- Cueva del Diamante( site\_id = 226), Entity NAR-C, NAR-C-D, NAR-C-F, NAR-D, NAR-F (entity\_id = 500, 501, 502, 503, 504)
- El Capitan cave( site\_id = 227), Entity EC-16-5-F (entity\_id = 505)
- Bat cave( site\_id = 228), Entity BC-11 (entity\_id = 506)
- Actun Tunichil Muknal cave( site\_id = 229), Entity ATM-7 (entity\_id = 507)
- Marota( site\_id = 230), Entity MAG (entity\_id = 508)
- Pacupahuain cave( site\_id = 231), Entity P09PH2 (entity\_id = 509)

- Rio Secreto( site\_id = 232), Entity Itzamna (entity\_id = 510)
- Robinson cave( site\_id = 233), Entity KR1 (entity\_id = 511)
- Santana cave( site\_id = 234), Entity St8-a, St8-b (entity\_id = 512, 513)
- Cueva del Tigre Perdido( site\_id = 235), Entity NC-A, NC-B (entity\_id = 514, 515)
- Toca da Boa Vista( site\_id = 236), Entity TBV40, TBV63 (entity\_id = 516, 517)
- Umajalanta cave( site\_id = 237), Entity Boto 10 (entity\_id = 518)
- Akaagavi cave( site\_id = 238), Entity MGY (entity\_id = 519)
- Baluk cave( site\_id = 239), Entity BLK12B (entity\_id = 520)
- Baratang cave( site\_id = 240), Entity AN4, AN8 (entity\_id = 521, 522)
- Gempa bumi cave( site\_id = 241), Entity GB09-03, GB11-09 (entity\_id = 523, 524)
- Haozhu( site\_id = 242), Entity HZZ-11, HZZ-27 (entity\_id = 525, 526)
- Kailash cave( site\_id = 243), Entity KG-6 (entity\_id = 527)
- Lianhua cave, Shanxi( site\_id = 244), Entity LH1, LH4, LH5, LH6, LH9, LH30 (entity\_id = 528, 529, 530, 531, 532, 533)
- Nakarallu cave( site\_id = 245), Entity NK-1305 (entity\_id = 534)
- Palawan cave( site\_id = 246), Entity SR02 (entity\_id = 535)
- Shalaih cave( site\_id = 247), Entity SHC-01, SHC-02 (entity\_id = 536, 537)
- Shenqi cave( site\_id = 248), Entity SQ1, SQ7 (entity\_id = 538, 539)
- Shigao cave( site\_id = 249), Entity SG1, SG2 (entity\_id = 540, 541)
- Wuya( site\_id = 250), Entity WY27, WY33 (entity\_id = 542, 543)
- Zhenzhu cave( site\_id = 251), Entity ZZ12 (entity\_id = 544)
- Andriamaniloke( site\_id = 252), Entity AD4 (entity\_id = 545)
- Hoq cave( site\_id = 253), Entity Hq-1, STM1, STM6 (entity\_id = 546, 547, 548)
- PP29( site\_id = 254), Entity 46745, 46746-a, 46747, 138862.1, 138862.2a, 142828, 46746-b, 138862.2b (entity\_id = 549, 550, 551, 552, 553, 554, 555, 556)
- Mitoho( site\_id = 255), Entity MT1 (entity\_id = 557)
- Lithophagus cave( site\_id = 256), Entity LFG-2 (entity\_id = 558)
- Akcakale cave( site\_id = 257), Entity 2p (entity\_id = 559)
- B7( site\_id = 258), Entity STAL-B7-7 (entity\_id = 560)
- Cobre cave( site\_id = 259), Entity PA-8 (entity\_id = 561)
- Crovassa Azzurra( site\_id = 260), Entity CA (entity\_id = 562)
- El Soplao cave( site\_id = 261), Entity SIR-1 (entity\_id = 563)
- Bleßberg cave( site\_id = 262), Entity BB-1, BB-3 (entity\_id = 564, 565)
- Bulgarian Orlova Chuka cave( site\_id = 263), Entity ocz-6 (entity\_id = 566)
- Strašna peć cave( site\_id = 264), Entity SPD-1, SPD-2 (entity\_id = 567, 568)
- Coves de Campanet( site\_id = 265), Entity CAM-1 (entity\_id = 569)
- Cueva Victoria( site\_id = 266), Entity Vic-III-4 (entity\_id = 570)
- Gruta do Casal da Lebre( site\_id = 267), Entity GCL6 (entity\_id = 571)
- Pere Noel cave( site\_id = 268), Entity PN-95-5 (entity\_id = 572)
- Gejkar cave( site\_id = 269), Entity Gej-1 (entity\_id = 573)
- Gol-E-Zard( site\_id = 270), Entity GZ14-1 (entity\_id = 574)
- Jersey cave( site\_id = 271), Entity YB-F1 (entity\_id = 575)
- Metro( site\_id = 272), Entity M-1 (entity\_id = 576)
- Crystal cave( site\_id = 273), Entity CRC-3 (entity\_id = 577)

- Terciopelo cave( site\_id = 274), Entity CT-1, CT-5, CT-6, CT-7 (entity\_id = 578, 579, 580, 581)

Change site\_name of Lianhua cave (site\_id = 198) to Lianhua cave, Hunan to distinguish from Lianhua cave, Shanxi (site\_id = 244)

- UPDATE `sisalv2`.`site` SET `site\_name`='Lianhua cave, Hunan' WHERE `site\_id`='198';

After a closer look at the sample dates in Los Molinos in the first version of the workbook, it appears that there is a sample at depth = 435, and that the hiatus should be between samples at depth = 435 and 720. Change hiatus from Molinos cave (site\_id = 109), MO-1 (entity\_id = 216) from depth = 432.5 to 577.5.

- UPDATE `sisalv2`.`dating` SET `depth\_dating`='577.5' WHERE `dating\_id`='3282';
- UPDATE `sisalv2`.`sample` SET `depth\_sample`='577.5' WHERE sample\_id = 331565;
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `sample\_id`, `sample\_thickness`, `depth\_sample`, `mineralogy`, `arag\_corr`) VALUES ('216', '108523', '0.5', '435', 'calcite', 'not applicable');
- INSERT INTO `sisalv2`.`original\_chronology` (`sample\_id`, `interp\_age`, `age\_model\_type`, `ann\_lam\_check`, `dep\_rate\_check`) VALUES ('108523', '8321', 'StalAge and other', 'not applicable', 'not applicable');
- INSERT INTO `sisalv2`.`d18O` (`sample\_id`, `d18O\_measurement`, `d18O\_precision`, `iso\_std`) VALUES ('108523', '-7.78', '0.06', 'Vienna-PDB');
- INSERT INTO `sisalv2`.`d13C` (`sample\_id`, `d13C\_measurement`, `d13C\_precision`, `iso\_std`) VALUES ('108523', '-6.41', '0.03', 'Vienna-PDB');

Correct typos in notes

- UPDATE `sisalv2`.`notes` SET `notes`='AB-DC-09 (entity\_id = 158) had 98 sets of samples with the same depth (with the same interp\_age but different isotope values (d18O and d13C)); these were averaged.' WHERE `site\_id`='70';

Entity MD3 (entity\_id = 350), Nettlebed cave (site\_id = 158): Averaged the 11 sets of samples with the same depth sample and interp\_age but different isotope values. Also edited the notes to mention that it has been averaged.

- UPDATE `sisalv2`.`d18O` SET `d18O\_measurement`='-5.6609' WHERE `sample\_id`='190027';
- UPDATE `sisalv2`.`d18O` SET `d18O\_measurement`='-5.91682' WHERE `sample\_id`='190052';
- UPDATE `sisalv2`.`d18O` SET `d18O\_measurement`='-4.82835' WHERE `sample\_id`='190131';
- UPDATE `sisalv2`.`d18O` SET `d18O\_measurement`='-5.17525' WHERE `sample\_id`='190149';
- UPDATE `sisalv2`.`d18O` SET `d18O\_measurement`='-5.22125' WHERE `sample\_id`='190154';

- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-4.73785' WHERE `sample\_id`='190170';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-4.874' WHERE `sample\_id`='190177';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-4.2329' WHERE `sample\_id`='190185';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-5.20145' WHERE `sample\_id`='190210';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-4.98885' WHERE `sample\_id`='190213';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-5.7393' WHERE `sample\_id`='190227';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-7.57145' WHERE `sample\_id`='190027';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-5.62662' WHERE `sample\_id`='190052';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-6.0637' WHERE `sample\_id`='190131';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-3.6972' WHERE `sample\_id`='190149';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-5.5405' WHERE `sample\_id`='190154';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-2.0498' WHERE `sample\_id`='190170';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-1.66205' WHERE `sample\_id`='190177';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=1.09105' WHERE `sample\_id`='190185';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-0.8817' WHERE `sample\_id`='190210';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-0.3989' WHERE `sample\_id`='190213';
- UPDATE `sisalv2`.`d180` SET `d180\_measurement`=-4.1421' WHERE `sample\_id`='190227';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190028';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190053';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190054';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190055';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190056';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190132';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190150';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190155';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190171';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190178';

- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190186';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190211';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190214';
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='190228';
- UPDATE `sisalv2`.`notes` SET `notes`='Entity MD3 (entity\_id = 350): Uncorrected U-Th dates were used in original publication age-model. Corrected ages have been recalculated by Petra Bajo and John Hellstrom. It was not possible to recover the uncertainties on 232/238 ratio so this uncertainty is estimated to be 1% of the 232/238 ratio value. There are 11 sets of samples with the same depth\_sample and interp\_age but different isotope values (d18O and d13C); these were averaged.' WHERE `site\_id`='158';

Added/edited notes with regards to hiatus which does not have an exact sample-depth (a broad range was mentioned but it is outside of the sample range). Added here to keep the data provider happy.

- UPDATE `sisalv2`.`notes` SET `notes`='Entity M1-2 (entity\_id = 481): Originally published in Burns et al., 2003. Chronology was updated in Burns et al., 2004 (10.1126/science.305.5690.1567a), then by A. Mangini (unpublished) and then refined by H. Cheng (unpublished). Age model supplied here is the most recent and deemed the best age model but not the published age model. \\\\ Entity M1-5 (entity\_id = 293): There is a hiatus during most of the Holocene (between depths of 60mm and 88mm). The sampling for isotopic data starts at depths > 88mm.' WHERE `site\_id`='138';

Added the hiatuses which are outside of the range (so not really necessary) date\_used = unknown

Entity FG01 (entity\_id = 117) from Fukugaguchi cave (site\_id = 41)

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('117', 'Event; hiatus', '192.6', 'unknown');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('117', '192.6');
- sample\_id = 331573
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331573', 'H');
- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('117', 'Event; hiatus', '205.0', 'unknown');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('117', '205.0');
- sample\_id = 331574
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331574', 'H');

Entity BA04 (entity\_id = 237) from Bukit Assam cave (site\_id = 116)

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('237', 'Event; hiatus', '432.9', 'unknown');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('237', '432.9');
- sample\_id = 331575
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331575', 'H');



Entity CHIL-1 (entity\_id = 167), Chilibrillo cave (site\_id = 78): change depth\_ref from 'from top' to 'from base' (cross-checked with paper (<https://doi.org/10.1029/2004jd004694>)). The sample depth/ages were also reversed and is now correct.

- UPDATE `sisalv2`.`entity` SET `depth\_ref`='from base' WHERE `entity\_id`='167';

Notes added/edited to say that the information on whether it is actively forming could not be retrieved.

Entity FG01 (entity\_id = 117), Fukagaguchi cave (site\_id = 41)

- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('41', 'Entity FG01 (entity\_id = 117): Information on whether it is actively forming could not be retrieved.');

Entity Taurus (entity\_id = 144), Taurus cave (site\_id = 60):

- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('60', 'Entity Taurus (entity\_id = 144): Information on whether it is actively forming could not be retrieved.');

Entity DA\_2005 (entity\_id = 442), Dongge cave (site\_id = 39)

- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('39', 'Entity DA\_2005 (entity\_id = 442): Information on whether it is actively forming could not be retrieved.');

Entity BA04 (entity\_id = 237), Bukit Assam cave (site\_id = 116):

- UPDATE `sisalv2`.`notes` SET `notes`='Entity BA04 (entity\_id = 237): Partin et al., 2007 has d18O, Partin et al. 2013 has d13C, Mg/Ca, Sr/Ca. Information on whether it is actively forming could not be retrieved.' WHERE `site\_id`='116';

Entity Mun-stm2 and Mun-stm1 (entity\_id = 348, 349), Munagamanu cave (site\_id = 157):

- UPDATE `sisalv2`.`notes` SET `notes`='Contact dominique.genty@lscce.ipsl.fr for any use. Mun-stm2 (entity\_id = 348) had two isotope values at depth\_sample = 8.5, 11.8, 12.5, 14.5, 15.5, 17.5, 19, 21, 22, 285.5, 383, 385.5mm, these were averaged. Mun-stm1 (entity\_id = 349) had two isotope values at depth\_sample = 24.5, 51, 52.5, 57.5, 60.5, 67.5, 80, 111.5, 119.5, 135mm, these were averaged. \\\ Mun-stm1 and Mun-stm2 (entity\_id = 349, 348): Information on whether they are actively forming could not be retrieved.' WHERE `site\_id`='157';

MWS-1 (entity\_id=62), Mawmluh cave (site\_id = 12): Notes updated to say that this information cannot be retrieved.

- UPDATE `sisalv2`.`notes` SET `notes`='Entity ML.1 and ML.2 (entity\_id = 476, 477): isotope samples were obtained from ML.1 and ML.2 at 125-250 and 182-255 mm, respectively. Depths = 125mm (ML.1) and 182mm (ML.2) are reported here as depth = 0mm. // Entity KM-1 (entity\_id = 495): Age-depth model inflection at 12ka is due to how the age model dealt with one date with a large error. \\\ Entity MWS-1 (entity\_id = 62): Mineralogy information could not be retrieved.' WHERE `site\_id`='12';

MC08-1 (entity\_id=422), Minnetonka cave: Notes updated to say that mineralogy was not checked and is unknown.

- UPDATE `sisalv2`.`notes` SET `notes`='Entity MC08-1 (entity\_id = 422): Analytical precision of isotope is better than 0.1 per mil. Three hiatuses are present at ~28, 31 and 112 mm from visual identification from figures. Mineralogy was not checked and is unknown.' WHERE `site\_id`='200';

Entity T8 (entity\_id = 48) from Cold Air cave (site\_id = 7): missing hiatus noted in notes as there are no depths for the hiatus

- UPDATE `sisalv2`.`notes` SET `notes`='Stable isotope record of T7\_1999 (entity\_id = 46) was published in Stevenson et al., 1999; the dating information was published in Holmgren et al., 1999. In the Dating Information of T7\_1999 (entity\_id = 46), all empty fields of the 230Th/232Th ratio had values above 1000. The content of initial thorium is considered minimal and no correction was needed. In the original data at entity T5 (entity\_id = 45) at depth 244mm there were two delta values, these were averaged out. d18O: -2.31 & -2.48; d13C: -3.38 & -3.2. \\\ Entity T8 (entity\_id = 48): There is a hiatus in between sample\_id = 17044 and 17045 (interp\_age = 10110 and 12590, respectively); depth of hiatus was not provided.' WHERE `site\_id`='7';

Entity T8 (entity\_id = 48) from Cold Air cave (site\_id = 7): correct uncorr\_age and corr\_age of the 4th age in the dating table from 4 and -46 to 654 and 604 respectively. Had been cross-checked with paper for this date.

- UPDATE `sisalv2`.`dating` SET `uncorr\_age`='654', `corr\_age`='604' WHERE `dating\_id`='777';

Entity T1 (entity\_id = 145) from Timta cave (site\_id = 61): Added notes with regards to a confirmation that the original publication did not mention any hiatus at depth = 116.031 mm.

- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('61', 'Entity T1 (entity\_id = 145): Original publication did not mention of any potential hiatus at depth = 116.031mm.');

Entity LH-70s-1 (entity\_id = 50) Lancaster Hole (site\_id = 8): Added notes with regards to unconfirmed hiatus at 201.5mm

- UPDATE `sisalv2`.`notes` SET `notes`='In all entities from this site (LH-70s-1 (entity\_id = 50), LH-70s-2 (entity\_id = 51), LH-70s-3 (entity\_id = 52)), the depth\_sample duplications are for levels at which the line of samples has been shifted laterally along a growth layer (e.g. the sample line had to sidestep to avoid a vug or the same layer had to be sampled across a break in the slab). \\\ Entity LH-70s-1 (entity\_id = 50): Potential hiatus at approximately 201.5mm cannot be confirmed.' WHERE `site\_id`='8';

Entity MF-3 (entity\_id = 260) from Schafsloch cave (site\_id = 125): Current hiatus at depth = 21.6 altered to depth = 20.55

- UPDATE `sisalv2`.`dating` SET `depth\_dating`='20.55' WHERE `dating\_id`='3994';
- UPDATE `sisalv2`.`sample` SET `depth\_sample`='20.55' WHERE `sample\_id`='143963';

Added Event; hiatus to the following entities (date\_used = 'yes' in all cases here):

Entity\_id 55 (JAR7) add hiatus between depths 1061.43 and 1061.93. A: looks like at depth 1061.68

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('55', 'Event; hiatus', '1061.68', 'yes');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('55', '1061.68');

- sample\_id = 331566
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331566', 'H');

Entity\_id 71, hiatus at depth = 168.9

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('71', 'Event; hiatus', '168.9', 'yes');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('71', '168.9');
- sample\_id = 331567
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331567', 'H');

Entity\_id 39 (JFYK7) hiatus at depth = 452.75

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('39', 'Event; hiatus', '452.75', 'yes');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('39', '452.75');
- sample\_id = 331568
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331568', 'H');

Entity\_id 115 (D4\_2004) hiatus at depth = 1935.5

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('115', 'Event; hiatus', '1935.5', 'yes');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('115', '1935.5');
- sample\_id = 331569
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331569', 'H');

Entity\_id 298 (SB-43): hiatus at depth = 219.5

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('298', 'Event; hiatus', '219.5', 'yes');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('298', '219.5');
- sample\_id = 331570
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331570', 'H');

Entity\_id 377: hiatus at 8mm

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('377', 'Event; hiatus', '8', 'yes');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('377', '8');
- sample\_id = 331571
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331571', 'H');

JX-2 from Juxtlahuaca cave (Entity\_id = 287, site\_id = 136): hiatus at depth = 190.5

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`) VALUES ('287', 'Event; hiatus', '190.5', 'yes');
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('287', '190.5');
- sample\_id = 331572
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331572', 'H');

Added Event; actively growing to the following entities:

- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`, `corr\_age`, `corr\_age\_uncert\_pos`, `corr\_age\_uncert\_neg`) VALUES ('187', 'Event; actively forming', '0', 'yes', '-64', '0', '0');





- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`, `corr\_age`, `corr\_age\_uncert\_pos`, `corr\_age\_uncert\_neg`) VALUES ('242', 'Event; actively forming', '0', 'yes', '-57', '0', '0');
- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`, `corr\_age`, `corr\_age\_uncert\_pos`, `corr\_age\_uncert\_neg`) VALUES ('202', 'Event; actively forming', '0', 'yes', '-55', '0', '0');
- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`, `corr\_age`, `corr\_age\_uncert\_pos`, `corr\_age\_uncert\_neg`) VALUES ('95', 'Event; actively forming', '0', 'yes', '-47', '0', '0');
- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`, `corr\_age`, `corr\_age\_uncert\_pos`, `corr\_age\_uncert\_neg`) VALUES ('137', 'Event; actively forming', '0', 'yes', '-41', '0', '0');
- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`, `corr\_age`, `corr\_age\_uncert\_pos`, `corr\_age\_uncert\_neg`) VALUES ('222', 'Event; actively forming', '0', 'yes', '-56', '0', '0');
- INSERT INTO `sisalv2`.`dating` (`entity\_id`, `date\_type`, `depth\_dating`, `date\_used`, `corr\_age`, `corr\_age\_uncert\_pos`, `corr\_age\_uncert\_neg`) VALUES ('420', 'Event; actively forming', '0', 'yes', '-56', '0', '0');

Added notes with regards to entities which are not actively growing:

- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('3', 'Entity PAR03 (entity\_id = 21) is not actively growing when collected.');
- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('9', 'Entity TON-2 (entity\_id = 54) is not actively growing when collected.');
- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('17', 'Entity HY1 and HY3 (entity\_id = 76, 78) are not actively growing when collected.');
- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('17', 'Entity HY1 and HY3 (entity\_id = 76, 78) are not actively growing when collected.');
- UPDATE `sisalv2`.`notes` SET `notes`='Entity TM2 (entity\_id = 98) has 27 sets of samples with the same depth\_sample and interp\_age but different isotope values (d18O and d13C). \\\ Entity TM0 (entity\_id = 97) is not actively growing when collected.' WHERE `site\_id`='27';
- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('35', 'Entity CUR4 (entity\_id = 110) is not actively growing when collected.');
- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('36', 'Entity DY-1 (entity\_id = 111) is not actively growing when collected.');
- UPDATE `sisalv2`.`notes` SET `notes`='Sampling of CC-1 (entity\_id = 165) is unconventional: samples are scrippled along a radial cross section and not along the growth axis of the vertical transect. The geology is mixed; CC-1 was collected from a chamber in andesitic hostrock.The raw uncorrected 14C ages in entity\_id=165 are not from the original publication. Only dcp corrected 14C ages were available to us. It is not actively growing when collected.' WHERE `site\_id`='76';
- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('80', 'Entity FR-0510 (entity\_id = 172) is not actively growing when collected.');
- UPDATE `sisalv2`.`notes` SET `notes`='PU-2 (entity\_id = 184): The upper three dating

points (dating\_id = 2723, 2724 and 2725) and the respective interp\_age do not reproduce the figure from the paper. The author has been asked for help but this question has not been answered in a satisfying way. The sample was collected in 1977. In the original paper, the model was linear but the data the author provided was obtained with a linear between dates model. It is not actively growing when collected.' WHERE `site\_id`='91';

- UPDATE `sisalv2`.`notes` SET `notes`='HS4\_2008 (entity\_id = 253) and HS4\_2013 (entity\_id = 254): The floating layer-counted chronology is tied to the 9 Bayesian U/Th ages by sliding the whole floating section to older or younger ages until the minimum average deviation from the U/Th ages is achieved. This layer-counted age model does not refine the absolute chronology for the 8.2 kyr event relative to that achieved from the U/Th chronology, but allows the duration of the event to be constrained at close to annual precision. See supplementary material DOI: 10.1038/ngeo1708 for further details. \\\ Entity HS4\_2008 (entity\_id = 253) is not actively growing when collected.' WHERE `site\_id`='122';
- UPDATE `sisalv2`.`notes` SET `notes`='In all entities from this site (JX-6 (entity\_id = 286), JX-2 (entity\_id = 287), JX-10 (entity\_id = 288) and JX-7 (entity\_id = 289)): Average crustal value for initial 230Th/232Th atomic ratio = 4.4 +- 2.2 ppm (assuming bulk earth 232Th/238U value of 3.8). Decay constants are 9.1577E-06 year-1 for 230Th, 2.8263E-06 year-1 for 234U and 1.55125E-10 year-1 for 238U.// JX-6 (entity\_id = 286) was corrected for aragonite in the 2013 paper. Original values (0.38 permil lower) are reported here. \\\ Entity JX-7 (entity\_id = 289) is not actively growing when collected.' WHERE `site\_id`='136';
- UPDATE `sisalv2`.`notes` SET `notes`='Entity 10FC-02 and 05FC-04 (entity\_id = 392, 393): U234/U238 activity ratios were converted from d234U (see Maupin et al., 2014 for methods). Decay constants are: 230Th = 9.1577 e-6 yr-1, and 238U = Jeffrey et al., 1971. \\\ Entity 05FC-04 (entity\_id = 393) is not actively growing when collected.' WHERE `site\_id`='181';
- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('10', 'Entity JAR4 (entity\_id = 447) is not actively growing when collected.);

#### Updated mineralogy field:

- Diva cave, DV2 (entity\_id=113), from mineralogy and arag\_corr = unknown, unknown to ARAGONITE - NOT CORRECTED
  - o UPDATE `sisalv2`.`sample` SET `mineralogy`='aragonite', `arag\_corr`='no' WHERE `entity\_id`=113;
- El Condor cave, ELC\_composite (entity\_id=410), from all unknown to ALL CALCITE
  - o UPDATE `sisalv2`.`sample` SET `mineralogy`='calcite', `arag\_corr`='not applicable' WHERE `entity\_id`=410;
- Jaragua cave, JAR13 (entity\_id=57), JAR14 (entity\_id=56), JAR7 (entity\_id=55) from all unknown to ALL ARAGONITE - NOT CORRECTED. NOTE that there is an hiatus at depth = 124.5 in JAR14 (entity\_id = 56)
  - o UPDATE `sisalv2`.`sample` SET `mineralogy`='aragonite', `arag\_corr`='no' WHERE `entity\_id`=57;
  - o UPDATE `sisalv2`.`sample` SET `mineralogy`='aragonite', `arag\_corr`='no' WHERE `entity\_id`=56 AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that the hiatus still has mineralogy = NULL

- UPDATE `sisalv2`.`sample` SET `mineralogy`='aragonite', `arag\_corr`='no' WHERE `entity\_id`=55;
- Yamen - Y1 - (entity\_id=389) from all unknown to CALCITE
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='calcite', `arag\_corr`='not applicable' WHERE `entity\_id`=389 AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
- Dongge cave; DA\_2005 (entity\_id=442); all unknown to CALCITE
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='calcite', `arag\_corr`='not applicable' WHERE `entity\_id`=442 AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
- Hollywood cave; HW3 (entity\_id=175); all unknown to CALCITE
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='calcite', `arag\_corr`='not applicable' WHERE `entity\_id`=175 AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
- Buckeye creek cave; BCC-2, BCC-4, BCC-6, BCC-8, BCC-10, BCC\_composite (entity\_id=271, 272, 273, 274, 275, 276); All unknown to CALCITE (note hiatuses in BCC-4 and BCC-8)
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='calcite', `arag\_corr`='not applicable' WHERE `entity\_id` IN (271, 272, 273, 274, 275, 276) AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
- Excentrica cave; GEX-SPA (entity\_id=116); All unknown to CALCITE
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='calcite', `arag\_corr`='not applicable' WHERE `entity\_id` IN (116) AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
- Te Anau Fiordland, Calcite, Gardener's Gut, Max's, Ruakari, Te Reinga, Waiau, Doubtful caves; Aurora, Calcite, GG1, GG2, MAXS, Ruakari C, Te Reinga A, Te Reinga B, Waiau, Doubtful (entity\_id=355, 356, 357, 358, 359, 360, 361, 362, 363, 365); all unknown to CALCITE
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='calcite', `arag\_corr`='not applicable' WHERE `entity\_id` IN (355, 356, 357, 358, 359, 360, 361, 362, 363, 365) AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
- Liang Luar cave; LL\_Comp\_2013 (entity\_id=372); All unknown to ARAGONITE CORRECTED TO CALCITE
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='aragonite', `arag\_corr`='yes' WHERE `entity\_id` IN (372) AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
- Torrinha cave (site\_id = 62); TR5 (entity\_id=146); All unknown to aragonite not corrected and add note: Entity TR5 (entity\_id = 146): Stalagmite has an aragonite habit but mineralogy check was not performed.
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='aragonite', `arag\_corr`='no' WHERE `entity\_id` IN (146) AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL



- INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('62', 'Entity TR5 (entity\_id = 146): Stalagmite has an aragonite habit but mineralogy check was not performed.');
- Lapa Doce cave; LD12 (entity\_id=203); All unknown to aragonite not corrected and add note: Entity LD12 (entity\_id = 203): Stalagmite has an aragonite habit but mineralogy check was not performed.
  - UPDATE `sisalv2`.`sample` SET `mineralogy`='aragonite', `arag\_corr`='no' WHERE `entity\_id` IN (203) AND mineralogy IS NOT NULL; # mineralogy IS NOT NULL so that hiatuses still automatically has mineralogy = NULL
  - INSERT INTO `sisalv2`.`notes` (`site\_id`, `notes`) VALUES ('103', 'Entity LD12 (entity\_id = 203): Stalagmite has an aragonite habit but mineralogy check was not performed.');

Added a new reference to KNI-51-0 (entity\_ids=331), KNI-51-3 (332) and KNI-51-4 (333) from KNI-51 (site\_id= 155) and BGC-6 (entity\_id= 64), BGC14 (entity\_id 66) from Ball Gown (site\_id=13)

- INSERT INTO `sisalv2`.`reference` (`citation`, `publication\_Doi`) VALUES ('Denniston, R. F., Asmerom, Y., Polyak, V. J., Wanamaker, A. D., Ummenhofer, C. C., Humphreys, W. F., Cugley, J., Woods, D. and Lucker, S.: Decoupling of monsoon activity across the northern and southern Indo-Pacific during the Late Glacial, Quat. Sci. Rev., 176, 101–105, 2017.', '10.1016/J.QUASCIREV.2017.09.014');
- ref\_id = 339
- INSERT INTO `sisalv2`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('331', '339');
- INSERT INTO `sisalv2`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('332', '339');
- INSERT INTO `sisalv2`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('333', '339');
- INSERT INTO `sisalv2`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('64', '339');
- INSERT INTO `sisalv2`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('66', '339');

Change hiatus from Molinos cave (site\_id = 109), MO-1 (entity\_id = 216) from depth = 435 to 432.5.

- UPDATE `sisalv2`.`dating` SET `depth\_dating`='432.5' WHERE `dating\_id`='3282';
- DELETE FROM `sisalv2`.`hiatus` WHERE `sample\_id`='108523';
- INSERT INTO `sisalv2`.`sample` (`entity\_id`, `depth\_sample`) VALUES ('216', '432.5');
- the sample\_id generated is 331565
- INSERT INTO `sisalv2`.`hiatus` (`sample\_id`, `hiatus`) VALUES ('331565', 'H');
- DELETE FROM `sisalv2`.`sample` WHERE `sample\_id`='108523';

#### Revised coordinates

- Beatus cave (site\_id = 185)
  - UPDATE `sisalv2`.`site` SET `latitude`='46.68472', `longitude`='7.78193' WHERE `site\_id`='185';
- Larshullet cave (site\_id = 47)
  - UPDATE `sisalv2`.`site` SET `latitude`='66.4381', `longitude`='14.1822' WHERE `site\_id`='47';
- Grotta di Carburangeli (site\_id = 129)

- UPDATE `sisalv2`.`site` SET `latitude`='38.1665', `longitude`='13.1603' WHERE `site\_id`='129';
- UPDATE `sisalv2`.`site` SET `latitude` = '64.89', `longitude` = '14.16' WHERE (`site\_id` = '102');
- UPDATE `sisalv2`.`site` SET `latitude` = '46.13', `longitude` = '11.03' WHERE (`site\_id` = '187');
- UPDATE `sisalv2`.`site` SET `latitude` = '40.76', `longitude` = '-0.59' WHERE (`site\_id` = '120');
- UPDATE `sisalv2`.`site` SET `latitude` = '-42.1' WHERE (`site\_id` = '168');

Updated site names (word cave is already embedded in the name so “cave” was deleted):

- UPDATE `sisalv2`.`site` SET `site\_name` = 'Anjokipoty' WHERE (`site\_id` = '32');
- UPDATE `sisalv2`.`site` SET `site\_name` = 'Anjohibe' WHERE (`site\_id` = '94');
- UPDATE `sisalv2`.`site` SET `site\_name` = 'Liang Luar' WHERE (`site\_id` = '104');
- UPDATE `sisalv2`.`site` SET `site\_name` = 'KNI-51' WHERE (`site\_id` = '155');

Revise sample precision

- SELECT \* FROM d13C WHERE sample\_id IN (SELECT sample\_id FROM sample WHERE entity\_id = 275); => d13C sample precision has been fixed to 0.01
- UPDATE `sisalv2`.`d18O` SET `d18O\_precision` = '0.08' WHERE (`sample\_id` = '52522'); Fixed from -0.92 to 0.08
- Piani Eterni 18O precision changed to 0.09 (274923<sample ids<275072)
- Paixao cave d18O precision changed to 0.1 (115197 < sample ids < 115201)

Update structure of dating table (date type)

- added the following option to the dropdown list: “Sampling gap”

Revised notes:

Added the reference of a hydrological record in the notes of Devil's Hole as useful info (in italics below): UPDATE `sisalv2`.`notes` SET `notes` = 'DH samples (entity\_id = 373, 374, 375, 376) are mammillary calcite (a subaqueous speleothem). Folia layers are not included in the d18O time series as they cannot be dated. DH2-E Terminal2 (entity\_id = 376): There is a folia layer between 47.4 and 57.9 mm (Folia layers are not hiatuses as such, but a change in fabric). DH2-D (entity\_id = 374): There are folia layers between 61 and 80.7 mm. DH2-D (entity\_id = 374) has the most reliable chronology. The other records have chronologies that are in part inaccurate because of excess 230-Th issues. Authors do not advise the use of DH2-E (entity\_id = 375, 376) and DH2 (entity\_id = 373) for palaeoclimate work. Please read the manuscript before using this record. *Another record of water depth at Devils hole can be found at: Wendt, K.A., Dublyansky, Y., Moseley, G.E., Cheng, H., Edwards, R.L., Spötl, C. (2018) Moisture availability in the SW United States over the last three glacial-interglacial cycles. Science Advances, 4 (10) eaau1375, 10.1126/sciadv.aau1375' WHERE (`site\_id` = '171');*

Change in site name:

Lianhua cave appears twice in the site table as “Lianhua” (site\_id = 198) and as “Lianhua cave” (site\_id = 225).

- Entity LH-2 (entity\_id = 496) which was linked to site\_id = 225 is linked to site\_id = 198 instead.
- Notes linked to site\_id = 225 linked to site\_id = 198 instead
- site\_id = 198
  - o site\_name changed from ‘Lianhua’ to ‘Lianhua cave’
  - o latitude from 29.78 to 29.4833
  - o longitude from 109.53 to 109.5333

#### Edited dating table:

The following was edited to the dating table for entity WX42B (entity\_id = 471) from Wanxiang cave (site\_id = 223). 54 years were subtracted from the corr\_age in the dating table as it appears that the modern reference for the dates in the workbook should have been the year 2004 as to the year BP(1950). This is observed from the approximately 54 years differences between the dates of the samples (interp\_age) and in the dates in the dating table (corr\_age) at the same depth. The changes have also been altered in the workbook (modern\_reference changed from BP(1950) to year of chemistry, and chem\_year = 2004)

#### Changes in the reference list:

The following references added to the reference table and linked to entity M1-2 (entity\_id = 481) from Moomi cave (site\_id = 138). To prevent this mistake being carried on, the change is also made to the workbook for this cave.

- Burns, S. J., Fleitmann, D., Matter, A., Kramers, J. and Al-Subbary, A. A.: Corrections and Clarifications, Science, 305(5690), 1567a–1567a, 2004.
  - o publication\_DOI = 10.1126/science.305.5690.1567a
  - o ref\_id = 336
- Mangini (unpublished)
  - o publication\_DOI = unpublished
  - o ref\_id = 337
- H. Cheng (unpublished)
  - o publication\_DOI = unpublished
  - o ref\_id = 338
- INSERT INTO `sisalv1c`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('481', '336');
- INSERT INTO `sisalv1c`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('481', '337');
- INSERT INTO `sisalv1c`.`entity\_link\_reference` (`entity\_id`, `ref\_id`) VALUES ('481', '338');

#### Notes added to the following sites:

- Tausoare cave (site\_id = 213)
  - o Entity 1152 (entity\_id = 457): material\_dated in dating table is determined as other and mineralogy in the sample table is mixed because the entity has a mixed aragonite-calcite mineralogy.
- Cave C126 (site\_id = 214)

- Entity C126-117 and C126-118 (entity\_id = 458, 459): d13C\_precision and d18O\_precision are better than 0.1 permil at 1 sigma range.
- E'mei cave (site\_id = 217)
  - Entity EM1 (entity\_id = 463): Laminae counting is based on confocal imaging. Elevated detrital 232Th levels of 2-4 x 10<sup>3</sup> ppt resulted in large dating uncertainties between 172-438 years for 230Th dates and hinder precise age model. The age model can only be used as a reference. The chronology is based on lamina counting.
- Mawmluh cave (site\_id = 12)
  - Entity ML.1 and ML.2 (entity\_id = 476, 477): isotope samples were obtained from ML.1 and ML.2 at 125-250 and 182-255 mm, respectively. Depths = 125mm (ML.1) and 182mm (ML.2) are reported here as depth = 0mm. // Entity KM-1 (entity\_id = 495): Age-depth model inflection at 12ka is due to how the age model dealt with one date with a large error.
- Lianhua cave (site\_id = 225)
  - Entity LH-2 (entity\_id = 496): The original age model has age inversions at depths: 746.8 and 748.0 mm. The interp\_age at depth 748.0 mm was altered to be the average of the two neighbouring samples.
- Moomi cave (site\_id = 138)
  - Entity M1-2 (entity\_id = 481): Originally published in Burns et al., 2003. Chronology was updated in Burns et al., 2004 (10.1126/science.305.5690.1567a), then by A. Mangini (unpublished) and then refined by H. Cheng (unpublished). Age model supplied here is the most recent and deemed the best age model but not the published age model.
- Nuanhe cave (site\_id = 218)
  - Entity NH6 and NH33 (entity\_id = 465, 466): Depth information is not available.
- Baeg-nyong cave (site\_id = 220)
  - Entity BN-1 (entity\_id = 468): Depths for U/Th dates are not available.
- Wanxiang cave (site\_id = 223)
  - Entity WX42B (entity\_id = 471): Some samples were averaged to remove duplicates.
- Sanbao cave (site\_id = 140)
  - Entity SB23, SB24, SB34 and TF (entity\_id = 486, 487, 491, 494): There are small changes of growth between U/Th dates; the cause is unknown.

All references have been checked to have been uploaded correctly. The references are then cleaned (ref\_id = 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 327, 329, 330, 332, 334, 335)

- UPDATE `sisalv1c`.`reference` SET `citation`='Staubwasser, M., Drăgușin, V., Onac, B. P., Assonov, S., Ersek, V., Hoffmann, D. L. and Veres, D.: Impact of climate change on the transition of Neanderthals to modern humans in Europe, Proc. Natl. Acad. Sci., 115(37), 9116–9121, 2018.' WHERE `ref\_id`='315';
- UPDATE `sisalv1c`.`reference` SET `citation`='Denniston, R. F., Asmerom, Y., Lachniet, M., Polyak, V. J., Hope, P., An, N., Rodzinyak, K. and Humphreys, W. F.: A Last Glacial Maximum through middle Holocene stalagmite record of coastal Western Australia climate, Quat. Sci. Rev., 77, 101–112, 2013.' WHERE `ref\_id`='316';

- UPDATE `sisalv1c`.`reference` SET `citation`='Ait Brahim, Y., Wassenburg, J. A., Cruz, F. W., Sifeddine, A., Scholz, D., Bouchaou, L., Dassié, E. P., Jochum, K. P., Edwards, R. L. and Cheng, H.: Multi-decadal to centennial hydro-climate variability and linkage to solar forcing in the Western Mediterranean during the last 1000 years, *Sci. Rep.*, 8(1), 17446, 2018.' WHERE `ref\_id`='317';
- UPDATE `sisalv1c`.`reference` SET `citation`='Jiang, X., He, Y., Shen, C.-C., Li, Z. and Lin, K.: Replicated stalagmite-inferred centennial-to decadal-scale monsoon precipitation variability in southwest China since the mid Holocene, *The Holocene*, 23(6), 841–849, 2013.' WHERE `ref\_id`='318';
- UPDATE `sisalv1c`.`reference` SET `citation`='Zhang, H., Cheng, H., Spötl, C., Cai, Y., Sinha, A., Tan, L., Yi, L., Yan, H., Kathayat, G., Ning, Y., Li, X., Zhang, F., Zhao, J. and Edwards, R. L.: A 200-year annually laminated stalagmite record of precipitation seasonality in southeastern China and its linkages to ENSO and PDO, *Sci. Rep.*, 8(1), 12344, 2018.' WHERE `ref\_id`='319';
- UPDATE `sisalv1c`.`reference` SET `citation`='Wu, J. Y., Wang, Y. J., Cheng, H., Kong, X. G. and Liu, D. B.: Stable isotope and trace element investigation of two contemporaneous annually-laminated stalagmites from northeastern China surrounding the 8.2 ka event, *Clim. Past*, 8(5), 1497–1507, 2012.' WHERE `ref\_id`='320';
- UPDATE `sisalv1c`.`reference` SET `citation`='Zhang, H., Cheng, H., Cai, Y., Spötl, C., Kathayat, G., Sinha, A., Edwards, R. L. and Tan, L.: Hydroclimatic variations in southeastern China during the 4.2 ka event reflected by stalagmite records, *Clim. Past*, 14(11), 1805–1817, 2018.' WHERE `ref\_id`='321';
- UPDATE `sisalv1c`.`reference` SET `citation`='Jo, K., Yi, S., Lee, J.-Y., Woo, K. S., Cheng, H., Edwards, L. R. and Kim, S.-T.: 1000-Year Quasi-Periodicity of Weak Monsoon Events in Temperate Northeast Asia since the Mid-Holocene, *Sci. Rep.*, 7(1), 15196, 2017.' WHERE `ref\_id`='322';
- UPDATE `sisalv1c`.`reference` SET `citation`='Li, H., Cheng, H., Sinha, A., Kathayat, G., Spötl, C., André, A. A., Meunier, A., Biswas, J., Duan, P., Ning, Y. and Edwards, R. L.: Hydro-climatic variability in the southwestern Indian Ocean between 6000 and 3000 years ago, *Clim. Past*, 14(12), 1881–1891, 2018.' WHERE `ref\_id`='323';
- UPDATE `sisalv1c`.`reference` SET `citation`='Zhang, P., Cheng, H., Edwards, R. L., Chen, F., Wang, Y., Yang, X., Liu, J., Tan, M., Wang, X., Liu, J., An, C., Dai, Z., Zhou, J., Zhang, D., Jia, J., Jin, L. and Johnson, K. R.: A Test of Climate, Sun, and Culture Relationships from an 1810-Year Chinese Cave Record, *Science*, 322(5903), 940–942, 2008.' WHERE `ref\_id`='324';
- UPDATE `sisalv1c`.`reference` SET `citation`='Tan, L., Cai, Y., Cheng, H., Edwards, L. R., Gao, Y., Xu, H., Zhang, H. and An, Z.: Centennial- to decadal-scale monsoon precipitation variations in the upper Hanjiang River region, China over the past 6650 years, *Earth Planet. Sci. Lett.*, 482, 580–590, 2018.' WHERE `ref\_id`='325';
- UPDATE `sisalv1c`.`reference` SET `citation`='Kathayat, G., Cheng, H., Sinha, A., Berkelhammer, M., Zhang, H., Duan, P., Li, H., Li, X., Ning, Y. and Edwards, R. L.: Evaluating the timing and structure of the 4.2 ka event in the Indian summer monsoon domain from an annually resolved speleothem record from Northeast India, *Clim. Past*, 14(12), 1869–1879, 2018.' WHERE `ref\_id`='327';

- UPDATE `sisalv1c`.`reference` SET `citation`='Kathayat, G., Cheng, H., Sinha, A., Yi, L., Li, X., Zhang, H., Li, H., Ning, Y. and Edwards, R. L.: The Indian monsoon variability and civilization changes in the Indian subcontinent, Sci. Adv., 3(12), e1701296, 2017.' WHERE `ref\_id`='329';
- UPDATE `sisalv1c`.`reference` SET `citation`='Burns, S. J., Fleitmann, D., Matter, A., Kramers, J. and Al-Subbary, A. A.: Indian Ocean Climate and an Absolute Chronology over Dansgaard/Oeschger Events 9 to 13, Science, 301(5638), 1365–1367, 2003.' WHERE `ref\_id`='330';
- UPDATE `sisalv1c`.`reference` SET `citation`='Wang, Y., Cheng, H., Edwards, R. L., Kong, X., Shao, X., Chen, S., Wu, J., Jiang, X., Wang, X. and An, Z.: Millennial- and orbital-scale changes in the East Asian monsoon over the past 224,000 years, Nature, 451(7182), 1090–1093, 2008.' WHERE `ref\_id`='332';
- UPDATE `sisalv1c`.`reference` SET `citation`='Huguet, C., Routh, J., Fietz, S., Lone, M. A., Kalpana, M. S., Ghosh, P., Mangini, A., Kumar, V. and Rangarajan, R.: Temperature and Monsoon Tango in a Tropical Stalagmite: Last Glacial-Interglacial Climate Dynamics, Sci. Rep., 8(1), 5386, 2018.' WHERE `ref\_id`='334';
- UPDATE `sisalv1c`.`reference` SET `citation`='Zhang, H.-L., Yu, K.-F., Zhao, J.-X., Feng, Y.-X., Lin, Y.-S., Zhou, W. and Liu, G.-H.: East Asian Summer Monsoon variations in the past 12.5ka: High-resolution  $\delta^{18}\text{O}$  record from a precisely dated aragonite stalagmite in central China, J. Asian Earth Sci., 73, 162–175, 2013.' WHERE `ref\_id`='335';

Contact names are being cleaned (standardised to the most prevalent version)

- Where there are two contact names , ' and ' is replaced by ', ' . (i.e. 'Haiwei Zhang and Yassine Ait Brahim', changed to 'Haiwei Zhang, Yassine Ait Brahim'.)
  - o entity\_id = 463, 467
- All of Syed Masood Ahmad names standardised to 'Syed Masood Ahmad'
  - o entity\_id = 478, 479, 480, 495

Updated pub DOI:

- publication\_Doi (ref\_id = 335) corrected from "10.10.38/s1598-018-23606-w" to "10.1038/s41598-018-23606-w" (reference for entity KM-1 (entity\_id = 495) from Mawmluh cave (site\_id = 12)). This change is also altered in the workbook to prevent the error being carried on in the future.

Remove duplicated references (entities linked to it are re-linked to a previous reference and the duplicated reference is removed):

- ref\_id = 326 to ref\_id =269
  - UPDATE `sisalv1c`.`entity\_link\_reference` SET `ref\_id`='269' WHERE `ref\_id`='326';
  - DELETE FROM `sisalv1c`.`reference` WHERE `ref\_id`='326';
- ref\_id = 328 to ref\_id = 143
  - UPDATE `sisalv1c`.`entity\_link\_reference` SET `ref\_id`='143' WHERE `ref\_id`='328';
  - DELETE FROM `sisalv1c`.`reference` WHERE `ref\_id`='328';
- ref\_id = 331 to ref\_id = 194

- UPDATE `sisalv1c`.`entity\_link\_reference` SET `ref\_id`='194' WHERE `ref\_id`='331';
- DELETE FROM `sisalv1c`.`reference` WHERE `ref\_id`='331';
- ref\_id = 333 to ref\_id = 83
- UPDATE `sisalv1c`.`entity\_link\_reference` SET `ref\_id`='83' WHERE `ref\_id`='333';
- DELETE FROM `sisalv1c`.`reference` WHERE `ref\_id`='333';

Reupload the following entities (removed and reuploaded, entity\_id changed to match the original):

- Hoti cave (site\_id = 152), H5 (entity\_id = 327)
- Green Cathedral cave (site\_id = 93), GC08 (entity\_id = 186)

Upload new entities:

- Tausoare cave (site\_id = 213), 1152 (entity\_id = 457)
- Cave C123 (site\_id = 214), C126-117 and C126-118 (entity\_id = 458, 459)
- Chacara cave (site\_id = 215), Cha2 (entity\_id = 460)
- Dark cave (site\_id = 216), D1 and D2 (entity\_id = 461, 462)
- E'mei cave (site\_id = 217), EM1 (entity\_id = 463)
- Nuanhe cave (site\_id = 218), NH6 and NH33 (entity\_id = 465, 466)
- Shennong cave (site\_id = 219), SN17 (entity\_id = 467)
- Baeg-nyong cave (site\_id = 220), BN-1 (entity\_id = 468)
- La Vierge (site\_id = 221), LAVI-4 (entity\_id = 469)
- Patate (site\_id = 222), PATA-1 (entity\_id = 470)
- Wanxiang cave (site\_id = 223), WX42B (entity\_id = 471)
- Xianglong cave (site\_id = 224), XL16, XL2, XL26 (entity\_id = 472, 473, 474)
- Grotte de Piste (site\_id = 135), GP5 (entity\_id = 464)
- Lianhua cave (site\_id = 225), LH-2 (entity\_id = 496)

Update entity:

- DA\_2005 (entity\_id = 442), Dongge cave (site\_id = 39)
  - o distance\_entrance from empty to 500 to match values given in DA\_2009 (entity\_id = 475)
- Sanbao cave (site\_id = 140), SB-10 and SB-26 renamed to SB-10\_2009 and SB-26\_2009 (entity\_id = 295, 296)
- Sanbao cave (site\_id = 140), SB10 and SB26 renamed to SB-10\_2008 and SB-26\_2008 (entity\_id = 483, 490). Note the slight change in naming to include the hyphen to make sure the name is identical to entity\_id = 295 and 296.

Upload following new entities to pre-existing sites:

- Bukit Assam cave (site\_id = 116), BA03\_decadal (entity\_id = 238). entity\_status = current. BA03\_highres (entity\_id = 285) entity\_status = current partially modified. BA03\_decadal had been previously uploaded to the database but have been removed on the 11th of December 2018 due to mistakes in the d13C records.

- Dongge cave (site\_id = 39), DA\_2009 (entity\_id = 475). entity\_status = current partially modified; DA\_2005 (entity\_id = 442) entity\_status = current.
- Mawmluh cave (site\_id = 12), ML.1 and ML.2 (entity\_id = 476, 477)
- Mawmluh cave (site\_id = 12), KM-1 (entity\_id = 495)
- Sahiya cave (site\_id = 54), SAH-2, SAH-3 and SAH-6 (entity\_id = 478, 479, 480)
- Moomi cave (site\_id = 138), M1-2 (entity\_id = 481)
- Sanbao cave (site\_id = 140), SB3, SB10, SB11, SB22, SB23, SB24, SB25-1, SB25-2, SB26, SB34, SB41, SB42, TF (entity\_id = 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494).

#### Update site metadata

- Hoti cave (site\_id = 152)
  - o geology from 'unknown' to 'limestone'
  - o rock\_age from 'unknown' to 'Cretaceous'
- Moomi cave (site\_id = 138)
  - o latitude and longitude from 12.5, 54.0 to 12.55, 54.2
- Sanbao cave (site\_id = 140)
  - o longitude from 110.433 to 110.4333