**Chew Bahir Mini Workshop in Golm 28 Feb/1 March 2018**

Participants: Asfawossen Asrat, Helen Roberts, Henry Lamb, Verena Förster, Frank Schäbitz, Martin Trauth, Johanna Krüger (Thursday only), Walter Düsing (minutes)

Frank: Possible topics for the mini workshop: EGU posters, conferences, update on individual research, such as PCA, XRD etc., correcting XRF results (Verena), geochronology and age models, publication strategy in particular in the light of the next DFG proposal submission deadline 15 Aug 2018.

Verena: Will travel to NYC and Atlanta, invited talk at Lamont, needs new stuff to be presented, will also meet Dan Deocampo, automated detection of minerals in XRD results

All: Forthcoming meetings, IPA-IAL 2018 Stockholm (abstracts by March 15), AFQUA 2018 Nairobi (Abstracts by April 15) and INQUA 2019 Dublin (session proposals by March 31)

Frank: Update on individual research, in particular geochronology and age model? Should we publish a paper on the core description separately or as part of story-based papers?

Verena: Finds a sedimentology paper boring. What is the process behind the proxies, however, is important.

Helen: Can we do the description of the proxies without talking about age, display the data vs. depth? Is worried about future change of age model. Will be able to generate a luminescence/14C based age model in the next two months. A description paper may come together with others in a special volume. If you want to write a dating paper there are a lot of different methods. Just’s paper is a paper on its own. Says we have responsibility to publish the descriptions as well.

Frank: Plotting it simply against depth, will it convince reviewers? It is very helpful to have an idea of the age. We need age to put the data in context with the other not only HSPDP sites. We should at least have ages to use internally, for correlation, etc.

Verena: We have to be careful and aware of what has been published before.

Asfa: The expectation is for a big paper. So, what we really want/plan to publish at this stage is important. Waiting for a good age model might be worth it, then everyone can publish on their topic.

Helen: Age model will be very linear. Not much different from a straight line through Alan’s ages. Some age underestimation. Going through the data and looking for corroboration.

Martin: Publish story-oriented papers better than core descriptions. We can use a preliminary, semi-linear age model based on Alan’s ages and/or tuning. If we don’t publish anything about the long core we can’t submit proposals for the 15 Aug deadline this year. Publish proxy vs. depth in the supplement, together (in the future) with short discussions on the age model of THIS paper in comparison with previous versions of the age model. Give the age models names, labels, version numbers.

Helen: A limited number of versions would be helpful. Another age model in two years’ time.

Asfa: Already indicated to and will further tell Alan to look at tephra in between 60 – 90 m depth, based on the core description it seems that there could be the Kibish tuff at these levels (~197 kyr) . There could also be the Konso (~154 kyr) tephra. Sampling outcrops during the November 2018 fieldtrip.

Frank: Paleomagn work: Janna Just’s work may also help to get a good age model soon. Works on the uppermost 80 meters (~200 kyr), Tim Raub on the lower part [note: see discussion on the next day]. Guillaume Dupont-Nivet is offering help with the paleo mag work. He is part of HSPDP and currently at U Potsdam, working in Norbert Nowaczyk’s lab at GFZ Potsdam. Janna is not going to publish before she has a discussion with Helen about the age model.

Helen: Is willing to integrate any data to her age model that is helpful.

Frank: It is important to compare Chew Bahir to SSTs. Wants to correlate the SSTs to Chew Bahir and the N-African wet dry index. Is doing grain size endmember analysis. Before publishing I need to know how large the uncertainties of the ages are.

Helen: Will give an age model with uncertainties envelopes in the next two months.

Verena: Is taking out the jumps from the XRF data. Will make the correction of the XRF dates in April, remove outliers due to core caps scanned together with the sediment.

Martin: Better to compare PCs against other not only HSPDP sites than ratios. Better unmix before you mix. About jumps, Steve Roberts said the sensor moves up and down. It has a higher or lower mean. Remove it statistically or re-measure. We have only 8 elements that have no jumps. Half of the elements are just noise.

Henry: The sensor is supposed to follow a profile, scans the core first for its morphology, then does the actual measurements.

Martin: Maybe these measurements have not been done, they failed or the corrections have not been done properly? Steve said that there may be a software problem. If this occurs the sections are usually scanned once more.

All: Discussion of Jonathan Dean’s isotope data and his publication plans. Might be best to focus on upper 80 m of core – more continuous data?

Frank: shows slides from his Rutgers presentation, with some of Emma & Jim’s leaf-wax data plotted. Also plotted against Grant et al 2017 N African wet-dry index ODP 967, Soreq cave d18O and SSTs from the Indic (3°N 50°E).

All: Returning to question of whether to focus on uppermost part of CB record: Asfa argued strongly for last 200ka, as there is a big story to tell about modern humans’ evolution and dispersal. This time frame also includes the newly discovered AMH fossils in Israeli (Misliya cave). Rick Potts has papers in pipeline: major transition / tools 300ka? /

Walter: presented his PCA analyses, wavelet colour reflectance PCs.

**2nd Day**

Martin: New edition of his second book “MATLAB and Design Recipes …”, but with new title to make it better distinguishable from the first book “MATLAB Recipes …”: Trauth & Sillmann 2018; *Collecting, Processing and Presenting Geoscientific Data.* Springer, March 2018.

Frank: Paper strategy, author list and which proxies? Paleo mag data. Session proposals for upcoming meetings needed. How far are our cores by the problem of what? Half-finished projects, push for publication.

Verena: Paper of Ute Frank with new age model, on short cores; who can be a lead author? Before moving on to long core. 2011 Maxwell Brown. paleo magnetic properties, manuscript never got submitted, problems: age model, someone with paleo magnetic expertise, Ute Frank wrote the manuscript, but is out of science now. The paper needs new first author. Little bit of work needs to be done!

Frank: Who can be the paleo magnetic expert? Guillaume Dupont-Nivet?

Verena: will ask Guillaume to get his opinion and possible help with the paper.

Martin: The problem with the age model of the short core was that there was no datable material. Dated carbonate, charcoal, bulk material basically anything. Resulted in noisy age data.

Verena: It is in such far stage that it won´t be a big deal and could be cited in the long core papers.

Frank: Give it a try talking to Guillaume, let him check the data than show it to Martin again. Paleo magnetics close to the equator are interesting to the paleo magnetic community.

Helen: It will get in the way of the age model unless you want to validate the magnetic data with the age model. It can be a difficult data set.

Asfa: If it is publishable, publish it in the sense that it validates the age model.

Martin: If data exists it needs to be published. It’s a lot of work still to make it nice. And if it contradicts the established age model we will be pushed back into the old discussion about the age model. Instead priority is to publish on the long cores. Publish first the other stories that don´t touch the age model of the short cores. Short cores are just hobbies since there is no funded project on those.

Verena: I understand your point. Wait for the other papers on short cores to be published. Would publish it against Martin’s advice not to do it.

Helen: One of the issues is the rotation of the long core. The short core paleo mag could be a validation for the long core data set. Have a paper on difficulties with paleo mag in general. Put the data sets together.

All: Reading Tim Raub’s email about paleomag of long cores: Inclination does not work, instead suggests orbital tuning of mag sus data. No word about paleo-intensity measurements.

* Martin: Protocol of the CB 2015 meeting in Köln says “First paleomagnetic intensity data expected by the end of July (Tim Raub). Very preliminary age model based on these data, based on whole loop sensor data and MSCL logs, tuned to orbital cycles and dust records by the end of September (Tim Raub, Martin Trauth).” But at the CB 2016 meeting in Aberystwyth Tim did not present any palaeomag results, instead he presented a AHP stromatolite study. The protocol says that Janna Just should work on the uppermost 80 m, Tim Raub on the lower part of the core.

Helen: There are difficulties just the way the sampling has been done. Janna and Tim use different methods, different sample geometries and prepare the samples differently which makes it difficult to exchange samples. Looking for the most compacted material, where material more likely stayed in place. Janna agrees in Email dated 2.02.2018 that the data is almost impossible to find reversals. Only possible if reversal appears in undisturbed part, should be fine grained, should be seen in the declination measurements. Another possibility if the mean of declination goes more to negative values. The fact that the record is much younger than 780 kyr, she will give up looking for the probably not present Reversal.

Martin : Inclination doesn’t work, very low values near the equator, core tilted and rotated, makes impossible to measure changes in the inclination. Instead, **intensity variations should be measured**. Not clear why Tim didn’t do this since he announced it at the Köln meeting.

Frank: Included in the NERC proposal, need to say why it didn’t work.

Henry: We have plenty of arguments why it doesn’t work, all listed in Tim’s email.

Helen: Cross-validate paleomag intensity results with luminescence data as soon as I am confident with my age model (in 2 months’ time).

Frank: is there still something that the paleo mag will support us.

Martin: Tim wants to tune mag sus which does not make sense. We have tried this and gave it up since mag sus is not a consistent proxy for anything (dust=dry, rivers=wet). Someone should tell Tim not to waste more time on this and do the paleomag intensity measurements instead. However, he could help us better understand the mag sus signal, as said in his email. And then we could eventually use mag sus as proxy at least, better understand the PCA results including mag sus (Frank’s grainsize work) and even use it for tuning later (Walter’s work, not Tim’s).

Frank: It was a compromise/political decision to keep all the labs involved. At that time everybody accepted that. Tim was together with us in the field. I was convinced he would do the job as promised.

Verena: At the 2016 meeting he wanted to be co-author on the paper. We were all expecting results from the paleo mag. More than 1000 samples were collected from the core.

Henry: to write a message to Tim what we are still expecting from him. Specific deadline for “conservative” / robust mag sus stratigraphy? Emphasise August deadline for DFG proposals. Are corrected mag sus data online? How does this overlap with Walter’s work in progress (tuning, incl mag sus)? Would Tim do the corrections? We hope to get intensity variations from him and a method to understand the mag sus signal.

Johanna: Does ancient DNA work on the core material, can search for specific species. From the genetic point of view we have the worst core. If it works at Chew Bahir it will surely work with the other HSPDP sites. DNA is less likely to be preserved in oxidizing environments. Also sunlight/UV rays are bad for the preservation. Magadi core may work better, talked to Tim Loewenstein about the samples, but will focus on CB core first.

Johanna: For the use of the method you need to know what you are looking for.

Asfa: Maybe also check for bovids, as they are very common fossils in the nearby Omo basin and are good indicators of environmental conditions.

Helen: Snail operculas: pure calcite of opercula potentially extends luminescence age range to Ma scale.

Johanna: The method yields information about similar species, can scan for groups of organisms.

Verena: Maybe check for the very common operculate snail Melanoides tuberculate.

Asfa: Chew Bahir meeting in Arba Minch, November 2018, will do the tephra outcrop sampling with Alan Deino, Frank, and Christine Lane and possibly others might also join. Kibish to be sampled during the excursion; other sites north of Weyto for two days after the excursion. Two options, (1) workshop only (385 USD), (2) workshop + excursion/sampling (1,064 USD), starting 10 November 2018. Prepayment required about 3 months ahead of the event. Focus of the workshop will be publications.

Henry: INQUA Dublin 2019: multiple, partly overlapping session proposals have arrived, climate and human origins. Scientific Organising Committee keen to make Africa and human origins a major theme.

Frank: Paper about the last 200 kyr with a +/- ok age model, approx. 80 m depth, including strat column, mag sus, potassium (maybe others), grainsizes and endmember modelling. Story to tell, precip changes, PCA, correlation with 2-3 other sights around Chew Bahir, e.g. Tana, Indian Ocean SSTs, ODP 967 wetness index and Soreq Cave in Israel.

Frank: Jonathan’s publication plans? Should be included in this paper? Probably needs first-author papers instead of including his isotope record as a co-author.

Verena: Analcime seems to be working as reliable qualitative aridity proxy in 2 cm resolution. Include it in the paper or make an independent one out of it? XRF data?

Henry/Asfa: paper should focus on key questions addressed by the project – e.g. what environmental changes occurred before and at the time of H sapiens origin, at times of dispersal? How did environmental change influence human origins, dispersal? Palaeodata to test hypotheses of origins, dispersal.

All: Discussion of Tierney’s Geology 2017 paper, refugia, regional differentiation, Jim Bob’s data, special pattern of their finds/presence and absence of occupation, Jim Bob and Matt submitted a paper to QSR, MSA transition.

Martin: Decide on the journal after having a story.

Henry: Concentrate on the human story, perhaps also on the MSA transition. Can we link the climatic shifts with dispersal events? Was it really dry or did early humans move whenever they wanted?

Verena: Understand the site and the proxy before plotting it vs. time.

Frank: Will send around first graphics to start the paper writing process.

Meeting concluded ca 2.00 pm, followed by visit to Museum of Prehistory and Early History, Neues Museum Berlin.