

Dear participants in the 2017 ICDP Barberton Moodies workshop,

You are science team members of the BASE (Barberton Archean Surface Environments) project. I would like to write with an update.

I noticed that some of you are not linked to a country or science group representative, so you are not updated on the developments. Some of you may not have had mail on this topic for a year or more. What has happened since?

Funding

I write approximately monthly a “funding update” to the members of the science management committee. You will remember, our ICDP proposal, quickly submitted in Jan. 2018, only four months after our 2017 workshop, was generally positively received but returned with requests for a few improvements. We were successful with the improved version, submitted in January, 2019. We were notified in June 2019 that the requested sum, 50% of the estimated drilling costs (900,000 US \$), would be reserved for this project for the coming three years. We then redoubled our efforts, begun already the previous year, to secure the matching funds from initially nine, then ten participating national governments.

These are the results to date (names are those of country coordinators; names of grantees may differ):

Australia	Martin van Kranendonk	submitted Aug. 2020
South Africa	Nic Beukes	in prep.
Japan	Takeshi Kakegawa	100,000
Germany	Christoph Heubeck	150,000
France	Stefan Lalonde	decision Oct. 2020
Belgium	Emmanuelle Javaux	50,000
Netherlands	Paul Mason	To be submitted Oct. 2020
US	Mike Tice	decision Nov. 2020
US	Roger Fu	submitted May 2020
CH	Johanna Marin-Carbonne	53000 CHF
CH	Johanna Marin-Carbonne	50000 CHF; decision ca. Oct 2020
UK	Martin Homann	submitted June 2020, decision March 2021

In addition, we have contacts in various degrees of maturity to Canada (also an ICDP member) and Agouron. We also anticipate in-kind funding from CIMERA (the SA research drilling consortium) and perhaps the CGS (the National Geol. Survey of SA).

The lines above only show those proposals that have or will ask for drilling contributions. I know that some others have already been funded to do research on the core.

Collecting money is thus coming along nicely. The more approved funding we can show in our proposals, the easier will it be to convince any national review panel to let you join the project. All proposals so far asked for the minimum sums to-date so we will end up a bit with a shortfall unless more countries join us.

Your Science Management Team

... has remained almost unchanged. Through Martin's move from France (where we had already Stefan) to London (where we had no one), we gained a new country AND a new country coordinator (smart move, Martin ! Private reasons may have played a small part).

	Affiliation		
N. Beukes	Univ. of Johannesburg	South Africa	nbeukes@uj.ac.za
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J. Marin-Carbonne	University of Lausanne	Switzerland	johanna.marincarbonne@unil.ch
P. Mason	Utrecht University	Netherlands	p.mason@uu.nl
M. Tice	Texas A&M University	US	mtice@geos.tamu.edu

Science management team members should double as country coordinators and disseminate information relevant principally to science team members of that nationality, e.g. about funding opportunities or conferences etc. although we have not formally talked about this.

Focus Groups

We currently have four focus groups, here listed alphabetically from the 2017 records and to the best of my knowledge. Underlined members are also members of the science management committee and thus have a bit of a coordination function. PhD-students (and "lower rankings") are not explicitly listed because their interests and focus changes more rapidly. It is not necessary that you belong to a focus group now but it helps us to see where there is a crowd and where vacuum threatens.

Life: David Fernandez R., Jian Gong, Martin Homann, Emmanuelle Javaux, Johanna Marin-Carbonne, Kim Myers, Mehrnaz Siah, Christophe Thomazo, Mark van Zuilen, Dylan Wilmeth

Sedimentation and Surface Processes: Andrea Agangi, Wlady Altermann, Heinrich Bahlburg, Dion Brandt, Alix Davatzes, David De Vleeshouwer, Nadja Drabon, Marcello Gugliotta, Christoph Heubeck, Rajat Mazumdar, Clarissa Vorster; Dennis Harries (partly), Franziska Scheffler (partly), Bertus Smith (partly)

High-T (Magmatism and Metamorphism, Structure and Tectonics, Diagenesis): Camille Francois, Matthias Schmitz, Paul Fugmann, Nora Bieker, Martin van Kranendonk

Paleoenvironment (Geochem): Bertus Smith, Franziska Scheffler, Leslie Robbins, Tsubasa Otake, Kurt Konhauser, Takeshi Kakegawa, Roger Fu

Staffing

We had a well-received mix of junior, mid-level and senior scientists in our 2017 workshop. By now, many of them have embarked on career paths which are unlikely to bring them back to research on Moodies core, while others, among them recognized experts, have only recently learned of the project, and would like to join the science team (- this means, same access to data and core as you have).

This issue concerns only those who will write research proposals and act as PIs; PhD students, in contrast, are usually employees of specific research projects granted to someone else. They have access to data and core through their PIs and do not need to be formally included.

There are, to my knowledge, no rules on how to modify the set of science team members at ICDP; the best way appears to be nominated through one of the science management team members and by voting on the applicant in that circle. We want to have many top experts with complementary expertise who will enthusiastically work in our team but want to avoid unnecessary duplication of skills and competition for core.

Corona

We are lucky that we were not more successful in our funding to-date, else the corona pandemia would have stalled our project in the drilling phase, conceivably marooning some of us in South Africa. Obviously, we currently cannot travel but electrons keep flying at an unreduced rate between Barberton and here. Personally, and as much as I'd like to collect new data in the mountains now, I also take satisfaction by being forced to sit at my desk for weeks, write, communicate and think. In the past, this often had to take a low priority.

Those of you with spending deadlines attached to your national proposals, please write your program coordinators and ask for a reprieve. I am sure they will understand.

Forecast

I am occasionally asked whether we can't start drilling even though we are not yet fully funded. This is a difficult question; its answer depends on the SA drilling contractors (option to extend?) and the likelihood of getting the remaining funds in time while already drilling. We certainly must avoid situations, for example, in which those who focus on the final well, BARB-5 (flood-plain-to-prodelta transition, 700 m of rhythmically laminated T_{de} turbidites, BIFs) do not get any core drilled while others whose (certainly well-written) proposals were turned down enjoy the results from the research interests on crinklies etc. from the first wells. And vice versa.

Currently, I think that we may be able to start drilling towards the end of 2021 because by then, we should have most if not all funding, contracts negotiated, permits obtained and travel arrangements made again. But I would certainly not bet on it.

Once drilling starts, we will need a small but semi-permanent number of drill hands, perhaps 3, represented mostly by students. We have asked for some travel funding for this staff in the ICDP budget but you are well advised to also add some budget for this kind of travel (e.g. 4 weeks per-diem plus flight and local travel) in your own research proposal.

All other dates remain unchanged: Approx. 276 days scheduled for drilling (better make it a year ...), staggered slabbing and shipping of the research core to Berlin; there, a quick initial description and production of a first log (ca. 3 months). Then, the sampling party. If all goes well, this would be mid-year 2023.

Of course, while drilling, we will already write daily reports and have a crude lithologic description on-site and of the slabbed core. This may already serve as base for research proposals – but you cannot have core material until AFTER the sampling party.

Science update

I cannot really describe here the Moodies-related research activities of colleagues and surely am also unaware of some. If you want to inquire, please ask me, and I'll advise.

In my own small group, we generally aim to improve the regional, field-based understanding of the Moodies tectonic and sedimentary environment so that we will be able to constrain interpretation of data from the future core. I try to stay away from anything that would diminish the value of the fresh core. We have recently submitted a ms on Moodies tectonic setting and another on the field evidence for hydrothermal alteration (thus preserving some crinklies). We are working on the Moodies volcanics and also on provenance. This kind of work takes us all over the mountains; please let us know if you would like to join us once we may travel again.

We just held a mini-symposium on the BGB at the German national meeting which was supposed to be in Utrecht (which is NOT in Germany but in the Netherlands); the meeting probably actually took place in some US data center (we were using Microsoft Teams software). We had six talks, four of which were on the Moodies. Please see [here](#) (from 4:20 p.m. downward) and [here](#) for the abstracts and uploaded pdfs of our ppts.

Literature

Several Moodies-related publications came out since 2018; below a (probably incomplete) list. Please refer to them in your proposals:

Saitoh, M., Nabhan, S., Thomazo, C., Olivier, N., Moyen, J.F., Ueno, Y., Marin-Carbonne, J., 2020, Multiple Sulfur Isotope Records of the 3.22 Ga Moodies Group, Barberton Greenstone Belt. *GEOSCIENCES*, 10, 145; [10.3390/geosciences10040145](https://doi.org/10.3390/geosciences10040145)

Bonnand, P., Köhler, C., Heubeck, M., Homann, P., Nonotte, K.O., Konhauser, M., Boyet, S.V., Lalonde, 2020, Post-depositional REE mobility in a Paleoproterozoic banded iron formation revealed by La-Ce geochronology: A cautionary tale for signals of ancient oxygenation. *Earth Planet. Sci. Lett.* 547, 1 Oct. 2020, 116452.

Nabhan, S., Marin-Carbonne, J., Mason, P.R.D., and C. Heubeck, 2020, In situ S-isotope compositions of sulfate and sulfide from the 3.2 Ga Moodies Group, South Africa: A record of oxidative sulfur cycling. *Geobiology* 2020;00: 1 – 19; <http://dx.doi.org/10.1111/gbi.12393>

Heubeck, C., 2019, The Moodies Group - A high-resolution archive of Archaean surface and basin-forming processes; in: A. Kröner and A. Hofmann (eds.), *The Archaean Geology of the Kaapvaal Craton, Southern Africa*. Springer (Regional Geology Reviews), 203-241; https://doi.org/10.1007/978-3-319-78652-0_6

(the first "review" paper on the Moodies - ☺)

- Köhler, I., and Heubeck, C., 2019, Tephra associated with microbial mats of the Archean Moodies Group, Barberton Greenstone Belt, South Africa: Resemblance to potential biostructures and ecological implications: *South African Journal of Geology*; doi:10.25131/sajg.122.0015
- Drabon, N., C. Heubeck, and D.R. Lowe, 2019, Evolution of an Archean fan delta and its implications for the initiation of uplift and deformation in the Barberton greenstone belt, South Africa. *Journal of Sedimentary Research* 89, 849-874.
- Stutenbecker, L., Heubeck, C., and Zeh, A., 2019, The Lomati Delta Complex: A prograding tidal delta in the Archean Moodies Group, Barberton Greenstone Belt. *South African Journal of Geology* 122, 17-38.
- Byerly, G.R., D.R. Lowe, C. Heubeck, 2018, Geologic evolution of the Barberton Greenstone Belt – a unique record of crustal development, surface processes, and early life 3.55 to 3.20 Ga; in: Van Kranendonk, M.J., Bennett, V.C., and Hoffmann, J.E., *Earth's Oldest Rocks – Second Edition*. Elsevier (Amsterdam), 569-613.
- Homann, M., P. Sansjofre, M. Van Zuilen, C. Heubeck, J. Gong, B. Killingsworth, I. Foster, A. Airo, M. J. Van Kranendonk, M. Ader, and S.V. Lalonde, 2018, Microbial life and biogeochemical cycling on land 3,220 million years ago: *Nature Geoscience*, <https://doi.org/10.1038/s41561-018-0190-9>

Summary

Lastly, I would like to encourage all of you to communicate early and openly with each other, as it has happened in a wonderful way so far. We really have a great team here !

I firmly believe that the cake is large enough (4400 m of core!) that even a large group as ours will have difficulty to digest its slices. So please don't claim too much in current and future research proposals but be realistic in your methods and in the core material you will require; resolve conflicts and build alliances early by writing those with whom you share interests. It is our ambition to have as much science done as quickly as possible on this core; we are striving to fill gaps and point out developing overlaps.

Frohes Forschen !

Christoph