Searching for new pieces of the Cradle of Humankind in Southern Africa: HON and HOMME research programs

Laurent BRUXELLES1, 2, 3
Dominic J. STRATFORD3
Amélie BEAUDET3
Bastien CHADELLE1
Grégory DANDURAND1, 2
Francis DURANTHON4
Jean-Baptiste FOURVEL5
Marc JARRY1, 2
Marcelino MOIANA6
Clément ZANOLLI7

1 - TRACES, UMR 5608 of the CNRS, Toulouse, France;
2 – Inrap, Paris, France
3 – School of Geography, Archaeology and Environmental Studies, University of Witwatersrand, Johannesburg, South Africa
4 – Toulouse Museum and AMIS, UMR 5288 du CNRS, Toulouse, France
5 – LAMPEA, UMR 7269 of the CNRS, Aix-en-Provence, France
6 – Museum of Geology of Mozambique, Maputo
7 - PACEA, UMR 5199 of the CNRS, Bordeaux, France

Significance:

We present here the results of on-going research programs in Southern Africa about Homo genus appearance. This opens broad perspectives of research as whole Africa can be now considered as the cradle of Humankind based on a geological and geomorphological approaches. Looking for potential fossil traps in karstic areas provide some interesting results supporting this statement.

Abstract:

For decades, the great East African rift has been considered a cradle of humankind. Eastern African archaeological and paleontological sites have yielded fossils of the oldest Australopithecus evidence in Africa, stone tool assemblages and fossil remains  of  hominins spanning the time period that documents the emergence of the genus Homo. Equally important is another cradle of humankind  located 35 km Northwest of Johannesburg in South Africa, which, over the last 80 years, has yielded a abundant fossil specimens attributed to Australopithecus, Paranthropus and Homo as well as the earliest stone tool artifacts found in the country. These artifacts and fossils are associated with extensive palaeokarst deposits. However, difficulties in dating the cave deposits have contributed led to the perception that the paleoanthropological record from the southern African cradle of humankind are significantly younger than that of eastern Africa, thus limiting the role of the southern African fossil assemblages in the search of the earliest hominin fossils.
Recently, the absolute dating of the nearly complete Australopithecus skeleton nicknamed ‘Little Foot’ produced an age of 3.67 Ma [1]. This date, supported by additional stratigraphic and faunal evidence [2], demonstrated that the southern African fossil record may be as old as the eastern African fossil assemblages and specifically has the potential of yielding the earliest evidence of the genus Homo. In both areas, fossil hominin remains and artifacts are preserved in geological traps (i.e. the rift valley and caves). Therefore, we may consider the possibility of finding new paleoanthropological sites in other geologically suitable areas in Africa [3]. In fact, the whole continent may represent a potential cradle of humankind, with fossils preserved in natural sediment traps throughout Africa.
Based on this hypothesis, the Human Origins in Namibia (HON) research program, represented by an interdisciplinary team, aims to search for fossiliferous palaeokarsts in Namibia. Our promising preliminary results suggest the presence of deep caves acting as sediment traps in several areas in Namibia. Similarly, we initiated a second research project, named Human Origins in Mozambique and Malawi Environments (HOMME), to search for fossil sites in the karsts that surround the southern end of the Great East African Rift. This geomorphologically interesting region provides a unique opportunity to link the Great East African rift sites of East Africa and the karst sites of South Africa. In the first field trip, we found promising fossiliferous breccia which confirmed the potential of this area.
If only one early hominin fossil could be found outside the established eastern African or South African ‘cradles’, this discovery will validate our hypothesis of a greater African cradle of humankind and initiate new research perspectives for interdisciplinary and international palaeoscience teams.

Bibliography:
Granger D., Gibbon R., Clarke R., Kuman K., Bruxelles L. et Caffee M., 2015. Cosmogenic burial ages for Australopithecus StW 573 and the Oldowan Infill at Sterkfontein, Nature, 522, pp. 85-88.
Bruxelles L., Stratford D. J., Maire R., Pickering T. R., Heaton J. L., Beaudet A., Kuman K., Crompton R., Carlson K. J., Jashashvilli T., McClymont J. Leader G. M. and Clarke R., J. 2019. A multiscale stratigraphic investigation of the context of StW 573 ‘Little Foot’ and Member 2, Sterkfontein Caves, South Africa. J. of Hum. Evol., 199, pp. 78-98.
Bruxelles L, 2016. Southern Africa as a cradle of Humanity: in search of new evidences. Géosciences, 21, BRGM, pp. 44-49.

Acknowledgement:

We would like to thank for their help and support the French Ministry for Europe and Foreign Affairs, the CNRS Miti 80 interdisciplinary mission, the Center of Excellence in Palaeosciences of the University of the Witwatersrand (Johannesburg, South Africa), the National Heritage Council of Namibia and the Museum of Geology of Maputo (Mozambique).