Dear SAHRA,

In the coming week, we have a team of French karst specialists from the CNRS doing research at Sterkfontein and Swartkrans, and they wish to sample flowstones and breccias for thin section analysis, chemical and environmental analyses, and dating. The work at both sites is supported by my NRF African Origins Platform grant (2013-2015) and the CNRS in France. I am a team member of the Swartkrans project and a Coordinator of Research for Sterkfontein caves. Our collaborators include:

Dr Laurent Bruxelles (team leader)
Geoarchaeologist in the French National Institute of Preventive Archaeology (INRAP)
Member of UMR 5608 of CNRS (TRACES, University of Toulouse le Mirail, France)
President of the French Association of Karstology since 2009
Honorary Research Associate, University of the Witwatersrand, School of Geography, Archaeology and Environmental Studies

Dr Richard Maire (karst geomorphology, sedimentology, petrography, & micromorphology)
Director of Research, CNRS-University of Bordeaux
UMR 5185 CNRS (ADES), Maison des Suds, Domaine Univ. Bordeaux, 12 Esplanade des Antilles, 33607, France

Dr Richard Ortega and Dr Stephane Roudeau (karst geochemistry)
Geochemists with the CNRS (5084 CNAB)

PROPOSAL FOR THE EXPORTING OF SAMPLES:

Flowstones and breccias will be sampled from both sites for the following analyses, to be done in the French CNRS laboratories of our collaborators:

- thin sections analysis for study of petrography and micromorphology to most accurately identify diagenesis in breccias and flowstones; this will enable us to date target the best samples for dating

- dating samples for Uranium Series work (U Pb)

- thin section analysis of samples at the contact of flowstone and breccia to reconstruct details of site formation

- geochemical analysis using microchemical imagery to map samples chemically; this will give precise information on diagenetic processes, detect elements that are specific to closed or open sources of sediments, and address the mineral composition of sediments (see below)

- Isotopic analysis of speleothems for palaeoenvironmental data

Sampling will be done primarily for Members 1, 2 and 3 at Swartkrans, which are the Plio-Pleistocene deposits, but Members 4 and 5 may be included if the team has time this year (MSA and Holocene respectively). We are currently excavating Member 3 and would use sediment samples to identify elements and minerals that could address the issue of burning in the deposit, which is currently indicated by the presence of burnt bone.

At Sterkfontein, work has already been done on Member 2 (ca 3 Ma, containing the Little Foot skeleton), and a paper is about to be submitted on the results. We need now to sample the younger Member 4 & 5, deposits exposed at the surface, especially to address the dating controversies for these members. In addition, the team may have time to do work in Jacovec Cavern, which is one of the oldest infills in the sequence, possibly approaching the age of Member 2.

Once the samples are targeted, a list of all material and provenances will be provided to SAHRA. They would be hand carried on the return flight of this team to France and taken to Dr Bruxelles laboratory for distribution to the specialists.

Submitted by:

Prof K Kuman and Dr Morris Sutton
13 July 2013

A signed copy of this application will follow shortly.