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Synchrotron imaging and the African fossil record: a decade of collaboration

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Palaeontologists have always sought for new techniques aiming to retrieve more and more information from the fossils they discovered. Until recently, one of the most difficult problems to overcome was the non-destructive visualization of inner structures, to access the numerous information for the understanding of life evolution on Earth. Using X-rays to scrutinize fossils rapidly appeared as an obvious non-destructive solution. From early medical scanner to synchrotron, Computed Tomography has revolutionized palaeontology opening new possibilities in all its branches.

African researchers were not an exception in this exploration of the unseen. The richness of the African fossil record was offering abundant and important material and more questions to answer. One of the first uses of synchrotron in palaeontology was the study an early member of the hominid lineage from Chad, *Sahelanthropus tchadensis*, also known as Toumai, studied by a Tchad-French team. This incredibly important fossil paved the way for many collaborations of African researchers with the European Synchrotron: Ethiopia, Kenya, Morocco, Cameroon, Mozambique and South Africa, to name a few and the list keep growing.

South Africa is a remarkable example of collaboration with the ESRF. From the first palaeontological experiment in 2008, South African researchers pushed forward to take advantage of their two cultural heritage treasures: the Karoo, first, land of the longest most extended continuous continental fossil record, documenting the most dramatic of all mass extinction, but also the rise of mammal forerunners and their fall at the dawn of dinosaurs; the second, the UNESCO world heritage site known as the Cradle of Humankind, where more fossil hominids have been discovered than anywhere else. The palaeontological community actively participated to the agreement with the ESRF, making South Africa the first African country to join the European Synchrotron. This endeavour made it possible for South African researchers to take advantage of their incredible fossil record and of the best tool available in the world for imaging of fossils.

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