The palaeokarstic deposits of southern Africa often contain thick flowstone deposits that are ideal for isotopic analysis. However, due to their Plio-Pleistocene age (3-1 Ma) the speleothems lie beyond the limit of U-Th dating. Recently, it has been possible to date these flowstone sequences using U-Pb methods when particular conditions apply, e.g. high uranium content and low common lead. This has allowed the direct dating of flowstone sequences and hominin remains from the South African palaeocaves when combined with other methods such as palaeomagnetism, ESR and cosmogenic nuclide burial dating. The clastic deposits in these caves often form very rapidly and create high resolution sequences that sometimes record geomagnetic reversal events despite the small stratigraphic sequences. Geomagnetic reversal events are also recorded within the slowly depositing flowstones themselves and can be directly dated using U-Pb. Multiple caves often contain flowstones of the same age and containing the same geomagnetic reversal events. At Sterkfontein and Malapa Caves the Huckleberry Ridge and Réunion events have been directly dated within flowstones. This method also has the advantage that geomagnetic field change can be directly compared to stable isotope data in the flowstones to look at potential links to climatic and palaeoenvironmental change.