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Quantification of climate and vegetation from Southern African Middle Stone Age sites – an application using Late Pleistocene plant material from Sibudu, South Africa

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The isolated geographical situation of South Africa makes the unraveling of various parameters that influence its regional climate in time challenging. If the South African climate does not exhibit a linear correlation with global archives as suggested by some authors then the contribution of independent local data that provides direct information on the environment at a certain place and time is crucial.
Fossil plant remains provide valuable information on past environmental conditions. Although few paleobotanical data are available from Southern Africa, some sites reveal rich and diverse fossil floras, most notably, Sibudu Cave, KwaZulu-Natal, South Africa, with its numerous fruits, seeds, pollen and charcoal flora. Such plant remains not only provide information on past vegetation, but also serve as a sound base for paleoclimate quantification with the Coexistence Approach (CA).
Sibudu Cave has pulses of Middle Stone Age occupation separated by hiatuses that are as long as 10 ka. Pre-Still Bay, Still Bay, Howiesons Poort, post-Howiesons Poort and late and final Middle Stone Age industries are present. Variations in vegetation and the animals preyed on through time suggest that subtle environmental changes could have occurred during MIS4 and MIS3 in the Sibudu area. Whilst always semi-forested, the region may have comprised a mosaic of uneven and changeable patches of coastal forest and savanna. These in turn might have influenced the numbers of forest versus plains animals in the area. Cultural factors could also have played a part in the faunal variability observed in Sibudu.
Preliminary analyses of Sibudu Cave material confirm the potential of the CA for its application on Late Pleistocene African floras. In the future, comparison with other contemporaneous sites will help quantify spatial differences in the climate of the Late Pleistocene in South Africa, and may answer if environmental changes effected the cultural development from Still Bay to late MSA industries.