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Dates in the desert: Interpreting over 600 luminescence ages from southern African desert dune systems

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Over 600 published luminescence ages from southern Africa's extensive continental dunefields and isolated dunes provide a rich record of aeolian system dynamics during the late Quaternary. Included in the Chronologic Database of INQUA's Dunes Atlas project, the majority of records come from sites within linear dune-dominated Kalahari dunefields, with lesser representation of both other dunefields (Namib, West Coast) and dune types (lunette, transverse, sand ramp). Records are analysed not only for the evidence they provide of Late Quaternary environmental changes over the last 190ka, but in terms of the analytical techniques used, data quality and data presentation, as these all impact on how dune luminescence ages have been, or should be, interpreted as a tool for palaeoenvironmental and dune development studies.

Although the sub-continent has yielded a substantial body of dune ages, the spatial unevenness of sampling for dating inhibits our ability to fully interrogate southern Africa's aeolian history. However, we argue that this is not a situation that can simply be improved by adding more and more ages to the full set of records. It is essential to 1) appreciate the spatial differences in dune sensitivities to activation; 2) the relationships of dune activity to potential changes in hydrological and other activity controls, and 3) establish better tools and approaches for analysing a rich but presently environmentally ambiguous record of dune accumulation.