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An introduction to the INQUA Dunes Atlas Chronologic Database

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The INQUA Dunes Atlas project has developed a global digital database of chronologic information for periods of desert sand dune accumulation and stabilization. The database currently contains 3278 luminescence and 535 radiocarbon records of directly dated periods of aeolian sand deposition from 1200 inland dune locations throughout the world, mostly in low- and mid-latitudes. Co-authors of this abstract have compiled data for their geographic region of expertise. Additional data are being added from publications, reports, and theses and dissertations as they become available.

In addition to age data, the database includes information on the site location (including coordinates), dune type, and stratigraphic context, pertinent analytical information (e.g. luminescence procedures), and literature citations to the original data source (with doi). The database has so far enabled: (1) analysis of patterns of dated dune deposits at multiple temporal and spatial scales; (2) correlation of these patterns with other paleoclimatic proxies; and (3) assessment of the paleoclimatic and paleohydrologic implications of periods of aeolian deposition.

The database has highlighted several issues with the available luminescence data set, especially the uneven spatial coverage of dated dune deposits and the heterogenous nature of the dune sedimentary record in many areas. It is clear that resolution of these issues to provide a better understanding of dune and dunefield responses to Quaternary climate change is not just a matter of additional dates. A systematic dating program that reflects fundamental patterns of dunefield sensitivity to climatic and hydrologic changes and relates dated deposits to patterns of dune morphology and sedimentology is needed as a research priority.