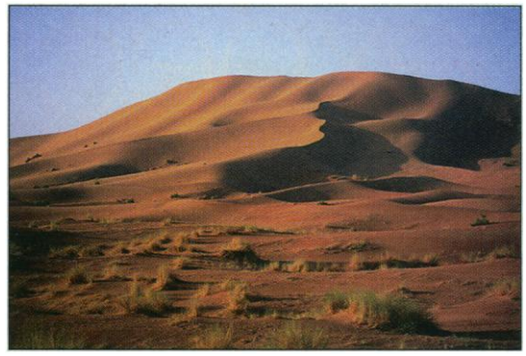
A Very Old Sahara

In the News Focus article "A wobbly start for the Sahara" by Mark Sincell (16 July, p. 325), it is stated that the Sahara region has only existed as a desert for 4000 years. To the contrary, there is substantial geologic evidence for widespread desert conditions in the Sahara before 4000 years ago.

The most detailed and comprehensive Saharan record of Quaternary eolian sediments is present in the Chott Rharsa Basin in southern Tunisia (*1*). This record is one of eolian sands and sandstones that interfinger with lacustrine (lake) and sabkha (salt flat) deposits. Thermoluminescence dates from the sands and sandstones indicate that there were distinct phases of eolian sand accumulation around 12,200, 10,000, 7500, and 6200 to 5600 years ago. Lacustrine deposition occurred sometime between the eolian accumulations of 10,000 and 7500 years ago, sabkha deposition occurred sometime between the eolian accumulations of 7500 and 6200 years ago, and a gypsum crust developed by pedogenic (soil) processes after the eolian accumulation that occurred between 6200 and 5600 years ago but before the onset of the desert conditions that prevail today. Each phase of eolian sand accumulation was followed by eolian sediment burial by lacustrine or sabkha deposits and eolian sediment stabilization by vegetation and pedogenic crusts.

Furthermore, a comparison of this reord with other eolian records (*2*) shows that the Tunisian record follows a pattern of regionally synchronous changes in eolian sediment behavior across the Sahara region. Thus, the statement by Sincell that the Sahara started only 4000 years ago, and his statement that "grasses and shrubbery covered what is now the Sahara until some unknown environmental catastrophe dried up all the water, leaving nothing but sand" consider only a limited time period. If one views the Saharan record for a longer time period, then it is clear that the Sahara region was desert well before 4000 years ago and that the episode of more abundant vegetation described by Sincell is simply the most recent of a series of episodes when eolian sands were temporarily covered by vegetation.

As for the age of the initial onset of desert conditions in the Sahara, an isolated eolian sandstone in southern Tunisia has yielded a thermoluminescence date of greater than 86,000 years ago (*1*, *2*), suggesting that desert conditions have been present for much longer than the time period considered by Sincell.



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Desert conditions in the Sahara have been episodic for at least 12,000 years and perhaps began as long ago as 86,000 years.

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References

1. C. Swezey *et al.*, *Holocene* **9**, 141 (1999).
2. C. Swezey, thesis, University of Texas at Austin (1997).