



SUBMERGED DUNES OF NORTHEASTERN EYRE PENINSULA

An investigation into the age, origin and palaeoclimatic implications of relict aeolian landforms.

Wilhelmus J. Van Deur, B.A. (Hons.) Dip. Ed.

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Department of Geography,
University of Adelaide.

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DECLARATION

This thesis is based on original research carried out in the Department of Geography, University of Adelaide. It contains no material submitted previously for a degree at any University, and to the best of my knowledge contains no material published or written by another person except when due reference is made in the text of the thesis.

W. J. Van D ur

SUMMARY

The presence of what are apparently longitudinal dunes submerged off the coast of northeastern Eyre Peninsula, South Australia, poses a number of problems that are investigated in this thesis.

These submarine features are located adjacent to the Utera Plain, which supports a series of northwest to southeast trending seif dunes. The Utera dunes are relict features, but when were they formed, from what sediment source and by what process? If these landforms are indeed dunes, how do they relate to the sand ridges of the Utera Plain, and, considering that dunes are commonly consolidated and subject to rapid erosion by marine activity, how have they survived submergence?

The relict longitudinal dunes deposited on the semi-arid Utera Plain attest to a period of former aridity. Further, the results obtained in this investigation indicate that the submerged landforms are dunes, and are related to the Utera dunes. Thus the dunes were drowned by the post-glacial rise of sea level during the Holocene. Radiometric dating of shell and other organic material superimposed stratigraphically over the dunes indicates that the dunes are pre-Holocene in age, while the results from a calcrete layer developed pedogenically within the dune, together with other evidence, suggests that the dunes were deposited at some time between 12,000 and 24,000 years B.P., that is, during the last-glacial maximum.

The concept that glacials were arid rather than pluvial, as was previously believed, is now accepted widely. This study has extended this theory to the eastern part of Eyre Peninsula, and contradicts the only major previous survey which concluded that the dunes were deposited during the last Interglacial.

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