GEOMORPHIC EVOLUTION OF SOUTHEASTERN FLEURIEU PENINSULA

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SUMMARY

The geomorphic features of Southeastern Fleurieu Peninsula are mapped, described and their possible origin and age considered.

As many landforms in the area are influenced by bedrock structures and as the stratigraphy of the region throws light on the sequence of historical events, detailed geological and geomorphological mapping is presented.

From field evidence the palaeogeography of the area at various points in time has been reconstructed. A Palaeozoic orogeny developed a fold belt, the base of which was intruded by a granite mass approximately 480 million years ago. Although there is inferential evidence of deposition during the Devonian, the 200 million years following the intrusion witnessed considerable erosion with the exposure of the granite occurring by the time of the Late Palaeozoic glaciation.

A Late Palaeozoic ice sheet overrode Fleurieu Peninsula from the southeast, accentuating the preglacial relief. There is no incontrovertible evidence of multiple glaciation in the area and glacigene sediments are not as extensive as previously thought. The expression of the Late Palaeozoic glaciation in the present landscape is considered.

Two major landsurfaces of erosion, the Spring Mount surface and the Green Hills surface, have been distinguished on the basis of elevation and distinctive duricrust cappings. Two main surfaces of aggradation occur in intermontane situations in the Upper Hindmarsh Valley and the Waitpinga area both of which have been dated by reference to Tertiary marine limestones. From the distribution of the limestones the roles of Tertiary tectonism and eustasy are examined.

The morphology of the present coastline reflects structure, present processes and a slight rise in relative sea level. Evidence exists for former Quaternary shorelines at elevations of 200' (60m), 100' (30m), 20' (6m), 8'-10' (2.4m-3m), -36' (-10.8m), and -66' (-19.8m), the last four of

which are considered to be the result of glacio-eustasy.

Morphometric techniques are used to analyse the development of the drainage network of Waitpinga Creek. River terraces in McKnight Creek, a tributary of Waitpinga Creek, are interpreted as climatically caused during the Late Pleistocene and Holocene. Further evidence of climatic change during the Quaternary is afforded by the relationship of fossil parabolic cliff-top dunes to the present wind regime.

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

Signed

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