

## 10. Structural Field Observations in the Basement between Fry and Reeves Glaciers, Victoria Land, Antarctica

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The basement of Victoria Land between Fry and Reeves Glaciers forms a 20 to 30 km wide strip along the coast of the Ross Sea. It consists mainly of granitoids (Granite Harbour Intrusives, GUNN & WARREN 1962) of Ross age, i.e. approximately 500 Ma (FAURE & JONES 1974, BORSI et al. 1989). They can be divided into clearly post-tectonic, red-coloured plutons and so-called syn-tectonic, grey varieties showing sometimes a measurable foliation of probably magmatic origin (Fig. 1; WARREN 1969, SKINNER & RICKER 1968, comp. FENN & HENJES-KUNST this volume).

Metamorphic rocks occur only rarely: (i) metasediments around Mawson Glacier showing a well defined schistosity (Fig. 1) and resembling „Priestley Schists“ (SKINNER 1983); (ii) orthogneiss with a NNW-SSE trending schistosity at one locality south of Fry Glacier; (iii) multiply folded migmatites near Cape Reynolds. The granitoids are cut by several generations of both acid and basic dikes with a general N-S to NE-SW trend.

Ductile deformation was observed in three places confined to shear zones: (i) at Walker Rocks (TESSENSOHN et al. this volume); (ii) north of Mt. Stephen (300/60; dip direction, CLAR compass), and (iii) immeasurable at Mt. Janetschek. The shear zones have thicknesses of up to 5 cm and are not of regional importance.

The most dominant structural features are small faults due to brittle deformation (Fig. 2). They have been measured at nearly all exposed basement rocks. 60 % of them show strike-slip, the rest normal character. 80 % of all and 80 % of the strike-slip faults are trending N-S to NE-SW. More than 80 % of these strike-slip faults show dextral shear as evidenced by the slickenside striations and Riedel shears.

Two thirds of the normal faults show downward displacement towards the west, only one third towards the Ross Sea. The amount of displacement could nowhere be measured. Normal faulting mostly overprinted strike-slip faulting at the same surface. Therefore we conclude, that strike-slip faulting is the older tectonic style in general, postdating nearly all dikes, except some of the basaltic ones (STACKEBRANDT & THIEDIG this volume).

One of the main goals of our field work was to find the continuation of the craton-ward directed Exiles Thrust of Oates Land (FLÖTTMANN & KLEINSCHMIDT 1991) in the area of the Ross Sea coast. On the one hand the fact that the thrust does not appear here may coincide with the non-appearance of the craton's boundary at the Ross Sea as suggested by aeromagnetic data from Reeves Névé (BOSUM & al. 1989). On the other hand the non-appearance may be related to the distribution of S- and I-types of the Granite Harbour Intrusives along the Ross Sea (GHEZZO & al. 1989).

### References

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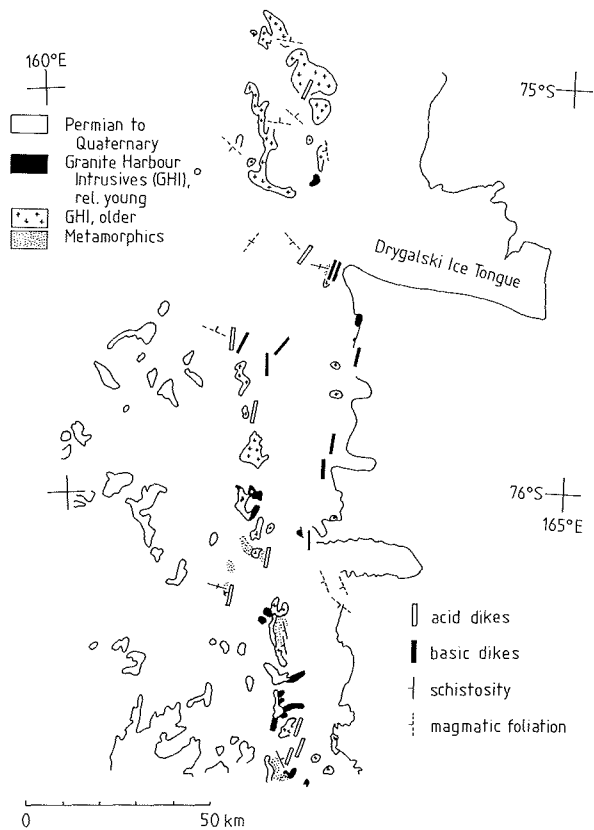


Fig. 1: Measured structural elements as dikes, schistosity and foliation in the basement between Reeves and Fry Glaciers, Victoria Land (general geology based on WARREN 1969).

Abb. 1: Eingemessene tektonische Elemente (Gänge, Schieferung, magmatische Foliation) im Grundgebirge zwischen Reeves- und Fry-Gletscher, Viktorialand (geologische Grundlage nach WARREN 1969).

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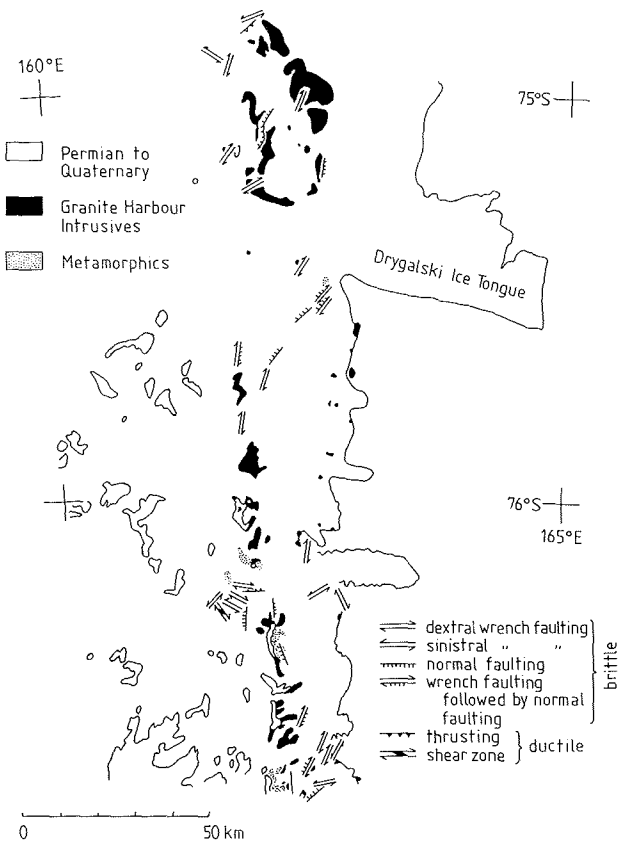


Fig. 2: Measured faulting in the basement between Reeves and Fry Glaciers, Victoria Land (general geology based on WARREN 1969).

Abb. 2: Eingemessene Bruchtektonik im Grundgebirge zwischen Reeves- und Fry-Gletscher, Viktorialand (geologische Grundlage nach WARREN 1969).