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Report: K-Ar, Rb-Sr and geochemical investigations in the Mooirivier Complex, south-western Windhoek District and north-western Maltahöhe District, Namibia

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K-Ar and Rb-Sr isotope studies of some rocks from the Mooirivier Complex indicate severe disturbance by processes postdating the formation of the complex. According to K-Ar dating of biotites from the Spreetshoogte Pass area which yielded individual ages between 330 and 545 Ma, such processes must also postdate the Damaran Orogeny. It is furthermore shown that the open system behaviour of the analysed biotites involved a severe loss of argon and potassium and a gain of atmospheric argon. In this context it is shown how reference lines in $^{40}K/^{36}Ar$ *vs.* $^{40}Ar/^{36}Ar$ and ^{40}K *vs.* $^{40}Ar_{rad}$ diagrams which are defined by data points affected by the loss of argon and potassium and the gain of atmospheric argon may lead to incorrect interpretations. Rb-Sr data obtained for amphibolites and granitic rocks from Mooirivier 160, yielding ages of 983.4 ± 97.0 Ma and 1141.2 Ma, respectively, indicate a possible disturbance of the Rb/Sr systems in this area by late Mokolian intrusives, while the whole-rock Rb-Sr data of samples from the Spreetshoogte area do not provide meaningful ages.

Introduction

The present study focused attention on some rocks from the Mooirivier Complex in the Rehoboth Basement Inlier. Migmatites and associated rocks in the Rehoboth area were first described and mapped as "Mixed Rocks" by De Kock in 1934. In 1966 De Waal interpreted Piksteel granodiorites, streaked granodiorites and migmatitic gneisses of the Nauchas area as the products of granodioritisation of Marienhof sedimentary rocks. Malling (1978) included all the migmatites and migmatitic gneisses occurring between Ubib 396 and Piksteel 209 in his "Swartfontein Formation", which he found to be intruded by Weener tonalite and Gamsberg granite.

SACS (1980) introduced a new stratigraphic classification involving the subdivision of the "Archaean Complex" into several successions of which the oldest is the Mooirivier Complex. The latter contains the migmatitic gneisses, amphibolites and some quartzites and schists occurring in the Rehoboth district and in the south-western part of the Windhoek District as well as outcrops of the same lithologies in the area of Mooirivier 160 and Neuhof 100 in the northern part of the Maltahöhe district.

Generally the rocks of the Mooirivier Complex occur as large xenoliths in granodiorite and granite but also as continuous outcrops of considerable extent (Schalk and Germs, 1975). Such large outcrops of the Mooirivier Complex are always intruded by granites, granodiorites and various basic rocks of Mokolian age. The Mooirivier Complex is unconformably overlain by the Neuhof Formation in the area of Mooirivier 160 and Neuhof 100. Gneisses of the Mooirivier Complex, possibly thrusted from the south (Schalk, pers. comm., 1987), are in tectonic contact with the Elim Formation on Alberta 175. In the same area the Gaub Valley Formation tectonically overlies the Mooirivier Complex (Schulze-Hulbe, 1975).

The overall span of radiometric ages determined on Mokolian igneous rocks from the Rehoboth Basement Inlier ranges between 821 Ma (Stoessel and Ziegler, 1989) and 1871 Ma (Seifert, 1986). A minimum age of 1730 Ma is estimated for the Mooirivier Complex by Schalk (pers. comm., 1987) based on whole-rock Rb-Sr determinations of the intrusive Naub diorite by Malling (1978). A K-Ar age for a muscovite from a "pegmatite in pegmatitic (migmatitic?) gneisses just south of the Naukluft mountains" yielded an age of 1158 ± 35 Ma (Ahrendt *et al*, 1977) and is therefore indicative of the large time span during which the Mooirivier Complex was intruded by various magmatic rocks.

The southern part of the Mooirivier Complex, which is intensely intruded by granites, consists mainly of partly migmatised banded gneisses, amphibolites, amphibole schists, sericite quartzites, garnetiferous mica schists, mica-rich granite gneisses and severely altered basic dykes. North-north-west and north-east trending fold structures are often observed within less altered metasedimentary rocks (Schalk, pers. comm., 1987).

In the area of the Spreetshoogte Pass, the northern part of the Mooirivier Complex is represented mainly by a succession of banded quartzite, porphyroblastic plagioclase-biotite schist, foliated amphibolite and chlorite schist. The complex is penetrated by often strongly sheared granitic rocks, which are assigned to the Mokolian Piksteel and Gamsberg Intrusive Suites (Schalk, pers. comm., 1987). In this area the fold axes of the Mooirivier rocks are north-east trending.

Sample collection and preparation

Five samples of 30 kg (KAW3060-KAW3064) of partly garnetiferous biotite schists were collected in the vicinity of the Spreetshoogte Pass (Fig. 1). The modal composition of the foliated and partly banded samples is 20-35% saussuritised plagioclase, 5-20% partly chloritised biotite, 20-45% quartz, 0-7% actinolithic horn-

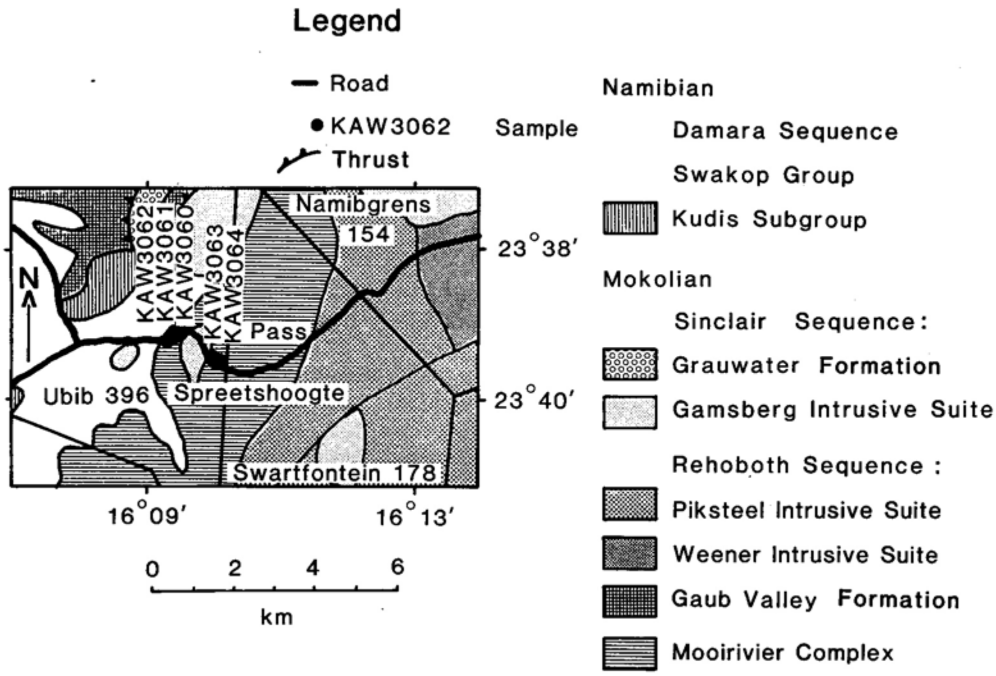

Fig. 1: Sample map of the northern part of the Mooirivier Complex. White areas indicate thin quaternary cover.

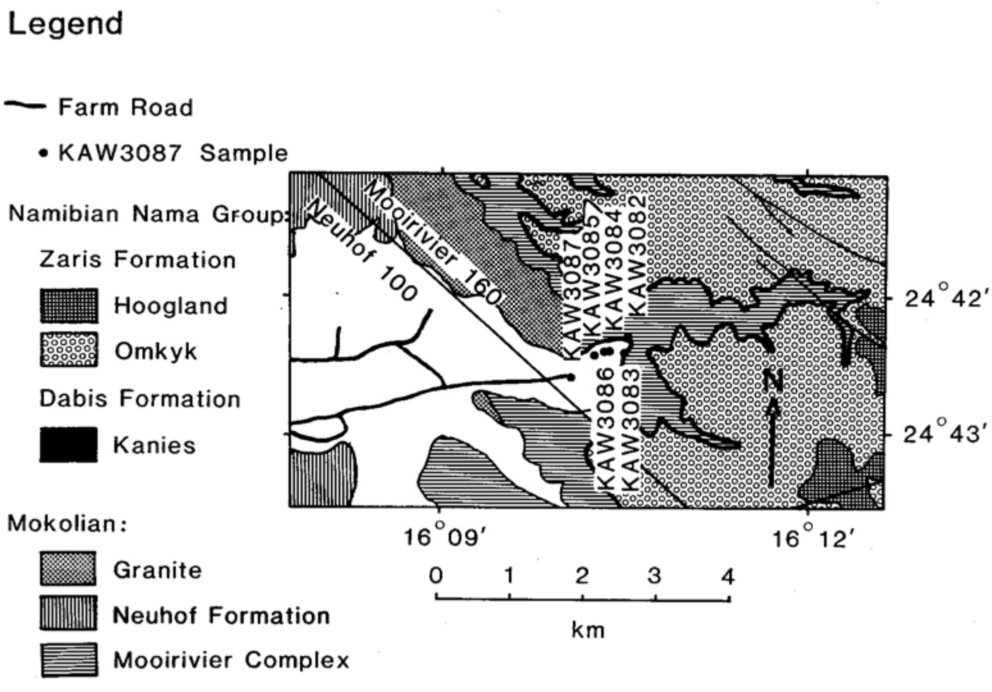

Fig. 2: Sample map of the southern part of the Mooirivier Complex. White areas indicate thin quaternary cover.

blende, 0-35% poikiloblastic garnet, 4-10% epidote minerals and accessory potassic feldspar, tourmaline, calcite, sericite and magnetite/haematite.

Four amphibolitic and two granitic samples of 30 kg (KAW3082-KAW3087) were collected on the farm Mooirivier 160 (Fig. 2). The amphibolites consist of 50-60% by volume of brown, partly chloritised amphiboles, 20-35% of saussuritized plagioclase, 0-15% quarti, 0-10% opaque minerals and accessory epidote minerals, chlorite, sphene, apatite and sericite. The amphibolites do occur as massive rocks but mostly show a strong foliation on a submillimetre scale and intense small scale folding. Brown amphiboles of possibly different generations were observed in sample KAW3085.

In spite of moderate alteration of the two granitic samples and shearing of one of them (KAW3087), magmatic textures have been preserved. Zoned relict clinopyroxene is found as an accessory mineral in KAW3086.

Biotites were separated from the previously crushed Spreetshoogte samples by the use of sieves, a dry shaking table, a buoyancy tube and magnetic separators. An aliquot of each of the whole-rock samples was ground under alcohol in an agate mill for at least 18 hours.

Analytical techniques

Analyses of 11 major and 21 trace elements of every sample were carried out on a Philips PW1400 X-ray fluorescence spectrometer at the University of Fribourg, Switzerland. Loss of ignition was determined by heating of an aliquot of each sample for two hours at 1150ºC.

Whole-rock Rb and Sr analyses of every sample were done by the isotope dilution method according to Jäger (1979). The Rb analyses were carried out on a "Ion Instruments" solid source mass spectrometer, while the Sr analyses were measured on a "VG Sector" thermal ionisation mass spectrometer.

The K and Ar analyses of five biotite separates from the samples KAW3060-KAW3064 were carried out according to the method of Flisch (1986) on an Ingold flame photometer and a VG MM1200 static vacuum mass spectrometer, respectively. Argon mass discrimination, air corrections and blank corrections were calculated on an online PDP11 system programmed by R. Siegenthaler.

Constants used for data correction and age calculations are those of Steiger and Jäger (1977).

Results

Geochemistry

The results obtained for all the analysed specimens are listed in Table 1. The tabulated limits of detection are those obtained due to regression statistics (Reusser, 1987) and not the considerably lower values resulting from matrix dependent count statistics.

As the number of analyses is not sufficient to make statistically relevant statements on the basis of the commonly used tectonic discriminant diagrams, the obtained results are presented in the form of a spider diagram (Fig. 3). This diagram shows the mantle-normalised element concentration patterns of the five whole-rock samples from the Spreetshoogte Pass area and the two granitic and four amphibolitic samples from Mooirivier 160 plotted in the order of decreasing continental abundances (from Taylor and McLennan, 1985 and Hoffmann, 1988) in comparison with average continental crust.

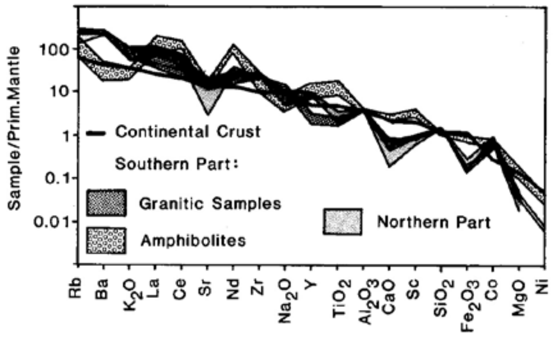

Fig. 3: Mantle-normalised element concentration patterns of the acid and amphibolitic samples of the Mooirivier complex plotted in the order of increasing compatibility (see text for explanation).

The resulting abundance patterns for the acid rocks are quite similar to that of continental crust of average composition (after Taylor and McLennan, 1985) which is represented by a solid line in Fig. 3. A slight enrichment of highly incompatible elements such as Rb, Ba, K, La, Ce, Nd and Zr can be observed in our samples in comparison with average crust. A depletion of compatible elements such as AI, Ca, Sc, Fe, Mg and Ni is also noteworthy. This trend of an enrichment of incompatible elements and a depletion of compatible elements in comparison to average continental crust is only contradicted by a relative depletion in Sr. Nevertheless, it can be noted that the degree of element fractionation of the analysed specimens is higher than that of average continental crust as expected for rocks of a sedimentary origin.

In Fig. 3 the analysed amphibolites more or less follow the trend of average continental crust although they are somewhat enriched in La, Ce, Nd, Zr, Y and TiO_2 in comparison with the average continental crust. Although basic igneous rocks can have very little Cr, amphibolites with high Cr contents are likely to be of igneous origin, so Cr contents of the analysed amphibolites ranging between 49-281 ppm are considered to indicate igneous protoliths.

K-Ar analyses

The results of the analyses are listed in Table 2. The individual ages of the biotite separates of the five samples from Spreetshoogte pass range from 330.3 ± 5.0 Ma to 545.1 ± 5.5 Ma with radiogenic ^{40}Ar ranging between 91.14% and 99.32%. The samples collected closer to the road pass show higher ages (537.1 Ma and 545.1 Ma) than those collected further towards the west where apparent K-Ar ages range from 330.3 Ma to 427.1 Ma. Age and percentage of radiogenic ^{40}Ar are positively correlated since the content of radiogenic ^{40}Ar diminishes parallel to the apparent individual age of a sample in a westerly direction from the Spreetshoogte pass. This trend indicates a loss of ^{40}Ar from the

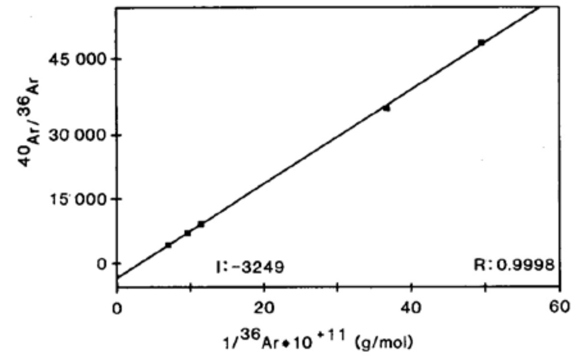

Fig. 4: $1/^{36}Ar$ *vs.* $^{40}Ar/^{36}Ar$ diagram for the analysed biotites from the Spreetshoogte Pass area. The calculated regression line has a slope of $9.279*10^{-9}$ and a correlation coefficient R of 0.9998.

minerals and/or a post-formation contamination of the samples with atmospheric argon. A simultaneous partial loss of potassium cannot be ruled out based on the observed decrease in K contents of the analysed biotites from 7.83% to 6.99% correlating with the decrease in individual K-Ar ages.

The previously suspected contamination of argon in the biotites with atmospheric argon is illustrated by the $1/^{36}Ar$ versus $^{40}Ar/^{36}Ar$ diagram where all the data plot on a regression line (Fig. 4) with a correlation coefficient R of 0.9998 which leaves little doubt about the line being a mixture line. However, the very low intercept I of this line at $^{40}Ar/^{36}Ar = -3249$ shows that this line not only represents an admixture of atmospheric argon but also indicates that a combination of various processes must have affected the analysed biotites.

Following Harper (1970), the $^{40}Ar_{rad}$ contents of the samples were plotted against their ^{40}K contents (Fig. 5). A regression line, showing a correlation coefficient R of 0.949 and a slope corresponding to an age of 1718 Ma, was then calculated through the data points. This line intercepts the y-axis at $-3.0062*10^{-8}$ mol $^{40}Ar_{rad}$/g thus making the presumed severe loss of $^{40}Ar_{rad}$ evident. According to Harper (1970) the intercept of such a well correlated regression line directly quantifies the loss of

TABLE 1: Major (wt %) and trace element (ppm) analyses of whole-rock samples from the Mooirivier Complex (no data recorded where concentration of trace element is below detection limit).

	Spreetshoogte Pass					Amphibolites Mooirivier 160				Granitoids Mooirivier 160	
SAMPLE	KAW3060	KAW3061	KAW3062	KAW3063	KAW3064	KAW3082	KAW3083	KWA3084	KAW3085	KAW3086	KAW3087
SiO_2	69.93	67.55	69.32	70.81	68.23	51.81	47.72	47.02	48.61	68.51	70.73
TiO_2	0.37	0.44	0.39	0.51	0.65	3.52	1.61	3.15	1.62	0.45	0.28
Al_2O_3	14.33	14.30	14.56	15.10	14.89	13.57	15.85	13.45	17.46	15.58	13.76
Fe_2O_3	4.68	4.44	4.69	3.42	4.42	16.12	12.64	16.22	11.65	2.85	2.24
MnO	0.23	0.10	0.21	0.06	0.07	0.28	0.20	0.25	0.17	0.04	0.04
MgO	1.38	1.74	1.36	1.21	1.23	3.84	7.19	6.10	5.21	1.21	0.64
CaO	0.59	0.80	0.73	2.70	2.27	7.68	10.33	10.34	10.09	2.33	1.39
Na_2O	2.11	1.56	2.03	3.57	3.44	2.68	1.24	2.58	2.87	4.85	3.20
K_2O	4.79	4.30	4.38	2.40	2.89	1.03	1.76	0.93	0.93	2.88	4.92
P_2O_5	0.07	0.06	0.08	0.09	0.09	0.46	0.14	0.29	0.17	0.14	0.08
LOI	1.24	1.74	1.45	1.05	1.12	0.60	1.80	0.62	0.93	1.17	1.06
SUM	99.72	97.03	99.20	100.92	99.30	101.59	100.48	100.95	99.71	100.01	98.34
Nb											
Zr	250	209	267	258	249	302	101	164	129	208	209
Y	34	31	39	32	31	66	29	42	29	7	13
Sr	79	51	92	366	330	216	198	254	320	419	198
U											
Rb	134	120	133	71	88	41	110	44	37	112	155
Th		13									
Pb											
Ga	19	19	21	19	20	27	22	24	22	25	20
Zn	52	46	52	50	61	158	102	129	98	68	48
Cu						19	85	148	82	18	
Ni				13	15		93	65	53		
Co	96	98	53	68	68	88	82	72	59	56	90
Cr				36	45	49	281	154	165		
V	41	59	55	54	72	222	334	411	226	46	27
Ce	68	83	77	98	89	257	204	250	178		121
Nd				35	35	158	121	144	106		46
Ba	1186	1355	1543	1232	1269	294	173	159	113	1289	1361
La		44		53	47	130	48	81			69
Sc	12	11	12	9	11	61	55	62	40		
S								246	278		

Detection limits (in ppm):
Nb 11, Zr 23, Y 5, Sr 16, Rb 14, Th 13, Pb 16, Ga 5, Zn 18, Cu 9, U 31,
Ni 12, Co 3, Cr 26, V 26, Ce 46, Nd 26, Ba 40, La 44, Sc 7, S 216
(Editor's note: High detection limits are attributed to the statistical method of Reusser, 1987).

TABLE 2: K-Ar results obtained for the analysed biotites from the Spreetshoogte Pass area (Age corr. = Individual ages corrected for the loss of $^{40}Ar_{rad}$ determined on the basis of the Harper diagram of Fig.7).

Sample KAW	K %	^{40}K $\cdot 10^{-8}$mol/g	$^{40}Ar_{rad}$ $\cdot 10^{-8}$mol/g	$^{40}Ar_{rad}$ %	^{36}Ar $\cdot 10^{-12}$mol/g	Age Ma	Error Ma	Age corr. Ma
3060 Biotite >100 Mesh	7.08	21.1324	0.5561	94.72	1.0495	404.1	4.6	1729.5
3061 Botite	6.99	20.8638	0.4394	91.14	1.4509	330.0	5.0	1705.7
3062 Biotite >100 Mesh	7.39	22.0577	0.6176	96.00	0.8727	427.1	5.1	1701.0
3063 Biotite >100 Microns	7.83	23.3710	0.8641	99.32	0.2022	545.1	5.5	1709.6
3064 Biotite <60 Mesh	7.52	22.4457	0.8158	99.02	0.2735	537.0	5.3	1740.7

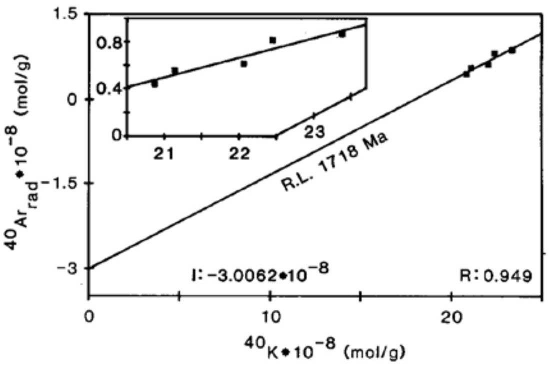

Fig. 5: ^{40}K *vs.* $^{40}Ar_{rad}$ diagram after Harper (1970) for the analysed biotites from the Spreetshoogte Pass area. The calculated reference line representing an age of 1718 Ma has an intercept I of $-3.0062 \cdot 10^{-8}$ and a correlation coefficient R of 0.949. See text for discussion on geological significance.

$^{40}Ar_{rad}$ from the analysed samples in mol $^{40}Ar_{rad}/g*10^{-8}$. Allowing for this apparent loss of $^{40}Ar_{rad}$ the individual ages of the samples would range between 1701.0 Ma and 1740.7 Ma and would therefore coincide with the age of the calculated reference line. Although such K/Ar ages could represent a reasonable formation age for the Mooirivier Complex, they probably have to be interpreted as geologically meaningless as the analysed biotites not only suffered from severe loss of ^{40}Ar which would have had to be proportional in all samples but also from loss of potassium as discussed above. Unless the observed loss of potassium was proportional to the loss of $^{40}Ar_{rad}$ it must have caused a change in the slope of the reference line in the Harper diagram. Such an uncontrolled change of slope would in turn result in erroneous readings for the loss of $^{40}Ar_{rad}$ on the y-axis and in erroneous "corrected" individual ages. To give a geologically relevant age, i.e. to still plot on a well correlated and meaningful reference line, the analysed biotites must have suffered from a proportional loss of argon and potassium. Although the loss of argon and potassium parallels the decrease of the apparent ages of the individual samples, such proportionality appears unlikely when considering that the analysed samples were collected over a distance of almost 2 km in a region affected by tectonism and fluid reactions of varying magnitude.

The $^{40}K/^{36}Ar$ versus $^{40}Ar/^{36}Ar$ isochron diagram (Fig. 6) with its highly correlated reference line (R = 0.99996) might suggest a geologically meaningful age of 576 Ma which could easily be related to a later Damaran metamorphism. However, as in the case of the 1718 Ma age discussed above, the apparent isochron age of 576 Ma in Fig. 6 proves to be meaningless under careful examination. This age has no geological significance since the resulting "isochron" must have formed due to the combination of the partial loss of potassium and argon from the analysed biotites, as was shown in the discussion of the Harper diagram (Fig. 5), and the addition of atmospheric argon indicated by the $^{40}Ar/^{36}Ar$ versus $1/^{36}Ar$ diagram (Fig. 4). These processes rotated and tilted the original isochron in a way that the resulting "isochron" of 576 Ma now intercepts the y-axis at an unrealistic $^{40}Ar/^{36}Ar$ value of -2396.

In summary, the $^{40}K/^{36}Ar$ versus $^{40}Ar/^{36}Ar$ and ^{40}K versus $^{40}Ar_{rad}$ isochron diagrams did not yield geologi-

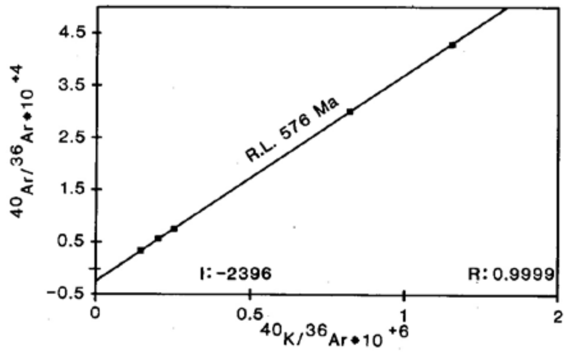

Fig. 6: $^{40}K/^{36}Ar$ *vs.* $^{40}Ar/^{36}Ar$ diagram for the analysed biotites from the Spreetshoogte Pass area. The geological significance of the calculated reference line of 576 Ma is discussed in the text.

TABLE 3: Rb-Sr results obtained for the analysed whole-rock samples from the Mooirivier Complex.

Sample KAW	Rb ppm	Sr ppm	$^{87}Sr/^{86}Sr$ ± 2 σ	$^{87}Rb/^{86}Sr$ ± 2 σ	Rb/Sr
3060	143.3	90.3	0.80814 ± 1	4.654 ± 47	1.568
3061	126.9	57.8	0.82447 ± 1	6.429 ± 64	2.197
3062	141.2	99.6	0.80391 ± 1	4.142 ± 41	1.418
3063	73.6	369.5	0.72061 ± 2	0.577 ± 6	0.199
3064	92.1	336.6	0.72469 ± 1	0.759 ± 8	0.274
3082	35.4	206.3	0.71138 ± 2	0.496 ± 5	0.171
3083	110.2	208.2	0.72700 ± 1	1.534 ± 15	0.529
3084	41.8	246.6	0.71142 ± 1	0.491 ± 5	0.170
3085	34.4	318.3	0.71119 ± 3	0.313 ± 3	0.108
3086	118.4	442.3	0.71662 ± 2	0.775 ± 8	0.268
3087	162.3	210.9	0.74046 ± 2	2.234 ± 2	0.770

cally significant results. The only reliable statement on the K-Ar age of the biotites from the northern part of the Mooirivier Complex is provided by the individual ages of the biotites which clearly show that the northern part of the complex has been affected by post-Damaran processes. The K-Ar system of the analysed biotites was probably initialised during the Damaran Orogeny as indicated by the age of 545 Ma of biotites from the easternmost sample which shows the least contamination with atmospheric argon and the highest K content. The individual biotite ages decrease in a westward direction to about 330 Ma, thus indicating that the processes disturbing the K-Ar system have to be younger or equal to this age. So these ages may be caused by a partial resetting of the K-Ar clock and might therefore reflect thermotectonic processes during the very early Karoo Period preceding the opening of the South Atlantic.

Rb-Sr Analyses

A tabular listing of the analytical results obtained for the whole-rock Rb-Sr analyses is given in Table 3. As expected from the results of the K-Ar analyses, a plot of the $^{87}Rb/^{86}Sr$ ratios of the samples versus their $^{87}Sr/^{86}Sr$ ratios (Fig. 7) mainly reflects disturbances of the Rb-Sr system which affected the Mooirivier Complex after its formation. The data do not plot on a well defined isochron but scatter within a fan of reference lines calculated after York (1969), using no correlation of errors and equal weighting of samples, with an upper limit of 1628 ± 3 Ma and a lower limit of 1234 ± 9 Ma. The corresponding initial $^{87}Sr/^{86}Sr$ ratios range between 0.7070 ± 0.0001 and 0.7109 ± 0.0009.

An interesting feature of Fig. 7 is a reference line of 634.2 ± 12.1 Ma and an intercept of 0.7663 ± 0.0009 which can be calculated through the points representing the samples collected furthest away from the Spreetshoogte Pass (KAW3060-KAW3062). This "small scale isochron" gives some evidence that homogenising processes which affected the Rb-Sr system of the samples also postdate the 1234 Ma reference line and thus most probably took place contemporaneously with the processes disturbing the K-Ar system of the biotites from the same samples. Accordingly, it can be said that these processes were not capable of completely resetting the Rb-Sr isotopic system of the analysed wholerock samples although the K-Ar system of the biotites from the same samples have completely been reset.

In Fig. 8 the whole-rock analyses of the four amphibolite samples and the two granitic samples collected on Mooirivier 160 plot on a reference line of 1100 ± 58 Ma with an intercept at $^{87}Sr/^{86}Sr$ = 0.7044 ± 0.001 and a correlation coefficient R of 0.994. If data for the amphibolites and granitic rocks are treated separately they yield reference age of 983 Ma and 1141 Ma, re-

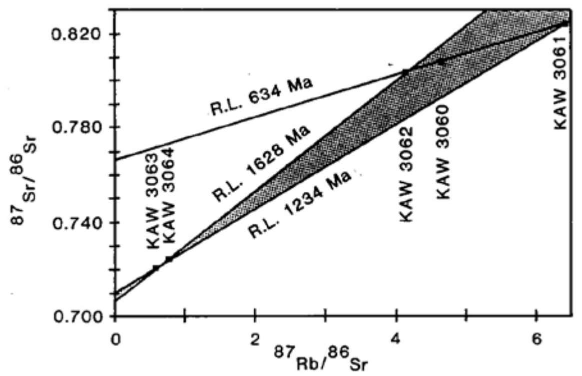

Fig. 7: $^{87}Rb/^{86}Sr$ *vs.* $^{87}Sr/^{86}Sr$ isochron diagram for the analysed whole-rock samples from the Spreetshoogte pass area.

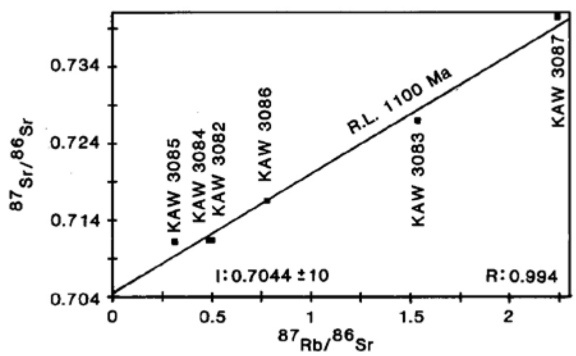

Fig. 8: $^{87}Rb/^{86}Sr$ *vs.* $^{87}Sr/^{86}Sr$ isochron diagram for the analysed granitoids and amphibolites from Mooirivier 160.

pectively, with intercepts of 0.7053 and 0.7040. It has to be assumed that all of these calculated ages reflect reset ages caused by the intrusion of the surrounding masses of Mokolian granites since the analysed samples mostly show a strong foliation while the intrusive granites are practically undeformed.

Conclusions

The present study shows that dating of the Mooirivier Complex by the K-Ar and Rb-Sr methods is inconclusive since both isotopic systems have been disturbed by post-formation processes. The argon system of the analysed biotites suffered from severe loss of argon and potassium and addition of atmospheric argon, while the Rb-Sr system was disturbed in an undetectable manner. Nevertheless, it is possible to make the following statements on the history of the Mooirivier Complex:

- The K-Ar system of the biotite separates from schists in the northern part of the Mooirivier Complex has probably been completely reset during the Damaran Orogeny as indicated by the age of 545.1 ± 5.5 obtained for the separate with the smallest percentage of atmospheric argon and the highest K content. A combined effect including a partial loss of argon and potassium and admixture of atmospheric argon at least until 330 Ma ago is indicated by the individual ages of some of the biotite separates. This age clearly postdates the Damaran orogeny which ended about 450 Ma ago and might thus reflect a partial attenuation of the analysed biotites in connection with post-Ordovician tectonic events preceding the opening of the South Atlantic.
- The whole-rock Rb-Sr data obtained for the granitic samples and for the orthogenic amphibolites from Mooirivier 160 in the southern part of the Mooirivier Complex plot on a reference line of 1100 ± 58 Ma. As indicated by structural data, K-Ar dating of the northern part of the complex and the age of the acid intrusive rocks of the region (see Stoessel and Ziegler, 1989), these ages are too young to represent the formation age of the Mooirivier Complex. These ages might reflect a homogenisation phase of the Rb-Sr systems in the analysed specimens which occurred due to the intrusion of the Mokolian granites (Gamsberg Granite Suite) in the area of Mooirivier 160. A higher degree of disturbance of the investigated Rb-Sr isotopic systems has been observed in the northern part of the Mooirivier Complex in comparison with the southern part. This probably reflects the decreasing influence of the Damaran Orogeny on the Rehoboth Basement Inlier towards the south.

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