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Stream sediment sampling in the Atâ area, central West Greenland

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In 1982 scheelite was identified in stream sediments in the Nuuk/Godthåb area, about 600 km south of Atâ. Subsequently a regional stream-sediment programme was carried out in the Nuuk area from 1982 to 1987 as a result of which scheelite was found to be quite abundant in the 3800 m.y. old Isukasia supracrustal rocks as well as in the 3300 to 3000 m.y. old Malene supracrustal sequence (Appel, 1988). It was also recognised that there is a close correlation between the number of scheelite grains and the gold content of the heavy mineral concentrates in the Nuuk area (Appel, 1988).

In the Atâ area (fig. 1) extensive outcrops of supracrustal rocks are found. In these supracrustals, which have been metamorphosed to greenschist and amphibolite facies, abundant sulphide-rich horizons are found, as well as sulphide-bearing breccia zones with appreciable gold contents (Knudsen *et al.,* 1988).

During the 1987 field season geological reconnaissance mapping was carried out in two of the supracrustal areas and the gneiss-granite complex enclosing the supracrustal rocks was investigated (Knudsen *et al.,* 1988). A limited programme of stream-sediment sam-

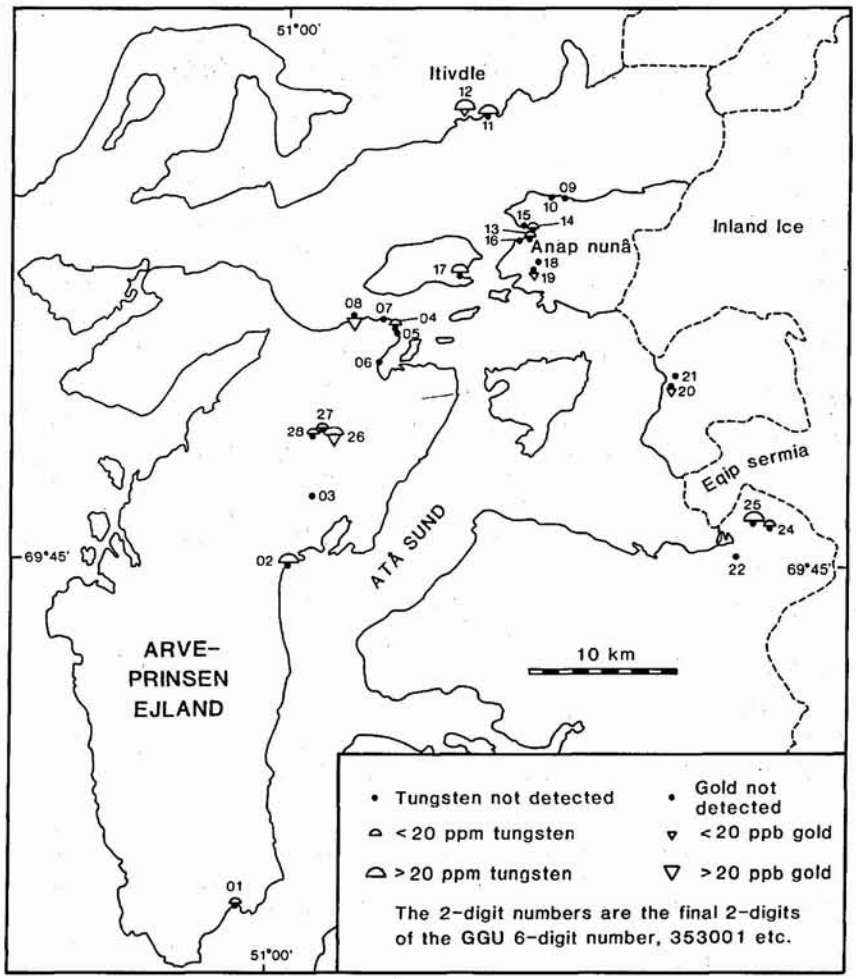

Fig. 1. Map of the Atâ area showing the sample sites with tungsten and gold contents indicated.

pling was carried out in the Atâ area, where stream-sediment samples were collected in all the main streams draining the supracrustal rocks.

Sampling programme

The stream sediments collected in the Atâ area consisted of coarse gravel and sand collected in sieves which contain about 3 kg of sample material. The material was passed through a sieve with 1 mm holes. The fines were measured by volume and then concentrated by panning.

The heavy mineral concentrates were dried and the number of scheelite grains counted under ultra-violet light (except samples 353024 and 353025). The results are listed in Table 1.

Results

The heavy mineral concentrates were analysed by neutron activation by Bondar-Clegg, Ontario, Canada for gold and 33 other elements. The tungsten, gold and barium contents are listed in Table 1. The analytical results for the following elements are available on request: Na, Sc, Cr, Fe, Co, Ni, Zn, As, Se, Br, Rb, Zr, Mo, Ag, Cd, Sn, Sb, Te, Cs, La, Ce, Sm, Eu, Tb, Yb, Lu, Hf, Ta, Ir, Th and U.

There is fairly good agreement between the observed number of scheelite grains and the tungsten content (Table 1), indicating that scheelite is the common tungsten-bearing mineral. There are, however, three notable exceptions, samples 3530001, 353008 and 353017. In samples 353001 and 353017 the tungsten mineral could be wolframite, whereas we cannot explain the discre-

Table 1. Analyses of heavy mineral concentrates from stream sediments in the Atâ area

	Scheelite/l	W ppm	Au ppb	Ba ppm	Sieves	Vol
353001*	0	16	<17	450	3	0.2
353002	10	65	<5	320	3	0.5
353003*	6	<7	<5	270	3	0.6
353004	3	15	<5	250	3	0.3
353005	0	<6	<5	370	3	0.25
353006	2	<5	<5	420	3	0.45
353007	3	<2	<5	460	3	0.3
353008	21	<9	37	280	3	0.35
353009	0	<7	<5	<100	3	0.56
353010	0	<6	<5	650	3	0.5
353011*	30	120	<5	4300	3	0.51
353012*	64	81	16	240	3	0.26
353013	1	7	<5	260	60	5.21
353014	0	13	<13	<100	4	0.2
353015	0	<5	<5	500	4	0.42
353016	0	<5	<5	430	4	0.09
353017	0	24	<17	<100	4	0.35
353018	0	<4	<5	730	3	0.1
353019	0	<6	19	320	3	0.2
353020	0	<8	15	1400	6	0.5
353021	1	<5	<5	380	20	1.45
353022	0	<6	<5	<100	2	1.51
353024		<9	<5	440	3	0.2
353025*		44	<5	260	3	0.2
353026*	32	93	32	290	6	0.6
353027*	6	10	<5	330	6	0.55
353028*	0	7	<5	440	3	0.35

* Samples collected in amphibolite facies.

pancy between 21 grains of scheelite and less than 9 ppm tungsten in sample 353008.

The gold contents in the heavy mineral concentrates are mostly too small to be detected. However, a few samples do contain interesting amounts of gold, and there is apparently some correlation between the gold content and the number of scheelite grains in the heavy mineral concentrates.

It should be noted that some stream sediments were collected in streams draining amphibolite facies metamorphosed supracrustal rocks; 353001, 353003; 353011–353012; 353025–353028.

Conclusion

This limited stream-sediment programme indicates that economically interesting tungsten occurrences may be found in the supracrustals of the Atâ area. Most of the scheelite apparently occurs in the supracrustal rocks which have undergone amphibolite facies metamorphism.

From this work and from the abundance of scheelite previously discovered in the supracrustal rocks further south (Appel, 1988) it is concluded that scheelite is probably more common in Precambrian supracrustal sequences than hitherto realised.

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Reconnaissance aeromagnetic survey east of Disko Bugt, central West Greenland

Leif Thorning

The Geological Survey of Greenland plans a major aeromagnetic survey in the Disko Bugt region over the coming years. It has already been started with some introductory work in 1986 and 1987 (Knudsen *et al.*, 1988). In this context, closed-file geophysical data were reviewed at GGU, and it soon became clear that good quality regional aeromagnetic data were lacking from the area and that the geological investigations would benefit from such data. Funds were not available for a systematic survey over the entire area, but in April 1987 a situation arose in which at least part of the area could be surveyed.

Due to the change of plans for the aeromagnetic surveying of the GICAS project, described by Thorning *et al.* (1988), it was possible to include one survey flight east of Disko Bugt. The measurements were made from the National Aeronautical Establishment aircraft (C-FNRC), which is a well equipped Convair-580 with very good navigational capabilities and a 3-axis magnetic gradiometer.