GEOCHEMICAL SURVEYS IN NORTHERN UGANDA

by

Esko Korkiakoski

Geological Survey of Finland, P.O. Box 1237, FI-70211 Kuopio, Finland
E-mail: esko.korkiakoski@gtk.fi

BACKGROUND AND IMPLEMENTATION

Geochemical Surveys of Northern Uganda were implemented by the GTK Consortium (GTK with a local partner) as part of the Geological and Mineral Deposit Mapping Project in 2009–2011. The mapping project was a component of the broader Sustainable Management of Mineral Resources Project (SMMRP) and financed by the Nordic Development Fund (NDF Credit No. 427).

Targets for regional stream sediment surveys and more detailed soil surveys were selected in co-operation with the geochemists of the Department of Geological Survey and Mines (DGSM) of Uganda (Fig. 1). The design of the geochemical surveys was based on new findings from geological mapping and airborne geophysics, carried out as part of the SMMRP, and complemented with earlier geochemical data and company reports. Sampling was performed by the DGSM field team under the supervision of GTK experts.

Regional stream sediment surveys were carried out at six selected mineral potential targets, including West Nile, Hoima, Karuma Falls, Kaliro, Icheme and Barr, totalling 1025 samples. The overall survey areas covered nearly 8000 km², the average sampling density being 7.5 km² per sample.

Soil sampling included ten different targets. Due to time constraints and logistical reasons, not all soil sampling targets were defined for follow-up study using the preceding results of the new stream sediment surveys, but were selected on a geological basis (i.e. new maps) or using earlier exploration data.

The stream sediment samples were analysed for major and minor elements by Acme Analytical Laboratories (Vancouver) Ltd. Canada by ICP-MS, while soil samples were analysed by XRF at the CGS laboratory in Pretoria, South Africa. The precious metals Au, Pt and Pd were also determined by ICP-MS. All samples were sieved before analysis into the <150 μm fraction at the DGSM mineral laboratory.

OUTCOME OF THE SURVEY

For overall processing of the stream sediment and soil surveys, analytical results were combined into a spatial database using ArcGIS. For interpretation, the analytical results were integrated with new geological maps and processed
geophysical data, both prepared as part of the main mapping project. Based on the results of the stream sediment and soil geochemical surveys, complemented with data integration and geological analogs from other places, several ore potential targets were identified in the NDF geochemical study areas for further exploration:

1) The southern West Nile area, where Au and Cu anomalies are related to mafic metavolcanic rocks associated with (fuchsitic) quartzites and tremolite-actinolite schists, all belonging to the War group.

2) The Hoima area, where Cu-Zn-Fe anomalies are related to Proterozoic Bunyoro fine-grained sediments and their NW contact zone.

3) The Karuma Falls area, with superimposed high Ni-Cr and geophysical anomalies possibly indicating an occurrence of a hidden mafic-ultramafic body.

4) The Kafu River West, with high and well-defined Au anomalies.

5) The northern central West Nile area, where REE (La, Ce and Y) and associated Nb-Ta anomalies are related to the highly-metamorphic rocks of the Watian series.

REFERENCES

Fig. 1. The location of the geochemical stream sediment and soil sampling targets in the NDF survey area, northern Uganda. Stream sediment areas are delineated by red lines and soil targets by black dots. Base map; 1:1.5 M scale geological map; symbols of the main geological units are indicated by text.