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NEW LAKE-BOTTOM SEDIMENT GEOCHEMISTRY DATA IN THE WESTERN GRENVILLE PROVINCE IN QUEBEC: AREAS NEAR VAL-D'OR, CHIBOUGAMAU AND LA TUQUE

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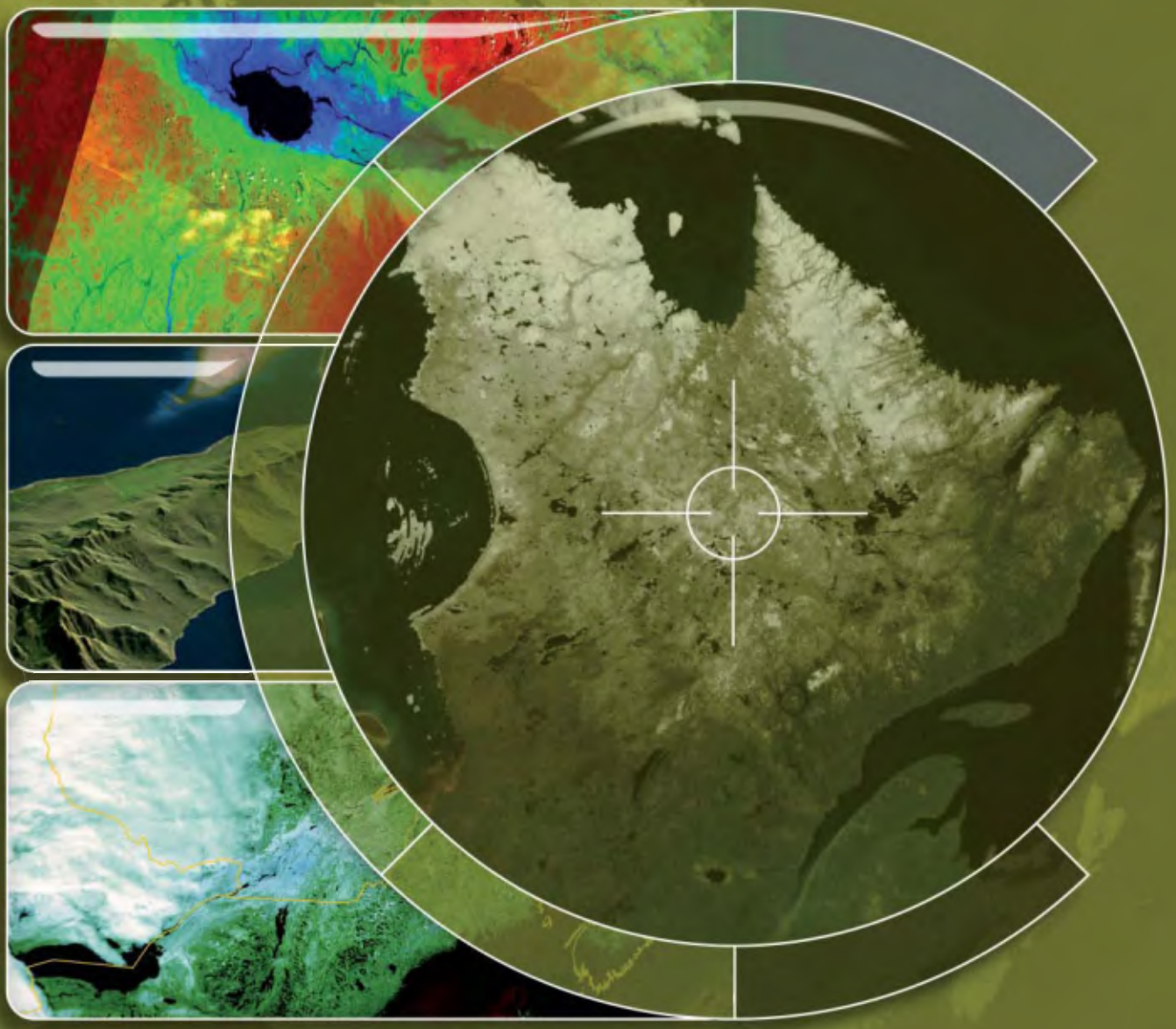
Jean-Yves Labbé

2009



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New Lake-Bottom Sediment Geochemistry Data in the Western Grenville Province in Québec: Areas near Val-d'Or, Chibougamau and La Tuque

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Introduction

The Ministère des Ressources naturelles et de la Faune du Québec announces the publication of new lake-bottom sediment geochemistry data in the western part of the Grenville Province in Québec. These data are now available in SIGÉOM, at: http://sigeom.mrnf.gouv.qc.ca/signet/classes/I1102_indexAccueil?l=a under the tab "Geochemistry – Sediment sample".

This data set is derived from a survey conducted in the summer of 2008 within the scope of the Grenville West Project, and from new analyses of samples collected in 1994 (Parent survey; Lalonde, 1997). The study area (Figure 1) broadly corresponds to a vast triangular zone bounded to the south by latitude 47°22'30''N, to the east by longitude 72°00'00''W, and to the northwest by the Grenville Front. This project stems from an initiative to update the geochemical coverage of the Grenville Province.

Methodology

The Grenville West survey was conducted from July 27 to September 18, 2008 by Geo Data Solutions GDS Inc., under the supervision of Mr. Mouhamed Moussaoui. A total of 4,357 samples were collected over a surface area of 59,400 km^2, for a sample density of about one sample per 13 km^2. Two distinct areas were covered (Figure 1). The west part of the survey, located southeast of Val-d'Or, covers a surface area of 10,180 km^2; 757 samples were collected in this area. The east part of the survey covers a surface area of 49,220 km^2 extending between La Tuque and Chibougamau; 3,600 samples were collected in the latter. The spacing between adjacent samples was maintained within a range of 2.8 to 4.2 kilometres. In addition to sampling, GDS was also responsible for the drying of samples and pH measurements.

These samples, as well as 2,631 samples from the 1994 survey (Figure 1), were analyzed at AcmeLabs facilities in Vancouver. A total of 53 elements were analyzed by inductively coupled plasma mass spectrometry (ICP-MS) following *aqua regia* digestion.

No statistical studies have been performed yet on the data set. However, we have included in this report a few anomaly maps likely to be of interest for mineral exploration. The various maps presented in this report were generated in ArcGIS (version 9.2) using Spatial Analyst. Isocontour maps were calculated using the inverse distance method with a search radius taking into account 12 points and a cell size of 200 m by 200 m. For each chemical element taken into consideration, grades were converted into percentile values prior to generating the maps. All the geochemistry maps illustrated in this report use the same legend, expressed in percentiles rather than in ppm or ppb. Combinations of elements (Cu + U in Figure 6; La + Nb + Y in Figure 7) were achieved by adding the percentile values, then recalculating percentile rankings. Map symbols are designed to visually emphasize the highest percentile values (0.95 and more).

Geochemistry Maps

Anomaly maps were generated for most of the chemical elements analyzed. However, only a few maps, deemed the most relevant for mineral exploration, were selected to appear in this report.

The copper distribution map (Figure 2) highlights a few anomalous areas, namely in the south part of the region where three zones are identified. The copper anomaly near Lac LeSueur corresponds to a series of known mineral occurrences. The anomaly near

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Lac Échouani occurs a few tens of kilometres away from a series of small copper deposits. Finally, there are no mineral occurrences inventoried in SIGÉOM that appear to be associated with the copper anomaly in the vicinity of Lac O'Sullivan. A fourth copper anomaly zone is identified near Rivière Samaqua, along the northern edge of the study area.

Figure 3 shows nickel concentrations in lake-bottom sediments. It outlines two large nickel anomalies in the west part of the region, near Lac Camachigama and Réservoir Dozois, which corresponds to the Parautochthonous belt of the Grenville Province. No nickel deposits are reported in SIGÉOM in this area, although anorthositic and gabbronoritic rocks are known to the southeast, between Réservoir Cabonga and Lac Camachigama.

The gold distribution map (Figure 4) does not show broad and well-defined anomalies. Instead, a few small zones are outlined, mainly along the Grenville Front near Val-d'Or and Chibougamau. In the southeast part of the study area, near Lac Flamand, a small anomaly zone is also visible.

The uranium distribution map (Figure 5) on the other hand, shows many anomalous areas. In the westernmost part of the region, near Lac Bay, a strong anomaly is outlined. Other anomaly zones are identified in the north part of the region, namely in the vicinity of Rivière Mistassibi and Rivière Boisvert. A strong anomaly is also visible near Roberval, south of Lac Saint-Jean. In the south-central part of the area, two other uranium anomaly zones are identified near Lac Kempt and Lac LeSueur.

The uranium anomaly near Lac LeSueur overlaps with the copper anomaly illustrated in Figure 2. These Cu-U anomalies correspond to a series of mineral occurrences associated with the LeSueur alkaline Suite (Nantel *et al.*, 2004), where NioGold Mining Corp. is exploring for iron oxide-copper-gold deposits on the Pump Lake project. Figure 6, which shows a combination of copper and uranium concentrations, clearly outlines the overlapping anomalies. It is also interesting to note in Figure 6, the anomaly near Lac O'Sullivan which is clearly defined and which may also be linked to mineralization associated with alkaline intrusions.

The Lac LeSueur area is also highlighted in the map showing combined lanthanum-niobium-yttrium values (Figure 7), as these three elements are commonly associated with alkaline intrusions. The map also outlines other anomaly zones, namely near the Crevier deposit, a niobium-tantalum deposit located about 100 km northwest of Lac Saint-Jean, as well as near Lac Kempt, near the southern edge of the study area.

References

LALONDE, J.-P., 1997 – Géochimie des sédiments de lacs, région de Parent. Ministère des Ressources naturelles, Québec; MB 96-42, 17 pages.

NANTEL, S. – GIGUÈRE, E. – CLARK, T., 2004 – Géologie de la région du lac Duplessis (31O/06). Ministère des Ressources naturelles, de la Faune et des Parcs, Québec; RG 2003-01, 51 pages.

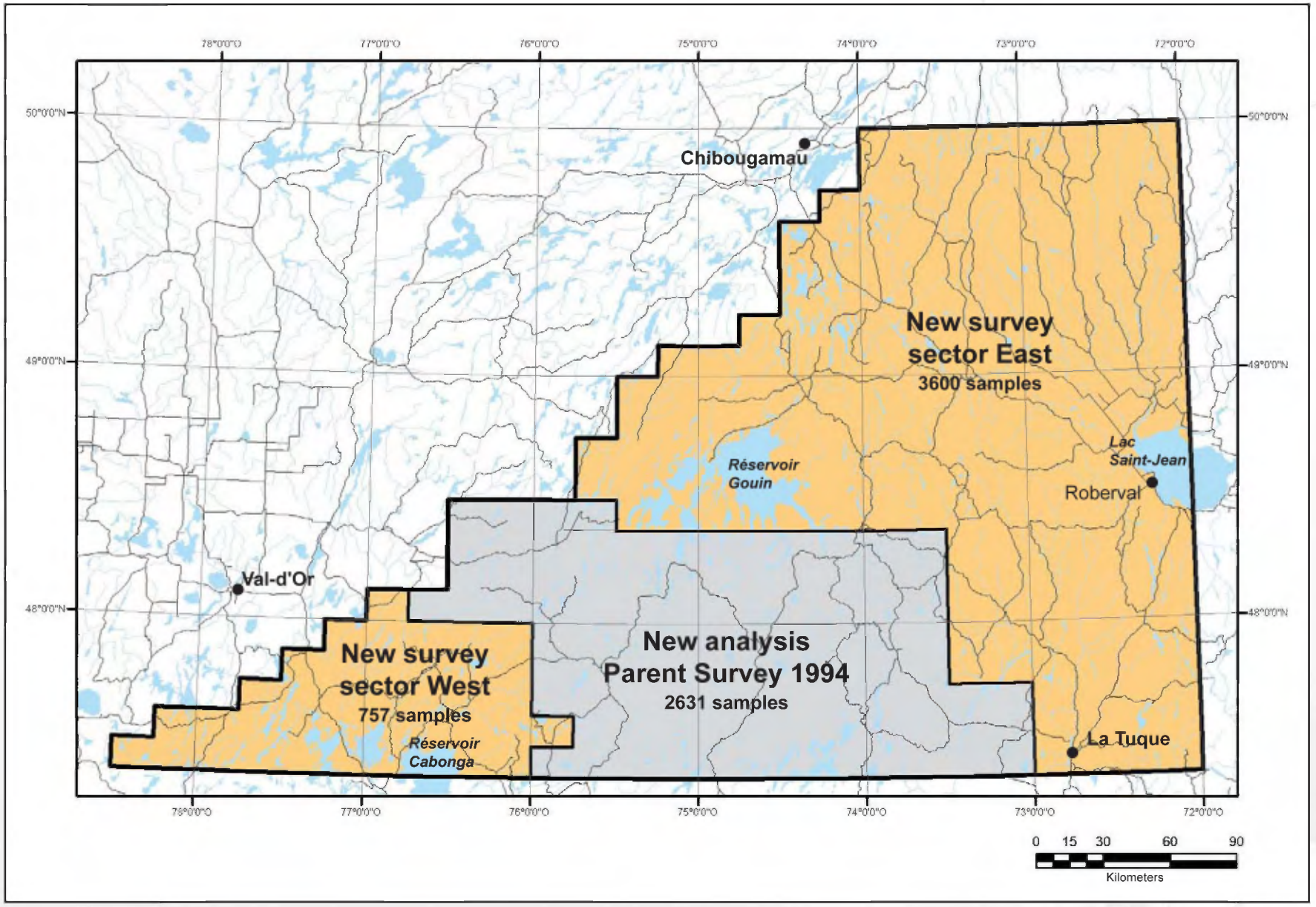

Figure 1 - Location map.

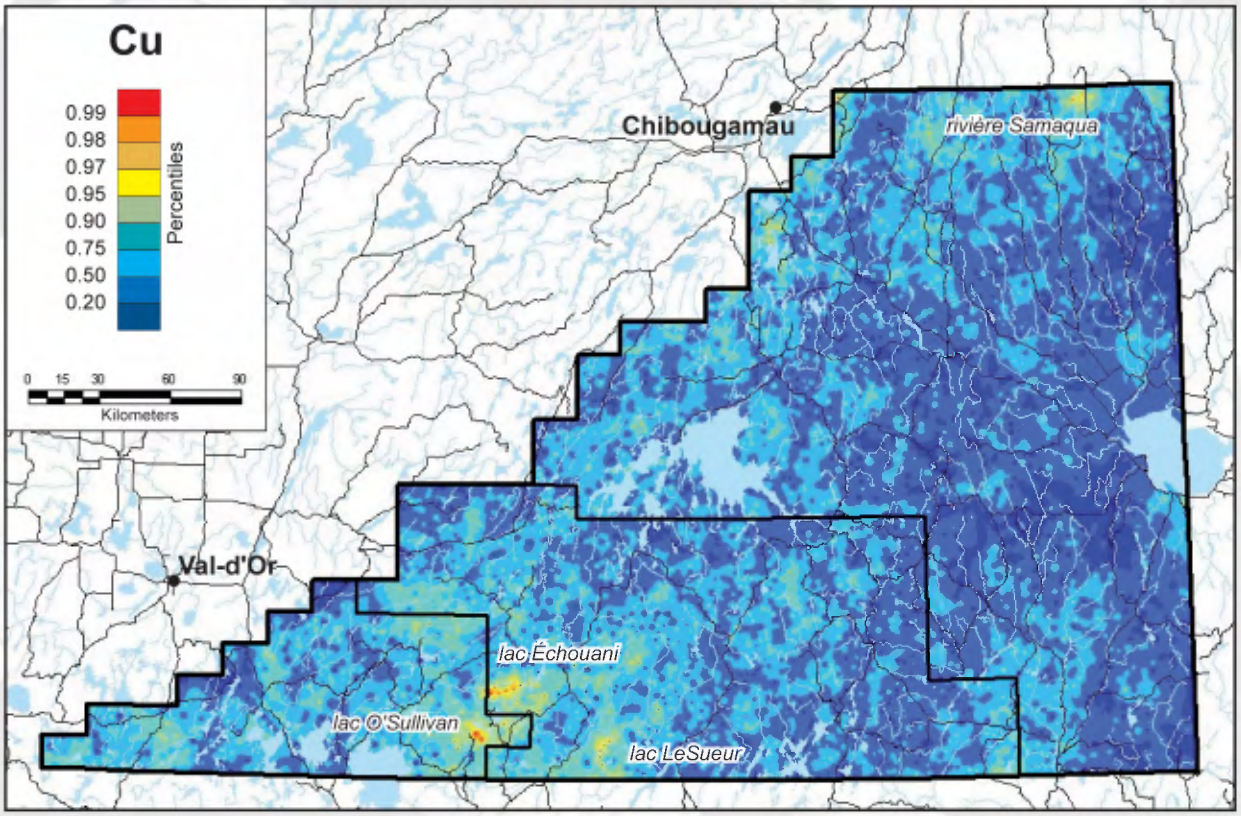

Figure 2 - Map showing copper anomalies in lake-bottom sediments.

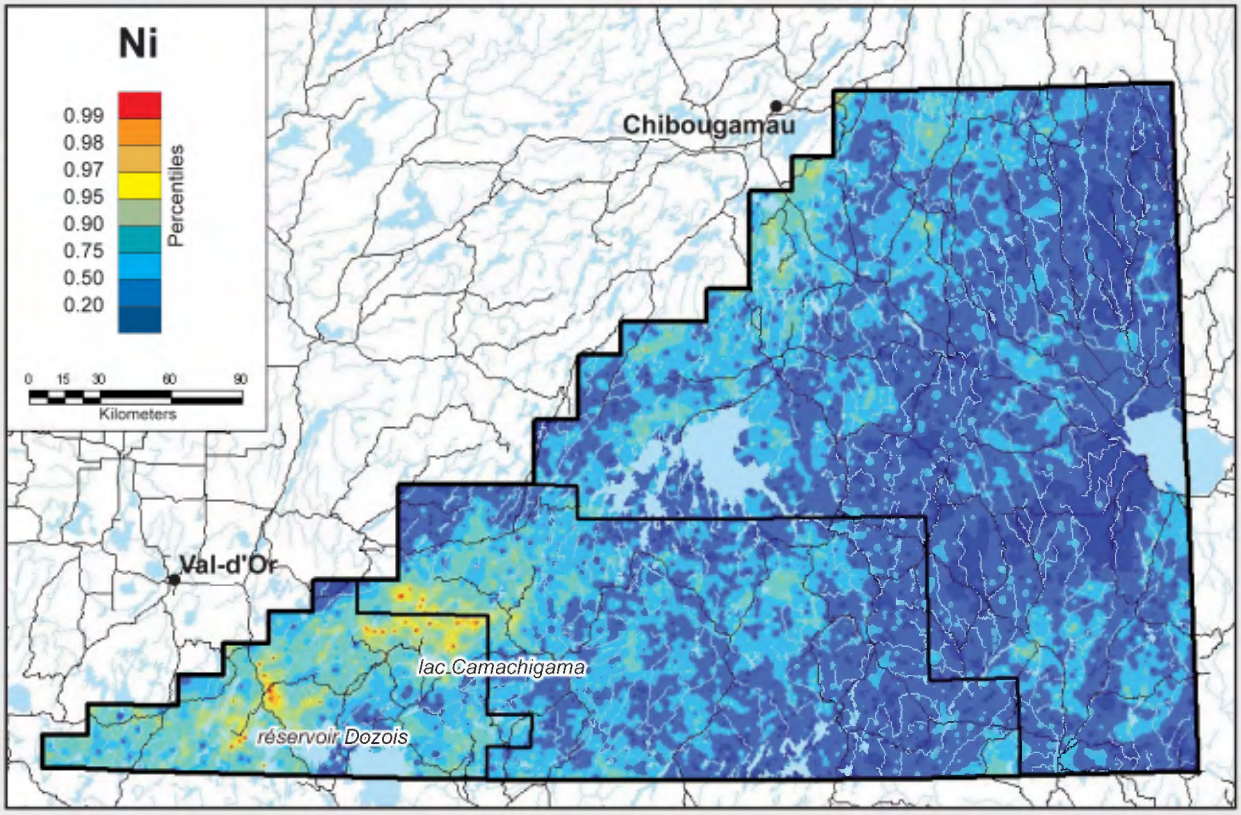

Figure 3 - Map showing nickel anomalies in lake-bottom sediments.

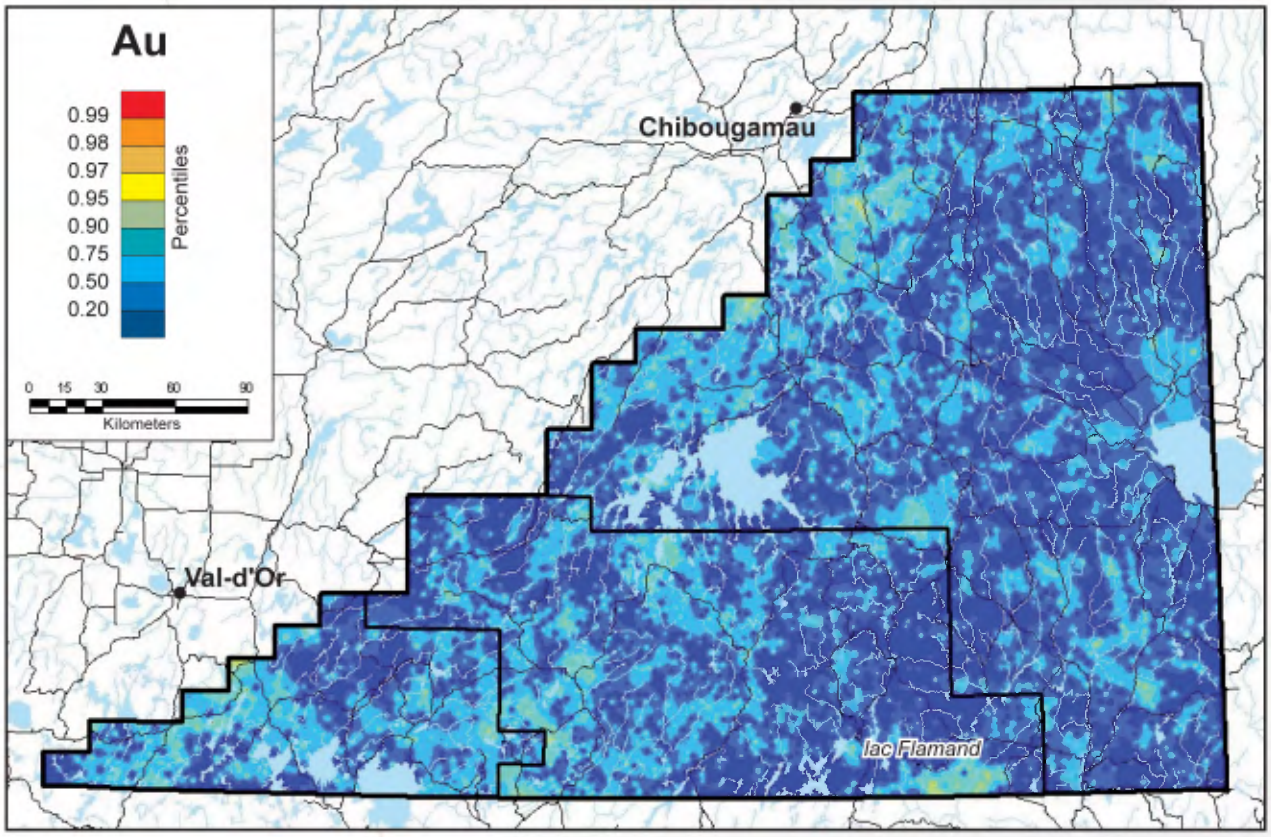

Figure 4 - Map showing gold anomalies in lake-bottom sediments.

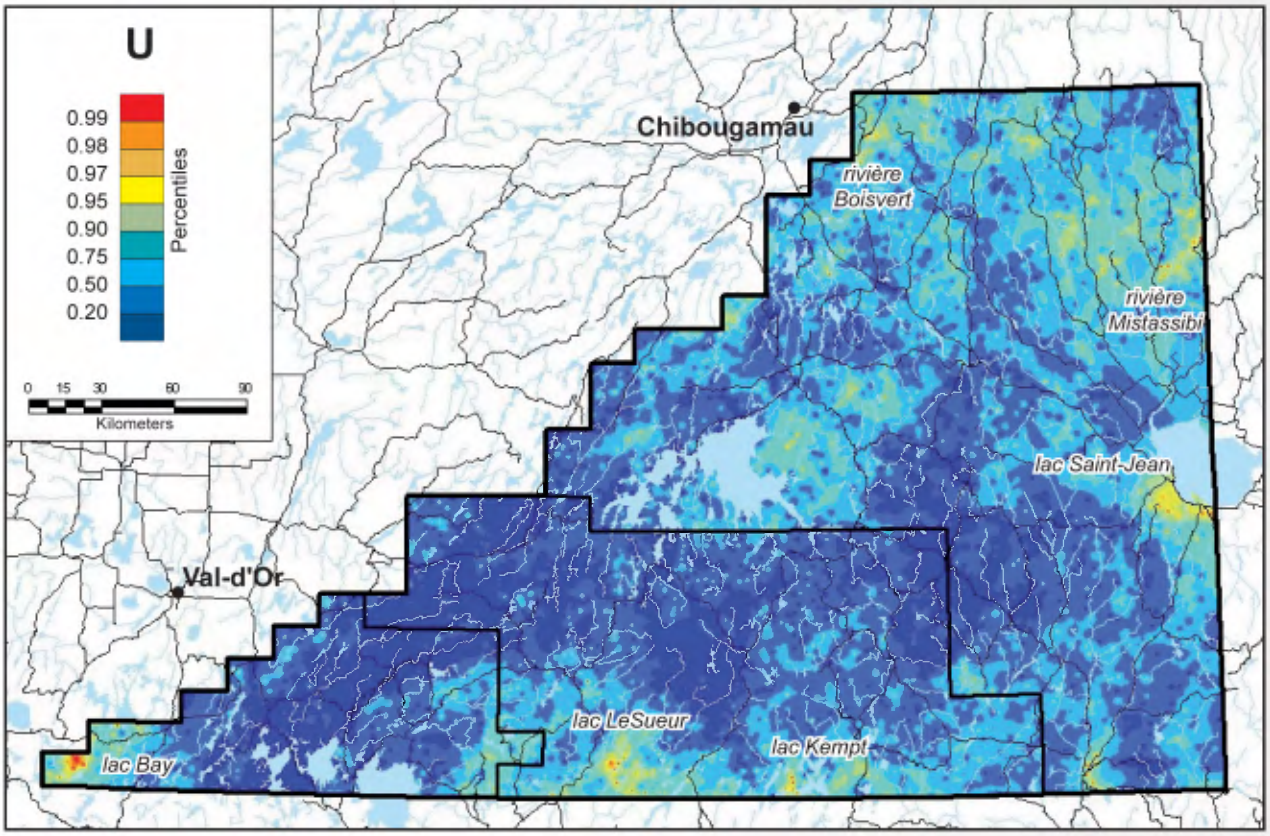

Figure 5 - Map showing uranium anomalies in lake-bottom sediments.

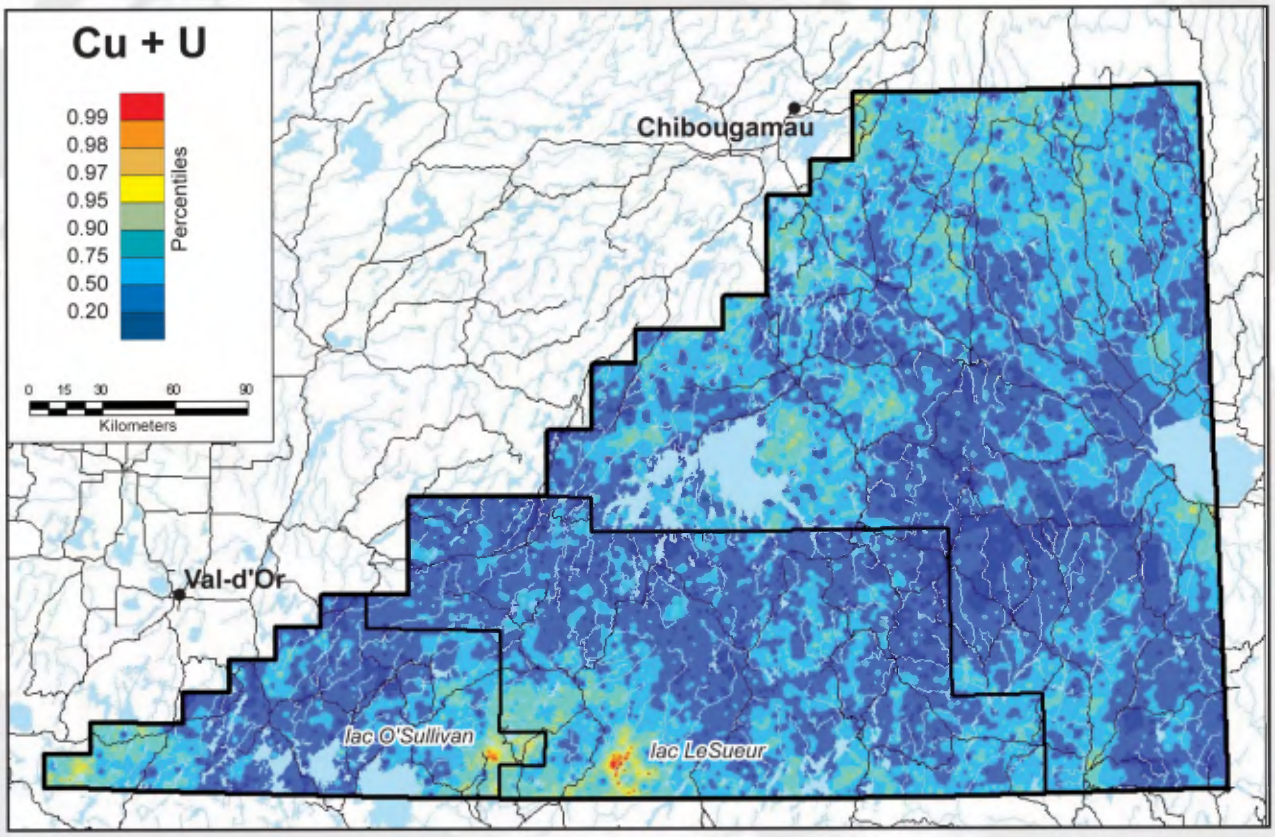

Figure 6 - Map showing combined copper and uranium anomalies in lake-bottom sediments.

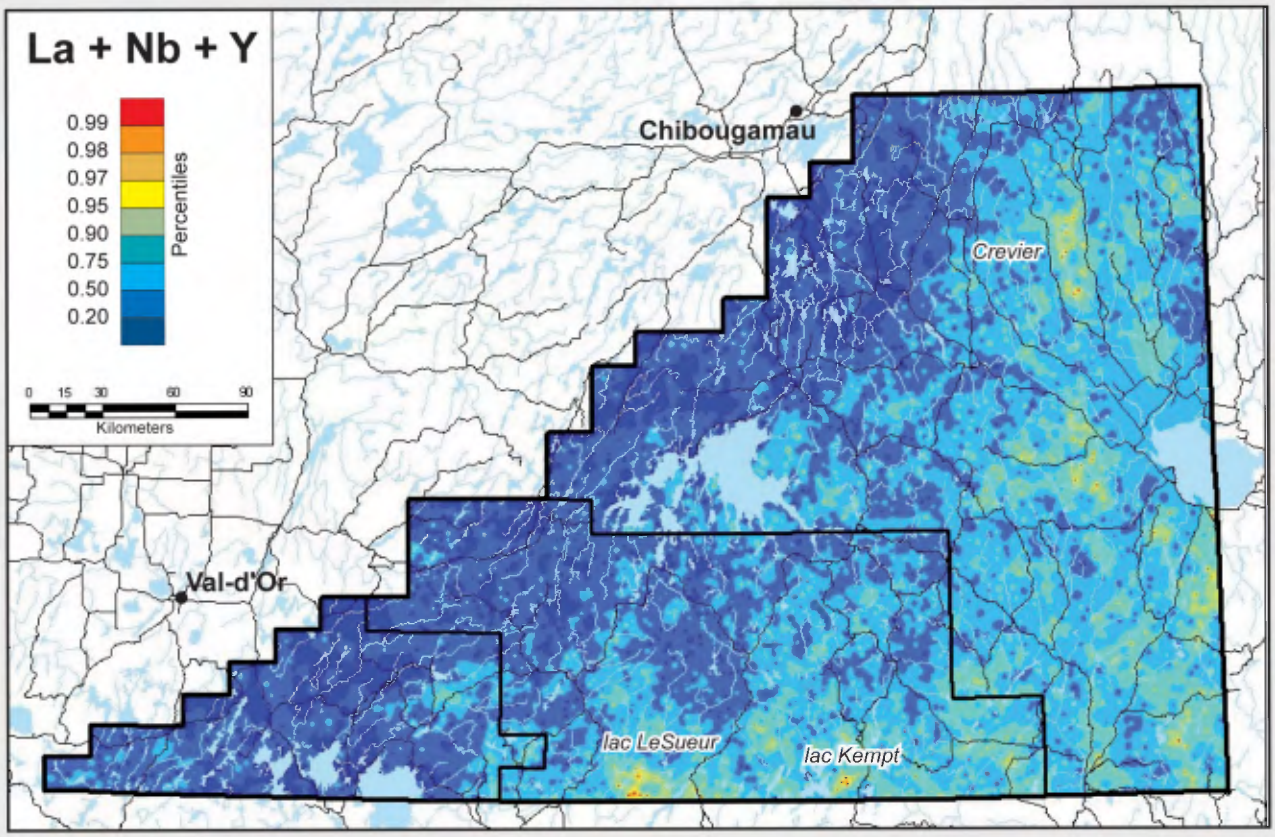

Figure 7 - Map showing combined lanthanium, niobium and yttrium anomalies in lake-bottom sediments.

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