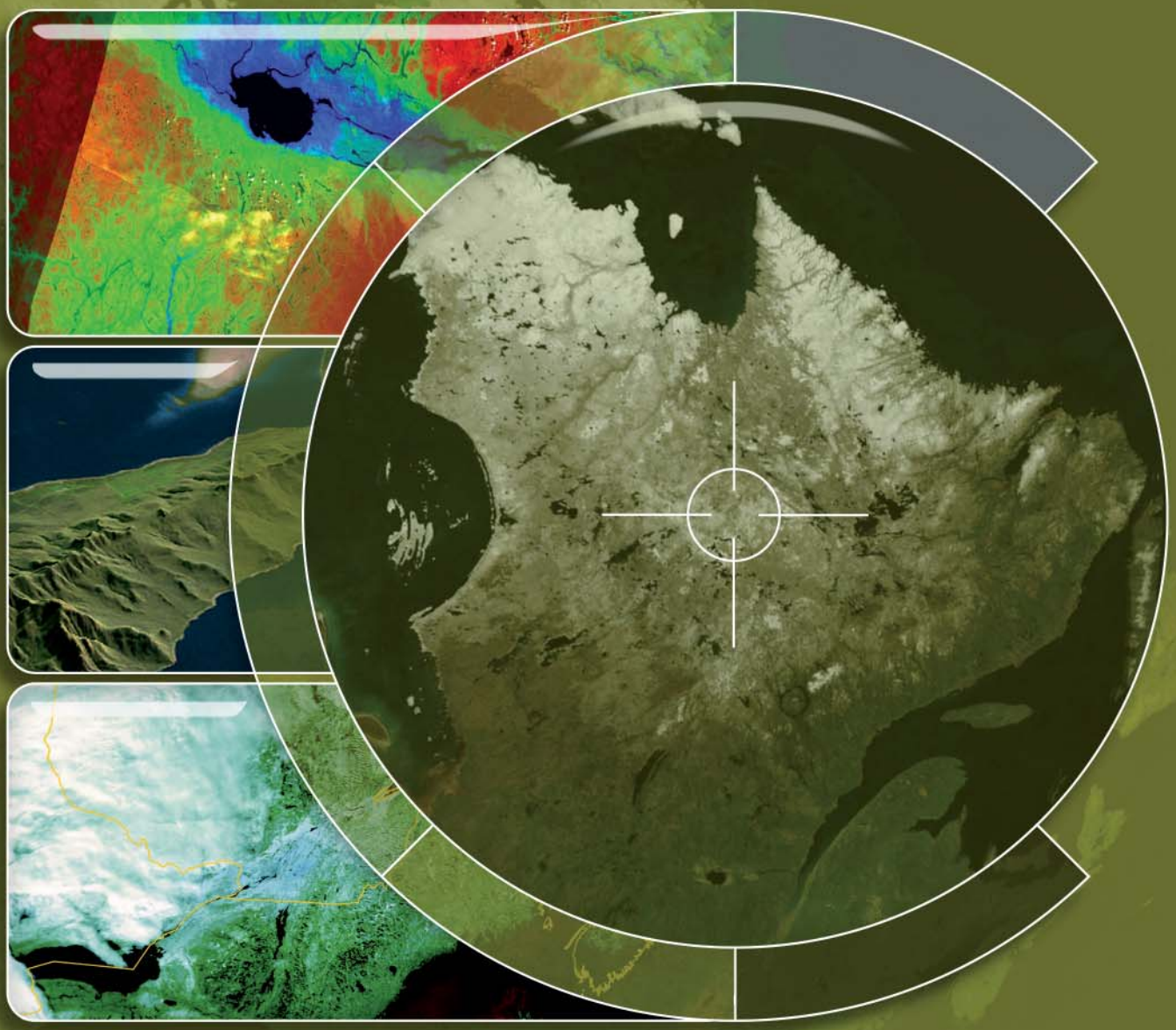
New Lake-Bottom Sediment Geochemistry Data in the Sept-Rivières MRC (Sept-Îles area)

Jean-Yves Labbé and Abdelali Moukhsil

2008



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Introduction

The Ministère des Ressources naturelles et de la Faune du Québec announces the public release of new lake-bottom sediment geochemistry data in the Sept-Rivières MRC (Sept-Îles area). These data are now available in SIGEOM, at: http://sigeom.mrnf.gouv.qc.ca/signet/classes/I1102_indexAccueil?l=a under "Geochemistry – Sediment sample".

This data set, which covers the entire Sept-Rivières MRC (Figure 1), is derived from a survey conducted in the fall of 2007 and from new analyses of samples collected in 1987 (Fermont project) and 1988 (Havre-Saint-Pierre project). This project stems from an initiative to update the geochemical coverage of the geological Grenville Province.

Methodology

The Sept-Îles survey was conducted from October 4 to 28, 2007 by Geo Data Solutions GDS Inc. under the supervision of Mr. Mouhamed Moussaoui and Mr. François Caty. A total of 1,657 samples were collected within a surface area of 21,500 km^2, for a sample density of about one sample per 13 km^2. The spacing between adjacent samples was maintained within a range of 2.8 to 4.2 kilometres. In addition to sampling, GDS Inc. was also responsible for drying and pH measurements of all samples. Quality control was independently assured by Mr. James McCann.

These samples, along with 306 samples from the 1987 Fermont survey and 1,112 samples from the 1988 Havre-Saint-Pierre survey, were analyzed at AcmeLabs in Vancouver. A total of 53 elements were measured by inductively coupled plasma mass spectrometry (ICP-MS) following aqua regia digestion.

The results were used to generate a series of geochemistry maps showing the distribution of individual elements. Detailed statistical studies have not yet been performed on these data; the object of this document is to bring attention to certain anomalous areas likely to be of interest for mineral exploration. The various maps presented in this report were constructed in ArcGIS (version 8.3) 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 metres x 200 metres. For each chemical element, grades were converted into percentiles prior to generating the maps. All the geochemistry maps illustrated in this report use the same legend, expressed in percentiles rather than ppm or ppb. Map symbols are designed to place more visual emphasis on higher percentile values (0.95 and higher).

Areas of Interest

The geochemistry maps show areas of interest for various metal associations.

In the north part of the study area (Figure 2), gold, copper, and silver anomalies suggest the presence of polymetallic occurrences. The geology of this area is dominated by grey biotite-hornblende gneisses with local amphibolite (metagabbro) remnants or boudins. Gabbronorite, gabbro and quartzite are observed in the west part of the area. These rocks host Ni-Cu-PGE and Cu-Ag occurrences. A significant boron anomaly is also present in this area. This anomaly most likely corresponds to tourmaline-rich rocks, possibly related to Au-Cu-Ag occurrences.

Figure 3 shows the regional distribution of uranium in lake-bottom sediments. Several anomaly zones are identified, one of which coincides with the anomalous area in Au-Cu-Ag discussed in the previous paragraph. Most of these anomaly zones occur in the south and east parts of the area, namely near Lac Nipisso. Southwest of Lac Nipisso, an extensive uranium anomaly coincides with a niobium anomaly. A more discrete anomaly near the east shore of the lake is defined by a sample strongly enriched not only in uranium, but also in As, Au, Be, Ce, Cr, La, Nb, Sc, Se, Sn, Sr, Th, V, W, Y, and Zr.

The extensive uranium anomaly located northeast of Lac Nipisso also corresponds to a significant anomaly in rare earth elements (La and Ce), niobium, and yttrium (Figure 4). These anomalies may be related to Fe oxide-type or Olympic Dam-type occurrences. Several showings of this type are documented about twenty kilometres further east, near Rivière Manitou.

Finally, a nickel anomaly is defined in the northwesternmost part of the area (Figure 5). This nickel anomaly is also accompanied by high values in chrome, cobalt, and phosphorus. The bedrock in this area consists of gabbronorite and anorthositic gabbro. A few known Ni-Cu occurrences in this area may explain the anomaly.

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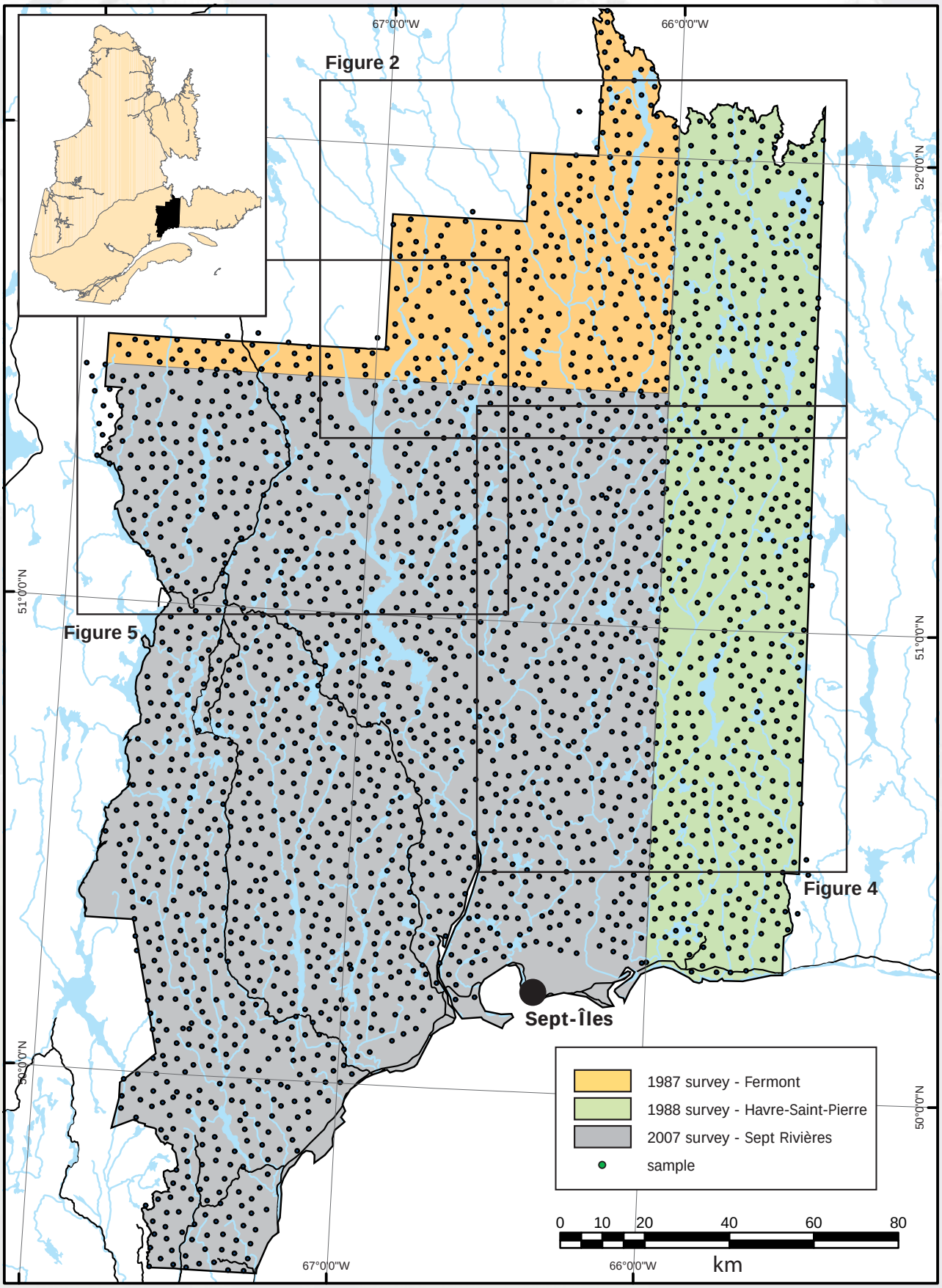

Figure 1 - Location map.

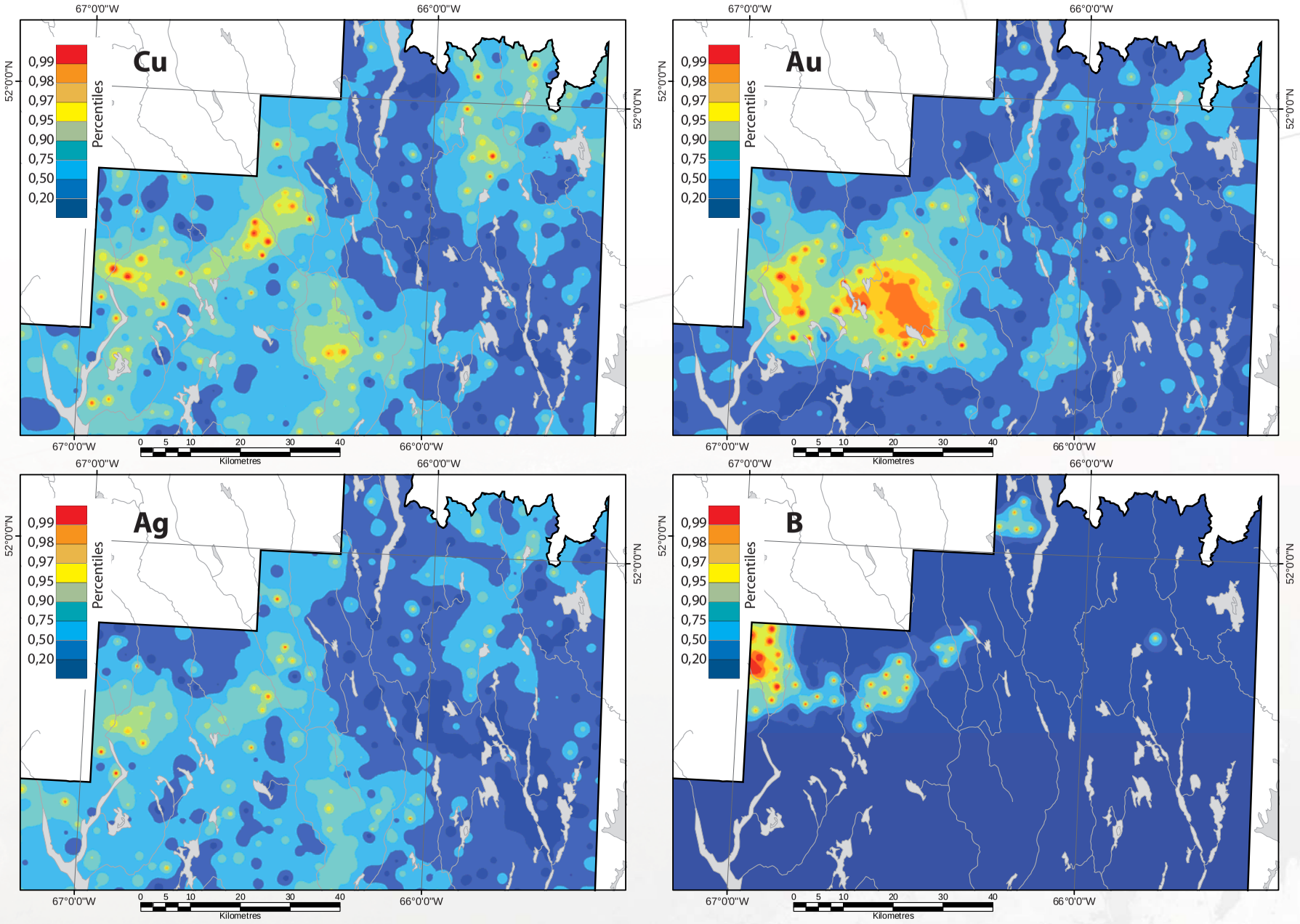

Figure 2 - Maps showing copper, gold, silver, and boron anomalies in lake-bottom sediments in the north part of the area.

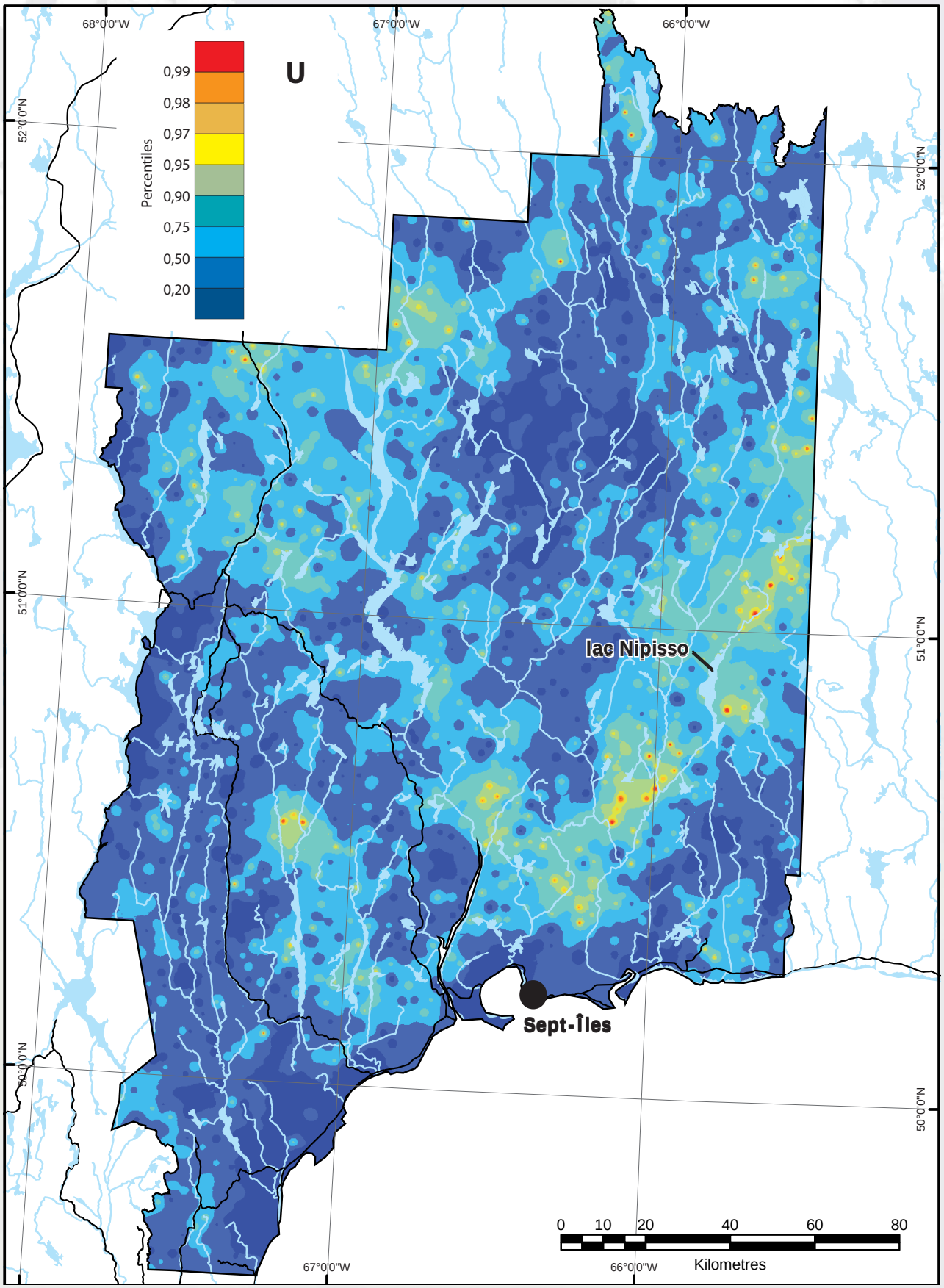

Figure 3 - Maps showing uranium anomalies in lake-bottom sediments.

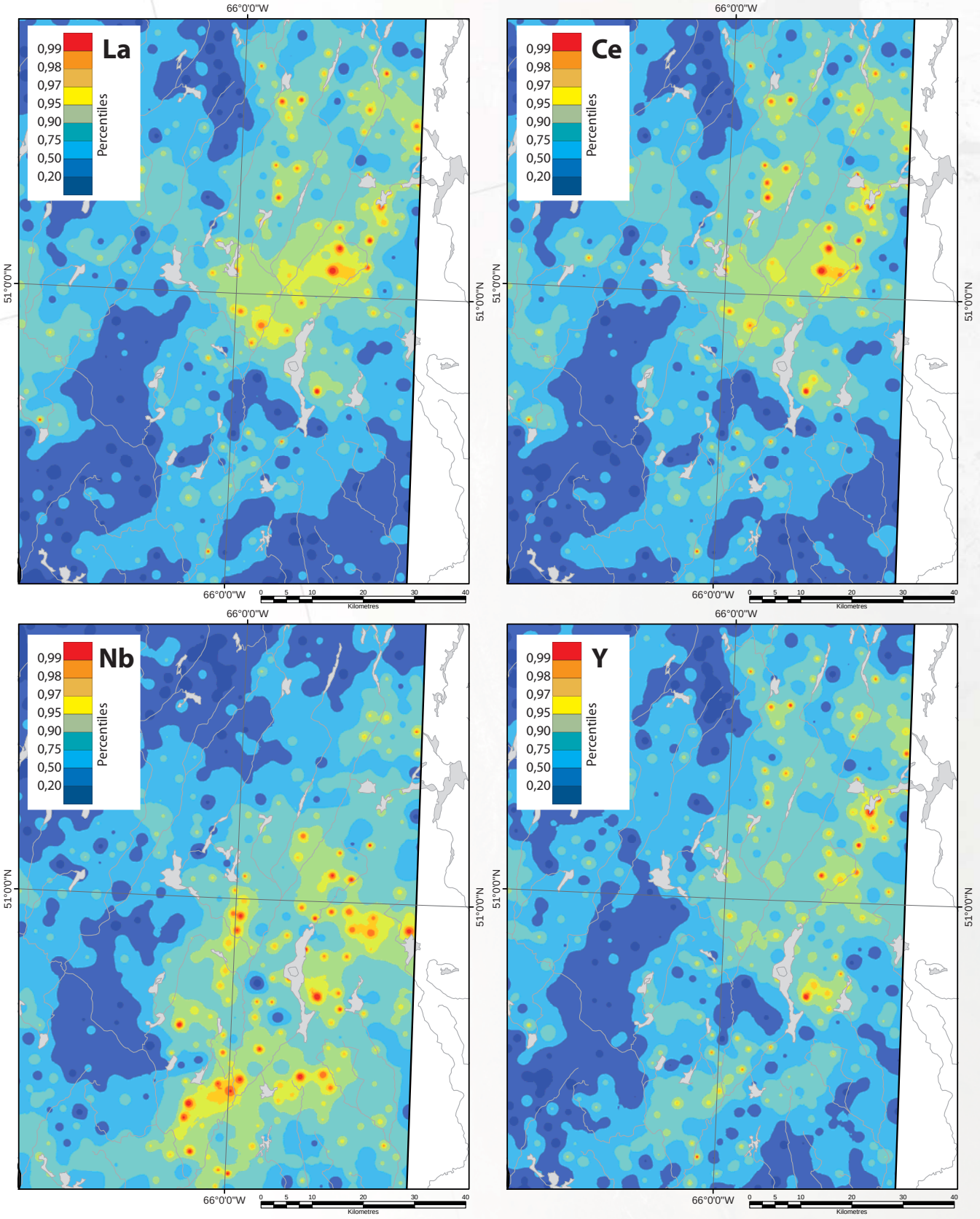

Figure 4 - Maps showing anomalies in lanthanum, cerium, niobium, and yttrium in lake-bottom sediments in the Lac Nipisso area.

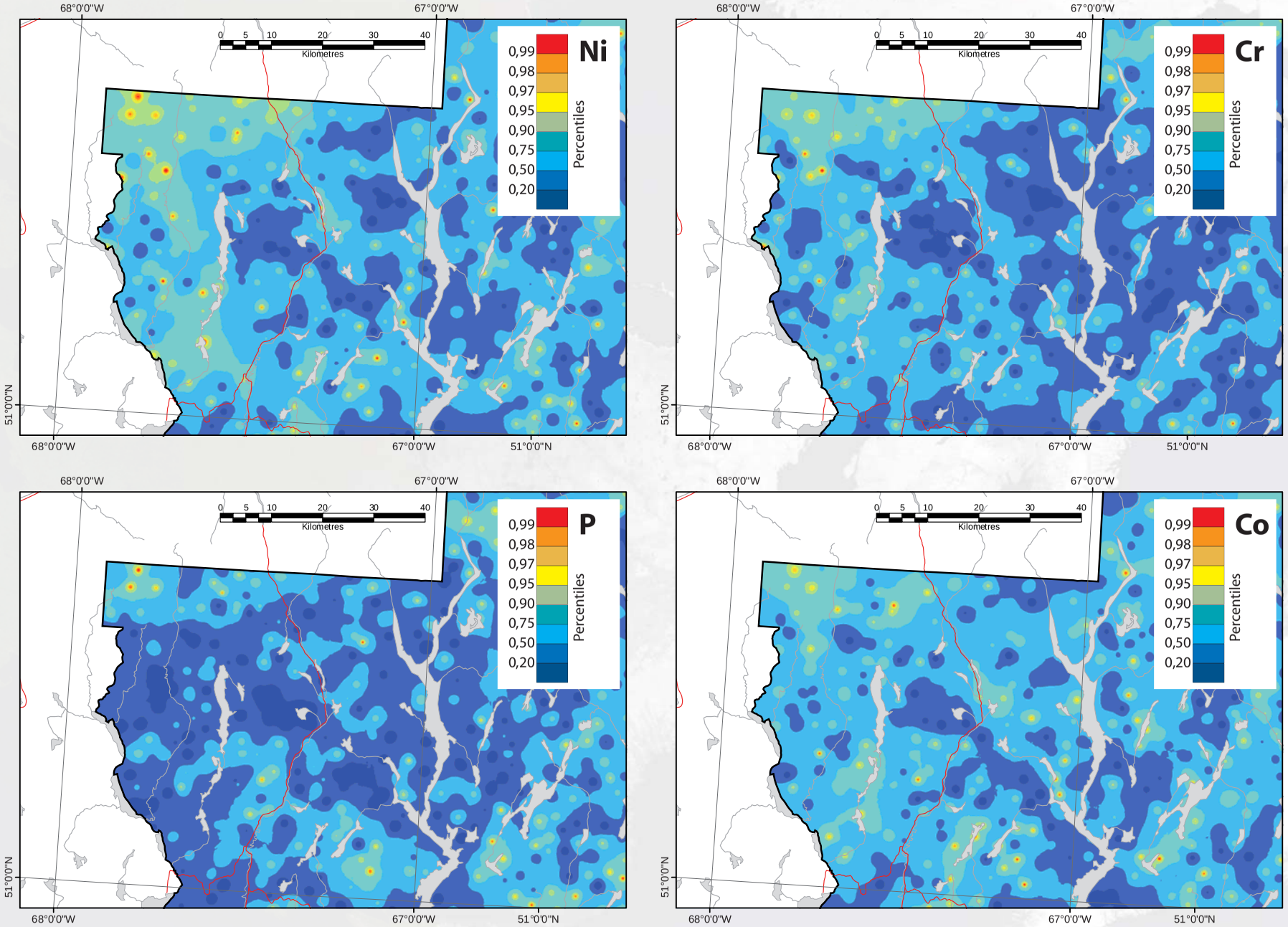

Figure 5 - Maps showing nickel, chrome, phosphorus, and cobalt anomalies in lake-bottom sediments in the northwest part of the area.

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