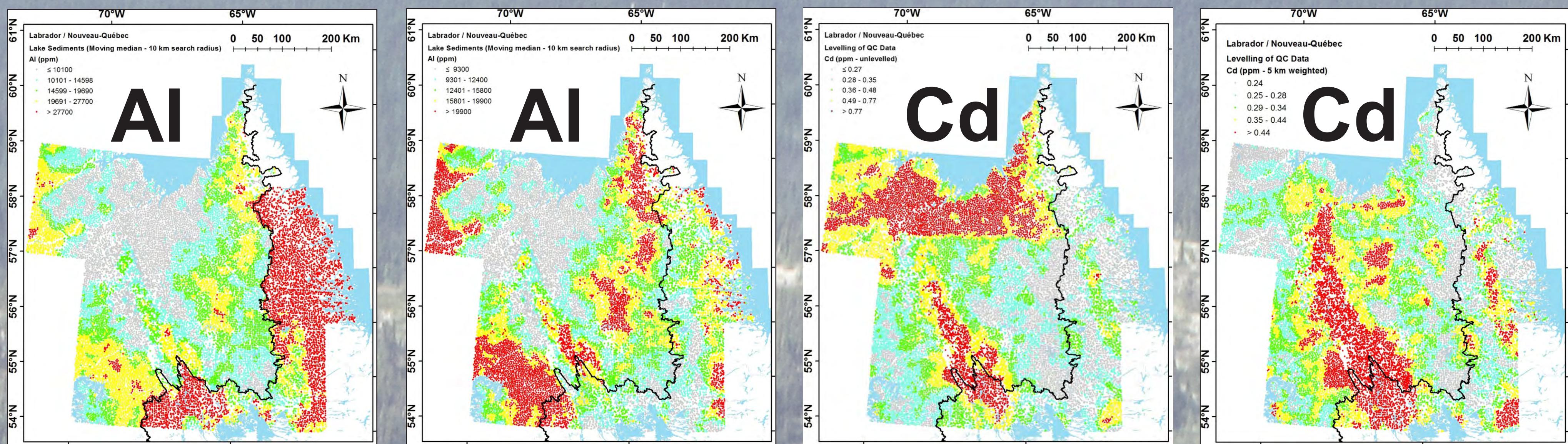


COMBINING LAKE-SEDIMENT GEOCHEMICAL DATA FROM LABRADOR AND QUÉBEC

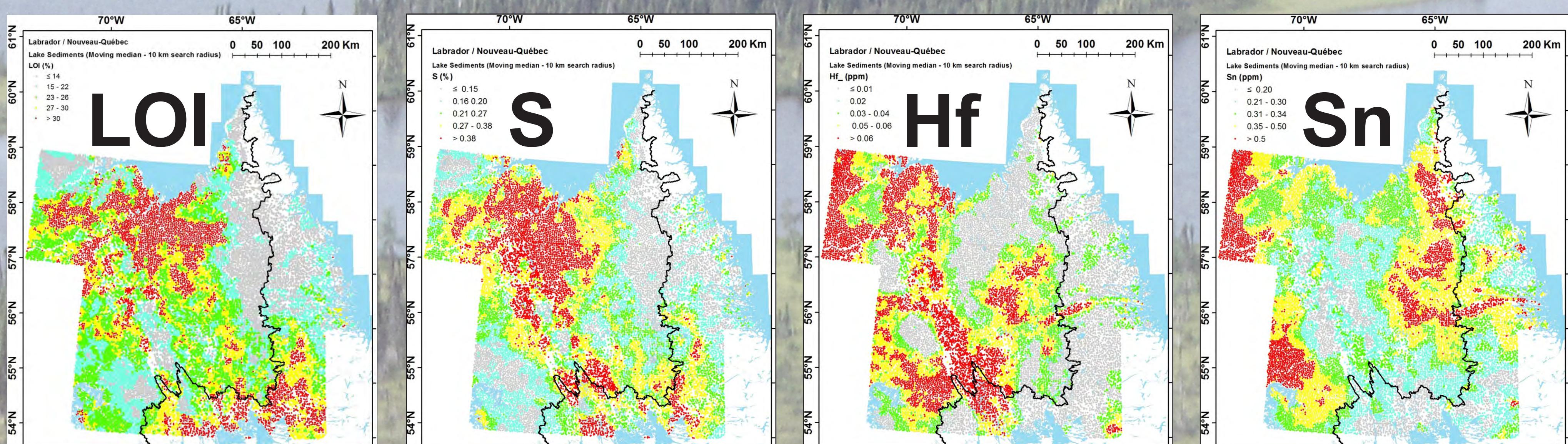
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Combination of lake-sediment geochemical results from Labrador and Québec, to create integrated maps, is complicated by the different analytical protocols applied in the two regions. Depending on the reagent used, differing portions of many elements go into solution because of the varying acid resistance of their host minerals. Whereas the Québec samples were digested with aqua regia (HCl/HNO_3) prior to analysis, the content of certain elements in the Labrador samples was only measured after a near-total digestion ($\text{HCl}/\text{HF}/\text{HClO}_4$). In order to create a more harmonious regional dataset, more than 5000 Labrador samples were re-analyzed after the same digestion applied to their Québec counterparts. An unweighted moving-median smoothing algorithm was applied, with a 10 km search radius around each sample, to create geochemical maps of the combined dataset in which large-scale patterns are emphasized.



The two maps above show the results of combining Al analyses of Québec lake sediments with those from Labrador. In the map on the left, the Labrador analyses were performed after multi-acid digestion; on the right, the map shows results of re-analyzing the Labrador samples after the same aqua-regia digestion that was applied to the Québec samples. This has resulted in a much better match between analyses from the two regions.

In a few cases, discontinuities are present within the dataset from a single region. In the map on the left, Cd analyses from one sub-project of the Québec program (in the north and northwest) are conspicuously higher than elsewhere. Application of a nearest-neighbour regression equation to correct the higher values has resulted in the removal of the discontinuity and it becomes apparent that the distribution of Cd is similar to that of the other chalcophile elements As and Sb.



The Labrador Trough (or New Québec Orogen) has a very distinct geochemical signature, particularly in chalcophile and siderophile elements. A zone strongly enriched in Cu extends about 300 km from immediately south of the provincial border to $57^{\circ} 30' \text{ N}$, whilst As and Sb define similar zones extending from

Ungava Bay in the north, to the Smallwood Reservoir in the south.

Sulphur and loss-on-ignition (L.O.I.) display similar behaviour to each other. In the east, both show a sharp drop-off north of 57° N . Farther west, enrichment persists as far north as Ungava Bay.

The well-documented dispersion train from the Strange Lake / Lac Brisson REE/RM deposit was previously known to be defined by Hf, U and many other elements. The new analyses have shown that it is also associated with elevated values of Sn.

