Portable XRF chemostratigraphy of a paleo-glacial foreland basin, the Nanaimo Lowlands, Vancouver Island

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Introduction

A portable XRF (pXRF) device was deployed in December 2012 and March 2013 in two sites: Chocarne and Spider, to collect data in the upper 10 cm of Holocene sediments. 21 of the 108 boreholes were rejected due to heavy metal contamination. Discontinuities in the upper 10 cm of the sediments were observed due to the influence of ancient Sr anomalies. Portable XRF data was calibrated using XRF data from Cochrane, and most likely represent a variation in lithology and provenance of the sediments.

Methods

1. XRF: portable XRF device used to measure elemental concentration
2. Dy and Sr isotopic analysis
3. Lower 40 cm of samples analyzed
4. Place samples in 50 mm diameter bar code, a height of 20 mm in size
5. Analytic lab and comparison of Cochrane + Spider
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7. Result of results and other results, plus multiply (CRN), at the beginning and end of every cycle, and every other cycle Cochrane

Results from Cochrane and Spider show that the sediments are a 1.2 cm clay and humic layer. These results do not document the magnetochemical variability in the Dashwood Till changes. However, these results can only be compared to Cochrane and Spider as they are the same environment.

Discussion

Interstadial sediments occur in the Strait of Georgia in British Columbia (and Puget Sound in Washington State). TheDashwood Till and its provenance have been determined for the first time and can be interpreted as the evidence for new. The results of this study demonstrate that the pXRF data can be determined for the first time and can provide insight into the provenance and evolution of these sediments.

Conclusions

To our knowledge these results are the first systematic geochemical characterization of late-Pleistocene sediments in British Columbia, and demonstrate that the pXRF data can be determined for the first time and can provide insight into the provenance and evolution of these sediments.

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