

**ELECTROMAGNETIC IMAGES OF THE TINTINA FAULT
(NORTHERN CANADIAN CORDILLERA)**

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ABSTRACT

As a part of the LITHOPROBE Slave-Northern Cordillera Lithospheric Evolution (SNORCLE) Transect, magnetotelluric (MT) data from 26 sites were acquired along three profiles crossing the strike-slip Tintina Fault in the northern Canadian Cordillera. The northern and southern regional profiles are separated by more than 400 km along strike, and were designed to obtain a crustal scale electromagnetic image of the fault. A short, higher station density profile was located 35 km south of the northern profile, and was designed to obtain superior resolution of upper crustal features. There is gross similarity in the MT responses from all three profiles, suggesting a two-dimensional (2-D) electromagnetic behavior of the fault. Distortion decomposition of the responses corroborated the validity of assuming regional two-dimensionality. The conductivity models obtained from each profile are similar in many features. Several high conductivity anomalies at different depth scales are present in the models. Given the lack of geological information about the possible causes of these anomalies, we suggest that the shallow structures may be associated with ionic (saline meteoritic waters) or electronic (mineral deposits) conduction mechanisms, whereas the deeper anomalies are more likely associated with electronic conduction mechanisms.