

Determining fault controls on intrusion complexes to analyze the distribution of porphyry deposits in Central British Columbia

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This study aims at improving the understanding of the geodynamic controls on the localization and magnitude of porphyry mineralization in central British Columbia. Over 1300 porphyry prospects exist in Canada's western mountain range and the net metal value of porphyry deposits containing copper, molybdenum and gold is estimated at \$200 billion. Of the known prospects, only 58 have been developed to the point of production. This study focusses on the interpretation and classification of faults within two study areas located near the Granisle and Huckleberry deposits in central British Columbia. The interpretation is based on digital elevation models (DEMs) ASTER and SRTM data, Landsat images, as well as aeromagnetic data from and Geoscience BC's Quest West and Quest Main project areas. The fault interpretation is supplemented by the Geoscience BC fault compilation and overburden and bedrock geology maps. Valley floors in British Columbia's interior are largely inaccessible to direct mapping due to cover by Quaternary sediments. Especially in these areas, the use of geophysical data provides valuable insight into the location and characteristics of bedrock structures. Faults with a surface expression, evident from the DEM interpretation, are correlated with faults interpreted from the aeromagnetic data, thereby adding a layer of confidence to the overburden-covered structures. The identified faults are characterized based on their relative age, order and offset, as well as their position within the geodynamic setting of central Cordillera. The classification of the faults is then used to assess the distribution of calc-alkaline intrusive and related mineralization.