

Non-technical Project Proposal Description

Project title: Metamorphic geology and tectonics of Cumberland Peninsula, Baffin Island, Nunavut

Researcher's name & affiliation: Brett Hamilton (University of Calgary, Department of Geoscience)

Project location: Near Clephane Bay and Totnes Road, Cumberland Peninsula, eastern Baffin Island

Timeframe: The duration of project is from 2009 to 2013. This application pertains to a field season from June 28 to August 9, 2011.

Project description:

A controversy exists about how tectonic plates amalgamated to form Baffin Island. Cumberland Peninsula (CP) is situated in a key location to solve this fundamental geological problem. Until 2009, this problem could not be addressed because there existed almost no published data on CP bedrock geology. Due to research by myself, as a part of my PhD, and collaborative research through the Geological Survey of Canada's (GSC) Cumberland Peninsula Integrated Geoscience Project, it is now possible to approach this question. I propose further detailed mapping in 2011 to answer unresolved questions about the relationships between deformation and metamorphism, which have implications for understanding CP geology as a whole. The overall objectives for the thesis are to 1) use metamorphic petrologic techniques to determine the path rocks took through the crust during tectonic events, and 2) combine these results with other concurrent regional geological studies to understand the tectonic history of CP.

Methodology:

During the 2011 field season, detailed mapping will be carried out in two regions (see attached map). Mapping will be conducted from remote two-person tent-based camps. Four temporary camps will be established and occupied for 8 to 15 days each. Camp supplies, personnel, and garbage will be transported to and from Pangnirtung, and between campsites, with a helicopter. All staging will be in Pangnirtung and I will employ a Pangnirtung resident to assist with logistics. Research will be conducted on foot; an inflatable Zodiac boat will assist with transportation along Clephane Bay. About 250 rock samples, 1 to 2 kg each, will be knocked off larger formations with a hammer for laboratory analysis. All other research activities are observational and have no environmental impact.

Data and reporting:

Field observations, structural measurements, laboratory observations, and laboratory chemical analyses of samples will be scrutinized for the next three years as I complete my PhD thesis. Data collected during mapping will be published with the GSC as paper maps and digital (GIS) data. Observations and chemical data will be published in peer-reviewed publications and in my PhD thesis. The samples will be archived in the University of Calgary and may be used in future studies. Results from this research will be communicated to Nunavummiut and those interested in Nunavut geology through presentations given at northern geoscience meetings including the Nunavut Mining Symposium and the Yellowknife Geoscience Forum.

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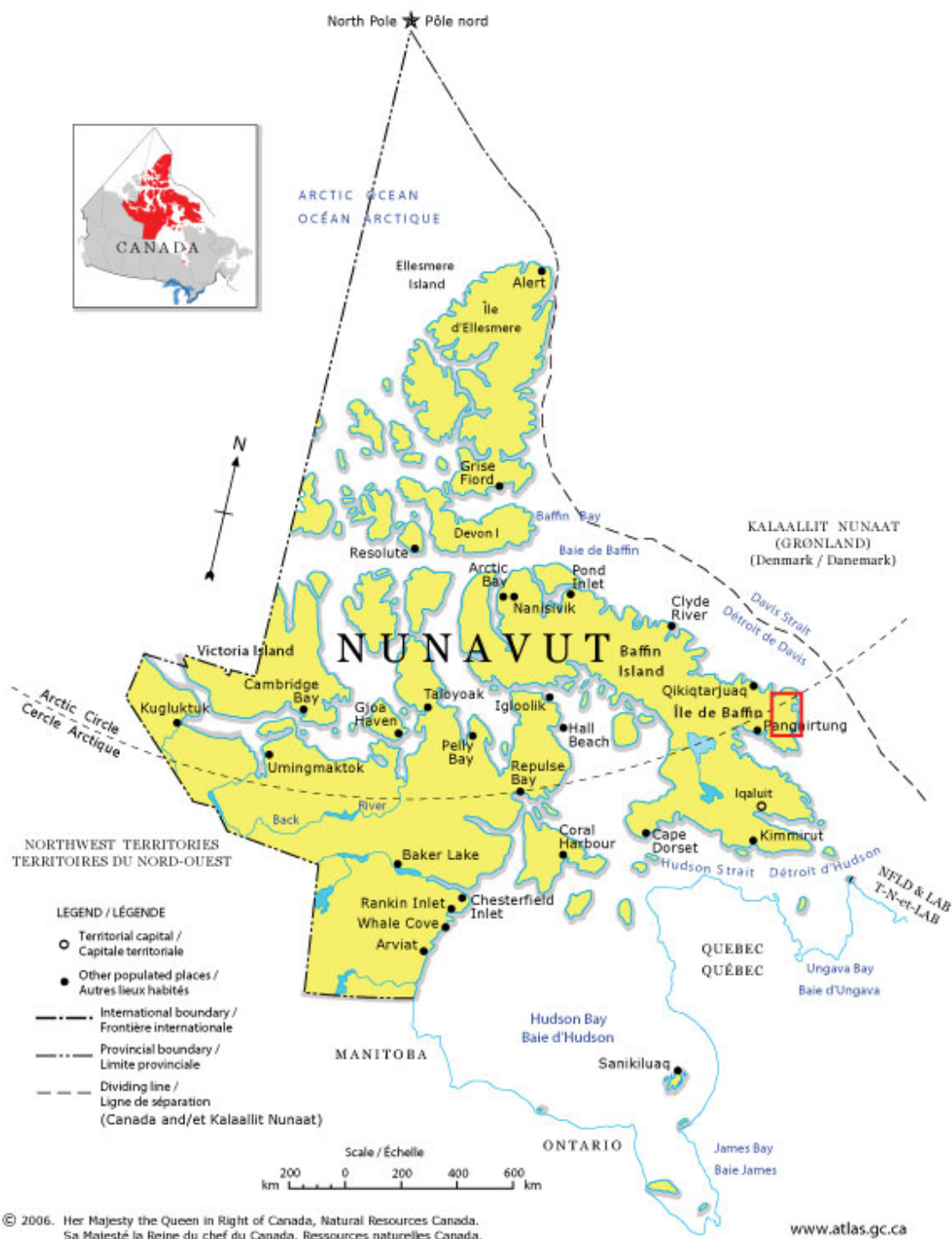


Figure 1. Map of Nunavut. The red box depicts the approximate extent of the map in Figure 2.

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Metamorphic geology and tectonics of Cumberland Peninsula, Baffin Island, Nunavut Land use for 2011 field season: Mapping areas and temporary campsites

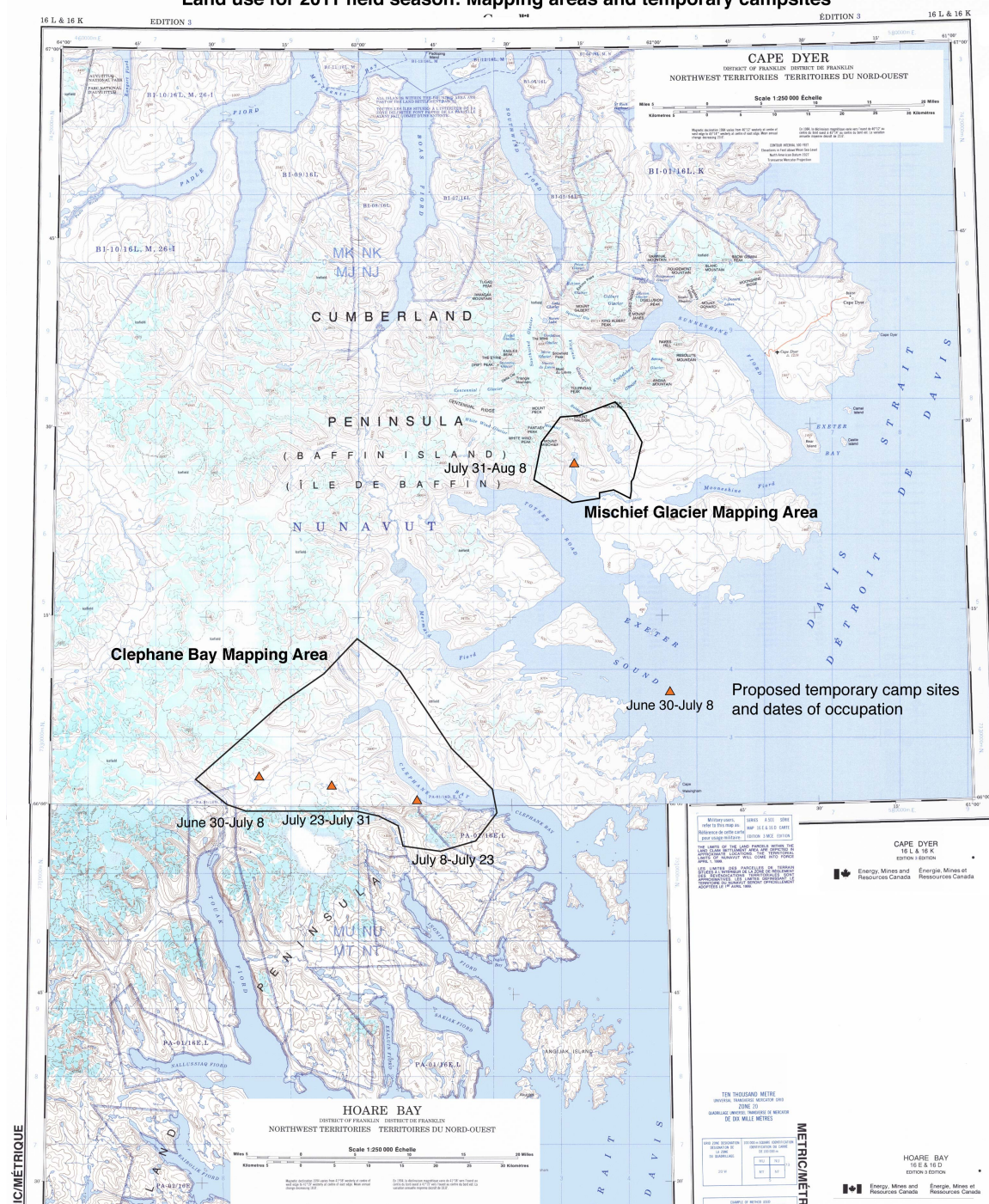


Figure 2. Maximum extent of research mapping areas and proposed campsites.