BEDROCK MAPPING OF THE KLUANE RANGES, SOUTHWEST YUKON (parts of NTS 115G/2, 3, 5, 6, 7)

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Introduction

Bedrock mapping in the Kluane Ranges continued in 2005, expanding 2004 mapping to the southeast from Quill Creek, to encompass the area between the Alaska Highway and Kluane National Park and Preserve (Figure 1). The aims of this project are; 1) to decipher the structural and stratigraphic relationships within the Kluane Ranges, 2) to determine the nature of the Kluane mafic-ultramafic bodies which are host to significant Ni-Cu-PGE mineralization, 3) to determine the extent of Alexander terrane stratigraphy (host to the Windy Craggy deposit in northwestern BC) in southwest Yukon.

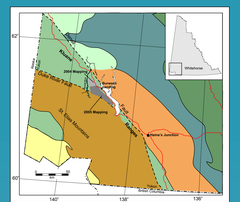


Figure 1

Stratigraphy

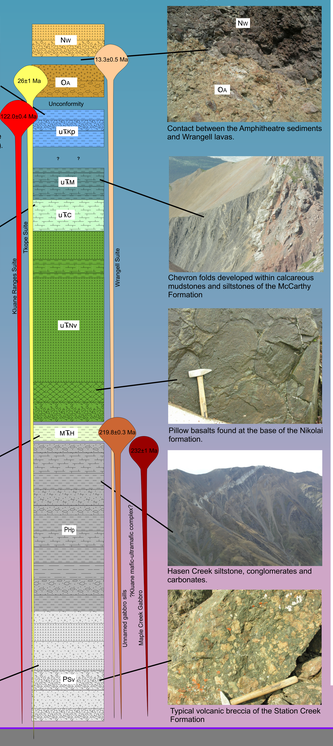
Much of the Kluane Ranges are underlain by Late Paleozoic arc volcanic and sedimentary rocks of the Skolai Group which in turn is overlain by Triassic flood basalts and shallow marine sediments and carbonates of the Nikolai, Chitistone and McCarthy formations. A poorly defined unit of sedimentary rocks of Upper Triassic to Cretaceous in age(Tatamagouche succession) unconformably overlies the Triassic stratigraphy. Tertiary terrestrial sedimentary and volcanic deposits are found scattered throughout the area. Stratified units are intruded by plutons, dykes and sills of variable age and composition. The age of mineralized ultramafic intrusions is problematic, falling somewhere between Middle and Upper Triassic.

Bedded sandstone, conglomerate and siltstone typical of the Tatamagouche succession (uTKp).

Typical resistant weathering Chitistone limestone forming the footwall of the Wade Mtn. Fault.

Well bedded siltstones and fine-grained sandstones of the Hoge Creek succession.

Columnar jointed flows within the Station Creek Formation



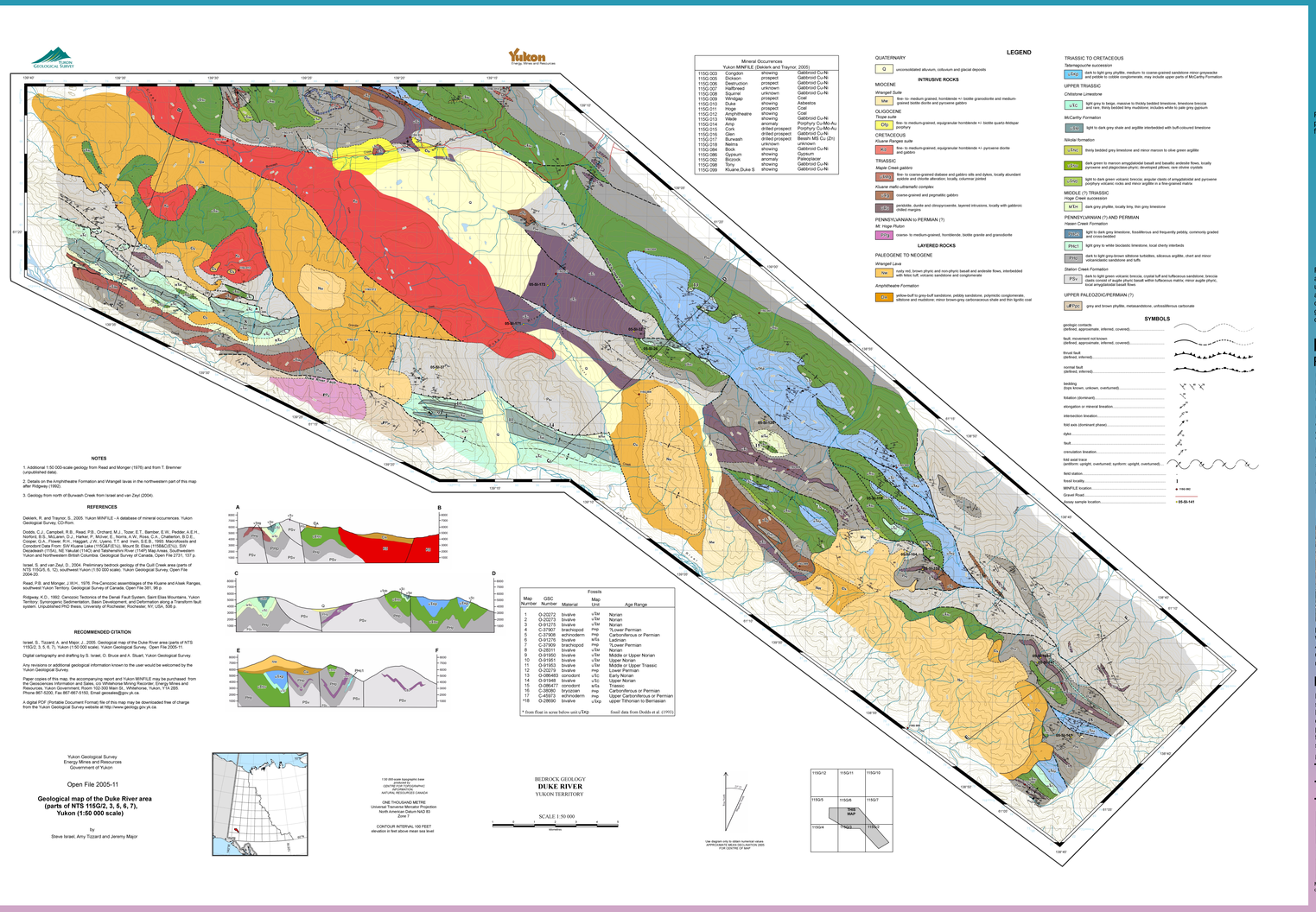
Contact between the Amphitheatre sediments and Wrangell lavas.

Chevron folds developed within calcareous mudstones and siltstones of the McCarthy Formation

Pillow basalts found at the base of the Nikolai formation.

Hasen Creek siltstone, conglomerates and carbonates.

Typical volcanic breccia of the Station Creek Formation


Yukon Geological Survey
Yukon
Energy, Mines and Resources
LEGEND
QUATERNARY
Q unconsolidated alluvium, colluvium and glacial deposits
INTRUSIVE ROCKS
MIOCENE
Wrangell Suite
Mw fine- to medium grained, hornblende +/- biotite granodiorite and medium-grained biotite diorite and pyroxene gabbro
OLIGOCENE
Tlogo suite
Olg fine- to medium-grained, equigranular hornblende +/- biotite quartz-feldspar porphyry
CRETACEOUS
Kluane Ranges suite
Ck fine- to medium-grained, equigranular hornblende +/- pyroxene diorite and gabbro
TRIASSIC
Maple Creek gabbro
TMG fine- to coarse-grained diabase and gabbro sills and dykes, locally abundant epidote and chlorite alteration; locally, cleavage zoned
Kluane mafic-ultramafic complex
Ku coarse-grained and pegmatitic gabbro
Uu peridotite, dunite and clinopyroxenite, layered intrusions, locally with gabbroic crest margins
PENNSYLVANIAN to PERMIAN (?)
Mt Hoge Pluton
PPG coarse- to medium-grained, hornblende, biotite granite and granodiorite
LAYERED ROCKS
PALEOGENE TO NEOGENE
Wrangell Lava
Nw rusty red, brown phyric and non-phyric basalt and andesite flows, interbedded with lithic tuff, volcanic sandstone and conglomerate
Amphitheatre Formation
Oa yellow-buff to grey-buff sandstone, pebbly sandstone, polymictic conglomerate, siltstone and mudstone; minor brown-grey carbonaceous shale and thin lignite coal
TRIASSIC TO CRETACEOUS
Tatamagouche succession
uTKp dark to light grey phyllite, medium- to coarse-grained sandstone minor greywacke and pebble to cobble conglomerate, may include upper parts of McCarthy Formation
UPPER TRIASSIC
Chitistone Limestone
uTc light grey to beige, massive to thickly bedded limestone, limestone breccia and rare, thinly bedded limy mudstone; includes white to pale grey gypsum
McCarthy Formation
uTM light to dark grey shale and argillite interbedded with buff-coloured limestone
Nikolai formation
uTNv thinly bedded grey limestone and minor maroon to olive green argillite
uTNv dark green to maroon amygdaloidal basalt and basaltic andesite flows, locally pyroxene and plagioclase phyric; developed pillows; rare olivine crystals
uTNv light to dark green volcanic breccia; angular clasts of amygdaloidal and pyroxene porphyry volcanic rocks and minor argillite in a fine-grained matrix
MIDDLE (?) TRIASSIC
Hoge Creek succession
MTH dark grey phyllite, locally limy, thin grey limestone
PENNSYLVANIAN (?) AND PERMIAN
Hasen Creek Formation
PPsv dark to light grey limestone, fossiliferous and frequently pebbly, commonly graded and cross-bedded
PHc1 light grey to white bioclastic limestone, local cherty interbeds
PPsv dark to light grey-brown siltstone turbidites, siliceous argillite, chert and minor volcaniclastic sandstone and tuffs
Station Creek Formation
PSv dark to light green volcanic breccia, crystal tuff and tuffaceous sandstone; breccia clasts consist of augite phyric basalt within tuffaceous matrix; minor augite phyric, local amygdaloidal basalt flows
UPPER PALEOZOIC/PERMIAN (?)
uPPgc grey and brown phyllite, metasandstone, unfossiliferous carbonate
SYMBOLS
geologic contacts (defined, approximate, inferred, covered)
fault; movement not known (defined, approximate, inferred, covered)
thrust fault (defined, inferred)
normal fault (defined, inferred)
bedding (tops known, unknown, overturned)
foliation (dominant)
elongation or mineral lineation
intersection lineation
fold axis (dominant phase)
dyke
fault
crenulation lineation
fold axial trace (antiform: upright, overturned; synform: upright, overturned)
field station
fossil locality
MINFILE location
Gravel Road
Alsek River
Duke River Fault
Shakwak Valley
Denali Fault
Kluane Lake
Duke River
Haines Junction
Whitehorse
Alaska Highway
Kluane National Park and Reserve
Mt. Hoge
Mt. Bates
Mt. Decoeur
Mt. Vanguard
Mt. Lucania
Mt. Steele
Mt. Wilson
Mt. Cairnes
Mt. Bear
Mt. Ballard
Mt. Martin
Mt. Meek
Mt. Decoeur
Mt. Hoge
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