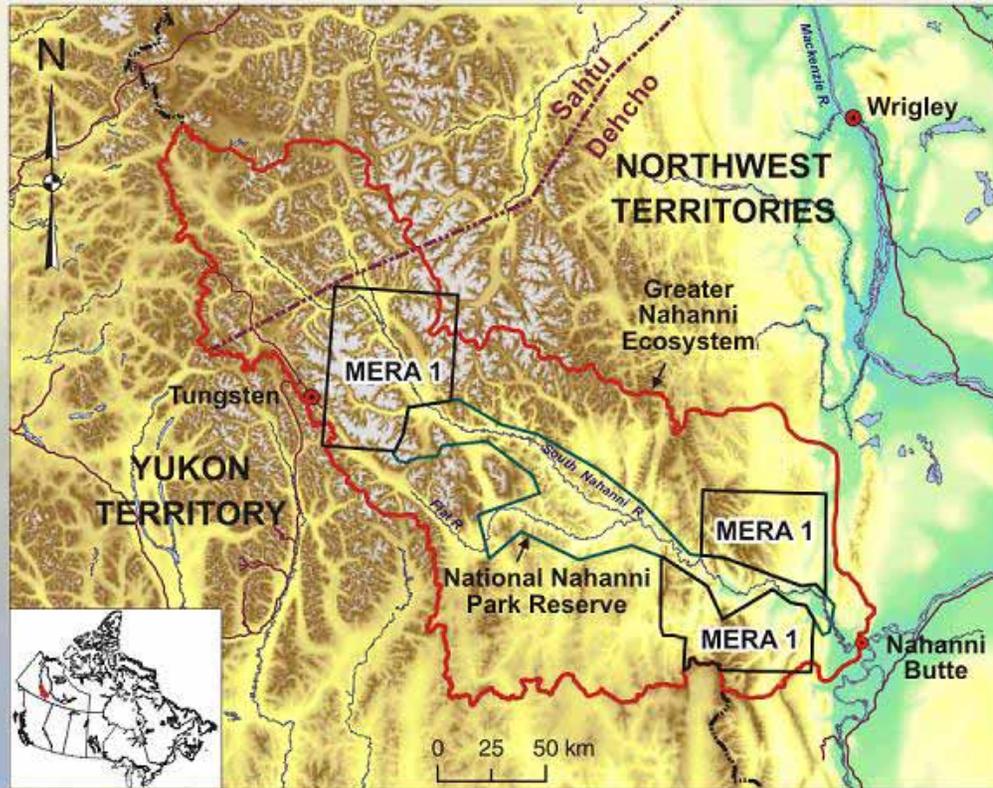




NAHANNI MERA STUDY AREAS



Mineral and
Energy
Resource
Assessment

MERA 1 1983-1985

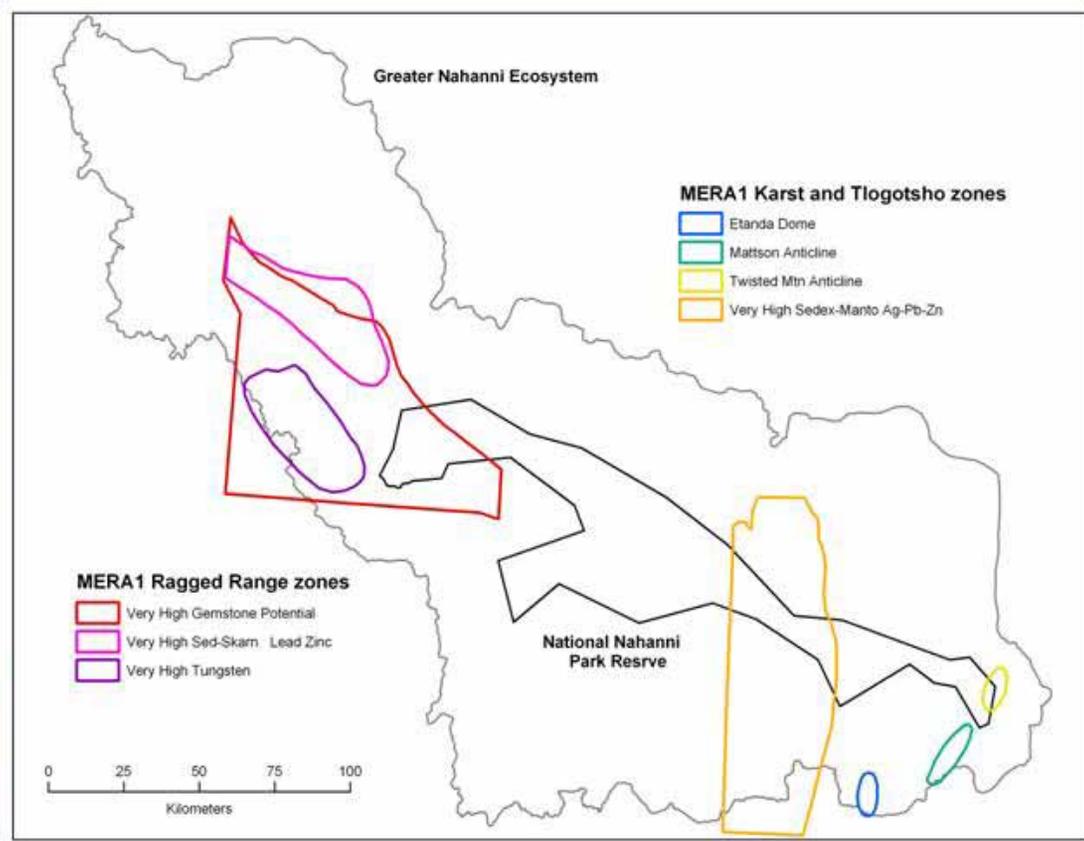
MERA 2 2004-2007





MERA 1 Results

Earth Sciences Sector



- GSC Open File 1686 (2003) Jefferson et al. provided rich database and data infrastructure.
- hydrocarbons were assessed in MERA 1 and therefore not in MERA 2



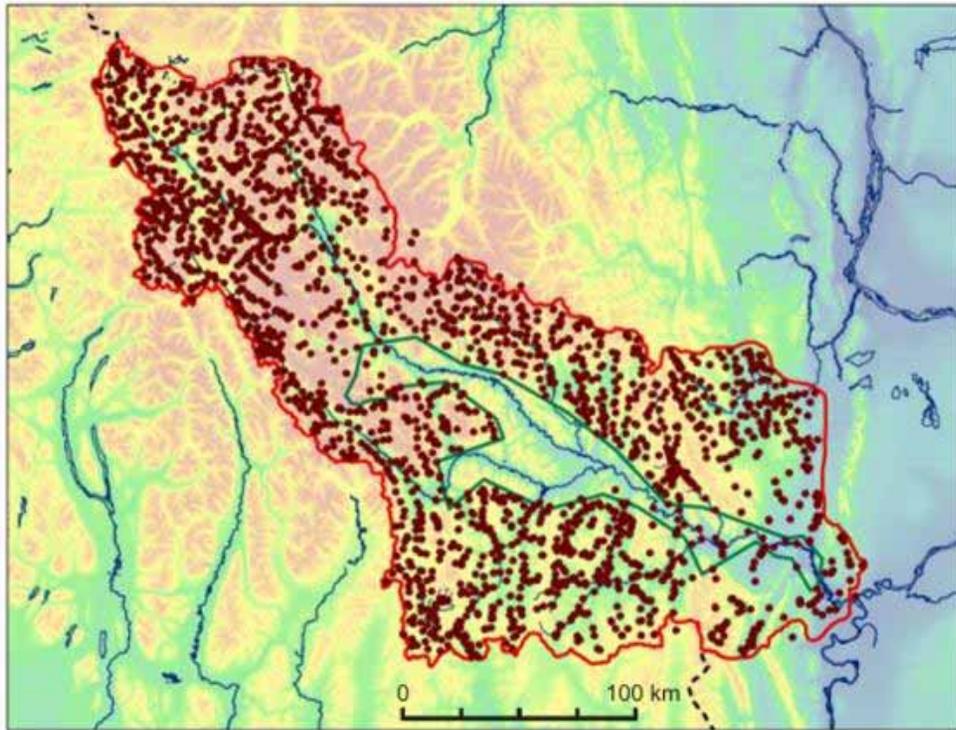
Natural Resources Canada
Ressources naturelles Canada

Community Consultation
October 2007

Canada ²



MERA 2 – Stream Geochemistry



stream sediment samples
legacy (MERA1 – 1089)
new (MERA2) 1374
total 2463

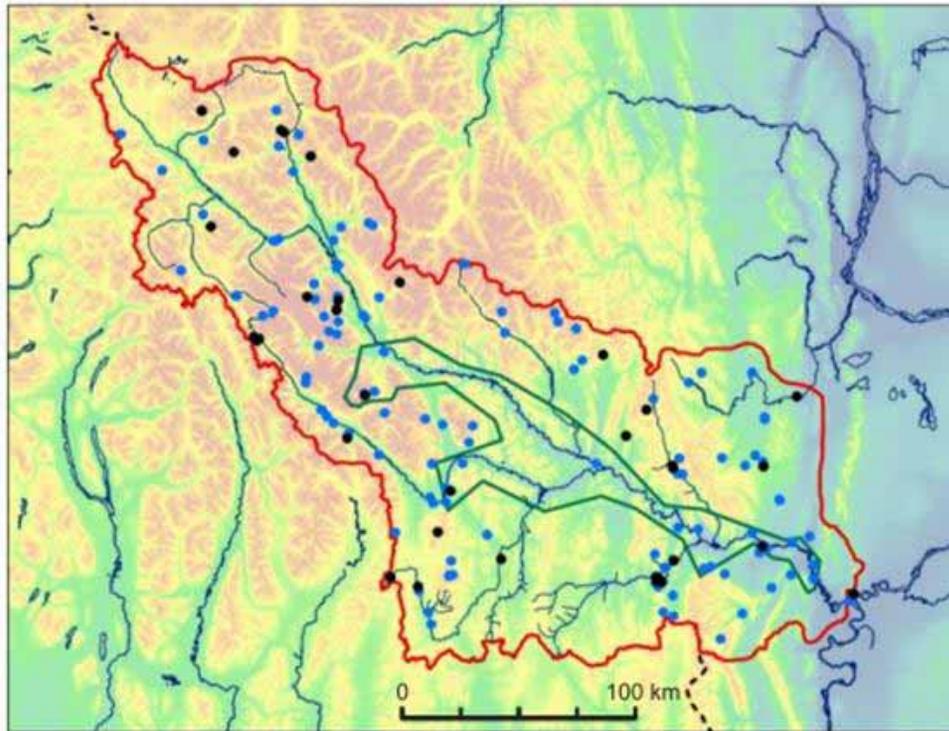
stream water samples
legacy (MERA1 – 690)
new (MERA2) 1374
total 2068

**National Geochemical
Reconnaissance (NGR)
program data**





MERA 2 – Spring water geochemistry



- springs sample sites
- anomalous springs geochemistry

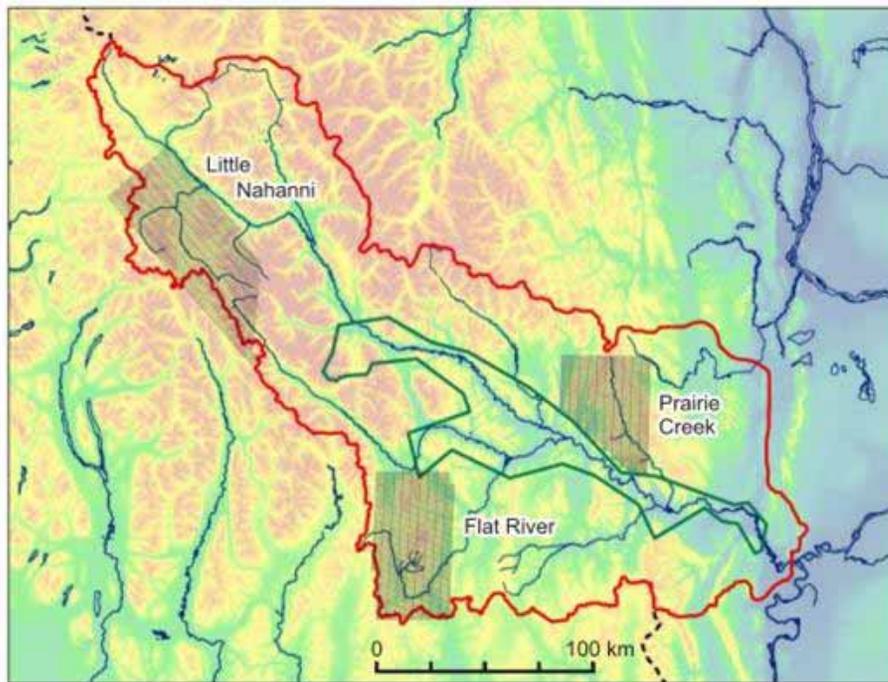
Spring water samples

- legacy (MERA1 – 127)
 - new (MERA2 95)
 - total samples 222
-
- 157 different spring locations
 - 65 duplicates / resampled
- 222 samples





MERA 2 – Airborne geophysics



- Detailed geophysical surveys:
 - Aeromagnetics
 - Gravity
 - Radiometrics.
- total of 16,000 line kilometres flown at 500 m spacing

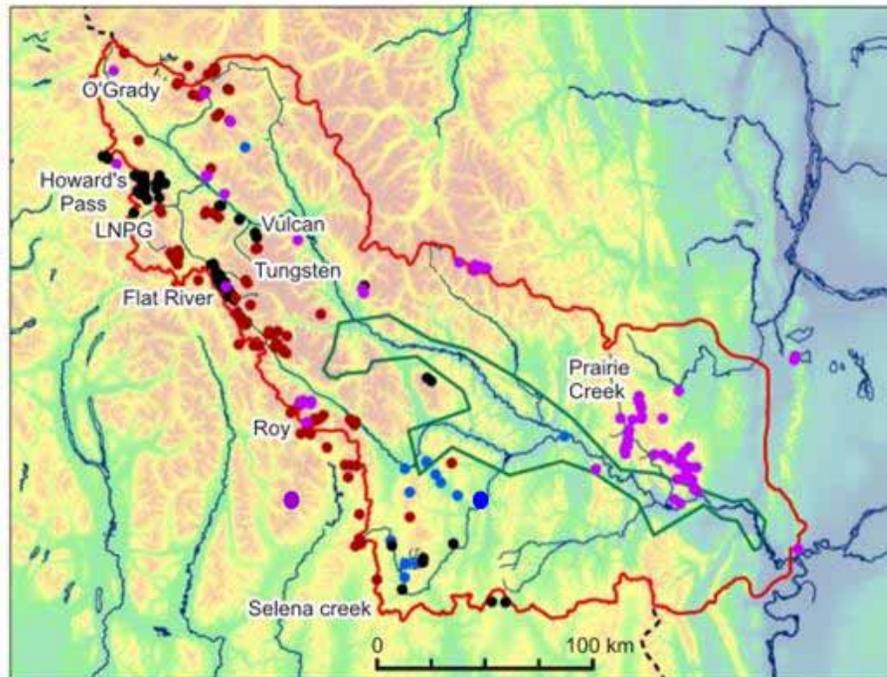
Geophysical Data Centre,
Geological Survey of Canada





MERA 2 – Mineral Occurrence Data

Earth Sciences Sector



● SEDEX ● Fault-related ● Carlin-type ● Intrusion-related

- occurrences from 2005 NORMIN database + new data from MERA 2 studies
- 40 key sites selected for geochemical analysis
- ~ 279 sites fall within GNE

NORMIN database, Department of Indian Affairs and Northern Development



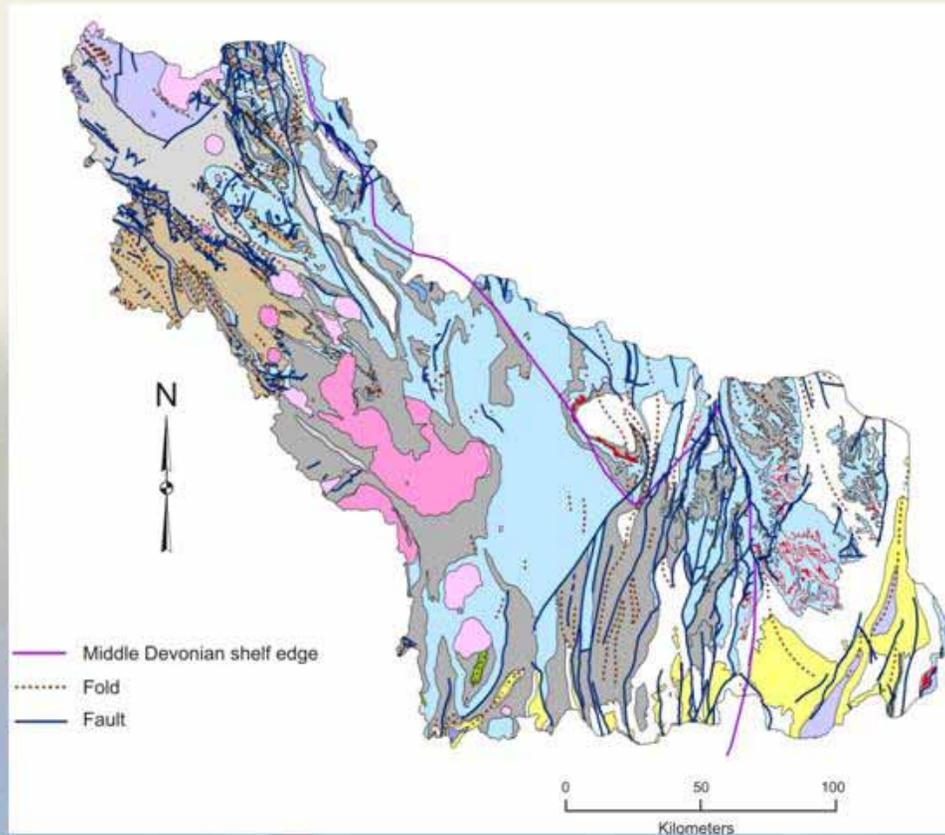
Natural Resources Canada
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MERA 2 – Bedrock Geology



LEGEND

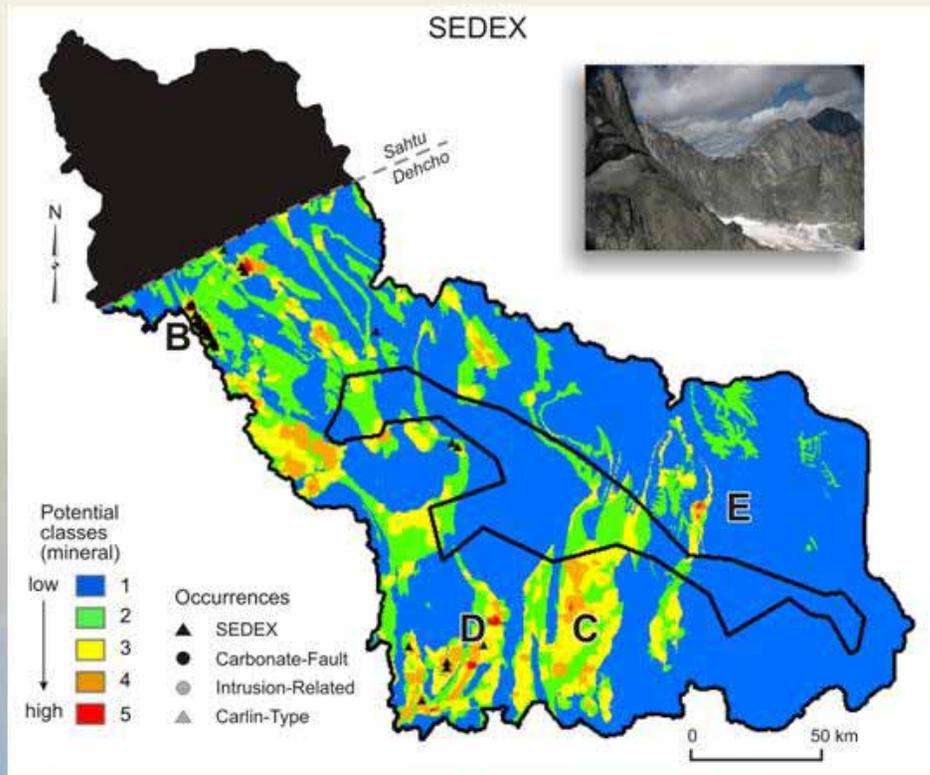
CRETACEOUS	Platform to oroclastic basin
NEWTON GRANITIC SUPER SUITE	TRIASSIC TO CRETACEOUS
Top flow, and Thompson series, granitoids to quartz monzonite (Tung, Mga, Ngt, Ngt, Ngt)	Shale to sandstone Mga, Ngt, Ngt, Ngt, Ngt, Ngt
Tungsten series, biotite - muscovite + garnet + zirconium granitoid to quartz monzonite Mga, Ngt, Ngt	CARBONIFEROUS TO PERMANIAN
Transitional to deep basin	Mostly shale and silty shale, clay Mga, Ngt, Ngt
LATE DEVONIAN TO EARLY MISSISSIPPIAN	EARLY CARBONIFEROUS
Shale, sandstone, minor siltstone, sandstone and conglomerate (Stn, Stn, and Pk) and Lake formation (Stn, Stn, Stn)	Coal-bearing sandstone and shale (Stn, Stn) with varying silty shales, with minor shale and siltstone (Stn, Stn, Stn, Stn, Stn)
MIDDLE DEVONIAN TO CRETACEOUS	MIDDLE DEVONIAN TO CARBONIFEROUS
Carboniferous, biotitic shale, minor siltstone and siltstone (Mga, Ngt)	Predominantly shale (Stn, Stn) and fine silt, and Full Devonian formation Mga, Ngt, Ngt, Ngt, Ngt, Ngt, Ngt, Ngt
MIDDLE DEVONIAN	MIDDLE DEVONIAN TO CRETACEOUS
Carboniferous, biotitic shale, minor siltstone and siltstone (Mga, Ngt)	Clayey shale, siltstone and siltstone with minor siltstone, sandstone, and conglomerate (Stn, Stn, Stn, Stn, Stn)
CAMBRIAN TO EARLY DEVONIAN	MIDDLE DEVONIAN
Carboniferous, biotitic shale, minor siltstone and siltstone (Mga, Ngt)	Limestone, minor siltstone and siltstone with minor siltstone, sandstone, and conglomerate (Stn, Stn, Stn, Stn, Stn)
Carboniferous, biotitic shale, minor siltstone and siltstone (Mga, Ngt)	CAMBRIAN TO EARLY DEVONIAN
Carboniferous, biotitic shale, minor siltstone and siltstone (Mga, Ngt)	Carboniferous, biotitic shale, minor siltstone and siltstone (Mga, Ngt)
NECROPROTEROZOIC	NECROPROTEROZOIC
WENAMERE SUPERGROUP	WENAMERE SUPERGROUP
Shale, siltstone and sandstone (Stn, Stn, Stn, Stn, Stn)	Carboniferous, minor siltstone, minor shale (Stn, Stn, Stn, Stn)
Shale, siltstone and sandstone (Stn, Stn, Stn, Stn, Stn)	Carboniferous, minor siltstone, minor shale (Stn, Stn, Stn, Stn)

- Updated geology map 2005, Geological Survey of Canada
- Bedrock geology compiled by Okulitch 2005, with new data from MERA 1, then simplified for modelling purposes.





SEDEX potential map



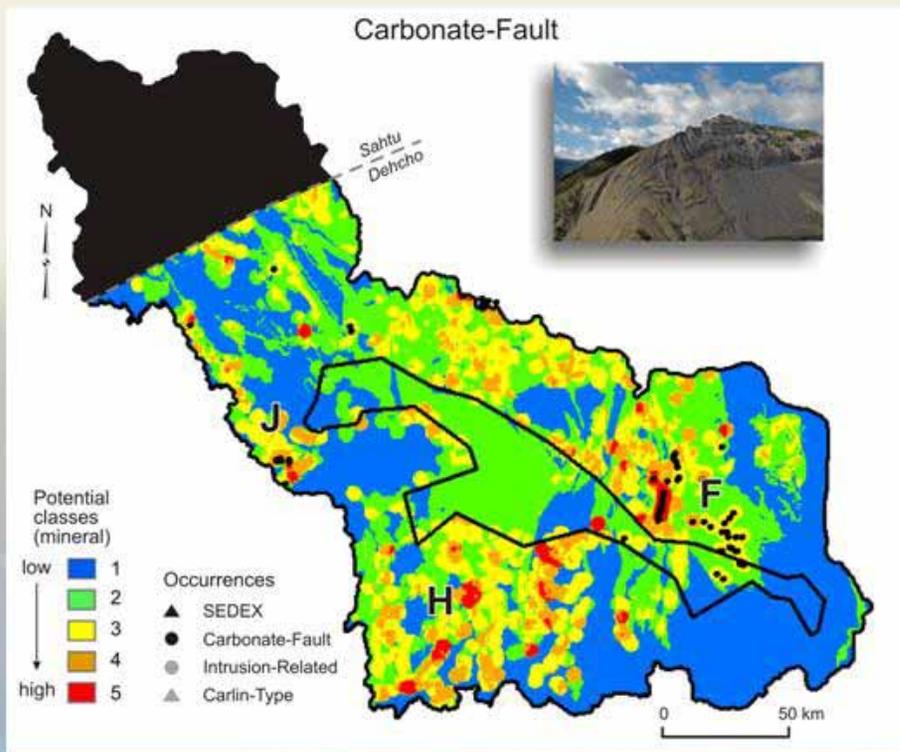
Stratiform shale-hosted sedimentary exhalative Zn Pb (SEDEX)
 example: Howard's Pass – zinc, lead, and barium

- **Modelling Input**
- (17 evidence maps):
- favourable rock types
- structural features
- stream geochemistry
- spring water geochemistry
- pH
- 79 mineral occurrences





Carbonate-fault potential map



Carbonate-hosted base-metals associated with faults (Carbonate-fault)

example: Prairie Creek – lead, zinc, and silver

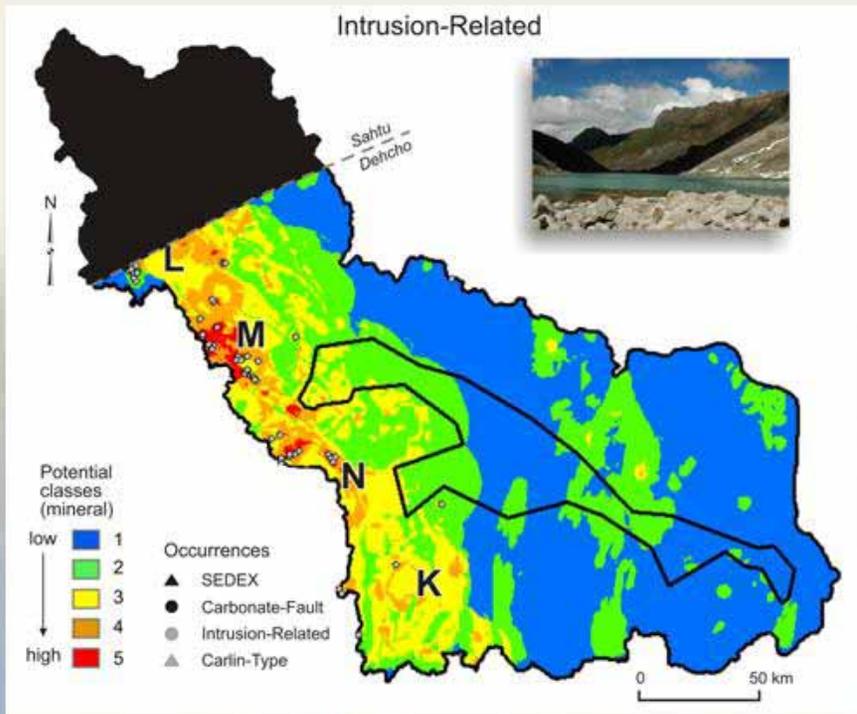
Modelling Input (15 evidence maps):

- favourable rock types
- structural features
- stream geochemistry
- spring water geochemistry
- 76 mineral occurrences





Intrusion-related potential map



Intrusion-related (includes rare metals, gemstones, and skarn tungsten and base metals)

example: **Cantung E zone skarn (tungsten) & Lened (emerald)**

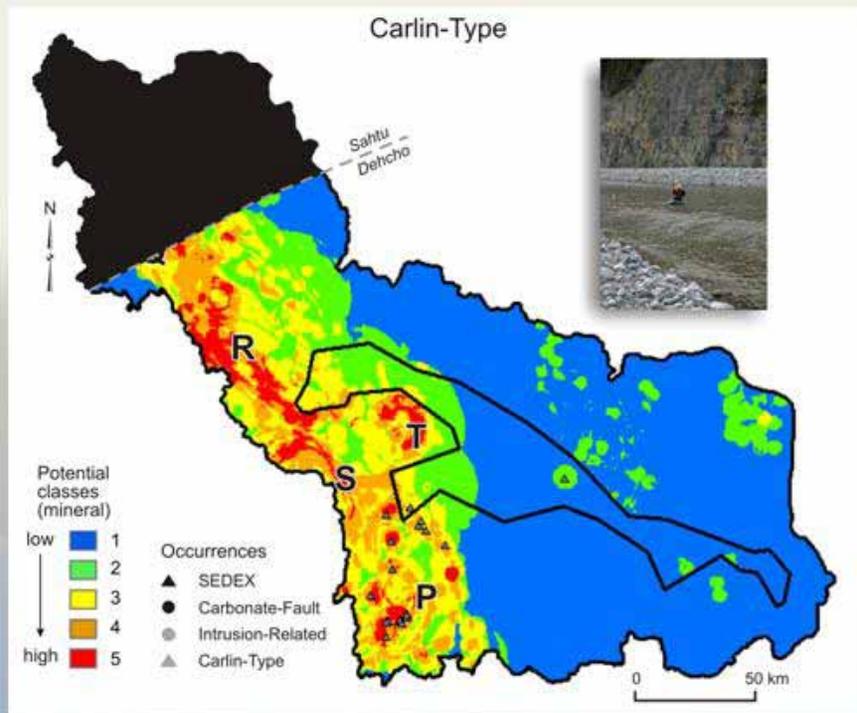
Modelling Input (14 evidence maps):

- favourable rock types
- structural features
- stream geochemistry
- spring water geochemistry
- 99 mineral occurrences





Carlin potential map



Placer and/or lode gold (Carlin-type)

example: Selena Creek, placer gold

Modelling Input (20 evidence maps):

- favourable rock types
- structural features
- stream geochemistry
- spring water geochemistry
- pH
- 25 mineral occurrences
- gamma ray (geophysics)

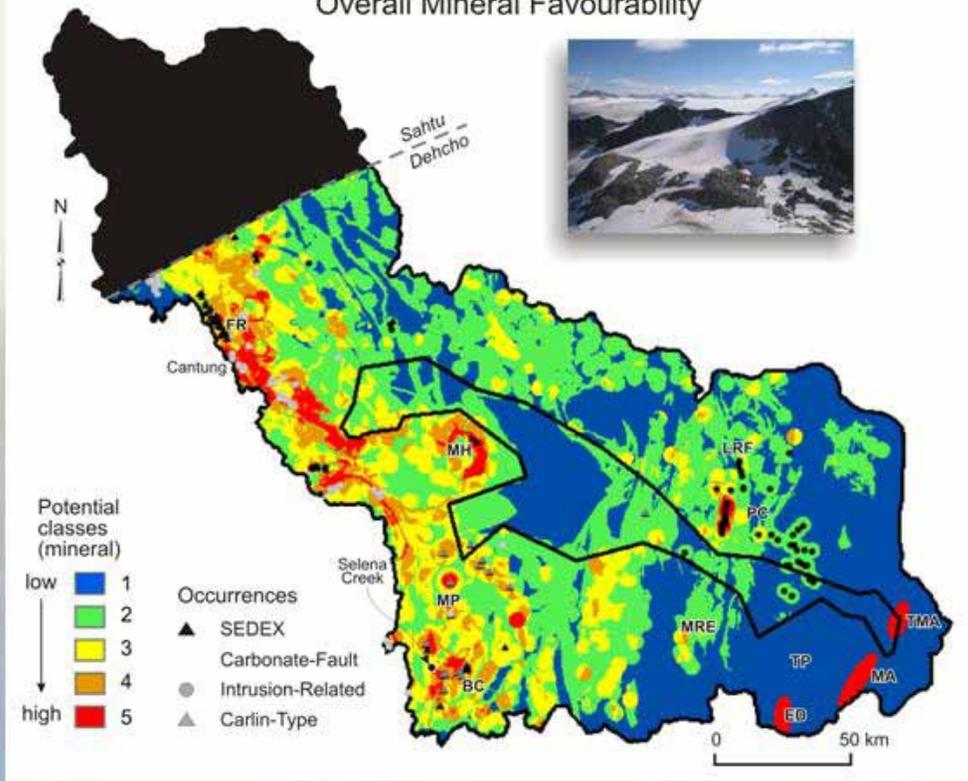




Overall Mineral Potential Map



Overall Mineral Favourability



Combines the results from the four mineral potential maps using the “maximum” potential from each of the individual maps

