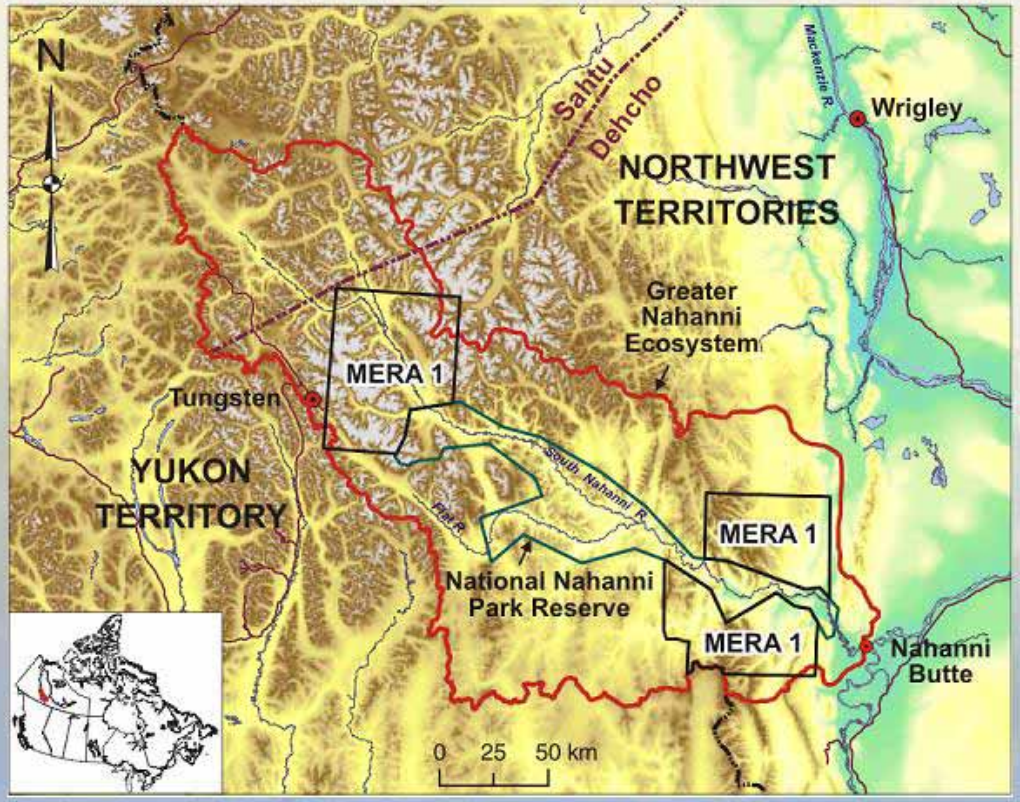
NAHANNI MERA STUDY AREAS

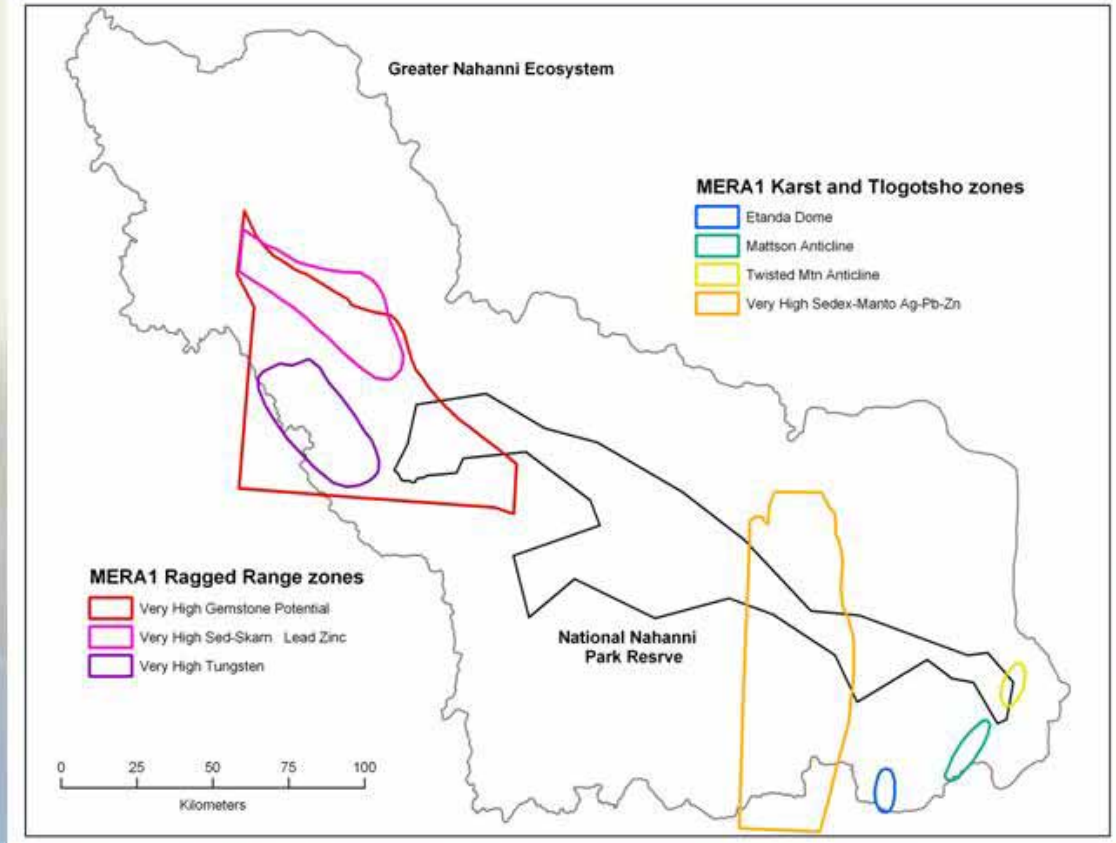


Mineral and
Energy
Resource
Assessment

MERA 1 1983-1985

MERA 2 2004-2007

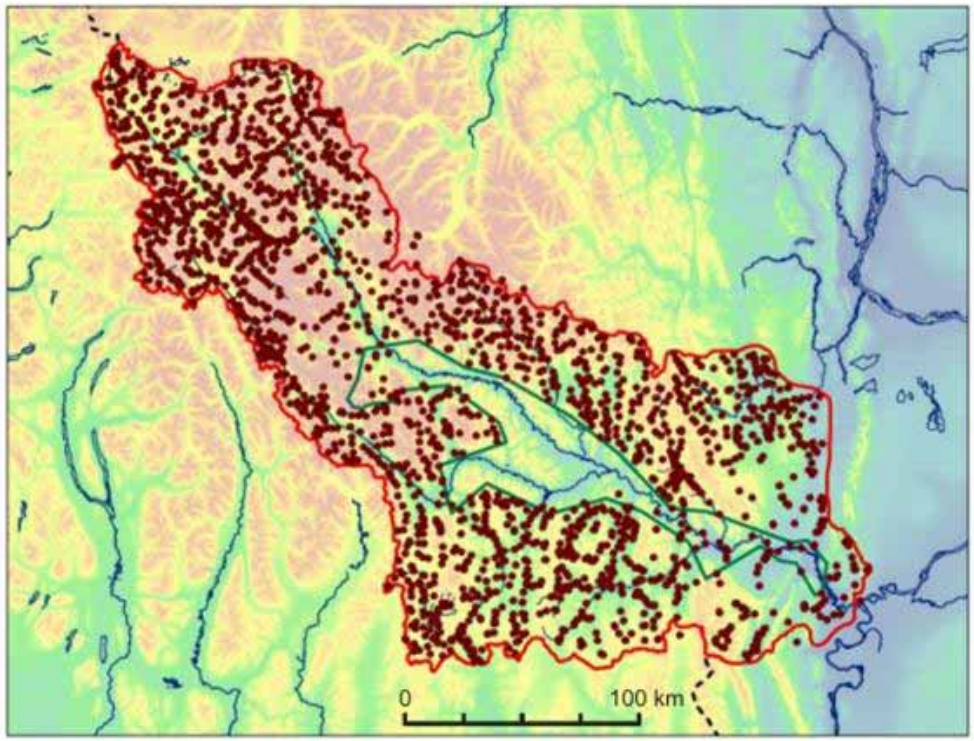
MERA 1 Results



- 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

MERA 2 – Stream Geochemistry

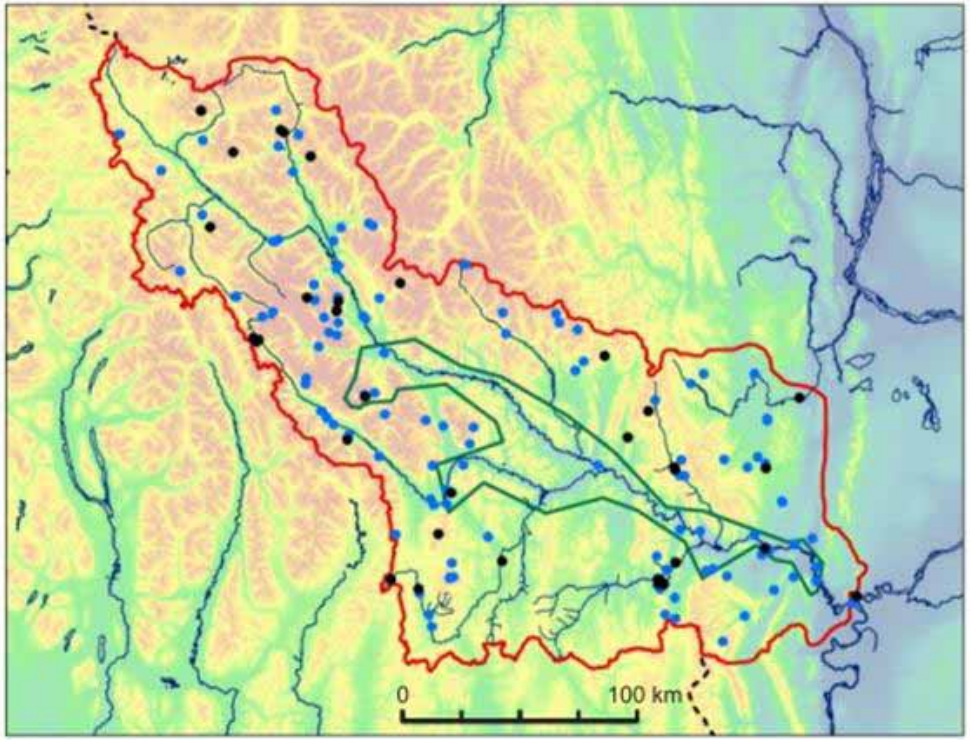


stream sediment samples
legacy (MERA1 – 1089)
new (MERA2) 1374
total 2463

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

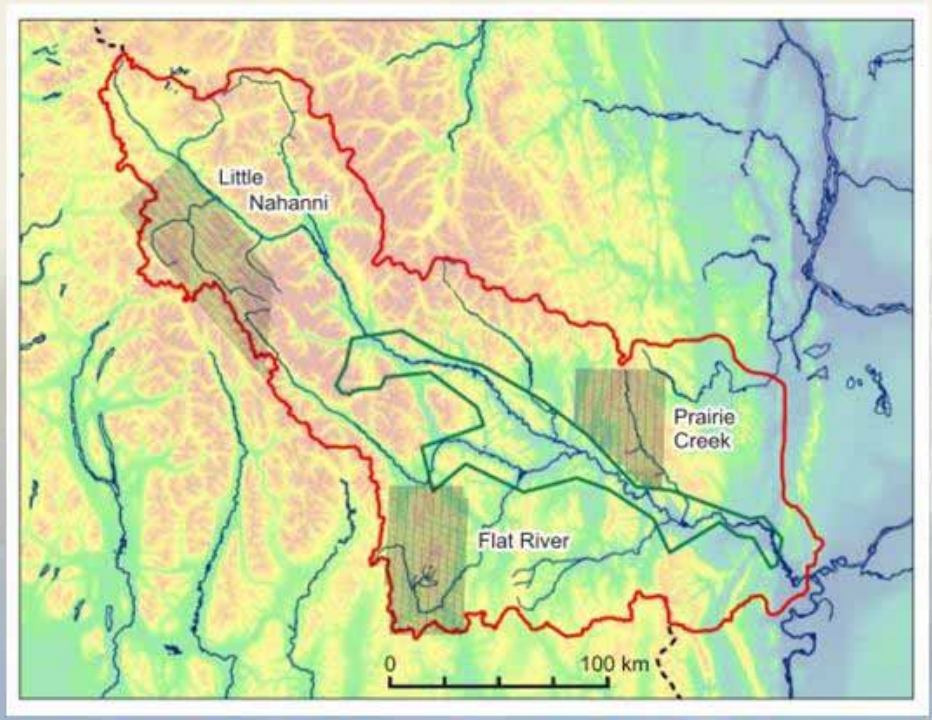
Spring water samples

- legacy (MERA1 – 127)
- new (MERA2 95)
- total samples 222

- 157 different spring locations
- 65 duplicates / resampled

222 samples

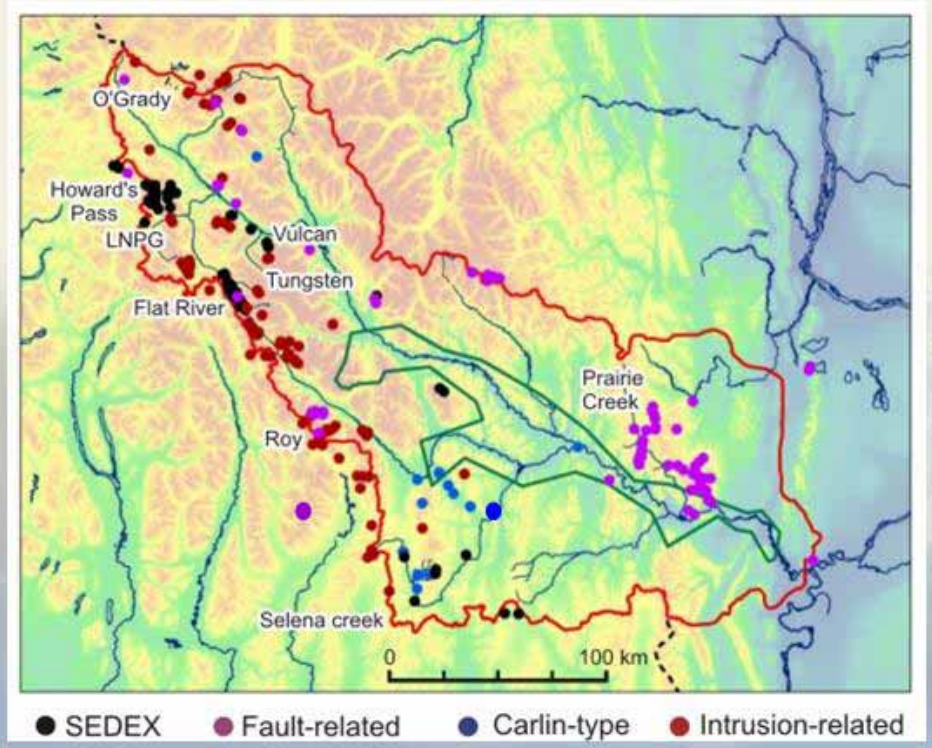
MERA 2 – Airborne geophysics



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

Geophysical Data Centre, Geological Survey of Canada

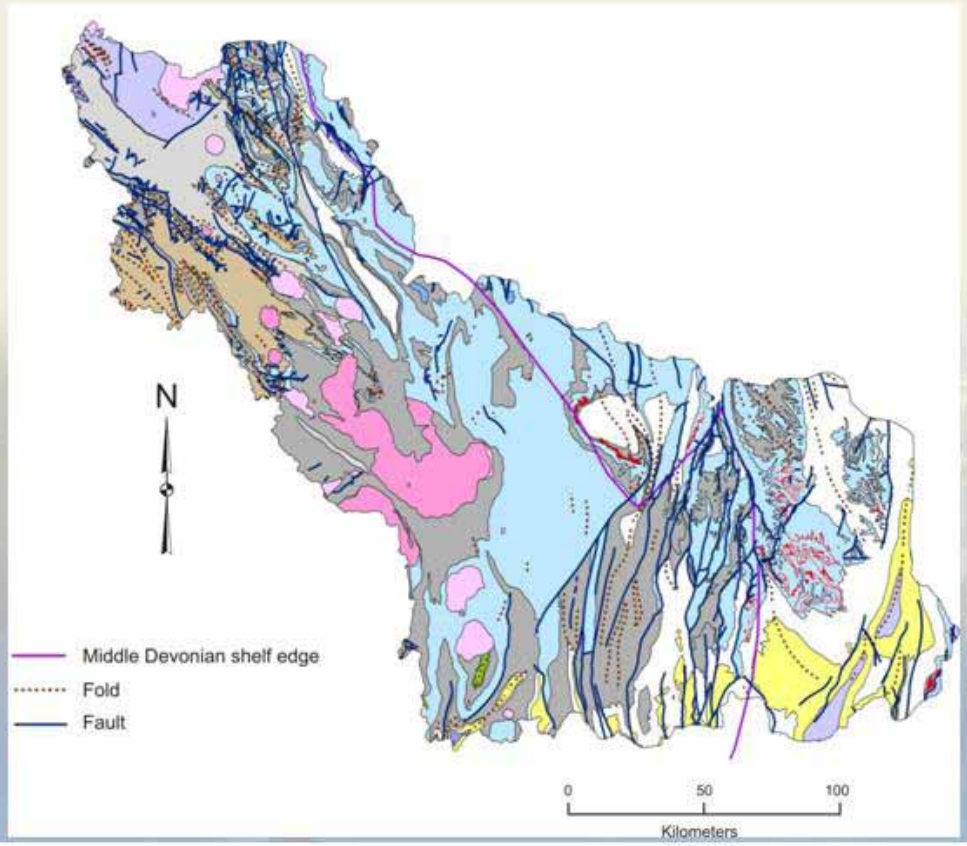
MERA 2 – Mineral Occurrence Data



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

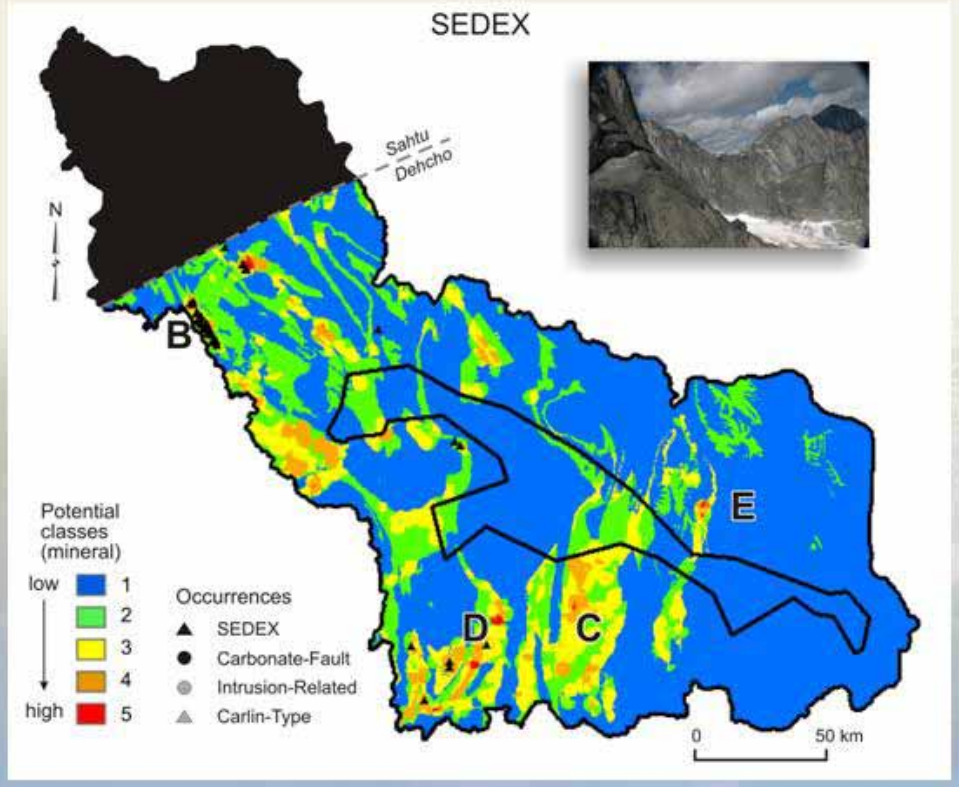
NORMIN database, Department of Indian Affairs and Northern Development

MERA 2 – Bedrock Geology



- **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.**

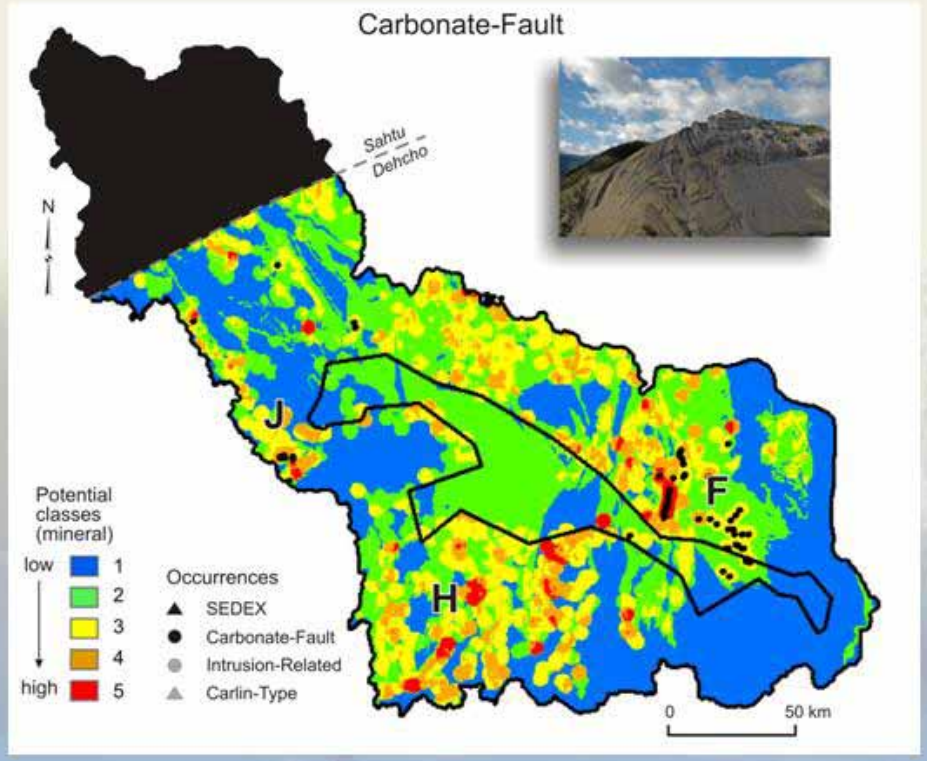
SEDEX potential map



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



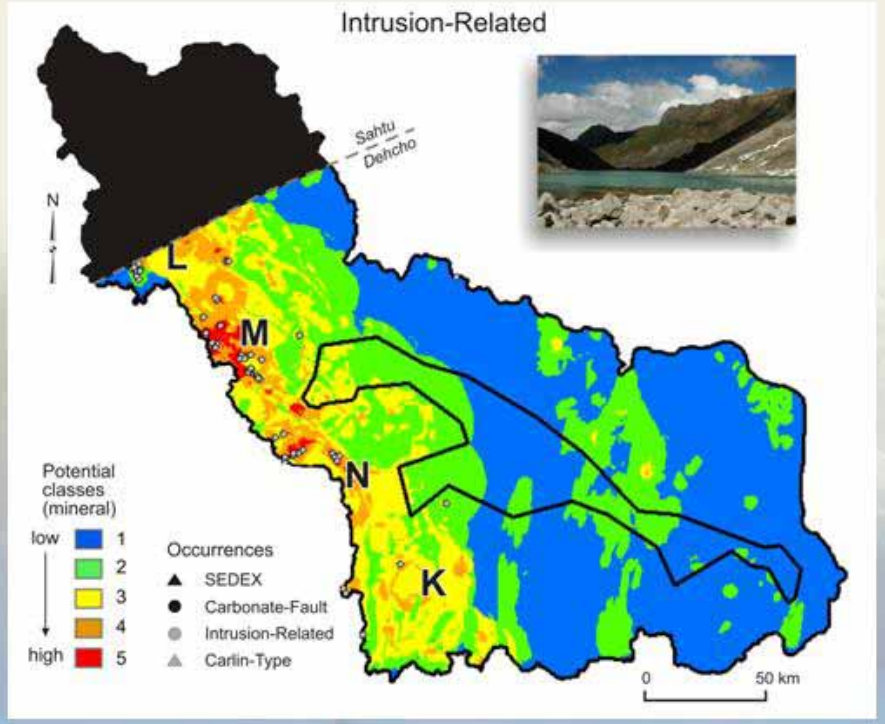
Carbonate-hosted base-metals associated with faults (Carbonate-fault)

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



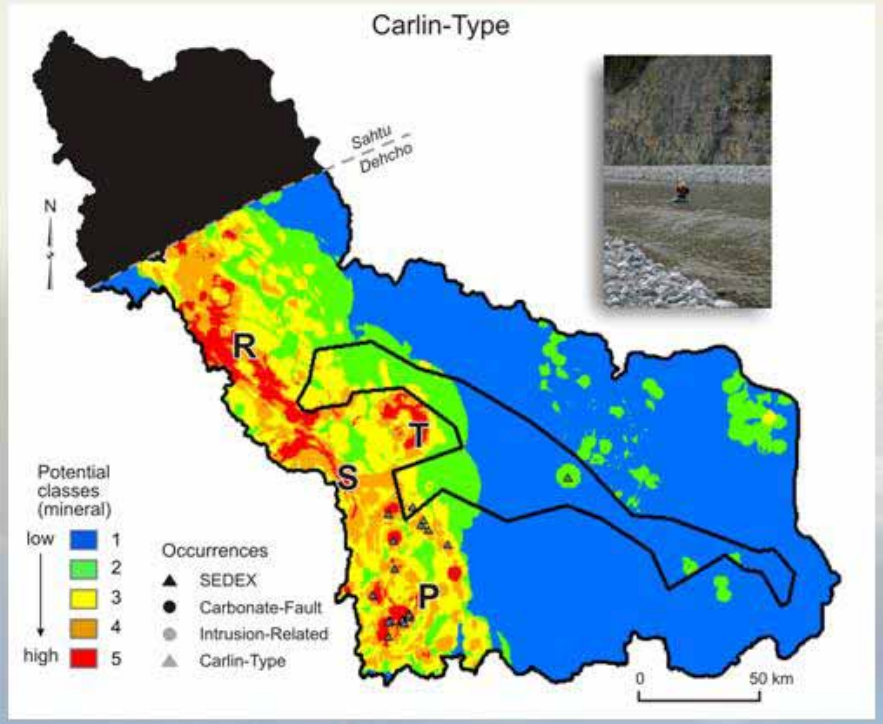
Intrusion-related (includes rare metals, gemstones, and skarn tungesten and base metals)

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



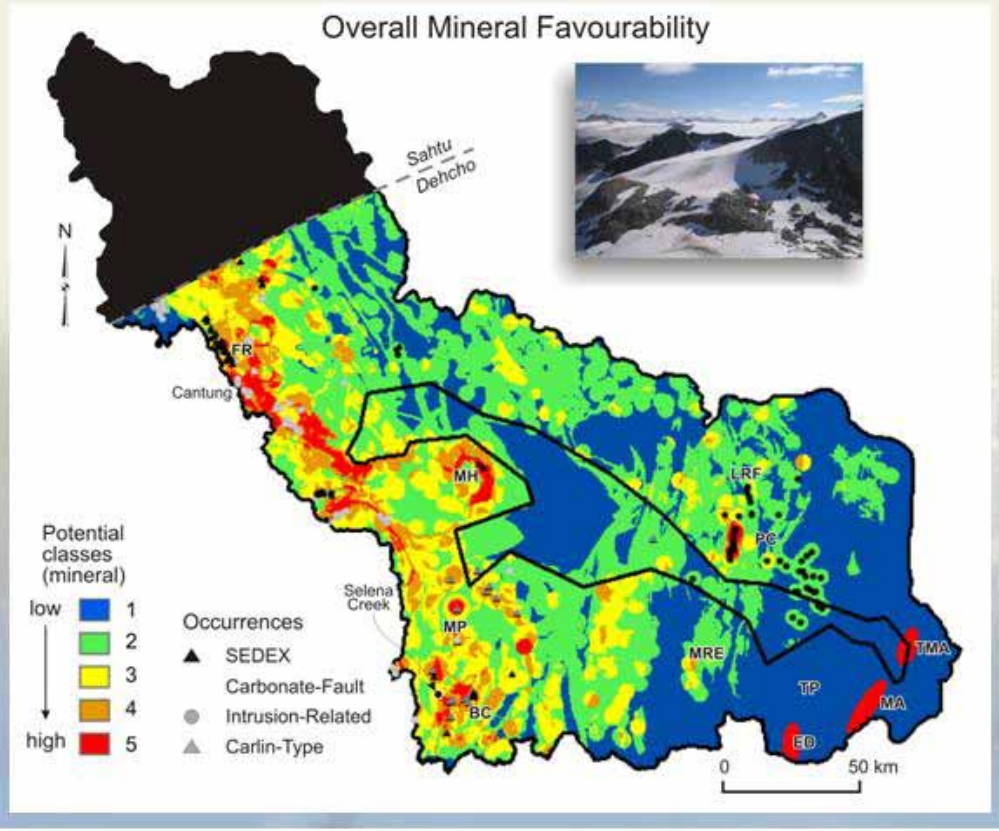
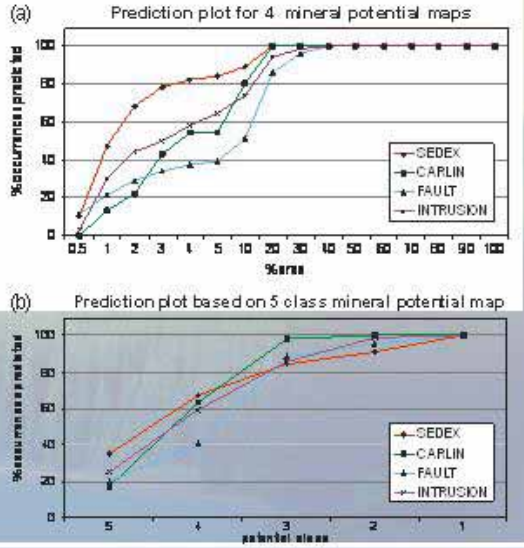
Placer and/or lode gold (Carlin-type)

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



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