

Support

- Government of Nunavut **Summer Student Employment Equity Program (SSEEP)**
- Canadian Northern Economic Development Agency (CanNor) **IDEANorth Program**

Presentation Outline

- **Discovery**
- **Exploration history**
- **Copper significance**
- **Nunavut copper occurrences**
- **Geological environments and examples**

Copper Discovery

Kitlinermiut (Copper Inuit).

Samuel Hearne (1771) Coppermine River region

Canadian Arctic Expedition (1913-1916) - Diamond Jenness

Historic use as arrow and spear tips, ulu, knives, ornamental and cultural objects.

Examples



Images source: Canadian Museum of History



Image source: Canadian Museum of History

Exploration History in Nunavut

Localities of copper (sulfide) minerals.
documented in the Kitikmeot 1910s-1940s.

Other occurrences in the Kivalliq 1950s.

Exploration drilling and sampling 1940s-1980s.

Fewer projects in 1990s.

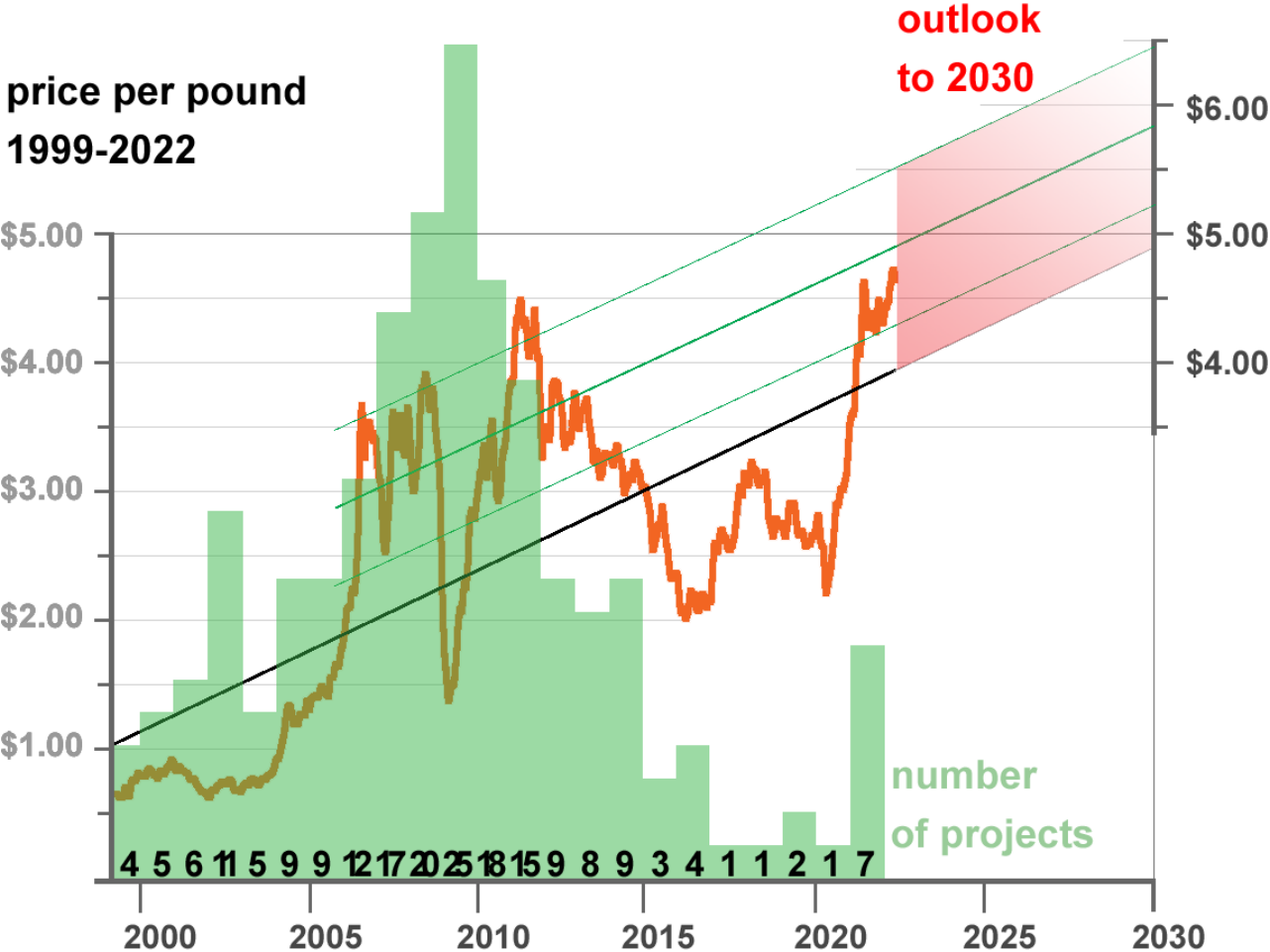
Importance of Copper

Core use in electrical infrastructure and electronic products.

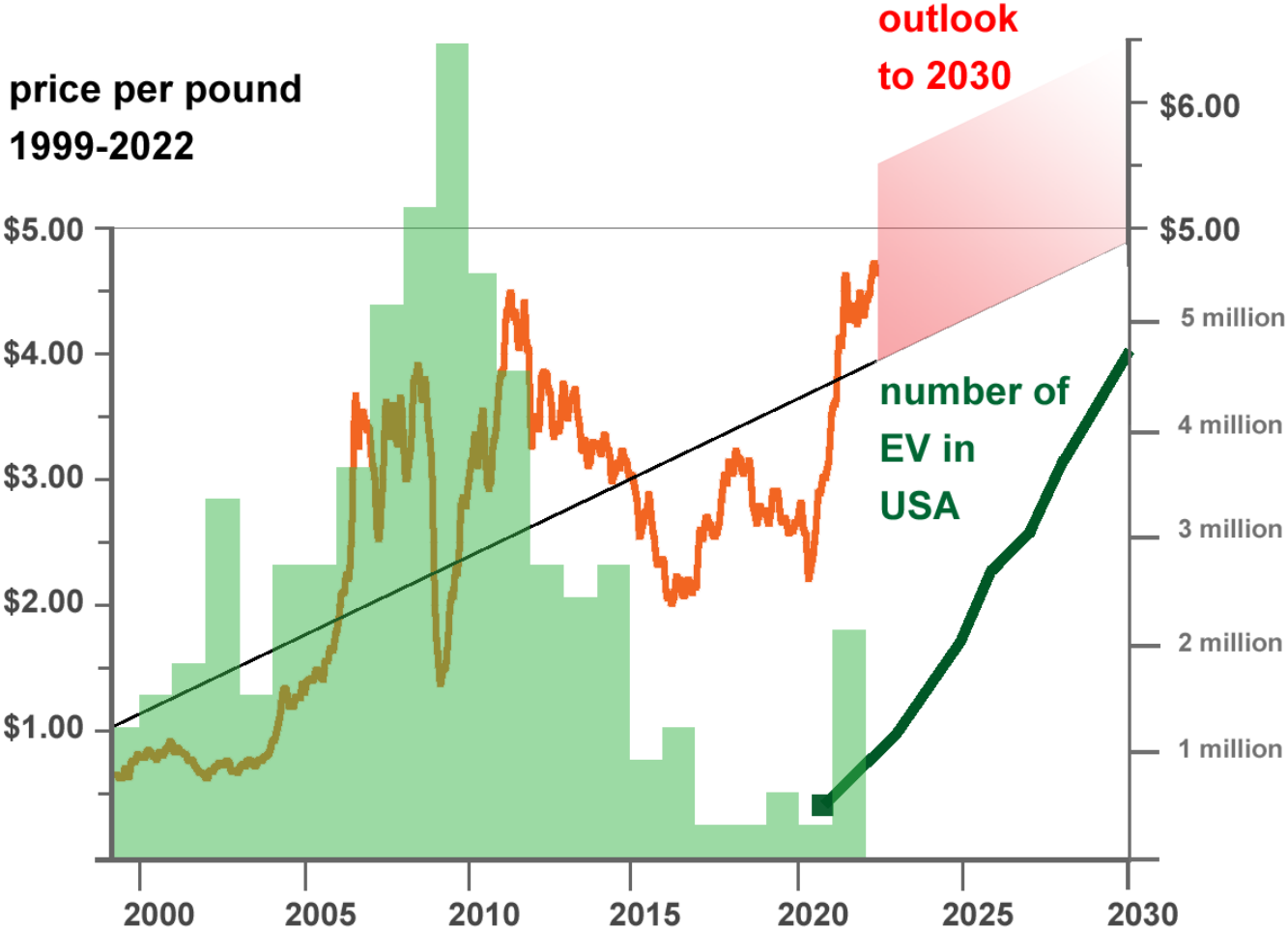
Few substitutions possible.

Worldwide demand is on the rise with increasing electrification.

Copper Price and Trend

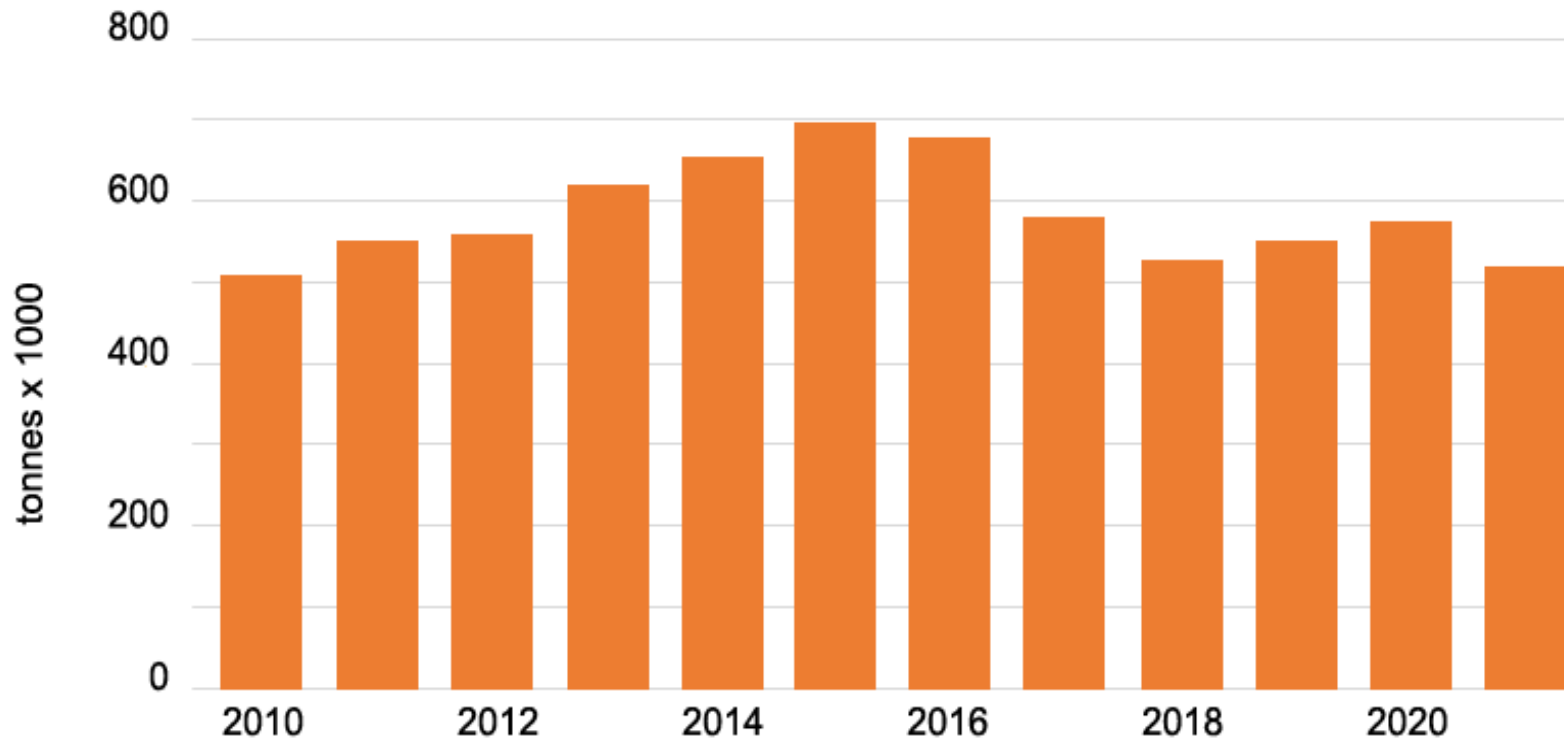


Copper Price and Trend



Canadian Copper Production

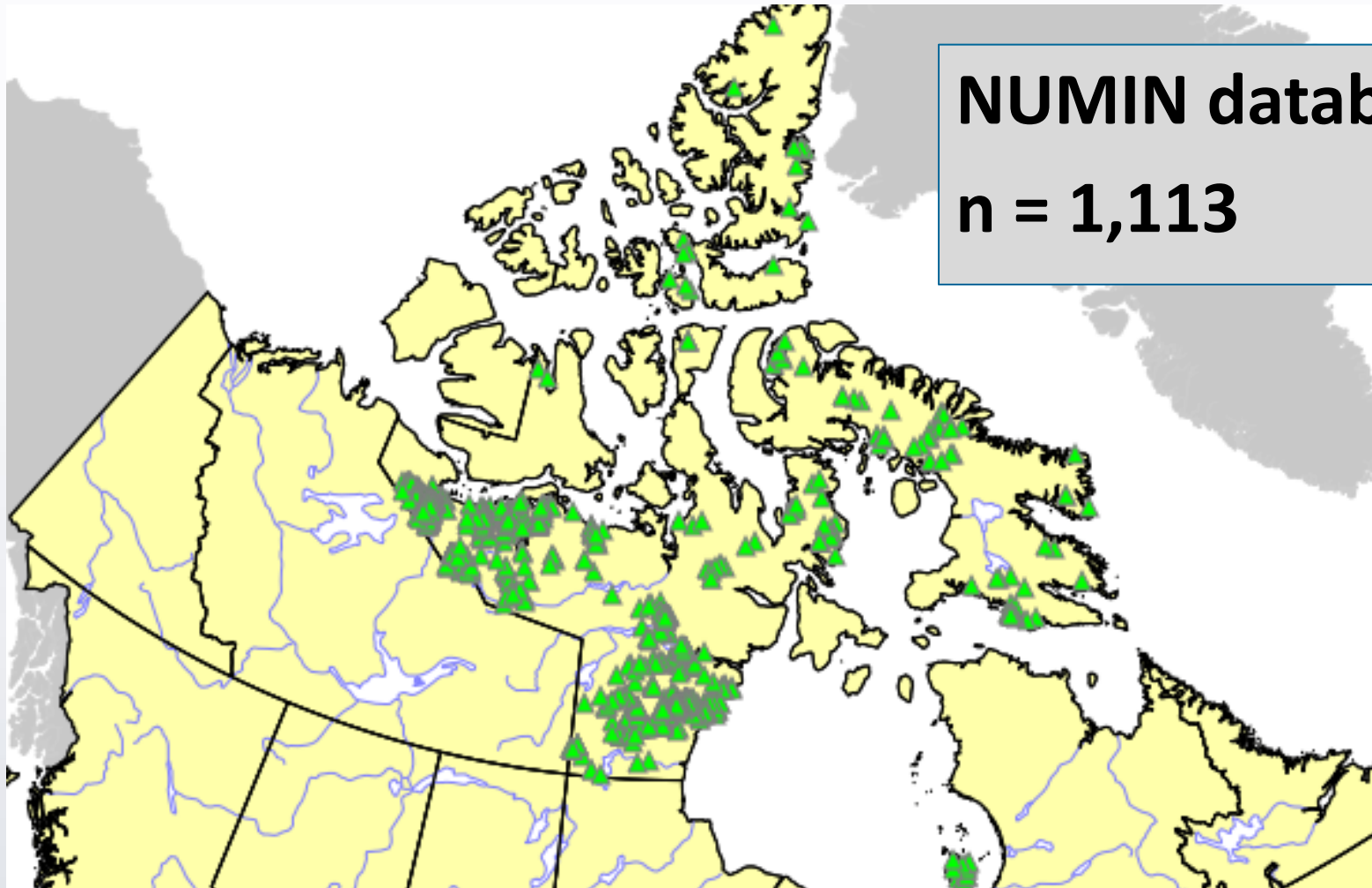
Decline of 29,000 tonnes annually since 2015



Nunavut Copper Occurrences

- NUMIN database contains 1,113 recorded copper mineral occurrences.
- 521 showings $> 0.2\%$ Cu (2,000 ppm)
- Nunavut hosts a large number of significant occurrences. Over 50 are greater than 10% Cu.
- Under-explored and undeveloped.

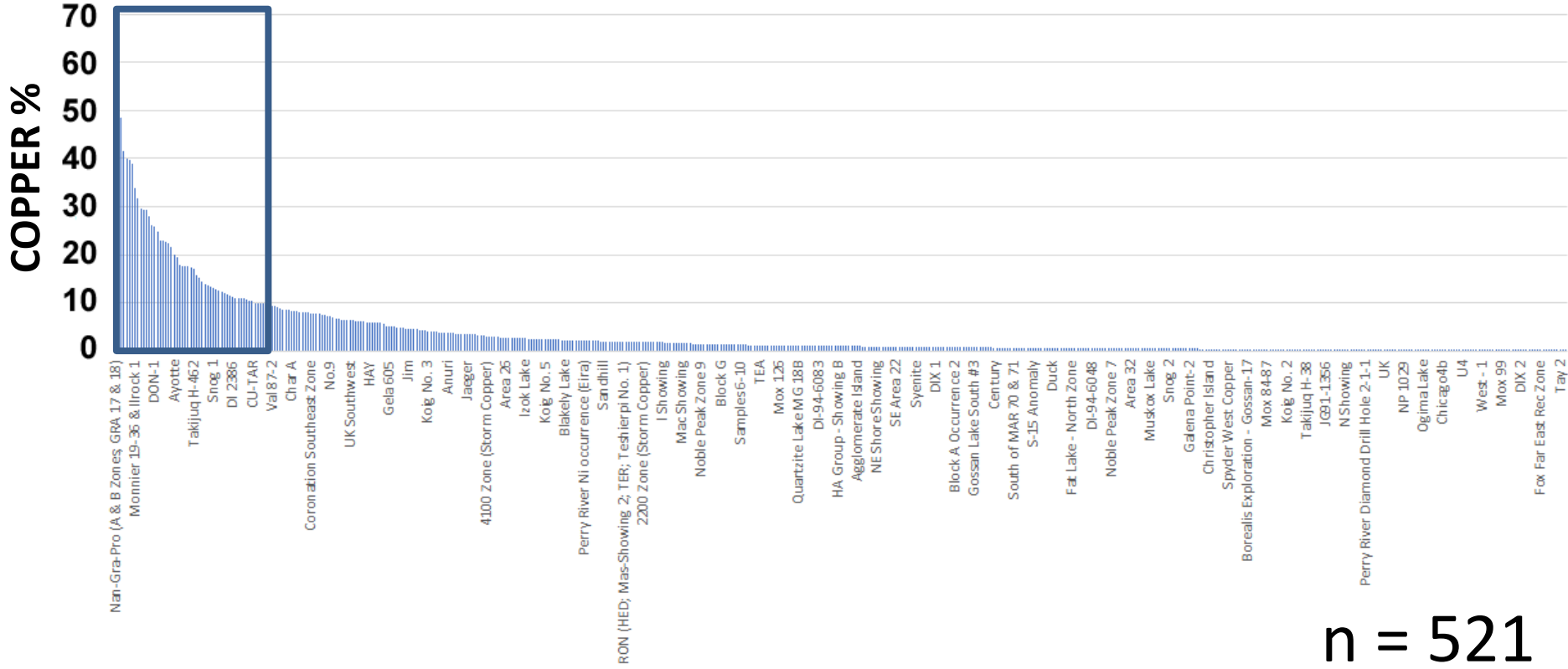
Nunavut Copper Occurrences



NUMIN database
n = 1,113

Ranked Distribution

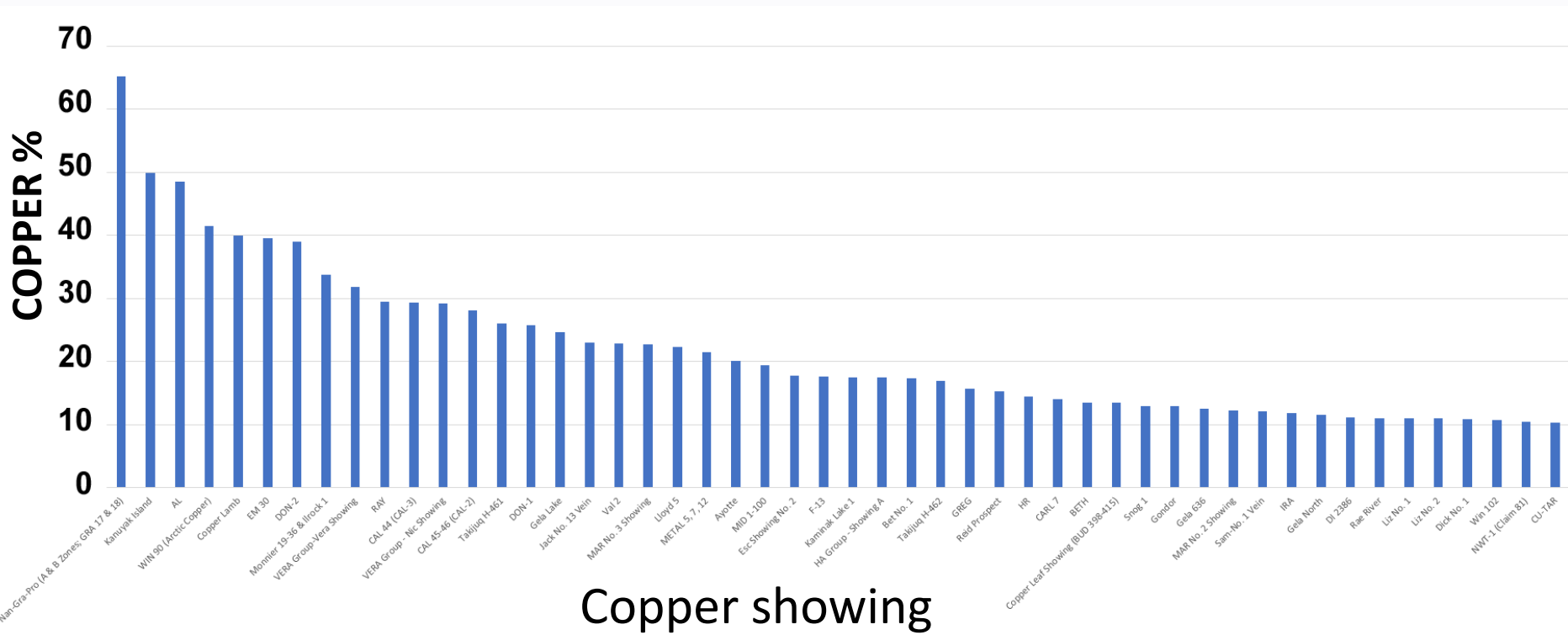
Copper showings (> 0.2%)



n = 521



Top 50



> 10%



Geological Environments

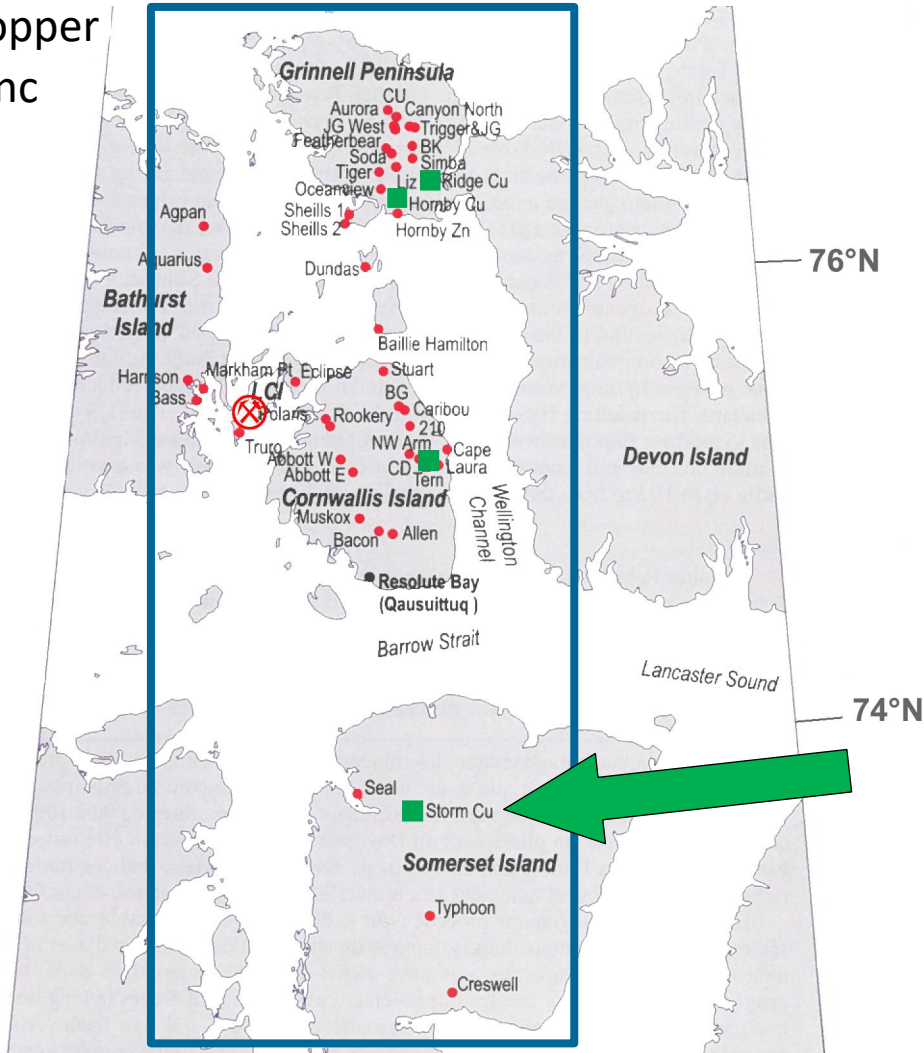
1. Magmatic massive sulfides
2. Volcanogenic massive sulfides
3. Sediment-hosted stratiform

Recent Exploration and Development Projects

- Hackett River (Glencore)
- Izok Lake and High Lake (MMG)
- Storm (Aston Bay Holdings) 
- Coppermine River (Kaizen Discovery)
- Arctic Copper (Arctic Copper)
- Ferguson Lake (Canadian North Resources Development)
- Atlas (Anconia Resources)
- Borden (MMG)
- West Melville (Vale)
- Wolverine (Rio Algom)
- Bathurst Inlet
- Muskox, MacGregor Lake
- Heninga Lake (Zimtu/Tugak)

Storm Copper Project

- copper
- zinc



Aston Bay Holdings

Copper Mineralization

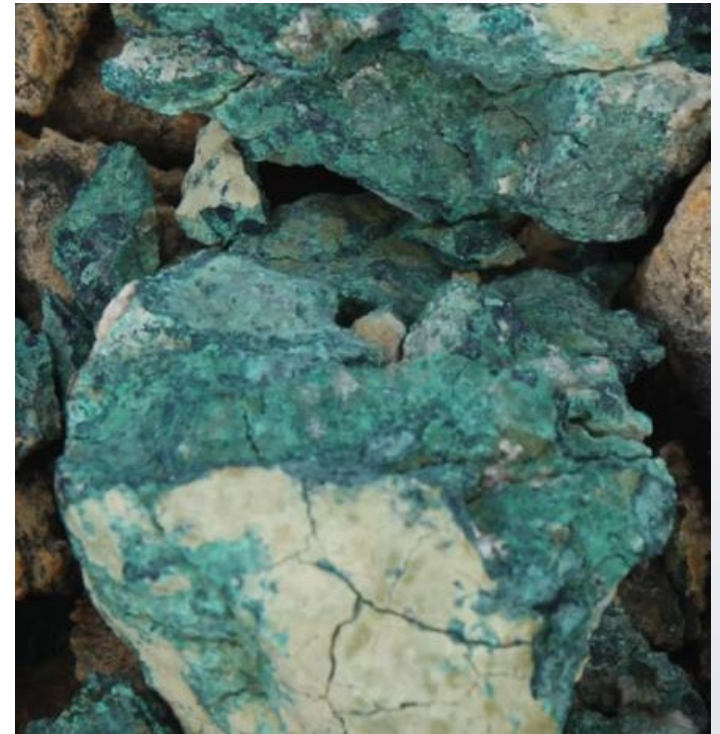
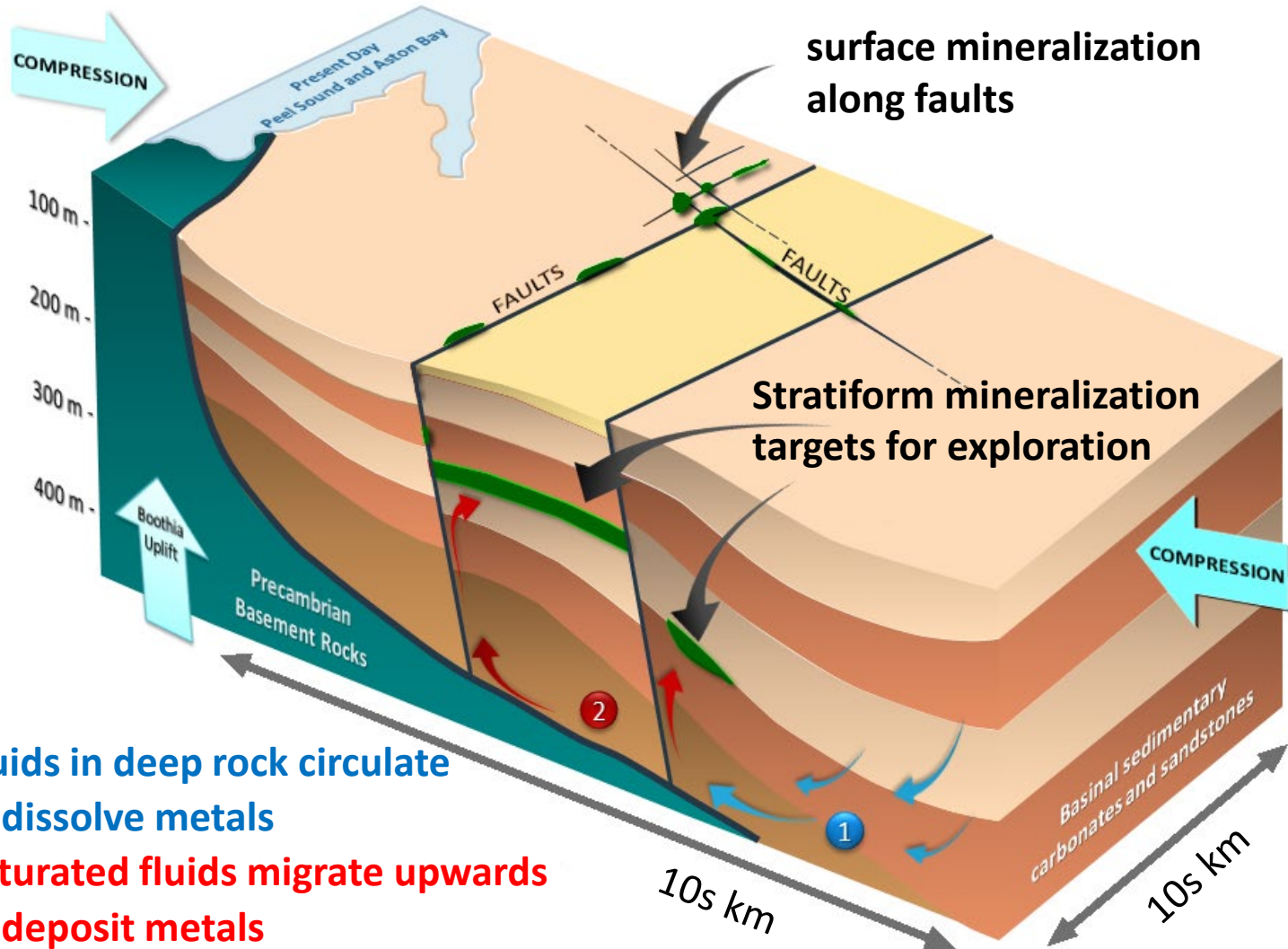


Image source: Courtesy Aston Bay Holdings



Storm Copper Mineralization Model



- 1 Fluids in deep rock circulate and dissolve metals
- 2 Saturated fluids migrate upwards and deposit metals

Image source: Courtesy Aston Bay Holdings

Projects with Resources

indicated and inferred

Hackett River (Glencore Xstrata plc) Zn-Pb-Cu-Ag-Au deposit
87 Mt at 0.4% Cu **\$3.2 billion**

Ferguson Lake (Canadian North Resources Inc.) Ni-Cu-Co-PGE
deposit
30.2 Mt at 1.0% Cu **\$2.8 billion**

Izok Lake (MMG Resources) Zn-Cu-Pb-Ag-Au deposit
14.6 Mt at 2.3% Cu **\$3.1 billion**

High Lake (MMG Resources) Zn-Cu-Pb-Ag-Au deposit
14.0 million tonnes at 2.5% Cu **\$3.2 billion**
using \$4.15/lb as the current price...



Benefits and Outlook

Investment in copper and other critical metals would diversify Nunavut's mining sector.

Nunavut is prospective for high grade copper; potential for further exploration.