

Gold as an indicator mineral, and integration with other exploration geochemical techniques



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Two linked webinars

Week 1 (Rob).

The nature of gold- heterogeneity –
alloy variation, inclusions, trace elements.
Environments in which these characteristics are formed.

Methodologies to characterize natural gold
Graphical approaches to data depiction: alloy and inclusions

Where can we use this knowledge?

Exploration scenarios

Signatures of gold from different deposit types (based on examples from Yukon, BC)

Ore deposit studies

Using gold to inform detailed paragenetic development

Week 2 – Norman and Rob

1. Heavy minerals as indicators of location and styles of auriferous mineralization (NM)
2. Sampling methodologies: differences between collecting for gold studies (RC) and for heavy mineral concentrate mineralogy and fine-fraction sediment geochemistry (NM)
3. Case study: Integrated gold compositional and heavy mineral concentrate studies in SE Ireland (NM)
4. What could possibly go wrong? : a critique of the methodology (authigenic Au, sampling / analytical issues, incomplete data sets) (RC)
5. Future directions
 - gold compositions (RC)
 - development of integrated exploration approaches (NM)

Biographies: 1, Rob

Western Areas Gold Mine, South Africa



Characterizing gold signatures: UK



Gold signatures N. American Cordillera: Yukon, BC, Alaska



Elswewhere: Namibia, Norway



Gold exploration and undergraduate field teaching

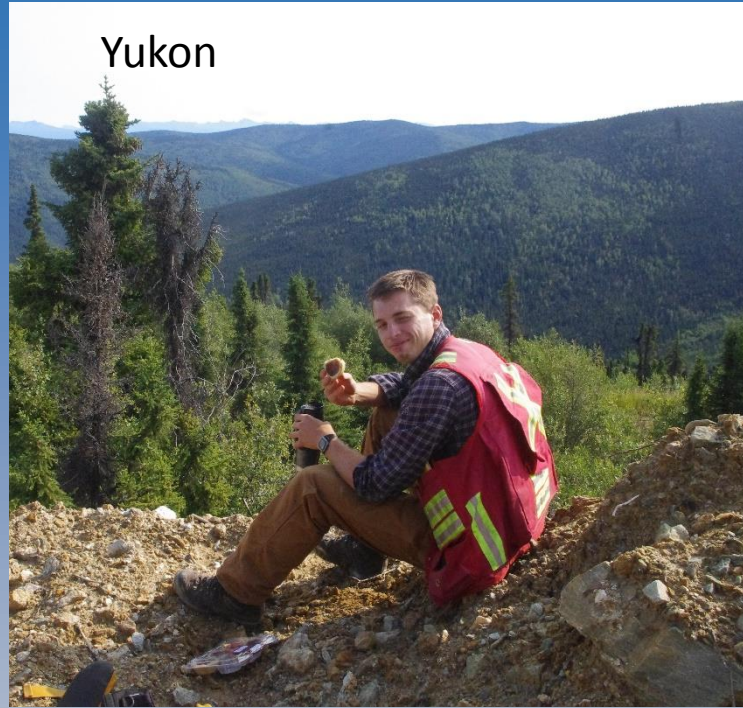


PhD students

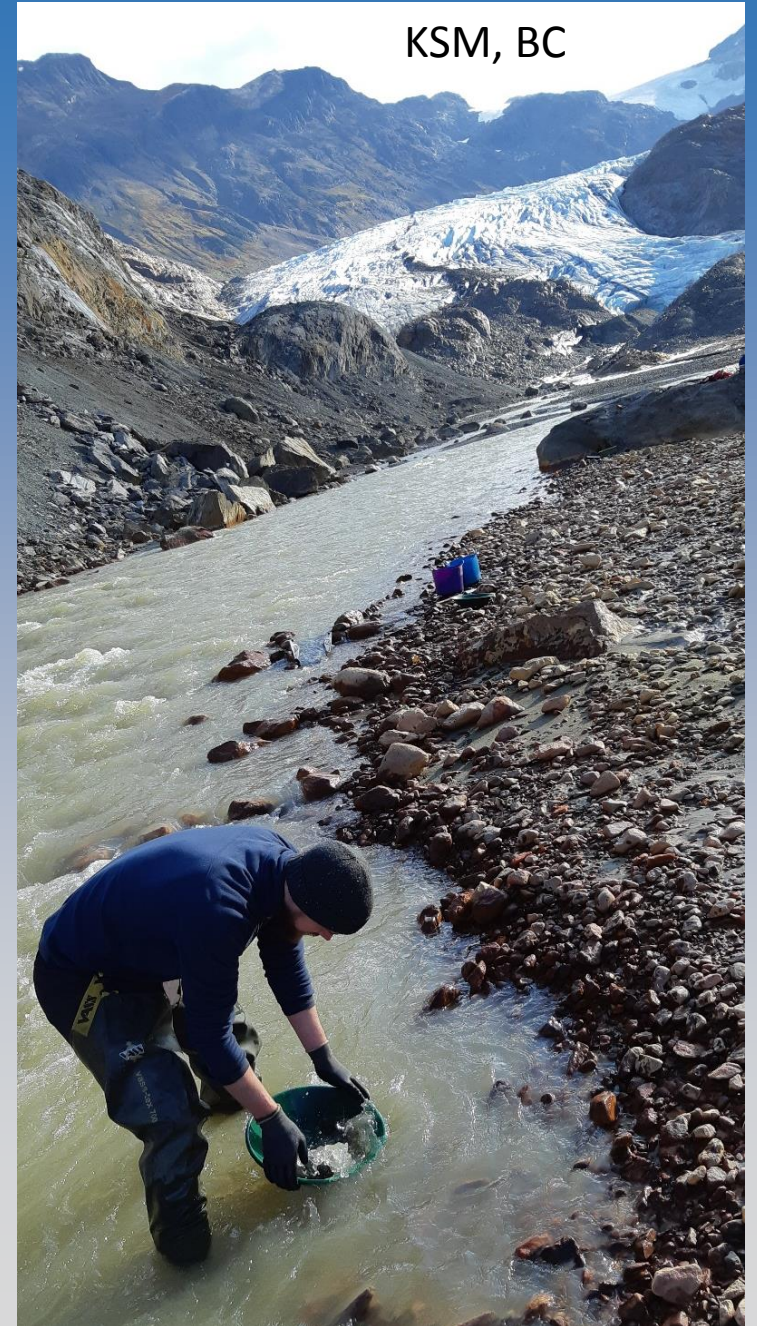
Namibia



Yukon



KSM, BC



Central Scotland

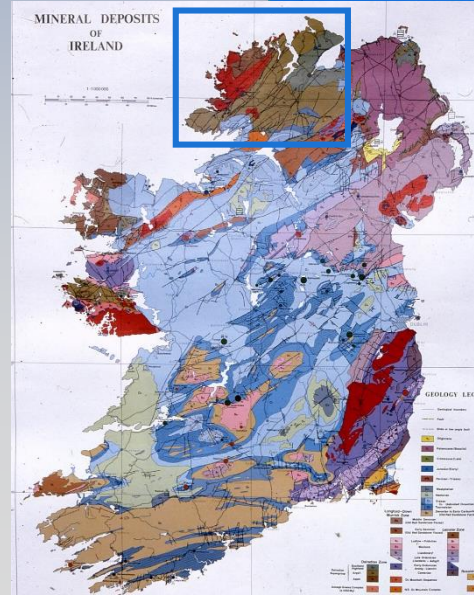
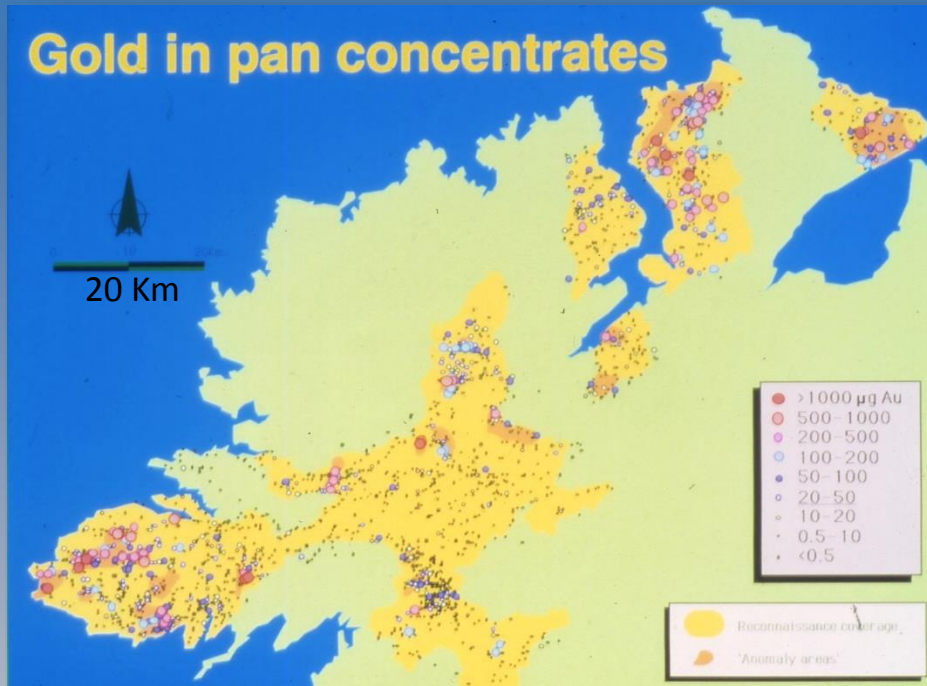


Back to Scotland



Norman's background

Industry: gold exploration in NW Ireland



Chronology of the Donegal Dalradian Project

- 1980/81** AML conduct reconnaissance stream sediment sampling for base metals
- 1982** J.V. formed with Cluff & Silvermines. Follow-up stream & soil sampling programmes
- 1983** Base metal targets tested by geophysics, deep overburden geochemistry, detailed mapping & drilling
- 1984** CSA take over as project managers
- 1985** Initiation of gold exploration; orientation studies
- 1986-7** North West Exploration farm into project as operators. Reconnaissance stream panning extends over 1/3 of Donegal, extensive 'anomaly areas' are outlined
- 1988-9** Follow-up exploration identifies 5 prospects with bedrock gold mineralization, investigated by trenching & drilling

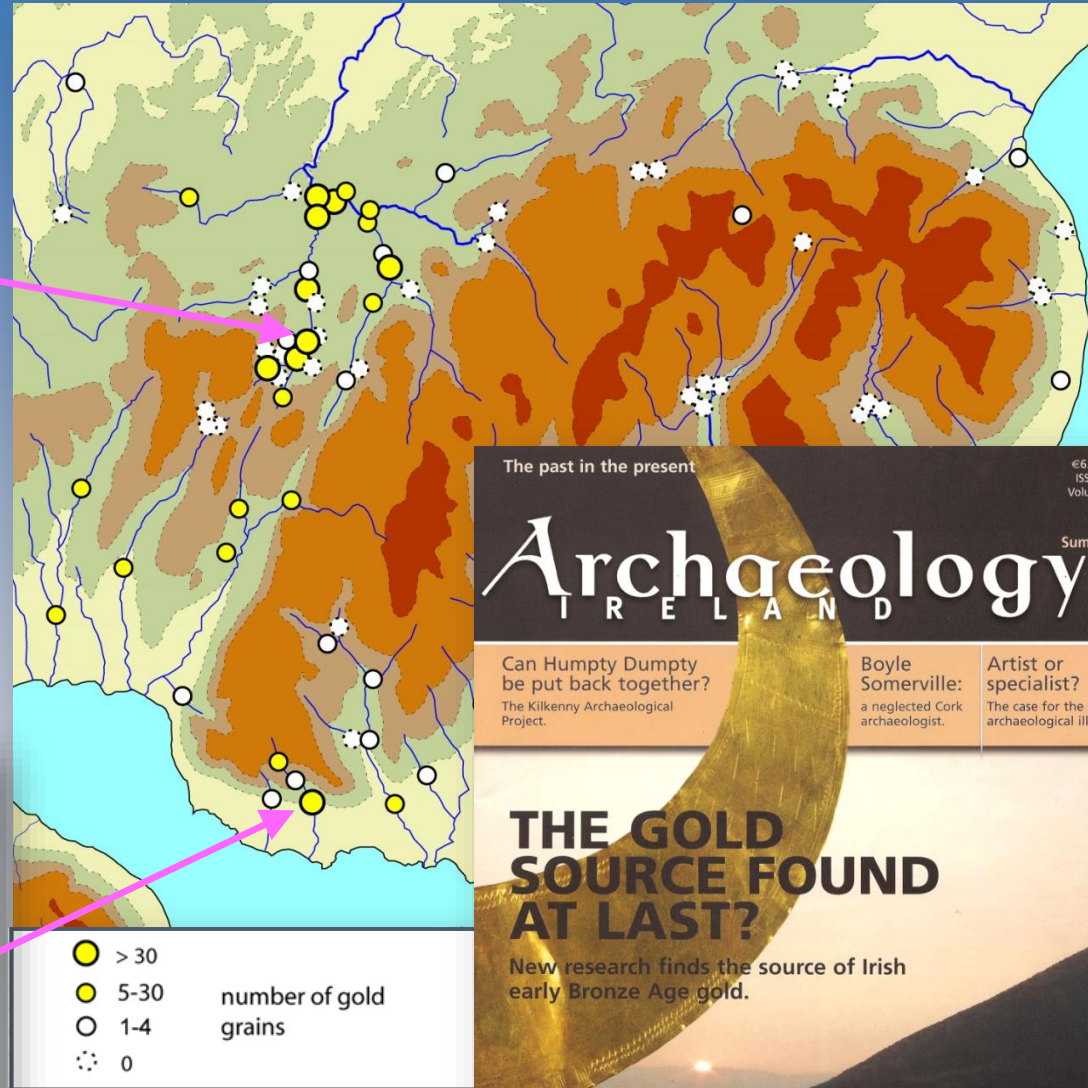


Characterizing gold signatures: Mourne Mountains, N. Ireland

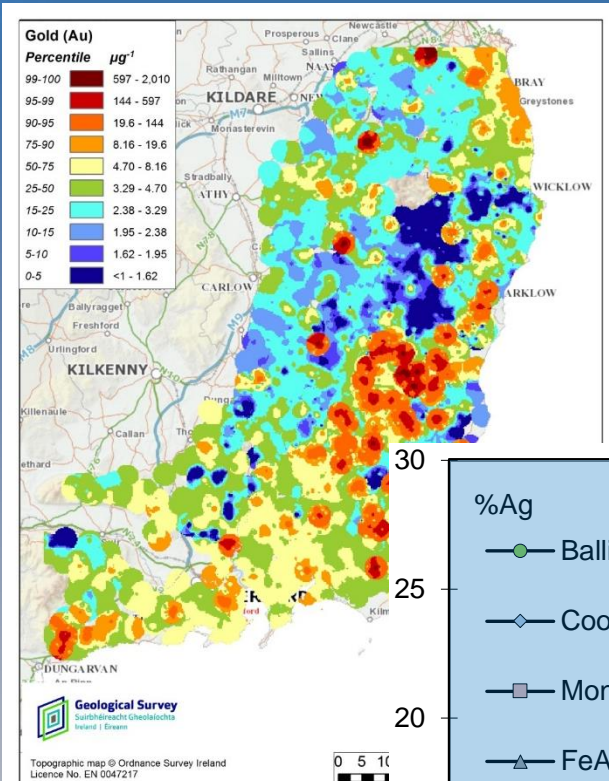


Leitrim River: flaky, far-travelled

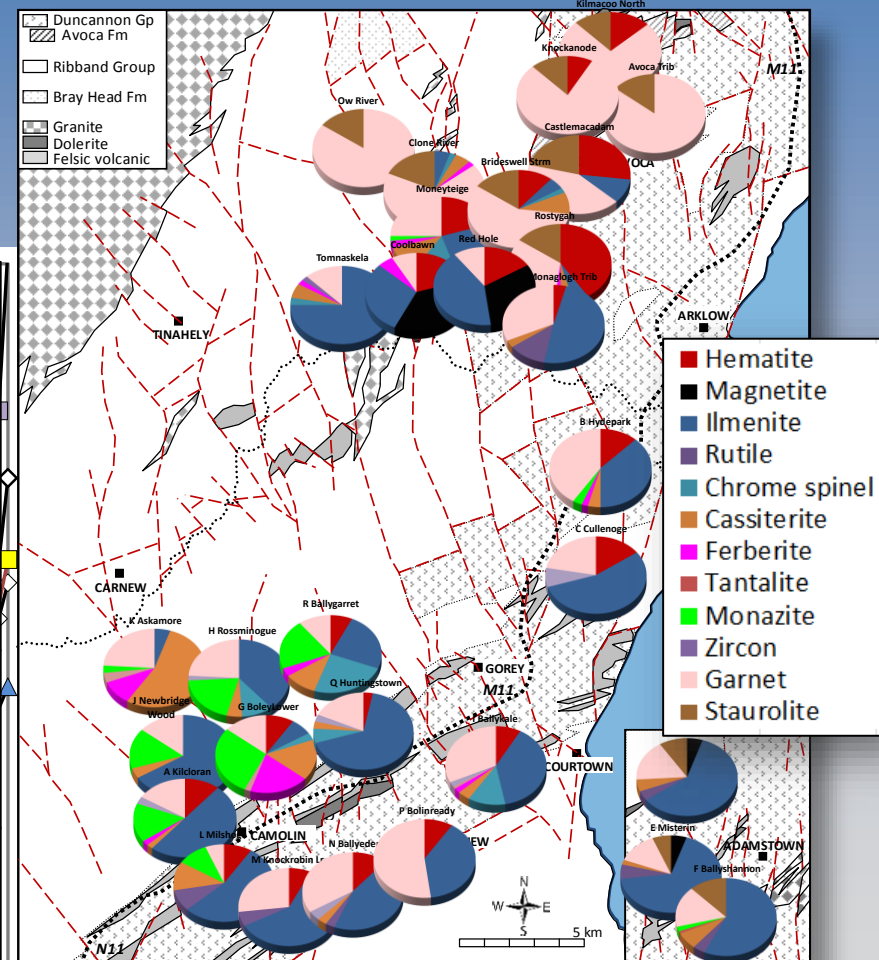
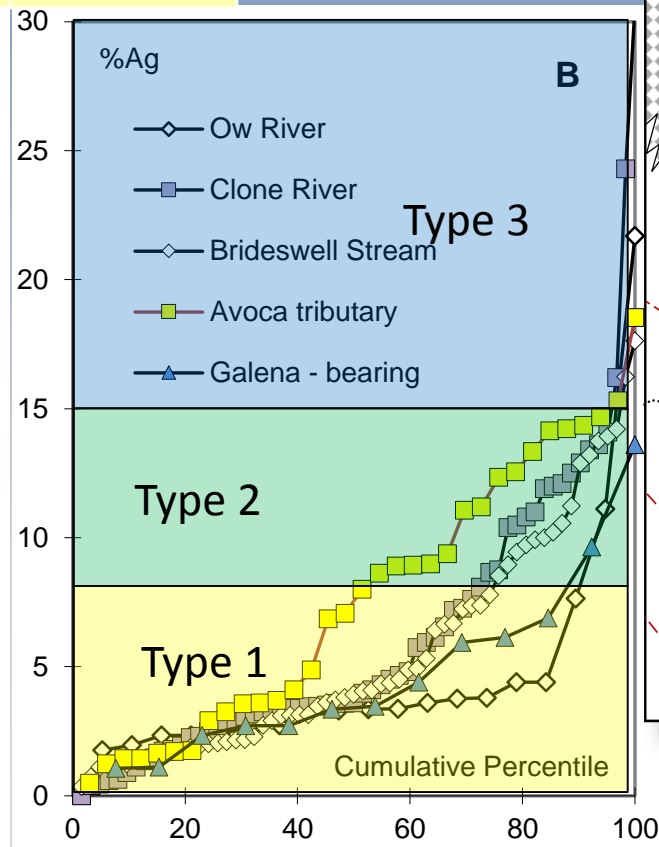
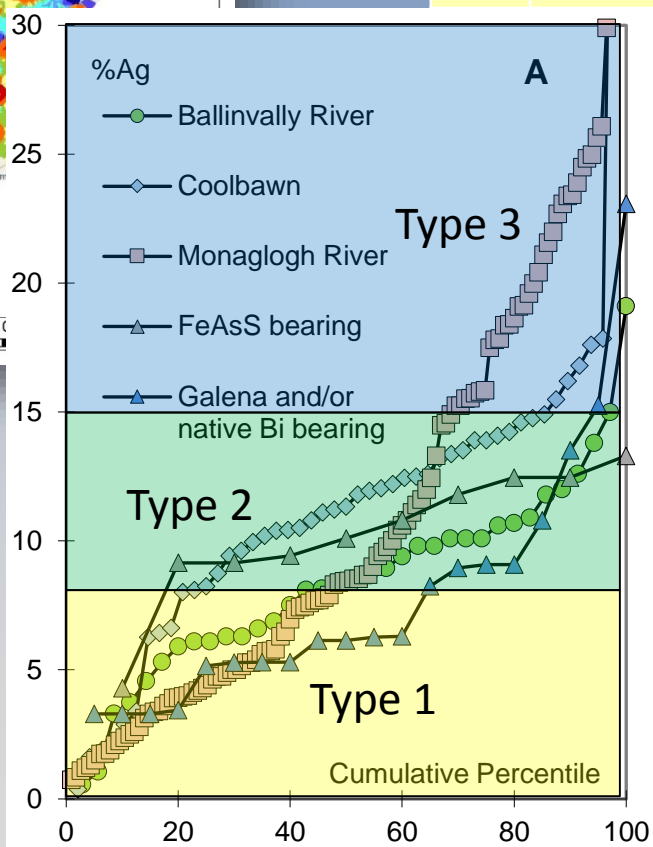
Ballincurry: angular, close to source



Characterizing gold signatures: Wicklow-Wexford, SE Ireland



Type	%Ag range in alloy	Defining inclusion mineralogy
3	>15	arsenopyrite
2	9-15	galena, arsenopyrite
1	0-9	Galena \pm native bismuth



BSc students (= slaves)



Back to the Mourne Mountains

