1–2: Epithermal Pb–Zn–Cu(–Au) deposits in the Baia Mare district, Eastern Carpathians, Romania

Baia Mare district: Lat. 47°40' N, Long. 23°34' E

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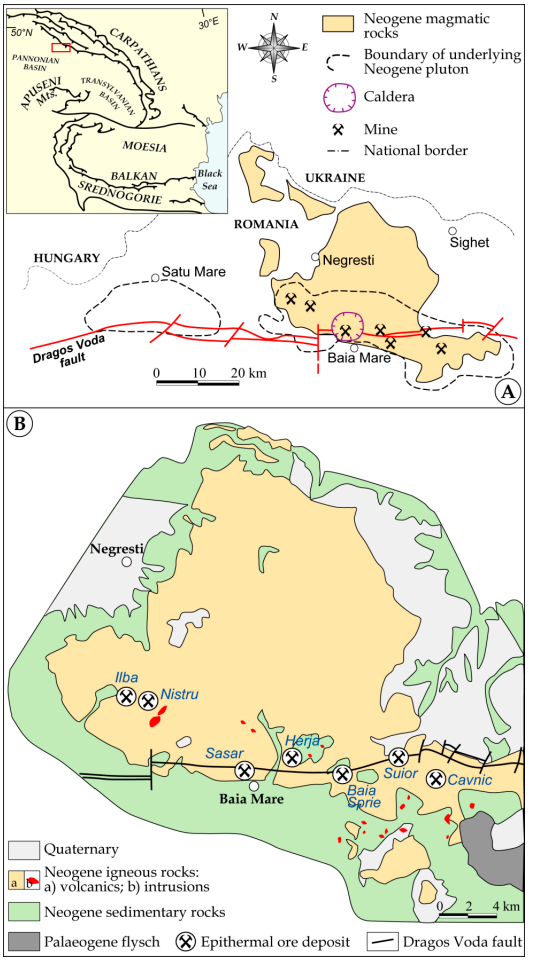

Fig. 1(A). Schematic map of Baia Mare district showing the position of the major Dragos Voda transform fault system and the boundaries of the underlying Neogene plutons recognized by geophysical studies; (B) Simplified geological map showing the distribution of the major epithermal deposits, modified from Crahmaliuc et al. (1995), Bailly et al. (1998) and Grancea et al. (2002).

Producing mining district: the Baia Mare district (NW Romania) includes several important epithermal gold–polymetallic ore deposits: from W to E, Ilba, Nistru, Sasar, Herja, Baia Sprie, Suior, Cavnic (Fig. 1). Miocene magmatism and related mineralization are controlled by a major E–W transform zone, the Dragos Voda strike-slip fault.
Mining: mainly underground, small open pits.
Commodities: Zn, Pb, Cu, Au, Ag.
Annual production: Precise data about past and present production are unavailable.
Resources: Cavnic: 5.9 Mt @ 2%Zn, 1.5%Pb, 27 g/t Ag, 0.4 g/t Au. Suior: 9.3 Mt @ 2.3%Zn, 1.4%Pb, 36 g/t Ag, 3 g/t Au. Baia Sprie: 4.3 Mt @ 1.2%Zn, 1.0%Pb, 0.6 %Cu, 29 g/t Ag, 0.4 g/t Au. Herja: 1 Mt @ 5.2%Zn, 3.5%Pb, 47 g/t Ag, 0.4 g/t Au. Sasar: 0.15 Mt @ 3.25%Zn, 1.2%Pb, 18 g/t Ag, 1.5 g/t Au. Nistru: 1.5 Mt @ 1.5%Zn, 0.8%Pb, 28 g/t Ag, 0.6 g/t Au. Ilba–Handal: 0.3 Mt @ 0.6%Cu, 11 g/t Ag, 0.3 g/t Au.
Type: Epithermal low- to intermediate-sulphidation base-metal–gold deposits.
Morphology: Epithermal mineralization shows a wide variety of textures. It mainly forms veins with typical banded and cockade structures, cavity filling and druses. Minor dissemination and stockwork-type mineralization are also present (Lang, 1979). In the Baia Sprie (Fig. 2), Cavnic and Sasar deposits, spectacular breccia pipe and breccia dyke structures have been described by Tămaş (2002).
Age of mineralization: Mineralization took place during two main episodes: 11.5 to 10.0 Ma in the western part of the district (Ilba, Nistru and Sasar), and 9.4 to 7.9 Ma in the eastern part (Herja, Baia Sprie, Suior, Cavnic), between 0.5 and 1.5 million years after the emplacement of the host rocks (Lang et al., 1994 and references therein).

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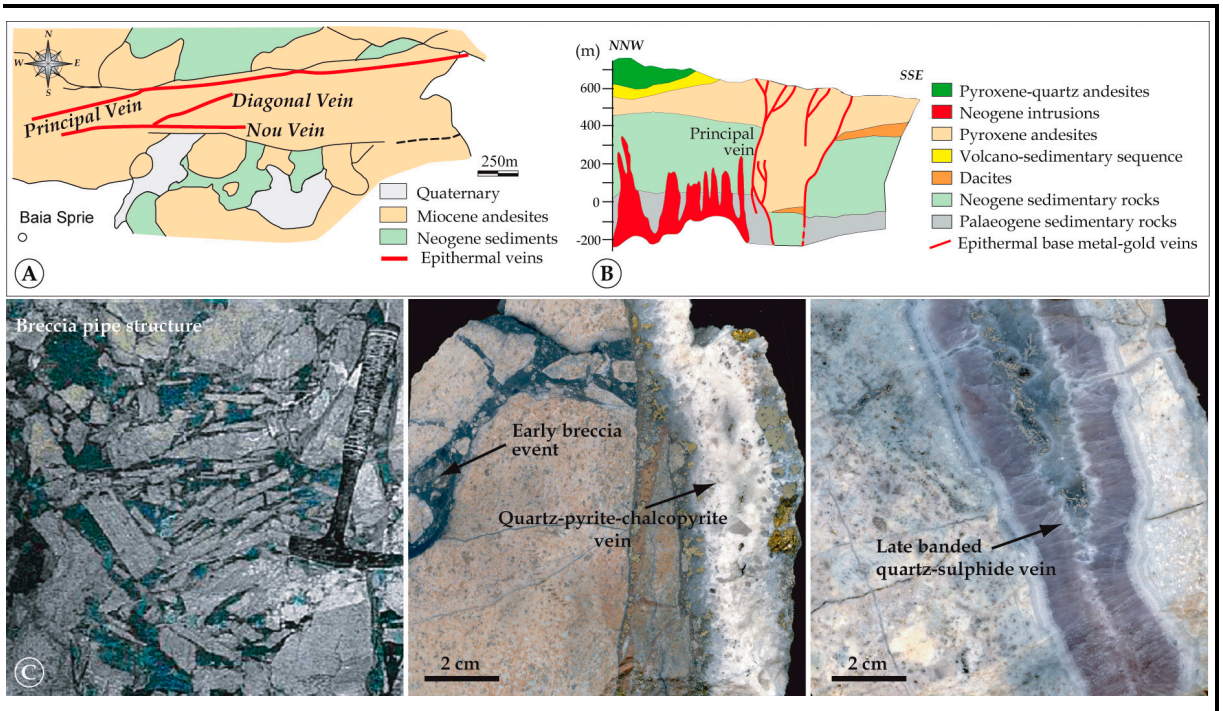

Fig. 2. Geology of the Baia Sprie ore deposit: (A) Simplified geological map of the Baia Sprie zone; (B) Schematic NNW–SSE cross-section, modified from Borcos et al. (1975) and Grancea et al. (2002); (C) Typical ore textures from the Baia Sprie deposit: early breccia pipe structures and late epithermal quartz–sulphide veins..

Ore minerals: sphalerite, galena, chalcopyrite, gold; subordinate Sb-, Pb- and Ag-sulphosalts, tungstates.
Alteration: propylitic, adularia–sericite to phyllic alteration, strong silicification.
Nature and age of host rocks: Magmatic activity started with deposition of felsic tuffs and ignimbrites (~14 Ma), followed by basaltic andesites, andesites and dacites (13.4 to 9.0 Ma), and ended with emplacement of small basaltic intrusions (8.0 to 6.9 Ma). The Miocene, predominantly medium-K, calc-alkaline andesitic magmatism has a subduction-related mantle-derived signature with strong crustal contamination.

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