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CADOMIAN-EARLY PALEOZOIC AGES OF THE SEBES-LOTRU TERRANE (SOUTH CARPATHIANS, ROMANIA)

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The basement of the South Carpathians has been mapped as a suite of terranes (Balintoni, 1997), of uncertain protolith and metamorphic ages (Dragusanu and Tanaka, 1999; Ducea, 1999), due to lack of geochronologic data. High grade felsic gneisses and migmatites including metagranites from the Sebes Lotru terrane (Leaota, Fagaras, Iezer and Sebes Mts.) were sampled for zircon U-Pb geochronology, by single crystal multicollector ICP-MS. Age distributions in nine studied rock types are shown in Figure 1.

1. The Sebes-Lotru sequence represents a crustal fragment of Caledonian-Cadomian age, in which have been reworked also Lower Proterozoic detrital zircons.
2. Grenvillian ages are missing, suggesting that this sequence has been generated close to North Africa.
3. The time interval between 400 and 500 Ma (conventionally covering Caledonian events) is well represented. This range can be divided into the following discrete moments of crustal building:
    a. 470-500 Ma
    b. 450-470 Ma
    c. 430-450 Ma
    d. 400-430 Ma
4. Probably the period between 400 and 430 is the one responsible for the linear and ocular migmatic structures.
5. As a matter-of-fact, the zircons from the felsic rocks of the Sebes-Lotru sequence do not keep any record of the Variscan thermo-tectonic events.
6. One can state that, until 430 Ma, the Sebes-Lotru sequence constituted a part of an active continental margin or an island arc near a continent. Possibly around 430 Ma, the Sebes-Lotru terrane collided with an ahead terrane and has been consequently involved in a subduction zone. The closing of U/Pb system in zircons at approximately 400 Ma, even if other isotopic systems record Variscan ages (e.g. Medaris et al., 2003), suggest that the percolation of the rock pile by the igneous/metamorphic fluids stopped at that time.
7. The maximum age concentration can be noticed between 430 and 450 Ma, which means before the terranes collision.
8. The Sebes-Lotru sequence can be seen as a polymetamorphic succession, finally affected by the Variscan Orogeny.

In a general plate tectonics context, the Sebes-Lotru sequence represents a Gondwanan terrane migrating toward Baltica during Paleozoic time.The von Raumer et al (2002) and Fernandez-Suarez et al (2002) models are accepted as a discussion frame for the Proterozoic and Paleozoic history of the Carpathian terranes.

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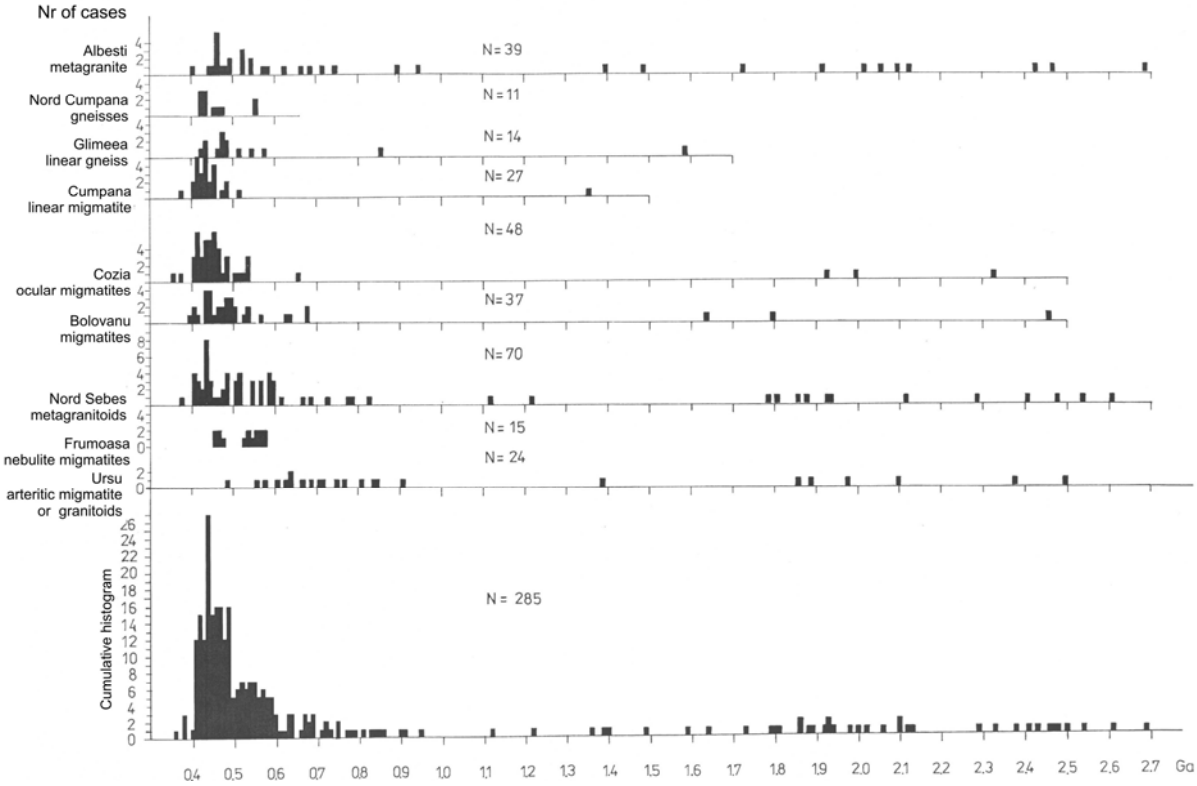

Fig.1 U/Pb ages histogram for quartzo-feldspatic rocks from Sebes-Lotru sequence, South Carpathians, Romania

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