# First SHRIMP U-Th-Pb data on detrital zircons and monazite from ice drillcore, Vostok lake, Antarctica

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Depression of the lake Vostok (Antarctica) is considered to be a part of intracontinental rift zone. Rift nature of depression is emphasised by its 60-80 km width and ca 300 km length and 3-5 km of sediments (deduced from gravity data) filling the lake graben. The rift graben of lake Vostok is interpreted as a segment of more spacious late Jurassic-early Cretaceous rift system. Central Antarctica is covered by thick ice and, in terms of bedrock geology, is still unknown region of the Earth. Recent finding of moraine debris, embedded in the basal level of ice drillcore from Vostok 5G-1 Borehole, presents the first insight into this problem. Data on ice dynamics suggest that captured rock debris should characterize the composition of bedrocks of north-western terrain from the Vostok lake.

Samples from ice drillcore (representing lake bottom sediments) contain thin clay-mica scales, quartz and a variety of fine (5-20 μm) accessory mineral grains (rutile, ilmenite, apatite, monazite, zircon, hornblende, garnet, molebdenite, pyrite, sphalerite), that indicate polygenetic nature of surrounding bedrocks. Only recently, several large (>5 mm) solid clasts of sedimentary rock (siltstone) were found in ice drillcore from depth 3607 m.

In one rock clast from this depth, several tiny (2-30 μm) zircon and monazite grain were found within polycristalline silicate matrix and some of them have been analysed in thin section using SHRIMP-II instrument.

The obtained U-Pb zircon ages range from 0.6 to 1.8 Ga. Because of low uranium in monazite, we decided on $^{232}$Th-$^{208}$Pb age as more appropriate. The obtained age scattering demonstrate sedimentary origin of the studied rock clast (see figure). These age estimations are in a good agreement with well-known tectonic events appearing in the Prince Charles Mountains region and provide no evidences about other rock types involvement in the process of bedrock ice abrasion except those known in the nearby outcropped terrains.