

Assessing microbial life in extreme subglacial Lake Vostok, East Antarctica from accretion ice-lake water boundary samples

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The objective was to estimate microbial content of accretion ice originating from frozen water of the subglacial Lake Vostok buried beneath 4-km thick East Antarctic ice sheet as well as first samples of the lake water (RAE57) with the ultimate goal to discover the life in this extreme icy environment. As a result, the DNA study constrained by Ancient DNA research criteria along with cell enumeration by flow cytometry pointed out that the deepest closest to the ice-water boundary accretion ice (3714m and deeper) contains the very low microbial biomass generating no reliable DNA signals and is comparable with background contamination level (a few cells per ml). The comprehensive analyses of the first lake water samples being frozen on a drill bit at 3769.3m depth upon the subglacial Lake Vostok entry (February 5, 2012) are still in a progress, thus, leaving the possibility the life exists in the most upper water horizon of the lake water column. However, it is worth to notice the preliminary results of flow cytofluorometry and DNA studies of that lake water frozen on a drill bit. The cell concentrations in water (being in a tight contact with drill fluid) were shown to be 167 cells per ml coming up with 4 bacterial phylotypes. Amongst them 3 phylotypes were encountered in our contaminant library [Bulat et al., 2004] while remaining one minor actinobacterial phylotype of *Microbacterium sp.* successfully passing on-site contamination criteria [Bulat & Petit, 2011] nevertheless proved to be originating from the drill fluid (aliphatic hydrocarbons) source. Does it mean the upper lake water horizon is lifeless (no ingenious cell populations) the farther investigations will shortly show.

References

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