Paper ID: 74411
oral
student

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Late breaking abstracts (LBA)

Author: Mr. Marcin Jasiukowicz
Poland, m.jasiukowicz@simle.pl

BEXUS 30, SIMLE STARDUST - INVESTIGATION OF MICROBES IN THE STRATOSPHERE

Abstract

The stratospheric microbiome has been investigated several times using the methods of classical microbiology. In this experiment, we have combined them with some novel approaches including whole-metagenome amplification, MaldiTOFF mass spectrometry and NGS sequencing. The results of the experiment may provide the scientists with knowledge about the mechanisms of survivability of microorganisms in stratospheric conditions such as high doses of UV and cosmic radiation, low temperature and low humidity.

The preliminary results have shown that the stratosphere is very poor in microorganisms in comparison to the regular, tropospheric air. Also the investigation is very difficult due to many problems with both small amounts of biological material and high risk of contamination. However, contamination is possible to control, and, modern methods of biotechnology help in research of low quantities of material.

The experiment was launched from Esrange Space Center in September 2021, on board BEXUS30 balloon mission conducted within REXUS/BEXUS programme.