

**HEAVY METAL IONS IN THE EAST ANTARCTIC SOILS AND VEGETATION**

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Our research established the first values of the mineral element contents in the East Antarctica and focussed mainly on the analysis of heavy metals.

Metal ion concentrations in 30 samples of soil and vegetation gathered from the Mirny, Progress – Stornes Peninsula and Molodezhnaya areas in East Antarctica were determined using the ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry) method, a simultaneous multi-element one.

For a better understanding of the limits of the heavy metal content, 17 microelement contents were analysed, also including the main heavy metals such as: Cd, Mo, Pb, Sb, Cr, Mn and Ni.

As there were two kinds of samples, some containing moss and algae and some containing silicates, the sample decomposition has been performed using two different procedures.

The heavy metal inputs and outputs in the terrestrial environment on a global scale is discussed in order to identify the possible heavy metal contamination sources. The levels of heavy metals in terrestrial ecosystems are discussed, aiming to identify the mechanisms of contamination, such as bioaccumulation and bioamplification. Soil contamination factors and mechanisms are discussed for each group of metals and region. Factors such as metal mobility and bioavailability, depending on the nature of the chemical species and the pH are considered. In Antarctica, the most important factor in soil analysis that influences the metal bioavailability is the acidity (pH). Other important factors are the redox potential, presence of some complex bonds and of the competitor ions, and the temperature.

The distribution of the identified microelements in the studied soils is a dynamic one, determined by the environmental sources, processes and factors. In fact, the analysed metal concentrations mainly depend on the base rock geology, the hydrologic conditions, and the meteorological and biologic processes. The concentrations were remarkably variable.