Summary of MEC_R_21 Project

MEC_R 141335

Applicant: Dr. Tamás Győrfi

International Conference on Environmental Pollution, Remediation and Sustainable Development 2021

Online Conference 4th-12th December 2021.

The goal of this **ICEPRSD 2021** environment conference is to gather scholars from all over the world to present advances in the relevant fields and to foster an environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

Speaker: **Dr. Tamás Győrfi**, Eötvös József College, Hungary, Baja; gyorfi.tamas@ejf.hu

Topic:

Estimation of sediment accumulation rate with gamma-spectrometry

Abstract

The filling up of the Nyéki-Holt-Duna watercourse (situated in the south of Hungary) has been determined with geodesic method. To be able to compare and specify the measurement results, there was a need to determine the rate of silting up with another method, too.

Our aim is to determine the age of the deposited sediment with gamma-spectroscopy from which it is possible to calculate the rate of accumulation. We used the easily detectable Cs-137 isotope (half life $T_{1/2}$=30,07 year) for our measurement. This isotope got into the atmosphere during the 1950s and 1960s as a result of atmospheric atomic blast as well as by the Chernobyl reactor accident in 1986. From the atmosphere it has fallen into the soil. The presence of the isotope and the function of the activity concentration along the soil depth refer to the age of the accumulation.

The results of the measurements show that the Cs-137 is present at a depth of about 54,8 cm. The nuclide Cs-137 which can be detected in the sample got into the environment in 1986 after the Chernobyl reactor accident. Supposing a linear model, the speed of the sedimentary process determined by gamma-spectrometry is 2,9 cm/year. It is in good agreement with the geodesic method's rate of 3.2 cm/year.