

EAR#P119

POSTER SESSION 1

Tuesday 22nd March, 1400 - 1540**A study of the Suess effect using a raised peat bog as historical archive****Santos J**¹, Gomez-Martinez I¹, Holm E², Garcia-Tenorio R³¹ Centro Nacional de Aceleradores,² Norwegian Radiation Protection Authority,³ Departamento de Física Aplicada II, E.T.S.A, Universidad de Sevilla

The radiocarbon content in a peat core from Gävle, Sweden, 61.0 °N, 17.0 °E, has been studied. This is a raised peat bog which only receives material from atmospheric deposition. There has been an increased use of fossil fuels by industries and also locally by transports and heating of domestic buildings. There has been fallout of ¹⁴C from nuclear tests during the 1950ies and 1960ies and also from the Chernobyl accident in 1986. There is also emission of ¹⁴C from nuclear facilities. The ¹⁴C/¹²C ratio from the Chernobyl accident is unclear since it was a graphite moderated reactor and the graphite was burning.

The core was sampled in 2008 and was previously dated using the ²¹⁰Pb method, giving a growth rate of 0.15 mm/yr. The top 21 cm have been analyzed to obtain radiocarbon content by Accelerator Mass Spectrometry (AMS) at the Centro Nacional de Aceleradores (CNA), Seville Spain. Using 0.5 cm samples, information about the last 140 years could be obtained with resolution better than 4 years. Results show a clear depletion of ¹⁴C levels in the area, the so called SUESS effect with maximum levels of only $F^{14}C=1.2333\pm 0.0043$, and the absence of a clear nuclear tests peak.

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Tuesday 22nd March, 1400 - 1540**Isotope ratios of ³⁶Cl/Cl in surface soils at the equal-latitude in Japan****Sueki K**¹, Tamari M¹, Amano T¹, Kitagawa J¹, Sasa K¹, Takahashi T¹, Matsushi Y², Tosaki Y³, Kurosumi K¹, Nagashima Y¹, Kinoshita N¹, Matsumura H⁴¹ University of Tsukuba,² Kyoto University,³ Geological Survey of Japan, AIST,⁴ High Energy Accelerator Research Organization

A long-lived radionuclide, ³⁶Cl, is produced in nature by cosmic-rays interacting with Ar in the atmosphere. However, the ³⁶Cl was produced by nuclear tests between 1952 and 1958. The ³⁶Cl bomb pulse has been used as a good tracer in geoscience. We measured ³⁶Cl/Cl ratios of surface soil samples collected from the Sea of Japan to the Pacific Ocean at the equal-latitude cross-sectional areas (37°20' N - 37°30' N) in the south Tohoku, Japan. We developed an improved leaching process that uses diluted HNO₃ as an extractant, activated carbon to remove organic matters without decomposition, and H₂O₂ to remove residual organic matters. This sequential treatment allows us to measure selectively ³⁶Cl/Cl ratios of inorganic chlorine in soil. The isotope ratios ³⁶Cl/Cl of soil samples were determined by accelerator mass spectrometry (AMS) at the Tandem Accelerator Complex, University of Tsukuba. We have collected 34 surface soil samples which were about 0-10 cm in depth from 6 sites at the equal-latitude cross-sectional areas. The measured ³⁶Cl/Cl ratios of these samples were between 0.1×10^{-13} and 4.1×10^{-13} . It was shown that the ³⁶Cl/Cl ratios are lower at both sea sides.