

RADIOCARBON ABUNDANCES IN TREE RINGS FROM THE SPOERER MINIMUM

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Year-by-year measurements of the radio-carbon (^{14}C) content of tree rings formed during the Spoerer minimum (1414–1534) have been carried out with an accuracy of 0.2%. The measurements were made using the liquid scintillation method: a 20 cc liquid sample was prepared for each year from a 100 cc sample of sliced wood taken from a piece of 700 year-old Yaku-cedar tree which was cut in October 1994. The absolute year was determined using the ‘bomb’ effect, which had its peak in 1964.

Our results (year-by-year) agree well with the pioneering work of Stuiver et al, which were obtained by combining 10 years of tree rings between 1440 and 1470. However they deviate considerably ($\sim 4\%$) in the years 1470–1545. Our results show a deep dip around 1506 for which we have no explanation a present. However we are impressed by the fact that the abundance of cosmogenic ^{10}Be obtained by AMS measurements made from the Greenland ice core sample Dye 3 also show a sharp dip at 1500.

We are now trying to determine the possible contribution of volcanic CO_2 to this dip. There is a famous volcano, Sakurajima, located 140 km north of Yaku island, however the winds normally have another direction and its effects are likely to be small. We will measure the actual CO_2 abundance near the volcano using fallen leaves. Historically, volcanic activity was recorded in 1468, 1478, 1642 and on many occasions since then, up to the present.