in tree rings of oak from Lublinek (ca 9750–10,050 cal BP). Such a pattern repeats many times throughout the Holocene. Most of the periods of 300-year declines recur more or less regularly, with the mean time span of 966 years. The amplitude of 300-year declines varies, the highest occurring in the earliest periods. It seems also, that a similar drop occurs about the YD/PB boundary. For earlier times, the available data are too dubious, and searching for characteristic patterns seems to be fruitless.

GERARDIA: THE BRISTLECONE PINE OF THE DEEP-SEA?

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Layers from the proteinaceous skeleton of the colonial zoanthid sea anemone, *Gerardia,* were subjected to carbon isotope and chemical analyses. This specimen was collected from 600 meters in the Florida Current in the northwestern Atlantic Ocean using the Deep Submergence Research Vessel, *ALVIN.* Radiocarbon ($\Delta^{14}C$) values in the layers decreased linearly with distance from the outer growing edge (–75‰) to the central core of the trunk (–250‰). If these $\Delta^{14}C$ values are reflective of time since accretion of the layers, then the ^{14}C age of this specimen is 1700 ± 100 BP. The $\delta^{13}C$ values of the layers did not vary (–16.0 ± 0.2‰), suggesting an unchanged source of carbon over its lifetime. The C:N ratios (wt %) in the layers are 2.8 to 3.0, indicative of protein. The amino-acid assays reveal high concentrations of glycine, histadine and alanine.

The existence of a deep-sea animal that accretes a layered, proteinaceous skeleton is unique. A lifespan of greater than a millennium pinpoints this organism as a possible marine equivalent of long-lived trees, such as the bristlecone pine.

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INTERPRETING THE SMALL COSMOGENIC ISOTOPE SIGNAL

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The technical ability to detect very small isotope concentration changes and/or to use very small samples opens new fields of analysis, but also requires critical reevaluation of all sources of variability outside the direct measurement. Environmental noise, that is, spatial and temporal variability in the concentration of cosmogenic isotopes in the atmosphere and in reservoirs in contact with the atmosphere, lake plants, snow and sediments, may be caused by variable mixing within the troposphere, and between troposphere and stratosphere. Seasonal cycles in biospheric productivity and oceanic ventilation may contribute to ^{14}C variability; ^{10}Be concentrations can vary with long-range transport by zonal and meridional circulation.

The detection limit for cosmogenic isotopes is set by the equipment background, which is constant and follows Poisson statistics in counters, by laboratory contamination and by sample contamination, which is different for each sample. Appropriate sample treatment procedures can minimize or eliminate laboratory contamination and keep the residual constant.