pattern from below 5 to over 15. Additioal evidence comes from Antarctica. We found that the beryllium-10/chlorine-36 ratio changed significantly within a short depth interval within a single block of ice and that the calculated age of ice based on beryllium-10/chlorine-36 differed from the age of an embedded meteorite, ALHA82102.

A variation of the beryllium-10/chlorine-36 ratio may be caused by climatic effects, for example changes in air circulation between the stratosphere and the troposphere in the polar region in combination with chemical processes that affect aerosol chlorine differently than aerosol beryllium. Also, the beryllium-10/chlorine-36 ratio is smaller than expected indicating that there may be additional sources of chlorine-36. If there is a source of chlorine-36 that varies independently from the galactic cosmic ray flux, this would result in variations in the isotope ratio. Discovery of the cause of the variations may lead to a new tool for understanding paleoclimate.

This work involves a collaboration between the cosmochemistry group at the University of California, San Diego (K. Nishiizumi and J.R. Arnold) and the accelerator group at the Univeristy of Rochester (D. Elmore, P.W. Kubik, N.J. Conard, and H.E. Gove). The beryllium-10/aluminum-26 measurements in quartz were obtained at the University of Pennsylvania (R. Middleton and J. Klein) and the beryllium-10 measurements in ice were obtained by the University of Bern (J. Beer and H. Oeschger)/ETH-Zurich (W. Woelfli, M. Suter, and G. Bonani) collaboration.

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Characterization of antarctic meteorites

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We have continued to characterize antarctic meteorites collected in Victoria Land by W.A. Cassidy (principal investigator) and his colleagues. This work has required the preparation of several hundred polished thin sections of the meteorites, their examination with petrographic and metallographic microscopes, and analysis of the minerals with an electron-beam microprobe.

During the past year, we have examined 9 specimens from the 1978 collection, 2 from 1981, 70 from 1983, and 101 from 1984. We have now completed the characterization of the collections from 1976 through 1982, a total of 1,235 meteorites. Work continues on the 1983 and 1984 collections, and specimens from the 1985 collection are expected soon. The results of the current year's work have been published in the *Antarctic Meteorite Newsletter*, 8:2 and 9:1 (available from Johnson Space Center, Code SN2, Houston, Texas 77058).