THE NEW NATIONAL OCEAN SCIENCES ACCELERATOR MASS SPECTROMETER FACILITY AT WOODS HOLE OCEANOGRAPHIC INSTITUTION: PROGRESS AND FIRST RESULTS

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The installation of the new AMS machine at Woods Hole Oceanographic Institution (WHOI) is nearing completion. During the summer of 1990, extensive factory tests of the fully assembled single-injector machine produced very promising results. The new injector design implementing the recombinator principle, has proven to be successful. We have learned that the simultaneous injection of all three carbon isotopes (with a 100:1 chopped C-12 beam) is possible, without notable effects on the performance of the accelerator. Because of the elaborate background suppression measures in the high-energy leg of the system, removing the ME/q**2 ambiguity, an exceptionally strong and clean ^{14}C signal (ca 40/s) was observed in first tests with NBS-OX II graphite samples at beam currents up to 50 microamperes. On-site tests at WHOI started in November 1990, and first routine operation results are anticipated by early spring of 1991.

^{36}Cl IN THE STRATOSPHERE

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Cl and Cl compounds are important trace constituents for stratospheric chemistry, in particular with respect to O_3 destruction. Stratospheric Cl chemistry has recently received increased attention with the observation of strong O_3 depletion in the Antarctic winter vortex and in the weaker and more complex Arctic winter vortices.

Cosmogenic ^{36}Cl is produced by spallation reactions from Ar mainly in the stratosphere, and the large amounts of ^{36}Cl introduced by nuclear weapon testing have been removed from the stratosphere by now. We are investigating the use of cosmogenic ^{36}Cl as a tracer for stratospheric Cl chemistry and for stratospheric/tropospheric exchange processes. In a first attempt, we try to determine stratospheric and tropospheric production rates, the partitioning of ^{36}Cl among particulates and gaseous Cl compounds, and the respective inventories and removal rates.

We have obtained three pairs of samples of stratospheric ^{36}Cl in particulates and HCl collected aboard the NASA WB-57B high-altitude aircraft, following techniques by Lazarus *et al* (1976). The preliminary results for two flights (#1: 13.7 km, 30–33°N, 97–107°W, 1.8–2.4 km above tropopause; #2: 17.6 km, 36–45°N, 92–94°W, 7.6 km above tropopause) are as follows:

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