Newall Glacier Snow Pit and Ice Core, 1987 to 1989, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Whitlow, S. et al. 1999. *Newall Glacier Snow Pit and Ice Core, 1987 to 1989, Version 1.* [Indicate subset used]. U.S. Antarctic Program (USAP) Data Center. https://doi.org/10.7265/N5JM27JP. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

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National Snow and Ice Data Center

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1 DETAILED DATA DESCRIPTION

Newall Glacier (162o30'E, 77o35'S) 6M snow pit dug and sampled in 1987, 2.25 cm sampling interval 4M snow pit dug and sampled in 1988, 1 cm sampling interval Two cores drilled austral summer1988-1989; core A,175 meters and core B, 150 meters

DATA SETS AVAILABLE: Snow pit, 1987: Chemistry, Beta profile, Stratigraphy Snow pit, 1988: Chemistry, Beta profile Core, 1988: Chemistry, Lead-210 profile, Density profile, Temperature profile

The pits were dug and sampled by the Glacier Research Group (GRG), using established protocols to prevent contamination. The samples for major ion chemistry remained frozen until melted for analysis in the GRG lab, located at the University of New Hampshire (UNH). The cores were drilled for GRG by the polar ice coring organization (PICO), all core processing was done by GRG using established protocols to prevent contamination. All data except the stable oxygen isotope data which is from the University of Washington was generated by GRG. Analytical methods: Major ions were analyzed using suppressed ion chromatography with Fast Cation I and Fast Cation II (for cations) and AS4A (for anions) Dionex columns. Sample loop size was 0.5 ml. Data was collected using the Dionex AI-450 software. MSA was determined using either the Dionex Omnipak 500 (snow pits samples) or AS4 column (core samples) and a 1 ml sample loop. Beta samples were melted, acidified, and filtered through cation exchange filters. The filters were counted with a gas-flow proportional counter at UNH. Lead-210 was determined by alpha spectrometric counting of Po-210 which had been plated onto silver planchets. Insoluble microparticles were determined on a Elzone 280 PC housed in a clean room at UNH (64 logarithmically spaced channels from 0.65 micormeters to 13 micrometers). Contact: Sallie Whitlow, Institute for the Study of Earth, Oceans and Space, Glacier Research Group, Morse Hall, University of New Hampshire, Durham, New Hampshire 03824 603-862-4129 siw@unh.edu Dr. Paul Mayewski, Institute for the Study of Earth, Oceans and Space, Glacier Research Group, Morse Hall, University of New Hampshire, Durham, New Hampshire 03824 603-862-3146 Publications: Mayewski, P.A. et al., 1995, An Ice-core based, late Holocene history for the Transantarctic mountains, Antarctica. Contributions to Antarctic Research IV, Antarctic Res. Series, 67, 33-45. Welch, K.A., P.A. Mayewski, and S.I. Whitlow, 1993, Methanesulfonic acid in coastal Antarctic snow related to sea-ice extent. GRL, 20, 443-446. Welch, K.A. et al., (in review) Marine and polar continental air mass influence on glaciochemical records from the Dry Valley region of Antarctica. Atmos. Environ. Welch, K.A. 1993, Glaciochemical investigations of the Newall Glacier, southern Victoria Land, Antarctia. MS thesis, Universtiy of New Hampshire. Data Fields -999 indicates no data -888 indicates sample below the level of detection Precision is the average of the coefficient of variations calculated for each pair of duplicate aliquots analyzed (20% of the samples). High sodium values obscured the NH4 peak in some of the pit samples. NH4 values are not given for the core due to problems integrating the small NH4 peak

which follows the large Na peak. PIT_87_Chem: Top depth, meters Bottom depth, meters; Oxygen isotopes (18O), standard per mil notation; Sodium (Na), micromoles per liter; precision 3% Ammonium (NH4), micromoles/L; precision 19% Potassium (K), micromoles/L; precision 4% Magnesium (Mg), micromoles/L; precision 3% Calcium (Ca), micromoles/L; precision 9% Chloride (Cl), micromoles/L; precision 3% Nitrate (NO3), micromoles/L; precison 3% Sulfate (SO4), micromoles/L; precision 3% Acidity (H+), micromoles/L; precision 28% MSA (methanesulfonic acid), micromoles/L; precision 10% Date, year; dating good to +/- 1 year PIT_88_CHEM: Top depth, meters; Bottom depth, meters; Oxygen isotopes (18O), standard per mil notation; Sodium (Na), micromoles per liter; precision 2% Ammonium (NH4), micromoles/L; precision 11% Potassium (K), micromoles/L; precision 6% Magnesium (Mg), micromoles/L; precision 2% Calcium (Ca), micromoles/L; precision 4% Chloride (Cl), micromoles/L; precision 2% Nitrate (NO3), micromoles/L; precision 3% Sulfate (SO4), micromoles/L; precision 2% MSA (methanesulfonic acid), micromoles/L; Age, year, +/- 1 year PIT_87_BETA: Depth, meters; Counts per hour per kilogram PIT_88_BETA: Mid-depth, meters; Counts per hour per kilogram CORE_DENSITY: Top depth, meters; Bottom depth, meter, Grams per cubic centimeter CORE_Temp Depth, meters Temperature, degrees C PB210_DATA: Depth, meters; Pb-210 Activity, dissentigrations per minute per kilogram (dpm/Kg); Sigma, one sigma uncertainty, dpm/Kg Core_CHEM: Top depth, meters; Bottom depth, meters; Oxygen isotopes (18O), standard per mil notation; Sodium (Na), microequivalents per liter; precision 2% Potassium (K), microequivalents/L; precision 1 % Magnesium (Mg), microequivalents/L; precision 2% Calcium (Ca), microequivalents/L; precision 2% Chloride (Cl), microequivalents/L; precision 1% Nitrate (NO3), microequivalents/L; precision 1% Sulfate (SO4), microequivalents/L; precision 1% MSA (methanesulfonic acid), micromoles/L; precison 15% Acidity (H+), micromoles/L; precision better than 20% but not quantified. Particles, total number of particles per milliliter between 0.7 micrometers and 11.3 micrometers (size based on the assumption that the particles are spherical). General comments on the core chemistry data All chemistry samples from 0 to 142 meters are from the B core. All data for depths greater than 142 meters are from the A core. Firn samples were cut on a lexan saw and then melted in precleaned containers. Ice samples rinsed with milliQ water and melted in precleaned containers. Blanks that were processed as the samples were processed indicated that core processing was not introducing any contamination. A few samples were frozen after being aliquoted and analyzed the following day. A few samples were analyzed for H2O2, all were below the detection limit and the data is included in the chemistry data file. Samples are discontinuous at bottom due to poor core quality. An ash layer was observed in the B core at 141.26 meters. Ash layers were observed in the A core at 140.24 meters, 148 meters, 151.5 meters and 158.5 meters Dating on the core is uncertain, see Mayewski et al., 1995. It is certain that the bottom of the core is still in the Holocene. Based on Haefeli model, 30.22 meters is 500 ybp (years before present); 47.25 meters is 1000 ybp,and 67.75 meters is 2000 ybp.