



# Antarctic News



Newsletter for Participants of an U.S. Undergraduate Antarctic Program

February 2005

[www.hamilton.edu/news/exp/antarctica/2005/research.html](http://www.hamilton.edu/news/exp/antarctica/2005/research.html) **Issue 4**



Moon over the Antarctic Peninsula

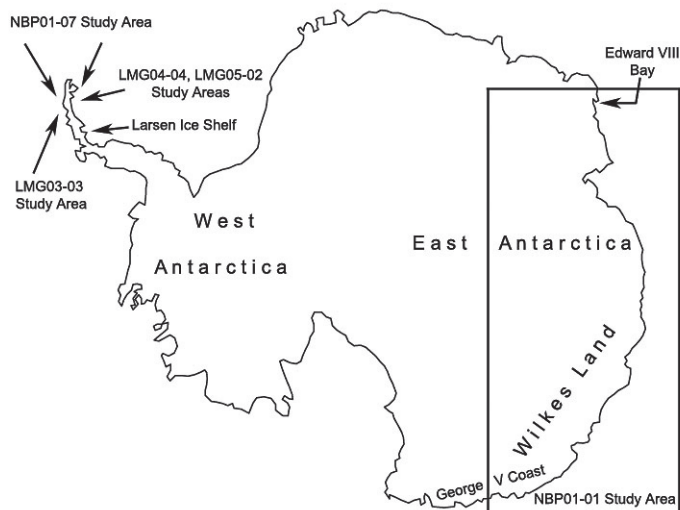


Larsen B Ice Shelf just prior to breaking up, NBP01-07

It has been a while since the last issue of Antarctic News, which means there is much to report on. Since NBP00-03, the last cruise reported on in Issue 3, four research cruises have been completed and one is coming right up.

from Boston University, University of California-Santa Barbara, and University of Tasmania. The group left from Hobart, Tasmania in late January and sailed south to the George V Coast of Antarctica. They spent the next couple months coring, taking water samples, and mapping while traveling westward along the Wilkes Land coast to Edward VIII Bay, where the science was completed and the 12-day transit to Capetown, South Africa started at the end of March.

Antarctic Cruises From January 2001 to March 2005



## NBP01-01

In early 2001, Amy Leventer, of Colgate University, led cruise NBP01-01 along the East Antarctic Margin. Onboard were faculty and students from Ohio State University, Cardiff University, Colgate University, Hamilton College, Middlebury College, and Stanford University, as well as grad students



NBP01-01 Undergraduates Departing From Hobart, Tasmania Standing: Caroline Olson (Colgate University), Katharine Burgdorff and Matt Hommeyer (Middlebury College), Tzveti Erohina, Lauren Rogers, and Melanie Hopkins (Stanford University). Seated: Kate McMullen (Hamilton College), Meredith Metcalf and Natalie McLenaghan (Colgate University).

### **NBP01-07**

Starting in December of the same year, NBP01-07, led by Eugene Domack of Hamilton College, sailed along the western and eastern coasts of the Antarctic Peninsula. Students from Colgate University, Hamilton College, Southern Illinois University, and the University of Barcelona joined faculty from Desert Research Institute, Hamilton College, and Queens University. This was another successful cruise, complete with coring, water sampling, mapping, and moorings. For more information see the 2001 Hamilton Antarctic website: <http://www.hamilton.edu/news/exp/antarctica2001/>



Gene Domack, Diana Duran, Scott McCallum, Emily Backman, Kate McMullen, Anna Rubin, Neil Basu, Andrew McCloskey, David Amblas arriving in Chile after NBP01-07

### **LMG03-03**

In March 2003, LMG03-03 sailed from Punta Arenas, Chile to the Antarctic Peninsula. Scheduled to sail were students and faculty from Colgate University, Desert Research Institute, Hamilton College, and Queens University. However, after finding that the *L.M. Gould* had a broken winch, making coring impossible, most of the Hamilton party turned around and headed north before the ship left Punta Arenas. The remaining group sailed to the western side of the Peninsula and did CTD casts, took grab samples and recovered a mooring. For more information see: <http://www.hamilton.edu/news/exp/Antarctica/2003/>

### **LMG04-04**

During the month of April 2004, LMG04-04 cruise participants from Colgate University, Hamilton College, Montclair State University, Queens University, and Southern Illinois University sailed to the Peninsula with hopes of collecting a suite of cores along the area formerly covered by the

Larsen Ice Shelf. They intended to recover samples from the recently broken up shelf, but weather and ice conditions were not on their side as they were unable to get into the study areas. Very little coring was accomplished; however, the team did find a submarine volcano in Antarctic Sound, which was mapped, sampled and videoed and is thought to have been recently active. For more information see: <http://www.hamilton.edu/news/exp/Antarctica/2004/>



Ice on the *NB Palmer*

### **LMG05-02**

In February 2005, we are scheduled to go back to the Larsen Ice Shelf area to study the recent breakup events. Three Hamilton College students will participate as well as 8 other undergraduate and graduate students from Colgate University, Southern Illinois University, Montclair State University, Queens University, University of Barcelona, and University of Durham. We hope to go back to the Larsen Ice Shelf region and recover sediment and water samples and obtain video coverage of the sea floor in the areas that were unreachable in 2004. The cruise website will be updated with daily pictures and logs: <http://www.hamilton.edu/news/exp/Antarctica/2005/>



Cap'n Joe Borkowski and Gene Domack (NBP01-07)

## Upcoming Events:

### International Antarctic Institute

Gene Domack recently attended a meeting in Hobart, Tasmania regarding the establishment of an International Antarctic Institute. This initiative would link schools that have Antarctic research programs by allowing students to take courses at other institutions and for the institutions to share facilities, resources, and faculty.

### International Polar Year

The International Polar Year (IPY), 2007-2008, is an initiative to boost knowledge about polar regions, not only among researchers, but also throughout the general public. Its purpose is also to “engage the upcoming generation of young Earth System scientists” and to make the public aware of the importance of polar regions. Past IPYs have led to a surge in polar research and understanding and hopefully the upcoming IPY will have a similar effect.



NBP01-07 participants, remember the Mud Man?

## Antarctic Student Projects at Hamilton College:

Ashley Hatfield ('05) is currently researching Jun Jaegy, a recently discovered alkali basalt volcano located in Antarctic Sound. She has been working on the initial petrography and geochemistry of the volcanic construct during the fall semester. In the spring she plans to use trace element data and isotopic data to learn more about the volcano's chemical signature.

Gemma Kirkwood ('05) is investigating the natural climate variability of the Antarctic Peninsula by identifying strong periods within a 5000-year record from the Schollaert Drift. The record was captured in cores NBP99-03 JPC-28 and NBP01-07 KC-8. Spectral analysis was used to find the strong cycles that contribute to the magnetic susceptibility and grain-size profiles of the record. This project is important because a greater understanding of climate variability is necessary for a comprehensive evaluation of current and future conditions.

Heather Schrum ('05) is evaluating carbon to nitrogen ratios in Antarctic marine sediments from two different cores: a kasten core from the Gerlache Strait and one from the Erebus and Terror Gulf. The ratios imply information regarding the characterization of the carbon source. Thus, she is determining whether the carbon is autochthonous or allochthonous.

## Antarctic Program Staff:

The Hamilton College Antarctic Program is run and directed by Professor Eugene Domack with help from co-director Kate McMullen. Dave Tewksbury, Hamilton's geology technician, continues to be of great assistance to the program as well.

Gene Domack has been to Antarctica 15 times, 8 as chief scientist, and has taken over 100 undergraduate students on research trips to the Ice. He is currently chair of Hamilton's Geology Department.

Kate McMullen recently returned to Hamilton to work for the Antarctic Program after graduating in 2003. Kate spent last year running the sediment lab at USGS in Woods Hole, MA. She is excited to have another opportunity to return to the Ice, after participating in NBP01-01 and NBP01-07.

Dave Tewksbury has been going to Antarctica since the 1970s. He currently provides technical assistance for the program, updates the Hamilton Antarctic Website with daily logs from the ship, and is our professional photographer.

## Collaborating Faculty:

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## Student Presentations

Ashley Hatfield, Gemma Kirkwood, and Heather Schrum, all seniors at Hamilton College recently presented posters at the Fall AGU Meeting in San Francisco. Hatfield's presentation "Jun Jaegyu Volcano: A Recently Discovered Alkali Basalt Volcano in Antarctic Sound, Antarctica" shows evidence of recent activity from this newly discovered volcano. Kirkwood's poster "Solar vs. Tidal Forcing of Centennial to Decadal Scale Variability in Marine Sedimentary Records from the Western Antarctic Peninsula" presents her studies of the periodic forcing mechanisms in cores from the Schollaert Drift. Schrum presented her poster titled "A Glimpse at Late Mesozoic to Early Tertiary Offshore Stratigraphy from Wilkes Land, East Antarctica: Results of Strategic Dredging of the Mertz-Ninnis Trough," in which she studied the palynology of rocks from a series of dredges

as a way of age dating the exposed strata in an erosional trough.

## Recent and Upcoming Publications:

Brachfeld, S., Domack, E., Kissel, C., Laj, C., Leventer, A., Ishman, S., Gilbert, R., Camerlenghi, A., Eglinton, L., 2003, Holocene history of the Larsen-A Ice Shelf constrained by geomagnetic paleointensity dating: *Geology*, v. 31, no. 9, p. 749-752.

Domack, E., Leventer, A., Dunbar, R., Taylor, F., Brachfeld, S., Sjunneskog, C., and ODP Leg 178 Scientific Party, 2001, Chronology of the Palmer Deep site, Antarctic Peninsula: a Holocene palaeoenvironmental reference for the circum-Antarctic: *The Holocene*, 11, 1, p. 1-9.

Domack, E., Leventer, A., Burnett, A., Bindschadler, R., Convey, P., Kirby, M., (eds.) 2003, Antarctic Peninsula climate variability; historical and paleoenvironmental perspectives, Antarctic Research Series, American Geophysical Union, Washington D.C., 79, 260 p.

Domack, E., 2004, Clues to Global Warming Found in Antarctica In: White, K and Urquhart, E., (eds) ODP Highlights, Joint Oceanographic Institutes, Washington, D.C., p. 16-17.

Domack, E., Amblàs, D., Gilbert, R., Brachfeld, S., Camerlenghi, A., Rebesco, M., Canals, M., and Urgeles, R., Subglacial Morphology and Glacial Evolution of the Palmer Deep Outlet System, Antarctic Peninsula, in press: *Geomorphology*.

Leventer, A., Domack, E., Barkoukis, A., McAndrews, B., Murray, J., 2002, Laminations from the Palmer Deep; a diatom-based interpretation, *Palmer Deep Paleooceanography*, 17, 3, 15 p.

Warner, N.R., Domack, E.W., 2002, Millennial- to decadal-scale paleoenvironmental change during the Holocene in the Palmer Deep, Antarctica, as recorded to particle size analysis, *Palmer Deep Paleooceanography*, 17, 3, 14 p.

## Alumni News and Address Updates:

Please send updates to Kate McMullen (kcmculle@hamilton.edu) or Eugene Domack (edomack@hamilton.edu) to be included in the next newsletter.