Palmer LTER: Project SANTA CLAμS: December 1994

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Microorganisms, including unicellular algae, bacteria, viruses, protozoans, and small metazoans, are vital components of southern ocean habitats (Karl 1993). They are largely responsible for the production and decomposition of organic matter, for the primary uptake and regeneration of inorganic nutrients, and for export of carbon and energy to intermediate ocean depths. Furthermore, microbial growth and metabolism can have a profound effect on sea water pH and redox state and, therefore, can influence the distribution, speciation, and availability of certain elements and compounds. Consequently, field data both on individual groups of microorganisms and on the complex interactions among them are necessary for a complete assessment of the role of marine microorganisms on both local and global environments.

The Palmer Long-Term Ecological Research (Palmer LTER) program was established in 1990 at Palmer Station, Antarctica, as an interdisciplinary study to seek a general understanding of ecosystem processes and to model the interactions among key groups of organisms and the physical environment (Smith et al. 1995). For the past several years, one component of the Palmer LTER study, "Microbial Dynamics and Carbon Flux" (D. Karl, principal investigator), has focused on microbial ecology in the coastal shelf waters of the Antarctic Peninsula and within the seasonal ice pack. In December 1994, a special-focus LTER cruise was conducted specifically to address the trophic coupling among the various microbial groups. The cruise was designated Project SANTA CLAμS [Studies in ANTarcticA: Coupled Linkages Among micro(μ)organismS]. Investigators from several academic institutions collected samples and performed shipboard or *in situ* experiments (table) at several study sites (figure 1). In addition, three bottom-moored time-series sediment traps (Karl et al. 1994) were recovered and redeployed; the second LTER program automatic weather station (AWS) was installed in the Victor Hugo archipelago; and two optical drifter buoys were released (Letelier, Abbott, and Karl, *Antarctic Journal*, in this issue).

Data collected during the SANTA CLAμS cruise will be made available as soon as possible after the analyses have been completed. To provide easy access to the common measurements (including conductivity-temperature-depth profiles, chlorophyll-*a*, primary productivity, nutrients, and dissolved oxygen), these data will reside on a work station at the University of Hawaii and may be accessed through the use of the anonymous file transfer protocol (FTP) via the worldwide Internet system. To maximize ease of access, the data will be prepared as ASCII files with file names chosen so they may be copied to DOS machines without ambiguity.

The SANTA CLAμS database will reside in a subdirectory called */pub/santa*. More information about the database is given in several files called *Readme.**, at this level. The file *Readme.first* gives general information on the database; we encourage readers to read it first. The following is an example of how to use FTP to obtain SANTA CLAμS data. The user's commands are denoted by italics text. The work station's Internet address is *hahana.soest.hawaii.edu*.

1. At the prompt >, type *FTP 128.171.154.13* or *FTP hahana.soest.hawaii.edu* (either address should work).
2. When asked for your login name, type *anonymous*.
3. When asked for a password, type your e-mail address.
4. To change to the SANTA CLAμS database, type *cd/pub/santa 5*.
5. To view files, type *ls*. A directory of files and subdirectories will appear.
6. To obtain further information about the database, type *get Readme.first*. This will transfer an ASCII file to your system. Use any text editor to view it.
7. To exit, type *bye*.

Information about the SANTA CLAμS cruise and emergent data set are also available on the World Wide Web (WWW) sys-

List of selected Project SANTA CLAμS research topics and investigators

Topic	Investigator(s)	Organization
Hydrography and meteorology	A. Amos	University of Texas
Photochemistry and UV-B fluxes	K. Mopper and D. Kieber	Washington State University and State University of New York
Bio-optics and optical drifters	R. Letelier and M. Abbott[a]	Oregon State University
Time-series sediment traps	D. Karl, T. Houlihan, and U. Magaard[a]	University of Hawaii
Virus ecology	D. Birda, R. Marangera, and D. Karl	University of Quebec at Montreal
Core biogeochemistry measurements and experimental studies of the microbial loop	D. Karl, D. Hebel, T. Houlihan, C. Carrillo, L. Fujieki, K. Bjorkman, R. Scharek, J. Christian and G. Tien	University of Hawaii
Biogenic gases	D. Hebel, J. Dore[a], A. Colman, and D. Karl	University of Hawaii
Hydrogen peroxide: sources and sinks	D. Pence, D. Karl, and G. Tien[a]	University Hawaii
Bacterial ectozymes	J. Christian and D. Karl	University of Hawaii
Archaebacteria	E. DeLong[a], D. Karl, and C. Moyer[a]	University of California and University of Hawaii
Automatic weather station installation	A. Amos and L. Quetin	University of Texas and University of California

[a]Did not participate in SANTA CLAμS cruise.

tem on the Hawaii Ocean Time-series & Coupled Ocean-ice Linkages and Dynamics (HOT & COLD) home page (figure 2). The primary address is *http://hahana.soest.hawaii.edu/*. The person in charge of the SANTA CLAμS data-management system is Lance Fujieki. He can, and should, be reached by e-mail (*lfujieki@soest.hawaii.edu*) if problems arise. Alternative contacts are as follows: (phone) 808-956-3312, (fax) 808-956-9516.

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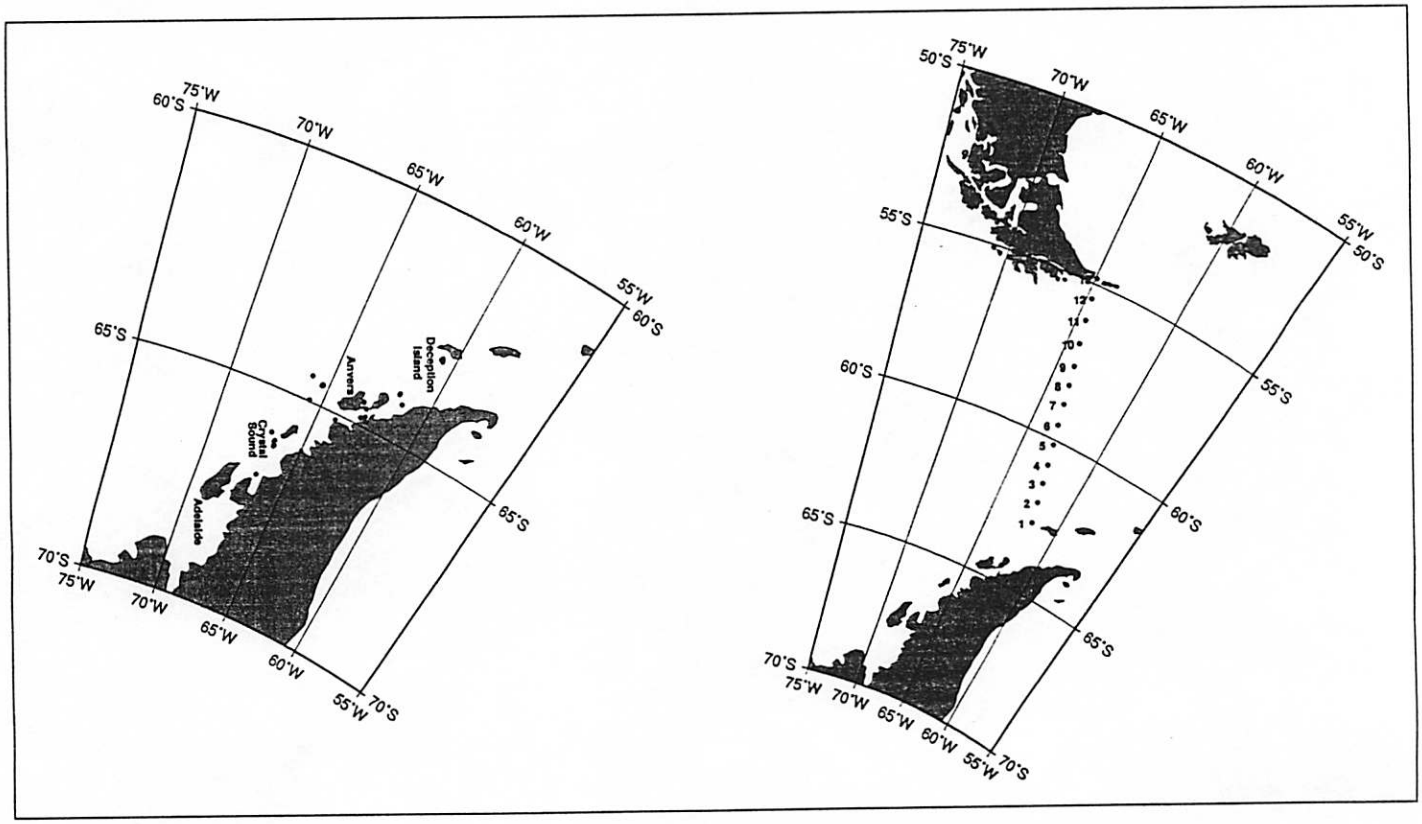

Figure 1. Map of the Antarctic Peninsula region (left) and Drake Passage (right) showing the locations where water samples were collected during Project SANTA CLAμS.

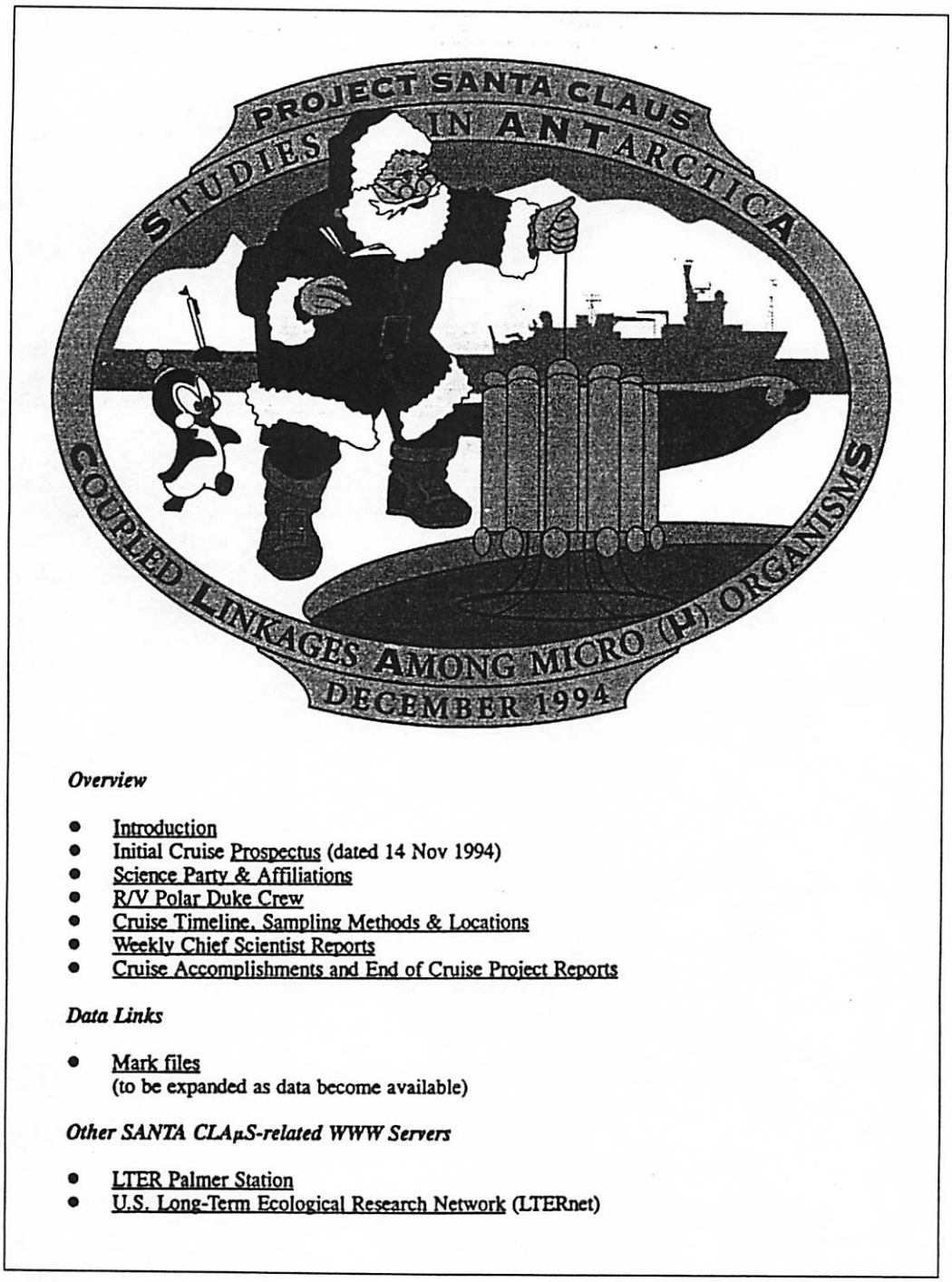

Figure 2. Graphical representation of the Project SANTA CLAμS home page on the World Wide Web. Information about the cruise, including a copy of the initial cruise report and access to the emergent data set are facilitated through this electronic interface.

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References

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Karl, D.M., J. Dore, T. Houlihan, D. Hebel, and V. Asper. 1994. The Palmer LTER sediment trap array experiment: Initial results. *Antarctic Journal of the U.S.*, 29(5), 222–224.

Letelier, R.M., M.R. Abbott, and D.M. Karl. 1995. Southern oceans optical drifter experiment. *Antarctic Journal of the U.S.*, 30(5).

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