Short Note

SEP World-Wide Web update

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INTRODUCTION

Since October 1994 SEP has been running a World-Wide Web (WWW) server, allowing web users to browse through selected file systems. The purpose of this server is to make information about the SEP group and some of its research easily available on-line.

In the last report Martin Karrenbach (1994) detailed our initial efforts to put SEP's research on the web. This paper describes the information currently available in the home pages, gives statistics on access to the SEP site during the past two months, and addresses the problem of how to put reproducible research on-line in the form of interactive documents accessible through the web server.

INFORMATION CURRENTLY AVAILABLE ON THE SERVER

On our World-Wide Web server **(SEPWWW)** the home pages of the students currently at SEP are available with their biography and a brief summary of their SEP publications. The students each have the responsibility and freedom to put whatever they think relevant on their home page. Thus you can find an assortment of GIF pictures, MPEG movies, postscript versions of SEP articles, and so on. We want to point out that Jon Claerbout has also made available on the net his books **(Free Books)** *Processing versus Inversion, Basic Earth Imaging,* and *Three-Dimensional Filtering* in their postscript version. In addition, you can also retrieve some of the most recent theses.

We have made available a space for the SEP alumni, to show what they do after they graduate. This space can be either a directory on our web server or a link to an existing home page outside Stanford.

The SEP home page also contains an area reserved for the sponsors of the group. At the time this report is printed we have already provided in the sponsors' area postscript versions of the SEP reports number 80 and 82, and plan to include this one. The new login and password for this area are given on the page of this report

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entitled "SEP Phone Directory" (one of the last pages of the report.) If you cannot access this area, please send e-mail to `webmaster@sep.stanford.edu`.

Finally, since January 1995 SEP has been proud to host the home page of the Society of Exploration Geophysicists **(SEG)** on its web server. There you can retrieve general information about the SEG, its conventions, and its workshops, and search its on-line index of papers, authors, and members.

STATISTICS ON ACCESS TO SEPWWW

In April 1995 we installed on our World-Wide Web server `wwwstat`, a perl script, that computes statistics on the access to our home pages from the access log files. The result, preformatted in HTML format, is now available to the public on our home page **(SEPWWW stats)**. It contains five tables corresponding to

- the daily transmission statistics,
- the hourly transmission statistics,
- the total transfers sorted by country names,
- the total transfers sorted by reversed subdomains,
- the total transfers sorted by archive sections.

The daily and hourly transmission statistics give the number of connections at particular dates and hours of the day. The statistics sorted by country and reversed subdomain show that between February 7 and April 1, 1995, our site has mainly been visited by U.S. account holders, who made 70 percent of the total number of connections. Among these 70 percent, 19 percent were from educational servers and 28 percent from commercial servers.

Figure 1 represents the number of times per week people have gained access to our site since made inception in September 1994. As expected, there has been an increasing interest in the information we provide over the internet via the World-Wide Web. The large spike observed on week 46 (about 5,000 visitors) corresponds to the official advertisement of our web site on the different web sites related to geophysics on the previous week (beginning of November 1994.) Currently, our server receives more than a thousand requests per day.

REPRODUCIBILITY AND INTERACTIVITY

Starting in 1990, Jon Claerbout and Martin Karrenbach (1990; 1992; 1993; 1993) have emphasized the goal of providing reproducible research and interactivity in published documents. As you know, each of our reports now comes with a CDROM containing the interactive report document and the source and data files necessary to rebuild the figures interactively.

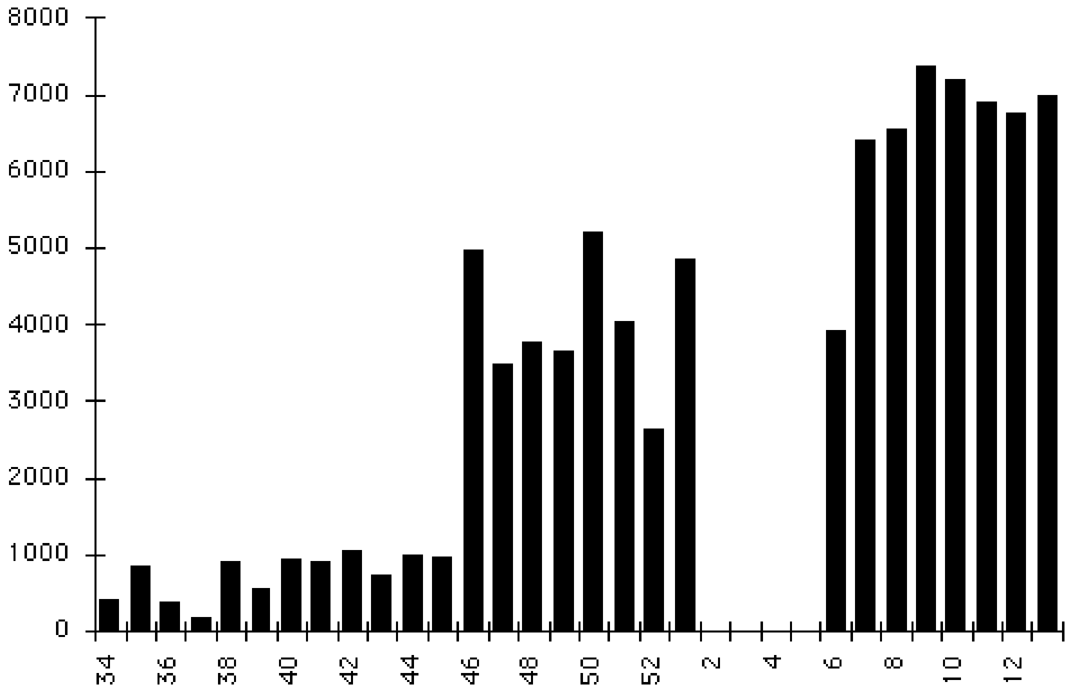

Figure 1: Number of visitors per week from August 22, 1994, to April 1, 1995. The data for the week two to five have been accidentally erased. webstat [NR]

Web documents are written in HyperText Markup Language **(HTML)**, a convenient language for displaying text with different fonts and font sizes. Unfortunately, up to now the HTML language has not allowed the authors to display tables and equations clearly, which has constrained our ability to provide scientific documents through the WWW servers. Currently equations are included inside the HTML document as postscript inline "figures," while tables are displayed as preformatted text with the appearance of computer listings.

However, version 3.0 of the HTML language (soon to be released, according to the developers) should improve the display of these important elements of scientific papers.

The HotJava browser **(HotJava)** has recently joined the growing family of browsers. Though still a prototype, it seems promising as far as interactivity is concerned. HotJava provides the unique feature of "executable content" because it uses Java, a new object-oriented programming language (developed at Sun Microsystems) that borrows many of its structures from C++ without being as complex. Our goal for the near future is to test Java and HotJava to investigate further the issue of reproducing our research on the World-Wide Web.

CONCLUSION

Since its installation in late August 1994, SEP has worked on making research and general information available on the Internet through the WWW browsers. The statistics we have collected during the last seven months show a growing interest in our site. The release of a new generation of browsers more suited to the display of scientific papers should enable us to put interactive documents and reproducible research on our web server in the near future.

REFERENCES

Claerbout, J. F., and Karrenbach, M., 1992, Electronic documents give reproducible research a new meaning: 62nd Ann. Internat. Mtg., Soc. Expl. Geophys., Expanded Abstracts, 601–604.

Claerbout, J. F., and Karrenbach, M., 1993, How to use cake with interactive documents: SEP–**77**, 427–444.

Claerbout, J. F., 1990, Active documents and reproducible results: SEP–**67**, 139–144.

HotJava, Sun Microsystems:, **http://java.sun.com/**.

HTML, National Center for Supercomputing Applications:, **http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html**.

Free Books, Stanford Exploration Project:, **http://sepwww.stanford.edu/prof/index.html**.

Karrenbach, M., Claerbout, J., and Berlioux, A., 1994, SEP goes World Wide Web: SEP–**82**, 265–268.

Karrenbach, M., 1993, How to organize an interactive document: SEP–**77**, 417–426.

SEG, Society of Exploration Geophysicists:, **http://sepwww.stanford.edu/seg**.

SEPWWW, Stanford Exploration Project:, **http://sepwww.stanford.edu/**.

SEPWWW stats, Stanford Exploration Project:, **http://sepwww.stanford.edu/webstats/results.html**.

APPENDIX A

Figures A-1 and A-2 show the beginning of the SEP and SEG home page displayed with Netscape.

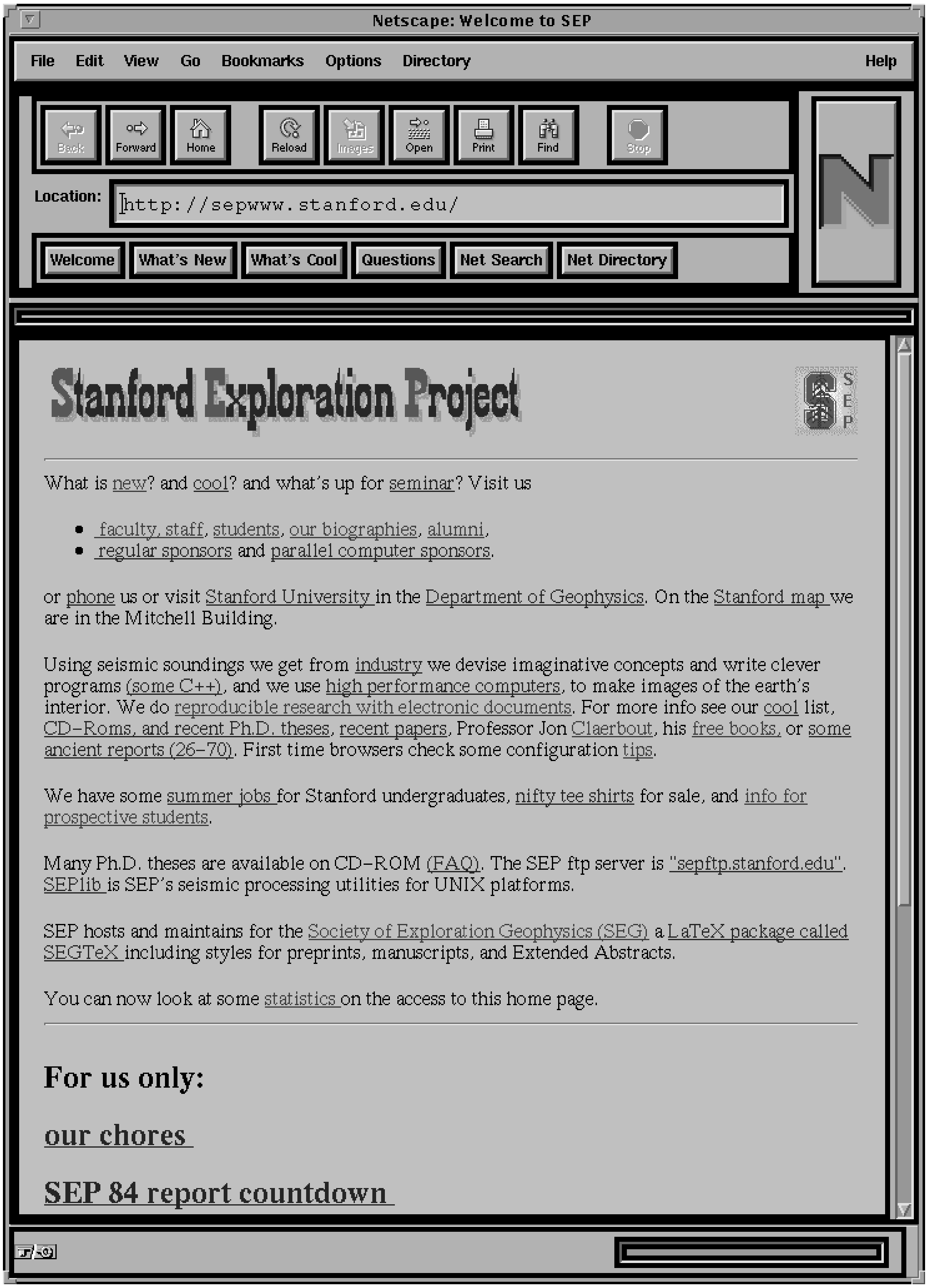

Figure A-1: SEP home page displayed with Netscape. sepwww-net [NR]

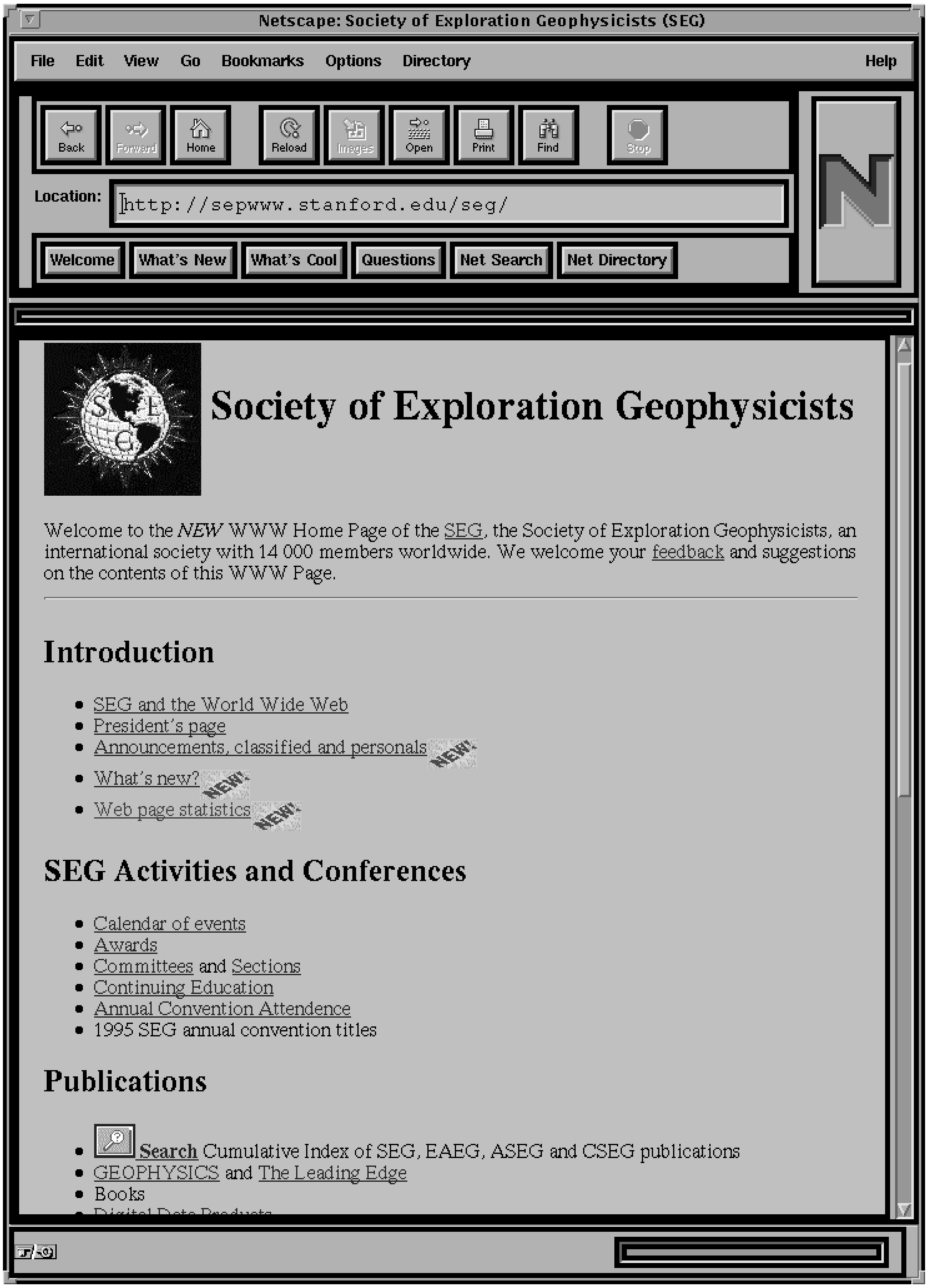

Figure A-2: SEG home page displayed with Netscape. segwww-net [NR]