Earth Exploration Toolbook providing step-by-step instructions for using Earth science datasets and software tools in educational settings. (serc.carleton.edu/eet/); and NSDL projects developing data access and tools including THREDDS (www.unidata.ucar.edu /projects/THREDDS/); Data Discovery Toolkit and Foundry (www.newmediastudio.org/DataDiscovery/index.html); Collection and Distribution of Geoscience (Solid Earth) Data Sets (atlas.geo.cornell.edu/nsdl/nsdl.html); and Atmospheric Visualization Collection (www.nsdl.arm.gov/index.shtml) These resources will be available for exploration at our poster.

URL: http://serc.carleton.edu

ED31D-1185 0830h POSTER

Support and Dissemination of Teacher-Authored Lesson Plans: a Digital Library for Earth System Education (DLESE) and Geological Society of America (GSA) Collaboration

Holly Devaul[1] (303-497-2653; devaul@ucar.edu)

Rajul E. Pandya[1] (303-497-2650; pandya@ucar.edu)

Christine V. McLelland[2] (303 357-1082; cmclelland@geosociety.org)

[1]University Corporation for Atmospheric Research (UCAR), DLESE Program Center PO Box 3000, Boulder, CO 80303, United States

[2]Geological Society of America, P.O. Box 9140, Boulder, CO 80301-9140, United States

The Digital Library for Earth System Education (www.dlese.org) and the Geological Society of America (www.geosociety.org) are working together to publish and disseminate teacher-authored Earth science lesson plans. DLESE is a community-based effort involving teachers, students, and scientists working together to create a library of educational resources and services to support Earth system science education. DLESE offers free access to electronic resources including lesson plans, maps, images, data sets, visualizations, and assessment activities. A number of thematic collections have recently been accessioned, which has substantially increased library holdings. Working in concert with GSA, a non-profit organization dedicated to the advancement of the geosciences, small-scale resource creators such as classroom teachers without access to a web server can also share educational resources of their own design. Following a two-step process, lesson plans are submitted to the GSA website, reviewed and posted to the K-12 resource area: http://www.geosociety.org/educate/resources.htm. These resources are also submitted to the DLESE Community Collection using a simple cataloging tool. In this way resources are available to other teachers via the GSA website as well as via the DLESE collection. GSA provides a template for lesson plan developers which assists in providing the necessary information to help users find and understand the intent of the activity when searching in DLESE. This initial effort can serve as a prototype for important services allowing individual community members to contribute their work to DLESE with little technical overhead.

URL: http://www.dlese.org

ED31D-1186 0830h POSTER

You Can't Always Get What You Want, But You Can Create What You Need: The Promise of DLESE for Pre-service Teacher Education

Russanne Low (612-626-0205; rlow@cce.umn.edu)

University of Minnesota, 107 Armory Hall 15 Church St. SE, Minneapolis, MN 55455, United States

DLESE provides a practical and valuable alternative to conventional introductory Earth Science textbooks for college instructors teaching pre-service teachers. A review of commonly used introductory Earth science textbooks reveals a course of study that highlights topics not addressed in the K-8 National Science Education Standards, and misses others that are stressed in K-8 curriculum. Using DLESE objects, we created an on-line digital course supplement that replaces the traditional textbook and introduces a pre-service Earth science curriculum aligned to National and MN State Science Standards. There are some distinct advantages to a textbook-less approach: out-of-class study includes a variety of learning objects including scientific visualizations, diagrams, primary text sources, and video-clips, accommodating all learning styles. In addition, familiarity with the on-line environment facilitates the engagement of students in the application of real data to discover scientific concepts. One of the unexpected benefits of the DLESE-based curriculum is the increased motivation observed among members of the pre-service teacher cohort. The practical relevance of the curriculum is especially important to elementary teachers, many of whom are uncertain about their knowledge and ability to teach science. By the end of the course, the students know they have been exposed to every topic they are expected to teach. Importantly, they will also be skilled in the use of DLESE for their own lesson planning, curriculum development and ongoing personal professional development.

ED31D-1187 0830h POSTER

COMET Multimedia modules and objects in the digital library system

Timothy C. Spangler[1] (303-497-8473; spangler@comet.ucar.edu)

Joseph P. Lamos[1] (303-497-8465; lamos@comet.ucar.edu)

[1]University Corporation for Atmospheric Research, P.O. Box 3000, Boulder, CO 80307-3000, United States

Over the past ten years of developing Web- and CD-ROM-based training materials, the Cooperative Program for Operational Meteorology, Education and Training (COMET) has created a unique archive of almost 10,000 multimedia objects and some 50 web based interactive multimedia modules on various aspects of weather and weather forecasting. These objects and modules, containing illustrations, photographs, animations,video sequences, audio files, are potentially a valuable resource for university faculty and students, forecasters, emergency managers, public school educators, and other individuals and groups needing such materials for educational use. The COMET Modules are available on the COMET educational web site http://www.meted.ucar.edu, and the COMET Multimedia Database (MMDB) makes a collection of the multimedia objects available in a searchable online database for viewing and download over the Internet. Some 3200 objects are already available at the MMDB Website: http://archive.comet.ucar.edu/moria/

ED31D-1188 0830h POSTER

Libraries and Information Science: the Profession. Alternative Career Opportunities for Atmospheric, Earth, and Geo-scientists.

April M Love (949-824-7237; amlove@uci.edu)

University of California, Irvine, Science Library, P. O. Box 19557, Irvine, CA 92623-9557, United States

Many graduate students, researchers and scientists may not be aware that there are other career opportunities available to them as scientists besides the traditional academic, government, industrial and private sector tracks. Subject specialists with science backgrounds are in great demand. Knowledge management and information services affiliated with science and research is an exciting and creative profession. Contributing to, finding and delivering the range of information now emerging from new and established disciplines in all formats defines Information Science and Librarianship with a multitude of opportunities. This poster will offer information to encourage students and researchers with these skills and backgrounds to consider Information and Library Science as an exciting career path.

ED31E MCC: 3012 Wednesday 1020h

The GeoWall in the Earth Science Classroom II *(joint with P, SM)*

Presiding: **P J Morin,** University of Minnesota**; P van Keken,** University of Michigan

ED31E-01 1020h

Visualizing seismic wave propagation

Peter van Keken[1] (keken@umich.edu); Jeroen Tromp[2] (jtromp@gps.caltech.edu); Dimitri Komatitsch[2] (komatitsch@yahoo.com); Shalini Venkataraman[3] (shalini@evl.uic.edu); Nicholas Schwarz[3] (schwarz@evl.uic.edu); Luc Renambot[3] (luc@evl.uic.edu); Jason Leigh[3] (spiff@evl.uic.edu)

[1]University of Michigan, Geological Sciences 2534 CC Little Building, Ann Arbor, MI 48109, United States

[2]California Institute of Technology, Division of Geological and Planetary Sciences, Pasadena, CA 91125, United States

[3]University of Illinois at Chicago, Electronic Visualization Lab 851 S. Morgan St. Room 1120 SEO, Chicago, IL 60607, United States

An accurate understanding of the propagation of seismic waves in the Earth is of fundamental importance for Earth Scientists at any level. Wave propagation is generally difficult to understand due to the spherical geometry and strong compositional layering in the Earth. 3D heterogeneity, anisotropy and attenuation create further complexities. Several tools exists, including those developed by Alan Jones (www.geol.binghamton.edu/faculty/jones/jones.html) or Michael Wysession (epsc.wustl.edu), that help beginning and advanced geoscientists by visualizing wave propagation in the Earth for 1D velocity models. A recently developed spectral element method (SPECFEM3D; Komatitsch et al., Science, 298, 1737, 2002) solves the full wave equation in a 3D spherical Earth which allows the inclusion of more realistic effects such as 3D heterogeneity and anisotropy. Accurate models require high spatial and temporal resolution and the use of this code is therefore restricted to moderately large PC clusters or other parallel platforms. The high resolution presents also difficulties when attempting to visualize the wave propagation since the presence of high frequency information requires high spatial resolution in the visualization. We have developed various approaches to visualizing the realistic wave propagation, using both 2D slices and 3D volumes, at high resolution. The visualization tools will benefit researchers that use SPECFEM3D since it provides mechanisms of quality control, data querying and dissemination, while also allowing to share new computational results with students and the media. We will demonstrate and compare visualizations for a number of historical earthquakes and provide a preliminary report on how students in introductory and advanced geophysics courses appreciated the use of these tools.

URL: http://www.geowall.org/waves

ED31E-02 1035h INVITED

High-Resolution Multibeam Sonar Survey and Interactive 3-D Exploration of the D-Day Wrecks off Normandy

Larry A Mayer[1] (603 862-2615; lmayer@unh.edu)

Brian Calder[1] (603 862-3433; bcalder@ccom.unh.edu)

James S Schmidt[2]

[1]Center for Coastal and Ocean Mapping, University of New Hampshire, Durham, NH 03824, United States

[2]Naval Historical Center, Dept. of the Navy, Washington, DC 20009, United States

Historically, archaeological investigations use sidescan sonar and marine magnetometers as initial search tools. Targets are then examined through direct observation by divers, video, or photographs. Magnetometers can demonstrate the presence, absence, and relative susceptibility of ferrous objects but provide little indication of the nature of the target. Sidescan sonar can present a clear image of the overall nature of a target and its surrounding environment, but the sidescan image is often distorted and contains little information about the true 3-D shape of the object. Optical techniques allow precise identification of objects but suffer from very limited range, even in the best of situations. Modern high-resolution multibeam sonar offers an opportunity to cover a relatively large area from a safe distance above the target, while resolving the true three-dimensional (3-D) shape of the object with centimeter-level resolution. The combination of 3-D mapping and interactive 3-D visualization techniques provides a powerful new means to explore underwater artifacts. A clear demonstration of the applicability of high-resolution multibeam sonar to wreck and artifact investigations occurred when the Naval Historical Center (NHC), the Center for Coastal and Ocean Mapping (CCOM) at the University of New Hampshire, and Reson Inc., collaborated to explore the state of preservation and impact on the surrounding environment of a series of wrecks located off the coast of Normandy, France, adjacent to the American landing sectors The survey augmented previously collected magnetometer and high-resolution sidescan sonar data using a Reson 8125 high-resolution focused multibeam sonar with 240, 0.5° (at nadir) beams distributed over a 120° swath. The team investigated 21 areas in water depths ranging from about three -to 30 meters (m); some areas contained individual targets such as landing craft, barges, a destroyer, troop carrier, etc., while others contained multiple smaller targets such as tanks and trucks. Of particular interest were the well-preserved caissons and blockships of the artificial Mulberry Harbor deployed off Omaha Beach. The near-field beam-forming capability of the Reson 8125 combined with 3-D visualization techniques provided an unprecedented level of detail including the ability to recognize individual components of the wrecks (ramps, gun turrets, hatches, etc.),

the state of preservation of the wrecks, and the impact of the wrecks on the surrounding seafloor. Visualization of these data on the GeoWall allows us to share the exploration of these important historical artifacts with both experts and the general public.

URL: http://www.ccom.unh.edu

ED31E-03 1050h

Geological map of the future: digital, interactive, and 3D

Harvey Thorleifson (612-627-4780-224; thorleif@umn.edu)

Minnesota Geological Survey, 2642 University Ave W, St Paul, MN 55114-1057, United States

Geological survey agencies are developing methods for government geological mapping in the post-paper map era. Surficial and bedrock maps are being digitized and reconciled, while multiple generations of legends are being made accessible in a categorized format. Regional 3D geological models that integrate soils and geology, surficial and bedrock geology, as well as onshore and offshore are increasingly in demand as the information, technology, and protocols to build them progress. Applications such as regional groundwater modelling require digitizing, reconciliation, and assembly of a digital elevation model, bathymetry, offshore geology, soils, surficial geology, public domain drillhole and geophysical data, bedrock maps, and existing stratigraphic models typically expressed as structure contours. New stratigraphic modelling, particularly required for surficial unconsolidated deposits in many regions, requires information from cored holes logged by geologists as well as geophysical surveys. These high-quality results are extrapolated laterally using drill hole data, commonly large quantities of water well data of varying resolution and reliability. Much effort is required to adequately georeference the drillhole data, and to parse large numbers of unique lithological descriptions. Stratigraphic modelling methods ideally use all data and an approach that permits judgement in the acceptance or rejection of data, while interpolation and extrapolation are guided by genetic insights. Models are best captured as a grid of predicted stratigraphy profiles that convey expert opinion on interpolation and extrapolation from the data points. Reconciliation of mapping with that of neighbouring jurisdictions is a key step, as is balancing subjective definition of strata with more objective geostatistical approaches to characterizing the heterogeneous physical properties of the strata. Progress is readily achievable in undeformed strata, while deformed strata present far greater challenges. Increasingly, databases of observations and measurements are being retained alongside the interpreted model, and models are being assigned varying confidence levels such that the result is seen not as an end but a means for prioritizing new mapping. Current activity is broadening our reliance not only from paper maps to digital models, but also from plan view maps, to drillhole databases, to 3D models, to dynamic models such as groundwater flow models. Pressing user requirements demand that geological survey work rapidly advance along this progression.

ED31E-04 1105h

Stereo Visualization of Time-Dependent 3D Convection: Illustrating Scales of Motion for Students (and Colleagues)

Scott D King[1] (765-494-3696; sking@purdue.edu)

Laura Arns[2] (765-494-6432; larns@purdue.edu)

John Moreland[2] (morelanj@purdue.edu)

Julian P. Lowman[3] ((44) 113-343-5212; J.Lowman@earth.leeds.ac.uk)

Carl W. Gable[4] (505-665-3533; gable@lanl.gov)

[1]Dept. of Earth and Atmospheric Sci., Purdue University, 550 Stadium Mall Dr., West Lafayette, IN 47907-2051, United States

[2]Envision Center for Data Perceptualization, Information Technology at Purdue, Purdue University, 128 Memorial Mall, Stewart G68, West Lafayette, IN 47906, United States

[3]School of Earth Sciences, University of Leeds, Leeds, West Yorkshir LS2 9JT, United Kingdom

[4]EES-6 MS T003, Los Alamos National Lab, Los Alamos, NM 87545, United States

The interaction between plates and convection produces complex flow patterns that are not only three dimensional and time dependent, but have features that occur over a large range of length scales. We have produced a series of calculations where plate motions reorganize over a very short time period as a result of the growth of a small-scale feature within the mantle flow. These calculations may provide insight into how plates on Earth reorganize. The topic of plate motions cuts across many disciplines in the geosciences and we would like to be able to convey the results of these calculations (and others like them) to students and colleagues who have little to no background in fluid dynamics. The spatial association of the features we are trying to highlight can be difficult to visualize with traditional three dimensional perspective representations, so we turn to stereo projection. At present, our planned survey of students and colleagues is informal. We will be showing them the animation, asking them to describe what they see and compare that with the responses from perspective representations. The calculations here represent one specific convection problem, yet our hope is that our experiences will serve as a guide that will enable instructors to use the complex results of state-of-the-art mantle convection calculations as illustrative tools in the classroom.

ED31E-05 1120h

New 3D Tools Provide Insights for Earth Interior Research, Visualization, and Education

Marvin V Simkin[1] (Marvin.Simkin@asu.edu)

Edward J Garnero[1] (480-965-7653; garnero@asu.edu)

Matthew J Fouch[1] (480-965-9292; fouch@asu.edu)

[1]Department of Geological Sciences, Arizona State University Box 871404, Tempe, AZ 85287-1404, United States

Investigations of Earth's interior, from crust to core, inherently utilize spatially-based data and models. Examples include the distribution of earthquake hypocenters, seismic wave raypaths, and seismic velocity heterogeneity maps derived by methods such as forward modeling and travel-time tomography. Visualization of such information is generally limited to 2D maps and cross-sections, which ultimately can limit the interpretation of inherently 3D problems. While a wide range of images produced for the GeoWall has provided an immediate impact in the classroom, few software tools are available for educators and researchers to create new discipline-specific images without the aid of software developers or commercial software applications. In this work, we describe a new set of visualization construction tools tailored for the GeoWall and other VRML-based systems that is designed for broad use and free distribution. HoloDraw is a software suite that enables the transformation of 2D, 3D and 4D data sets into 3D stereo GeoWall images. These tools, which are currently in development, facilitate use of existing GMT (Wessel, P. and W. H. F. Smith, Free software helps map and display data, EOS Trans. AGU, 72, 441, 1991) scripts and their data sources, and produce 3D files for the GeoWall, suitably configured web browsers, and other software packages capable of viewing VRML files. HoloDraw runs on Unix, Macintosh, and Windows, using script files and command lines to create rectilinear or spherical projections of a wide range of data sets. We will present several images constructed with HoloDraw, including heterogeneity maps from global and regional seismic tomography, earthquake hypocentral locations, and source-receiver raypaths used for deducing D" topography. We show that HoloDraw facilitates bringing new life to existing data sets through 3D visualization techniques that are easily transported to web browsers and the GeoWall. The two immediate benefits of HoloDraw are: (1) It allows researchers to view data and/or models from perspectives previously unavailable or impractical to create. In some cases this process facilitates important next-step research decisions that may have otherwise been obscured. (2) HoloDraw enables researchers to transport existing 2D image construction scripts (e.g., GMT tools) into 3D, providing a clear and comprehensible transfer of research knowledge and discovery to all levels of students and colleagues.

URL: http://geophysics.asu.edu/vis/agu/2003/ed01/

ED31E-06 1135h

The Role of Research Institutions in Building Visual Content for the Geowall

Robert L Newman[1] ((858) 822-1333; rlnewman@ucsd.edu)

Debi Kilb[1] ((858) 822-4607; dkilb@ucsd.edu)

Atul Nayak[1] ((858) 534-5623; atul@epicenter.ucsd.edu)

Graham Kent[1] ((858) 534-7386; gkent@ucsd.edu)

[1]Cecil H. and Ida M. Green Institute of Geophysics and Planetary Physics, Scripps Institution of Oceanography, 9500 Gilman Drive, La Jolla, CA 92093-0225, United States

The advent of the low-cost Geowall (http://www.geowall.org) allows researchers and students to study 3-D geophysical datasets in a collaborative setting. Although 3-D visual objects can aid the understanding of geological principles in the classroom, it is often difficult for staff to develop their own custom visual objects. This is a fundamentally important aspect that research institutions that store large (terabyte) geophysical datasets can address. At Scripps Institution of Oceanography (SIO) we regularly explore gigabyte 3-D visual objects in the SIO Visualization Center (http://siovizcenter.ucsd.edu). Exporting these datasets for use with the Geowall has become routine with current software applications such as IVS's Fledermaus and iView3D. We have developed visualizations that incorporate topographic, bathymetric, and 3-D volumetric crustal datasets to demonstrate fundamental principles of earth science including plate tectonics, seismology, sea-level change, and neotectonics. These visualizations are available for download either via FTP or a website, and have been incorporated into graduate and undergraduate classes at both SIO and the University of California, San Diego. Additionally, staff at the Visualization Center develop content for external schools and colleges such as the Preuss School, a local middle/high school, where a Geowall was installed in February 2003 and curriculum developed for 8th grade students. We have also developed custom visual objects for researchers and educators at diverse education institutions across the globe. At SIO we encourage graduate students and researchers alike to develop visual objects of their datasets through innovative classes and competitions. This not only assists the researchers themselves in understanding their data but also increases the number of visual objects freely available to geoscience educators worldwide.

URL: http://siovizcenter.ucsd.edu/

ED31E-07 1150h

3D Geospatial Models for Visualization and Analysis of Groundwater Contamination at a Nuclear Materials Processing Facility

Gerry L. Stirewalt[1] (1-301-415-5265; gls3@nrc.gov)

James C. Shepherd[2] (jcs2@nrc.gov)

[1]MANDEX, Inc, 12500 Fair Lakes Circle, Fairfax, VA 22033-3808, United States

[2]U.S. Nuclear Regulatory Commission, MS T7F27, Washington, DC 20555, United States

Analysis of hydrostratigraphy and uranium and nitrate contamination in groundwater at a former nuclear materials processing facility in Oklahoma were undertaken employing 3-dimensional (3D) geospatial modeling software. Models constructed played an important role in the regulatory decision process of the U.S. Nuclear Regulatory Commission (NRC) because they enabled visualization of temporal variations in contaminant concentrations and plume geometry. Three aquifer systems occur at the site, comprised of water-bearing fractured shales separated by indurated sandstone aquitards. The uppermost terrace groundwater system (TGWS) aquifer is composed of terrace and alluvial deposits and a basal shale. The shallow groundwater system (SGWS) aquifer is made up of three shale units and two sandstones. It is separated from the overlying TGWS and underlying deep groundwater system (DGWS) aquifer by sandstone aquitards. Spills of nitric acid solutions containing uranium and radioactive decay products around the main processing building (MPB), leakage from storage ponds west of the MPB, and leaching of radioactive materials from discarded equipment and waste containers contaminated both the TGWS and SGWS aquifers during facility operation between 1970 and 1993. Constructing 3D geospatial property models for analysis of groundwater contamination at the site involved use of EarthVision (EV), a 3D geospatial modeling software developed by Dynamic Graphics, Inc. of Alameda, CA. A viable 3D geohydrologic framework model was initially constructed so property data could be spatially located relative to subsurface geohydrologic units. The framework model contained three hydrostratigraphic zones equivalent to the TGWS, SGWS, and DGWS aquifers in which groundwater samples were collected, separated by two sandstone aquitards. Groundwater data collected in the three aquifer systems since 1991 indicated high concentrations of uranium (>10,000 micrograms/liter) and nitrate (> 500 milligrams/liter) around the MPB and elevated nitrate (> 2000 milligrams/ liter) around storage ponds. Vertical connectivity was suggested between the TGWS and SGWS, while the DGWS appeared relatively isolated from the overlying aquifers. Lateral movement of uranium was also suggested over time. For example, lateral migration in the TGWS is suggested along a shallow depression in the bedrock surface trending south-southwest from the southwest corner of the MPB. Another pathway atop the buried bedrock surface, trending west-northwest from the MPB and partially reflected by current surface topography, suggested lateral migration of nitrate in the SGWS. Lateral movement of nitrate in the SGWS was also indicated north, south, and west of the largest storage pond. Definition of contaminant plume movement over time is particularly important for assessing direction and rate of migration and the potential need for preventive measures to control contamination of groundwater outside facility property lines. The 3D geospatial property models proved invaluable for visualizing and analyzing variations in subsurface uranium and nitrate

contamination in space and time within and between the three aquifers at the site. The models were an exceptional visualization tool for illustrating extent, volume, and quantitative amounts of uranium and nitrate contamination in the subsurface to regulatory decision-makers in regard to site decommissioning issues, including remediation concerns, providing a perspective not possible to achieve with traditional 2D maps. The geohydrologic framework model provides a conceptual model for consideration in flow and transport analyses.

ED31E-08 1205h

GeoWall-2 : a Scalable Display System for the Geosciences

Jason Leigh[1] (312-996-3002; spiff@evl.uic.edu); Paul Morin[2] (lpaul@umn.edu); Andrew Johnson[1] (aej@evl.uic.edu); Thomas A DeFanti[1] (tom@uic.edu); Maxine Brown[1] (maxine@uic.edu); Daniel Sandin[1] (dan@evl.uic.edu); Frank Rack[3] (frack@joiscience.org); Frank Vernon[4] (flvernon@ucsd.edu); John Orcutt[4] (jorcutt@igpp.ucsd.edu); Brian Davis[5] (bdavis@usgs.gov); Peter van Keken[6] (keken@umich.edu); Larry Smarr[7] (lsmarr@ucsd.edu)

[1]Electronic Visualization Laboratory, University of Illinois at Chicago, MC 152, 1120 SEO, 851 S. Morgan St., Chicago, IL 60607, United States

[2]Department of Geology and Geophysics, University of Minnesota, 310 Pillsbury Drive, Minneapolis, MN 55455, United States

[3]Joint Oceanographic Institutions, 1755 Massachusetts Avenue, NW, Suite 700, Washington, DC 20036-2102, United States

[4]Institute of Geophysics and Planetary Physics, Scripps Institute of Oceanography, University of California San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0225, United States

[5]United States Geological Survey, EROS Data Center, 47914 252nd Street, Sioux Falls, SD 57198-0001, United States

[6]Department of Geological Sciences, University of Michigan, 2534 C. C. Little Building, 425 East University, Ann Arbor, MI 48109-1063, United States

[7]California Institute of Telecommunications and Information Technology, University of California, San Diego, EBU1, 7th Floor 9500 Gilman Drive, La Jolla, CA 92093-0405

The first generation of the GeoWall was targeted at providing affordable 3D stereoscopic visualization of small- to modest-sized Geoscience datasets. Continuing the trend to take advantage of the commodity computing, GeoWall-2 is designed to cost-effectively serve Geoscience applications that require greater display resolution and visualization capacity. The full GeoWall-2 consists of 15 LCD panels tiled in a 5x3 array comprising a total resolution of 8000x3600 pixels. Each LCD panel is driven by a single PC with a high-end graphics card such as Nvidia's Quadro FX3000, at least 250GBytes of disk space, 2.5-3GHz CPU, and Gigabit Ethernet networking. The GeoWall-2 is scalable in that smaller or even larger versions can be built by adjusting the number of LCDs and computers. Applications of the GeoWall-2 include the visualization of large remote sensing, volume rendering imagery, mapping, seismic interpretation, museum exhibits and other applications that require a large collaborative screen area. GeoWall-2 was developed with support from the National Science Foundation, and the Office of Naval Research.

URL: http://www.evl.uic.edu/cavern/optiputer/

ED32A MCC: Level 2 Wednesday 1330h

Scholarly Journals in the Digital Age Posters

Presiding: **D J Boccippio,** NASA Marshall Space Flight Center

ED32A-1189 1330h INVITED POSTER

Re-Launching a "Dormant" Electronic Journal: The Experience of "Earth Interactions"

Jonathan A Foley (jfoley@wisc.edu)

Center for Sustainability and the Global Environment (SAGE), University of Wisconsin 1710 University Avenue, Madison, WI 53726, United States

Earth Interactions, an electronic journal published by the American Geophysical Union (AGU) and the American Meteorological Society (AMS), in collaboration with the American Association of Geographers (AAG), has been recently "re-launched" with a new Editorial Team and a new scientific focus. For the past six months, we have worked very hard to revitalize Earth Interactions, and to establish it as a top-notch publication venue for interdisciplinary earth and environmental sciences. So far, the results have been outstanding. Our submission rate has increased dramatically, while the overall quality of articles remains extremely high. Furthermore, articles in Earth Interactions are now among the most sought-after articles in the AMS electronic publication system, and we believe they will have tremendous impact. Earth Interactions continues to seek excellent papers that explore the interactions among the biological, physical and human components of the earth system. We consider a wide variety of manuscript styles, including the following: original research articles; review articles; brief "data reports" and "model reports"; and special collections of papers from conferences and workshops In this presentation, I will describe how Earth Interactions has been re-launched, and the challenges facing this electronic publication.

URL: http://www.earthinteractions.org

ED32A-1190 1330h POSTER

The G^3 Experience with Electronic Publishing: An Editor's Perspective

William M. White (607 2554766; white@geology.cornell.edu)

Cornell University, Dept. of Earth and Atmos. Sci., Ithaca, NY 14853, United States

G^3 (*Geochemistry, Geophysics, Geosystems*) is an all-electronic journal published jointly by the AGU, the Geochemical Society, and the European Association of Geochemistry. G^3 publishes original scientific contributions pertaining to understanding the Earth as a system, including relevant observational, experimental, and theoretical investigations of the solid Earth, hydrosphere, atmosphere, and biosphere. The journal was initiated as a result of a grass roots effort with the following goals in mind: a copyright policy designed to enhance, rather than inhibit, the dissemination of scientific information (for example, allowing authors to post electronic reprints on their web sites), provide a means of publishing, in immediately useable formats, large data sets, provide a means for ready dissemination of computer modeling and analysis tools, and provide a forum where authors could use novel ways of illustrating both data and models (e.g., formats such as movies, virtual reality images, sound, mathematical models, etc.), and finally to reduce costs and speed publication. In most respects, G^3 has been enormously successful and has met most of its goals. G^3 began publishing in December of 1999; in the subsequent 3 1/2 years 625 papers have been submitted to it and 325 have been published. It currently has over 600 institutional and personal subscribers. Papers are submitted through the web (a variety of formats are accepted, however, Microsoft Word is most common) and are converted to Adobe pdf format for peer review. Except that it is fully electronic using the web and e-mail, the peer review process is traditional, which insures the quality of the papers published. Accepted papers are copyedited and converted to SGML for archival purposes. HTML and Acrobat pdf versions are then generated from the SGML and published as they are ready on the G^3 web site (www.g-cubed.org). Large data sets are routinely published in digital formats that can be readily downloaded by readers and immediately imported into programs such as Excel. Numerous animations and movies have been published in animated GIF, Apple Quicktime, Macromedia Flash, and Wolfram Research Mathreader formats. Computer models and tools have been published as Excel Macros and MATLAB Scripts. Full color, high resolution images allow superior publication of detailed maps and photographs. While G^3 is a success by most measures, the process of pioneering electronic publication has at times been painful and frustrating. Early on, there were problems and delays in converting files, particularly graphics, to pdf format for both review and final publication. Costs have been higher than anticipated - primarily due to the cost of file conversion and formatting. The time from acceptance to publication (currently 10 weeks), although improving, it still longer than the goal, again because of the time required for copy-editing and formatting. Automation of this process in the future is the primary opportunity to both reduce cost and further speed publication. Authors have been slow to take advantage of the new illustration formats, with most relying on tradition figures instead. This will likely change slowly in the future, as these new formats, and the software tools to create them, become more familiar.

URL: http://www.g-cubed.org

ED32A-1191 1330h POSTER

A step beyond simple keyword searches: Services enabled by a full content digital journal archive

Dennis J Boccippio (256-961-7909; Dennis.Boccippio@nasa.gov)

NASA / Marshall Space Flight Center, NASA / MSFC SD-60, MSFC, AL 35812, United States

The problems of managing and searching large archives of scientific journal articles can potentially be addressed through data mining and statistical techniques matured primarily for quantitative scientific data analysis. A journal paper could be represented by a multivariate descriptor, e.g., the occurrence counts of a number key technical terms or phrases (keywords), perhaps derived from a controlled vocabulary (e.g., the American Meteorological Society's Glossary of Meteorology) or bootstrapped from the journal archive itself. With this technique, conventional statistical classification tools can be leveraged to address challenges faced by both scientists and professional societies in knowledge management. For example, cluster analyses can be used to find bundles of "most-related" papers, and address the issue of journal bifurcation (when is a new journal necessary, and what topics should it encompass). Similarly, neural networks can be trained to predict the optimal journal (within a society's collection) in which a newly submitted paper should be published. Comparable techniques could enable very powerful end-user tools, all premised on the view of a paper as a data point in a multidimensional descriptor space, e.g.: "find papers most similar to the one I am reading", "build a personalized subscription service, based on the content of the papers I am interested in, rather than preselected keywords", "find suitable reviewers, based on the content of their own published works", etc. Such services may represent the next "quantum leap" beyond the rudimentary search interfaces currently provided to end-users, as well as a compelling value-added component needed to help bridge the print-to-digital-medium gap, and help stabilize professional societies' revenue stream during the print-to-digital transition.

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Going Online With Ocean Drilling Publications

Ann D. Klaus[1] (979-845-2729; annklaus@odpemail.tamu.edu)

Katerina E. Petronotis[1] (petronotis@odpemail.tamu.edu)

[1]Ocean Drilling Program, Texas A&M University, 1000 Discovery Drive, College Station, TX 77845, United States

In 1999, the Ocean Drilling Program (ODP) transitioned from a print publication format to a hybrid print/electronic format of its Initial Reports (IR) series. A year later, the Scientific Results (SR) series joined the electronic era. Our mandate was to produce a fully functional electronic publication in HTML and PDF formats that would also function as a professionally typeset printed publication. The IR series disseminates the preliminary scientific knowledge gained during each ODP cruise, whereas the SR series is a venue for publishing independent research conducted after each cruise and often includes extensive data sets and many color images. Although both series are published as a print/CD-ROM hybrid and on the Web, the IR online version follows publication of the CD, whereas the SR online version precedes it. This unique format–neither all print, all electronic, or print with electronic replica of print–led to interesting challenges that few other publishers had to grapple with when going electronic. ODP's formal transition from print to electronic publication was concentrated in a 2-year period, but fortunately, staff members had honed many valuable online editing and production skills prior to that time as a cost-saving means of publishing hardcover books. This made the transition rather seamless for the staff; however, issues pertaining to multiplatform publications still had to be addressed. These included word choices that made sense regardless of whether the material was being viewed on paper, on CD, or on the Web; the creation of alternative citation formats; policies on revising already published electronic material; etc. In our experience, the advantages for publishers and readers have outweighed the growing pains of moving to electronic publishing. For example, SR authors typically see their manuscripts published 4-5 months after acceptance, whereas it used to take 7-9 months. The accessibility of the online publications has significantly widened distribution. And the CD-ROM product allows ODP to enhance the electronic resources available to researchers by including an index of all published IR/SR volume pairs on each CD, detailed site maps, movies, unlimited color images, and other supplementary data sets provided by authors. Our next venture is to digitize the older printed ODP volumes and the Deep Sea Drilling Project (DSDP) series and make these publications available online in HTML and PDF formats as well. This will provide the scientific community with more than 30 years of marine earth science research at