(right) Christopher E. Henze demonstrated the analytical and visualization capabilities of the 128-screen Hyperwall of the Pleiades supercomputer.

(below) Challenges about writing for various audiences were discussed at a lively round table.

(above) Plenty of time was allotted for journalists and boot camp faculty to converse informally. At a reception, Kim Griest (professor of physics, UC San Diego) engages with Elizabeth Wilson, Earle M. Holland, and Pam Frost Gorder.

Computational Astronomy Boot Camp

BY TRUDY E. BELL

The idea was a natural. When, in June 2011, I became senior writer for the University of California High-Performance AstroComputing Center (UC-HiPACC), headquartered at UC Santa Cruz, I felt on a learning curve as steep as Mount Everest. Although for decades I had covered astronomy and the engineering of telescopes and detectors, I was still wrapping my head around the basics of supercomputing and its applications to astrophysics. Sure, high-end computation made analysis faster. I got that. But when I found that powerful computation is enabling real-time observational discovery (e.g., of supernovae exploding in other galaxies), and new theoretical insights (e.g., how the Milky Way got its spiral arms), and even turning cosmology into an experimental science (e.g., powerful enough to evolve the Universe all over again inside a supercomputer), I realized the revolutionary field of computational astronomy was a huge, under-told story that may have escaped others as well.

20 science/engineering journalists with UC-HiPACC staff gather in front of an image from the Bolshoi cosmological simulation on the 128-screen Hyperwall of the Pleiades supercomputer at NASA Ames Research Center.

I approached UC-HiPACC director Joel R. Primack with the idea for an intensive boot camp as a backgrounder in computational astronomy for science and engineering journalists in all media. Modeled loosely on the short, single-topic boot camps of the Knight Science Journalism program or the National Center for Atmospheric Research, ours would be the first on astronomy to be offered on the West Coast, and the first anywhere on computational astronomy.

Both Primack and UC-HiPACC seemed ideal as host and sponsor. Primack is distinguished professor of physics at UCSC and an architect of the cold dark matter theory now widely accepted as the standard model for the formation of the Universe. He had founded UC-HiPACC in 2010 with a five-year grant from the University of California to encourage collaborations—primarily through funding workshops, conferences, and travel grants—across UC campuses and three Department of Energy national laboratories (Lawrence Berkeley, Lawrence Livermore, and Los Alamos).

After consulting with Robert Irion, director of UCSC's Science Communications Program, and Tim Stephens, UCSC public information officer who covers the campus's scientific research, we titled the boot camp Computational Astronomy: From Planets to Cosmos. Faculty were invited from all UC campuses and the three affiliated DOE labs to serve as experts and speakers in intensive one-hour mini-courses designed convey essential background and highlight significant upcoming developments. Faculty were also asked to commit to staying at least the entire day of their presentations to give journalists informal time to establish relationships with potential sources.

Faculty included Michael Norman, director of the San Diego Supercomputer Center, who offered insights as to why and how big

TRUDY E. BELL IS SENIOR WRITER AT UC-HIPACC. SHE IS A FORMER EDITOR FOR *SCIENTIFIC AMERICAN* AND *IEEE SPECTRUM* MAGAZINES, IS THE AUTHOR OF A DOZEN BOOKS AND NEARLY 500 ARTICLES ON ASTRONOMY AND OTHER PHYSICAL SCIENCES, TECHNOLOGY, HISTORY OF SCIENCE, AND BICYCLING.

BOOT CAMP PHOTOS BY TRUDY E. BELL

supercomputers are enabling pioneering astrophysical research; James Bullock, director of the Center for Galaxy Evolution at UC Irvine, who outlined fundamental problems and approaches; and a dozen other key researchers (slides and videos of mini-courses are at **hipacc.ucsc.edu/2012CAJBC_Program.html**).

The program accepted 20 attendees (more than half were NASW members) from both general and scientific media. Journalists included staff and freelance feature writers for U.S. and international magazines, a daily newspaper reporter, new media specialists, an Emmy Award-winning documentary filmmaker, a radio reporter, and PIOs from two major universities; they ranged from blazing young talents to late-career veterans.

The boot camp was held June 24 to 27 and opened with a welcome reception at the home of Primack and his wife, philosopher and writer Nancy E. Abrams. Two days of formal sessions were held on the redwood-forested campus of UC Santa Cruz. Mini-courses covered current pioneering investigations in planetary science, stellar astronomy, explosive and high energy astrophysics, dark matter and dark energy, and cosmology, including discussions of instrumentation and analytical techniques.

One day included an on-campus field trip to the famous UC Observatories Instrument Laboratories and optical shops, plus an evening banquet. Another day concluded with a 90-minute journalism round-table discussion. There were also field trips to two institutions leading in astrocomputing and visualization: NASA Ames Research Center at Moffett Field in Mountain View, and the California Academy of Sciences in San Francisco.

Participants were surveyed both at the conclusion of the boot camp and two months later in an effort to determine how useful the event had been to them. The following responses are representative:

"I did not know much about how computers are being used to produce new scientific insights and provoke searches for new phenomena. This was the probably the most important concept that I learned."

"I will definitely get story ideas out of this—hopefully lead to new stories. But the overviews are very helpful to get deeper context about the research I cover—especially the mechanics of it, how simulations are made and what assumptions underlie them."

BOOT CAMP continued on page 32

NASW Members Attending Computational Astronomy Boot Camp

- Rebecca Boyle, *Popular Science*
- Camille Carlisle, *Sky & Telescope*
- Charles Day, *Physics Today*
- Pam Frost Gorder, Research Communications, Ohio State University
- Heather Marie Goss, *Air & Space/Smithsonian*
- Lisa Grossman, *New Scientist*
- Donna Hesterman, Research Communications, University of Florida
- Earle M. Holland, Freelance writer
- Bruce Lieberman, Freelance Science & Environment Writer
- Angela Posada-Swafford, *Muy Interesante*
- Elizabeth Wilson, *Chemical & Engineering News*

The New NASW Grant and Fellowship Database

BY MADELINE BODIN

You have a great idea for a book, a long-form narrative article or an investigative piece, but the payment the publisher offers won't cover the cost of the project. I've been there, and so have many NASW members. Skimpy funding doesn't have to mean the end of the project, though. There are grants, fellowships, and other resources available to help you turn great ideas into reality. The problem is that Google doesn't offer much help finding those opportunities and neither does Bing. But a new database from NASW can get you started.

As a NASW member with both experience in looking for funding for and training in grant writing, I knew that a funding database would be a valuable resource for other members. I applied to the Ideas Fund, but what the project most needed was a capable database programmer, and NASW already has that resource in Cybrarian Russell Clemings. The NASW website guest editor program let me work with Russ for three months to create the database.

The specific information included on each grant or fellowship is based on a class on grant writing I took from Diane Silver (**dianesilver.net**), a grant writer with nearly two decades of experience who has written grants that have brought millions of dollars to the institutions that hire her.

Silver says that grant writing is not that different from science writing. "The first thing I learned as a grant writer is to take your audience into consideration, and you really have to do that as a science writer," she says. When writing a grant, your audience is the funding organization. "Each funding agency is different. They each have different needs, different quirks," Silver says.

The link to further information about the funding organization in the database is your connection to the needs and quirks of that organization. When writing your grant proposal, present your project in a way that makes sense to that organization's particular world view and needs, Silver says. If the funder's world view is incompatible with your project, don't apply, she warns. "If your project is about climate change and you have a foundation that's given money to climate change deniers, you are wasting your time."

Examining which projects have already been funded—which is also included in the database—will also help you target a likely funder. You want to see projects like yours, but not exactly like yours. Silver says that, like magazines, funders don't want to repeat themselves.

Unlike magazines though, most funders encourage you to call

DATABASE continued on page 32

MADELINE BODIN IS A SCIENCE WRITER SPECIALIZING IN WILDLIFE CONSERVATION AND THE ENVIRONMENT.

NASW CONTACTS

National Association of Science Writers, Inc.
P.O. Box 7905
Berkeley, CA 94707
Phone 510-647-9500
nasw.org

STAFF

Executive Director
Tinsley Davis, director@nasw.org

NASW Cybrarian
Russell Clemings, cybrarian@nasw.org

Workshops Coordinator
Tinsley Davis, workshops@nasw.org

***ScienceWriters* Editor**
Lynne Friedmann, editor@nasw.org

OFFICERS

President
Ron Winslow, ronwinslow@nasw.org
Wall Street Journal

Vice President
Robin Marantz Henig, robinhenig@nasw.org
Freelance

Treasurer
Beryl Lieff Benderly, blbink@aol.com
Freelance

Secretary
Deborah Franklin, deborah_franklin@nasw.org
Freelance

BOARD MEMBERS AT LARGE

Jill Adams, jilluadams@gmail.com
Freelance

Bob Finn, finn@nasw.org
Int'l Medical News Group

Peggy Girshman, pgirshman@kff.org
Kaiser Health News

Jeff Grabmeier, grabmeier.1@osu.edu
Ohio State University

Laura Helmuth, lhelmuth@si.edu
Slate

Michael Lemonick, mikelemonick@gmail.com
Climate Central

A'ndrea Elyse Messer, aem1@psu.edu
Penn State

Rosie Mestel, rosiemestel@gmail.com
Los Angeles Times

Tabitha M. Powledge, tam@nasw.org
Freelance

Hillary Rosner, mail@hillaryr.net
Freelance

Mitch Waldrop, m.waldrop@naturedc.com
Nature

COMMITTEES

Annual Meeting, Awards, Education, Finance & Audit, Freelance, Grievance, Information Access, Internet, Membership, Nominating, PIO, Program

Complete contact information available at **nasw.org**

NEW MEMBERS

ALABAMA: Gregory Williams, Univ. of Alabama at Birmingham. **ARIZONA**: Elizabeth Blaker*, Northern Arizona Univ., Flagstaff. **CALIFORNIA**: Jessica Shugart*, UC Santa Cruz; Mollie Bloudoff-Indelicato, E&E Publishing, Linden; Keely Chaisson*, UCLA; Amanda Alvarez*, UC Berkeley; Randy Dotinga, freelance, San Diego; Julie Granka*, Stanford Univ.; Laura Poppick*, UC Santa Cruz. **COLORADO**: Susan Moran, freelance, Boulder; Jonny Waldman, Simon & Schuster, Boulder; Cally Carswell, *High Country News*, Paonia. **CONNECTICUT**: Gwyneth Shaw, Online Journalism Project/The Nano State, Hamden; Jessica McDonald*, Yale Univ. **DISTRICT OF COLUMBIA**: Devin Powell, freelance; Lauren Rugani, National Academy of Sciences. **FLORIDA**: Amanda Barrett*, Univ. of Florida, Gainesville; Kristy Shimp*, Univ. of Florida, College of Medicine, Gainesville; Andrew Kays*, Univ. of Florida, Ocala; Danielle Torrent, Univ. of Florida/Florida Museum of Natural History. **GEORGIA**: Ian Branam*, Univ. of Georgia; Dian Cai*, Univ. of Georgia; Carolyn Crist*, Univ. of Georgia; Jing Luo*, Univ. of Georgia; Julianne Wyrick*, Univ. of Georgia; Ian Campbell*, Georgia Inst. of Technology, Atlanta; Lacey Avery*, Univ. of Georgia. **IOWA**: Michael McGinn*, Univ. of Iowa; Richard Lewis, Univ. of Iowa. **ILLINOIS**: Evelyn Lamb, freelance, Chicago; Chelsey Coombs*, Univ. of Illinois at Urbana Champaign. **INDIANA**: Jessica Stoller-Conrad, Univ. of Notre Dame. **MARYLAND**: Kelsey Calhoun*, The Johns Hopkins Univ.; Alex Kasprak*, The Johns Hopkins Univ., Baltimore; Kerri Wachter, freelance, Baltimore; Rebecca Widiss*, The Johns Hopkins Univ., Baltimore; Phyllis Edelman, Genetics Society of America, Bethesda; Kerstin Nordstrom, Univ. of Maryland, College Park; Larry Engel, American Univ., Hagerstown; Jessica Higgins*, Univ. of Maryland, Mt. Rainier. **MASSACHUSETTS**: Alyssa Botelho*, Harvard College; Alison Bruzek*, MIT. **MICHIGAN**: Morgan Sherburne, *Petoskey News-Review*, Charlevoix. **NEW YORK**: Alla Katsnelson, freelance, Astoria; Jennifer Barone, *Discover Magazine*, Brooklyn; Jessica Benko, freelance, Brooklyn; Rose Eveleth, freelance, Brooklyn; Miriam Kramer*, New York Univ.; Nicholas St. Fleur*, *Cornell Daily Sun*, Ithaca; Ashley Tucker*, St. John's Univ., Kew Gardens; Davey Alba*, Columbia Univ. Graduate School of Journalism, NYC; Laura Geggel*, New York Univ.; Taylor Kubota*, New York Univ.; Samantha Miller*, Cornell Univ.; Valerie Ross, *Discover Magazine*, NYC; Julie Hecht, Horowitz Dog Cognition Lab, The Bark, Dog Spies, Scarsdale; Jonathan Bardin, Weill Cornell Grad School, Woodside; Kristina Wilson*, Univ. of Rochester. **NORTH CAROLINA**: Erin Espelie*, Duke Univ.; Natalie Taylor*, Univ. of North Carolina at Chapel Hill; Carol Kelly, MDB, Inc., Chapel Hill; Patrick Mustain*, Univ. of North Carolina at Chapel Hill; Katie Burke, *American Scientist Magazine*, Sigma Xi, Durham; Jim Shamp, No. Carolina Biotech. Center, Durham; Meghan Radford*, No. Carolina State Univ.; David Hunt, North Carolina State Univ.; Christina Kaemmerlen*, Univ. of No. Carolina, Charlotte; D'Lyn Ford, No. Carolina State Univ.; Laura Ingerham*, freelance, Raleigh; Kelly Poe*, Univ. of No. Carolina at Chapel Hill. **OHIO**: Nancy Averett, freelance, Oxford. **OREGON**: JoAnna Wendel*, Univ. of Oregon. **PENNSYLVANIA**: Meeri Kim*, Univ. of Pennsylvania; Caroline Leopold, freelance, Philadelphia; Christina Szalinski*, Univ. of Pittsburgh; Nola Redd, freelance, Pottsville; Joshua Yearsley*, Penn State Univ. **RHODE ISLAND**: Stephanie Yin*, Brown Univ., Providence. **SOUTH CAROLINA**: Joe Spring, *Outside*, Folly Beach. **TEXAS**: Tara Marathe, Center for Vital Longevity/Univ. of Texas at Dallas; Lana Straub, freelance, Stanton. **VIRGINIA**: Maria Zacharias, National Science Foundation, Annandale; Lindsay Key*, Virginia Tech. Univ., Blacksburg; Ashley Stevenson*, Univ. of Virginia, Charlottesville; Curtis Balmer, Blue-Groove Communications, LLC, Sterling; Mary Curtis*, American Univ., Vienna; Margaret Pizer, Virginia Sea Grant, Williamsburg. **WASHINGTON**: Ashley Braun, I.M. Systems Group/Nat'l Oceanic and Atmospheric Admin., Seattle; Susan Keown, Palladian Partners, Inc., Seattle; Mali Main*, Univ. of Washington, Seattle. **WISCONSIN**: Rebekah Gillespie, Center for Dairy Research, UW-Madison, Madison; Eleanor Nelsen*, Univ. of Wisconsin-Madison Department of Chemistry, Madison; Troy Rummler*, Univ. of Wisconsin-Milwaukee, Milwaukee; Tasha Eichenseher, *Discover Magazine*, Shorewood. **AUSTRALIA**: Mia Cobb*, Monash Univ., Wonga Park, Victoria. ■
**student member*

BOOT CAMP

continued fron page 7

"The workshop gave me rare and valuable time hanging out with astronomers informally, in small groups, and in a non-interview setting. I wish that could happen more often. It also gave me a good sense of some of the broad trends and big questions in astrocomputing."

The faculty also found the boot camp eye-opening. One remarked: "To a scientist, the boot camp felt very different from a scientific meeting. First, the journalists actually ask questions. Second, some of the questions are scary to a scientist, such as 'Why are you doing this experiment?' Third, even though that's the case, it is very important for scientists to hear their questions, especially since our work is publicly funded. Something like this boot camp should be held at the end of every scientific meeting!"

UC-HiPACC is evaluating the pros and cons of future boot camps on computational astronomy, including whether events should be tailored to other audiences such as education directors of science museums and planetariums, K-12 master teachers, or lower-division astronomy professors.

Meantime, journalists had no doubt there should be future boot camps in computational astronomy. As one remarked: "I think it is extremely useful to learn about the process, and how these scientists come about their findings." Another declared: "Most definitely. This needs to go on. It is the best way to help journalists and scientists learn about so very different worlds and communicate science effectively." ■

DATABASE

continued from page 7

or email a program representative to discuss your project before you write the proposal. These conversations can provide valuable insight into how your project stacks up in the eyes of the funder, plus provide additional information, including updates to what's on the website, Silver says.

The database also includes the names of past awardees. If someone you know has won a grant that you are interested in, they can be another source of inside information, or, if you see the names of writers who are completely out of your league, that may be a hint that the funding opportunity may be as well.

Some funders are quirky about deadlines. They only post the deadline on their website a few weeks ahead of time. Personally, I need more time than that. And if I'm planning a book project, I'm