

## IMAGES

### Storm Seers

A hurricane is like a towering turbine, sucking air in at the base and venting it out at the top, as indicated in this computer model of Hurricane Floyd churning north toward the North Carolina coast on 16 September. Researchers at the Geophysical Fluid Dynamics Lab (GFDL) in Princeton, New Jersey, spent 2 decades refining an approach that involves feeding global and regional temperatures, wind speeds, pressures, and so on into a supercomputer. Their toil has saved lives: Since 1995, federal meteorologists have used this model to help predict hurricane paths and intensities. "It's a little different every time," notes John Sheldon of GFDL, who says last year's deadly Mitch was particularly hard to pin down: There were no winds to steer Mitch, so it wobbled "like a spinning top." See GFDL's gallery\* for movies of Floyd and other hurricanes, or this site for more storm simulations.†

\* [www.gfdl.gov/~jps/GFDL\\_VG\\_Gallery.html#Hurricane](http://www.gfdl.gov/~jps/GFDL_VG_Gallery.html#Hurricane)

† [virdir.ncsa.uiuc.edu/virdir/raw-material/envhydrology/atmos/vatmos.htm](http://virdir.ncsa.uiuc.edu/virdir/raw-material/envhydrology/atmos/vatmos.htm)

## NET NEWS

### Growing a Digital Garden

The New York Botanical Garden (NYBG) last week unveiled an online cornucopia for plant taxonomists: 2500 crisp digital photos of specimens from four vascular plant families. The dried plants, plucked and pressed by collectors as long ago as the 1830s, should aid biodiversity studies worldwide.

Other herbaria, most notably in the Netherlands and Sweden, have also put specimens online, but NYBG's is perhaps the most ambitious project yet—it's aiming for 75,000 specimens in the next few years. The high-resolution images, snapped beginning last May with a digital camera, are so detailed you can make out the type or handwriting on yellowing old ID labels. Such information makes the images nearly as useful as the actual specimens, which many museums hesitate to send out for fear of loss or damage, says Barbara Thiers, associate director of the herbarium. And NYBG's online specimens are all "types"—original samples used to describe new species, so examining them is something like consulting an author's original manuscript. Type specimens are "extremely valuable material when one is studying species relationships and species defini-



*Macleania pentaptera*, a blueberry cousin from Ecuador.

## NETWATCH

edited by JOCELYN KAISER

tions," notes Anita Cholewa, vascular plant curator at the University of Minnesota Herbarium.

Thiers expects that the digital images will be most appreciated by field taxonomists—particularly those in tropical countries, whose biota is largely cataloged in museums up north.

\* [www.nybg.org/bsci/hcol/vasc](http://www.nybg.org/bsci/hcol/vasc)

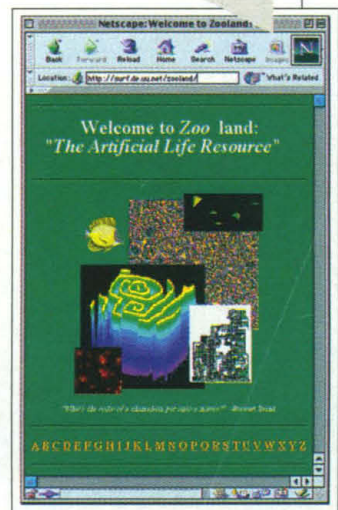
## SITE VISIT

### Life and Death on a Computer

The idea of playing god on computers took off 30 years ago, when mathematician John Conway invented the Game of Life, in which colored cells in a grid vie for survival. By now, applications of artificial life (Alife) are becoming commonplace: Social scientists use "evolutionary" algorithms to explore social interactions, for example, while biologists harness the equations for studying protein folding and lining up DNA sequences.

Try your hand at the creation and destruction of life at Zooland, a site where animals mate and compete, armies battle, landscapes bloom, and whimsical creatures learn to walk or swim. The site is targeted "somewhere between newbie/layman and die-hard expert," says Zooland mastermind Jörg Heitkötter, head of research at the Internet provider UUNET's subsidiary in Germany. After boning up on the subject with *The Hitchhiker's Guide to Evolutionary Computation*, co-authored by Heitkötter, you'll be ready to jump to Alife software programs for Macs, PCs, and UNIX. For instance, The Iterated Prisoner's Dilemma looks at trade-offs between cooperation and defection; in Sugarscape, civilizations evolve as tribes trade and bicker over stores of sugar (*Science*, 1 November 1996, p. 727); and in yet another game, lions stalk gazelles on a virtual savanna.

[surf.de.uu.net/zooland](http://surf.de.uu.net/zooland)



## HOT PICKS

**Cool moves.** Photos of Antarctica often depict a bleak white landscape, failing to convey the grandeur of the rivers of ice flowing—more slowly than the naked eye can perceive—from the continent's interior to the sea. A new map made with high-resolution radar at last captures some of Antarctica's dynamism. Tour spectacular ice streams, collapsing ice shelves, volcanoes, and more at: [svs.gsfc.nasa.gov/imagewall/antarctica.html](http://svs.gsfc.nasa.gov/imagewall/antarctica.html)

**Wireless lit search.** Ever wish you could look up MEDLINE abstracts while sitting on a train or in a coffee shop? If you've got a Palm Pilot that connects with the Internet, download this free application. [www.biomednet.com/display/info/palmvii.html](http://www.biomednet.com/display/info/palmvii.html)

**Bunkbuster.** Crystals, homeopathy, the weight-loss drug DHEA, stigmata, and UFOs are among topics debunked by *The Skeptic's Dictionary*, written by a philosophy professor. [skepdic.com](http://skepdic.com)

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