NETWATCH

edited by JOCELYN KAISER

COOL IMAGES

Virtual Green Thumb

Stripes on a seashell, the spindly fingers of a bacterial colony, a sunflower's petals: Such patterns are programmed by an organism's genes and elaborated by its environment. In 1952, computing pioneer Alan Turing first modeled how chemicals jostling around by diffusion might lead to mottled patterns, such as a leopard's spots. More recently, this horse chestnut tree (above) took root in a computer that predicted the branching in the crown. (Taking a cue from nature, the computer assumed that branches in shade will not grow new ones, for example.) More images and movies of growth in action are featured at Visual Models of Morphogenesis,* an online tutorial from computer scientist Przemyslaw Prusinkiewicz and his students at the University of Calgary in Canada. The team's specialty is software for Lindenmayer systems, a fractal-based model for plant growth used by everyone from botanists studying physiology to ecologists modeling how grazing shapes grasslands.

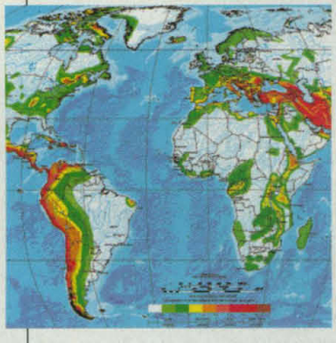
* www.cpsc.ucalgary.ca/projects/bmv/vmm-deluxe/TitlePage.html

NET NEWS

Charting the Shakes From Quakes

For everyone who has wondered where to live to avoid getting rattled by an earthquake, a new map provides some hints. Last week, earth scientists released on the Internet* the first global map that shows the odds of severe ground shaking during earthquakes for the next 50 years. The map will help engineers design safer buildings in regions that face high hazards.

Many geological atlases chart the world's major faults and pinpoint where big quakes have struck. However, such maps don't reveal the strength of ground shaking, which varies greatly depending on the nature of the earthquake and the landscape around it. For instance, a giant quake off the coast or far underground may produce only mild shaking in the closest city, while a small quake can wreak havoc if its fault breaks the surface where people live.



The new map, unveiled at an American Geophysical Union meeting in San Francisco, takes all such factors into account to quantify the chances that a particular region will feel shaking motions ranging from negligible to severe. More than 500 researchers worked on the world map (and regional maps, also available on the site) for 6 years, using satellite measurements, field surveys, historical records, and other data, says the project's director, Domenico Giardini of the Swiss Seismological Service in Zürich. Seismologists in many countries had few such maps or had waited until major quakes struck to predict future shaking, Giardini notes. About 15% of the world's land areas face a high to very high risk of severe shaking in the next few decades, say the map's authors. The most dangerous zones include Southern California, Iceland, Taiwan, Turkey, and around the India-China border.

* seismo.ethz.ch/GSHAP

SITE VISIT

A Bountiful Catch

It's long been a dream of biodiversity experts to tabulate all the world's species on the Web. Leading the way toward a catalog of life is FishBase, which counts more than 23,000 finfish, 80% of this largest group of vertebrates. Besides enumerating, the data clearinghouse has compiled a wealth of facts, from distribution maps to swimming speeds.

Type in "sockeye salmon," for example, and you are whisked to a page describing the fish's range (from Japan to Alaska and Los Angeles) and biology. (It actually takes two forms: anadromous sockeyes, and the smaller, landlocked kokanees.) From there you can tap details on distribution, predators, genetic markers, and diet, as well as photos and common names in various languages. FishBase draws on 300 collaborators, who feed data to a team at the International Center for Living Aquatic Resources Management in the Philippines. "No other animal group has this kind of information on the Internet," says ichthyologist Bill Eschmeyer of the California Academy of Sciences. The site's 1000 visitors a day range from biology students (who can take a fish quiz) to fishery managers to ecologists studying how harvesting too many small fish, such as menhaden and anchovies, can harm stocks of bigger fish that rely on them.

Project leader Rainer Froese says FishBase owes it success largely to a decade of steady funding from the European Commission, which launched it to help tropical fisheries scientists. The full version comes only on CD, but most of FishBase will be on the Web by the end of 2000.

HOT PICKS

Straight from the clinics. Braving the uncharted waters of posting raw biomedical manuscripts, the *British Medical Journal* (together with HighWire Press, *Science*'s online publisher) has launched a preprint server for clinical research and medicine. Although the point is to rush findings to the scientific community, the site says submissions will be "screened to ensure that they contain original research" and maintain patient confidentiality.
clinmed.netprints.org/home.dtl

Constant companions. From the velocity of light in a vacuum to the mass of an alpha particle, the so-called fundamental constants are essential to balancing the equations that describe the world around us. The National Institute of Standards and Technology has just released its first update of the constants since 1986, based on the latest experimental results and theoretical calculations. That means more decimals and less uncertainty.
physics.nist.gov/cuu/Constants/index.html

Send Internet news and great Web site suggestions to netwatch@aaas.org

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