

EARTH

Smarter Electricity

Technology to
make America's
electrical system
efficient, reliable
and clean

PLUS:

- Earth's alien places
- What's with oil prices? Why they're all over the map
- Information superhighway: building roads out of computer parts
- How ordinary citizens are changing the course of science

OLD FOOTPRINTS
SHOW MODERN
WALKING



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FEATURE

MAKING ELECTRIC GRIDS SMARTER

Building new power plants and increasing efficiency of our appliances and light bulbs will only go so far in meeting growing demand for electricity. What could really make a difference is smart grid technology. Such technology has been deployed in places like Boulder, Colo., and is saving consumers and electric companies both energy and money.

Brian Fisher Johnson



FEATURE

FROM DRY DOCK TO WET TAP

Global demand for water is increasing, even as severe droughts set in, natural disasters strike and wars take a toll on supply. But the world may be able to meet that demand by converting old ships into floating desalination plants, which could convert seawater to freshwater and pump it to shore, providing freshwater to areas ravaged by natural disasters or war.

David Kreamer



FEATURE

EARTH'S ALIEN PLACES

Planetary scientists would love to jet over to Mars, Venus, Io and other planetary bodies for a firsthand look, but the technology for deep space travel isn't there yet. So scientists turn to the next best thing — almost-other-worldly locations on Earth — as analogues to test their hypotheses, equipment and endurance.

Chelsea Wald

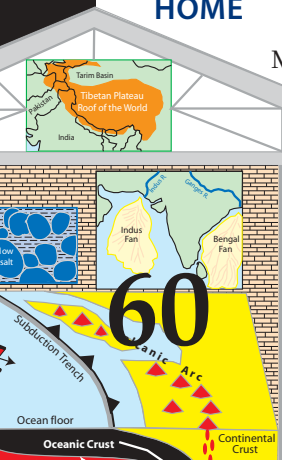


FEATURE

GEOSCIENCE VOCABULARY MAKES EARTH RIGHT AT HOME

Many words in earth science describe Earth's features and processes in terms of a home with fine architecture and furniture.

Rasoul Sorkhabi

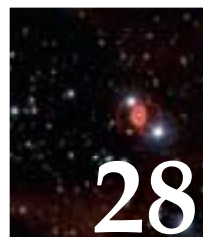


TRENDS AND INNOVATIONS

USING CITIZENS IN SCIENCE RESEARCH

Ordinary citizens participate in scientific research, scanning the skies for supernovae and galaxies, and tracking birds, weather, amino acids and earthquakes from their homes.

Cassandra Willyard



EDUCATION AND OUTREACH

STUDENT SCIENTISTS CAST A LONG SHADOW

At last year's annual meeting of the American Geophysical Union, a middle school student — the youngest presenter ever — commanded his own audience.

Carolyn Gramling



ON THE COVER

Making Earth's electric grids smarter. Illustration by Nicolle Rager Fuller, www.sayo-art.com, copyright 2009.

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INFRASTRUCTURE NEEDS — AND GETS — HELP
U.S. infrastructure is aging, failing and in desperate need of repair. Thankfully, policymakers seem to have finally gotten the message and have allocated funds for infrastructure in several budget bills this spring.
Scott Burns
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PROTECTING PEOPLE, PROPERTY AND ECONOMIES WITH CLIMATE PREDICTIONS
Climate extremes such as heat waves and droughts are predicted to intensify and occur more frequently in the future. Regional climate predictions can help mitigate the damages from such events.
Michel Jarraud
- 88 **GEOLOGIC COLUMN**
FEAR OF THE C.H.U.D.S
Perhaps the reason no one wants a nuclear waste repository anywhere near their own backyards is not political, but based on fear of C.H.U.D.s or other scary monsters from B-movie horror flicks.
Stephen M. Testa

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